Overcoming the Valley of Death in a Service Organisation

Designing Innovation Implementation

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Overcoming the Valley of Death in a Service Organisation:
Designing Innovation Implementation
Dissertation

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Dedication

For Jan and Annemieke

Preface

For me, writing a PhD thesis will probably be the loneliest endeavor I will ever undertake. At the same time, I never felt alone because of the continuous support of the colleagues, friends and family around me. Thank you all for sparring with me, inspiring me, thinking along with me, writing with me and, occasionally, letting me just 'be' or blow off steam.

Special thanks to my supervisory team. Sicco, thank you for your trust in me, for your everlasting care over me, for your wise words to 'frame my story and stay inside it' and for letting me do it my way. Your advice throughout this process, regarding PhD and life in general, has been invaluable. Christine, thank you for showing me the PhD opportunity, for showing me that there are always options, for your positivity and for sticking with me. Rebecca, thank you for getting in the weeds with me, for being my guide into AR, being my life raft while I was drowning in data and for your countless hours of editing and correcting. I look back with a smile on my memories with all of you, with the highlight being our 'DD goes USA' tour.

This PhD is grounded firmly in the everyday action of an airline and would have been impossible without the dedication, time and effort of everyone at FlyCo who was involved. This research is the result of deep trust and intense collaboration. I want to thank everyone at FlyCo - from the executive sponsors to the ground staff - for your open door, your warm welcome and your honesty. Special thanks to those (formerly) in the InnoHub, DigitalOps and CE units. The airline industry faces fundamental challenges (chiefly pandemics and sustainability), but I'm sure you will come out at the other end as a better company.

I also wish to thank my colleagues at the TU Delft. Frithjof, Bart, Eva and KJ Jeroen, it was great to be on a journey together with you. Let's all remember to 'just keep swimming'. To my other colleagues at DOS, thank you for your critique and your support. Keep up the good work as there's much more to learn at the crossroads of design, organisations and strategy.

This thesis also wouldn't have been possible without those closest to me. Annemieke, thanks for your unwavering support. Susanne, Jacomijn and

Liselotte, you know all the countless ways in which you contributed to this process. Amongst others, you showed me the way and to put things in perspective. Ocky, I never would've finished this mega project in time and with confidence without you, thanks for being my buddy. Pater and Luuk, thank you for sparking my enthusiasm for SPD and igniting my drive for this field. Finally, I need thank my wife, Lauren. Thank you for sticking with me throughout all my downs and being so happy with me for all my ups. I couldn't have done this without you.

Abstract

Large and mature organisations, with their access to knowledge, capital and customers, are perfectly positioned to walk the road from invention to innovation; to turn promising breakthrough technologies and creative concepts into profitable and scalable business opportunities. However, these organisations rarely generate winds of creative destruction and instead start-ups disrupt them at an increasing pace (Anthony et al., 2018; Elsbach & Stigliani, 2018). Large and mature organisations struggle to innovate sustainably, in part because of their rigid organisational structures and processes that maintain the status quo (O'Reilly & Binns, 2019). To overcome this, organisations increasingly deploy 'innovation hubs'. Innovation hubs are partially independent physical and managerial spaces intended as safe havens for exploratory activities. Examples of hubs are Xerox's' PARC and Google X 'the Moonshot Factory'. These are spaces where innovators find freedom to challenge the status quo and where there is space to consider alternatives, to experiment and to learn. Innovation hubs fuel the discussion of "what might be".

However, if organisations want to transform their business, they need to go beyond generating thought-provoking concepts. They need to implement promising concepts and integrate them with the rest of the organisation. Scholars call this gap that exists between concept generation and implementation the 'Valley of Death' (from heron: VoD) (Markham et al., 2010). It is crucial that organisations resolve issues related to the VoD if they want to reap the benefits of innovation. However, innovation implementation is a relatively under-examined field (Baer, 2012).

Innovation implementations scholars predominantly focus on the proposed concepts. Questions arise, such as are the ideas 'good' enough? Are they 'radical'? Do they serve an actual need? Alternatively, the innovator becomes the focal point of the study. There are stories (in both popular and academic writing) in which one well connected, head strong champion heroically shepherds an innovative concept into realisation, in resistance to incumbent forces. But it is risky for organisations to bet their future survival on the presence, capabilities and ultimately, success of lone champions who succeed *despite* organisational circumstances, not *because* of them (Dougherty & Hardy, 1996). Especially since failing to implement innovations often stems from factors beyond the control of champions

(Goepel et al., 2012). Thus, in this research, I take an approach to explore what organisational conditions help innovators to mitigate the VoD and achieve implementation.

As a designer, I particularly focus on the relationship between design practices in innovation and the VoD. The Design Council states that design practices can mitigate the VoD (Kolarz et al., 2015). Others suggest they may actually aggravate the issue (Carlgren et al., 2016a). Recently, scholars have noted that designers need to consider implementation issues if they want to contribute to resolving organisational and society-level challenges (Dorst, 2019b; Norman & Stappers, 2015). In this thesis, I consider different conceptualisations of design in an innovation context (as problem solving and as inquiry) and shed light on the role of design in mitigating the VoD.

Research Design

I performed this study using an action research approach (Reason & Bradbury, 2008a) in collaboration with a large heritage airline 'FlyCo' (kept anonymous for privacy reasons). FlyCo finds itself in a competitive landscape. Weighted down by large labour forces, considerable and long-term capital investments, and legacy management structures, FlyCo faces a battle to remain airborne while competing with both low-cost entrants (e.g., EasyJet) and high-quality 'Gulf' behemoths (e.g., Emirates). It operates in (for safety and security), a highly regulated and increasingly commoditised industry, which makes achieving innovation difficult yet rewarding. In response, FlyCo started an ambitious 'architectural transformation' (Safrudin et al., 2014) in which 'design thinking' was a central pillar to deliver a more customer-centred and cost-efficient service. This transformation required that FlyCo adjust its organisation to implement innovation projects more effectively. This situation provided a solid launching pad for this study. The research objectives, combined with the needs of FlyCo, informed the following main research question:

How can design catalyse innovation implementation at a service organisation?

Over a 14-month period, I embedded as an action researcher at 'FlyCo'. I engaged employees from different levels of FlyCo to conduct actions as part of reflective, collaborative research cycles. The research contained three action research cycles (ARCs). Each ARC was performed in collaboration

with a distinct set of stakeholders and with different research aims. In the first ARC, my efforts focussed on building a network and an understanding of FlyCo and the VoD phenomenon. In ARC 2, the focus moved towards investigating conditions that contribute to a VoD with a focus on the role of design practices. In ARC 3, the focus again shifted towards how design interventions in organisational context could contribute to implementation success. Over the research period, I became increasingly immersed in FlyCo as my role shifted from being an outsider to obtaining increasingly influential positions (I became an interim manager in ARC 3 for example), which provided an opportunity to gather a rich dataset.

During the embedded period, I employed multiple data gathering methods. Predominantly, I took part in- and observed corporate activities, resulting in 231 temporal observations (events). I captured observations and reflections in field notes, resulting in 426 pages of notes and drawings. Additionally, I gathered internal documents (such as strategies, project proposals, training manuals). Finally, 48 interviews were conducted at multiple intervals during the study. Of these interviews, 17 were semi-structured, audio-recorded, and transcribed, whilst 31 were conversational and recorded via hand-written notes. I initially analysed the data using a visual mapping strategy. Subsequently, a thematic analysis was performed using NVivo software. A breakdown between identified themes and existing literature finally informed a narrative analysis strategy. Together, this data collection and analysis strategy helped to observe nuances in FlyCo's innovation and implementation processes that can evade detection by other 'outside-in' research designs.

Insights

The data inform four sets of insights. Extant research on innovation implementation has focussed on product/manufacturing organisations (with historically large R&D departments) that aim to reach additional customers through new/improved products. In this context, managers and scholars noticed that R&D output did not reach controlled stage-gate New Product Development (NPD) processes. But innovation hubs are also increasingly popular at service organisations (Blindenbach-Driessen & Van Den Ende, 2014), which have different (and less structured) innovation processes. The first set of insights describes an exploration and re-conceptualisation of the VoD phenomenon in a service organisation context. I identify three

organisational unit types that contribute to innovation: exploration hubs, support partners and operational units. In this context, the metaphor of a singular 'valley' between two contributing units appears erroneous, as implementation challenges exceed the dichotomous relationship between design and production.

A deeper investigation into the mechanism that drives the VoD shaped the second set of insights, which highlights the role of institutions, specifically organisational logics. At FlyCo, a constellation of three organisational logics and the absence of a recombination strategy fosters an environment inhibiting resource pooling between organisational units. The three logics inform conflicts on three issues: innovation priorities, innovation processes and problem frames. As logics guide legitimacy judgement, conflicts between logics lead to a Not-Invented-Here attitude from gatekeepers towards concepts from 'foreign' logics. Consequently, champions can't gather the resources needed for implementation and their concepts end in a VoD.

The third set of insights describes how 10 barriers contribute to the VoD. I identify four barriers related to organisation properties of FlyCo. A complex and siloed organisation, the absence of a shared service vision, decentralised innovation portfolio management, and a competing internal innovation marketplace stimulate a VoD. Two barriers describe project characteristics related to the VoD: founding problem frames in an inferior domain and proposed solutions with a weak fit with the existing service system. Two process-related barriers highlight how engaging stakeholders late in the innovation process and inadequate communication of project decisions contributes to a VoD. Finally, two barriers describe how the organisational set-up of an exploration hub contributes to a VoD: when there is no 'Shadow of the Future' and when hubs have limited access to resources, they struggle to mitigate the VoD.

The fourth set of insights explores the relation of design practices with innovation implementation. When viewed as a problem-solving approach, I exhibit how design practices contribute to mitigating implementation issues by fostering more holistic concepts and an innovation process with engaged and aligned stakeholders. However, as an inquiry process, design practices contribute to a VoD when projects are reframed such that the aspired value shifts. A VoD then appears in two situations: if the new working principle requires new stakeholders (not part of the founding problem frame) to become involved, or if not, all involved stakeholders accept the new frame. In

addition, I deployed design practices to create new organisational infrastructure which fosters innovation implementation success. These practices inform a sense of shared ownership and novel organisation designs, but they also introduce challenges that require further investigation.

Contributions and Guidelines

One principal contribution to literature is the reconceptualisation of service innovation implementation. Instead of three sequential phases, 'elaboration', 'championing' and 'production' (Perry-Smith & Mannucci, 2017) are three reiterating micro-processes. These micro-processes constitute two innovation-to-implementation process streams. In one process stream, innovation teams solve 'innovation challenges' (Dougherty & Hardy, 1996) through concept elaboration and production. In the other stream, championing in the organisation sphere aims to solve 'innovation-to-organisation challenges' (Dougherty & Hardy, 1996). In line with this conceptualisation, I propose to define the VoD in this context as 'when concept development terminates because champions fail to gather the required resources for further development because of innovation-to-organisation challenges'.

Second, I propose a classification of three types of organisational units involved in innovation. In service organisations, achieving innovation requires mitigating gaps between (1) explorative units, (2) support resources, and (3) operational units. I challenge whether the dichotomous conceptualisation of a VoD does justice to the complexities of achieving alignment for reform within service organisations.

The findings add to a growing body of knowledge that considers the role of institutions in realising (service) innovation. I add that, besides on an ecosystem level, organisational level 'Logics matter when coordinating resources' (Edvardsson et al., 2014) in service innovation. I identify three issues where misalignment between organisational logics hampers innovation implementation: innovation priorities, innovation processes and problem frames. I propose that besides contextual, spatial, and organisational boundaries (Antons & Piller, 2015), *organisational logic* boundaries can trigger a Not Invented Here attitude.

Insights from this study suggest a complicated relationship between design innovation and the successful implementation of these innovations, which I call the 'Design Implementation Paradox'. Design principles and practices related to experimentation, experiential learning, and embracing

diversity contribute to implementation success. Practices related to embracing diversity, user-centricity and materialisation contribute to resolving innovation-to-organisation challenges and mitigating logic conflicts, and thus to implementation success. However, design can also contribute to a VoD when reframing leads to a shift in the stakeholder field or when champions cannot convince involved stakeholders of a new frame. This study represents an initial exploration into this relation, but more research is needed.

The final contribution to theory is 10 organisational barriers identified that contribute to the VoD in a service organisation. For example, by exhibiting how an internal innovation 'marketplace' encourages competing behaviour as opposed to collaborative behaviour, which hinders innovation implementation.

The insights inform six guidelines for managers, specifically for those who shape organisational conditions, to design organisational infrastructure that promotes innovation implementation. These guidelines describe organisational infrastructure that contributes to mitigating the VoD:

1. To resolve innovation-to-organisation problems, service organisations can use innovation hubs because this infrastructure facilitates the required social dynamics.
2. To avoid a Not Invented Here attitude, the infrastructure of these innovation hubs can promote institutionalisation and legitimisation of innovation concepts.
3. To motivate aligned innovation processes and 'implementable' concepts, the infrastructure of these hubs must act as a 'shadow of the future'.[1]
4. To align decisions making across organisational units, a service vision - which describes what value the organisation wants to create in the future - should be formulated and shared.
5. To ensure alignment between resource allocation and the innovation vision, and to spot potential VoD issues, centralised innovation portfolio management can be applied.
6. To align the innovation portfolio with the current technological and organisational system, the service system-fit framework can be applied.

[1] An example of such infrastructure is when incentives of innovation hubs relate to *implemented* innovations, not merely proposed concepts.

This research emphasises the need to study implementation in design research, if designers aim to realise societal impact. Design education needs to adjust to fit the more strategic role that design is assuming. If design is indeed going 'beyond design' (Dorst, 2019b) to contribute to solving the world challenges, then we need to go beyond teaching future designers how to generate innovative interfaces, products, and systems. We need to teach them how to contribute to implementation and, ultimately, impact. This implies assuming a broader understanding of design, offering students tools and skills to become more sensitive to organisational context and helping them understand what influences implementation and what strategies they may pursue to achieve implementation. This requires a realisation that the road to implementation is paved with team players and that besides being great pitchers, designers need to learn how to knock the ball out of the park.

Above all, this research emphasises the limits of the 'rogue innovator' narrative and provides principles for organisational leaders of service organisations that face transformation to mitigate their dependence on innovation champions and instead design organisational infrastructure that facilitates innovation implementation.

Contents

Related publications

Conference

Klitsie, J. B., Price, R. A., & De Lille, C. S. H. (2018). *Overcoming the Valley of Death: A Design Innovation Perspective* Next Wave, The 21st dmi: Academic Design Management Conference Proceedings, London, UK.

Klitsie, J. B., Price, R. A., & De Lille, C. S. H. (2018). *Using Dynamic Capabilities in an actionable tool as a vehicle to initiate design-driven innovation* Catalyst, Proceedings of DRS 2018, Limerick, IE.

Klitsie, J. B., Price, R. A., & De Lille, C. S. H. (2019). *Exploring the Fourth Order: Designing Organisational Infrastructure* Research Perspectives in the Era of Transformations, Proceedings of Academy for Design Innovation Management Conference, London, UK.

Journal

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Klitsie, J. B., & Wegener, F. E. (2020). Going from Service Design to Organisational Designing. *Touchpoint, the Journal of Service Design, 11*(3), 52-57.

Klitsie, J. B., Price, R. A., & Santema, S. C. (under review). Priorities, processes and project frames: how organizational logic misalignment obstructs service innovation implementation. *International Journal of Design, Special Issue on Service Design 2021*.

(Also presented as: Klitsie, J. B., Price, R. A., & Santema, S. C. (2021). *'Not Invented Here': Organizational Misalignment as a Barrier to*

Innovation Implementation in Service Organizations ServDes.2020, Tensions Paradoxes Plurality, Melbourne, AU.)

Chapter 1. Introduction

1.1 Background

Large, mature organisations rarely generate winds of creative destruction (Christensen, 1997). Instead, start-ups disrupt them at an increasing pace as the lifespan of large corporates steadily declines (Anthony et al., 2018). To avert this phenomenon, scholars and managers call for a proactive stance toward innovation (Elsbach & Stigliani, 2018). However, large and mature companies struggle to sustainably realise innovations (Dougherty & Hardy, 1996; Sandberg & Aarikka-Stenroos, 2014).

To achieve sustainable innovation, organisations need to develop three capabilities: to generate novel concepts, to develop these concepts into mature propositions and to adopt these propositions as institutionalised parts of the daily operation (O'Reilly & Binns, 2019). Most innovation management research focusses on either of two relatively disconnected categories: (1) innovation generation and creativity or (2) innovation implementation (Anderson et al., 2014). My research focusses on the latter of the two categories, which broadly studies: how are innovations realised? My personal interest in this topic developed during my master's thesis where I developed a tool for large organisations to pinpoint their major challenges in creating value through innovation (2018). When I tested this tool with innovation managers in several large organisations, it surprised me to find that there was one challenge which all innovation managers found especially difficult to tackle: *implementing* innovations. Since then, I encountered other researchers who have echoed this finding in various industries, such as educational innovation (Thompson & Purdy, 2017), social innovation (Schulz et al., 2021) and healthcare reform (Nilsen, 2015).

The term "innovation implementation" has various connotations and definitions. In this thesis, innovation implementation refers to "the process of converting ideas into new and improved products, services, or ways of doing things" (Baer, 2012, p. 1102). In their study on realising sustained innovation in large mature organisations, Dougherty and Hardy conclude that, "structures and strategies in mature organisations [that] reinforce existing practices and, (…) are hostile to creativity" (1996, p. 1122) inhibit implementation. Similarly, Govindarajan and Trimble note in *The other side of innovation*, "Organisations are not designed for innovation. Quite the contrary, they are designed for ongoing operations" (Govindarajan & Trimble, 2010, p. 10). As an example, there are reports of how incumbent

forces and legacy systems at large automakers resisted the development of electric vehicles, even though much of the required knowledge and concepts were readily available (Lezama, 2016; Magnussen et al., 2003).

Organisations thus actively search for alternative forms of organising which facilitates both the exploitation of current operations and the exploration of new strategic opportunities (Tushman & O'Reilly, 1996). One such way of organising that large corporates have adopted is to launch (semi)-separate innovation hubs to offer a safe-haven for exploratory activities (Ahuja, 2019; Blindenbach-Driessen & Van Den Ende, 2014). These hubs (which are also referred to as, and looking like, playgrounds, labs, or studios), are physical spaces with accompanying managerial structures, in which project teams develop concepts in relative isolation from the principal business. Corporate research labs have a long and rich history in the product manufacturing sector; Xerox PARC and Google X are two famous examples. However, service organisations like healthcare companies, financial service companies and retailers also increasingly adopt this form (Ahuja, 2019).

One challenges this approach faces is that concepts that come out of these innovation hubs can get "stuck" between phases. Like a scenario-writer looking for a production company (Elsbach & Kramer, 2003), concepts end in what scholars metaphorically call the Valley of Death (from heron: VoD) (Markham et al., 2010). The VoD is a segment in the innovation process between research and product development (Griffin et al., 2014), as visualised in Figure 1. It describes the "difficulties of moving ideas from the incubation phase to acceleration phase" (Story et al., 2014, p. 1272) over and across the gap in roles, activities, and resources between internal organisations (Markham et al., 2010).

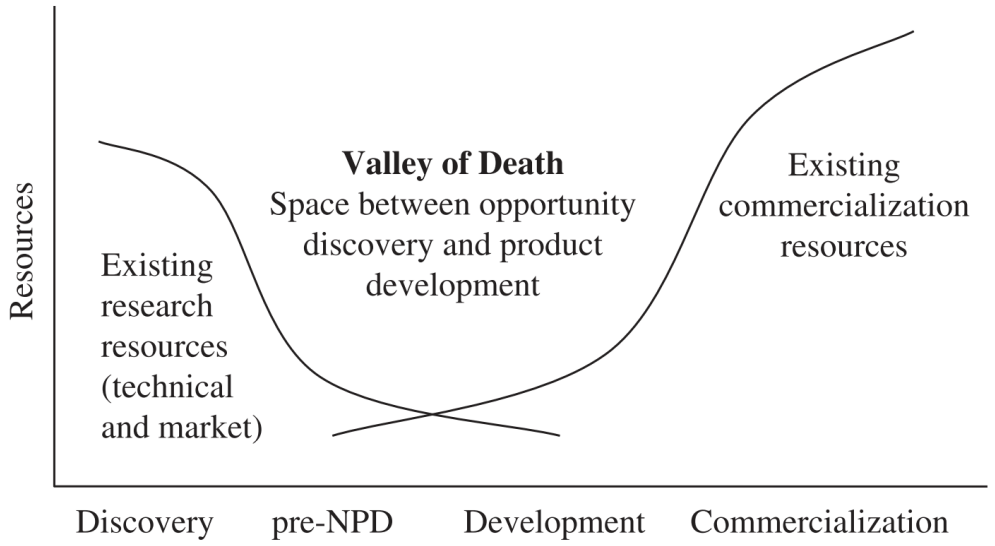

Figure 1: The VoD as visualised by Markham et al. (Markham et al., 2010)

In the VoD, issues related to organisational structures, corporate politics and managerial prerogatives, push organisations (consciously or unconsciously) to shelve promising - feasible, viable and desirable - concepts. As a result, return-on-investment on innovation is low and managers lose faith in their organisations' ability to innovate (Viki, 2018; Viki et al., 2017).

1.2 Service Research: Problematising Product Knowledge

This thesis specifically focusses on innovation implementation in service organisations. Service organisations offer an experience to customers where the performance does not result in ownership of any of the factors of production (Lovelock & Wirtz, 2000). For instance, when customers buy a ticket to see a movie, they'll be met with confused faces if they attempt to take the theatre seat home afterwards. Instead, when customers buy a service, they buy the right to temporarily use non-tradeable, organisational controlled *technical* and *human* capacities (Gadrey, 2000). In the movie theatre case, you buy the right to sit on a chair while a beamer (operated by a theatre-employed operator) is used to show a movie. Services typically include: a tangible or intangible service product (e.g., transport or a meal), a service setting (e.g., an airplane or -port) and a service delivery system (e.g., pilots or baggage systems) (Bowen & Ford, 2002). Other examples of service organisations are theme parks, restaurants, or professional service agencies such as accounting firms.

There seems to be an implicit assumption in the innovation management field that implementation challenges and the VoD manifest similarly in product innovation and service innovation. I problematise (Alvesson & Sandberg, 2011) this assumption based on data gathered in this study and insights from previous scholars who recognise that the (in-house) development and implementation of new services in a service organisation requires a different process than that of products (Nijssen et al., 2006; Overkamp & Holmlid, 2016; Zomerdijk & Voss, 2010).

Indeed, in line with innovation management literature, service (management) researchers are noticing the challenges of implementing innovations (Ostrom et al., 2015). For example, Vink et al. (2021) note that, "Despite promising outcomes during prototyping, new service concepts are all too often left that collecting dust on a shelf or, when these concepts are implemented, the original intention is slowly eroded over time by conventional ways of working." (p. 168) As a result, the importance of *service implementation,* the term used in the service design field for innovation implementation, is increasingly recognised (Polaine et al., 2013) and explored (Overkamp, 2019; Raun, 2017; Yu & Sangiorgi, 2014). Yet there is still much unknown and no research on the VoD in service research or service organisations specifically exists.

Service researchers studying innovation implementation diverge from many innovation scholars in their emphasis on understanding innovation as an emergent process in *ecosystems* (Chandler et al., 2019). This perspective has resulted in a better understanding of implementation processes in service innovation and the formulation of multileveled service design processes (Patrício et al., 2011). However, the predominant focus on a macro-level has limited direct applicability to the context of (teams) of innovators inside one service organization (Vink et al., 2019). Since the service sector is responsible for about two-thirds of employment in western societies and is the main contributor to economic growth there (Witt & Gross, 2020), I identify a need for theoretical development elaboration[2] (Fisher & Aguinis, 2017) toward concepts to support innovation implementation in service organisations.

[2] "The process of conceptualizing and executing empirical research using preexisting conceptual ideas or a preliminary model as a basis for developing new theoretical insights by contrasting, specifying, or structuring theoretical constructs and relations to account for and explain empirical observations." (Fisher & Aguinis, 2017, p. 438).

1.3 Innovation Management: Individual and Organisational Perspectives

There are gaps in current literature that inhibit the development of effective strategies to mitigate the VoD which I explore in the literature review of this thesis. These gaps lay at the intersection of three scholarly fields: innovation management, service research, and design management. Besides the problematisation discussed in the previous section, the following sections summarise relevant gaps in the innovation management and design management field and indicate how my research brings these theoretical fields together and contributes to identified gaps.

Innovation management scholars predominantly search for the solution to implementation challenges on the individual or the team level (Anderson et al., 2014). They study how innovators (or 'champions') and their stakeholders determine actions or strategies to 'get an innovation implemented' (e.g., Miron-Spektor et al., 2018). This lens recognises the social and political character of innovation (Van de Ven, 1986). For example, Perry-Smith and Mannucci (2017) describe how successful creators leverage different social networks in distinct stages of the innovation journey. In the beginning, creators require feedback through smaller networks whilst in later stages they need influence and legitimacy to acquire the necessary resources. Similarly, Markham et al. (2010) use role theory to study how champions, gatekeepers and sponsors interact to successfully cross the VoD.

Besides studying at the social dynamics at the individual level, scholars focus on artefacts. For instance, Baer studied how creators, "design or structure ideas in such a way that they are particularly likely to be implemented" (2012, p. 1115). Similarly, Overkamp (2019), in his thesis on service transformation, references 'Design for Manufacturing' research where researchers define guidelines for designers to produce *manufacturable* designs. He proposes that, analogously, researchers could identify design guidelines for concepts to be more *implementable*.

But, as Dougherty and Hardy (1996) remark (building on Schön (1963)) this approach assumes that such champions are present inside the organisation and have the opportunity to develop novel and useful ideas. Additionally, it assumes that champions can access the networks and knowledge needed to progress an innovation. What if all these champions leave the organisation because they encounter too much resistance? Or what if current senior-level

managers, interested in maintaining the status quo, form an impenetrable wall for junior innovators with small networks and little experience? Or if concepts aren't implemented because of factors beyond their control (Goepel et al., 2012)? In sum, mature organisations take a risk when they rely on champions alone to realise innovations *despite* the organisational context.

We must seek solutions at an organisational level; there is a need to define the organisational context that helps innovators and innovations to cross the VoD. As Anderson et al. conclude in their literature review on organisational level studies of innovation:

> [What] we seem to be missing here, however, is a development of a more thorough and comprehensive conceptual explanation for the role of these [antecedent] factors in organisational innovation and a deeper understanding of how individual creative attempts translate into organisational innovation. (Anderson et al., 2014, p. 1315)

Yet, as opposed to earlier process-oriented work (Van de Ven & Angle, 2000), (quantitative) antecedent research dominates contemporary organisational-level innovation implementation research (Anderson et al., 2014). With this thesis, I return to exploratory, process research and identify barriers to service innovation implementation and how they can be overcome at an organisational level.

1.4 Design Management: Implementation as Research Frontier

As a strategic designer, aware of the potential contribution of design to innovation, I'm also interested in understanding better the relationship between these two concepts. A 2015 report by the Design Council suggests that design - as an approach to organising and performing innovation projects with specific principles, mindset, practices, and techniques (Carlgren et al., 2016b) - could help mitigate the VoD (Kolarz et al., 2015). But researchers in design management have only recently expressed a need to better understand the effects of applying design principles and practices to innovation on implementation success (e.g., Norman & Stappers, 2015))

On a high level, scholars identified that when applied to innovation processes design contributes to organisations change, which requires implementation (Micheli, 2014), for example by eliminating cognitive biases

(Liedtka, 2015). But there are also other ways that design can catalyse organisational change (Brown et al., 2008). Buchanan, for instance, proposes four orders in which designers contribute to organisational change through proposing alternative futures when they design symbolic and visual communications; material objects; activities and organised services; or complex systems or environments (1992). From a strategic perspective, Bucolo et al. (2012) find that design facilitates businesses to remain relevant in periods of change by connecting customer needs and strategy.

But there is much that we do not yet understand about the link between design and innovation implementation. For example, Micheli et al. (2018a) propose several strategies for elevating design to a more strategic level to increase its impact but call for research which validates those strategies. Similarly, Sangiorgi (2011) recognises the transformative power of service design but calls for a reflection on how design can deal with issues such as power and control.

Separate findings from innovation management and design studies do suggest a potential link. For example, the iterative nature of design innovation projects (Kolko, 2015) fits the required probe-and-learn approach to manage the inherent uncertainty related to implementing radical ideas (Assink, 2006). To cross the VoD, innovators need to further explore technical feasibility, market acceptance and business viability (Markham & Lee, 2013; Markham et al., 2010). In their literature review, Carlgren, Rauth, and Elmquist (2016b) identify that most of the descriptions of design include finding a balance between (technical) feasibility, (user) desirability, and (business) viability. These overlaps suggest a potential link, yet further exploration is needed.

In sum, this research sits at the intersection of three related academic fields: innovation management, design innovation, and service research. Figure 2 visualises this position. Each grey dot represents an existing study, the green dot is my research. In each field researchers have started to discuss tangent topics, such as the VoD in innovation management, service implementation in service research and organisational change in design innovation. This research contributes by investigating the intersection of these fields as it aims to expand the understanding of how design practices can help to mitigate the VoD for a large service organisation.

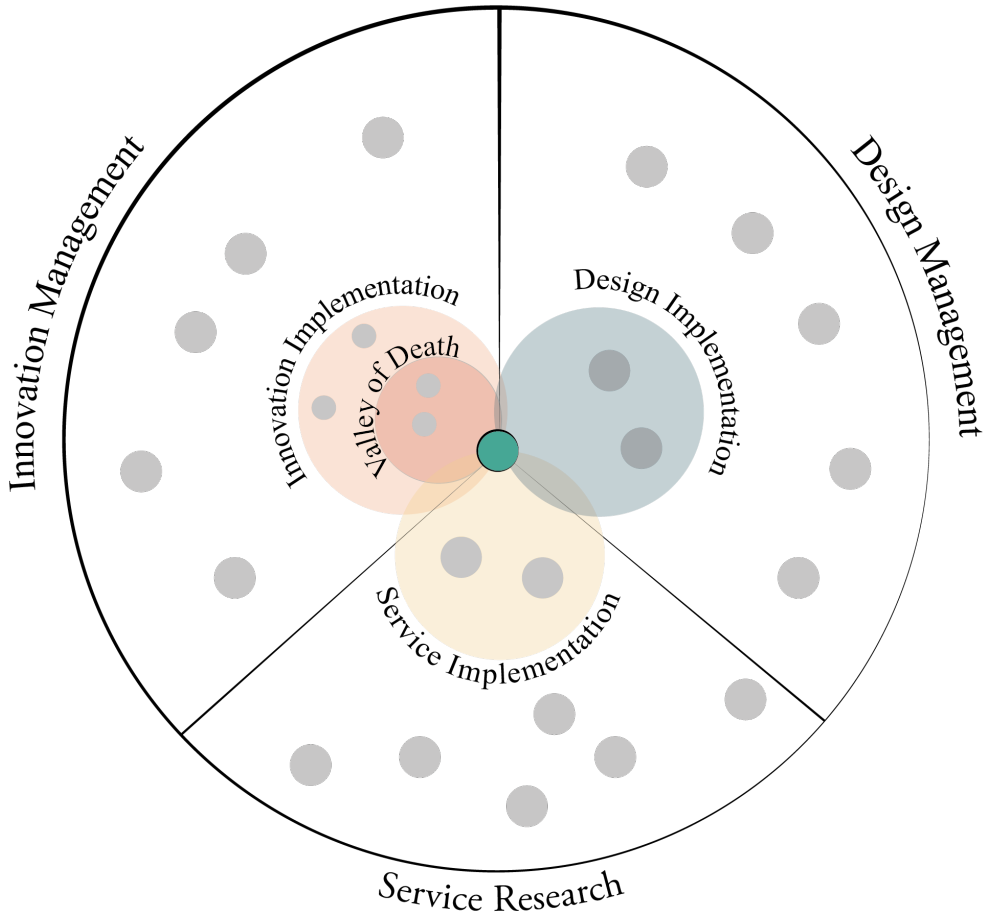

Figure 2: This thesis sits at the intersection of three scholarly fields that deal with innovation implementation

1.5 Research Design

In this research, I adopt a qualitative Action Research (AR) design (Coghlan, 2011) based on a pragmatic worldview. AR is an umbrella term for many participatory and collaborative research approaches (Herr & Anderson, 2005). In AR, academics do research *with* participants as opposed to *on* them (Lüscher & Lewis, 2008). Together, the stakeholders perform multiple reflective cycles (Reason & Bradbury, 2008a) to generate an "understanding of practice and the articulation of a rationale or philosophy of practice in order to improve practice" (McCutcheon & Jung, 1990, p. 148).

This interaction between researchers and participants makes AR highly suitable for innovation management research as it helps build a deep

managerial understanding of a phenomenon (Guertler et al., 2020; Ottosson, 2003) and the complex context in which innovation takes place (Gustavsen & Verlag, 2005). Price (2016) showcased this in her dissertation, which was also in an aviation context and on which I built the research design of this thesis (see also (Price et al., 2018)). In addition, AR is suitable to study phenomena that are initially 'fuzzy' (Dick, 2002), such as the VoD.

In contrast to Price et al. (2018), I take a process perspective. In process studies, scholars conceptualise organisational and management phenomena as processes as opposed to stable entities with specific properties (Sandberg et al., 2015). In their state-of-the-science review, Anderson, Potočnik and Zhou (2014) call for a renewed interest in process studies to build a better multi- and cross-level understanding of innovation.

The airline industry as case

This thesis builds on data from an AR programme with a large heritage airline (from hereon: FlyCo). As part of their People-In-Transit Research program, my research institute had long established a collaboration with this airline. The aviation industry represents an interesting context to study innovation due to three characteristics that make it a hostile environment to innovation. The aviation industry is:

1. Highly regulated (Sampere, 2016), and airlines are high-reliability organisations (Price, 2016) which experience the dilemma of performing error-free and stable operations while reacting to dynamic conditions (Danner-Schröder & Geiger, 2016);
2. Highly commoditised (Rothkopf & Wald, 2011), as deregulation has led to intense competition on price, earning healthy margins and creating a competitive advantage are difficult, and;
3. Complex, both because the ecosystem includes diverse cultures (Verganti et al., 2020, p. 17) and because of the highly networked supply chain (Price et al., 2019).

In 2017, FlyCo formalised their collaboration with my university[3] and co-funded the research of two design PhD candidates. I am one of those candidates. During initial meetings with FlyCo employees, they expressed a growing awareness that promising innovation initiatives, including dozens of

[3] To preserve the anonymity of the case, references to sources supporting these statements are not included but are in possession of the author.

student design projects, didn't reach implementation. FlyCo had invested in several innovation labs, but like most innovation labs, especially in the service industry (Blindenbach-Driessen & Van Den Ende, 2014), these failed to deliver the intended value (Solis et al., 2015).

In February 2018, thousands of FlyCo employees gathered for a yearly address. Halfway through the event, one of the chief executives entered the stage to provide his view on how the company was developing. He had one key message for his audience: "We've invested a lot in our capacity to generate new ideas and create prototypes, now it's time to become good at implementing these ideas. *Innovation is implementation*". FlyCo experienced a VoD and thereby provided the case context needed for this research.

FlyCo's architectural transformation

From the standpoint of FlyCo, the airline industry has seen a particularly troubling dynamic: the simultaneous rise of low-cost and high-quality airlines which squeezes out middle-of-the-road legacy national (or flag) carriers. Low-cost carriers (e.g., EasyJet, Ryanair) can offer flights for a cheap price by combining several cost-saving strategies such as unbundling, operations optimisation and standardisation (Brüggen & Klose, 2010). Concurrently, high-quality airlines (i.e., 'Gulf carriers' such as Emirates and Etihad Airways) have assumed aggressive price policies to claim large parts of upper-market segments (Ratcliffe, 2015).

In October 2014, FlyCo's newly appointed CEO recognised the predicament and called for an organisational transformation. I categorise the transformation he foresaw as an 'Architectural Transformation' (Safrudin et al., 2014). Architectural transformations, as visualised in Figure 3, require radical changes in enterprise architecture (including core IT platforms and business processes), whilst the offer to consumers remains unchanged. FlyCo's management did not intend to fundamentally change their offer, nor were they interested in catering to a new audience, their intended transformation was of low visibility. Yet they did realise that 'Incremental Transformation' would be insufficient to secure firm survival and sought to achieve 'Architectural Transformation'. Management of FlyCo regarded design as one central pillar in this transformation to deliver a more customer-centric and cost-efficient service. It therefore provided a solid launching pad for this study.

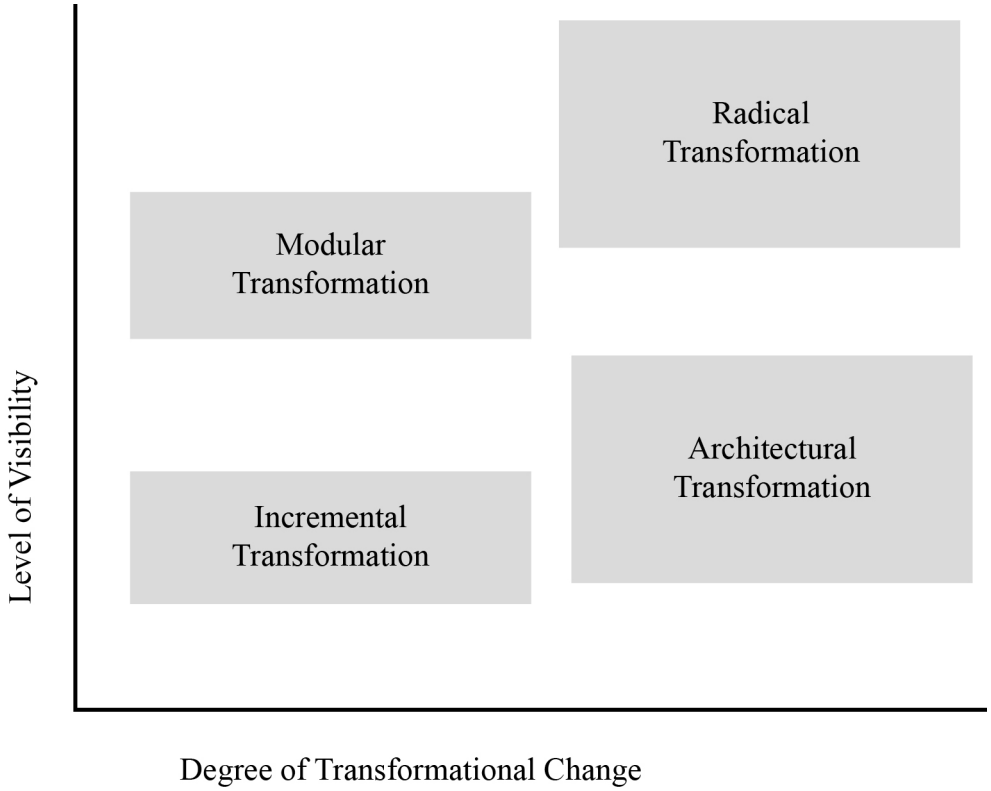

Figure 3: Typology of business transformations (Safrudin et al., 2014)

1.6 Research Aim and Questions

The aim of this research is to expand the understanding of how design principles and practices can contribute to innovation implementation for a large service organisation in the context of an architectural transformation. The primary research question underpinning this thesis is:

How can design catalyse innovation implementation in a service organisation?

This question requires some unpacking:

- By design, I refer to design principles and practices.
- By catalysing, I refer to the different ways in which design can contribute to innovation implementation, both at the project level and the organisational level.
- FlyCo is an example of a service organisation, as it offers an experience (a flight from A to B) to customers (passengers) where the

> performance does not result in ownership of any of the factors of production (airplane, personnel, technology, etc.) (Lovelock & Wirtz, 2000).

A key strength of action research is that it allows for responsiveness: I moved from vague questions and undiscovered phenomena to increasingly precise questions and accompanying insights. This process of iterations is visible in the research questions that guide this research. I now introduce these sub-research questions.

At the start of this research, informed by literature study and initial encounters with FlyCo staff, I explored how the concept of the VoD manifests at FlyCo. The first sub-research question that guided this exploration was:

1. How does the VoD manifest in a service organisation?

After I gained a clearer understanding of the innovation implementation process and the role of the VoD in this process, two related additional questions became leading in the research process. I investigated the VoD deeper to understand the mechanism that drives this phenomenon. In line with the organisational-level focus of this research, I subsequently explored which organisational conditions contribute to the VoD. I define these barriers as properties, situations or conditions that contribute to the emergence of a VoD.[4] Additional sub-research questions thus became:

2. What mechanism drives service concepts to arrive at the VoD?

3. What organisational barriers contribute to the VoD?

Simultaneously, throughout this research, I sought to understand how *design* relates to innovation implementation, through mitigating the VoD (e.g., by overcoming the before mentioned barriers) or otherwise. The final sub-research question that guides this research thus became:

4. How can design principles and practices mitigate the driving mechanism and barriers of the VoD and otherwise contribute to innovation implementation?

[4] Based on earlier definitions of barriers by Kleinsmann (2006) and Kuijk (2010).

1.7 Thesis Outline

Besides this introduction, this dissertation consists of five chapters. Below, I present a brief outline of each chapter:

Chapter 2: Literature Review

In this chapter, I review the state-of-the-art of the three literature fields mentioned in the introduction: innovation management, service research and design innovation. I further specify the research gap to which I contribute and provide definitions, descriptions and examples of the central concepts used throughout this thesis.

Chapter 3: Action Research Design

In this chapter, I present my philosophical assumptions (pragmatism and process orientation), my strategy of inquiry (AR) and how I operationalised AR specifically in this case. In Sub-chapter 3.4, I describe how I generated data and Sub-chapters 3.5 and 3.6 are dedicated respectively to data analysis and a discussion regarding research quality. This chapter closes with a description of the research context and of how I gained access to this context (Sub-chapters 3.7 and 3.8).

Chapter 4: Action Research Cycles

In this chapter, I present the results of the three Action Research Cycles (ARCs). The Sub-chapters depict the narratives of each cycle; together, they form the overall narrative of action of this research. I describe actions and outcomes whereas in Chapter 5, I combine the outcomes with the reflections of stakeholders and relevant literature to come to the insights. The structure of chapter 4 is as follows: I provide an overview of the action research cycles and the research projects in Sub-chapter 4.1. After this, Sub-chapters 4.2 to 4.4 each describe the aims, projects, and evaluation of specific ARCs, including the relevant project goals, actions and outcomes.

Chapter 5: Insights

In Chapter 5, I present the insights gained during the analyses of the narratives (presented in the previous chapter). I combined data from various projects and ARCs with existing knowledge from literature in an iterative analysis

process to come to the insights. The insights are presented in relation to the stated research questions.

Chapter 6: Conclusion

In the concluding chapter, I first provide a response to each research question (6.1). In Sub-chapter 6.2, I discuss three contributions to literature in more depth, and in 6.3 I present limitations of the research approach. In Sub-chapter 6.4 I translate the research insights into guidelines for managers who aim to design organisational infrastructure that supports innovation implementation. Finally, Sub-chapter 6.5 includes reflections on the applied research approach, on designing organisational infrastructure and on design education.

In this chapter, I introduced the background of this research, the literature gap that I contribute to and my research design. In the next chapter, I present and review the relevant existing literature to set the stage for my research.

Chapter 2. Literature Review

2.0 Chapter Overview

In this chapter, I review the state of the art of the three literature fields mentioned in the introduction: innovation management, service research and design innovation. I've included literature when it contributes to at least one of three goals:

1. To clarify the literature gap this thesis addresses;
2. To introduce- and provide definitions and examples of concepts that I use to construct the narratives in the results chapter (4), or;
3. To present existing knowledge that I use to inform the insights (chapter 5) and to situate my contributions (Sub-chapter 6.2). For instance, I exhibit extant perspectives regarding the VoD.

The scope of this review pertains to intra-organisational innovation, predominantly in the context of large organisations. The literature review starts with the academic field that is most mature and has generated the most sizeable body of literature on innovation implementation: innovation management. Because this research aims to explore innovation in a service context, Sub-chapter 2.2 reviews service research literature, emphasising what is published regarding innovation implementation. I clarify what characterises the design of *service* innovations. Finally, Sub-chapter 2.3 exhibits extant literature regarding design. Here, I introduce key concepts in the design literature in the context of corporate innovation. Additionally, I review extant perspectives on how design practices influence innovation implementation.

2.1 Innovation Management

2.1.1. Innovation Management Research

An increasingly turbulent environment (Eisenhardt et al., 2010) drives firms, or "legal entities where inventions that emerge from the free flow of ideas can be nurtured through careful mentorship, patient capital, and access to firm-wide resources and capabilities" (Garud et al., 2013, p. 777), to embrace innovation. Innovation can be defined as,

> The process of making changes, large and small, radical and incremental, to products, processes, and services that result in the introduction of something new for the organisation that adds value to customers and contributes to the knowledge store of the organisation. (O'Sullivan & Dooley, 2009, p. 5)

Innovation is currently a top priority for firms and their leaders (O'Reilly & Binns, 2019). Scholars and managers see innovation as essential for firm competitiveness and survival, because through it firms can reach new customers or decrease their cost-base (Moss Kanter, 2006). However, the process of becoming more innovative is challenging, especially for large and mature organisations (Baer, 2012; Börjesson et al., 2014).

Since Schumpeter popularised the term 'Creative Destruction' (1942) - thereby establishing the importance of technological progress in economic development - innovation scholars have studied the processes involved in- and implications of managing innovation (e.g., Abernathy & Clark, 1985; O'Reilly & Binns, 2019; Van De Ven & Poole, 2000). These studies differ in three aspects: (1) their level-of-analysis, (2) their focus, and (3) their method for studying change.

In their state-of-the-science review, Anderson et al. identify studies on the individual, team and organisational (i.e., firm) level, and call for more multi-level studies (2014). Additionally, Garud, Tuertscher and van de Ven (2013) separate firm-level innovation studies from multi-party network and community level studies. Despite their inherent connection, the two sub-fields that focus on idea generation and concept implementation[5] have diverged (Anderson et al., 2014). These two fields remain disconnected from one

[5] The process of converting these ideas into new and improved products, services, or ways of doing things (Baer, 2012, p. 1102).

another and the body of innovation management literature that focusses on implementation is relatively small compared to that of generation (Baer, 2012; Bledow et al., 2009). Innovation studies broadly aim to illuminate the innovation process or to "[evaluate] the multitude of so-called antecedent factors to innovation" (Anderson et al., 2014, p. 1319). This difference is also referred to as the variance-based view versus the synoptic view (Garud et al., 2017).

This research is multi-levelled, as I study (the interaction between) individual projects and firm-level conditions, the focus is on innovation implementation and, as discussed in more detail in the research design (see Sub-chapter 3.1), this research is process-oriented.

In line with this dual level-of-analysis, I first review literature on individual projects and individuals engaged in innovation projects. Thereafter, I will summarise extant theory on innovation at the organisational level.

2.1.2 Individual level: Innovation Process & Roles

The innovation process is the "sequence of events that unfold as ideas emerge, are developed, and are implemented within firms" (Garud et al., 2013, p. 774). It is a technical, social and political process (Hislop et al., 2000; Van de Ven, 1986), in which actors shape technologies and concepts and simultaneously influence the social context in which these are judged (Garud et al., 2013).

Innovation scholars use different conceptualisations of the innovation process. Process scholars generally recognise three innovation phases: initiation or generation; development or internal venturing; and finally, adoption[6] (Angle & Van de Ven, 2000). Perry-Smith and Mannucci conclude that, "Despite the importance of these phases for the idea journey, research taking a social and relational approach primarily has emphasised either idea generation or implementation, neglecting key intermediate phases … or confounded the two by not clearly specifying either" (2017, p. 58). They resolve the issue by adding more phases; they divide the developmental phase into an 'elaboration' phase[7] and a 'championing' phase and split the implementation phase into 'production' and 'impact'. The various conceptualisations are visualised in Figure 4. I discuss each of the three

[6] Also referred to as implementation.

[7] As emphasised by Mainemelis (Mainemelis, 2010).

phases briefly and elaborate more generously on the development phase, which is the focus of this research.[8]

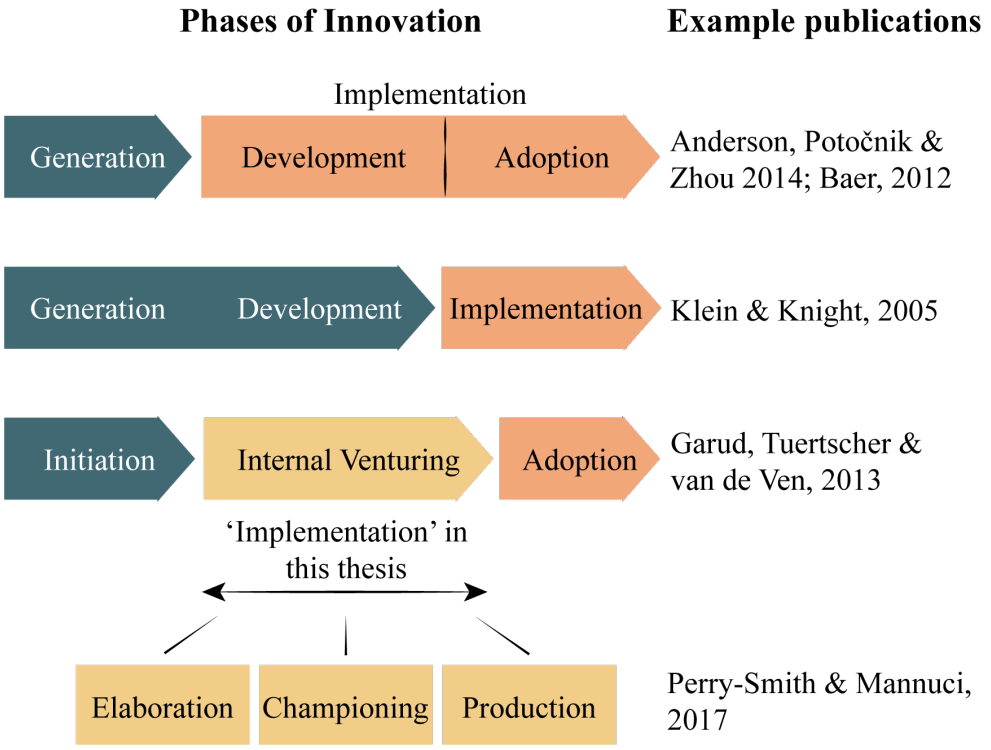

Figure 5: Variants of process models in literature

Phases in the innovation process

Generation[9]

In the first phase, a creative, novel, and useful idea emerges (Baer, 2012). Ideas are stimulated when actors are exposed to a combination of previously existing ideas in other domains and practices (Garud et al., 2013, p. 774; Kratzer et al., 2010; Tortoriello & Krackhardt, 2010). This exposure influences cognitive structures (Perry-Smith & Mannucci, 2017) which leads to original associations and recombinations (Hargadon & Sutton, 1997). This phase is generally described as an individual activity (Van de Ven, 1986), which succeeds a longer period of 'gestation' in which an awareness is

[8] 'Innovation implementation' as defined in the introduction coincides with the development phase of the process models.

[9] Also referred to as 'initiation'.

created of both (market) needs and (technological) opportunities (Angle & Van de Ven, 2000). A 'shock' (internal[10] or external[11]) stimulates the formulation of an idea and initiates the change process (Smets et al., 2012).

Development or internal venturing

As Van de Ven notes, the second phase represents,

> A collective achievement of pushing and riding those ideas into good currency. The social and political dynamics of innovation become paramount as one addresses the energy and commitment that are needed among coalitions of interest groups to develop an innovation. (Van de Ven, 1986, p. 591)

During this phase, the novel idea's potential is evaluated and the idea is further clarified and developed (Garud et al., 2013; Perry-Smith & Mannucci, 2017). This process is influenced by brokerage (Fleming & Mingo, 2007) and bricolage (Baker & Nelson, 2005). During this process, experiments and material artefacts play a central role as they are used to demonstrate feasibility (Coughlan et al., 2007), unearth unknowns (Jensen et al., 2017) and act as boundary objects (Bechky, 2003). As Garud and Karnøe note, this is a process in which various actors play important (and at times changing) roles (2003). Perry-Smith and Manucci (who assume a creator-centred position), argue that, "Individual creators successfully move through a phase when the relational and structural elements of their networks match the distinct needs of the phase" (2017, p. 44). The key mechanisms behind this phase are those of transformation (Garud et al., 2013). This phase is the focus of this research.

During the development phase, championing takes place. This is, "the active promotion of a novel idea, aimed at obtaining the approval to push the idea forward and, consequently, also obtaining money, talent, time or political cover" (Perry-Smith & Mannucci, 2017, p. 63). During this process, resistance to change needs to be overcome as power structures and institutions are challenged (Van de Ven, 1986), moreover the inherent uncertainty of creative ideas "often provokes disputes caused by differences in viewpoints among those who are affected by the ideas" (Baer, 2012, p. 1105). Garud and Karnøe note that it is vital that champions involve a wide set of actors in this

[10] E.g., a shift in management priorities.

[11] E.g., new regulations.

phase because "technological initiatives that do not build upon the inputs of relevant actors may neither mobilise the required skills and resources nor ensure its acceptance in the wider community" (2003). At the end of this phase, resources, assets, and capabilities have been gathered and the idea has transformed into a definitive concept or a final 'blueprint' (Perry-Smith & Mannucci, 2017).

Adoption

The final phase is the adoption phase, where concepts "become part of an institutional logic of production, use and regulation" (Garud et al., 2013). Klein and Sorra describe this as "gaining targeted organisational members' appropriate and committed use of an innovation" (1996, p. 1055) and Perry-Smith and Mannuci state that here, "the innovation is accepted, recognised and used by the field" (2017, p. 54). During this phase, diffusion mechanisms play a key role (Garud et al., 2013). During this phase, local adaptations may still be made to ensure a fit between the 'final concept' and the local context (Choi & Moon, 2013) and reigning institutions (Hargadon & Douglas, 2001). The adoption phase is beyond the scope of this research.

Roles in the innovation process

On an individual level, roles play a key role in innovation processes. Role theory "facilitates observation not only of the roles themselves but also of the ancillary processes and resources over which the respective role players have influence" (Markham et al., 2010, p. 404). Throughout the innovation process, actors assume various informal roles (Organ, 1988). Three important roles are: innovator or champion; sponsor; and gatekeeper. Although scholars have suggested other roles,[12] actions of actors in these three roles most significantly impact the innovation process (Markham et al., 2010).

Champions

The champion, or sometimes simply referred to as 'the innovator', "creates, defines, and adopts an idea for a new technological innovation and … is willing to risk his or her position or prestige to make possible, the innovation's successful implementation" (Maidique, 1980, p. 64). Champions

[12] E.g., brokers (Friedman & Podolny, 1992), midwifes (Vincent, 2005), godfathers (Smith, 2007) and innovation managers (Maier & Brem, 2018).

engage in communicating "a clear vision of what the innovation could be or do, displaying enthusiasm about innovation, demonstrating commitment to it, and involving others in supporting it" (Howell et al., 2005, p. 646). Specifically, champions simultaneously undertake three activities to secure implementation: they frame issues and engage in 'issue selling' (Bessant et al., 2014; Markham, 1998, 2000); they (re)frame solutions to gain legitimacy (Baer, 2012; Dougherty & Heller, 1994); and finally, they create and leverage a network to gain resources (Dunne & Dougherty, 2016; Perry-Smith & Mannucci, 2017).

Sponsors

Sponsors provide project sanctioning (i.e., political cover) and resources (Markham et al., 2010, p. 405). They draw on a power base (Hauschildt, 2010), such as being part of management teams (Garud et al., 2013), to promote innovations (Bankins et al., 2017). They also coach champions and help navigate corporate bureaucracy (Smith, 2007). According to Bankins et al. (2017), whereas champions are mainly concerned with transformation and motivation, the sponsors' focus is on overcoming specific barriers.

Gatekeepers

Finally, gatekeepers establish criteria and make decisions about the future of the project (Markham et al., 2010, p. 405). Whereas the champion and the sponsor role relate to specific innovation projects, it is the gatekeeper's role to evaluate efforts and guide resources to projects. Gatekeepers process and broker information and resources between units (Friedman & Podolny, 1992) and between the individual to the organisational level (Reid & de Brentani, 2004). Whereas champions are needed to spark and transform ideas and sponsors are required to manage attention (Van de Ven, 1986), "the level of influence of the gatekeeper is highest … as the project nears and finally enters formal development" (Markham et al., 2010, p. 410). Theory regarding the gatekeeper-role is, however, relative to the other two roles, underdeveloped.

2.1.3 Organisation level: Ambidexterity and Innovation Centers

To understand innovation, we need to look beyond individual projects and consider "institutional forces and organisational context" (Kalling, 2007, p. 65). This requires a focus on "the [organisational] *factors* that facilitate and inhibit the development of innovations" (Van de Ven, 1986, p. 591). More

specifically, organisations need to master three organisational capabilities: ideation, incubation, and scaling (O'Connor et al., 2018; O'Reilly & Binns, 2019; Sandberg & Aarikka-Stenroos, 2014). In this thesis, in line with the research questions, I focus on incubation and scaling only.

The major challenge for large, mature organisations in managing innovation is to become ambidextrous (Martini et al., 2013; Moss Kanter, 2006; O'Reilly & Tushman, 2013; O'Reilly & Binns, 2019). This means organisations need to effectively manage two different (and sometimes conflicting) activities: exploitation or to maintain and optimise current operation; and exploration, or to look for- and develop new strategic opportunities (O'Reilly & Tushman, 2004). Conflicts arise because exploitation favours efficiency, control and incremental improvements and exploration demands flexibility, autonomy, and experimentation (Ikeda & Marshall, 2016; O'Reilly & Binns, 2019).

Innovation Hubs

One approach to tackling the issues described above is by establishing 'structural ambidexterity' (Tushman et al., 2010). A structurally ambidextrous organisation establishes a semi-separate innovation department or team (i.e., hub) sitting remote to existing departments, with limited relationship to the existing management hierarchy (Blindenbach-Driessen & Van Den Ende, 2014). These hubs, incubators, accelerators or simply innovation centres focus on accelerating innovation and are to some extent 'external' to the company sphere of influence (O'Connor, 2008). Often, these hubs target executive challenges and develop concept solutions which are presented back to business owners (Jansen et al., 2009). This organisational set-up has a long tradition of falling in and out of favour (Galbraith, 1982) and many organisations have experimented with such "skunk works" approaches (Fosfuri & Rønde, 2009), with varying success (Moss Kanter, 2006). However, in a report on global innovation hubs, Capgemini found that they are increasingly prevalent: within 8 months, 88 new centres were opened in 2017 (Turkington et al., 2017).

There are several benefits to innovation hubs. They can shield concepts from internal political pressures (Govindarajan & Trimble, 2010) and avoid corporate bureaucracy (Christensen et al., 2008) (see the notion of 'innovation accounting' (Ries, 2011)). Hubs create space to identify concepts 'downward' of the functionality trajectory (Christensen, 1997). Finally, innovation hubs

can be innovation expertise centres, support constructive relationships with key stakeholders (Leifer et al., 2001) and support a culture and organisational structure that is more appropriate for innovation (Blindenbach-Driessen & Van Den Ende, 2014).

Within innovation hubs, several teams work on projects (Kratzer et al., 2010). The infrastructure of the innovation help helps to overcome the issues[13] that inhibit exploration (Dougherty & Heller, 1994; Martin, 2009). Garud et al.[14] define projects as:

> Mezzo-level organisational arrangements that serve as forums for pursuing new opportunities. Moreover, projects serve as forums for action and interaction among a diverse set of organisational actors to facilitate the emergence, formation, and transformation of beliefs, routines, and practices. (2013, p. 784)

Staffing these projects with a dynamic group of multi-disciplinary personnel supports overlapping problem solving (Dougherty & Heller, 1994). Taken together, innovation hubs promise to contribute greatly to ambidexterity of large organisations.

2.1.4 Valley of Death

There has been criticism towards structural ambidexterity.[15] One major issue that scholars raise is that most of the innovations developed in innovation hubs are never realised (Ahuja, 2019), as was the case for this research. One could argue that this is simply a 'venture capital model' of innovation: investing in many experiments with the expectation that only one will thrive and make-up for the losses of the other experiments (Engel, 2011). In fact, the concept of 'innovation funnels' focusses on exactly this working principle: reducing uncertainty through experimentation, searching and selection (Nagano et al., 2014).

But scholars have also suggested a different perspective: that concepts are shelved - not because of concept quality - but because concepts and their

[13] At the core of this conflict lie four issues: attention, organisational processes, organisational structure, and culture (Van de Ven, 1986).

[14] Citing Nonaka and Takeuchi (1995) and Ravasi and Lojacono (2005).

[15] E.g., structural ambidexterity may diminish synergies that exist between exploration and exploitation (Bledow et al., 2009) and it could support an organisational mindset where innovation is considered illegitimate (Dougherty & Heller, 1994).

champions get “stuck” between phases in a VoD. The VoD is “a discrete segment between research and product development” (Markham et al., 2010, p. 402). It describes the “difficulties of moving ideas from the incubation phase to acceleration phase” (Story et al., 2014, p. 1272) where champions need to “explicitly manage the transition from the fuzzy front-end tasks and outputs (proposed solution to a problem) to the more formal and institutionalised development process” (Griffin et al., 2014, p. 1362). In the VoD, champions need to bridge the gap in roles, activities, and resources between internal organisations (Markham et al., 2010; Perry-Smith & Mannucci, 2017).

To understand this phenomenon better, the distinction introduced by Dougherty and Hardy (1996) between ‘within-project challenges’ and ‘innovation-to-organisation challenges’ is useful. They state:

> Within-project problems concerned issues that could be resolved within or by a product's team, such as working with people from another function (e.g., getting the "guys in the warehouse" to insert extra material) and defining a product to fit the targeted market. Project-to-organisation problems involved reaching across major organisational boundaries, such as working with another business unit and determining whether a product fit the company's strategy. (1996, p. 1130)

From literature, they identify three (interconnected) zones of tension that result in innovation-to-organisation challenges: how resources are distributed; organisational structures and processes, and; the strategic meaning (of innovation) (Dougherty & Hardy, 1996). First, champions, especially young employees, find it difficult to access resources that are tied to existing products. Second, existing structures and processes sustain silo’s and power imbalances, and inhibit collaboration. Third, innovation isn’t part of strategic discussions, nor are the innovators. Fundamentally, Dougherty and Hardy conclude, this is an issue of power and that, “For large, mature organisations to become innovative, they must reconfigure the power embedded in the organisational system - in its resources, processes, and meanings” (1996, p. 1146). Dougherty and Hardy call for more research into the three zones of tension described above, specifically into innovation-to-organisation barriers in service organisations. The specifics of that domain is the topic of the next sub chapter.

2.1.5 Summary

So far, I have summarised relevant literature to this research in the innovation management literature. I identified and defined key concepts, which will return in Chapter 4 (results), 5 (insights) and 6 (conclusion). In Table i, I summarise the most important take-aways from the previous sections. The last column indicates how the insight contributes to the thesis.

Table i: Most important take-aways from Sub-chapter 2.1

Sub-Chapter	Topic / Concept	Description	Contribution to thesis[16]
2.1.1	Level-of-analysis	the interaction between individual projects and the context of one firm	1
	Innovation phase focus	Implementation	1
	Research type	Illuminating the process	1
2.1.2	Innovation process	Technical, social, and political process, in which actors shape technologies and concepts and simultaneously influence the social context in which these are judged	2
	Process innovation phases	Initiation, Development, Implementation	2/3
	Key roles	Champion, Sponsor and Gatekeeper	2
2.1.3	Key organisational innovation challenge	Ambidexterity: combining exploration and exploitation	1
	Four ambidexterity issues	Attention, processes, structure, and culture	3
	Structural ambidexterity	One strategy to achieve ambidexterity, by establishing innovation hubs where explorative projects are 'safe'	2
2.1.4	VoD	A segment between research and development where	2, 3

[16] (1) Clarify the literature gap; (2) introduce- and provide definitions and examples of concepts, or; (3) present existing knowledge and situate my contributions.

		champions need to bridge the gap in roles, activities, and resources between internal organisations	
	Innovation-to-organisation challenges	Challenges that need to be overcome to implement innovations. Related to resources, processes and structures and strategic meaning of innovation	2, 3

2.2 Service Research

2.2.1 Service Organizations & Innovations

Building on foundational work of Hill (1999), Gadrey provides a process-based perspective (Evenson & Dubberly, 2010) of services,

> The economic production of services is reckoned to take place in developed capitalist systems in the following two cases: (a) when an organisation A, which owns or controls a technical and human capacity (this latter can also be denoted by the term "competencies"), sells (or offers without payment in the case of non-market services) to an economic agent B the right to use that capacity and those competencies for a certain period in order to produce useful effects on agent B himself [or herself] or on goods C that he [or she] owns or for which he [or she] is responsible. (2000, p. 384)

In other words, services are the 'right to use' non-tradable and organisationally controlled technical and/or human competencies (Lovelock & Gummesson, 2004), as visualised in Figure 6. For this thesis, I adopt this definition as it fits well with the situation of an airline and my process perspective.

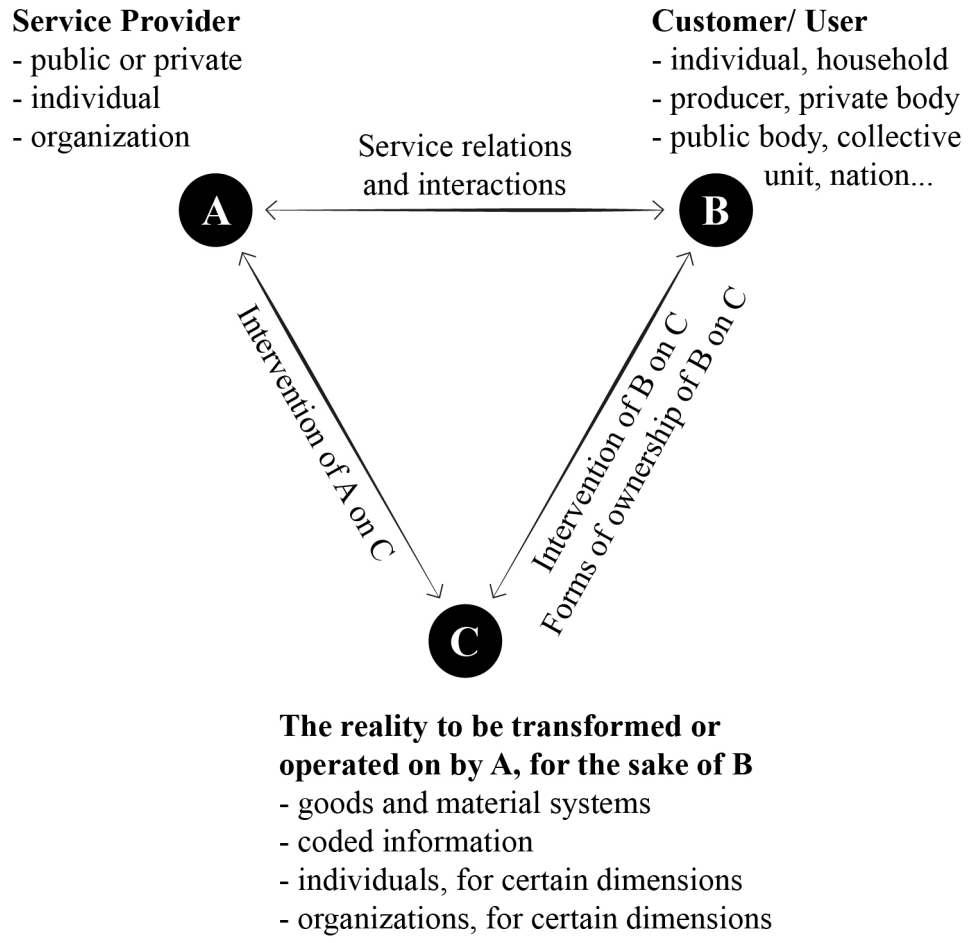

Figure 6: The service triangle of Gadrey (2002)

In line with this conceptualisation, 'service organisations' are firms that offer an experience to customers where the performance does not result in ownership of any of the factors of production (Lovelock & Wirtz, 2000, p. 31). Service offerings can be described as: a tangible or intangible service product (e.g., transport or a meal), a service setting (e.g., a flight with an airplane) and a service delivery system (e.g., baggage systems) (Bowen & Ford, 2002, p. 449). In the case of this thesis, FlyCo (Agent A) is a service organisation, which owns technical capacity (airplanes, computers) and controls human capacity (pilots, gate-agents) that sells to passengers (agent B), the right to use an airplane seat to transform (in this case transport) themselves. Edvardsson and Oloson propose that, "The resources of the system must be so designed that the concept can be realised, that the right

service can be generated. The development of the service system and service process must go hand in hand" (1996, p. 161). The 'resource structure' of the service system (which is also referred to as the service infrastructure (van der Bijl-Brouwer, 2017)) consists of four components: the service company's staff, the customers, the physical/technical environment and the organisation and control (Edvardsson, 1997).

Three related (and interrelated) concepts that are central to this thesis are: New Service Development (NSD), Service Design, and Service Innovation. Throughout different research streams, these terms cover overlapping concepts. In this thesis, I follow the conceptualisation as recently proposed by Gustafsson, Snyder and Witell (2020) (and as visualised in Figure 7). Gustafsson et al. propose that,

> NSD could be understood and defined as the process of developing a new product or service for a market. Service design on the other hand is concerned with systematically applying design principles and methodology to the development of services. In contrast, service innovation should emphasise the outcome of a development process rather than how it was realised. (2020, p. 112)

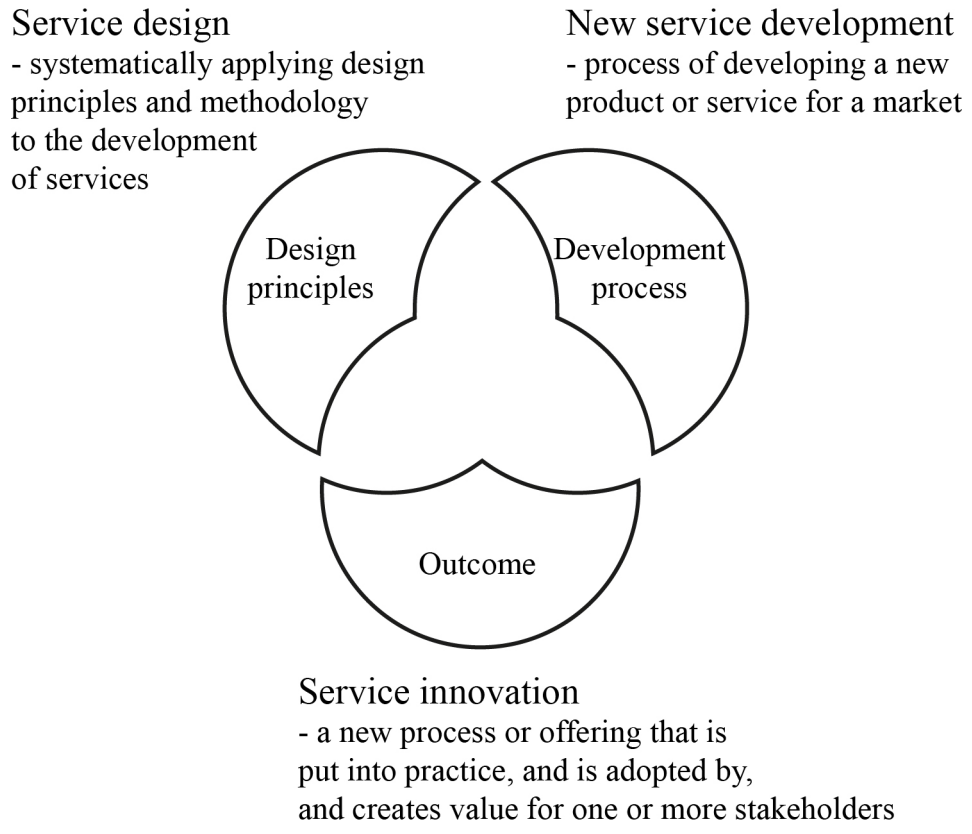

Figure 7: The proposed disentanglement of concepts related to service innovation (Gustafsson et al., 2020)

The 'service concept' refers to, "The description of the customer's needs and how they are to be satisfied in the form of the content of the service or the design of the service package" (Edvardsson & Olsson, 1996, p. 148). In other words, the 'service concept' is a first idea of what should eventually become a service innovation.

Like product innovations, not all service innovations are equal.[17] As such, findings regarding service innovation management may be limited to certain types of innovations (Snyder et al., 2016). Service innovations can consist of "one or several of the following dimensions: new service concept, new customer interaction, new value system/business partners, new revenue

[17] See for instance the literature on radical versus incremental innovation (Slater et al., 2014).

model, new organisational or technological service delivery system" (Den Hertog et al., 2010, p. 494). Snyder proposes three useful[18] categorisation axes to further specify service innovations (2016):

1. Degree of change (customer point of view): from incremental to radical;[19]
2. Degree of newness (internal point of view): from 'to the firm' to 'to the market', and;
3. Mean of provision (internal point of view): new technology and/or new organisational arrangements.

For this thesis, in line with FlyCo's *architectural* transformation (Safrudin et al., 2014), innovations can be classified as incremental. Besides this, these innovations can be classified at all positions of the other two axes.

Managing Service Innovation

There is a fundamental divide in literature between two different perspectives on how to manage and study service innovation and transformation (Edvardsson et al., 2005; Evenson & Dubberly, 2010; Kimbell, 2011a). In his thesis, Overkamp (2019) concludes that the root of this divide lays in two different ontologies or "ways of seeing service" (p. 244). First, in the 'service as artefact' ontology, service innovation is "related to process and outcome archetypes of service innovation. It is based on NSD literature, and it frames service transformation as the assembly of a service delivery system, similar to manufacturing and assembling a product" (p. 243). This theory is based on a 'goods-logic' (Holmlid et al., 2017). Alternatively, the 'service as value-in-use' ontology builds on Service Dominant Logic (SDL) (Vargo & Lusch, 2004) which approaches service science with two 'new' core ideas (Vargo & Lusch, 2017):

1. "It is the *activities* emanating from specialised knowledge and abilities that people do for themselves and others (i.e., service, applied abilities) and the activities they want done for them, not the goods, which are only occasionally used in the transmission of this

[18] Snyder et al. conclude that the fourth categorisation 'type of change' (product or process) is meaningless since this distinction is difficult to operationalise and conceptually problematic for services.

[19] Where a radical service innovation is based on new core characteristics versus improvements to existing core characteristics.

service, that represent the source of value and thus the purpose of exchange" (p. 47). And;

2. Vargo continues, "Value is co-created, rather than created by one actor and subsequently delivered" (p. 47).

Overkamp concludes that both perspectives offer different insights in how transformation can be realised and what the role of design(ers) could be in catalysing transformation (2019). In the next two sections, I introduce the main concepts and ideas from both perspectives. I also discuss extant literature on the implementation of service innovations from both perspectives.

2.2.2 The service as artefact ontology

In the 'service as artefact' ontology, services are seen as a type of good. As Evenson and Dubberly note, "Activities or events in a service process are described as forming a perceivable set or 'product' through interaction with designed elements or resources from representatives of the service organisation, the customer, and any mediating technology" (2010, p. 404). This follows from the assumption that goods are the basis of economic activity (Holmlid et al., 2017). From this perspective, services can be described through the 'service strategy triad' (Ponsignon et al., 2011): a customer outcome, the customer process, and the prerequisites for the service[20] (Edvardsson & Olsson, 1996). NSD thus entails following procedures to define a desired outcome and then determining the prerequisites that are needed to achieve this controlled process (Evenson & Dubberly, 2010; Holmlid et al., 2017).

Within this ontology, scholars disagree on the degree to which goods and services differ. In the 'assimilation' view, researchers do not significantly demarcate the two categories (Drejer, 2004) and as such "theories and concepts developed in manufacturing contexts can easily be transferred to innovation in services" (Droege et al., 2009). For example, Scheuing and Johnson (1989) note about their NSD model, "The model is based on the extensive body of literature dealing with new product management; however, the structure of the model also reflects the unique conditions prevailing in service industries" (p. 25). In this stream, services are considered a subcategory of goods (Kimbell, 2011a).

[20] Also described as the target market, service concept and 'service delivery system'.

In contrast, the 'demarcation view' embraces the unique characteristics of services and suggests a need for concepts and models specifically designed for services (Coombs & Miles, 2000). In this line, Den Hertog et al. note "the considerable role of customer interaction and the intangibility characteristic" and that, "compared to manufacturing, services are less standardised, usually not focused on products, and less centralised/more dispersed" (2010, p. 492). Because of these dynamics, innovating services in-house requires a different process than that of product development (Cipriani & Rossi; Nijssen et al., 2006; Overkamp & Holmlid, 2016).

Designing Innovations as Artefacts

In this ontology, service design was initially portrayed as a phase in the NSD process (Scheuing & Johnson, 1989; Zeithaml et al., 2009) after the 'concept generation' phase (Kimbell, 2011a) and as mainly concerned with specifying prerequisites such as interfaces and interactions (Sangiorgi & Prendiville, 2017b; Sangiorgi et al., 2017). However, in recent years, in parallel with trends in product innovation, scholars increasingly "suggest the need to locate designers' work within a wider innovation space and time frame in order to better understand the conditions affecting their contribution and impact, and also the potentials and opportunities" (Sangiorgi et al., 2017, p. 25). Consequently, service design practices now also heavily influence concept generation through human-centred practices.

From the early 'service blueprint' (Shostack, 1977), service design has applied a split view of services; the service interface (where the service is co-produced) and the service infrastructure, which is needed for the interface to operate (Secomandi & Snelders, 2011). Here, the interface consists of multiple 'touchpoints' where organisations and customers interact (Patrício et al., 2018). From a customer perspective, touchpoints consist of one or more of three 'service elements' (Zomerdijk & Voss, 2010): the environment or 'servicescape' (Moeller, 2010; Vilnai-Yavetz & Rafaeli, 2006); material artefacts or 'service clues' (Berry et al., 2006; Patrício et al., 2018) and; the interaction with other people (e.g., agents) or 'service encounters' (Halvorsrud et al., 2016; Zomerdijk & Voss, 2010). Service design projects often end with a description of touchpoints and the requisite infrastructure to create them. Overall, service design in the 'service as artefact' ontology has developed a distinct knowledge base around "understanding human experiences and translating this understanding for the design of better

customer journeys" (Sangiorgi & Prendiville, 2017b, p. 2), for which it is recognised throughout the 'service science' community (Ostrom et al., 2015). However, defining 'design' as a phase in development processes may obstruct the view of design as a way of working, and limits the use and potential of design in service development.

Implementing Service Designs

In the 'service as artefact' ontology, implementation is a phase that comes after design (Overkamp, 2019). However, increasingly authors are voicing concerns over implementation success (Holmlid et al., 2017). Although research into this topic is still scant, some initial findings are emerging (Almqvist, 2019). For example, Patrício et al. (2011) suggest that service design should become 'multi-levelled' so that implementation fosters alignment between the Customer Value Constellation (network level), service system (firm level) and service encounters (touchpoint level). After stressing the importance of implementation for the 'legitimacy' of the service design field, Sangiorgi et al. (2017) suggest that, when service design is viewed as process, there are three 'spaces' where designers can intervene to improve implementation success: 'before design', 'during design' and 'after design'.

'Before design', implementation success may be improved if the organisational design narrative, the organisational pre-text and con-text, is considered and discussed before and throughout the design process (Junginger & Bailey, 2017). The pre-text is the "combined history of previous design efforts, historic design decision-making and earlier design approaches that have formed and still inform current design practices and current design thinking with a specific organisation" (Junginger & Bailey, 2017, pp. 33). The con-text, or 'design legacy', consists of the existing organisational purpose, organisational design approaches and organisational design practices {Junginger, 2015 #1230).

Regarding the design process itself, several authors have noted the influence of the nature of the designer-client relationship (e.g., separated, collaborative or integrated) (Lee; Sangiorgi et al., 2017). Others suggest that service designers need not only deploy a user-centred approach, but a context-centred approach to understand socio-economic and cultural requirements for implementation (Ostrom et al., 2015; Santamaria et al., 2018). Part of such an approach would be involving front-line and back-office employees in the design process to unearth the (consequences of) changes required for an

innovation (Overkamp, 2019; Raun, 2017). These consequences "include both prerequisites for the assembly of the service delivery system and effects of service transformation on the existing service" (Overkamp, 2019, p. 224). Overkamp and Ruijs also stress the importance of visuals and boundary objects to ensure a shared mental model (between stakeholders) regarding the required changes of practices (2017).

Finally, Sangiorgi and colleagues stress the importance of a strong narrative that accompanies a service design concept to support implementation after design (Sangiorgi et al., 2017). In addition, scholars stress the importance of having a detailed specification of the innovation and of the required changes to facilitate champions (Den Hertog et al., 2010; Lee; Tax & Stuart, 1997). Overkamp (2019) and Almqvist (2019) stress the importance of the handover. To support this handover, Almqvist introduces the concept of a 'service design roadmap' that guides clients in their actions over time after the design phase (2019). Certainly, all these strategies may be beneficial to champions. What none of the authors discuss however, is what can be done on an organisational level to foster these strategies (or make them obsolete).

2.2.3 The service as value-in-use ontology

In the past decade, a second perspective on services has gained momentum, one which seeks to integrate product and service innovation research. In a meta-analysis of 27 years of new service development research, the authors conclude with the following passage:

> It appears that the conceptual foundations that guided NSD research for many years may no longer be valid. As service and manufacturing activities are becoming increasingly intertwined, there may be a need for a common framework for studying the innovation activities instead of maintaining the dichotomy between the two. (Papastathopoulou & Hultink, 2012, p. 713)

In recent years, frameworks that take such a 'synthesis perspective' - where insights from product and service innovation research are integrated and unified (Carlborg et al., 2014; Coombs & Miles, 2000) - have been articulated. The most prominent of such frameworks (Baron et al., 2014), which is especially suitable to study service design (Holmlid et al., 2017), is based on Service Dominant Logic (Vargo & Lusch, 2004) and Service Logic

(Grönroos, 2008). This is where the 'value-in-use' ontology of service resides (Overkamp, 2019).

Service Dominant Logic (from hereon: SDL) proposes an "alternative understanding of exchange and value creation" (Wilden et al., 2017, p. 346)[21] with "service - the application of resources for the benefit of others - as the common denominator of economic (and non-economic) exchange" (Vargo & Lusch, 2017, p. 48). Service may be offered directly, when actors[22] use *operant* resources (knowledge/skills) or indirectly, when the transaction is mediated through *operand* resources (i.e., goods and natural resources). Other actors, the *beneficiaries*, then *integrate* these resources with their own, which is where value co-creation happens (i.e., in use). As Overkamp (2019) puts it plainly, "By exchanging knowledge and skills with each other and integrating them with their own skills and knowledge, service actors can achieve things that they cannot realise alone. Service thus becomes a collaborative process of doing something with and for someone else" (p. 185). The focus thereby shifts from the output unit (i.e., service*s*) to the process (i.e., service) of value co-creation (Vargo & Lusch, 2017, p. 48; Wilden et al., 2017).

The core ideas of SDL have been captured in 11 foundation principles, which have been expanded, criticised and revised over the past 15 years (Vargo & Lusch, 2008) and have recently been collided into 5 'axioms' (Vargo & Lusch, 2016), which are presented in table ii. In addition to the premises explained above, these axioms direct that beneficiaries determine the value of a service and that this value is contextually dependent and often is realised by integrating multiple resources (Axiom 4). Furthermore, SDL research increasingly assumes a network focus whereby the 'service ecosystem' (Vargo et al., 2015) - defined as a "relatively self-contained, self-adjusting system of resource-integrating actors connected by shared institutional arrangements and mutual value creation through service exchange" (Vargo & Lusch, 2016, p. 161) - becomes the unit of analysis for value co-creation (Axiom 5) (Vargo & Lusch, 2017). However, current SDL literature is abstract and aims to develop a new meta-theory of economics (Vargo & Lusch, 2017). I thus add to (and build upon) a relatively small body

[21] To a Goods Dominant Logic where "value is inherent in goods and is assessed through price mechanisms or value in exchange" (p. 348).

[22] Actors in this sense can be single customers and employees, but also for example firms, communities or regulatory bodies.

of knowledge where this theory (and its accompanying service ontology) is used to study empirical data on service innovation and design.

Table ii: The five SDL axioms as summarised by Vargo and Lusch (2016)

Axiom Number	Contribution
Axiom #1	Service is the fundamental basis of exchange
Axiom #2	Value is co-created by multiple actors, always including the beneficiary
Axiom #3	All social and economic actors are resource integrators
Axiom #4	Value is always uniquely and phenomenologically determined by the beneficiary
Axiom #5	Value co-creation is coordinated through actor-generated institutions and institutional arrangements

Innovations in Service as Value-in-use

In the service as value-in-use ontology, the focus of research in service innovation shifts. In short, this perspective highlights that, "Innovation is not about inventing things, but about developing systems for value co-creation" (Vargo & Lusch, 2017, p. 54). To be precise, this perspective on service innovation foregrounds two aspects: (1) what value is co-created and how and what resources are used in the process, and; (2) the actors engaged in the exchange, their relationships and the roles they assume in those relations and the institutional arrangements that facilitate these relationships. This perspective thus acknowledges the dual social and material aspects of service and highlights its relational and temporal nature (Kimbell, 2011a).

An ontology based on SDL underlines the importance of institutions and institutional arrangements (or logics) in supporting or inhibiting relations. Institutions are "humanly devised rules, norms and meanings that enable and constrain human action" (Scott, 1995). For example, *institutionalisation* or "the maintenance, disruption and change of institutions" is recognised as the central process of innovation (Vargo et al., 2015). Chandler et al. (2019) explore this perspective further and conclude that the innovation process in a service ecosystem consists of three phases: the idea, institutional reconciliation, and the solution. In that middle phase, "institutional dissonance (tensions and divergences) is reconciled, [and] institutional

stabilizing efforts (expected value and service) reverberate throughout a service ecosystem." (p. 84)

The service-in-use ontology shifts the focus of service innovation research from the object to the actors and their relationships (Wetter-Edman et al., 2014). In doing so, different aspects of innovation are foregrounded. However, as noted in recent literature review papers, research on service innovation from an SDL perspective is in its infancy (Vargo & Lusch, 2017; Wilden et al., 2017). Specifically, there is scant research that operationalises this perspective and tests it on empirical data (Wetter-Edman et al., 2014; Yu & Sangiorgi, 2018).[23]

Designing for Value Co-creation

The practice and aim of service design, when considered from a 'service as value-in-use' perspective, is different from the view found in most literature (that builds on the service-as-artefact ontology). To differentiate their perspective, these scholars have adopted the term 'designing for service' (Sangiorgi & Prendiville, 2017a). Designing for service is a way of working as opposed to a phase in the service development process (Holmlid et al., 2017; Wetter-Edman, 2014; Wetter-Edman et al., 2014). Kimbell (2011a) describes it as a specific type of service design,

> Combining an exploratory, constructivist approach to design, proposing and creating new kinds of value relation within a socio-material configuration involving diverse actors including people, technologies and artefacts. This conceptualisation has implications for other design fields, since it sees service as enacted in the relations between diverse actors, rather than as a specific kind of object to be designed. (p. 42)

Designing for service recognises two consequences from the SDL-based perspective on service and service innovation: (1) services cannot be designed, instead we design platforms for action (Manzini, 2011; Wetter-Edman, 2014) and; (2) the role of the designer is to stage learning (Blomberg & Darrah, 2015; Carvalho & Goodyear, 2018; Overkamp, 2019; Sangiorgi & Prendiville, 2017a).

[23] With a few notable exceptions, such as Kurtmollaiev et al. (2018).

Overkamp (2019) identifies three activities where design contributes to service innovation from a value-in-use ontology. First, designers can help stakeholders understand the current situation by providing tools and visualisations (Carvalho & Goodyear, 2018; Yu & Sangiorgi, 2018). They can create "boundary objects that served to make visible these actors within a service, as both they and the managers constructed an understanding of the service" (Kimbell, 2011a, p. 50). Second, designers can help stakeholders to imagine new value co-creating relationships (including related roles) and identify what factors influence these relations[24] (Overkamp, 2019; Yu & Sangiorgi, 2018). Third and final, designers can aid in identifying and developing artefacts (or resources (Evenson & Dubberly, 2010)) that stimulate the intended relationships and roles. The object of design thus becomes enablers of roles (Overkamp, 2019) and interactions (Secomandi & Snelders, 2011).

Concurrently, the service management research community has started to prioritise research into service innovation and the impact of service design on service innovation processes (Patrício et al., 2018). The ecosystem perspective and recognition of the importance of institutional reconciliation have focused attention on the contribution of service design to contribute to this process and result in lasting change. Service design itself is even conceptualized as bringing a new organisational logic - changing how employees engage in change routines, routine changes, and changes in routines – which has the inherent potential to transform itself based on the organisational context (Kurtmollaiev et al., 2018).

Regarding the contribution of service design practices, Vink et al. (2019) note that service design contributes to reshaping actors' mental models and thereby triggers institutional change. Service design contributes by helping actors to sense surprise, to perceive multiples and t experience alternatives. Wetter-Edman et al. (2018), link this process to how designers stage 'aesthetic disruption' – bodily, sensory experiences – which result in lasting change. Yu and Sangiorgi (2018) identify five contributions of service design to service innovation processes. For example, they illustrate how service design helps to gain a contextual and holistic understanding of value

[24] This is done through 'situating strategies' (Gedenry, 1998) in which designers use all resources currently available (e.g., tools and surroundings) to explore new situations (Dalsgaard, 2014).

propositions and how prototyping promotes resource- and process optimization. Finally, Patrício et al. (2011) propose a multileveled approach to service design, which includes designing the service ecosystem alongside the value proposition. However, innovation studies in service research predominantly focus on a macro-level, which has limited direct applicability to the context of (teams) of innovators inside one service organisation (Vink et al., 2019).

Implementing Designs for Services

Available literature that discusses service innovation from an SDL perspective has emphasised generation (or finding new ways of creating value) over implementation. Overkamp (2019) concludes in his thesis: "How realisation of envisioned value co-creating relationships takes place is, to the best of my knowledge, not addressed yet" (p. 229). Yet through my review of literature, I have identified initial insights which indicate that innovation implementation from a value-in-use perspective is approached in a fundamentally different way than from the 'service as artefact' perspective.

To start, there is a recognition that the process and outcome of service innovation are intertwined (Evenson & Dubberly, 2010; Toivonen & Tuominen, 2009). As Holmlid et al. (2017) state, "Design should not be viewed as an activity or a practice only in the development projects, but also as an activity in change and reconfiguration processes leading to service implementation, as well as an on-going activity in service" (p. 102). Instead of designing one single project and considering the implementation, designers engage with service evaluation and change processes to contribute towards realising transformations (Sangiorgi & Junginger, 2015; Sangiorgi & Prendiville, 2017a). Overkamp stresses that transformations occur as 'incremental approximations' (Gedenry, 1998) towards the intended value co-creating relationships (2019). Similarly, Sangiorgi (2011) proposes that designers increasingly engage in 'transformation design' for which they may currently be ill-equipped.

Researchers recently started to explore what designers need, to be more effective at realising transformations (Raun, 2017). Designers need to consider more profoundly the context for which they are designing, which extends beyond the user's space to the organisation and value networks (Sangiorgi & Prendiville, 2017a; Wetter-Edman et al., 2014). This means they need to consider power dynamics (Sangiorgi, 2011) and work actively to align

businesses to better support value co-creation (Sangiorgi & Prendiville, 2017a). In fact, designers need to develop spaces where businesses can constantly work to realign their business with new value co-creating relationships. Both Overkamp (2019) and Sangiorgi and Prendiville (2017a) point towards 'infrastructuring' (Björgvinsson et al., 2012),[25] a concept that originated in participatory design, as a key design activity to realise transformations. In conclusion, this literature suggests that realising transformation is more about shaping relationships and enabling roles than about developing artefacts.

2.2.4 Summary

In this chapter, I provided an overview of relevant concepts from the service (marketing), service innovation and service design literature. I summarised what has already been published regarding the implementation of service innovations. Because of the fundamentally different ontology, I critiqued literature that views service as an artefact separate from literature that views service as value-in-use. In table iii, I summarise the main concepts reviewed in 2.2.1. In table iv, I compare the two different perspectives on service, service innovation and -design.

[25] Infrastructuring refers to the creation and support of 'public spaces' (Le Dantec & DiSalvo, 2013) around projects where stakeholders address matters which "stretch beyond the scope of the initial project and might include actors who were not considered from the beginning" (Overkamp, 2019, p. 232).

Table iii: Main concepts introduced in 2.2.1.

Sub-Chapter	Topic / Concept	Description	Contribution to thesis[26]
2.2.1	Services	The 'right to use' non-tradable and organisationally controlled technical and/or human competencies	2
	Service organisations	Are firms that offer an experience to customers where the performance does not result in ownership of any of the factors of production	2
	New Service Development (NSD)	The process of developing a new product or service for a market.	2
	Service design	Systematically applying design principles and methodology to the development of services	2
	Service innovation	The outcome of a new service development process	2
	Service concept	The description of the customer's needs and how they are to be satisfied	2
	Service ontology	Way of seeing service, there are two: 'service as artefact' and 'service as value-in-use'	3

[26] (1) Clarify the literature gap; (2) introduce- and provide definitions and examples of concepts, or; (3) present existing knowledge and situate my contributions.

Table iv: Two perspectives on service introduced in 2.2.2 and 2.2.3

Ontology	**2.2.2 Service as Artefact**	**2.2.3. Service as value-in-use**
Based on	Goods Dominant Logic	Service Dominant Logic and Service Logic
Value is	Created by actors and embedded in goods. Determined in exchange. Actors exchange 'products', services are a type of product.	Co-created and determined by user in-use. All actors engage in service-for-service exchange.
Distinction between goods and services	Services are a subcategory of goods (assimilation view) or a unique type of 'product' (demarcation view).	Is irrelevant, both are means to deliver service (singular), (synthesis view)
Service(s)…	Can be described through the 'service strategy triad': a customer outcome, the customer process, and the prerequisites for the service	The application of (operant/operand) resources for the benefit of others. Providers offer value propositions, beneficiaries integrate resources. Focus is on process, not on output.
Service Innovation	Changes in: service concept, customer interaction, value system/business partners, revenue model, organisational or technological service delivery system	New value Co-creation relationships (i.e., ways to create value or benefits) or new 'configurations of resource integrators' (i.e., actors or role-division)
Role of Design	Service Design	Designing for Service
Service Design…	Is about determining an intended interface and then the required	Exploratory, constructivist approach to design. Service cannot be fully

	infrastructure. Interface consists of touchpoints, which are influenced by the servicescape (surrounding), service clues (artefacts) and service encounters (people).	controlled but 'platforms for action' are developed. Design contributes by facilitating learning process about: current actors and relationships, possible new actors and relationships, factors that enable new relationships.
Implementation	Takes place after design, but success can be influenced: • Before design: by analysing organisational pre-text and con-text • During design: context-centred approach, influence front- and back-office employees, use visuals to align mental models • After design: Strong narrative and clear specifications	Implementation of one single project is only a step towards realising transformations. Designers continuously engage with service evaluation and change processes. Transformation happens through incremental approximations. Designers need to deal with power and business interests. 'Infrastructuring' as important tool to create flywheel for transformation and shape value cocreating relationships.

2.3 Design Innovation

2.3.1 Design and Designerly Thinking

In this sub-chapter, I review literature that contributes to an understanding of how design principles and practices influence innovation implementation. First, I review extant literature underpinning *design*. In this 'designerly thinking' literature (Johansson-Sköldberg et al., 2013), scholars describe how designers think, what they produce, as well as what they do and how they do it (Kimbell, 2011b). Subsequently, I review literature which aims to describe how design practices contribute to *innovation* in the context of organisations[27] (Johansson & Woodilla, 2009). For clarity, I refer to this as 'design innovation' literature. In this literature, design is considered an organisation resource (Kimbell, 2011b). Several authors have noted that these two bodies of literature are curiously disconnected (Kimbell, 2011b; Kleinsmann et al., 2017). Although clear overlaps are visible, 'design innovation' literature rarely references research about 'designerly thinking' and both fields build on different research paradigms (Johansson & Woodilla, 2009). This is a tell-tale sign of the developmental phase in which the design research field currently is, where several literature bodies have yet to converge or connect (Cash, 2020). Nevertheless, in the past decades, a large body of knowledge has been created which informs my research.

Design has been studied from various epistemological traditions (Johansson-Sköldberg et al., 2013). I discuss two perspectives that are dominant in design and innovation research[28] (Johansson-Sköldberg et al., 2013; Kimbell, 2011b) and in which I found useful concepts for Chapter 5 and 6. The rationalist (Jones, 2014), deterministic (Pandza & Thorpe, 2010) view of design, which Dorst calls "design as problem solving" (2019a, p. 74) and the pragmatic (Schön, 1983) and practice-based (Johansson-Sköldberg et al., 2013) view, or "design as reflective practice" (Dorst, 2019a, p. 74).

Design as problem solving

One of the most cited definitions, especially in management literature, describes design as a discipline of practices (Price, 2016) that differs from

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[27] What Johansson-Skölkberg et al. (2013) refer to as 'design thinking' literature.

[28] The third perspective mentioned by Johannesson-Sköldberg et al. (2013), which considers design as creating meaning (Verganti, 2008), was out-of-scope.

social/natural science, as it considers 'what ought to be' instead of 'what is' (Kimbell, 2011b). The fundamental text for this view is from (earlier versions of) Simon's 'The Sciences of the Artificial' (Simon, 1996) where he defines design as "devising courses of action aimed at changing existing situations into preferred ones" (p. 111) by designers who are "concerned with how things ought to be, how they ought to be in order to attain goals" (p.16). Importantly, this view implies a desired situation that is known in advance and problems that can be decomposed in smaller problems (Kimbell, 2011a).

Many process models of design throughout literature trace back to this framework of design (Johansson-Sköldberg et al., 2013). These models generally describe an exploration phase, an ideation phase, and a prototyping/iteration/implementation phase (Kimbell, 2011b; Micheli et al., 2018b). Well-known examples of such models are the Design Council's Double Diamond (Design Council, 2007), depicted in Figure 8, IDEO's 5-step model (Kelley & Littman, 2001) and the Interaction Design Foundation's design phases (Dam & Siang, 2020).

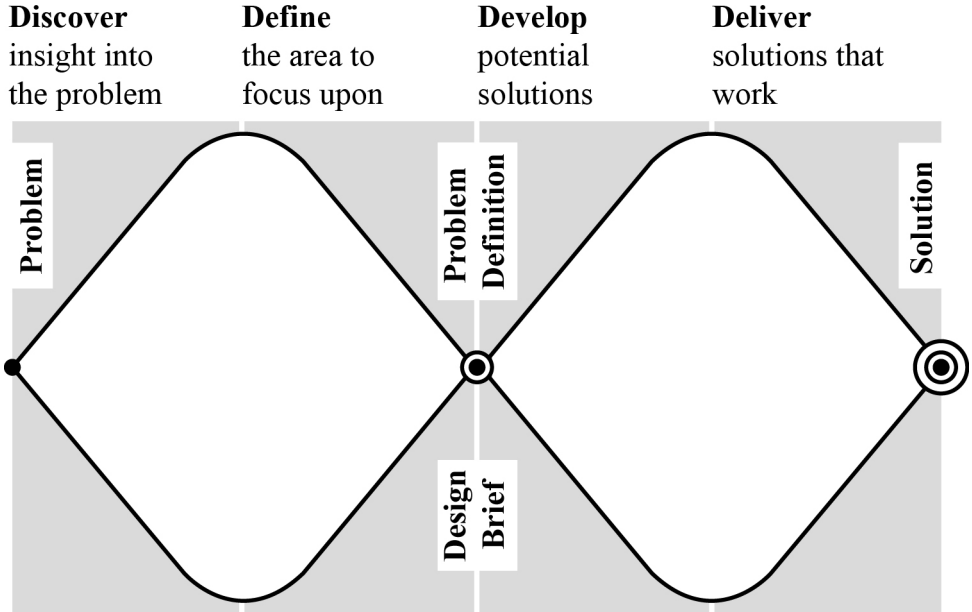

Figure 8: The Double Diamond model popularised by the Design Council (Design Council, 2007)

Building on this understanding, several characteristics of the practice of design are identifiable. First, design is considered to be human-centred (Auernhammer & Leifer, 2019; Kimbell, 2011b). Designers work visually to

resolve issues in conceptual ideas and to navigate meaning and situations (Kimbell, 2011b; Self & Goldschmidt, 2018). Design is often related to creativity and coming up with novel ideas (Micheli et al., 2018b), which is attributed to their tendency to "ask 'what if?' questions to imagine future scenarios rather than accepting the way things are done now" (De Lille et al., 2012; Kimbell, 2011b, p. 287). Finally, design is associated with experimentation and prototyping (to unearth and test assumptions) (Bjögvinsson et al., 2012; Micheli et al., 2018b). Together, these characteristics paint a picture of design as a problem-solving approach that focusses on creating artefacts (Simon, 1996).

Design as reflective practice

Kimbell contrasts 'design as problem solving' with a take on design that is based in Schön's "The Reflective Practitioner" (Schön, 1983) and defines design as "an exploratory enquiry during which understanding of an issue or problem emerges" (Kimbell, 2011a, p. 44). Schön (1983) observed and described the 'conversation' (Price, 2016) that takes place between the designer and the problem or issue at hand through reflection[29] (Johansson-Sköldberg et al., 2013) both during (reflection-in-action) and after action (reflection-on-action) (Wegener et al., 2019). Inquiry is deemed necessary because the end state is not known in advance (Rylander, 2009). Buchanan (1992) uses Rittel and Weber's (1973) notion of 'wicked problems' to describe such an indeterminate situation. He explains that design as inquiry is especially suitable to deal with these problems, precisely because it doesn't follow a step-by-step process wherein analysis and synthesis are separated (Dorst & Cross, 2001). As later studies confirmed, "practice studies of architectural designing have shown there to be no distinct steps of analysis and synthesis, but that activities are made up of both ways of knowing at the same time" (Neubauer et al., 2020, p. 25).

An important practice related to inquiry is reframing. Buchanan introduces the concept of 'placements' (1992) to explain this practice. Placements can be thought of as perspectives through which a problem can be viewed (Wylant, 2010). According to Buchanan,

[29] Several scholars from the design field also heavily criticise the notion of design 'thinking', partly for its reliance on the division between thinking and doing and for centralising the designer (Kimbell, 2012; Neubauer et al., 2020).

> The boundary of a placement gives a context or orientation to thinking, but the application to a specific situation can generate a new perception of that situation and, hence, a new possibility to be tested. Therefore, placements are sources of new ideas and possibilities when applied to problems in concrete circumstances. (1992, p. 13)

Dorst and Cross (2001) identify a similar notion when they explain that progress in design can be modelled as co-evolution of problem and solution spaces as introduced by Maher et al. (1996). They emphasise that creativity comes from finding a surprising new 'frame'[30] or "a 'bridge' between the problem space and the solution space by the identification of a key concept" (Dorst & Cross, 2001, p. 437). Expert designers, they propose, are especially skilled at re-framing. Dorst further develops this argument around reframing, which he describes as a key design practice (2015), describing it as the result of a unique type of reasoning that designers perform: design abduction (2011). Abductive reasoning is also mentioned by other authors as being core to design practice (Dong et al., 2016; Martin, 2009; Micheli et al., 2018b).

This second view of design thus stresses the emergent aspects of design and the fluidity that exists during the design process. As several authors have noted (Dorst, 2019a; Johansson-Sköldberg et al., 2013), both perspectives describe a part of design. In recent years, businesses have increasingly started to rely on design as a resource to innovate. As I will discuss in the following sections, the two perspectives of design offer means to analysing how businesses approach and apply design.

2.3.2 Design Innovation

In the past decades, and especially since the publication of 'Change by Design' (Brown, 2009) and 'the Design of Business' (Martin, 2009), a large body of knowledge has been created that describes the contribution of design principles and practices in the context of innovation in organisations (Johansson & Woodilla, 2009). The following section is a review of that literature.

[30] A term they borrowed from Schön (Schön, 1983).

Principles

Initially, in product development and innovation management literature, 'design' was positioned as either part of the 'fuzzy front end' (Lockwood, 2009) of New Product Development (NPD) processes (to identify user needs) (Micheli et al., 2018b) or as an 'add-on' process to product development (as concerned with aesthetics and usability) (Hernández et al., 2018). However, "The concept of 'design *thinking*' became a portal for the whole design area to contribute to innovation, and design thinking enabled innovation to supersede strategic management as a way to deal with a complex reality" (Johansson-Sköldberg et al., 2013, p. 127) [italics added]. With that perspective, design innovation can be defined as to "employ the principles and processes of human-centred design and components of strategy… to present a whole of organisation approach to design as a strategic as well as an operational process with the purpose of creating sustainable competitive advantage" (Matthews & Wrigley, 2017, p. 49). Design is now expected to contribute to the entire innovation process (Dong, 2015; Kleinsmann et al., 2017).

Design thinking offers three advantages: it fosters creativity, structures the innovation process, and promotes more holistic, less biased solutions. The Design Council describes design as "creativity deployed to a specific end" (2011, p. 4). Design thinking practices help identify original concepts (Rylander, 2009), based on emerging user needs (Brown, 2008; Dell'Era et al., 2020). These practices also add structure to an inherently ambiguous innovation process (Liedtka, 2017; Neubauer et al., 2020), amongst others by using tools (Kolko, 2015). Finally, as argued by Liedtka (2015, 2018), design thinking practices result in better outcomes because they help unearth and counter cognitive biases (Price & Lloyd, 2021). Additionally, the holistic, system-oriented approach inherent in design practices (Fayard et al., 2017) helps develop solutions that balance viability, feasibility, and desirability (Aricò, 2018; Brown, 2009).

Practices

There have been several attempts to identify design innovation practices and there are meta-reviews that compare these practices (Micheli et al., 2018b). For this thesis, I will adopt the practices proposed by Carlgren, Rauth and

Elmquist (2016b) because they are complete,[31] grounded in empirical data and they differentiate between design innovation themes (such as materialisation), principles, practices, and techniques. Through this hierarchy, they connect practices with theoretical literature (theme level) and to observable empirics (techniques level). Table v is a (for simplicity) edited reproduction of the characteristics of design innovation practices as identified by Carlgren et al. (2016b), with example practices mentioned.

Design innovation is human-centred (Brown, 2009), which is underpinned by empathy (Kimbell, 2011b), as innovators aim to understand and improve the experience of all stakeholders involved (Dong, 2015; Yee et al., 2017). Design innovation also promotes materialisation (and visualisation) (Ward et al., 2009), for example, to create a shared understanding or to clarify thoughts (Kleinsmann et al., 2017). In addition, experimentation and iteration lay at the heart of design innovation (Kolko, 2015), innovation proceeds through cycle of thinking, making, and doing (Cassim, 2013). Carlgren et al. (2016b) note that design innovation is collaborative and inclusive (Norman & Stappers, 2015). Collaborative, because other stakeholders than trained designers play a key role in the process (Neubauer et al., 2020); and inclusive, because there is a 'gestalt' view which "refers to the belief that the perception of the whole is not simply the sum of the perceptions of its parts" (Micheli et al., 2018b). Finally, design innovation practices help navigate ambiguity (Bason & Austin, 2019) and emphasise purposefully looking for creative ways to look at- and solve problems (Dorst, 2017). Taken together, these practices show overlap with practices from big perspectives on design as described in the previous section. This makes sense because design innovation practices are localised versions of the practices of design.

[31] By which I mean that when compared to other studies I encountered, there are no omittances.

Table v: Characteristics of Design Thinking (Carlgren et al., 2016b)

Themes	**Principles / Mindsets**	**Practices**	**Techniques**
User focus	Empathic	Use qualitative, context specific approach in user research	Ethnographic research
Materialisation	Thinking through doing	Make rough representations	Sketching
Experimentation	Learning-oriented	Work iteratively (divergent, convergent)	Brainstorming techniques
Diversity	Integrative Thinking	Take a holistic perspective into account	Analogies, study visits
Problem framing	Comfortable with complexity and ambiguity	Challenge and reframe the initial problem to expand both problem and solution space	'How-might-we-questions'

One could argue that conceptualising 'problem framing' as one of five themes under-appreciates the fundamental importance of this theme. Perhaps it should be considered more centrally, as the defining aspect of design innovation (Dorst, 2019a). A stronger consideration of the 'design as inquiry' literature provides the basis for such a conceptualisation.

Recently design innovation scholars seem to be shifting their view on design thinking, towards one that conceptualises innovation as an inquiry process. As Muratovski puts it,

> From a field of making and styling, design has evolved into one that embodies the idea of "problem solving" at its core. In recent times, things have continued to evolve, and the next stage for design is increasingly being defined as one that deals with 'problem finding'. (2015, p. 135)

Instead of portraying design innovation as creating solutions, solutions are merely probes to identify fruitful frames or directions (Dorst, 2019b).

Identifying, framing, and reframing problems assume equal importance to solving problems (Beckman & Barry, 2007).

In line with this conceptualisation, good design thinking doesn't imply satisfying pre-set quality criteria with an artifact/solution. Instead, the goal becomes double loop learning, shifting the mental model of the problem and resolving paradoxes (Dorst, 2019a). The innovation process can be conceptualised as an *experiential* learning process (Beckman & Barry, 2007). Elsbach and Stigiliani conclude that design triggers an organisational culture of experiential learning where the experiences of stakeholders provide sources for reflection (2018). This different conceptualisation of design innovation (as learning) doesn't imply that the before-mentioned practices become irrelevant. However, it implies a shift in scope from realising projects to ongoing design processes that articulate interventions with the aim of realising system level change (Dorst, 2019b).

2.3.3. Design Innovation Implementation

Design literature rarely discusses implementation, besides mentioning it as the last stage of the design process.[32] It seems as if though the design (thinking) research community regards the 'muddy back end' (Buijs, 2007) as out-of-scope. One explanation of this could be that designers (traditionally) often aren't involved in the implementation process (Norman & Stappers, 2015). However, one could challenge whether this exclusion is still justifiable. As discussed, design is increasingly viewed as a process of inquiry - rather than a problem-solving project. Norman and Stappers conclude that when moving to higher-order challenges, implementing design outcomes is the biggest challenge for designers to contribute to solving the world's biggest problems (2015). Norman and Stappers summarise, "incompatible constraints coupled with the different perspectives of those involved in the analysis and decision-making process means that any solution requires collaboration and agreement of multiple social entities and political actors" (2015, p. 92). In other words, there are significant social, cultural, political, economic, and practical barriers to implementation for design outcomes.

[32] I should note that there is a significant body of literature on the technical aspects of producing/implementing designs, for instance literature on product design for manufacture and assembly (Boothroyd, 1994).

Moreover, design may actually aggravate implementation issues. in their study on design thinking practices in large corporations, Carlgren, Elmquist and Rauth (2016a) mention:

> The strong focus on reframing problems and building on deep user insights in DT seem to reinforce this [VoD] challenge even more… also while the different ways of creating tangible representations were found useful within DT work, sometimes they represented a communication style that was hard to grasp or found inappropriate when communicating with the mainstream organisation. (p. 355)

In a similar vein, Björjklund et al. mention that design practices can cause friction with management and engineering practices, inhibiting implementation (2020). But currently further details of this friction remain unexplored.

What can design add to innovation processes to mitigate implementation issues? The Design Council proposes that design thinking has the potential of mitigating the VoD by structuring the process of innovation from creative ideas to valuable propositions (Kolarz et al., 2015). More specifically, design could foster implementation by proposing higher quality solutions (Liedtka, 2017) that satisfy more criteria because of designers' integrative thinking (Dorst, 2019b) and that are less fraught with cognitive biases (Liedtka, 2015). Prototyping and experimentation may also help mitigate implementation issues by lowering cost of failures (Liedtka, 2017). Similarly, Assink (2006) notes the inherent uncertainty related to the development of new ideas during the VoD and that a probe-and-learn approach needs to be taken. Finally, Liedtka (2017) argues that design thinking practices may facilitate the social process of implementation because they stimulate alignment and the creation of an invested network around a concept.

At an activity level, design can also be linked to the VoD. Within the VoD, attention is required to matters of technical viability, market/user research, and business case development (Markham, 2013; Markham et al., 2010). These are precisely the three criteria that design thinking ostensibly balances so elegantly (Carlgren et al., 2016b). Summarising, these are initial signs that design thinking may contribute to mitigating implementation issues, but the empirical evidence about this relation and how factors interact remains unclear (Hernández et al., 2018; Liedtka, 2017). Moreover, current findings

suggest strategies for (design) champions to overcome implementation issues rather than how an organisation can be designed to facilitate these champions.

2.3.4. Managing by Design

The previous section dealt with the contribution of design to innovation processes within organisations. In this final section, I review a different stream of literature that has taken an interest in design: organisational design and management studies. Several authors have noted that design has found application beyond its historical roots in product development (Buchanan, 2001, 2015; Joore & Brezet, 2015; Price et al., 2019). An increasing number of designers act in the fourth order of design: *Systems, Organisations and Environments* (Boland et al., 2008; Cooper et al., 2009; Kronqvist & Salmi). In this order, organisations are seen as 'products' which can be designed (Bauer & Eagen, 2008; Buchanan, 2008). This stream of literature, which discusses design as a management approach, is also referred to as 'managing by design' (Gruber et al., 2015) or 'managing as designing' (Boland & Collopy, 2004b; Boland et al., 2008).

'Managing as designing' is presented as an alternative (or complementary (Bauer & Eagen, 2008)) management approach to an analytical, rational approach to management as taught in business schools (Eagen et al., 2011; Kimbell, 2011b; Martin, 2009) and practiced by strategy consultants (Rylander, 2009). Managing as designing refers to introducing "design as a verb and positive emotional involvement into the process of management" (Boland et al., 2008, p. 18). A design approach, taken to a strategic level, may result in both a different change process (Magalhães, 2020) and different organisational infrastructure (Boland et al., 2008; Gruber et al., 2015). The resulting organisations would be better suited to support both exploitative and explorative activities (Martin, 2009) and thus to respond to a more dynamic marketplace (Bauer & Eagen, 2008; Boland & Collopy, 2004b; Tsoukas & Chia, 2002). Perhaps they would also take into account more profoundly the needs of *all* involved stakeholders (Kimbell, 2011b; Magalhães, 2020).

But except for an initial rise in publications exploring the notion in the beginning of this century[33] the discussion seems to have stalled (Buchanan,

[33] Marked by Boland and Collopy's book that resulted from a workshop attended by many management scholars (Boland & Collopy, 2004b) - and a special issue on 'Design and Organisational Change' (Brown et al., 2008).

2008). There have been several papers that echo the concept of managing as designing (Dunbar & Starbuck, 2006; Yoo et al., 2006), but it seems we haven't progressed from noticing a need/opportunity to exploring practical implications. The new 'vocabulary' that Boland and Collopy (2004b, 2004c) called for to further explore design into management writing hasn't strongly materialised[34] (Johansson-Sköldberg et al., 2013). How to practically apply design in the domain of management and organisational design remains understudied.

2.3.5 Summary

In this Sub-chapter, I reviewed relevant literature regarding 'designerly thinking', 'design innovation' and 'managing by design'. In Section 2.3.3, I explored extant knowledge on design and the implementation of project outcomes. I find that design can contribute in several ways to fostering innovation implementation. But I also find implementation can be a problematic issue for designers. Most of all, I find that implementation is an under-researched topic in the field of design. In table vi, I summarise the main concepts and insights from Sub-chapter 2.3.

[34] There are a few exceptions. E.g., Golsby-Smith (1996) finds that fourth order designers need to deal with three unique features in their approach: purpose, integration, and systems (or community).

Table vi: main concepts introduced in 2.3

Sub-Chapter	Topic / Concept	Description	Contribution to thesis[35]
2.3.1	Design(erly) thinking	Research into how designers think as well as well as what they do and how they do it. There are two perspectives, 'design as problem solving and design as reflective practice	2, 3
2.3.1	Design as problem solving	Design process to devise artefacts that help achieve a knowable desired state. Practices are human-centredness, creativity and experimentation.	2, 3
2.3.1	Design as reflective practice	An exploratory enquiry during which understanding of an issue or problem emerges. Desired state cannot be known. Instead, designers explore frames that connect problem- and solutions spaces: co-evolution. Design abduction is used to identify novel frames.	2, 3
2.3.2	Design Innovation	To employ the principles and processes of human-centred design and components of strategy…to present a whole of organisation approach to design as a strategic as well as an operational process with the purpose of creating sustainable competitive advantage.	2

[35] (1) Clarify the literature gap; (2) introduce- and provide definitions and examples of concepts, or; (3) present existing knowledge and situate my contributions.

2.3.2	Contribution of Design to innovation	Fosters creativity, structures the innovation process, and promotes more holistic, less biased solutions	3
2.3.2	Design innovation practices relate to	User focus, Materialisation, Experimentation, Diversity, Problem Framing	2, 3
2.3.2	Design innovation as experiential	Problem Framing is fundamental to design thinking. Solutions are	1, 2, 3
	learning process	probes to identify fruitful frames or directions. Identifying, framing, and reframing problems are key. Shifts focus from design projects to system change processes.	
2.3.3	Implementation in design innovation	The final phase in a project. Is under-researched in design literature, yet increasingly identified as major challenge for designers.	1, 2
2.3.3	What can design add to innovation processes to ensure implementation	Structure the process; increase quality of solutions; lower cost of failures; facilitate the social process.	1, 3
2.3.3	What design should add to ensure implementation	Pursue smaller; incremental interventions; feedback loops, involve stakeholders; Designers should stay involved.	1, 3
2.3.4	Managing by Design	To introduce design as a verb … into the process of management. To view organisations as designable ‘products’.	2

Chapter 3. Action Research Design

3.0 Chapter Overview

In this chapter, I explain how I studied innovation implementation and the VoD in the context of FlyCo. In line with Creswell (2014), I first briefly explain my worldview (3.1). After this, I introduce action research (AR) and describe why I applied this approach (3.2 and 3.3). The following sub-chapters portray which methods for data collection and analysis I used (3.4, 3.5 and 3.6). The chapter closes with a description of the research context with particular attention paid to how I gained access to this context (Sub-chapter 3.7 and 3.8).

3.1 Philosophical Assumptions

To respond to the question "*How can design catalyse innovation implementation at a service organisation?"* and the sub-research questions defined in the previous chapter, I apply an Action Research (AR) 'strategy of inquiry' (Creswell, 2014). Before I discuss this strategy of inquiry, this Sub-chapter describes the worldview that underlies my research: a **pragmatist** view of knowledge (Lorino, 2018) and a **process** perspective on change (Langley et al., 2013).

Pragmatism

My worldview is based on a pragmatic philosophy. Pragmatists propose that there is a single objective world, yet that we can only subjectively perceive this world (Cornish & Gillespie, 2009; Morgan, 2007). Pragmatists fundamentally reject that theory and practice can be separated (Elkjaer & Simpson, 2011; Greenwood & Levin, 2007) and propose that ideas (theories, concepts, assumptions) are not 'out there' (Sætra, 2019), but are merely "tools, like forks and knives and microchips—that people devise in order to cope with the world in which they find themselves" (Menand, 2002, p. xi). We acquire knowledge when these 'tools' are tested (Greenwood & Levin, 2007) through experimentation (Lorino, 2018) or enactment (Farjoun et al., 2015). Pragmatic research can be seen as a quest to find 'what works' (Patton, 1990).

In line with these ideas, pragmatists argue that social science research should be considered an inquiry process (Morgan, 2007).[36] Scientific

[36] Similar to any other that humans experience in daily life.

knowledge, according to Dewey (1991), thus results from cycles of action and reflection as actors aim to transform undetermined (or 'doubtful') situations into determined situations (Greenwood & Levin, 2007). Pragmatists see the world as emergent and assert that inquiry is most effective when it happens in a pluralistic community through dialogue (Lorino, 2018; Wegener & Lorino, 2020). As a result, they reject the idea that knowledge can be gained from outside observations by the researcher (Bacon, 2012). [37] Instead, researchers need to assume an active role[38] and apply 'engaged scholarship' (Bansal et al., 2018).

Process

Innovation implementation is an organisational change process. Organisational change can be studied using variance theories or process theories. I adopt the latter: a process perspective.[39] Process theories "provide explanations in terms of the sequence of events leading to an outcome (e.g., do A and then B to get C)" (Langley, 1999, p. 692), whilst variance studies describe phenomena in terms of (dependent and independent) variables and (statistically significant) relationships between these. Process researchers generate actionable, particular knowledge, that helps actors decide "what to do, at what point in time, in what context" (Sandberg & Tsoukas, 2011, p. 342). In this study, I aim to gather knowledge about *how* design could contribute to moving from a situation where an organisation experiences a VoD (case A), to one where this is mitigated, and transformation is achieved (case B). A process approach is thus suitable.

Variance studies have dominated innovation management research (Van De Ven, 2007a). Anderson and colleagues (2014) note in their review, "The [innovation management] field appears to have moved away from process research in general despite earlier publications of valuable process models derived from longitudinal, observational studies in real time within differing organisational settings (e.g., King, 1992; Van de Ven et al., 1989)" (p. 1319).

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[37] What Dewey referred to as the 'spectator theory of knowledge'.

[38] This introduces subjectivity (Raun, 2017), but pragmatists view this as unavoidable since "our values and our politics are always a part of who we are and how we act" (Morgan, 2007, p. 70).

[39] I assume a 'weak' perspective and my research question focusses on how 'things' (innovat*ions,* innovation hubs) change as opposed to how 'processes' (innovat*ing*) changes (Langley et al., 2013; Langley & Tsoukas, 2016).

As a result, our process understanding of innovation hasn't improved much (Anderson et al., 2014). Anderson et al. (2014) subsequently call for the reinvigoration of process studies. One reason for the absence of process studies of organisations change is that it is highly resource consuming and requires multi-levelled access to an organisation over a longer period. With this research, I answer to the call of Anderson et al. (2014) by leveraging a long-term and company-wide engagement with FlyCo to study innovation implementation.

A process research approach has implications for data gathering:

- Data needs to be gathered longitudinally (following actors, artefacts, organisations over time) (Van de Ven & Angle, 2000), with a multi-level perspective (Garud et al., 2013).
- The number of 'temporal intervals or events' that are recorded (Van De Ven, 2007a) are at least as important as traditional 'sample size' (e.g., different organisations).
- An 'insider view' (Van de Ven & Angle, 2000) is promoted[40] to better understand the complexities that practitioners face and to appreciate the importance of context (Garud et al., 2013).

Similarly, process research asks for specific analysis techniques: [41]

- Analysis strategies such as visual mapping, temporal bracketing, grounded theory, and narrative writing (Langley, 1999) preserve the temporal and multi-levelled qualities of the data (Van de Ven & Poole, 2005):
- Data need to be synthesised to show logic and generative mechanisms behind events and sequences (Van De Ven, 2007a) in a process that is hard to program or schematise (Langley et al., 2013).
- Findings can be 'tested' on other parts of the data (or other data) for confirmation.

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[40] A completely detached perspective is thus impossible (Van de Ven, 2007b). Instead, authors must be explicit about who has been involved in the research and how they became involved. In Sub-chapter 3.4, I detail how (and in collaboration with whom) longitudinal data was collected as I moved from being an outsider to being an insider.

[41] The common theorising mechanism doesn't presume a link between observed data and *interventions*. Confirmation is sought through replication rather than through experimentation (as pragmatists propose), this is in natural alignment with a constructivist worldview.

Where I depart from most process researchers is in my relation to the studied context and in my theorising mechanism. Most process researchers (building on a constructivist philosophy) remain outsiders to the studied context and gain an 'insider view' by interviewing insiders. In cases where researchers are insiders (mostly ethnographic research), there is no clear attempt to use interventions to test theories. Instead, inspired by pragmatism, I learn from interventions in- and engage with the studied context because, as the famous Lewin[42] quote goes: if you want to truly understand something, try to change it.

3.2 Strategy of Inquiry: Action Research

The strategy of inquiry that allowed me to operationalise my worldview in this research is Action Research, from hereon: AR. AR is not a strict research method, but an 'orientation to inquiry' (Reason & Bradbury, 2008b). AR "seeks to create participative communities of inquiry in which qualities of engagement, curiosity and question posing are brought to bear on significant practical issues" (Reason & Bradbury, 2008a). AR is more or less an umbrella term for many participatory and collaborative research approaches (Coghlan, 2011; Herr & Anderson, 2005). In Appendix A, I provide an overview of the characteristics of AR approaches. All these approaches can be characterised by a reflective cycle that is performed in collaboration with the researched population (Heron & Reason, 2006). As Kurt Lewin (the "father of action research" (Ottosson, 2003)) notes: "It proceeds in a spiral of steps, each of which is composed of a circle of planning, action and fact finding about the results of the action" (1946, p. 206). Understanding of a phenomenon grows through multiple cycles in which data collection, interpretation and interventions are performed in an iterative manner as illustrated in Figure 9.

[42] Although there is no text from Lewin wherein he claims this, many have accredited this maxim to him, such as Stam (Stam, 1995).

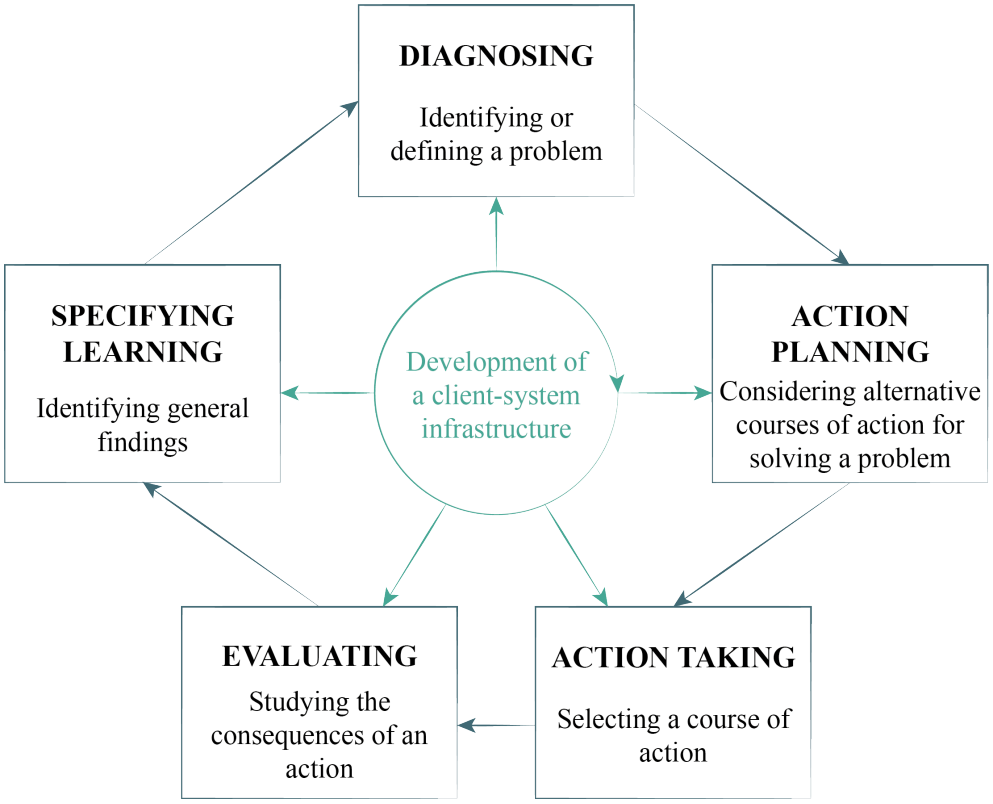

Figure 9: Cyclical process of action research, adapted from Susman and Evered (Susman & Evered, 1978)

As a result of this plurality of approaches, there are many definitions of AR. I adopt the definition by McCutcheon and Jung (1990) because they stress both the collaborative nature and intended results of AR:

> A systematic inquiry that is collective, collaborative, self-reflective, critical, and undertaken by the participants of the inquiry. The goals of such research are the understanding of practice and the articulation of a rationale or philosophy of practice in order to improve practice. (p. 148)

3.2.1 AR Fit with Research Project

I applied an AR approach because;

1. It allowed me to leverage access and build trust with participants to study the VoD and innovation implementation from a unique perspective.

2. It contributed to the research aim of generating actionable knowledge and realising change, and;
3. It aligned with my philosophical assumptions (as discussed in Sub-chapter 3.1).

First and foremost, AR allowed me to build trust in the organisation and subsequently leverage backstage-access to study a process and phenomenon which is difficult to study from outside of the organisation[43] (Herr & Anderson, 2005). AR is well-suited to study a contextualised (Gustavsen & Verlag, 2005) and complex phenomenon (Garud et al., 2013) as the VoD because it allowed me to build a deep understanding and access implicit knowledge (Lüscher & Lewis, 2008; Ottosson, 2003). Finally, the cyclical, emergent nature of AR was useful to study the VoD because, at the start of the research, it was unclear how the phenomenon manifests in this service context, even though extant literature provided a theoretical conceptualisation that resonated with FlyCo stakeholders.

Second, with this research project I aimed to generate and contribute practical knowledge (Coghlan, 2011) to the (academic) field. In addition, I wanted to realise change in line with management goals[44]. As discussed, AR is uniquely suited to realise these twin objectives (Lüscher & Lewis, 2008) because knowledge is generated through action.

Third, the principles and characteristics of AR converge with those of pragmatism (Lorino, 2018). Both fundamentally challenge a separation of theory and practice, are interested in specific contexts (situations), and stress the importance of testing theory (Greenwood & Levin, 2007). The 'practical knowing' that results from AR is in line with pragmatic philosophy (Coghlan, 2011; Scaratti et al., 2018). Several authors also describe how pragmatism influenced AR (Greenwood & Levin, 2007, p. 62; Lorino, 2018; Reason, 2003; Reason & Bradbury, 2008a; Wegener & Lorino, 2020). In sum, Dewey's foundational works on pragmatism predate Lewin's AR literature and 'set the ground' for this practical approach to research (Coghlan, 2011).

After explaining my philosophical assumptions and portraying how these (and the research question, topic, and aim) led me to an AR approach, I now discuss the specifics of my AR approach.

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[43] This difficulty is related partly to the social, cultural, and political nature of innovation (Garud et al., 2013) and partly attributable to that studying the VoD requires registering what *isn't* said or done as much as what *is*.

[44] What Scaratti (2018) refers to as 'pragmatically' oriented AR.

3.3 Operationalising AR

My strategy of inquiry built on the approach detailed in the thesis of Price (2016), who similarly engaged with design practices to enhance innovation and performed AR in an aviation context (airport). However, where Price studied the effect of building design innovation capabilities, I study what could be considered the next-in-line problem: when these capabilities have been built, how can organisations ensure impact from design innovation projects? My approach is similar to the recently published theses of Overkamp (2019) and Raun (2017), both of whom studied design implementation from a pragmatic worldview (applying respectively 'programmatic design' and 'Research through Design' methodologies) in a service context (respectively automotive services and healthcare). One key difference between these works and this project is that I take an explicitly organisational perspective as opposed to an individual (Raun) or project (Overkamp) level perspective.

In this section, I highlight two aspects of how I operationalised my AR approach. These aspects are positionality and the role of literature during the project.

3.3.1 Positionality

The role of the researcher relative to the studied context - or his 'positionally' - differs considerably between AR studies. This ranges from insiders studying themselves (e.g., auto-ethnography) to outsiders who study insiders (Herr & Anderson, 2005), as portrayed in Figure 10.

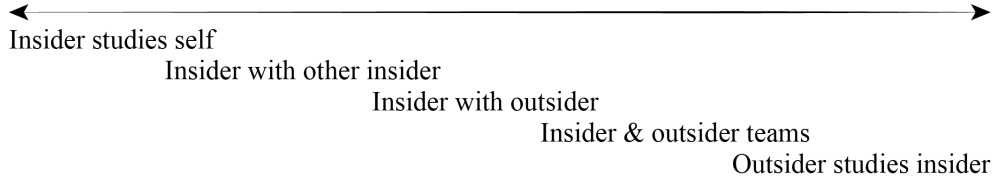

Figure 10: Continuum of positionalities in AR research (Herr & Anderson, 2005)

This research project was initiated as part of an 'insider & outsider teams' research collaboration. There were coordinators on both sides of the collaboration agreement (FlyCo and my research institute). Initially, I started as an outsider who studied insiders, with other insiders. I hadn't significantly been involved at FlyCo before, and most FlyCo employees (including my initial collaborators) had experienced limited engagement with research

activities. However, I gradually shifted towards an insider position during the project. As Herr and Anderson note, this is common in AR projects (2005).

During the research project, I shifted in positionality twice as visualised in Figure 11, I am the green dot. The shifts involved what I call lateral and vertical moves. The lateral move was that I alternated collaboration with different departments at FlyCo. This allowed me to gain a more holistic understanding of both the organisation and the VoD. During the vertical move, I gained a higher hierarchical position. As the project progressed, I shifted from being an outsider (left side Figure 11), to being a trainer/coach at the edge of the organisation (middle in Figure 11) to being an interim manager - inside, but never fully an insider - of one of the FlyCo innovation units (right side in Figure 11). These moves were partly driven by opportunity, yet they were buoyed by an increasing understanding of the phenomenon and consequently by developing in research questions. New positions allowed me to identify relations and (test) potential solutions. Neither of these positionalities was objectively better (Herr & Anderson, 2005) but they provided me with what I needed at a certain point of my research trajectory.

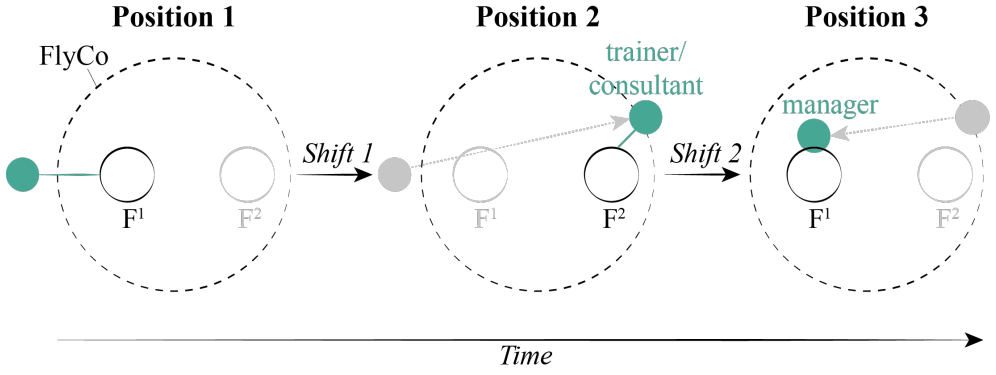

Figure 11: My positionally shifts over time from outsider to insider

For clarity and quality, I provide details of my roles during the projects (and each specific Action Research Cycle) in chapter 4.

Throughout the research, and similar to Price (2016), I assumed the role of (and presented myself as) Design Innovation Catalyst (DIC) (Wrigley, 2013). The DIC spans the domain of business and academia and continuously "explores, instigates, challenges, and disrupts innovation internally and externally - all from a position within the company" (Wrigley, 2016, p. 151). The DIC concept provided me with legitimacy internally at FlyCo, it provided

me with the flexibility to pursue position-shifts and it guided me when making research (design) choices.

3.3.2 Role of Literature and Writing

AR replaces part of the 'traditional' order of research activities[45] with *research cycles* of action and learning. As I describe throughout Chapter 4, research methods developed over time and literature research, writing and analysis were more intertwined (Herr & Anderson, 2005). Here I discuss my approach to reviewing literature and writing.

In Figure 12, I illustrate the use of literature throughout this research. At the start of AR projects, it was unclear what literature was relevant (as is common in AR (Herr & Anderson, 2005)), partly because the research topic itself was initially 'fuzzy' (Dick, 2002). Initially, I consulted methodological AR literature and, as I had my first conversations with FlyCo, my attention turned to literature regarding innovation processes, design thinking practices, and the (benefits of) adoption thereof in large organisation. Further discussions with academics and practitioners led me towards literature regarding the VoD. As research progressed and I performed initial analysis, I encountered the need to problematise (Sandberg & Alvesson, 2011) the applicability of the existing manufacturing-context and product-centric perspective of existing innovation implementation literature to FlyCo. I subsequently engaged more with service innovation and organisational design literature to understand questions thrown up during analysis (Davis, 2004, 2007), to find disconfirming arguments, reach conclusions with more confidence and ultimately to perform better informed actions (Dick, 1993).[46]

Write-up took place over various stages, through the production and presentation of (conference/discussion) papers (see Related Publications). Writing forced me to be specific and logical, which led to deeper analysis and spurred literature search. Writing forced me to reflect on the data and stimulated the inquiry process. Writing became a 'method of knowing' (Richardson, 2003). For example, I consulted much of the service design and

[45] Review literature, identify gap, design research, gather data, perform analysis and then write-up.

[46] Greenwood and Levin (2007) and Winter (1998) provide a more detailed description of this 'dialectical analysis' process.

institutional (logics) theory literature as a response to writing the later papers and the final thesis.

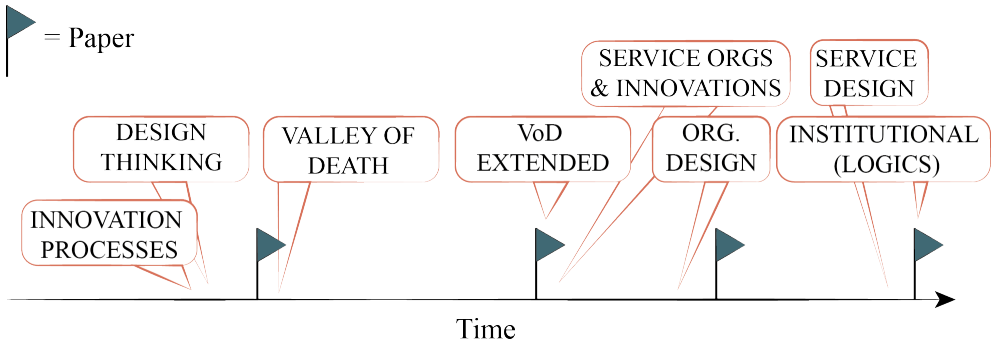

Figure 12: Unfolding of literature and writing during research project

In this sub-chapter, I illuminated how I approached positionality, literature and writing during this research. In the following sub-chapter, I present how I generated data.

3.4 Data Generation

In this sub-chapter, I discuss how I generated data. I generated two types of data: describing events (action) and describing what meaning participants (including myself) ascribed to those events (reflection). The former, which Van de Ven refers to as a 'qualitative datum' include:

1: "A bracketed string of words capturing the basic elements of information;
2: about a discrete incident or occurrence (the unit of analysis);
3: that happened on a specific date, which is;
4: entered as a unique record (or case) in a qualitative data file (2007a, p. 213)."

Recorded events range greatly in size (as is common in process research (Van de Ven & Poole, 2005, p. 1384)): a two-day training was considered one event, but a key stakeholder who phrased his opinion in a noticeable way during day-to-day operations also qualified as an event.

As often happens in AR, data generation methods developed over time (Herr & Anderson, 2005), as understanding of the phenomenon grew, as focus shifted and as I leveraged opportunities in the field. Yet, in each AR Cycle, I employed some form of each of four data generation approaches: field work and journaling, collective inquiry, interviews, and tertiary data.

I used journaling to record my own reflection and observations. Interviews focussed on recording the experiences and viewpoints of FlyCo participants. Collective inquiry served both purposes as 'insider' and 'outsider' knowledge collided and new knowledge was co-generated (Greenwood & Levin, 2007), as visualised in Figure 13. Finally, I used tertiary data to triangulate and confirm data. I now discuss each of these categories in more detail.

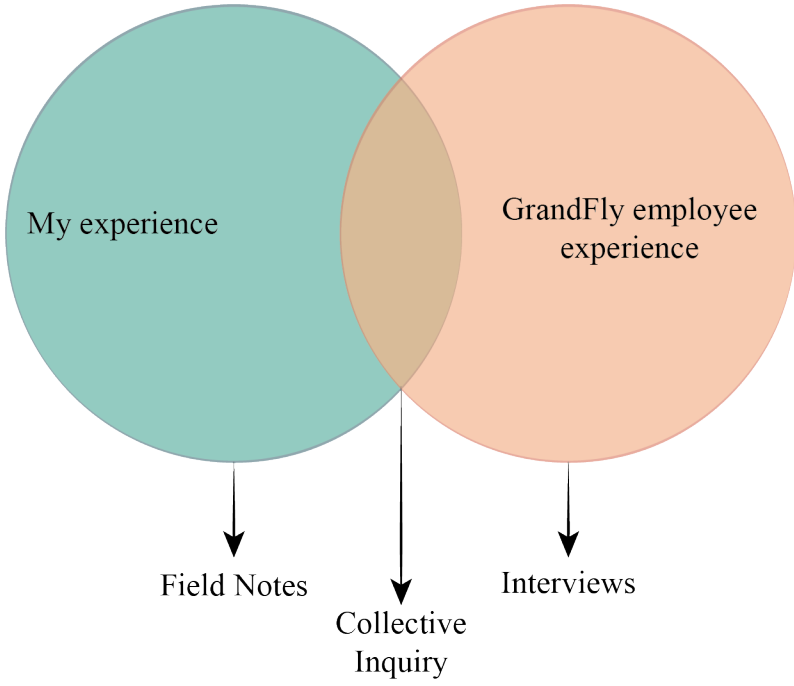

Figure 13: Three data generation approaches to capture holistic data

Fieldwork, Journaling and Reflection

AR is characterised by its narrative nature and the use of autobiographical data (Herr & Anderson, 2005, p. 77). As a result, the research journal is the most important data collection tool. In this journal, field notes captured "descriptive details of people (including themselves), places, things, and events, as well as reflections on data, patterns, and the process of research" (Brodsky, 2008, p. 341). I thus captured both observations and 'speculative-personal reflections' (Fetterman, 1998). Observations included both naturally occurring events and (the results of) performed interventions. As the research progressed, I became increasingly comfortable with a less expansive view as

I made scoping (or prioritisation) decisions and my understanding of what was relevant (and what was not) progressed. In total, I registered 231 'temporal observations' (Langley & Klag, 2017). In addition to observations, I captured thoughts, ideas, impressions, and decisions in the journal (Herr & Anderson, 2005). The journal became a running record of my developing understanding and of the (rationale behind) performed interventions.

Field notes were captured in writing and drawing, and a combination of these. Figure 14 displays an example page in the journal in which I tried to visualise an insight while linking it to existing theory. Initially the journal was a paper notebook, but I migrated to taking notes on a pin code-locked digital handheld device to be more secure (especially as I spend more time at FlyCo). The physical notebooks were later scanned so that they could be analysed. In total, I filled 426 pages with notes and drawings.

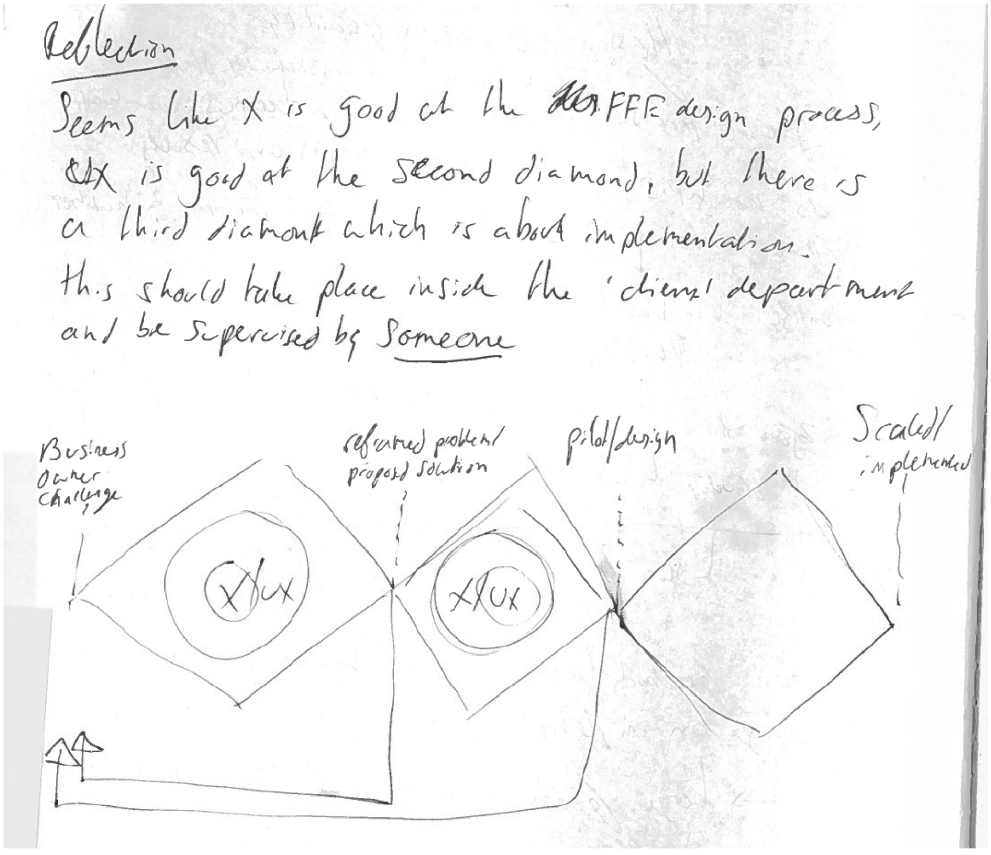

Figure 14: Example of field note in journal

I applied two other approaches to capture observations and reflections. When my notebook wasn't within reach and in some other exceptional occasions, I used my mobile phone to record audio memo's. In total, I recorded 24 memo's which lasted between a few seconds to five minutes. These audio files were added to a database. Finally, I took pictures during events. Through these pictures I register events, capture a specific aspect of an event (people present, type of setting, interaction) or capture the outcome of events. Figure 15 is an example of such a picture, taken during a workshop. These pictures were taken after consent had been given by FlyCo employees.

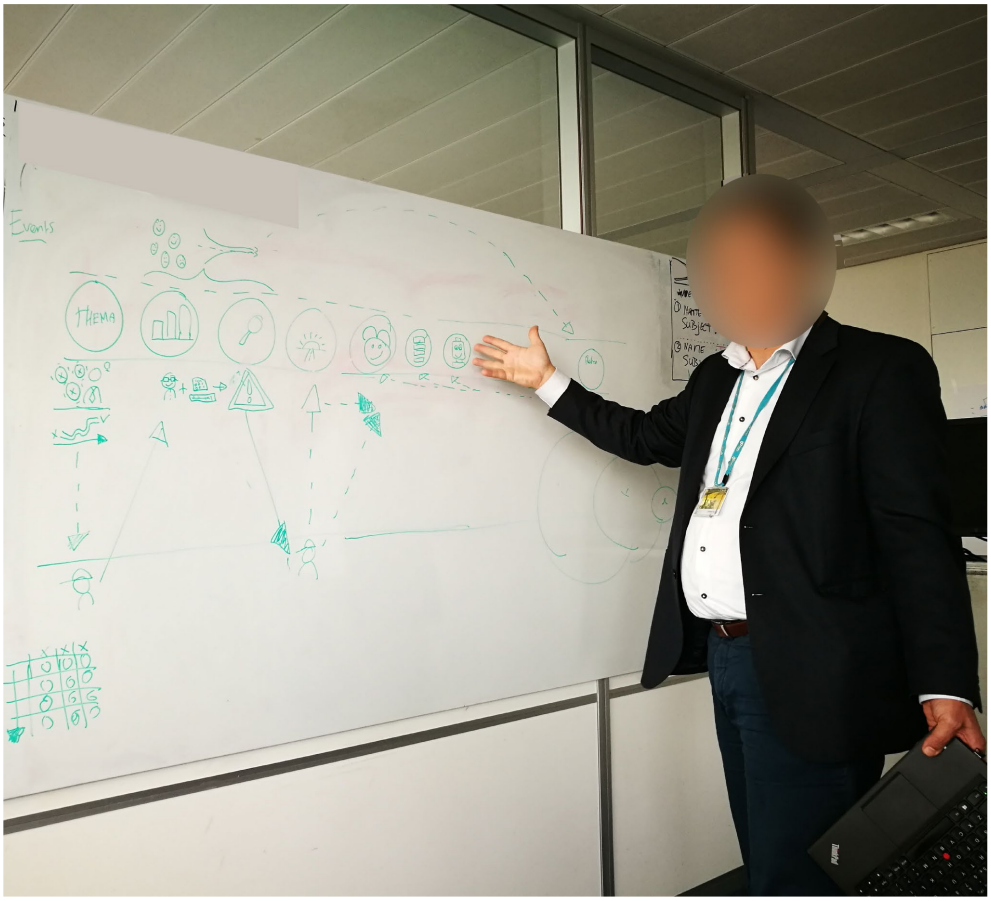

Figure 15: Example of picture taken during field work

Interviews

I conducted 48 interviews whilst embedded at FlyCo. An overview of these interviews is provided in table vii. Of these interviews, 17 were semi-

structured, recorded, and transcribed. The interviews lasted approximately one hour, and the interview guides can be found in appendix A. I conducted 31 informal or 'conversational' interviews, each with a duration of about one hour (Roulston, 2008). As Fetterman explains, "where structured interviews have an explicit agenda, informal interviews have a specific but implicit research agenda" (2008, p. 290). These informal interviews were performed with a goal, but without a pre-composed interview guide. This informal setting allowed flexibility and provided an atmosphere in which participants could speak freely. During these interviews, I recorded notes in my journal. I conducted all the interviews myself, except for three interviews with FlyCo employees during ARC 3. When these interviews were conducted, I was their direct manager, which I suspected might influence their responses. Therefore, these interviews were conducted by a university colleague with whom I had collaborated during the project and who followed the same interview guide. Data (audio files and transcripts) were stored on a secured, university provided, online repository and I obtained informed consent before each interview started.

Table vii: interviews during research project

Action Research Cycle	**ARC 1**	**ARC 2**	**ARC 3**	**Total**
# Formal interviews	4	3	10	17
# Informal interviews	13	3	15	31

The discussed subjects of these interviews changed over time, as the focus of the research developed. The interviews in the first ARC were aimed at gaining a better understanding of the current state of design and innovation at FlyCo. With the interviews during ARC 2, I aimed to gain a better understanding of the effect of applying design practices on challenges related to the VoD. Finally, interviews during ARC 3 focussed mostly on the organisational conditions that contributed to the VoD. During these interviews, specific cases of innovation projects were often discussed and used as examples.

To gain a holistic understanding of innovation at FlyCo, I interviewed respondents who occupied a wide range of positions at FlyCo. Interviewees ranged from the most senior executives to service designers and product owners. I interviewed respondents from various departments at FlyCo; from

those who oversaw day-to-day operational performance to employees whose job consisted of experimenting with futuristic digital technology. I've added an anonymised list of respondents to the appendix which portrays the width of the respondent selection.

Through the interviews, I not only became aware of (the importance of) events that I had not witnessed personally, but I also gained a rich understanding of the experiences of the FlyCo participants. This information, combined with my own observations and reflections, informed the insights in Chapter 5. This information was also input for discussions during several forms of collective inquiry, which I will discuss next.

Collective Inquiry

A pragmatic worldview suggests that inquiry is most effective when done collectively (Lorino, 2018). During specific inquiry sessions, FlyCo participants and I 'co-generated' knowledge whereby,

> The insiders reformulate and revalue their own knowledge in response to queries from the outsider [and]… The outside researcher is assisted enormously in learning things he or she does not know or immediately perceive through dialogue with insiders and through experiencing and understanding shared actions. (Greenwood & Levin, 2007, p. 107)

For example, in ARC 3, I presented a finding to an executive about a perceived relationship between the limited responsibilities of an innovation hub and the VoD. As a response, and by means of explanation, he shared the historical path and decisions that led to this set of responsibilities. This input subsequently ignited a discussion around the assumptions that these decisions revealed. This collective inquiry provided me with crucial historical knowledge to understand the current situation and it prompted the executive to challenge those assumptions.

To create spaces for shared reflection, I built the necessary 'client-system infrastructure'[47] (Susman & Evered, 1978) or 'participatory structures' (Herr & Anderson, 2005, p. 95). In these spaces, we (FlyCo employees and I) reflected on:

[47] This building process is known as 'infrastructuring' in participatory design (Hillgren et al., 2011).

- Research questions and aims, to guarantee that the research focused on issues that were relevant to FlyCo and the academic community;
- Proposed research design, to identify practical/political/ethical (im)possibilities and gain understanding and engagement from FlyCo employees;
- Interim results; to generate additional data such as various viewpoints on the logic behind actions sequences; and
- Findings, to confirm understanding with participants, disseminate knowledge and to identify relevant follow-up research questions

These sessions were either recorded or notes were taken in the journal and included in the data analysis.

Table viii summarises the established infrastructure at FlyCo. On a programme level, I engaged with my three sponsors.[48] In these sessions, we discussed high-level strategic topics regarding the research program (and my thesis). Each produced interim publication (covering multiple projects) was discussed with relevant stakeholders before publishing. I performed 'member checks' with interviewees,[49] where I "presented back to the research community the understandings [I] have come to in the research process" (Herr & Anderson, 2005, p. 85). I used these checks as "an opportunity for further reflecting on members' own experiences and for self-transformation" (Sandelowski, 2008, p. 502). Finally, I reflected with stakeholders on a project level. During these sessions, we dissected our experiences while collaboratively trying to come to conceptualisations. The participants of these sessions depended on the research project (see Chapter 4).

[48] FlyCo employees who (like sponsors in innovation theory) initiated the research project, supported it (financially and politically) and who were deeply engaged with the topic (Cunliffe & Alcadipani, 2016).

[49] The example with the executive was during a member check.

Table viii: various forms of collective inquiry in this research

Reflection level	**FlyCo participants**	**Form**	**Example reflection questions**	**Dominant topic**
Programme	Sponsors	Quarterly 1-on-1 meetings	What worries do they have? What knowledge would they like to have?	RQ's and aims, Research Design, Findings
Paper	Sponsors, interviewees	Sporadic (when writing), 1-on-1 'member checks'	Are my conclusions in line with their experience?	RQ's and aims, Findings
Project	Sponsors, (CE, DigitalOps & InnoHub) Employees	(Bi-monthly) recurring (group) sessions	I noticed this action, can they explain their reasoning?	RQ's and aims, Research Design, Interim results, Findings

To conclude this sub-chapter, I emphasise the differences between collective inquiry and interviewing. In collective inquiry sessions: I reported back findings; conversation was free flowing, although in some instances I did apply some structure; we engaged not only in talking but also in doing, several of these sessions were in workshop format; I engaged with groups of individuals, and; we worked in series, which allowed referring back to earlier insights.

Tertiary data

In addition to actively generating first- and second-person data as discussed above, I collected tertiary data. I used this data to triangulate and confirm the emerging narrative. I consulted three sources for this data: e-mails, (official) internal documents and external reporting. While immersed at FlyCo, I received over 6500 e-mails. In addition, I gathered (and partly contributed to) 675 documents. This collection, which included long-term strategies, internal

presentations, and organisational charts, contributed to my understanding of FlyCo. Finally, I collected newspaper articles, industry reports, annual reports and similar publications related to FlyCo. Taken together, this data further enriched my perspective on FlyCo.

3.5 Data Analysis

AR demands that researchers continuously perform analysis to inform understanding and subsequent actions (Davis, 2007; Greenwood & Levin, 2007). I analysed data in the field (captured via reflective field notes) and more formally as preparation for interim publications. In addition, I undertook an elaborate individual thesis analysis and write-up phase after the immersed period had ended. In this analysis, I revisited all data and findings from previous publications functioned as sensitising constructs (Van De Ven, 2007a). Figure 16 illustrates the data analysis process of abstraction from data to the insights presented in this thesis. In this sub-chapter, I describe the final analysis process, in which I combined three process analysis approaches:[50] visual, thematic, and narrative analysis.

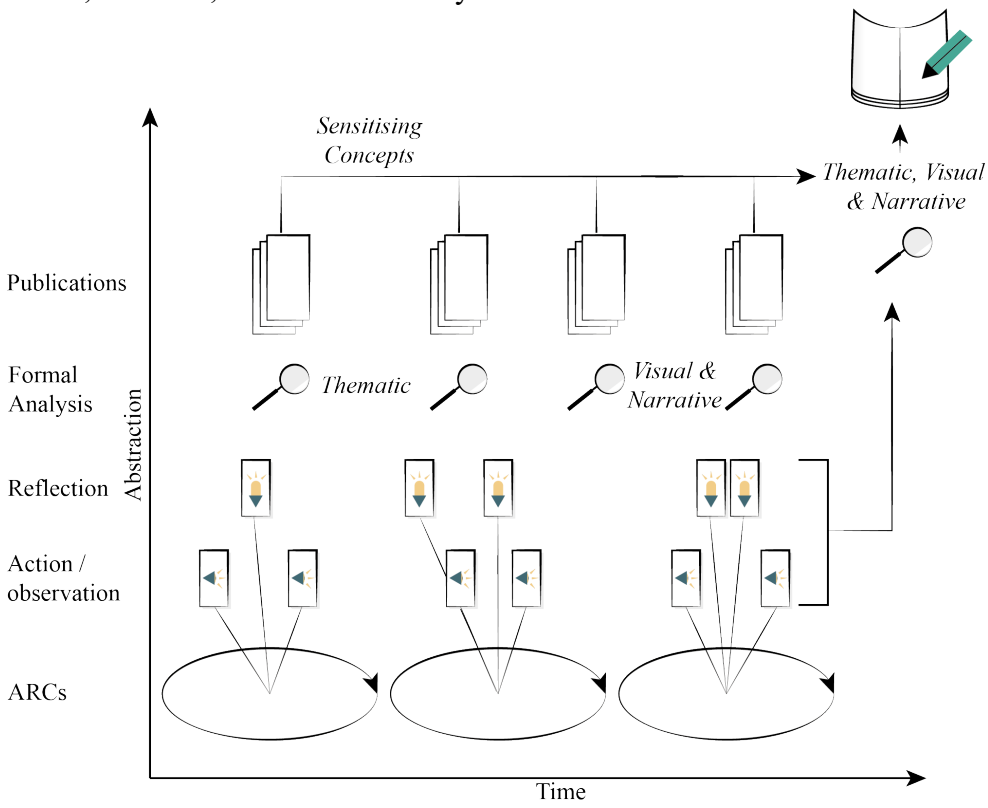

Figure 16: Overview of data analysis process

[50] I will not discuss the analysis processes of the interim publications; these are described in the respective papers.

I analysed data over three stages with the explicit aim of preserving the processual nature of the data. Initially, I applied visual mapping strategy (Langley, 1999) to gain an overview of the data and identify key events. After this, a thematic analysis was performed (Dougherty, 2002). Finally, I used a narrative analysis strategy to cope with an emergent 'mystery' as my experiences conflicted with existing theory, as suggested by Alvesson and Kärreman (2007). This combination of strategies allowed maximum opportunity to theorise from process data (Langley, 1999, p. 708). In the next paragraphs, I describe each analysis step in more detail.

Visual Mapping

Initially, two large longitudinal maps were created, using the field notes to gain oversight in the available data and determine possible moments of interest in the vast amount of data (Van De Ven, 2007a, p. 214). I created a physical timeline, as exhibited in Figure 17, which showed interaction with specific stakeholders, engaged projects, important insights, and the passage of time. In addition, I created a spreadsheet file (table ix is an excerpt), ordered by date, that included *all* events, the involved stakeholders, accompanying insights or observations and their link to research projects. These maps helped identify important insights, transitions, events and build the overall narrative of the research project.

Figure 17: Picture of timeline used to gain overview of data

Table ix: Excerpt from timeline spreadsheet

Date	Event Type	Participant	Project	Observations/insights
01-02-2018	Training	CE Unit	3	Deep Customer Insights Challenge, theory-practice gap
02-02-2018	Interview	Director AA	5	Relation unit AA and unit BB. Friction sources.
04-02-2018	E-mail (in field note)	CE product owners (xx, xx & xx)	3	Multiple incoming requests for design resources and help with innovation process

Thematic Analysis

The second phase of analysis involved a thematic theory-building process in lieu of protocol by Braun and Clarke (2006). During this process, data were coded into more abstract categories, increasingly closer to existing theoretical constructs. These categories informed theory formulation grounded in the data. The flexibility of this approach was vital, as it provided a method to analyse rich, detailed, complex data to produce distinguishable themes (Braun & Clarke, 2006). Specifically, I aimed to identify similarities regarding processes, language, and attitudes (Tesch, 1990).

The coding process was performed using NVivo software. This software supports more efficient data organisation and analysis process, as well as provides search capabilities[51] (Bringer et al., 2004). This software allowed me to code large amounts of data directly into categories. These categories were clustered and organised into families which provided initial insights for the theory formulation phase.

The coding process more specifically involved:

1. Identifying several 'sensitising constructs' (Van De Ven, 2007a). These constructs were the result of reading literature and of a thematic analysis of data collected by a different researcher before my project

[51] An additional advantage of using this software package was the opportunity to include different types of data such as text files (e.g., interview transcripts), images (e.g., scanned field notebooks and pictures), presentation slides (e.g., strategic documents) and audio files (e.g., recorded memo's).

started. That research also focussed on implementation challenges at FlyCo but aimed to identify barriers through cases and interviews. The project had been abandoned after data collection and presented an opportunity to include the perspectives of unrelated FlyCo stakeholders;

2. Performing an initial round of paragraph-by-paragraph 'open coding' of all data, guided by the aforementioned research question and the sensitising constructs (Elliott & Timulak, 2005). I generated fifty-seven (57) first order codes that were close to the participants' expressed experiences, linked to 1136 data points. Each code had three instances, which referenced the ARC in which the code was applied;
3. Producing second order themes by clustering the first order codes. This process of clustering was explorative and iterative, similar to how designers make sense of their research data (Kolko, 2010) and to how De Lille describes her analysis process (2014). The collage in Figure 18 provides a sense of this process, and;
4. Over many iterations, moving from a tentative organisation of these clusters (top-right corner in the collage) to an increasingly coherent framework of insights (bottom-left corner). During this process, I continuously cycled from the overall narrative of the ARCs (the three coloured boxes in the top-left corner), through the clusters (on the table) to the empirical data (organised in NVivo, middle picture on the right) in search of a sense of 'fit'.

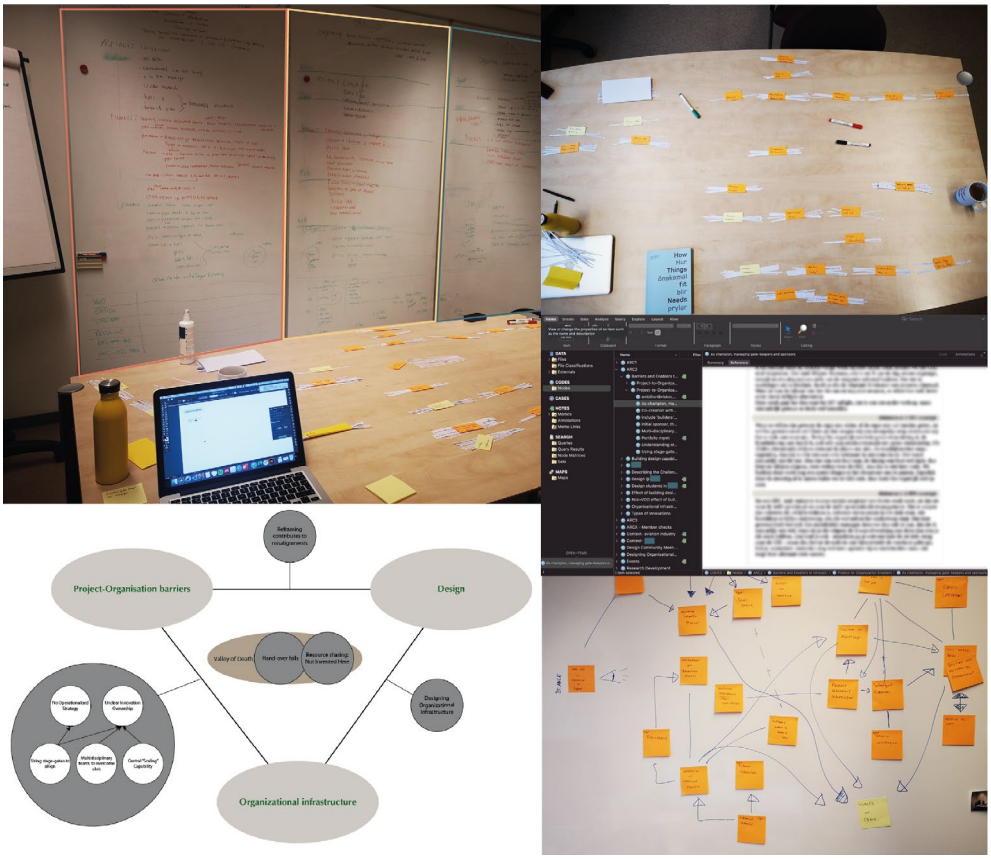

Figure 18: Collage of the thematic data analysis process

Narrative Analysis

Nineteen (19) codes and accompanying themes "leapt out" because of their apparent conflict with existing literature (Gioia et al., 2012, p. 20). These related to how the VoD manifested in this service context. Tracing these concepts on the before-mentioned map illuminated a thread of data, which indicated a breakdown between theoretical assumptions and empirical impressions (Alvesson & Kärreman, 2007, p. 1266). This led to further investigation using a narrative strategy (Langley, 1999). From the data, I constructed narratives of the VoD in a service context and the driving mechanism. The resulting 'thick' narratives (Langley, 1999) are presented in the insights.

In the past sub-chapters, I've discussed my research approach. In the next sub-chapter (3.6), I highlight issues of quality in AR.

3.6 Quality in AR

In this sub-chapter, I present measures implemented to achieve a high standard of AR. I discuss matters of validity before discussing ethical issues.

3.6.1 Validity

As mentioned in previous paragraphs, the underlying assumptions of AR challenge the applicability of quality criteria often used in other forms of (positivist or constructivist) research (Herr & Anderson, 2005). For instance, as Greenwood and Levin (2007) argue,

> Conventional social research believes that only a community of similarly trained professionals is competent to decide issues of credibility, while AR places emphasis on the stakeholders' willingness to accept and act on the collectively arrived at results and the defining characteristic of credibility. (p. 67)

In this sub-chapter, I discuss five 'validity' criteria (Herr & Anderson, 2005) relevant to AR and how I operationalised these. I have compiled criteria from several sources to come to this list (Bradbury et al., 2019; Bradbury Huang, 2010; Coghlan, 2011; Herr & Anderson, 2005).

Outcome validity

Outcome validity refers to whether the performed actions lead to resolutions of the studied problem (Herr & Anderson, 2005), also referred to as 'workability' (Greenwood & Levin, 2007) or 'actionability' (Bradbury et al., 2019). To meet this criterium, I've explicitly and elaborately discussed my objectives in various parts of this thesis (see for instance, Sub-chapter 4.2.3) (Bradbury et al., 2019). I portray the (rationale behind) the performed interventions to achieve these goals and the results in the 'outcomes' section of each project. Additionally, FlyCo stakeholders regularly approached me to collaborate, which I took as a signal that outcomes and insights were indeed seen as valid. Finally, I published an article in a practitioner journal (*Touchpoint)* based on this research, which is a signal that the generated insights were indeed valuable to practitioners.

Process validity

Process validity is increased when cycles of action and reflection are enacted (Coghlan, 2011; Greenwood & Levin, 2007), when it is clear what has been 'counted as evidence' (Herr & Anderson, 2005), when data has been triangulated (Herr & Anderson, 2005) and when research methods and processes are clearly articulated (Bradbury et al., 2019). I've used the previous three sub-chapters to clearly articulate my research methods. I have aimed to triangulate findings by collecting tertiary data, by gathering viewpoints from various stakeholders throughout the organisation and by moving through the organisation myself. Finally, the insights chapter (5) is drenched in the 'voice of the participants' (Bradbury et al., 2019).

Democratic validity

Democratic validity concerns how research and results are relevant to the specific context in which the research is performed (Herr & Anderson, 2005). I took several measures to increase democratic validity: I collaborated with different layers of the organisation (Bradbury et al., 2019) to build a thorough understanding of the context and a collaborative relationship with the members of the organisation (Coghlan, 2011) (see Sub-chapter 3.4 and Chapter 4); the research question and aims were established in consultation with FlyCo employees, and; I engaged in member checking (Sandelowski, 2008). Finally, I've included short descriptions of how I got involved in the various projects in appendix E. With these detailed descriptions, I aim to specify the specific context in which the research was performed and thereby contribute to democratic validity.

Catalytic validity

Catalytic validity refers to whether the project has resulted in education of both researcher and participants (Herr & Anderson, 2005). This requires that authors explicitly locate themselves as 'change agents' and are clear about their role and involvement (Bradbury Huang, 2010). I recount how my own understanding developed throughout the research and articulated my positional development in Sub-chapter 3.3. As the 'narrative turn' during the data analysis suggests (when data did not match the extant literature), I remained open to 'reorienting my view of reality' (Herr & Anderson, 2005).

Dialogic Validity

Finally, dialogic validity suggests that researchers should engage in constant conversation with both existing literature and other researchers (Bradbury et al., 2019), to make sure that the generated knowledge is new and relevant (Bradbury Huang, 2010) and that the researcher remains critical (Herr & Anderson, 2005). Throughout this research, I've engaged a 'critical friend' to help make explicit what I implicitly knew and who challenged the conclusions that I drew from the data (Herr & Anderson, 2005). This role was performed by several university colleagues. In addition, I published and presented at several conferences throughout this research and participated in PhD workshops at academic design and innovation conferences. These activities ensured that I remained critical and was able to formulate my contribution to existing knowledge.

3.6.2 Ethics

Doing AR, as any other (qualitative) research approach, introduces ethical dilemmas. Action researchers must be especially careful as AR "emphasises democratic participation, questioning, reflection and is directed towards change, all of which may be threatening to existing organisational norms" (Coghlan & Shani, 2005, p. 544). In my reflective journal, I captured these dilemmas because as noted by Reason and Bradbury (2008a), the primary rule of AR is "to be aware of the choices one is making and their consequences" (p. xxvii). Here, I discuss two ethical challenges that I encountered and how I aimed to resolve these issues: 'avoiding misrepresentation' and 'doing no harm'.

Avoiding Misrepresentation

There are opportunities to (unintentionally) misrepresent the research or researcher to the participants in AR studies (Cunliffe & Alcadipani, 2016). For example, when I attempted to gain access, I presented the research and myself in a certain way, aiming to balance accuracy with effectiveness. Partly, I mitigated this issue by gaining formal informed consent, for example when I conducted interviews and at the start of all research projects. However, as I became an increasingly integral part of FlyCo, it was impractical to start each conversation with an elaborate description of my research. Instead, whenever I first met a FlyCo stakeholder, I introduced myself as researcher first and

attempted to (however briefly) explain my research. As part of that explanation, I mentioned that I gathered data through engagement with FlyCo employees and by observing the company from within. In addition, in settings where I deemed it impossible to make myself known as researcher (e.g., large company gatherings), I recorded only anonymised data. Furthermore, I was always honest about my role as researcher (Coghlan & Brannick, 2005).

Avoiding Harm

Although scholars note that the required relationships and democratisation of the AR process already contribute to this goal (Walker & Haslett, 2002), I've taken several measures to avoid doing any unintentional harm to FlyCo stakeholders. For instance, I gave respondents the opportunity to check my publications before making them public. In addition, when considering actions in the field I was guided by ethical principles set forth by Gellerman et al. (1990).):

1. Serve the good of the whole;
2. Treat others as we would like them to treat us;
3. Always treat people as ends, never only as means;
4. respect their being and never use them for their ability to do;
5. treat people as person and never as subjects;
6. Act so we do not increase power by more powerful stakeholders over less powerful, and;
7. Finally, I ensured that stakeholders remained anonymous, both towards each-other and in my publications (Cunliffe & Alcadipani, 2016).

In this sub-chapter I highlighted how I aimed to do valid and ethical research. In the next and final sub-chapter of the research design chapter, I provide an overview of FlyCo.

3.7 Research Context

AR aims to produce knowledge that is context dependent. To portray this context, I've included a description of FlyCo and the aviation industry in appendix D. The description includes a description of how I entered the field and gained access to the company. This description contributes to the 'transferability' (Herr & Anderson, 2005) of the findings and to transparency

of the research approach. The next sub-chapter is an abstract of this description.

The aviation industry is a highly regulated, commoditised, and complex industry where the economics of the industry favour exploitation of value over exploration of new value. FlyCo is a relatively small, profitable, legacy airline carrier with a traditional, hierarchical organisational structure as the simplified organisational chart (of 2017) illustrated in Figure 19 shows.

FlyCo's culture was described as a typical 'airline culture' with high regard for safety. The culture was described as risk-averse and short-term focussed.[52] In contrast, stakeholders also mentioned that FlyCo had been successful in the past through its 'pioneering spirit'. Furthermore, the culture was described by stakeholders as 'operation is king'. By this, they referred to the perceived dominance of operational interests (as opposed to customer experience or sales) in business decisions. Finally, FlyCo fostered a competitive culture which employees related to a siloed culture. Collaboration across departments was difficult.

The colours of the boxes in Figure 19 show the level of involvement of these units in this research. The red boxes include the departments that I collaborated with intimately throughout my research. In the first ARC, I collaborated mostly with DigitalOps, InnoHub and Design Doing. In the second, I engaged with the Customer Excellence Department. In the third and final ARC I became part of the management team of DigitalOps, as interim manager of the InnoHub team. The units with orange boxes were involved with the research but weren't involved in the design of the cycles or determining the aims of projects. The yellow boxes are units where I merely conducted interviews.

[52] According to an executive, FlyCo never created strategies that looked further ahead than one year.

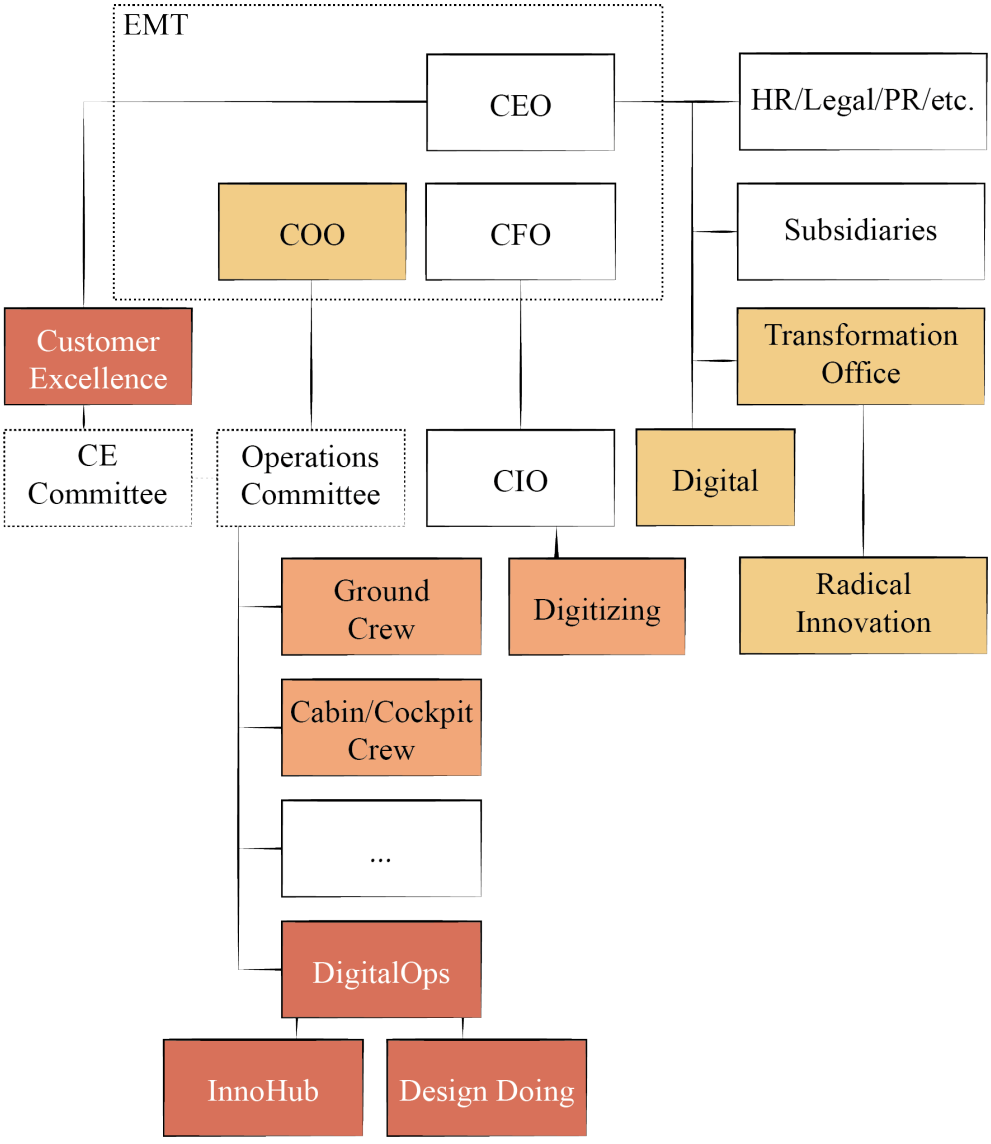

Figure 19: Simplified illustration of the corporate structure of FlyCo

Recent marketplace developments, noticeably pressure from both low-cost airlines and high-quality 'Gulf' carriers, placed FlyCo in a challenging competitive position. In 2014, a new CEO was named, who announced a new corporate goal: to become "the most customer-centric, innovative and cost-efficient network carrier" of the region. Subsequently, the CEO presented a 5-year strategy that included two pillars: to become more customer centric and digital.

Design thinking was positioned as one driving force for achieving customer experience. In 2017, after several years of pilot programmes, FlyCo formalised a partnership with the design faculty of a university. As part of this agreement, which included funding for my research project, design students would continue to perform design projects in collaboration with FlyCo employees. Additionally, the university and FlyCo collaborated to strengthen FlyCo's design capabilities. This program, part of DigitalOps (see Figure 19), was named Design Doing.

However, in discussions with stakeholders I learned that the transformation was hindered as projects often encountered a VoD. The severity of the issue was confirmed in 2018, when thousands of FlyCo employees gathered for a yearly address. Halfway through the event, one of the chief executives entered the stage to provide his view on how the company was developing. He had one main message for his audience: "We've invested a lot in our capacity to generate new ideas and create prototypes, now it's time to become good at implementing these ideas. Innovation is implementation."

One initiative FlyCo had recently established to achieve change was an innovation hub, InnoHub, inspired by similar hubs that were established by other (hospitality) service organisations (Ahuja, 2019; Verganti et al., 2020). Employees at this hub employed a design innovation methodology, which they developed in collaboration with a university (Stoimenova & De Lille, 2017) and had achieved several high-profile successes. However, as many other innovation hubs (Solis et al., 2015), this unit increasingly noticed that they encountered difficulties during the implementation process. They were open to collaborate with me to investigate the issue together, which formed the initiation of my research project.

To understand the innovation process as it unfolded in FlyCo, I needed to gain access to the backstage of organisational life at FlyCo (Cunliffe & Alcadipani, 2016). Backstage data can be accessed through *immersion* (Herr & Anderson, 2005). Achieving immersion is a complex process, because it requires "negotiating boundaries between hierarchical levels, different departments and positions" (Cunliffe & Alcadipani, 2016, p. 16). This type of access is not acquired with merely reputational capital (which may provide acceptance and credibility); immersion requires building trust from organisational stakeholders. Trust building is a continuous process, but three actions performed specifically to gain trust were:

- Learning the lingo (Costas & Grey, 2014) (i.e., adopting the operational airline language that is used by FlyCo employees);
- Leveraging internal sponsors (MacLean et al., 2006) (i.e., asking prominent organisational members to facilitate and champion the research within the organisation), and;
- 'Humanising' as researcher (Daniel-Echols, 2003) (i.e., participating in social activities, both formal and informal, to build a relationship with research participants).

These actions contributed to gaining access and building trust. Over the course of this research however, I needed to *maintain* access. This "ongoing process of discovery, of opening various doors, building relationships, and maintaining secondary access once in the field" (Cunliffe & Alcadipani, 2016, p. 12) required: continuous explanation of the research; considering the local context when designing actions; respecting local culture, and; being neutral to units, but in favour of the organisation.

3.8 Chapter Summary

In this chapter, I provided an overview of my research process. I initially introduced pragmatism and a process perspective as philosophical venture point. From there, I discussed my strategy of inquiry: Action Research. After explaining how I operationalised this approach, I exhibited in more detail how data was generated and analysed. Next, I discussed how I approached and aimed to increase quality in the research design. In the final sub-chapter, I provided an abbreviated description of the research context and how I gained access to the field. In table x, I summarise the main insights as presented throughout this chapter.

x: Summary of discussed topics in this chapter

Sub-chapter	Topic	Notes
3.1 Philosophy	Process Research	A process perspective to studying change with a 'weak process' view of organisations.
	Pragmatism	There is a single objective world, yet that we can only subjectively perceive this world, theory and practice are inseparable and research is a quest to find 'what works'.
3.2 Strategy of Inquiry	AR	Action Research (AR) is an 'orientation to inquiry' in which researchers participate in 'communities of inquiry' to generate practical knowing. AR is characterised by a reflective cycle as knowledge generation mechanism.
3.3 Operational-ising AR	Positionality	Shifting from 'insider and outsider teams' to 'insider with insiders'. Moved both laterally (different unit) and vertically (different hierarchical level).
	Role of Literature & Writing	Literature study, analysis and writing were intertwined as understanding of context and phenomenon grew
3.4 Data Generation	Field Work and Journaling	Captured observations and 'speculative-personal reflections' on naturally occurring events and (the results of) performed interventions. Includes drawings and text.
	Collective Inquiry	In 'participatory structures', we (FlyCo employees and I) reflected on: research questions and aims; proposed research design; interim results and findings.
	Interviews	I conducted forty-eight (48) interviews, seventeen (17) were formal semi-

		structured and thirty-one (31) were 'conversational'.
	Tertiary data	Collected internal and external documents to triangulate and confirm the emerging narrative, such as news reports and internal strategic presentations.
3.5 Data analysis[53]	Visual mapping	Two large longitudinal maps were created to gain oversight in the available data and determine moments of interest.
	Thematic Analysis	Using software, data were coded into more abstract categories, increasingly closer to theoretical constructs.
	Narrative Analysis	A breakdown between theoretical assumptions and empirical impressions was explored through narrative analysis.
3.8: Research Context	Aviation Industry	A highly regulated, complex, and commoditised industry, in which exploration is challenging.
	FlyCo	Relatively small, profitable, legacy airline carrier with traditional, rigid organisational structure. Hierarchy and safety were important cultural pillars.
	Transformation, Innovation & Design	Recently established design-driven innovation hub 'InnoHub' to achieve architectural transformation. Design thinking was positioned as one driving force for achieving customer experience. Design Doing programme to build capability and launch design projects.

This summary concludes the action research design chapter. In the next chapter, I provide my results: a narrative of three ARCs.

[53] Supported by NVivo software.

Chapter 4. Action Research Cycles

4.0 Chapter Overview

This chapter includes the narratives of the three Action Research Cycles (ARCs) that I performed. Together, the following sections form the overall 'narrative of action' (Greenwood & Levin, 2007) of this research. This narrative focusses on project outcomes and is considered my 'results'. The project outcomes inform my research outcomes, which I present as 'insights' in the following chapter. These insights are informed not only by what happened but also by how stakeholders reflected on actions and outcomes accumulated over multiple ARCs and projects. I've included only actions and results that contributed to insights in this narrative. Actions that didn't noticeably contribute to my response to the research questions, such as administrative tasks performed as manager at FlyCo, were excluded for brevity.

For the reader, I introduce an artificial boundary between what *happened* (narratives, this chapter) and what was *learned* (insights, Chapter 5), as if all the insights came after the immersed period concluded. This divide is to improve transparency and readability. Factually (as discussed in Chapter 3), learning happened continually through iterative cycles, as is the hallmark of AR (Reason & Bradbury, 2008b). Summing up, in this chapter I describe actions and outcomes (and refer only to research outcomes insofar they informed subsequent actions) whereas in Chapter 5, I combine the outcomes with the reflections of stakeholders to come to Insights.

Chapter 4 is structured as follows: I provide an overview of the ARC and the research projects in Sub-chapter 4.1. After this, Sub-chapters 4.2 to 4.4 each describe one ARC and all projects that were performed during each ARC. In line with AR methodology (Coghlan, 2011; Kock, 2017) the descriptions include:

- Diagnosing & Action Planning
  - For ARCs: what were the research aims?
  - For projects: what was the background and what were the project goals?
- Action Taking
  - For ARCs: which projects are part of the ARC and what additional actions did I perform?
  - For projects: a timeline of events during each project is included in appendix F.

- Evaluating and specifying learning
  - For ARCs: Did I achieve my research aims? How did they inform the insights?
  - For projects: what happened as an outcome of the actions? Were the project goals met?

4.1 Overview of ARCs

Before diving into the details of each cycle, I hereunder provide an overview of the ARCs and of the projects.

Research Cycles

This research projects consisted of three ARCs in which five projects were performed, completed over 15 months. I distinguish ARCs by their distinct set of research goals and engaged group of internal stakeholders. Projects are set within ARCs, with subsets of FlyCo personnel, distinct goals and clearly identifiable begin and endpoints. In the first ARC, I focussed on building a network and gaining an understanding of FlyCo, the innovation (implementation) process and the VoD. This motivated actions such as informal meetings with a diverse set of stakeholders. This wide scope was accompanied by a wide selection of involved stakeholders. Most central to this ARC were the DigitalOps department, the InnoHub unit, and the Corporate Innovation unit. In ARC 2, the focus moved towards investigating conditions that contribute to a VoD with a focus on the role of design practices. In this cycle, I collaborated with stakeholders from the Customer Experience (CE) department as well as other units that leveraged design practices (InnoHub and Digital). In ARC 3, the focus shifted towards how interventions in organisational context could mitigate the VoD. Actions that accompanied this research aim required close collaboration, which is why ARC 3 was performed in the context (again) of InnoHub and the DigitalOps department, where I had accumulated the most profound relations. An overview of the (abbreviated) goals and relevant stakeholders can be found in table xi.

Table xi: Research goals and key engaged units of each Action Research Cycle

Action Research Cycle	ARC 1	ARC 2	ARC 3
Research Goals	• Understand company context • Understand VoD Build Network	• Understand relationship Design Innovation and VoD	• Understand (effect of) interventions in organisational context on VoD
Key engaged units	DigitalOps, InnoHub, Corporate Innovation	CX, InnoHub, Digital	DigitalOps, InnoHub

Research Projects

Figure 20 schematically illustrates the five projects of this research. In process research, what constitutes a 'project' depends on one's perspective, as Langley and Tsoukas note:

> Discreteness is only apparent … what is fundamental, which our pragmatic concerns in everyday life hinder us from noticing, is the flowing character of experience – the experience of temporal flow is more real than the apparent discreteness of the past-present-future structure we ordinarily notice. (2016, p. 5)

In line with this view, I define 'projects' from my perspective as action researcher in the field. The 'projects' in this thesis appear to have a clear beginning, middle and end, corresponding with my engagement in these projects. In reality, what existed before were merely 'less organised' groups of people (Dunbar & Bechky, 2016). Additionally, after my 'project' ended, actions often continued albeit in a (temporarily) less organised form. In other words, instead of viewing my actions as discrete projects, I recognise them as periods in which I catalysed a group of people to reach a certain goal, which is in line with considerations of the Design Innovation Catalyst (Price et al., 2018).

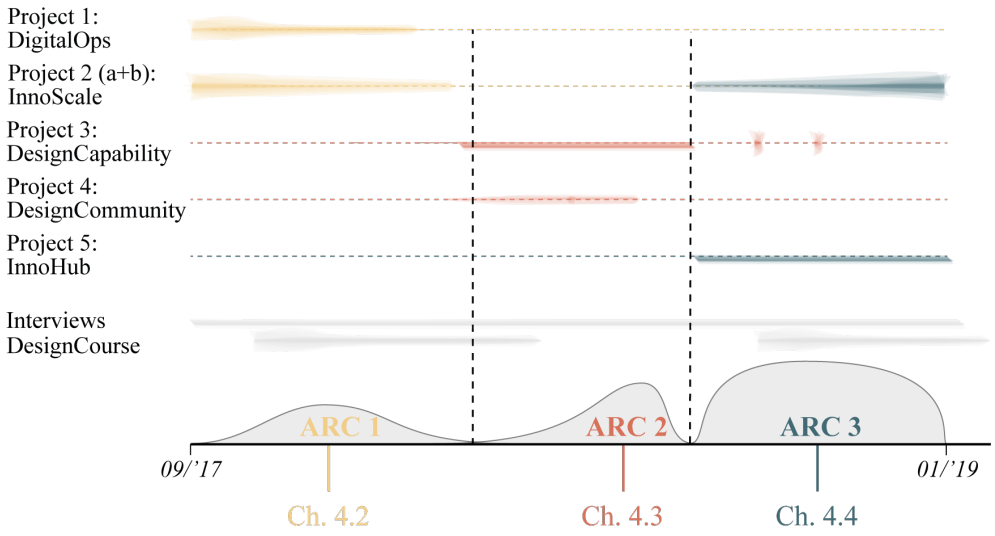

Figure 20: Overview of project timing and relation to ARCs

Project Characteristics

Projects varied in size (e.g., length of project, amount of resources invested) and scope (e.g., number of people involved). The DigitalOps, DesignCapability and InnoHub projects all required significant investment. Project DesignCommunity was less resource intensive and was performed alongside other projects. Actions related to the large InnoScale project started in ARC 1 and were continued again throughout ARC 3. Because my positionally shifted between ARC 1 and ARC 3, I discuss actions and outcomes from these ARCs separately (further referring to them as project 2a and 2b).

Researcher responsibilities in projects

In each project, I assumed a different role dependent on the needs of FlyCo and my research aims for that ARC. For example, in the InnoScale project, my responsibilities initially was to provide theoretical guidance and challenge how 'things were always done'. On the contrary, during project InnoHub, I had managerial responsibilities and was responsible for project progress and facilitation. Table xii provides summaries of the projects and my responsibilities in each project. The range in responsibilities provided varying opportunities to engage with FlyCo employees and allowed various degrees of freedom to probe and learn.

Table xii: summaries of the five research projects with responsibilities of the researcher in these projects

Project name	**Project Summary**	**Researcher Responsibilities**
1. DigitalOps	Organised strategy-making process which aimed to resolve internal innovation challenges and produce a department vision	• Co-created event program and facilitate Management Teams (MT) reflection and iteration between events • Recruited and instructed other design facilitators • Facilitated during the program
2 (a/b). InnoScale	Member of a task force which aimed to 'scale' the internally developed design innovation practice of an innovation hub and improve the effectiveness of the hub	• Provided theoretical contribution to the task force • Coached stakeholders to apply the developed design methodology and feedback observations to task force • Facilitate process to co-design interventions to improve implementation
3. DesignCapability	Trained and coached CE department management and members in design innovation methodology	• Developed and twice deployed 2-day training to introduce design methodology and subsequent monthly trainings • Provided 1-on-1 project coaching to department employees

		• Consulted directors and executive of department to facilitate the adoption of the methodology
4. DesignCommunity	Member of task force which aimed to align the design practices and tools of various design departments	• Identified and connected design teams • Facilitated process of practice exploration • Provided input and determine prerequisites for the development of a shared toolbox
5. InnoHub	Interim position as manager of a design-driven innovation hub	• Executed operational responsibilities towards team members and MT • Communicated with internal stakeholders • Designed and facilitated a project to define a new strategy and organisational infrastructure

Project relations

Characteristically of AR, my projects built on each other. Insights from one project led to new questions which I attempted to answer with new projects (Greenwood & Levin, 2007). I discuss the connections between these projects in the 'background and goals' section of each project in the following sub-chapters. Figure 21 shows an overview of how the projects were connected to each-other and the involved FlyCo departments. All initial projects were started based on previous engagements between FlyCo and my research institute. DesignCommunity was started based on the learnings from the DesignCapability and InnoScale projects that greater impact may be realised if various design-driven units shared practices and resources. Project InnoHub

started as a response to challenges to implementation as encountered during InnoScale and as a follow-up of project DigitalOps (to apply design practices to change organisational structures). Findings from the InnoScale project informed the DigitalOps and InnoHub projects, as there was a large overlap in stakeholders.

Figure 21 illustrates how, over the course of the research project and with a deepening bond of trust, my responsibilities and influence increased (as also evident from table xii). During project InnoScale and DigitalOps, my responsibilities were to advise and provide input. During DesignCapability, this was continued, yet I also became a coach and trainer, which granted more authority and influence. Case in point: the executive in charge of this department formulated specific outcomes from my work. Finally, during project DesignCommunity, InnoScale part 2 (Project 2b), and InnoHub, I was heavily involved in agenda setting and was held accountable for outcomes.

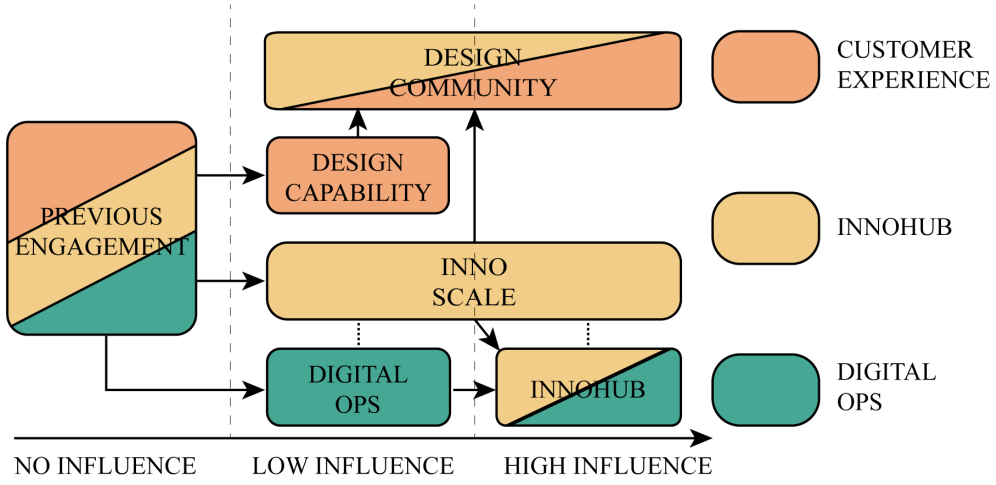

Figure 21: Relations between projects and the involved main stakeholders

In sum, this research consisted of three ARCs with five research projects. Projects varied in size, type of researcher responsibilities, and involved stakeholders. Projects built on each-other as new insights were gained and my network expanded. In the next sub-chapters, I describe each cycle and all projects in detail.

4.2 Action Research Cycle 1

Whilst building trust and gaining access to the 'backstage', I performed the first ARC (see Figure 22). This was an explorative cycle, in which on-site

fieldwork, interviews, and literature review shaped my perspective on FlyCo, the research topic and research questions. During this period, I visited the offices of FlyCo for 2-5 meetings per week.

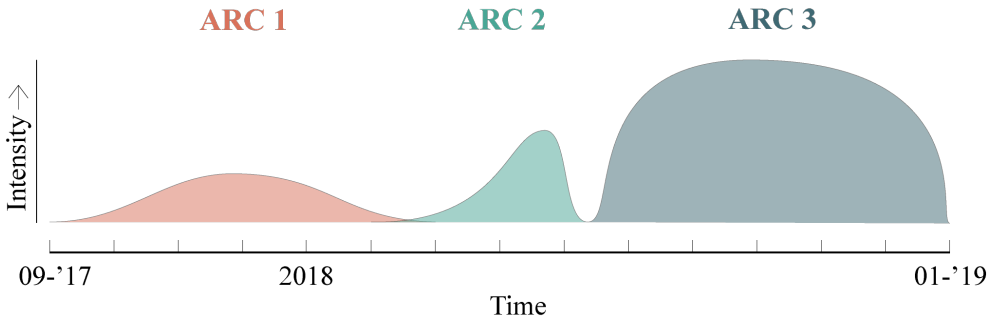

Figure 22: Three Action Research Cycles

4.2.1 Research Aims ARC 1

After gaining access to the organisation (as described in appendix D), ARC 1 was used to build a network, gain an understanding of the research context, and understand the VoD as it unfolded in practice. Table xiii summarises these aims and provides example questions that guided the research. The goals were exploratory, as many parameters of the research were yet to be confirmed. The process during this period resembled that of 'investigating a murder scene': initially everything and everyone seemed relevant, but gradually key stakeholders and constructs were identified and the research questions became more focussed.

ARC 1 started with interviews with a broad array of stakeholders and leveraging 'coffee-machine' talks whilst keeping an open mind and being sensitive to any new information. These activities align closely with the 'Dissect' phase of a Design Innovation Catalyst research project (Wrigley, 2016). At the same time, research questions (as phrased at the time) and academic literature helped to 'zoom-in' on relevant information and stakeholders. Eventually, as projects were identified and established, I started to perform actions.

Table xiii: research aims of ARC 1 with example questions

Research Aim	Example Questions
To build a network at FlyCo	• Who is engaged with innovation? • Who leads and manages innovation initiatives? • Where are designers placed inside FlyCo?
To understand the research context	• What is the history of FlyCo? • What is the dominant culture? • What are the departments of Grandly and what activities do they perform? • What is the commercial/operational strategy of FlyCo? • What are existing perspectives on Design? • What are existing perspectives on Innovation?
To understand the VoD in the context of FlyCo	• How does the VoD phenomenon manifest in this service context? • What barriers contribute to the VoD?

4.2.2 Action Overview ARC 1

The majority of ARC 1 actions were part of two projects, described in the following sections (4.2.3 and 4.2.4). I performed additional activities. These activities helped achieve the research goals, yet they were not part of the before-mentioned projects, for instance because other stakeholders were engaged.

- I participated in the internal *Operational Excellence* Masterclass. Along with 15 senior employees, I was invited to participate by my sponsor (Director 4), who was the manager responsible for this masterclass. Although the masterclass emphasised operational topics, it reviewed the strategy at a high level and compared FlyCo with other airlines. This added valuable knowledge regarding FlyCo's operating model and strategy. The setting provided an opportunity to ask clarifying questions and probe fundamental assumptions.
- I performed semi-structured interviews (Blandford, 2013) to collect diverse perspectives on FlyCo, innovation and design. I conducted four formal interviews (recorded and transcribed) and thirteen (13)

informal interviews. A more detailed description of the procedure and participants of these interviews can be found in Sub-chapter 3.4.

- I engaged in interactions with the Corporate Innovation unit (field note, 10/10/'17, 01/11'17, 06/11/'17, 25/11/'17). This unit aimed to facilitate innovation throughout the organisation. In this unit, P-Manager 2 was tasked with improving the innovation capability of FlyCo. These interactions offered insight in a (top-down) perspective on the organisation and provided insight in strategic processes, as the Corporate Innovation unit was part of the strategy-setting department.
- I engaged in collaborative sense-making (Herr & Anderson, 2005). I discussed the findings of an initial paper with FlyCo employees and presented at a research program review meeting. These meetings contributed to my legitimacy and provided an opportunity to discuss results directly with one of the most senior stakeholders of the company (CXO 3).

4.2.3 Project 1: DigitalOps

Background & Goals Project 1

Developments in technology allow airlines to increasingly make operational decisions using large amounts of data and algorithms with "Decision Support Systems" (Andreatta et al., 2014). The potential gains of improving the quality of operational decisions using modern software are considerable (Verganti et al., 2020), but to realise these gains, airlines need to build in-house software development capabilities (Ivanov & Netjasov, 2014).

FlyCo developed Decision Support Systems in a strategic collaboration with an external consultancy agency, which subsequently led to the formation of a department in this thesis referred to as DigitalOps (internal document, 05/'17). Combined teams of FlyCo employees and employees from this consultant designed, developed and implemented the Decision Support System software. Because of the strong digital component of this initiative, collaboration and funding of the IT departments within FlyCo was needed, on top of the involvement of the operational organisation. Software development required work, attention and sign-off from an increasing number of employees and a wide array of departments within FlyCo.

After increased investments and growth of the department (internal documentation, 10/'18), a need for alignment arose among the employees of

DigitalOps. A feeling of disconnect had arisen between various teams operating as part of (or with) the DigitalOps department (field note, 15/11/'17). A lack of collaboration between teams hindered the impact of the department as a whole because projects weren't implemented (field note, Director 4, 02/11/ '17). Instead of working towards a shared vision, the teams were focussed on their own product and projects (internal document, 11/'17). This was problematic, as several teams depended on each other's work for project implementation. In other words, the teams that developed the Decision Support Systems weren't autonomous, nor were they aligned (field note, Director 4, 30/11/'17). To respond to this need, Director 4 initiated a series of workshop days which would be called the 'DigitalOps Accelerator days'.

For Director 4, the Accelerator days were an opportunity to experiment with the use of design practices in strategic organisational design processes (field note, 10/10/'17). He expected that the future-oriented, visual, and co-creative practices of designers would facilitate the process. By involving the employees in the process of organising their department, he hoped to realise a smoother process with a better outcome that the employees felt engaged with. I was asked to help organise this process and bring 'inspiration from the design world' (internal communication, 26/10/'17).

Involved Stakeholders

The project consisted of two phases: a collective three-day workshop series and a series of parallel follow-up projects with a small task force. The first phase of this project was organised by 11 employees. Within this group, six people were in the lead. Three external consultants were involved in facilitating the first day, as well as one illustrator and six design facilitators. The facilitators were strategic design students.

The three-day workshop was attended by a mixed group of employees from departments that collaborated with DigitalOps as well as the employees of DigitalOps. The first day was the largest, with an attendance of 90 people over the day. The last two days involved only the employees of DigitalOps, totalling about 40. The second phase, titled 'Road to production', kicked-off with a large session with 19 employees. The follow-up was performed by a core group of four employees who met regularly.

Researcher Responsibility[54]

As part of the organising team, it was my responsibility during this project to take a design perspective and co-create the event program. I also facilitated the DigitalOps Management Teams in their reflection between and after the events. My tasks ranged from determining the program timing to selecting the appropriate tools and deciding an output format. Furthermore, I recruited and instructed the design student facilitators for the first day. Finally, during the event, I facilitated a project group throughout the program.

Goals

The project had two goals (internal documentation, 03/'18):

1. To align all employees that worked in-, for-, or with the projects of DigitalOps on the goal and shared values of the department. Additionally, and based on above agreement, we aimed "To facilitate a dialogue between management and the employees involved in innovation" regarding a new organisational structure which prescribed: how the department was organised, how information was shared, how the department was managed and what the shared 'way of working' was. (External consultant, internal document, 11/'17)
2. To develop a vision for FlyCo operations in 2025 on select technological innovation themes, including concepts to be implemented in the short-term. In my notebook, I summarised this aim as to achieve a "shared understanding of current situation and future vision" (field note, 1/11/'17). In line with rethinking the goal of the department and to improve long-term orientation and collaboration, the event included co-creation sessions in which the employees created conceptual presentations (i.e., visualisations) of future products. Within the workshops, these ideas were further developed so that teams could start working on these products in the short term.

Appendix F1 includes a detailed timeline of the events of Project 1.

[54] In Appendix E1, I describe how I gained access to this project.

Outcomes Project 1

Participant experiences

The first two days of co-creation sessions were experienced as positive and energetic, the third day was challenging. The three word clouds in Figures 23, 24 and 25, created from responses from employees at the end of each day, illustrate the experiences of the participants.[55] Whereas the first two days spurred responses such as 'inspiring' and 'cool', the third day was 'confusing' and 'difficult'. During evaluative meetings, these impressions were confirmed by the core organising team.

Figure 23: Participant responses after day 1 of the Accelerator days

[55] In these figures, larger font size represent more-often mentioned words than smaller font size.

Figure 24: Participant responses after day 2 of the Accelerator days

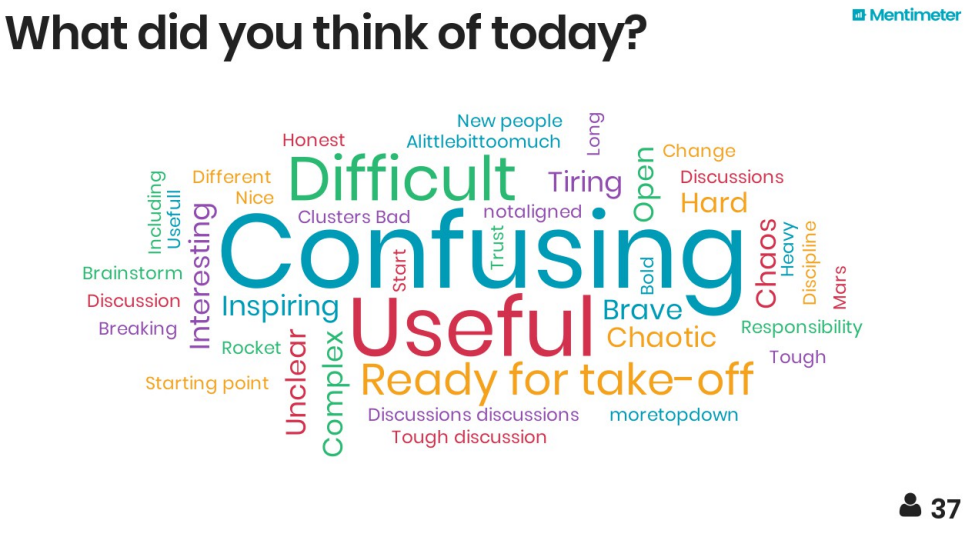

Figure 25: Participant responses after day 3 of the Accelerator days

In other visualisations of the interpretation of employees of the core of their department, words such as ‘collaboration’, ‘together’ and ‘multi-disciplinarity’ appeared in large font. As the goal of the project was partly to bring employees together and align them, these results were viewed as positive by management. Altogether, the days provided valuable output for

management, whilst employees appeared to have had a mostly positive experience.

Goal 1: To align all employees that worked in-, for-, or with the projects of DigitalOps on the goal and shared values of the department

The output from the sessions consisted of several more or less tangible artefacts. To align employees and improve collaboration, a manifesto was created along with guidelines such as "Fail fast, learn fast, succeed fast". Additionally, the teams designed new rituals and practices to facilitate collaboration and alignment. They agreed to adopt a set of specific terms when communicating with other FlyCo units and to install a recurring cycle of activities and rituals which aimed to improve planning (e.g., quarterly planning events) and cohesion (e.g., monthly drinks). Alongside this rhythm, they specifically agreed that each team had considerable flexibility regarding their use of tools and methodology. After the third session, management was able to draw-up an initial proposal for a new team-structure, aimed to facilitate the realisation of the newly created vision. This vision was based on a new interpretation, and visualisation, of the activities that the department performed. Together, all these activities reinforced a shared identity and way of working, whilst allowing freedom for teams.

One notable outcome was the inability or resistance of teams to propose a new team-structure for their own department. As part of the co-creative theme of the event, the organising team had decided to co-create a manifesto, a vision and the projects that would realise this vision. After concluding that the current structure of DigitalOps wasn't compatible with the new vision, the core team asked the employees of DigitalOps to propose a new organisation that would be better suited. The teams opposed this approach (internal documentation, 12/'17). In an evaluating meeting with Director 4, he expressed that it was a deception for him and that he, as 'management', had to propose (or impose) a new structure instead of co-creating it with the employees that were going to 'use' the new organisational design (field note, 26/10/'18).

Goal 2: To develop a vision for FlyCo operations in 2025 on select technological innovation themes, including concepts to be implemented in the short-term.

A second collection of outputs described the co-created vision for the department. The department director shared a 'storyboard' which described a future vision. This vision, titled 'Let's turn operations into a competitive advantage' described a fundamental *reframe* of how to manage operations and the intended benefits to users (both employees and airline customers). Additionally, a document was created which detailed the various components (or products) that were needed to realise the future vision. Finally, design guidelines were presented that showed how the vision could be materialised through the products that were developed. Examples of these guidelines were: 'We *empower people* to ask and answer complex question', 'we realise it's not about single KPI's, but about *integrating journeys'* and 'We include an *auto-pilot* button when possible'. The storyboard, components and guidelines formed a coherent framework that guided employees toward a shared future vision.

Several issues that surfaced during these three days required more time and dedicated attention. For these issues, smaller task force teams were formed. In the context of this research, one of these topics was especially interesting: "Road to production". This task force aimed to smoothen the 'scale-up' or implementation process. The project spurred a continuous dialogue in which problems and solutions related to innovation implementation were discussed. These 'follow-up' sessions culminated in a proposal for a new process, project organisation and technology. From calls with internal stakeholders I learned that months after I departed FlyCo, a new product team was set up using the revised organisation and process (as discussed in ARC 3).

4.2.4 Project 2a: InnoScale

Background & Goals Project 2a

To build design expertise at FlyCo, employees at InnoHub developed a context-sensitive design approach (Stoimenova & De Lille, 2017). When I entered the organisation, InnoHub had recently started 'Scaling the InnoHub Way-of-Working' (field note, 28/11/'17). This implied diffusing the design practice across the rest of the organisation to further legitimise design and

increase InnoHub's effectiveness. P-Manager 3 initiated a taskforce to help establish this task which had taken its first steps in the form of codifying the process steps of their innovation method[56] (field note, 26/10/'17).

However, as InnoHub started championing and 'scaling' both their concepts and their design-driven methodology, challenges arose. Principal stakeholders of InnoHub started to raise concerns that concepts weren't being implemented (field note, 08/12/'17 and interview, Manager 7, 14/02/'18). InnoHub experienced an inability to "Go from experimentation to industrialisation" (interview, PO 1, 21/08/'18). As Director 4 and P-Manager 3 noted, there were concerns that InnoHub was incapable of satisfying the many requests that were being submitted (field note, 02/02/'18).

Additionally, during attempts to scale the methodology, InnoHubs legitimacy was challenged because of their lack of recently implemented innovations (field note, 17/08/'18). InnoHub employees mentioned their dismay at this response, as one of their main goals for organising these trainings was to create a more fertile ground for their innovations to be implemented (field note, 08/10/'18). On the whole, InnoHubs' momentum, and thereby for a part the momentum of design innovation, was slowing down. As Manager 10 noted, "The energy of InnoHub is stagnating" (field note, 22/06/'18). With the InnoScale project, InnoHubs stakeholders aimed to reverse that trend.

Involved Stakeholders

The main stakeholders for this project were:

- P-Manager 3 and his successor P-manager 4;
- Manager 7, the manager of InnoHub;
- Manager 12, the manager responsible for the Design Doing programme;
- Service Designer 5, who was responsible for the professionalisation of design practice at InnoHub;
- P-Manager 7, the manager of a unit at FlyCo's Engineering and Maintenance department (from hereon: E&M hub) that wanted to replicate InnoHubs innovation success in their domain, and;
- PO 7, who was initially responsible for portfolio management at DigitalOps and later became the manager of InnoHub.

[56] As evidenced by a promotional video and posters (internal documentation, 01/'18).

Researcher Responsibility[57]

As part of the InnoScale project team, initially it was my responsibility to provide theoretical knowledge on design practices and provide input for interventions. In addition, I observed other initiatives within FlyCo that aimed to establish design as an innovation practice and shared my observations and reflections. Additionally, together with P-Manager 3, I coached P-Manager 7 during his attempts to establish design as innovation approach in the Engineering and Maintenance domain. Finally, once I became manager of the InnoHub (i.e., during project 2b), I continued the InnoScale project by facilitating the sessions in which we co-designed interventions that aimed to mitigate the VoD for InnoHub and implementation these interventions.

Goals

The InnoScale project had two goals, which (as discussed above) were not separate, but when established strengthened each-other:

1. To diffuse the innovation practice of InnoHub across the FlyCo organisation, as noted in the yearly strategic document of FlyCo in 2018, and;
2. To increase the impact of InnoHub by increasing the portion of implemented innovations (internal document, 01/2019).

Appendix F2 includes a detailed timeline of the events of Project 2a.

Outcomes Project 2a

Goal 1: To diffuse the innovation practices of InnoHub across the FlyCo organisation

A first outcome of these activities was that the innovation practices of InnoHub were positioned as 'the standard way of innovating for step-change innovations' in the FlyCo executive strategy document of 2018. The executive team thereby fuelled the legitimacy of the practices, which resulted in an increased demand for presentations and training about InnoHubs' innovation practices. Second, as an outcome of the InnoScale task force meetings, the design innovation practices of InnoHub were formulated so that they could be shared and used by other stakeholders. The documents included

[57] In Appendix E2, I describe how I gained access to this project.

a description of the core values behind the methodology and a step-by-step guide. Furthermore, InnoHubs services were requested by an increasingly wide range of stakeholders. In addition to solving operational challenges on the airside of the airport, they were asked to operate on landside. Interestingly, this resulted in an overload for the InnoHub team, their success became their challenge (as discussed in more detail in project 2b). Finally, in other units at FlyCo, design practices were being introduced and formalised as well. For instance, the Digital department consolidated its design resources into a design studio. Interestingly, this unit chose to adopt their own design practices rather than relying on InnoHub.

Goal 2: To increase the impact of InnoHub by increasing the portion of implemented innovations

Regarding mitigating the VoD, improvements were not impressive. At the end of project 2a, implementation was still seen by the main stakeholders of InnoHub (e.g., Manager 7 and Director 4) as problematic. Although several concepts had been implemented (such as boarding via the rear stairs of an airplane), these weren't the radical concepts that were required to realise the architectural transformation.

On the other hand, as noted in the field notes, the increased attention towards the VoD phenomenon and the interventions did influence the behaviour of the champions at InnoHub. For instance, after renaming the final phase in the innovation process from 'release' to 'scale', I observed that champions remained engaged with their concepts (and the stakeholders that were tasked with implementing these concepts) with the aim of stimulating implementation.

A final outcome of this process was that CXO 3 formally assigned Director 4 to organise innovation portfolio management for FlyCo's entire passenger business. This assignment came shortly after the Design Doing yearly review meeting in which we discussed the absence of portfolio management and how this contributed to the VoD.

4.2.5 Evaluation ARC 1

At the end of ARC 1, I had developed a network that spanned various departments and gained access. I better understood the peculiarities of the airline business and FlyCo in particular. I was struck by the size and power of the operational organisation and by how decentralised innovation and

design were organised. I had registered initial barriers of FlyCo that contributed to implementation challenges (as presented in my *ADMC* conference paper). I was surprised by the large role that departments such as IT and DigitalOps played in the development and implementation of innovations. In addition, I noticed how misalignment between units, for example regarding innovation priorities, contributed to the VoD. Finally, the experience of DigitalOps showed that design practices were effective in engaging a wide variety of employees in a process of organisational design. However, this project also surfaced how employees struggled to overcome ambiguity when the design process concerned their own working conditions. These insights set the ground for a deeper investigation in ARC 2.

4.3 Action Research Cycle 2

Most activities of ARC 2 were performed between month three and nine (as visualised in Figure 22). After gaining an understanding of the research context and phenomenon, research during this ARC explored the relationship between design and the innovation implementation. During this ARC, I was granted increasing access, partly due to a strengthening bond with key stakeholders inside the Customer Experience Department (from hereon: CE). Activity peaked until I spent two days per week at the FlyCo office. Activities were performed predominantly in collaboration with stakeholders from the CE department.

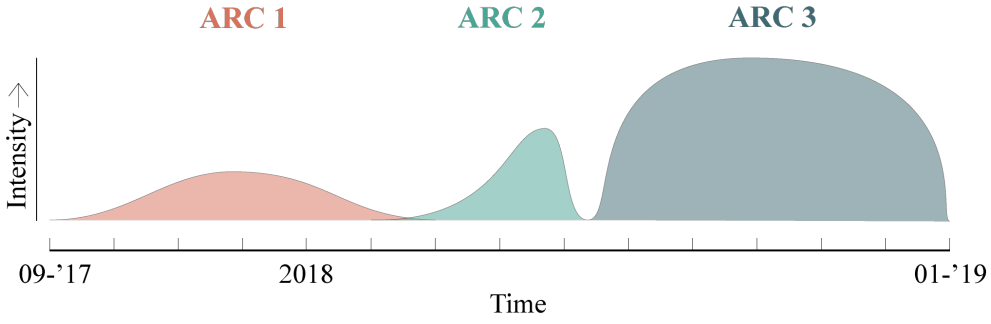

Figure 22: Three Action Research Cycles.

4.3.1 Research Aims ARC 2

There were two main research aims for ARC 2, with two sub-research aims (field notes, 18/01/'18, 13/04/'18, 18/04/'18):

1. To understand how design contributes to innovation implementation;

a. To explore if and how design practices influence the innovation process and thereby contribute to innovation implementation;
b. To explore if and how design practices influence the proposed service concept and thereby contribute to innovation implementation, and;

2. To explore the relationship between the organisational context in which design innovation takes place and the VoD.

Table xiv summarises these aims and provides example questions related to these aims. The research questions were informed by the outcomes of ARC 1 and by existing literature. For instance, for sub-research question 1a, project DigitalOps had shown the importance of alignment between units for implementation. As extant literature indicated that designers' visualisations practices contribute to alignment (Hargadon & Sutton, 1997), I explored this relationship further in ARC 2.

Table xiv: research aims of ARC 2 with example questions

• **Research Aim, to explore…**	• **Example Questions**
…How CE employees can use design to influence *the innovation process* to contribute to innovation implementation.	• What is the effect of using visualisation and prototyping practices on the VoD? • Does designers' ability to structurally tackle ill-defined problems contribute to mitigating the VoD? • How do co-creation practices influence innovation implementation?
…How CE employees can use design to influence the *service concept* to contribute to innovation implementation.	• Which, if any, design practices contribute to concepts that are more 'implementable'? • Is there an effect from the visual way designers present concepts on the VoD?
…How the organisational context of CE influences the use of design innovation and the VoD.	• What organisational context contributes to the VoD when design practices are used to innovate? • What organisational context helps mitigate the VoD during design innovation?

4.3.2 Action Overview ARC 2

The actions of ARC 2 were part of two projects. The main project was project DesignCapability. This project, performed in collaboration mainly with stakeholders from the CE department, centred on building design capabilities and using these capabilities to increase the impact of this department. As opposed to the stakeholders at InnoHub and DigitalOps, CE employees were yet to systemically apply design practices to their projects. This was an insightful contrast with ARC 1.

Project 4 DesignCommunity is a small project (in terms of the actions that I was involved in). Nevertheless, because of the involvement of InnoHub, CE and the Digital department, the topic (design and innovation implementation) and the insightful outcomes, I did include the project here. The goal of this project was to stimulate innovation implementation (in this case driven by a Director 2 from CE) by means of pooling and aligning FlyCo's design tools and capability.

Finally, in addition to these two projects, I conducted semi-structured interviews with stakeholders from design related units at FlyCo. I conducted three formal interviews (recorded and transcribed) with CE stakeholders (Director 4, Manager 4 and Director 3); engaged in collective inquiry with Service Designer 3 and 4 (CE); and conducted informal interviews with CXO 1 (CE), S-manager 2 (Digital) and Service Designer 2 (Digital).

4.3.3 Project 3: DesignCapability

Background & Goals Project 3

To realise the new customer-focussed strategy, FlyCo created a new department (CE) which was responsible for gathering customer insights, branding, and developing innovations (interview, CXO 2, 18/12/'17). The executive that was responsible for this department regarded it their job to "go from talking about being customer centric to doing it" (interview, CXO 2, 18/12/'17). AT CE, a set of employees were responsible for conceptualising and implementing innovations. These employees were internal hires that had little to no previous experience with design but were expected to "become the captains of multi-disciplinary innovation teams" (internal document, 03/18). The managers of the CE department regarded design as a suitable methodology to support these employees (field note, Director 2, 26/10/'17). Specifically, they hoped that design practices would help these employees to

generate a significant positive contribution to the Net Promoter Score (NPS) of FlyCo (field note, 07/12/'18).

To help the project leaders perform innovation projects, CXO 2 and Director 2 requested design trainings and on-the-job coaching. They aimed to develop a 'toolbox' with design tools and to offer a dedicated 'design space' for project leaders to use (field note, 16/11/'17). They organised a continuous presence of design students at the department (field note, 28/11/'17) and built relationships with designers at other departments (interview, Director 2, 13/08/'18). Taken together, an ambitious attempt was made to create a design-driven organisation that would be the flywheel of customer-centred innovations at FlyCo. I was asked to provide the training and on-the-job coaching for realising this ambition.

Involved stakeholders

The main stakeholders of this project were:

- CXO 2, the executive who was responsible for the CE department;
- Director 2, the manager at CE who was responsible for building a design capability;
- Director 3, the successor of Director 2, who was tasked with creating a 'centre of excellence' for customer experience design;
- Consultant 3, responsible for improving CE's innovation capabilities;
- Manager 12, the manager responsible for the Design Doing programme;
- The project managers at CE, the before-mentioned 'captains of innovation teams', and;
- Service designer 3 and 4, were hired at the end of 2018 to be permanent design coaches and facilitators at CE.

Researcher Responsibility[58]

My first responsibility during project 3 was to provide input for the initial two-day training that conveyed the basics of design to the CE department. In addition, I facilitated a part of this training. When this training was repeated (because new project managers were hired after the initial training), I was responsible for re-organising the training and facilitated a large portion of the

[58] In Appendix E3, I describe how I gained access to this project.

(more action-oriented) training, whilst handing over responsibilities to the recruited service designer that would replace me. Figure 26 provides an impression of this second training. Furthermore, I provided monthly follow-up trainings to the project managers in which we discussed their (barriers to) daily use of design and in which I taught new tools. Figure 27 shows an example presentation slide of such a training.

Figure 26: Participants during second two-day design training

I also provided one-on-one coaching to the project managers. These sessions lasted an hour and were on a request basis. Almost all project members made use of this coaching opportunity in the first months of the project. For several projects, I joined the project members in their sessions as a result of our coaching.

As requested by CXO 2, I discussed how best to organise the department to facilitate the use of design practices with both CXO 2 and Directors 2 and 3. During several sessions, CXO 2 and the Directors asked for advice on matters such as how to evaluate the project managers on their use of design (field note, 06/05/'18) and on the role the managers were able to take vis-à-vis professional (external) designers (field note 08/03/'18).

Figure 27: Example presentation slide from design training about customer interviewing

Goals

This project had two goals:

1. To provide a shared design-driven approach to developing and implementing innovations.

CXO 2 pronounced a clear goal during his first interview: project managers of CE needed to develop a common way of performing projects that was structured and resulted in high-quality concepts. A more structured approach would lead to a better overview of the project portfolio and help the department to intervene in failing projects (field note, 08/11/'17). CXO 2 explained that by 'high-quality concepts', he meant that the proposed solutions needed to be rationally sound, resonate emotionally and be meaningful to customers (interview, 18/12/'17).

2. To mitigate the VoD by aligning stakeholders.

During later meetings with Director 2 and the project managers, a second goal emerged. The project managers and their directors had noticed that many of their projects weren't being implemented. By their own analysis, this was due to misalignment with other organisational units (which they called 'capacity' providers) (interview, Manager 4, 27/08/'18). The involved stakeholders believed that with the help of design practices, they could better 'align stakeholders', which would result in more implemented concepts (field note, 29/09/'18).

Appendix F3 includes a detailed timeline of the events of Project 3.

Outcomes Project 3

Goal 1: To provide a shared design-driven approach to developing and implementing innovations

One outcome of this project, and requisite of developing a shared approach, was the attendance and involvement of the CE project managers in the design trainings and coaching. As indicated in the timeline (see also Appendix F3), involvement was high during both two-day trainings and early follow-ups. Service Designer 3 and 4 noted that after the second two-day training, follow-up sessions had continued with decent attendance and involvement from project managers (interview, 28/05/'19). However, attendance and request for individual coaching sessions diminished over time (field note, 29/08/'18).

Second, from observations and interviews with Service Designers 3 and 4 (28/05/'18), I derive that the CE project manager did gain an understanding of design practices, but that they required assistance to apply the methodology. At a high level, CE project managers adopted a shared design-based project structure from which they operated. I observed on several occasions that CE project managers independently organised design workshops (e.g., field note, 14/06/'18). Furthermore, CE project managers indicated that they increasingly considered the emotional state of stakeholders in their projects, yet that doing so required a major shift in mindset for them and their colleagues (field note, 03/05/'18).

On the other hand, Service Designer 3 and 4 noted that CE project managers experienced difficulties in applying design methods and that they often resorted to their previous approach of performing projects (interview, 28/05/19). Several reasons were proposed for why CE project owners (implicitly) refused to change their practices, despite that the application of design practices became one of their personal evaluation criteria (Director 2, internal communication, 06/05/'18). According to the Service Designers, this originated from that CE project owners had other responsibilities than executing innovation projects that distracted them. The CE project members themselves mentioned that they found it challenging to translate design theory and tools to their day-to-day project reality (field note, 07/12/'18), and that they weren't always involved early enough in projects to dictate the applied methodology. In cases when project members did apply a design-driven methodology, their main challenge was choosing the right tools for the

situation (field note, 01/05/'18) and when to proceed towards the next stage in the process (field note, 29/09/'18).

A third outcome is that FlyCo, based on their evaluation of the project so far, decided to invest more resources in design for the CE unit. They green-lighted the construction of a physical space where design workshops could be performed. Figure 29 was taken during the opening ceremony of this lab. The slide mentions the aim of creating this space: for creativity, to facilitate co-creation, to design from a customer perspective and to present new products/services. Moreover, after temporarily hiring an external service designer to replace me when I shifted focus towards project 5, they reserved budget to permanently hire three designers to support the CE unit (field note, 24/04/'18 and interview, Director 3, 21/05/'19). This signalled a decision regarding a long-standing debate about whether project managers at CE should be able to perform their own project as designers, or whether they should be supported by trained designers (interview, Service Designer 3 and 4, 29/08/'18). In sum, first steps were taken in establishing a shared design-driven approach to innovation, but when my immersed period terminated there was significant room for improvement.

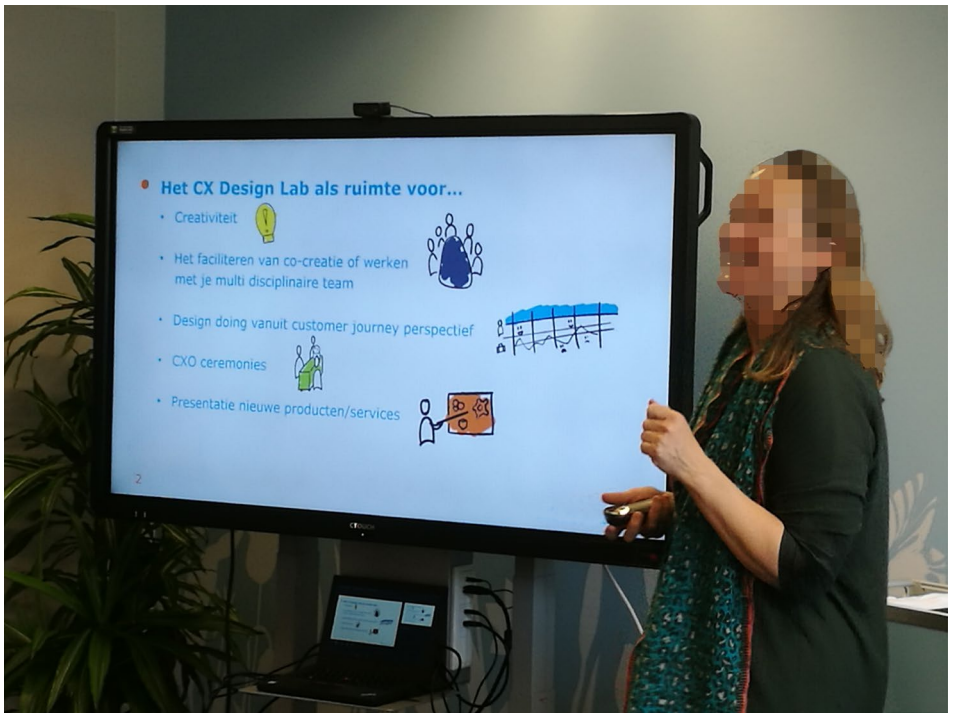

Figure 29: Opening ceremony of the CE design lab.

Goal 2: To mitigate the VoD by aligning stakeholders

One of the most notable outcomes of Project DesignCapability was that stakeholders (both from the CE unit and outside) noted a shift in how CE project managers approach their innovation projects. Specifically, they shifted from an attitude that relied on implementing 'their' solution and a focus on solving issues from a business perspective, towards exploring and mitigating customer challenges (field note, 28/11/'17). This became evident during discussions when CE project members mapped their projects on the phases of design projects (as determined within FlyCo), as displayed in Figure 30. During this process, project managers noted that, previous to their design training, they had frequently skipped the first stages of problem exploration (field note, 29/09/'18). Manager 4 noted that design practices helped to first align stakeholders on a customer need, which eventually informed a more effective implementation process (10/07/'18).

Figure 30: CE project managers mapped their projects on stages of the FlyCo design process

A second outcome of this project in relation to aligning stakeholders to mitigate the VoD is that the training of the CE department contributed to a

'ripple effect' across FlyCo as other units requested similar capability building programs (field note, 14/03/'18) such as the Digital-, In-Flight and the Engineering and Maintenance unit (internal documentation, 01/'19). CE Project members noted that collaboration with other units towards implementation was more effective when employees at these units also gained an understanding of the design process (field note, 14/03/'18). Project DesignCapability became a stepping-stone towards a more widespread adoption of design practices, which FlyCo employees expected to help mitigate the VoD (as discussed in more detail in Section 5.4.1).

Balanced against these positive outcomes, Service Designers 3 and 4 and Director 3 in their interviews noted that project managers continued to experience implementation challenges. They concluded that regardless of the practices employed, CE project managers lacked the resources required to progress towards implementation. Furthermore, S-Manager 2 noted that processes that would allow CE project managers to acquire the necessary resources for implementation were insufficiently established. In line with this finding, after my engagement ended, CE management decided to establish the 'CE Innovation Lab', or "a capability center with a proven set of capabilities, resources, tools and best practices" (internal documentation). In effect, they decided to internalise the resources needed to perform innovation projects in the CE unit.

4.3.4 Project 4: DesignCommunity

Background & Goals Project 4

At FlyCo 'pockets' of design practitioners were spread throughout the organisation (field note, 27/11/'17). When I asked Service Designer 2 to create a map of the presence of design at FlyCo, he confirmed my observation when he produced the map in Figure 31 (internal documentation, 02/'18). The design capability of FlyCo was spread thin and there was little connection between the various units where design was embraced as a practice for innovation (field note, S-Service Designer 2, 09/02/'18).

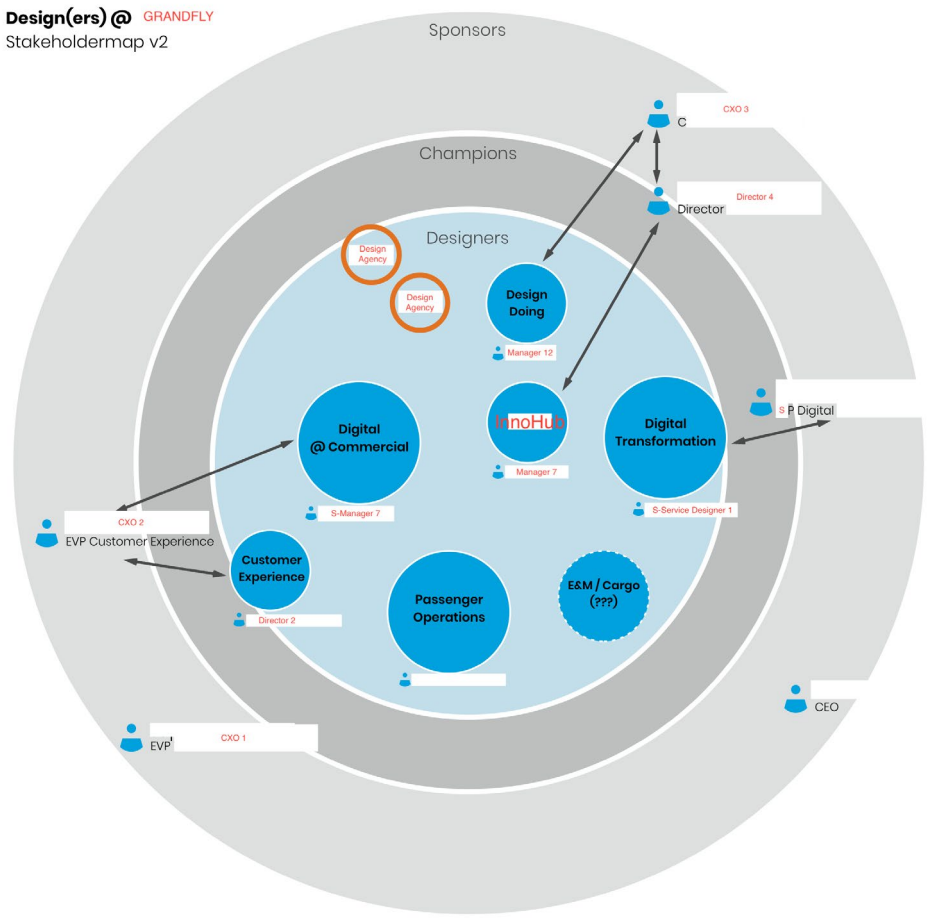

Figure 31: Visualisation of the presence of design at FlyCo by Service Designer 2

There was however growing awareness between the pockets of designers that the decentralised organisation resulted in both under-utilised potential and in implementation issues. Related to the former, stakeholders noticed that design resources and skills weren't shared between units, despite their complementarity (field note, 12/02/'18). For example, InnoScale could easily access the operation to prototype concepts, the digital department had developed an expertise in design research, and the CE department had direct access to customer insights. According to S-Service Designer 2, the spread of units implied that the strategic impact of design would remain limited (field note, 09/09/'18). In relation to implementation issues, Director 2 noted that because units applied different methods and tools and held differing priorities, handovers between units during innovation projects were challenging

(interview, 13/08/'18). In all, stakeholders from different design units within FlyCo recognised that they could increase the impact of design at FlyCo if they collaborated more.

In line with design attitude, the stakeholders moved quickly to prototype a collaboration. The initial topic to collaborate on was a shared toolbox. This was driven by Director 2, who recognised the need for such a toolbox for the project managers in CE (field note, 16/11/'17).

Involved stakeholders

The main stakeholders of this project were:

- Manager 7, the manager of *InnoHub*, the unit that applied design practices at DigitalOps;
- P-manager 3, who was tasked with improving the impact of *InnoHub's* design practitioners;
- S-Service Designer 2, responsible for design (thinking and research) at *Digital Marketing unit*;
- S-Manager 2, the manager of design practitioners at *Digital Marketing;*
- Service Designer 4, designer at *Digital Marketing (*at the time of the project);
- S-Service Designer 1, responsible for the design capability of the *Digital* unit;
- Service Designer 2, designer at *Digital* unit;
- Director 2, responsible for adoption of design practices at the *Customer Experience* unit;
- Consultant 3, responsible for improving *Customer Experience* units' innovation capabilities, and;
- Service Designer 3, who was hired to be permanent support for project managers at Customer Experience.

Researcher Responsibility[59]

In project DesignCommunity, I was a process facilitator. First, I identified and connected stakeholders at the various design units to engage with this project. Second, I facilitated part of the process in which the design practices

[59] In Appendix E4, I describe how I gained access to this project.

of the various units were explored. Third, I supported Director 2 in his effort to develop a shared toolbox.

Goals

1. Explore potential for shared capabilities to elevate to a more strategic impact.

This project was a first exploration into the benefits that could be gained from a more intense collaboration between design units (interview, Director 2, 13/08/'18). Besides sharing expertise and resources, there were opportunities to collaborate on initiatives related to, for instance, training and recruiting. Additionally, as mentioned by S-Service Designer 2, units could potentially realise strategic change by collaborating across units. (Internal communication, 07/02/'18).

2. Create a shared toolbox for design units.

A more specific goal of this project was to create a shared toolbox that would help align design practices of various units. The reason for having such a shared toolbox was twofold. First, this would facilitate handovers and help 'integrate efforts' of the design units (field note, 12/02/'18). Second, director 2 noted that he expected shared methods to lead to a more consistent experience for customers (internal communication, 05/01/'18).

Appendix F4 includes a detailed timeline of the events of Project 4.

Outcomes Project 4

Goal 1: Explore potential for shared capabilities to elevate to a more strategic impact

With project DesignCommunity, stakeholders aimed to explore the potential of bundling their resources. This was achieved only marginally. In an interview with Director 3, he explained that the designers that collaborated with his CE were now being centralised at the CE unit (the before mentioned CE Innovation lab). However, he also mentioned that the other design units refocused more on specific tasks (interview, 25/06/'19). For example, the Digital Marketing unit had decided to focus more specifically on marketing. As such, instead of creating a shared resources pool, a larger central design capability was created at CE and other functions had occupied specific niches.

A second outcome related to this goal was the establishment of the FlyCo 'service design network'. This network of designers gathered on a regular basis and had expanded considerably. During the network meetings, strategic issues such as the recruitment of new design talent and the professionalisation of the discipline were discussed. Although this network wasn't formalised and had no explicit authority, topics related to strategic design were (for the first time) being discussed at an organisational level.

Goal 2: Create a shared toolbox for design units

On first inspection, a toolbox was created. The InnoHub, CE, Digital and Digital Marketing units all contributed tools to a digital repository which presented these tools in relation to phases of a linear design process. However, as became clear from observations and interviews with service designers, use of the toolbox was limited (field note, 28/05/'19). Regarding user journey consistency, the CE innovation lab was tasked with facilitating, monitoring, and evaluating a consistent user journey.

In terms of mitigating the VoD through the use of shared tools, outcomes were ambiguous. During ARC 3, CE approached InnoHub with a (design-driven) concept and asked for resources to continue towards implementation. InnoHub project managers refused to support the concept, initially arguing that they didn't trust the effectiveness of the concept. After learning about the methods used to come to the solution, these objections faded, but support was denied as the concept did not contribute to InnoHubs (operational) goals (field note, 27/08/'18). What this indicated was that although a toolbox was created which could partly mitigate the VoD (related to a diversity of design practices), the effectiveness of the toolbox was limited because of limited use and other factors that contributed to the VoD.

4.3.5 Evaluation ARC 2

At the end of ARC 2, I had gained more insights regarding how design and innovation implementation relate. I identified design practices that contribute to innovation implementation, such as materialisation, reframing and human-centredness. However, I learned that design practices can aggravate the VoD too, as explained in Section 5.4.2 (and as described in the *Touchpoint* paper). Project DesignCommunity showed the significance of alignment regarding innovation processes and methodologies and concurrently revealed that alignment on this level alone is insufficient to achieve implementation. There

seemed to be more fundamental differences between stakeholders that I needed to explore in the next ARC.

I identified additional organisations barriers that contributed to the VoD in ARC 2. To provide one example: whilst coaching employees in the CE exploration hub, I noticed how limited their access to resources was, compared to employees at InnoHub. After interactions with CE stakeholders about this issue, more in-house resources were acquired (such as dedicated designers). Reflection on the consequences of this intervention revealed that exploration hubs with limited access to resources more frequently experience a VoD. As activities in collaboration with CE stakeholders were winding down, I was offered a position as interim manager of InnoHub. This event kick-started ARC 3.

4.4 Action Research Cycle 3

ARC 3 started in month nine of the research timeline and spanned six months, after which the immersed time at FlyCo ended (as visualised in Figure 22). During ARC 3, I was employed in a full-time position for four days per week as interim manager of InnoHub. ARC 3 can be characterised as when I shifted towards an 'insider perspective' (Brannick & Coghlan, 2007), whilst recognising that I would never fully be an 'insider' (Herr & Anderson, 2005).

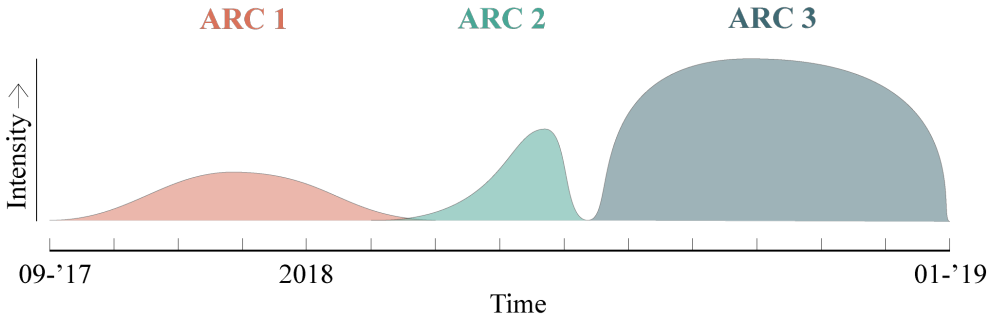

Figure 22: Three Action Research Cycles.

I mainly involved employees from DigitalOps and InnoHub during ARC 3. As opposed to ARC 1, I now was also involved in management team issues of DigitalOps. Most of the time was spent on Project 5 and the second half of project InnoScale (2b), which continued from ARC 1. Research focus during ARC 3 shifted from a focus on (design) innovation processes towards the context in which design innovation projects were performed.

In the following sections, I describe the research aims of ARC 3 (4.4.1), and what actions were performed. In addition to Project 5 (4.4.3) and Project 2b (4.4.4), Section 4.4.2 describes the interviews I conducted and the educational course (introduced in Section 4.2.2) which was repeated.

4.4.1 Research Aims ARC 3

Based on insights from ARC 1 and 2 and the opportunity as manager of an innovation hub, the two research aims of ARC 3 explored the relationship between organisational context and the VoD. Aim 1 focussed on what interventions in organisational context contribute to mitigating the VoD. Aim 2 focussed on how these interventions were designed. Table xiv summarises these aims and provides example questions related to these aims.

1. What organisational barriers at InnoHub and DigitalOps contribute to mitigating the VoD?

While ARC 1 and 2 focussed on exploring the VoD phenomenon and the innovation process and practices, ARC 3 shifted focus towards the context in which champions innovate (field note, 19/05/'18). This implied both identifying contextual elements in which I could intervene and observing (and collaboratively reflecting on) the consequences of the interventions.

2. How can design be used to redesign an organisation with the aim of promoting innovation implementation?

During project 1 (DigitalOps), design principles and practices were used to generate interventions in the organisational context of the organisation. In doing so, we explored how designers' distinctive approach to problem solving (Gabay, 2018), could lead to better outcomes. The outcomes of the DigitalOps project motivated further exploration of using design to come up with novel organising principles over selecting from existing alternatives (De Lille et al., 2012).

Table xv: Research aims of ARC 3 with example questions

Research Aim, to explore…	**Example Questions**
…What organisational barriers at InnoHub and DigitalOps contribute to mitigating the VoD.	• How do incentives of an exploration hub influence the VoD? • How does project prioritisation relate to the VoD? • What project-characteristics influence the VoD?
…What the effects are of using design to redesign an organisation with the aim of promoting innovation implementation.	• What, if any, are the potential benefits of applying design to an organisational redesign process? • How can an organisational design be co-created? What is the effect of applying co-creation methods?

4.4.2 Actions Overview ARC 3

Most actions in ARC 3 were part of Project 5 (4.4.3) and Project 2b (4.4.4). In addition to these projects,

- I conducted 13 formal semi-structured and 15 conversational interviews (Roulston, 2008) with a wide selection of stakeholders (related to InnoHub and DigitalOps). Of the formal interviews, 10 were conducted at the beginning of the ARC, when project InnoHub was in its initiation phase. The final three informal interviews were conducted after the immersed period ended. In these, I reflected on ARC 3 with key stakeholders (Director 4, PO 7, PO 2, and PO 3).
- I facilitated access for an external researcher who conducted a study into design and digitalisation processes at large organisations. Subsequently, I attended the presentation in which he shared his findings with key design stakeholders at FlyCo (e.g., S-Manager 2, Director 4, SP Digital and Director 2).
- Like ARC 1, I participated in the Yearly Review meeting of the Design Doing programme. Here, I presented preliminary findings through a video-presentation to CXO 3.

4.4.3 Project 5: InnoHub

Background & Goals Project 5

At its initiation, InnoHub focused on realising results quickly by utilising a lean governance structure, close ties with top management and by holding to a credo of 'learning by doing' (interview, Director 4, 20/08/'18). However, the team and especially Director 4 noticed over time that an increasing number of innovations ended in the VoD. This became an increasingly prohibitive problem as mentioned by PO 7 (interview, 23/11/'18) and Director 4, "We need to make bottom-line impact. Otherwise, others will do it" (field note, 4/04/'18). Crucially, the lack of implemented innovation started to influence the legitimacy of the team (field note, 20/05/'18 and 29/05/'18).

Several interventions were previously done to try to overcome the problem, such as changing the prioritisation mechanism of InnoHub (see also DesignScale 2A). However, InnoHub wasn't yet realising the impact that was expected (interview, S-Manager 3, 19/11/'18). Director 4 realised that more radical structural and cultural changes were needed, "We don't have all the structural issues figured out … really the basis … we need to shift from a culture of experimenting … to a culture of achieving significant impact" (interview, Director 4, 20/08/'18). Additionally, as discussed in Section 4.2.4

(Project 2a), InnoHub was asked to 'scale' their methodology across FlyCo. However, articulating, translating, and transmitting practices required new capabilities and the team found it challenging to organise this activity within their current context (field note, 04/06/'18). As the new manager of InnoHub, I was asked to design a new strategy and organisation that solved these two problems (field note, 16/06/'18), or as Director 4 put it, to find a structure for InnoHub to be able to 'make the second s-curve' (field note, 27/08/'18).

Involved stakeholders

- InnoHub unit members: PO 2, PO 3, PO 4, PO 5 and PO 6
- Director 4
- PO 7, who became manager of InnoHub after I left

Researcher Responsibility[60]

During this project, I was responsible for the design process. I facilitated all the sessions in which the strategy and new organisational design were generated, I communicated (interim) results with key stakeholders and I created the final deliverables.

Goals

1. To define a new strategy for InnoHub

InnoHub needed to mitigate the VoD and was increasingly asked to scale their design practices. In response to these two challenges, the team needed to formulate answers to several questions. These answers would guide InnoHub activities and the approach of the designers in InnoHub. Examples of these questions were, what do we want to achieve? How do we measure success? In addition, the team needed to define more clearly what value they added to FlyCo and how this differed from other innovation units.

2. Design a suitable organisation to realise this strategy

From the results of previous interventions, it became clear that to realise this 'new s-curve' the unit required a different organisational design (field note, 17/04/'18). This project had as goal to define this new organisational design and to do this by applying design principles and practices.

[60] In Appendix E5, I describe how I gained access to this project.

Appendix F5 includes a detailed timeline of the events of Project 5.

Outcomes Project 5

Goal 1: To define a new strategy for InnoHub

The new strategy of InnoHub manifested through several outputs. First, a manifesto was created which laid-out the core values of the unit and what its main aim was, as visualised in Figure 32. Second, a new 'service concept' was defined for InnoHub. This described the activities that the unit would undertake and the value it wanted to add to FlyCo. The accompanying document described, for example, the type of challenges the team aimed to tackle (and which challenges it avoided), the impact it expected to have and the relation between InnoHub and other units within DigitalOps.

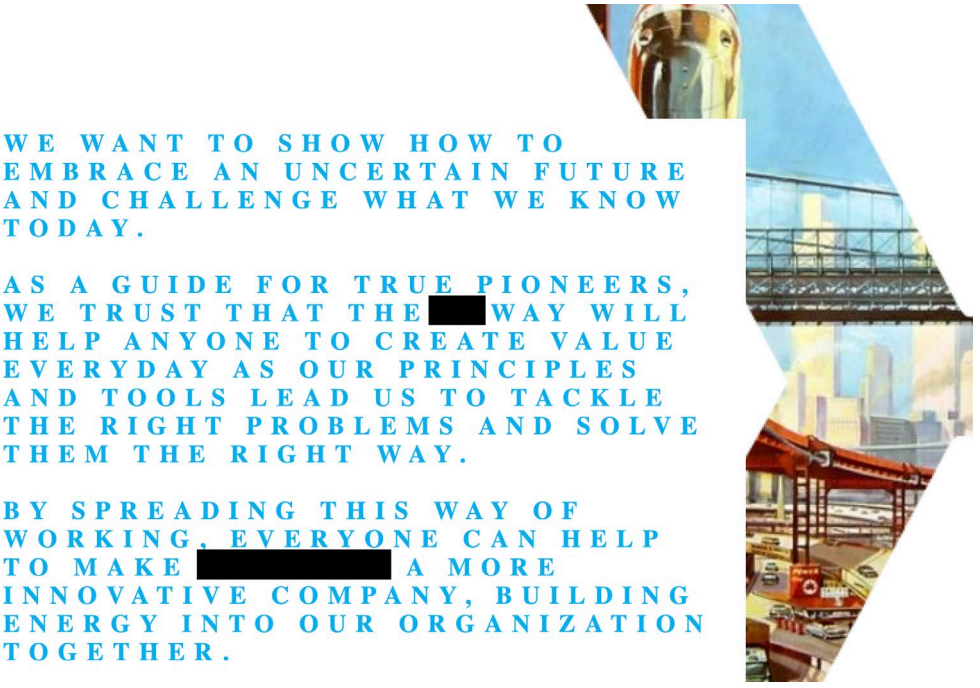

Figure 32: New manifesto of InnoHub

Goal 2: Design a suitable organisation to realise this strategy

Another outcome of Project InnoHub was a detailed proposal for a new organisational design, which was supported by both the InnoHub team and Director 4. The new organisational design differed radically from the existing design, amongst others because the unit would become more multi-

disciplinary. The accompanying document prescribed new team structures, a new location for the team, new roles, and an expanded innovation process.

However, not everyone reacted positively to the new organisational design. One employee (who had worked closely with InnoHub), for instance, noted that he thought the new organisational design would limit the creativity of the team. Moreover, the new design wasn't fully implemented. PO 2 and PO 3 mentioned, in an interview performed nine months after my departure, that large portions had been implemented (interview, 12/09/'19). This was in agreement with what PO 7 informed me (internal communication, 07/'19). Alternatively, in an interview four months before that, Director 4 mentioned that he was surprised and disappointed about how little and slow the new design had been adopted (interview, 22/05/'19).

4.4.4 Project 2b: InnoScale

Outcomes Project 2b

Project 2b was a continuation of project 2a, with the same background, goals, responsibilities and involved stakeholders. This project description therefore only includes a description of the outcomes of the project. Appendix F6 includes a detailed timeline of the events of Project 2b.

Goal 1: To diffuse the innovation practice of InnoHub across the FlyCo organisation

There are three outcomes related to this goal: a strategy to diffuse design practices, the increased demand at FlyCo for design training and the expanded endorsement of management of design practices. First, InnoHub developed a strategy for diffusing their innovation practices, which leaned heavily on experiential learning strategies (Price et al., 2018). They developed a repeatable process to transfer and translate their practices to other units. To support this process, three components were developed: design trainings, a design toolbox (developed in collaboration during project DesignCapability) and an organisational structure, which included an interdepartmental 'tribe' of designers (i.e., Project DesignCommunity). This process focussed on simultaneously legitimising the innovation practices through "pragmatic" cases that could deliver value quickly whilst building a capability through tackling more complex and impactful challenges.

Second, at the end of this project, InnoHub regularly gave presentations for (management) teams throughout the organisation. A standout example of this was the full-day design training for 20 operational executives. There were outstanding requests for more elaborate design training from four units who were willing to invest resources in such trajectories. The demand was such that at the end of project InnoScale, the Learning and Development department hired a service design agency to build a formalised internal curriculum for design training (internal documentation, 01/'19).

Additionally, design practices were increasingly endorsed and embraced by management across the organisation. As consultant 1 noted, "there is a very strong InnoHub brand across the organisation" (interview, 19/11/'18). InnoHub was mentioned in strategic documents as the 'standard for innovation' and the yearly strategic document of 2019 mentioned that the goal for that year was to expand the 'environments' in which InnoHub operated. Indeed, InnoHub expanded their domain to include customer-facing innovation topics during project InnoScale. Finally, InnoHub was asked to lead or support large, impactful innovation projects such as a new DigitalOps product team.

Nevertheless, it is questionable whether practices were transferred via presentations and trainings. For example, the 'Intercontinental innovation team' attended a presentation after which they regularly referred to design practices. However, during their meetings (which I attended), it was difficult to identify which (if any) design practices or principles were being applied. In some cases, such as the DigitalOps training, employees explicitly rejected the practices. This suggested that managerial interest trumped employees' willingness or ability to adopt design practices.

Goal 2: To increase the impact of InnoHub through implemented innovations

According to FlyCo stakeholders, improvements were achieved regarding mitigating the VoD. They noted two outcomes: improved portfolio management and changes in behaviour of InnoHub employees. Stakeholders mentioned that improved portfolio management contributed to mitigating the VoD. Similarly, the 2019 strategic document mentioned that the introduction of organisational level priority-setting was expected to improve the implementation success of innovation hubs. I observed an increased attention and formalisation of project prioritisation mechanism. For example, the

challenge during the 2019 design course (see additional actions ARC 3) was to "Design interventions that facilitate the [portfolio] team in managing the innovation portfolio of FlyCo strategy" (internal document, 09/'19). However, except for several successful local initiatives, there were significant challenges in establishing portfolio management on a firm level.

Second, interventions in the context of InnoHub contributed to mitigating the VoD. For example, towards the end of ARC 3, PO 5 refused to proceed with an innovation project if formal approval wasn't granted by the business executive. She cited the VoD as her reason, demonstrating an increased awareness of the phenomenon. Stakeholders mentioned that interventions had stimulated alignment (between InnoHub and other units) and thereby contributed to mitigating the VoD.

After all, improvements were too marginal to satisfy FlyCo stakeholders. During ARC 3, the Digital department revoked InnoHubs budget for development, referring to underperformance on implementation as reason. Director 4 informed me that in a subsequent reorganisation of DigitalOps, the InnoHub unit would be eliminated. Instead, designers would be integrated in other DigitalOps teams.

Overall, InnoHub didn't achieve the required impact to continue to operate as a stand-alone design innovation unit. Nevertheless, elements of the organisational structure of InnoHub, InnoHub designers and their practices were integrated in DigitalOps product teams, realising impact via a different route.

4.4.5. Evaluation ARC 3

ARC 3 revealed an additional set of organisational barriers that contribute to the VoD. For example, as manager of InnoHub, I experimented with setting different types of evaluative metrics for the team. Based on discussions with FlyCo employees, I hypothesised that these metrics could motivate InnoHub employees to pursue implementation more actively. To explore this idea, one experiment included the introduction of a metric related to the number of implemented innovation (as opposed to generated innovations). After this intervention, I observed different behaviour from InnoHub employees. For example, they involved other stakeholders earlier in the process. This information led to the Insight, that a lack of a 'shadow of the future' contributes to a VoD (see Section 5.3.9) that involving stakeholders in-medias-res can trigger a VoD (see 5.3.7).

During ARC 3, I developed my reconceptualisation of the VoD (as presented in the *ServDes* conference paper), as I experienced that the employees of InnoHub encountered this phenomenon at different stages of the innovation process (see 5.1). Similarly, I further explored the driving mechanism behind the VoD in ARC 3. For example, I noticed a Not Invented Here attitude when gatekeepers were presented with concepts from other departments (see 5.2.3).

Finally, project InnoHub provided another opportunity to apply design principles and practices to an organisational redesign process (the combined learnings of which were presented in my *ADIM* conference paper). This project taught me, amongst others, that mutual trust is a requirement to co-design an organisation with employees. Without trust, the ambiguity that is inherent to design inquiry can become unmanageable for the employees involved in the process which defeats the purpose of involving them (see 5.4.3).

4.5 Chapter Summary

In this chapter, I described the three ARCs and five projects included in this research. In Table xvi, I list the actions and to which sub-research questions these actions contributed. Earlier actions focussed on understanding the VoD better (1) and identifying the driving mechanism (2). Towards the end, the focus shifted towards the organisational barriers that contribute to the VoD (3) and the contribution of design to in ensuring innovation implementation (4).

xvi: Summary of actions and relation with sub-research questions

ARC	Action	Contributed Sub-RQ
1	Project 1: DigitalOps	1, 3, 4
	Project 2a: Innoscale	1, 2, 3, 4
	Operational Masterclass	1
	Corporate Innovation Unit	3
2	Project 3: DesignCapability	1, 2, 3, 4
	Project 4: DesignCommunity	3, 4
3	Project 5: InnoHub	3, 4
	Project 2b: InnoScale	2, 3, 4
	External Design Innovation Study	4

In the next chapter, I present what insights emerged from the performed actions in combination with the reflections from stakeholders on these actions.

Chapter 5. Insights

5.0 Chapter Overview

In this chapter, I present the insights gained during the analyses of the narratives (presented in the previous chapter). The insights aren't presented in the chronological order in which they were generated. Rather, as explained in Sub-chapter 3.5 (data analysis), data from various projects and ARCs were combined in an iterative analysis process to arrive at insights. The insights are thus presented in relation to the research questions presented in the introduction (and reproduced for the reader's convenience below).

I consulted literature throughout the research process to make sense of findings, frame the reflection, and inform subsequent actions (as discussed in Sub-chapter 3.3). I consequently refer to literature throughout this chapter. However, in this chapter, I don't discuss extensively how my findings add to extant literature. This is highlighted in the concluding chapter.

In Sub-chapter 5.1, I describe how the VoD manifested in FlyCo. In this chapter, I set the stage and define the key stakeholders, concepts, and processes relevant to the VoD within FlyCo. Sub-chapter 5.2 details the driving mechanism that I observed through which concepts fell into the VoD. In this chapter, I describe the three organisational logics present at FlyCo. Additionally, I portray how conflicts between these logics informed a Not-Invented-Here attitude, which hindered the required resource integration for implementation. Chapter 5.3 explores the ten barriers that I found contributed to these mechanisms. In the last sub-chapter (5.4), I turn to how design can contribute to mitigating the VoD and contribute to innovation implementation. I discuss the contribution of design as problem-solving approach and as inquiry process to developing holistic concepts and to mitigating the before-mentioned logic conflicts. Conversely, I describe how these design practices, which encourage a dynamic inquiry process that requires problem solution co-evolution, hindered implementation as they required stakeholders to enter and exit the process *in-medias-res* while frames were under development. Finally, in this sub-chapter I introduce the observed benefits of employing design practices on an organisational level and the particular challenges that I encountered in doing so.

1. **How does the VoD manifest in a service organisation?**
2. **What mechanism drives service concepts to arrive at the VoD?**
3. **What organisational barriers contribute to the VoD?**

4. How can design principles and practices mitigate the driving mechanism and barriers of the VoD and otherwise contribute to innovation implementation?

5.1 The VoD in FlyCo

5.1.1 Concept Development and the VoD[61]

The literature discussed in Chapter 2 portrays the VoD as a gap between (technical and market) research capabilities and commercialisation capabilities (Markham et al., 2010). On one side of the Valley, concepts are created and technologies are invented (Auerswald & Branscomb, 2003). On the other side, concepts are commercialised (Barr et al., 2009). This metaphor aligns with Perry-Smith and Mannuci's (2017) model of the innovation process, where concept elaboration is followed by a 'championing' phase in which gatekeepers are sought to invest resources for development (reproduced in Figure 33). In other words, there is a crucial moment in the innovation process where a champion fails or succeeds in bridging to the implementation process. Three observations during this research inform a reconceptualisation of this process, and thereby of the VoD in the studied context.

Figure 33: Implementation process (Perry-Smith & Mannucci, 2017)

Three Observations

First, championing (Howell & Higgins, 1990) is performed throughout the innovation process, not just during one moment in the journey. This becomes clear in the way, for example, Manager 4 sums-up his role:

> It is my role to create an ambition for the experience of the customer on board… my responsibility is also that this ambition is translated towards a desired customer journey on board...to design a journey that matches the needs of the customer… and is at the same time feasible. That it fits with the strategy of FlyCo, but also in the processes of the crew and other types of feasibility… that means communicating the concept to the people

[61] This section is based on my 2021 *ServDes* conference paper.

> that need to make it work, such as the in-flight department and digital department, but also to monitor with them whether we're reaching our goal. (Interview, 27/08/'18)

This role continues even after the initial service concept has been implemented. As PO 1 explained:

> What I mostly do is managing stakeholders. A lot of alignment with business owners. My app touches five business domains and they all have their wishes to improve their domains. We need to transfer these to product-features, so that they will support us in the end to get the value delivered. That is one of the most important activities. (Interview, 21/08/'18)

The second observations is that after initial research and concept generation, concept elaboration[62] and concept production[63] takes place over iterative cycles. In each cycle, an artefact is produced. As PO 6 expresses it, "We learn from the use of a concept, not from the user" (field note, 18/07/'18). Concepts progress through increasingly advanced development states. These states differ per concept, the number of states a concept develops through differs, and these states have different names within FlyCo. Generally, observed states are:

- The Visual state, where the artefact doesn't 'work' yet but can be discussed with stakeholders;
- The Prototype state, where the artefact can be used for validation during experiments, but only under controlled circumstances;
- The MVP state, the simplest form of a concept that can be operated throughout the organisation, but with limited functionality;
- The Scaled-up state, a fully functional version of the concept, but with an improper 'behind the scenes' service system, and;
- The Industrialised state, a fully functional version of the concept, supported by the entire organisation (PO 7, interview, 23/11/'18) and integrated in work-processes (S-Designer 1, interview, 29/02/'18).

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62 "Systematically evaluating a novel idea's potential and further clarifying and developing it" (Perry-Smith & Mannucci, 2017, p. 61)).

63 "Turning the idea into something tangible—a finished product, service or process" (Perry-Smith & Mannucci, 2017, p. 64).

Through the development of- and experiments with (increasingly advanced) artefacts, champions learn about the feasibility, viability and desirability of a concept and about what resources are needed to implement a concept.[64] As champions uncover what resources are necessary for implementation, they uncover what stakeholders (who own or control those resources) need to be involved. Thus, what is crucial about transitions between states, is that they regularly represent a moment in which new-to-the-project stakeholders need to become involved and invest resources.

Third, I observe that concepts can fall in the VoD during any transition between development states (i.e., from concept to prototype, from prototype to MVP and from MVP to 'industrialised' product). I encountered concepts in the VoD at FlyCo in states ranging from elaborate visualisations and storyboards to fully developed and tested 'scaled-up' services (that never progressed from an unstable model and inappropriate software architecture). For instance, Manager 4 explains that he experiences a VoD when he moved from concept visualisations to testing an initial prototype (interview, 2018/08/27) and P-Manager 3 explains that InnoHub experiences a VoD frequently after initial tests with prototypes (field note, 28/09/2017). Alternatively, S-consultant 2 experiences a VoD during a transition from 'throwaway' prototypes (intended to validate a concept) to an MVP, a challenge he describes as, "How you standardise it so that it goes from something clunky that works once for a test to something that works perfectly and smoothly in the operation is something I think hasn't been fully cracked" (interview, 07/12/'18). Yet, others experience a VoD after a first, stable digital product is developed and these products need to be supported by the entire organisation (PO 7, interview, 23/11/'18)

The Implementation Process of FlyCo

In Figure 34, I provide an illustration of the implementation process as observed at FlyCo. The three above-mentioned observations point towards a process that is iterative and in which championing is a reoccurring activity. After the initial concept is generated, champions move their concepts through various states. Each state represents a further development of the service concept and requires both elaboration and production. As champions learn from new developments, they identify new stakeholders whose resources are

[64] Such reworking as part of the implementation process is described by Suchman (2004).

necessary to progress towards the next state. Championing is again needed to involve these new stakeholders. This iterative process continues until all necessary stakeholders are involved and all the requisites are in place for a concept to be performed as a routinised service process.[65] From here on, champions move towards the 'impact' phase, in which the focus shifts from concept development towards adoption and use by employees and consumers (e.g., by training employees). What then, in light of the iterative process visualised in Figure 34, should be considered the VoD?

The metaphor of a singular 'gap' or 'valley' appears erroneous. For large service organisations, implementation challenges exceed the dichotomous relationship between design and production. Instead, each transition requires championing, which represents an opportunity for a VoD. Based on this insight, I propose a wider conceptualisation of the observed phenomenon: the VoD describes the phenomenon where concept development is discontinued when championing efforts fail to gather the required resources for further development.

[65] This process corresponds with Van de Ven's description of implementation as "a collective achievement of pushing and riding those ideas into good currency; The social and political dynamics of innovation become paramount as one addresses the energy and commitment that are needed among coalitions of interest groups to develop an innovation" (p. 591).

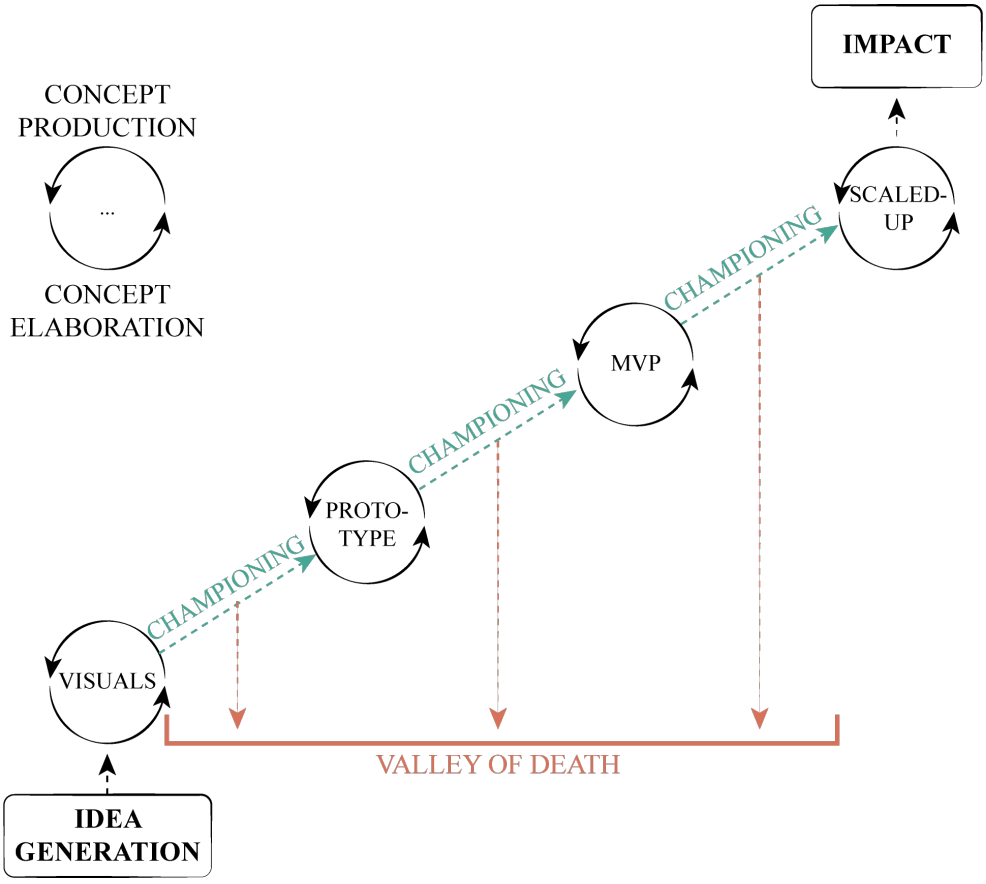

Figure 34: VoD as observed in FlyCo

5.1.2 Three organizational unit types[66]

The second insight relates to a higher unit of analysis: that of departments or teams (from here on referred to as units). In line with conceptualising the VoD as multiple gaps (instead of one), I identify three categories of units (not two) between which individual projects stall. A difference between these units is noticeable by their role in the concept development and implementation process. This categorisation is informative in the further analysis of the VoD mechanism and associated barriers.

[66] This section is based on my 2021 *ServDes* conference paper.

Three, Not Two Units

I entered FlyCo with the reference frame of the VoD as it is described in existing literature. I initially aimed to identify which units represented the exploratory capability and which represented the commercialisation capability, as described by Markham (Markham et al., 2010). In the field, these different units were often depicted as 'the headquarters' (HQ) and 'the operation' (reflective journal, 17/10/'17). The HQ, an office located at a distance from the airport, houses the highest management and departments that were responsible for non-operational tasks such as administration and marketing. This is where exploratory activities take place.

The operational unit houses the commercialisation capabilities. This organisation is responsible for keeping the operation running (i.e., the line organisation (Chandler, 1977)). Employees in the operation work at the airport and control centres and included their direct management. I noticed the difference in institutions (e.g., culture and environment) between HQ-units and operational units on multiple occasions. For instance, consultant 1 remarks about the operation, "There's no window-dressing, there's no politics… and honestly, we don't do that in many places at FlyCo, at least not at headquarters" (interview, 19/11/'18). Additionally, as one of the respondents notes, units on both sides had limited knowledge of the others' domain (field note, P-Manager 3, 08/12/'17). In accordance with the VoD concept (Markham et al., 2010), a chasm did seem to exist between these two types of units.

However, nearing the end of the immersed period, I noted in my reflective journal, "Maybe I'm redefining the VoD metaphor through my research" (16/05/'18) and added the drawing displayed in Figure 35. This breakdown consequently led to further investigation. This investigation revealed that champions needed to bridge an additional gap. This substantiated a new categorisation of organisational units.

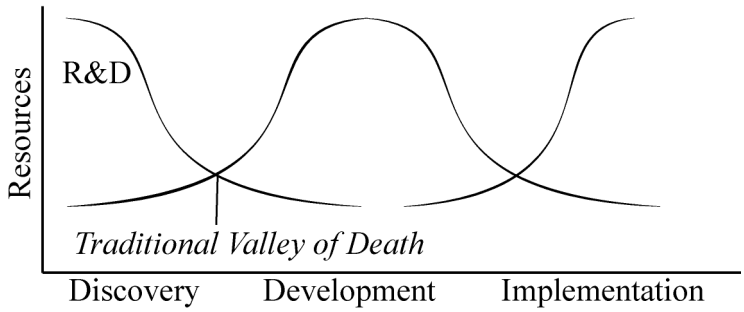

Figure 35: First drawing in notebook regarding a third type of unit (reproduced for legibility)

At FlyCo, three instead of two distinct categories of organisational units are identifiable. The categories of units are (1) exploration hubs, (2) support partners and (3) operational units. Exploration hubs propose and design new service concepts (often in collaboration or at least consultation with members of other units). These hubs function as the Research and Development (R&D) units of this service organisation, or the exploration capability. In addition to the hubs and the previously mentioned operational units, 'support partners' contribute significantly to the implementation of concepts. Support partners create the environments and objects necessary for concepts to be performed by the operation, yet they are clearly separate from exploration hubs. The segmentation of a third, distinct, unit type is confirmed by the director of one of the support partner units, "[DigitalOps] is not an end-user and we're not a facilitator, so we work differently" (field note, Director 4, 02/02/'18), referring to the end-user as the operation and the facilitator as an exploration hub.

The support partners' capabilities are distinct from those of exploration hubs. I observed this specifically during project InnoHub. We explored the option of integrating two units: InnoHub (an exploratory hub) with DigitalOps (a support partner). Manager 7 (of InnoHub at the time) opposed this idea, because the two units had such different capabilities, mentality, and ways of working (field note, 28/3/2018). He described this difference as the difference between "the world of experimentation and [the world of] industrialisation" (field note, 28/3/2018). Whereas exploration hubs are designed for research, flexibility, speed and deliver low-fidelity visuals and prototypes, support partners are designed to efficiently build and deliver high-fidelity products. As I notice in my journal, "It is the difference between

proving validity and reliability… From discovering a heuristic to building an algorithm". To illustrate this categorisation, Table xvii provides examples of responsibilities and resources of units and allocates them to one of the three categories.

Table xvii: Descriptions of the three unit types and examples with their respective resources

Department category	**Role in innovation process**	**Responsibility of department**	**Resources**
Exploration hub	To design the 'right' projects; to design concepts that consider requirements for implementation.; to present these concepts so that other actors can participate in the co-creation process	To design, prototype and test concepts that can improve the operational performance by a step-change (non-incremental)	• Service designers • Physical space & tools to build prototypes
		To design and orchestrate the touchpoints of the user journey and improve the customer experience	• Customer journey analytics software • Product/Service/Brand-designers
Support Partner	To create the environments and objects necessary for the concept to be implemented (e.g., software, infrastructure, manuals).	To maintain the commercial website and build new features	• IT staff • Access to digital backbone
		To maintain the iPad applications that are used by staff to deliver the service and build new features	• IT staff • Specialized software

Operations	To provide insights (operational and customer related) to guide concept development; to provide feedback on the performance of the service; to enact the designed service encounters	To staff the airplanes and deliver the service to the highest standard possible	• Operational staff • Ownership of operational guidelines
		To staff the ground personnel and make sure that airplanes are (de-) boarded, fuelled, loaded, and cleaned as quickly as possible.	• Operational staff • Ownership of operational guidelines

Not every process requires all three categories of units to be involved. I observed projects where only the exploration hub and the operation, or the exploration hub and support partners were involved. Three example innovation projects from FlyCo are pertinent to illustrating this point: Boarding Procedure, Baggage Notification and Passenger Progress Insight.

Boarding Procedure, by exploration hub and operations

An *exploration hub* of FlyCo was asked to design a solution that would improve the 'turn-around time'[67] of the airline. After research and design, this hub proposed to solve one of the bottlenecks in this process: passenger boarding time. The exploration hub designed and tested a new boarding procedure. To implement this design, the *operation* needed to support the design. Official procedures required reform, staff needed to be informed, and the training procedures and eventual operations required change. However, changes to IT or infrastructure were not required. As a result, the change was implemented with limited to no resources from a support partner.

Baggage Notification, by exploration hub and support partner

To improve the experience of passengers, the customer experience-focused exploration hub designed a solution to decrease the chances of having to

[67] This is the time between parking the airplane at the gate (on-blocks) and departure (off-blocks).

demand last-minute baggage check-in at the gate. The concept seemed rudimentary: send a message to customers to notify them that they have booked a relatively busy flight and ask them to check-in their baggage voluntarily. To implement this concept, the operation need not implement any alterations. However, support from IT resources was necessary. New programming was required to identify busy flights, gather personal details, and automatically generate and send messages. Project implementation hinged on the availability and engagement of an IT support partner.

Passenger Progress Insight, by exploration hub, support partner and operations

One of the main causes for flight delays is the delayed arrival of passengers at the gate. Front-line staff often delay the boarding procedure if they know that there are passengers that have checked-in but haven't yet boarded. As a solution, an exploration hub designed a digital service which could provide the front-line staff with time-stamped insight on the progress of these delayed passengers. This allowed front-line staff to make a more informed decision on whether to close the check-in procedure and progress to off-blocks. The road to implementation of this concept proved difficult. New software development was required to gather the (partly external) data and disclose this information through graphic user interfaces. Additionally, the operation needed to adjust their routines and processes to make use of this new information and realise targeted benefits.

To illustrate the contrasts between the projects portrayed above, the resource investment of each type of unit per project timeline is illustrated in Figure 36.

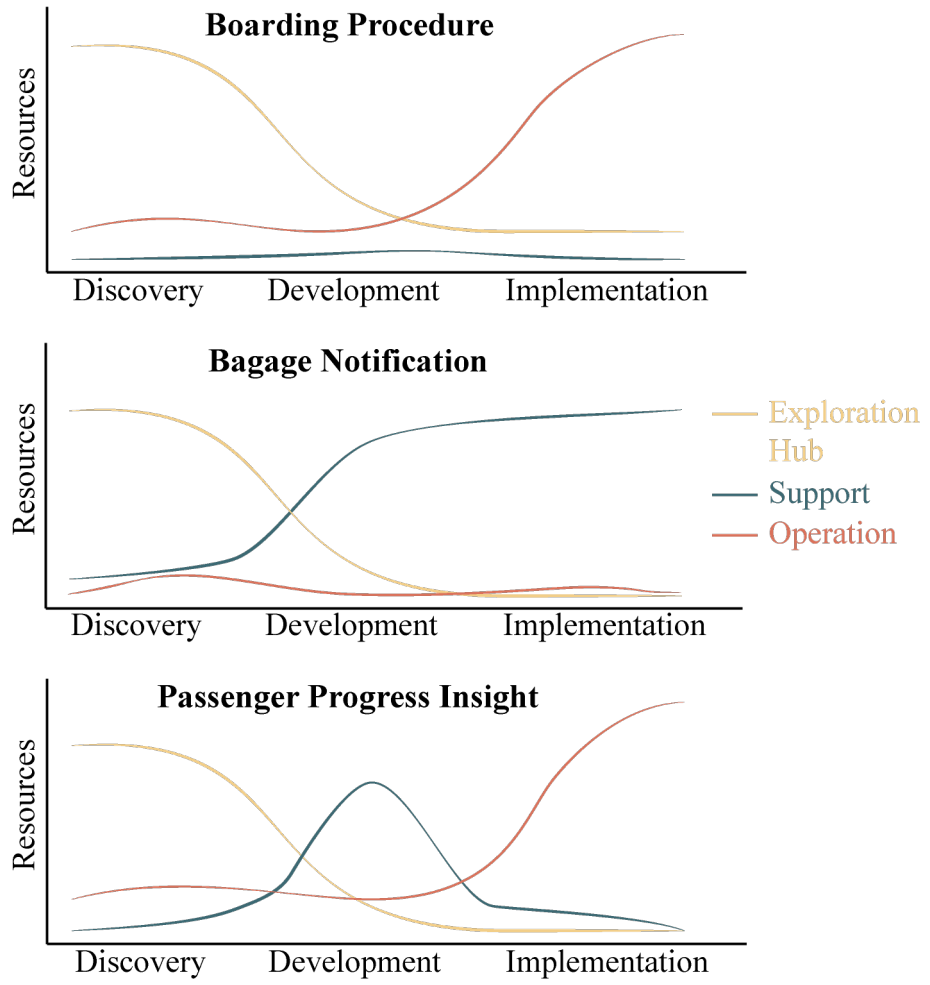

Figure 36: Resource investment of three types of units in the implementation process

Summing up, at FlyCo, three as opposed to two categories of organisational units contribute to the implementation of service concepts. In addition to exploration hubs (research resources) and the operation (commercialisation resources), support partners provide a distinct contribution. Support partners create the environments and objects necessary for concepts to be performed by the operation. In other words, support partners are responsible for producing servicescapes and service clues (Patrício et al., 2018). Shifting focus from the duality of research and operations to including support partners coincides with views of service innovation as reconfiguring resource integration of value networks (Holmlid

et al., 2017) (as discussed in more detail in chapter 5.2) and recognises the distinct features of service firms.

5.1.3 Consequences of the VoD

The third insight of this sub-chapter relates to the organisation as unit of analysis. I identify three organisational consequences for FlyCo as a result of the VoD. A low Return On Investment (ROI) is a more obvious consequence, but I encounter two more indirect consequences of the VoD: a lack of demonstrable impact moves senior leaders to question the legitimacy of innovation; and without implementation, innovation projects fail to fuel organisational learning.

Low Return On Investment (ROI)

To start, there is an expected ROI for innovation initiatives. If, due to the VoD, innovative concepts aren't implemented, their potential return never materialises. Stakeholders at FlyCo were aware of this consequence. For instance, CXO 1 mentions, "I'm convinced that if we can master the skill of scaling successful experiments, we will gain so much profit, even from incremental innovation, so much profit! If we manage to smoothen that flow" (interview, 07/11/2017). PO 6 agrees and adds that this unrealised potential extends to customers:

> … There's too much *just* experimentation. That you don't add any value to the organisation yet. So, the last step to innovation *slash* directly adding value to the organisation, the time-to-market there is just too long. That's a shame because you have an innovation ready, but before the user or the customer really experiences this, there's so much time that goes by before that happens. (Interview, 07/11/'18)

In brief, stakeholders at FlyCo realise that, "Without implementation, even the most promising service innovation remains *just* a potential" (Singh et al., 2020, p. 492).

Legitimacy of Innovation

A second, perhaps less obvious, consequence is a diminishing legitimacy of innovation as an activity and thereby of innovation teams and their methods. As Rauth, Carlgren and Elmquist (2014) note (regarding design innovation),

once the 'honeymoon' of design adoption within an organisation concludes, developing ways to legitimise design become paramount (p. 50). A key approach to legitimising innovation methods is to prove that results are achieved and that additional value is created (for the operation or for the customer). Upholding legitimacy through impact was one of the main reasons for launching project InnoScale (see also 4.2.4). Without (measurable) results, in this case due to the VoD, influential stakeholders start to question the effectiveness of innovation in general and of specific innovation approaches. As a result, they begin considering diverting resources elsewhere. These resources aren't always redirected towards other innovation initiatives. Consequently, the operational transformation loses momentum.

The development of InnoHubs' access to resources (explained in more detail in sidebar A) is exemplary evidence of this sequence. InnoHub was initially considered a key driver for the operational transformation of FlyCo. Regardless of initial success, many of InnoHub's concepts eventually ended in the VoD. Senior leaders then started to question InnoHubs legitimacy and eventually stopped investing resources in the team. When I left FlyCo, it was unclear whether the redirected resources were invested in other initiatives that (more effectively) supported the operational transformation or that strengthened the status quo.

No Implementation, No Organisational Learning

The third consequence of the VoD is that without implementation, innovation projects don't contribute to organisational learning (reflections, 31/05/'18 & 16/06/'18). Besides gaining direct return on investment, another key reason for organisations to establish an innovation lab is to facilitate organisational learning (Lewis & Moultrie, 2005) which is crucial to developing new processes and services and long-term survival (Kalling, 2007). In fact, P-Manager 2 mentions that he was assigned to engage in innovation projects with the primary purpose of discovering process bottlenecks and organisational inefficiencies (field note, 22/01/'18). Part of organisational learning takes place during idea generation, when innovators study current processes and determine bottlenecks. However, during the implementation phase unforeseen obstacles appear, resistance surfaces and implicit assumptions become explicit. Hence, organisational learning potential through innovation appears highest in the implementation phase (Angle & Van de Ven, 2000, p. 694), when this acts as a 'feedback loop' (interview,

manager 7, 14/02/'18). Director 3 recognises this issue by stressing that innovation pushes organisations to reconsider their assumptions when failures happen during testing as part of the implementation process,

> Testing as a step in the innovation process is different from testing to learn… What is your hypothesis? Did you do research? … The mindset to really learn from testing, that is the higher purpose… to learn from your user, that's the higher purpose. … Sometimes you hear that something wasn't implemented because of this and that. … I'm interested in those failures… the added value is actually in those failures. (Interview, 25/06/'19)

An external researcher similarly concluded in an internal presentation that because FlyCo's designers weren't involved in implementation, they never received feedback on their concepts and as such, they never learnt about the (im)possibilities and impact of their proposed concepts (field note, 28/05/2018).

To conclude, when concepts end in a VoD at an early stage, firms don't reap the learning benefits that an implementation process generates. Metaphorically, innovation without implementation is like collecting data without ever performing the analysis and uncovering subsequent insights.

SIDEBAR A

Following successful product implementations with measurable operational results, InnoHub initially was granted more resources (field note, 17/08/'17). One such resource was a dedicated team of software developers to facilitate digital prototyping: InnoHub-Tech (resources that were officially part of the digital department). The developers in InnoHub-Tech only worked for InnoHub projects, and InnoHub did not need authorisation from digitals' senior leadership to supply the developers with work. However, after a period in which InnoHub struggled with the VoD and failed to implement a large portion of their concepts, senior leadership decided to revoke their privileged position (citing a lack of implemented results) (field note, 05/09/'18). During their initial rise, InnoHub also acquired a 'seat at the table' at a senior committee that informed the priorities for customer-oriented innovation projects. When I joined this meeting for the first time, this position was challenged, as I note in my journal, "I'm directly being challenged on what we've implemented at InnoHub lately when I introduce myself as the manager of InnoHub" (field note, 29/05/'18). Eventually, Director 4 announced that he planned to disband the InnoHub team as part of a reorganisation, again citing a lack of implemented projects as reason (an intention and reasoning he later confirmed, interview, 22/05/'19). Regarding this decision, I note in my journal:

> *[InnoHub] will cease to exist… the reason for this reorganisation is for a large part because [Director 4] now doesn't see enough impact of [InnoHub]… [InnoHub] is good at exploring but too few concepts get implemented to make an impact… [InnoHub] was an experiment… but we've learned that just producing concepts doesn't bring the large-scale impact and the step-changes that we want because there's too much VoD. (Field note, 29/09/'18)*

5.1.4 Summary Insight 1: The VoD in FlyCo

This sub-chapter explored how the VoD manifested in FlyCo. The insights in this chapter can each be related to a unit of analysis in innovation management literature (Anderson et al., 2014). In the order of the smallest unit of analysis (innovation project) to largest unit (the organisation), the insights presented in this chapter are:

- Individual level:
  - After initial research and concept generation, concept elaboration and concept production take place over iterative cycles, resulting in multiple development states. Each state required new stakeholders to become involved.
  - The implementation process is iterative, and championing is a reoccurring activity.
  - Concepts can enter a VoD during any transition between development states.
  - The VoD describes the organisational phenomenon where concept development is discontinued when championing efforts fail to gather the required resources for further development.
- Unit level:
  - Three instead of two distinct types of organisational units can be identified regarding their role in service innovation implementation.
  - In addition to the commercialisation and the research capability, the role of Support Partners in implementation is significant.
  - Support Partners are needed to create the environments and objects necessary for concepts to be implemented.
  - A VoD appears between an exploration hub and a support partner or between a support partner and the operation.
- Organisational level, I identified three organisational consequences of the VoD:
  - The VoD lowers the Return-On-Investment (ROI) of innovation activities;

- The VoD diminishes the legitimacy of innovation as an activity and thereby of innovation teams and their methods, and;
- When concepts regularly end in a VoD, firms don't reap the learning benefits that an implementation process generates.

5.2. Driving Mechanism: Organisational Logic Misalignment

5.2.1 Constellation of Organisational Logics

The literature discussed in the literature review was insufficient to describe and explain my data. Consequently, I consulted additional literature and found useful knowledge in institutional theory literature. Specifically, the institutional logics perspective (Thornton & Ocasio, 2008) was helpful. Subsection 5.2.1.1 contains a summary of the relevant literature.

At FlyCo, I identified a constellation (Goodrick & Reay, 2011) of organisational logics[68] across units that need to collaborate for service implementation. At FlyCo, there are three logics: the Airline-, Customer- and Digital logic. The Airline logic is a type of professional logic (Bêvort & Suddaby, 2016). This constellation is similar to what Aricò encountered (2018) at a telecom organisation (in her case: Telco, Customer and Digital). Table xviii provides an overview of these logics.

Table xviii: Summary of the three logics at FlyCo

Logic name	**Airline Logic**	**Customer Logic**	**Digital Logic**
Dominant organisational silo	Operations, senior suite	Customer Excellence, Branding	Digital, Commerce, DigitalOps
Discourse	Logistics	Customer-centred	Technological
Source of Competitive Advantage	Fleet and network	Customer experience	Digital marketing and efficiency through employee superpowers'

At FlyCo, members of each organisational unit operate predominantly according to one of these logics, in line with findings from Goodrick & Raey (2011). These three logics are clearly identifiable in the organisational structure, as the units that hold differing logics are separated in vertical silo's

[68] These organisational logics simultaneously influence individual actors in their decision making and practices, which explain actors' partial autonomy from social structures (Lounsbury & Boxenbaum, 2015).

(internal documentation). In line with propositions by Lammers and Garcia (2017), I find that each logic is dominated by a different discourse.

The Airline logic is dominated by a logistics discourse where the optimisation of fleet usage and development of a network are seen as the airlines' competitive advantage. This became evident during the Operational Excellence Masterclass (see 4.2.2). I asked a group of senior managers whether FlyCo was able to benefit from a higher customer satisfaction. The response was negative. The executives agreed that (at least currently) customers pay for the airline's network and that the price of a ticket is determined by the *demand for transit* from A to B (field note, 18/10/'17). In line with this logic, FlyCo's legacy and experience in the business are a key organisational asset, as emphasised by CXO 1:

> If you just focus on managing and controlling your processes, you're not going to make it. You have to move people to use that [process] knowledge and combine it with everything that's happening in the world around us. Where innovation is much quicker than in our field. If you're able to manage that well, this enormous expertise that we have, again that's part of our legacy, that's just the experience that we've built. If you combine that with the faster world around us, than you've got a beautiful company. (Interview, 07/11/2017)

The Airline logic is especially dominant in operational units. As discussed in more detail in 5.3.5, this logic dominated the senior suite, possibly because most of the senior executives were former operational staff (e.g., the COO was a former pilot).

Alternatively, Customer logic stresses the importance of customer service and creating added value as perceived by customers. Members operating under this logic (with roots in a market logic (Feng, 2013)) prescribe that all employees of FlyCo should base their choices more on the resultant effect on the customer experience, not the operational performance. As Director 2 described it:

> The ambition to make the entire organisation more customer oriented. Not just our own Customer Experience organisation, but all other departments that we work with, that we work more with the customer in mind. That's also a culture change. Consequently, we want to make the customer journey as optimal and consistent

> as possible, with the ultimate goal to achieve an NPS of [value] in 2020. (Interview, 13/08/2018)

Following this logic, FlyCo should focus on creating a smooth customer experience, uncovering and servicing unmet customer needs, and on creating 'Wow moments' for customers (interview, Service Designer 1, 28/02/'18). By doing this and by creating a strong brand, customers become loyal to FlyCo and in turn choose to book FlyCo's (more expensive) tickets when given a choice.

The third logic, the Digital logic, stresses the importance of technology and digital touchpoints to capture market share and improve operational efficiency. As S-Service Designer 1 mentioned, "There's like, such a focus on 'digital is the future', but last year it's all about mobile, now it's about chat bots. It's always going to change" (interview, 19/02/'18). Besides recognising the importance of digital channels in reaching customers, this logic fostered a discourse around giving, "employees technological superpowers" (internal documentation) and getting front-line staff, "equipped and engaged to decide and to inform customers" (externally distributed brochure). PO 1 also mentioned this in describing her units' goal, "We actually want to enable and empower all our frontline staff with digital tooling" (interview, 21/08/'18). The process and visions created during project DigitalOps (see 4.2.3) are in line with this logic as they are based on exploiting the potential of technology to improve the operation of FlyCo (field notes, 15/11/'17).

At FlyCo, I the Customer and Airline logic are competitive, whereas the Digital logic is cooperative with both (see Figure 37). Director 4 presents an example wherein the Customer and Airline logic competed in the practice of operating an airline (reproduced from internal documentation, 05/'18): when boarding time expired, passengers are frequently missing from the plane, even though they have checked-in their baggage or passed the security border. At this moment, frontline staff (e.g., gate agents) experienced a conflict:

- Should they close the boarding procedure and finish boarding in time (Airline logic)? Or;
- Should they wait longer to let a passenger on board who may be just around the corner (Customer logic)?
- Ultimately, it differs per gate agent how these situations are handled, likely resulting in sub-optimal outcomes. From a Digital perspective, a solution to this issue was proposed:

- Present gate-agents with more information about the location of passengers and show them data that helps them understand the expected effect of delaying a flight (e.g., number of missed connecting flights). This information could help them make better informed decisions.

The proposed solution and accompanying practices support practices in line with both the Airline and Customer logic. However, frontline staff are still responsible for weighting this additional information and deciding upon a course of action.

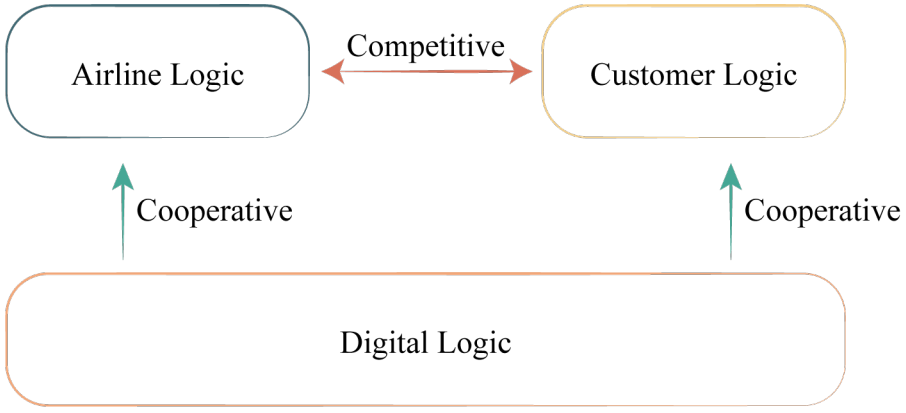

Figure 37: Constellation of logics at FlyCo

To maintain stability and to optimise current service delivery systems, logics are useful as they facilitate collaboration between actors operating under the same logic[69] (Scott, 2008). However, to achieve innovation implementation, FlyCo's innovation projects require units that operate under different logics to integrate resources in novel combinations and co-create value (Holmlid et al., 2017). A route to avoid an alignment issue is to define a recombinant strategy (Dalpiaz et al., 2016). Such a strategy results from institutional work and describes how practices and symbolic constructions from various logics are adopted to certain degrees (i.e., a new combined dominant logic). At FlyCo, I identified no such deliberate strategy. There is no articulated guidance as to which logic is dominant in general (nor in most specific situations). FlyCo's strategic goal "to become the most innovative, cost-effective and customer-centric airline in Europe" (internal

[69] For example, a logic may inform a shared Key Performance Indicator (KPI), which gives collaborating stakeholders a sense of direction.

documentation) is an example of this ambiguity. It is unclear for FlyCo employees how they should act if the actions required to reach these goals conflicted.

Additional Literature: Institutional Theory

Institutions are humanly devised rules, norms and meanings that enable and constrain human action (Scott, 1995). Institutions influence what is seen as meaningful and appropriate behaviour and explain organisational behaviour as trying to gain legitimacy (and thereby survival) and not efficiency per se (Greenwood et al., 2008). For the airline in this study, these field-level rules, norms and values manifest in policies, metrics and rhetoric that discern acceptable actions and outcomes within the industry.

Institutional Logics

Institutional logics is a meta-theoretical perspective, a theoretical lens, within institutional theory (Thornton et al., 2012). Institutional logics are the material practices and the symbolic constructions (Friedland & Robert, 1991) that help actors make sense of themselves and the world. Institutional logics provide meaning, guide how time and space are organised and structure how experiences are reproduced (Thornton & Ocasio, 1999). Within organisations, localised in time and space, institutions shape organisational logics (Spicer & Sewell, 2010).

Within organisations, multiple organisational logics co-exist in constellations (Goodrick & Reay, 2011). For example, in her study on the adoption of service design, Aricò (2018) identified three co-existing logics: Telco, Digital and Customer (p. 156). Logics in constellations are ordered in arrangements that describe the relations between logics (Waldorff et al., 2013). Logics may be competitive or cooperative (Greenwood et al., 2010). When logics are competitive, As Waldorff et al. explain, "An increase in the strength of one logic means a corresponding decrease in another logic" (Waldorff et al., 2013, p. 103). For instance, in the case of FlyCo, operational efficiency demanded standardised procedures (Airline logic), which often interfered with the flexibility required to provide pleasurable customer experiences (Customer logic). Cooperative logics can either have facilitative or additive relationships. In the former case, changes in practice in line with one logic encourage changes consistent with another logic (Waldorff et al., 2013). When a relation is additive, practices can be

found that support more than one logic simultaneously (Waldorff et al., 2013). As the example in Section 5.2.1 shows.

A recombinant strategy can be used to marry a constellation of logics (Dalpiaz et al., 2016). A recombinant strategy describes how practices and symbolic constructions from various logics are adopted to certain degrees and combined into a new dominant logic. For example, "A compartmentalisation strategy… brings the elements of two logics together in the same organisation but creates separate sets of guiding principles and demarcates the domain of application of each" (Dalpiaz et al., 2016, p. 368). Kurtmollaiev et al. (2018), for instance, describe how a collective of actors forge a new logic after the introduction of an additional logic: Service Design. They describe the mechanisms and actions that lead to the construction of a new dominant logic. This way, organisations where multiple logics are intertwined may outperform their peers due to how they hybridise their logics (Battilana & Dorado, 2010).

Organisational logics are dynamic. On macro- and meso-level, institutional logics interact with each other and are elaborated. On a micro level, actors perform institutional work when organisational members deliberately or purposefully create, maintain, and disrupt institutions and their logics (Klitsie, 2018; Lawrence et al., 2011). For example, Lammers and Garcia (2017) (with their focus on communication) mention "the creation and dissemination of texts, narratives, definitions and other forms of discourse" (p. 204) as an example of institutional work. At FlyCo, an example of such institutional work was when employees at InnoHub created materials to disseminate their way of working. When they codified their way of working, they did not use the terms from design innovation literature. For example, they named the prototype phase the 'Lego' phase. These more 'neutral' terms were expected to be adopted by design- or innovation sceptical colleagues more easily.

5.2.2 Three service innovation issues

Organisational logics inform "what is legitimate, reasonable, and effective for an organisation to do in a given context" (Spicer & Sewell, 2010, p. 936). Related to service innovation, the three organisational logics at FlyCo each inform a different interpretation of what is legitimate on three key issues:

- What the innovation priorities of FlyCo are. In other words, what value innovative concepts should aim to create;
- What the innovation process of FlyCo is. Or what methods and approaches are suitable to develop and implement innovation concepts, and;
- What the underlying problems are that need to be solved. Or what legitimate founding problem frames and problem scopes are for innovation projects.

Although not all logics are competitive, misalignments at each of these issues (i.e., priorities, process, and problems) exists within FlyCo. I now discuss each issue and portray the differences between the three logics.

Innovation Priorities

When I asked project managers and champions why their concepts ended in the VoD, I received the same outcome on several occasions: conflicting innovation priorities. One of the project managers of an innovation hub expresses it as follows: "We experience a lot of resistance when we try to implement an innovation. Business owners just say: not my priority!" (field note, Manager 7, 28/9/'17). Another project manager has a similar experience, "We're experiencing a lot of friction. It seems to depend on whether the owner is interested at the moment.… If the business owner doesn't see the result in his KPI's, [FlyCo] won't do it" (field note, P-Manager 1, 02/11/'17). PO 1 summarises this in her interview:

> You find out that what's beneath has to do with priorities that we don't really set in this organisation, at least not on a high level. There is not really a funnel or a portfolio or some sort of organisation with regards to that. … We don't agree on what we find important, we don't agree on what we think are the biggest problems, the bottlenecks. (21/08/'18)

Units operating under the Airline logic consider different innovation priorities legitimate in comparison to other units operating under the Customer logic.

Under the Airline logic, operational efficiency was paramount. Airplanes require large investments, airlines should use them as efficient as possible (CXO 1, interview, 07/11/'17) As Consultant 2 mentions, "The end goal is to have profit maximising operational performance" (field note, 13/07/'18). This is the main goal of the Management Team Operations (MTO), a senior committee situated directly beneath the executive board. An emphasis on efficient operations is in line with industry standards as expressed in the annual review of the international airline association (International Air Transport Association, 2019).

In line with this efficiency driver, the internal 'Operational Excellence' strategy steers executives to value innovative concepts that were able to reduce lead-time through a more reliable and efficient operation (field note, 18/10/'17). Key Performance Indicators (KPI's) in the strategy of FlyCo are the Non-Performance Cost (costs incurred because of sub-optimal performance), Unit Cost (operating cost per seat) and Turn Around Time (time between airplane touchdown and subsequent take-off) (internal documentation). As such, as CXO 1 explains, it seems legitimate to focus innovation initiatives that aimed to optimise the operational process, "It's easy today to think of dozens of projects that are in progress today … It is the optimising of the current process. And that is important for several reasons" (interview, 07/11/'17). In brief, the Airline logic dictates that FlyCo should give strategic priority to innovative concepts that improve the efficiency of the operation to realise a maximum 'return on capital employed' (internal documentation, strategy 2019) and thereby secure organisational survival.

Under the Customer logic, the experience of passengers is paramount. As Director 2 mentions, "From the customer perspective this is paramount… But not everyone has the same viewpoint" (interview, 13/08/'18). This logic aligns more with a growing understanding of the industry that to counter commoditisation, airlines need to distinguish themselves by offering unique experiences (internal presentation, 29/05/'18). Innovative concepts that contribute to a "smooth customer journey and … personalised and memorable experiences on the moments of truth and along the journey" (internal documentation) are deemed a legitimate priority. To realise this goal, the Customer Experience Committee (CEC) was established as a counterpart to

the MTO (interview, CXO 2, 18/12/'17), directly beneath the executive board. The Net Promoter Score (NPS), a KPI at the executive level that reflected customer satisfaction, is an embodiment of this logic. The Customer logic dictated that priority should be given to concepts that significantly improve the customer experience, to strengthen brand loyalty, secure customer demand, and thereby secure organisational survival.

On the issue of innovation priorities, the Digital logic was cooperative to the other two logics. A senior executive at the Digital department mentions that diverging priorities were one of the reasons for establishing a separate digital department, "A new product will never come through the old systems. There'd be too much delay due to constant misalignment" (interview, 10/12/'17). From the Digital perspective, both concepts that aim to achieve operational efficiency and customer experience are legitimate priorities, if these projects leverage digital technology to achieve these goals.

Innovation Process

Organisational logics inform what innovation processes are deemed legitimate, beyond the common general phases of problem analysis, problem definition and concept generation/elaboration. This manifests especially when new Support Partners enter an innovation project. As Service Designer 2 notices, "If we get an idea from [InnoHub], our initial response is to throw the solution away and start with the original challenge", after which she explained that they didn't think InnoHub's innovation process was legitimate (interview, 01/02/'18). Stakeholders suggested that this misalignment was related to communication errors or faulty hand-over documents. One manager of an innovation team therefore proposed a shared toolbox, "So that we can integrate all our efforts. So that the outcome of one department can be used by another and it fits towards the same goal" (field note, S-Manager 2, 12/2/'18). However, regardless of the form of hand-over documents, it seems that teams didn't trust the output of other teams (reflective note, 01/02/'19). Overall, as confirmed by PO 1 (field note, 27/10/'17), on several instances innovative concepts weren't accepted by other units because of disagreements over the innovation process and associated underlying assumptions that informed the innovation process.

Innovation processes according to Airline logic are expected to be linear, rational, and fast. Prominent innovation methods under this logic resemble methods used for manufacturing optimisation and quality management such

as Six Sigma (Schroeder et al., 2008). Innovators start with an extensive mapping of the operational processes, define bottlenecks, key relationships, and key metrics, and then they generate and test solutions (internal documentation). By starting with current processes and documenting proposed changes, this innovation method stimulates innovators to preserve safety and security measures (CXO 1, interview, 07/11/'17), which are two core traditional values of the Airline logic.

Alternatively, the Customer logic emphasises that projects need to start with an understanding of stakeholders' experiences, including those of customers and employees. After this, champions define a desired user journey (the "customer priorities" at FlyCo), from which several solution components are derived (interview, Manager 4, 27/08/'18). The Customer logic aligns closer with a service design approach to innovation as a, "A human-centred, holistic, creative, and iterative approach to creating new service futures" (Meroni & Sangiorgi, 2011; Patrício et al., 2018, p. 6). This alternative approach to innovation (to the approach presented above is why an executive of the CE department initiated Project 3 (DesignCapability) (interview, CXO 2, 18/12/'17). During this project, I noticed that reframing, ambiguity and analysing and designing for emotions were characteristics of this innovation approach that are considered legitimate under the Customer logic, but less so under the Airline logic.

Finally, under the Digital logic, technological possibilities are at the core of the innovation process. The leading thought under this logic is that,

> If you look at the world around us and to the market that we're in, then slowly you see that firms are entering our market that do not allow such a slow pace of innovation. They just have much more speed. There are parties around us… Amazon for freight, GE for engineering and maintenance, and Google for personal travel. They change much more quickly than we do. And they are capable of changing our market and our environment much more radically than we do. (Interview, CXO 1, 07/11/'17)

This logic emphasises that FlyCo needs to experiment with technologies and build the capability to develop technology quickly (interview, Director 4, 07/11/'17). Champions start innovation projects by discovering the possibilities of a new technology, to then find a use case for this technology and develop a specific solution (SP Digital, interview, 01/12/'17). Both the

physical surroundings and the language used under this logic (e.g., "Entrepreneur's pitch" and "VC investments") are similar to that used by high-tech Silicon Valley organisations (internal document, 09/26/'18). As PO 6 explains, this tech-push approach involves the risk of not finding a suitable use-case and force-fitting unnecessarily complicated technological solutions to challenges:

> I hear examples here [at the Digital department] of when concepts were made but not implemented. I think that happens most often because they didn't involve the business early enough or that they experiment with a certain technology without there being an actual need. … I understand that things don't work that way. (Interview, 10/'18)

The innovation methods deemed legitimate under the Digital logic stem from a belief that the radical innovation needed at FlyCo requires new technological capabilities and are distinct from both the Airline and Customer logic.

Founding Problem frames

The third issue of misalignment between the three organisational logics related to what are considered legitimate founding problem frames. A single innovation project can be framed in multiple ways, for example: solving an employee-relate challenge, customer-related challenge, or operational challenge (field note, 26/10/'17). Three founding frames on the same project can be:

- 'Our employees don't know whether they'll board the passengers in time (Employee-related)';
- 'The boarding experience is stressful for passengers (Customer-related)', or;
- 'On too many occasions, we do not finish boarding within our desired operating time-frame (Operational)'.

Each frame informs a different set of follow-up actions (e.g., to further investigate the perception of employees or of customers), implies a different scope and possibly leads to a different final design (Price & Lloyd, 2021). Friction emerges when resources for implementation are required from units that have divergent problem frames or disagree with the problem scope (field note, P-Manager 3, 11/04/'18). InnoHub recognised this problem and aimed

to mitigate this by looking for overlap and defining every project in terms of multiple frames. They added a step in their innovation process to specifically ask other involved units to agree on the problem statement before continuing (interview, P-Manager 3, 28/09/'17). In this way, they gained formal 'buy-in' (or in-principal support) from parties that are needed for implementation. The Airline logic, in line with the linear development process, favours specific and relatively small scopes and problem frames that emphasise operational issues. For example, PO 4 explains that InnoHub's initial problem frames were to, "Have the 'loadsheet[70]' ready in time more often and… [and] have 97% of passengers on board 15 minutes before departure" (interview, 10/'18). Actors operating under the Airline logic deem only problem frames that are observable and measurable as legitimate.

Innovators that are guided by the Customer logic however operate from entirely different problem frames. Their projects are framed to fulfil unmet or underserved customer needs and as responding to deep customer insights (Price & Wrigley, 2016). For example, Manager 4 operated under the Customer logic and championed a project (ensuing from a broad research project performed by an external consultant) with the initial problem frame "to offer customers a personal schedule" (interview, 27/08/'18). Under the Customer logic, relatively wide problem scopes are deemed legitimate.

Finally, innovators that operate under the Digital logic emphasise the needs of employees in their founding problem frames, "The mission is to help our employees make the difference by doing what they do best" (interview, S-Designer 1, 19/02/'18). For example, SP Digital explained that their exploration hub always starts their process with the need of an operational employee (field note, 28/05/'18). Similarly, S-Service Designer 1 stresses,

> What tools does the employee need to have in order to deliver that? We're just making everything so efficient, there's no room for service. But then aren't we a service-oriented organisation? We're not going to compete on product or price. We must compete on our service. But if you're making us like a low-cost carrier by cutting off all the room for interaction… You're setting us not up for success but for failure. (Interview, 19/02/'18)

[70] A document that summarises and approves the weight distribution of a plane.

Technology is framed as an aid for employees to either operate more efficiently or to deliver better customer service. As such, problem frames are grounded in the operations of staff and optimising this.

When project stakeholders are misaligned on project frame or scope, they lose confidence that the proposed solution, once built, is effective in solving their problem. They thus withhold resources needed for implementation, which inhibits further development. On occasion, misalignment regarding problem frames is related to misalignments regarding legitimate innovation processes. When units who are needed to implement a concept don't trust the process of the team that created the concept, they start to question the data used to propose a solution and question the problem frame as well (interview, S-Manager 2, 09/11/'17).

In sum, the three organisational logics that are available at FlyCo influence the perception of stakeholders on what are legitimate innovation practices. Specifically, these logics inform divergent opinions on three issues: what legitimate innovation priorities are; what legitimate innovation methods are and what legitimate founding problem frames and problem scopes are. As explained in the following section, the conflicts that result from misalignment on these three issues contribute to the VoD as resource owners refuse to invest resources in innovation projects that they deem illegitimate.

5.2.3 Logic Misalignment and Not-Invented-Here

In Section 2.2.3, I reviewed literature on service (dominant) logic, which takes a system perspective and describes services as actors integrating resources to create value and outcomes (Grönroos, 2008; Vargo & Lusch, 2008). In line with this, Holmlid et al. describe service innovation as the "reconfiguration of resource integration" (2017, p. 98). This view of service innovation is useful in further exploring the mechanism behind the VoD. In this section, I describe how misalignment (introduced in the previous section) between the three logics available at FlyCo (discussed in 5.2.1) contribute to the VoD through conflicts during the resource acquisition process of Exploration Hub champions.

In FlyCo, service innovation is driven by Exploration Hubs. To progress from service concepts to implementation, significant resources[71] of at least

[71] Resources are here defined as "anything that can serve as a source of power in social interactions" (Sewell, 1992, p. 9).

one of the other two unit types (Support Partners and/or Operations) are required. As discussed in chapter 5.1.1, champions request more resources as the innovation process proceeds from one state to the next. This process of resource acquisition and subsequent integration is visualised in Figure 38.

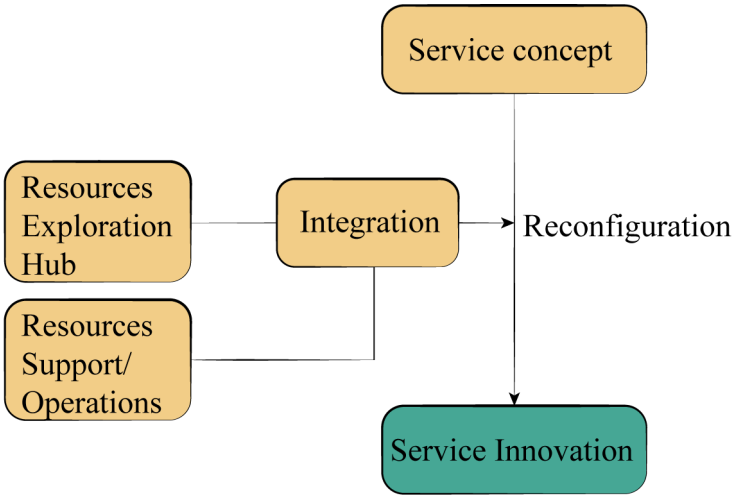

Figure 38: Service innovation as reconfiguration of resource integration

Resources can be both human (e.g., strength, knowledge) and nonhuman (e.g., objects, access) (Aricò, 2018). As I note in my journal, the combination of resources requires is unique to each project, "It seems as if every innovation has a micro-organisation. How do you keep these aligned on the problem and solution?" (24/07/'19). The 'micro-organisation' referred to the specific set of Exploration, Support and Operational units involved in each innovation project.

Time and access to IT personnel are popular resources. To illustrate, PO 1 mentions:

> In the beginning of the project, we worked fast because there were not many dependencies and the prototype could be built stand-alone. … Implementation, however, takes so long because of the [FlyCo] Digital department's planning. The project had to fit into their plans and priorities too. This was compounded by data limitations, slow APIs, and back-ends that [were] not accessible. (Internal document, 03/'17)

But I encountered other examples of resources as well. For instance, manager 6 recounted when she needed operational personnel to provide

guidance on how to effectively implement a new service concept, but "People just don't make time" (field note, 14/04/'18). Similarly, during his time as manager of InnoHub, Manager 7 mentions a list of resources that projects at InnoHub often required:

> There are four factors that determine how easy it is to implement a project: whether the concept involves data, IT, a change in physical infrastructure and whether it concerns safety-critical processes. The number of categories touched correlates to the difficulty of implementation. (Interview, 14/02/'18)

Ideally, each concept that Exploration Hubs produce (and thus invest resources in) acquires at least enough funding to test the feasibility, viability, and desirability of the concept. However, resources are perceived as being in limited supply and concepts are many.

As Dong, Lovallo and Mounarath (2015) identify, "Companies are facing a large stream of ideas, and are struggling with the filtering and selection process" (p. 37). Champions need to convince gatekeepers that their concept should receive resources over other concepts. In other words, they need to show legitimacy for themselves and their concepts.

However, for solutions to complex problems, objectively assessing quality is complex. Challenges at service organisations invariably include a human component. Characteristic of these challenges is that there is not one 'right' and 'objective true' solution. Solutions merely satisfice (Simon, 1996), worse or better to adaptable criteria based on one's own problem frame (Boland & Collopy, 2004c)). Consequently, as Liedtka argues, "Because the solution represents invented choice, rather than discovered truth, its contestability affords a major role to argumentation. 'Making the case' becomes critical" (2004, p. 196).

The importance of 'making the case' is confirmed by PO 1, "So we often say, 'go to that person and convince them to get it prioritised.' And sometimes good ideas stall because they end up at a person and that person just doesn't think it's good. It's a one-person failure mechanism" (interview, 21/08/2018). By exception, these discussions take place in formal settings, but generally champions make their case and request resources in personal meetings between champions, gatekeepers, and/or sponsors.

Internal documentation (pitch slide-decks) show that champions try to establish legitimacy by arguing the quality of their methods and the insights

that guide their concept decisions. They aimed to convince gatekeepers of two aspects of their projects: (1) their problem frame, and (2) their proposed solution to that frame. In other words, they argued that their concept would result in positive impact (i.e., objective merit) and that it would contribute the type of impact that the organisation needed. As Director 4 explains, "… We also try to set quantitative indicators, that would show whether these qualitative interventions, whether they made the *right* kind of impact" (interview, 22/05/'19).

This observation is in line with findings by Dong, Lovallo and Mounarath (2015), who state, "Design concept selection should entail two aspects. First, it should entail evaluating the merits of a design concept as it stands, which requires deductive analysis. Further, it should be intrinsically forward-looking, requiring a long-term perspective of 'what might be' rather than 'what is'" (p. 39). The first aspect (expected impact) may be argued and proven rationally (to a degree) (Dong et al., 2015). For example, PO 6 convincingly argued that a service that would transport passenger baggage from their front-door directly to their destination would be appreciated (and perhaps even paid for) by customers (internal presentation). However, what kind of impact an organisation needs, and thus what problem frames it needs to solve, depends on the organisational logic because logics help actors determine what is legitimate (Vargo et al., 2015). To continue the example, whether FlyCo wants to introduce an additional door-to-door baggage service is a matter of strategic priority (field note, 26/11/'18). This impact of organisational logics on the championing process is visualised in Figure 39.

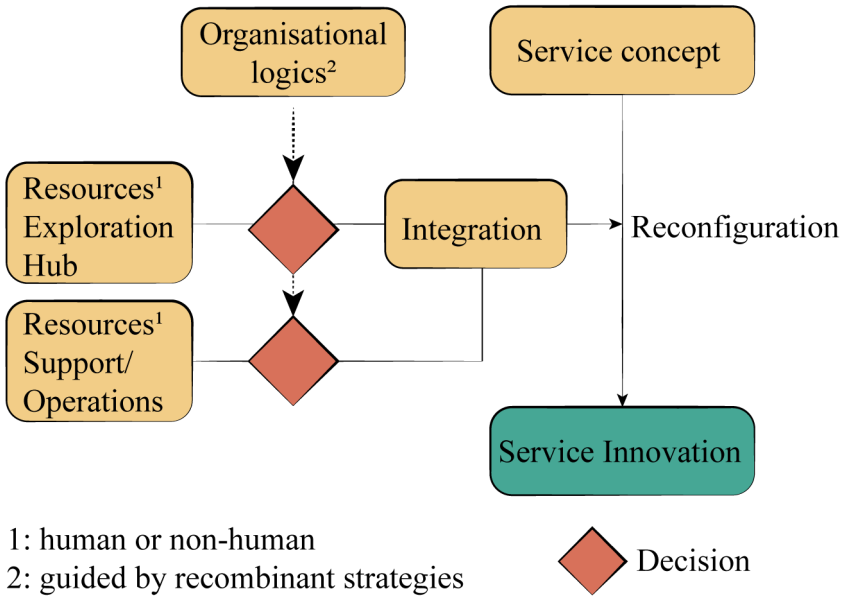

Figure 39: Influence of organisational logics on resource acquisition (i.e., championing)

I observed regular successful reconfiguration of resource integration between Exploration Hubs, Support Partners, and Operational units that operated under the same logic. An example was the success of the 'Europe improvement team', an Exploration Hub that operated under the Operations logic (interview, S-Manager 3, 19/11/'18). However, when there is misalignment between logics and there is no recombinant strategy that guides the simultaneous use of multiple logics, resource acquisition is often unsuccessful, leading to a VoD.

Not-Invented-Here

Gatekeepers don't discuss the concept themselves when they deny resources due to logic conflicts. Instead, they reference the conflicting logics or the before-mentioned misalignment issues (priorities, process and founding frames). Logic conflicts influence gatekeepers subconsciously, as an attitude bias where concepts are rejected not for their own merit, but for their origin (i.e., different logic). For example, Director 4 was asked to invest resources in concepts proposed during an innovation contest and filtered for strategic fit by a chief executive (field note, 08/12/17). Director 4 refused to invest resources in these concepts. In his argumentation, he doesn't discuss the concepts themselves. Instead, he dismisses the Exploration Hub that proposed

the concepts, “They’re just not part of the team… This is typically ivory tower innovation. They never discussed their approach with us, or the assignments, or the solutions” (field note, 01/02/’18). Decision makers exhibit a Not-Invented-Here attitude bias, where their negative attitude “toward knowledge that has to cross a contextual (disciplinary), spatial, or organisational (functional) boundary, [results] in either its suboptimal utilisation or its rejection” (Antons & Piller, 2015, p. 197). As Antons and Piller (2015, p. 197) describe, such biases may be harmful for organisations when knowledge that is objectively useful for organisations is rejected by individuals.

To conclude, when champions from Exploration Hubs need to acquire resources from Support Partners and Operations units to implement concepts, perceived limited resources motivate resource owners (i.e., gatekeepers) to judge innovation projects on their legitimacy, and not only their ‘objective’ merit. As legitimacy judgement is informed by the logic of the decision maker, conflicting logics inhibit the required resource pooling. In effect, conflicting logics trigger a Not-invented-Here attitude from gatekeepers which inhibits implementation.

5.2.4 Summary Insight 2: Organisational Logic Misalignment as Driving Mechanism

In this chapter I aimed to identify the mechanism that drives concepts into the VoD. In section 5.2.1, I described the constellation of three organisational logics that are present at FlyCo:

- Airline logic, dominated by a logistics discourse where the optimisation of fleet usage and development of a network are seen as the airlines’ competitive advantage;
- Customer logic, which stresses the importance of customer service and creating added value as perceived by customers, and;
- Digital logic, which stresses the importance of technology and digital touchpoints to capture market share and improve operational efficiency, in this case by giving “employees technological superpowers”.

The Airline and Customer logic are competitive, where the Digital logic is cooperative. Each organisational unit operates predominantly according to one of these logics and no recombinant strategy exists that guides work spanning these logics.

In the second section (5.2.2), I described the three service innovation issues that the logics have differing views on:

- What the innovation priorities of FlyCo are. In other words, what value innovative concepts should aim to create;
- What the innovation process of FlyCo is. Or what methods and approaches are suitable to develop and implement innovation concepts; and
- What the underlying problems are that need to be solved. Or what legitimate founding problem frames and problem scopes are for innovation projects.

In the third section (5.2.3), I built on the conceptualisation of service innovation implementation as "reconfiguration of resource integration" (Holmlid et al., 2017). I illustrated how perceived limited resources motivated gatekeepers to judge innovative concepts on their legitimacy (and not only their 'objective' merit). As logics guide legitimacy judgement, misalignments between logics lead to a Not-Invented-Here attitude from gatekeepers towards concepts from 'foreign' logics. Consequently, champions can't gather the resources needed for implementation and their concepts end in a VoD.

5.3. Organisational Barriers Contributing to VoD

In the following sections, I describe barriers related to one level of a unit of analysis (organisation/unit/project/stakeholder) that contribute to the VoD. Yet barriers often connect to other levels; multiple barriers can influence one project and difficulties may compound. For example:

- Barrier 1 (5.3.1), a complex, siloed organisation refers to a property of the *organisation*;
- Barrier 7 (5.3.7), stakeholders enter in-medias-res describes a situation in which a *stakeholder* may find itself during a *project,* and*;*
- Barrier 9, a lack of 'Shadow of the Future' is best described as a condition under which an explorative *unit* operates.

The following four barriers describe which properties of the organisation of FlyCo contributed to the VoD. They describe the high-level circumstances under which champions undertook innovative projects.

5.3.1 Complex, Siloed Organisational Structure[72]

This barrier refers to how the organisational design of FlyCo, or the way that work had been cut-up in 'manageable' pieces, contributes to the VoD. FlyCo's organisational design, is shaped by the tasks that need to be performed (Puranam, 2014), but also by its legacy and the (highly regulated) industry that it operates in. As Director 4 mentions, FlyCo's organisational design aims to respond to two types of complexity in its operation, (1) 'assembly line complexity' and (2) 'rocket complexity' (field note, 13/7/18).

With 'assembly line complexity', he refers to the many sequential *and* parallel tasks that need to be performed to create the conditions to deliver the service. The onboard catering supply process is an example of such a string of sequential tasks. Before a sandwich arrives in front of a passenger, FlyCo needs to: procure the (ready-made) sandwich; package it appropriately; transport it to the airport warehouse; transport it from the warehouse to the airplane; serve it as part of a (lunch) menu serving routine; and dispose of the waste. The operation requires tasks to be performed in parallel as well. Staff needs to fuel the airplane, *while* gate-agents check-in passengers and *while* pilots prepare the plane for take-off.

[72] This section is based on my 2019 *Design Management Journal* paper.

To complicate matters, FlyCo operates on short-range, long-range, and intercontinental routes. For these routes, FlyCo uses unique assets (e.g., different planes), competes with different competitors on these routes (e.g., low-cost carriers specialised in short-range flights) and optimises different aspects of the service (e.g., efficiency is more important on short-range flights than intercontinental). Consequently, labour is divided along route differences. This results in a complex organisational design, as concluded by Service Designer 1, "FlyCo is a huge company with a very complex department-roles structure. It is even difficult to understand for employees that have worked there for more than 10 years" (interview, 28/02/2018). As internal documentation (e.g., organisational charts) show, to manage the inherent complexity of the organisation, FlyCo created a large and complex hierarchical organisational design, internally referred to as the 'line operation'.

With 'rocket complexity' on the other hand, Director 4 refers to the multiple, at times conflicting requirements for the service. The operation needs to be, for example, safe, pleasant for staff, pleasant for customers and efficient. Units outside the line organisation (i.e., in 'staff' units (Chandler, 1977)), constantly work to balance these needs and improve in the face of this type of complexity. For example, when FlyCo identified digital technology as a possible driver for competitive advantage, a 'Digital' department was created that interacts with virtually all other units. However, due to historic choices and a strategic alliance with another airline, this department could not take on the responsibility of managing and developing social media or the website platform. This, Manager 1 notes, is the responsibility of another unit in the commercial domain of the organisation (field note, 10/10/2017). Additional units to the line-organisation thus exist, which report to different executives (internal documentation). Consequently, FlyCo is organised as a complex web of units.

Labour division is unavoidable (Puranam, 2014), although this could be done in more or less complicated designs. Previous research shows that such division need not be a barrier for innovation (Damanpour, 1996; Singh et al., 2020), unless communication across silos and/or organisational levels is lacking (Johnson, 2001; Moss Kanter, 2006; Van de Ven, 1986). At FlyCo, the division of labour is a barrier because communication and collaboration *between* units is indeed limited, especially between the 'line' and 'staff' organisation. As concluded by an external researcher, not the existence of

silos but 'silo thinking and working' is one of the main barriers for innovation at FlyCo (field note, 28/05/'18). Similarly, Director 6 describes FlyCo as an organisation in which each unit acts as a separate company, with its own culture and people (field note, 19/07/'18). In all, as is common in hierarchical organisations (O'Reilly & Tushman, 2013), vertical communication structures inhibit collaboration across silo's at FlyCo.

Because of the organisational design of FlyCo, fragmented stakeholders 'manage' the same segment in the customer journey with sporadic collaboration. Additionally, because of the complexity of the operation, seemingly simple interventions in the operation influence processes and stakeholders in the organisation in ways that are difficult to understand or predict.[73]

Contribution to VoD

The complex siloed organisational design contributes to the VoD in three ways. First, without a complete understanding of the organisation, it is difficult for champions to involve all the appropriate stakeholders at the start of the project. As one designer recalls, "We found the front-end designer actually too late because nobody knew him, he didn't know about my project, it was by accident that we came across him" (internal document, 03/'17). Similarly, Director 2 recounts:

> We're still doing too much in silo's...it still happens too often that new ideas come out of silos. They are then presented almost at the moment of implementation. And [CXO 2] even experiences, he sits in the [customer experience board], that [operational unit] or [digital unit] presents an innovation in the board. And then he thinks: okay, good, but why did we not know about this? Why weren't we involved? (Interview, 13/08/2018)

Without an oversight of related stakeholders, champions accidentally exclude vital stakeholders from initial phases. Key resource owners may be left out of the initial innovation phase. As detailed in section 5.3.7, when these stakeholders enter mid-process, a VoD can be triggered as they introduce new constraints or different frames.

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[73] As CXO 1 mentioned, it could take a year to change the type of sandwich on a flight and doing so requires changes in many IT-systems (interview, 07/11/2017).

Second, overlapping responsibilities and conflicting requirements lead to situations in which too many stakeholders feel responsible for challenging the legitimacy, viability, and feasibility of projects. As one manager recounts: "By the time more people are aware, communication is key to keep everyone on the same level and enthusiastic. … The need to be involved is so huge that you spend all your time and energy just keeping everyone updated, and still people feel left out. That leaves you almost no time to solve the actual issue" (internal document, 03/'17). Similarly, PO 1 mentions, "[Our product] covers 5 domains and has 15.000 users, you can have a lot of impact. But everything in FlyCo takes very long because everyone has an opinion and you encounter lots of barriers because all those domains work differently and want different things" (interview, 21/08/'18) The complexity of the organisational design thus contributes to the VoD as the overload of stakeholders limits the momentum and flexibility of champions.

Finally, more indirect, the siloed communication structure of FlyCo contributes to the VoD by minimising interaction between stakeholders with different organisational logics. Director 2 explains this,

> This remains how the organisation is built. You still have 'decentralised' product managers that have their own priorities and their own budget and spent more attention on their own projects. We keep having this and so we can have good ideas from our side, even where we involve all the right parties, but they still die because, well, the organisation isn't built to do this. (Interview, 13/08/'18)

By organising (and allocating budget) predominantly along silo lines, members with different organisational logics remain separated, whereas integration and contact are key countermeasures to the Not Invented Here attitude (Hannen et al., 2019) discussed in Section 5.2.3.

5.3.2 Lack of a Shared Service Vision

A product vision is an ontological representation of a yet-to-be-realised product (Sarpong & Maclean, 2012). It describes, through metaphors, images or insights, the value that a product creates and how this value is delivered (Crawford & Di Benedetto, 2003). Well-known examples of product visions are the concept cars that car manufacturers design, produce and present at large auto shows each year. Through these cars, automakers materialise a

vision for the (far) future of their product. In this research, in which I study service organisations, I refer to these visions as *service* visions. At FlyCo, I observed many service visions, yet not one vision was articulated and broadly shared at the highest executive level. This absence of a shared service vision, acts as barriers that contributes to the VoD.

The executive committee of FlyCo produces strategic forward-looking documents. However, these documents: only mention long-term numerical targets; describe only 'functionalities' to be introduced in the following year (such as Wi-Fi on board), or; describe the strategic positioning of FlyCo relative to other airlines (field note, 5/11/'17). This focus on competitors and numerical indicators was confirmed by P-Manager 2 (field note, 6/11/'17) and CXO 1 in their descriptions of the strategy-making process. As CXO 1 mentions, strategic discussions revolve around targets, "If you don't make this target in 2023 as company, then you're not relevant anymore in the market. If you see how the market develops and where it's moving in the domains that we want to be a relevant party, then you have to wonder what targets we need to set ourselves to play a role there?" (interview, 07/11/'17) FlyCo set a strategic target to become the most customer-centric airline of Europe. But the customer intimacy strategy (i.e., *how* to become customer centric) hasn't been thought through and isn't broadly shared (interview, CXO 1, 08/02/'18). In line with this, an external researcher at FlyCo mentioned in his final presentation to the board that, "What's missing, is looking to the future to define projects in the now" (field note, 28/05/'18). Overall, (long-term) strategic documents provide guidance to FlyCo employees mainly in terms of numerical targets, not in terms of what value could be offered to customers in the future or how this value could be delivered.

Intrigued by the absence of a service vision at the highest level, I inquired at lower levels of the organisation for available service visions. Initially, I observed a similar focus on performance indicators. For example, the overall vision for hub operations entitled 'The Course' [translated] predominantly describes targets for airplane turn-arounds, more efficient processes, and less absence of staff (interview, SP Hub, 27/07/'18). But I eventually encountered more articulated service visions at this lower level of the organisation. Figure 40 is an example of such an articulated vision, made by InnoHub and an external agency on behalf of the operational unit responsible for hub operations. The vision shows various user groups and what services FlyCo

could offer in the future (e.g., doc-less identification). However, these visions only describe a limited part of the service offering. Similarly:

- InnoHub facilitated the process to create a vision for the on-board employee experience (P-Manager 5, field note, 28/05/'18);
- Part of project DigitalOps in ARC 1 was to create a vision for planning optimalisation and disruption management processes, and;
- the Customer Experience department created their own visions for the airport and on-board experience of customers (Manager 4, interview, 27/08/'18).

During my immersed period, I observed an evolution from the absence of service visions to (organisationally) bounded service visions that are disconnected and a lack of an agreed upon service vision at the executive level.

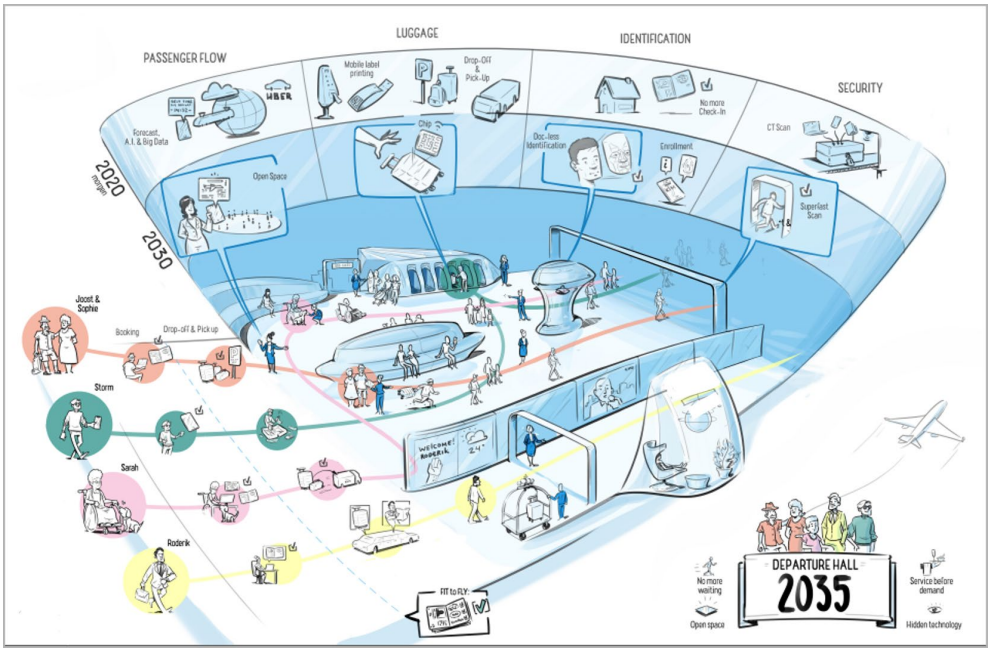

Figure 40: Future service vision of the airport, created by InnoHub and an external design agency

Contribution to VoD

The absence of a shared service vision contributes to the VoD in three ways. First, visions inform *organisational innovation priorities* that span organisational units and logics. As Manager 7 explains, when presenting their

innovative concepts to gatekeepers, champions can appeal to how their concept contributes to realising a service vision to gain legitimacy from units operating under a different logic (interview, 14/02/'18). Decision makers can use service visions to inform decisions regarding which projects to grant resources. When there are multiple visions, decision makers can hold divergent opinions regarding which projects are legitimate and which aren't. This contributes to the conflicts underlying the VoD.

Second, as Sarpong and MacLean note, "visions mobilise current potential to move in the direction of tactical and technical goals… [they] influence framing of customers' problems which require solutions" (2012, p. 695). In other words, visions guide coherent *idea generation*. Without a shared service vision, units generate ideas which conflict with visions held by other units. Manager 7 explains, "At FlyCo we often start our projects with technology instead of a vision of what the value we want to deliver" (interview, 14/02/'18). The resulting concepts end in the VoD when resources from the operation were needed, because champions can't appeal to a shared vision.

I observed an example of this at InnoHub. In an effort to improve the efficiency of the ground crew, PO 4 (at InnoHub) created a concept to support a move towards *decentralising* the planning of ground crew and self-organising teams around physical locations. When he required resources from an operational unit to test his concept, he encountered resistance. After inquiry, we uncovered that the operational unit had articulated a vision (with encouragement of DigitalOps) in which they pursued technology-enabled *centralised* planning of ground crew. However, this vision wasn't shared with InnoHub. Because of this conflict, the decentralisation concept wasn't tested. If PO 4 had been aware of the vision of the operational unit, he perhaps wouldn't have invested in a concept that was incompatible with this centralisation vision.

Third and final, when operational stakeholders invest in- and articulate a vision, they take ownership of innovation projects that contribute to this vision. As a result, they are more involved in the implementation of the concept. PO 1 mentions this issue and explains how the absence of a vision contributes to the VoD:

> What I notice is that managers look to the separate units to drive innovation for them. … An example: that [InnoHub] needed to come-up with a vision on the arrival hall or the departure hall of

> the future! Then I think: 'it's the job of managers to boost innovation towards the departure hall of the future.'… That should be in the DNA of managers, otherwise you never get the needed focus and priorities and innovations will stall later on. Because [InnoHub] can make a beautiful vision like that, but how do you make sure that they will actually embrace the vision? (Interview, 21/08/'18)

In other words, when operational stakeholders operate with an articulated vision, they commit to making sure innovative concepts reach implementation. Hence, the creation and ownership of a service vision by operational units moves the dynamic from one of innovation push (by the exploration hub) to innovation pull (by the operation). This dynamic stimulates innovation implementation and mitigates the VoD.

5.3.3 Decentralised Innovation Portfolio Management[74]

Innovation Portfolio Management describes a set of activities in which an organisation decides what innovation projects to start, continue or terminate to realise a strategy (Kester et al., 2011). FlyCo manages their innovation portfolio in a decentralised structure (field note, Manager 4, 8/11/'17).[75] There is no top-down committee who manages the entire innovation portfolio, nor is there an infrastructure in which the executive board periodically decides on innovation activities. Instead, to foster corporate agility, 'autonomous and aligned' units are expected to manage their own portfolios and activities (interview, SP digital, 01/12/'17).

Organisational units use various approaches to select what projects to work on and to manage interdependencies between units. For example:

- The 'Digital' department created their own centralised 'portfolio office' to manage the portfolio of the teams that are part of this department (S-Service Designer 1, interview, 02/19/'18). This office later transformed to become an investment board (internal documentation).
- Exploration Hubs in the operational organisation and at DigitalOps (such as InnoHub) developed distinctive methods to prioritise their

[74] This section is based on my 2019 *Design Management Journal* paper.

[75] With the exception of exceptionally large, incidental capital investments. Those need to be approved by a specific committee.

activities (internal documentation). At DigitalOps, Director 4 created the role of portfolio manager to manage interdependencies between teams (field note, 26/10/2018).

- The Customer Experience unit seems not to apply any systematic method,[76] to select projects. Director 2 explains, "As far as I know, from the Customer Experience side, we don't have a good gatekeepers meeting. Not one in which we say, 'we have selected a number of prototypes that we want to test and if they don't achieve these results, we will stop the project and focus on other technologies'" (interview, 13/08/'18). Instead, (senior) managers individually decide what projects their team members pursue.
- The IT department introduced Planning Increment (PI) events where hundreds of developers gathered to align their planning and manage interdependencies (field note, 15/05/'18). However, the organisational scope of these events was limited and project selection procedures were left decentralised.
- Overall, units are not aware of each other's planning and priorities and different criteria are used by units to prioritise their activities (interview, S-Service Designer 1, 19/02/'18 and internal documentation).

During my time at FlyCo, management increasingly put structures in place to support integral planning and prioritisation. In Sidebar B, I describe such an initiative in which I was involved. There was a noticeable search for balance between affording autonomy to innovation teams whilst mitigating the negative effects of this approach.

Contribution to VoD

FlyCo's decentralised innovation portfolio management approach contributes to the VoD in two ways: (1) innovation projects secure initial resources even though they have a weak fit with the corporate strategy and (2) without an overview of in-progress innovation projects, projects stall without senior management noticing.

I start with the first route to the VoD: when innovation projects start with a weak strategy fit. Because units are granted autonomy in selecting their projects, not all these projects are thoroughly tested for their alignment with

[76] Although they did have a high-level priority list for each year, the 'customer priorities'.

corporate strategy. Consequently, when resources from other units are needed, champions can't appeal to the corporate strategy to gain legitimacy for their project. At InnoHub, employees noticed this dynamic. According to PO 5 and Director 4, one of the most effective changes proposed during InnoScale was that InnoHub would only work on projects that were in line with business priorities (interview, PO 5, 12/11/'18 and interview, Director 4, 22/05/'19).

A project of Service Designer 1 provides a clear example of such a case of a weak strategy fit. She explains that her project was never formally assessed in that regard:

> So that's how they kind of give priorities to different [project proposals]. And then if your [project proposal] is something that's easy and it's going to give a lot of money and its very nice for the user and everything, then it goes on top of the list. But my project never went into this [prioritisation] market, through this [project proposal] phase. I didn't know and the person I was working with also didn't know there was such a way of working. … It would have gone to a backlog somewhere and maybe it would still be there, I think. (Interview, 28/02/'18)

After Service Designer 1 and colleagues invested resources and developed this concept, they needed support from other units for implementation. They were unable to secure this, "It was never more important than the other things that were happening here" (interview, 28/02/'18). Director 4 links this case to the use of corporate sponsors, "If you can't get onto a backlog, I wonder whether you're really working on a strategic priority… [or] If you're not just leaning on a sponsor. You've got to get commitment from everybody first" (field note, 26/03/'18). Service Designer 1 explains that when her "biggest sponsor" moved to a different organisational unit, her project lost support and ended (interview, 28/02/'18). The designer of a different concept recounts a similar story:

> [Name] as a sponsor was definitely necessary because he gave me access to data and people. That's definitely important for implementation in big companies, you need someone to sponsor you. If you don't say their name when emailing, people don't feel obliged to help you. … The project was stopped because the new

> CEO [didn't] sponsor the project anymore and the project lost momentum after such a long time. (Internal document, 03/'17)

Champions can gather resources for projects that do not align with the organisational strategy. They can do this by using sponsors who have considerable autonomy in prioritising their projects. However, once resources from other units are needed, projects require wider support, which they are unable to secure once their projects are scrutinised for their contribution to the corporate strategy.

Decentralised innovation portfolio management contributes to the VoD because it exempts senior executives from having an overview of in-progress projects. Without this overview, executives do not notice projects that diverge from the organisational strategy or stall within departments or during ownership transfers. As CXO 3 mentions, "This is a leadership issue that we have. If you [operational executive] give an assignment [to an Exploration Hub] and you like the solution, you should follow up. … There should be transparency to show who isn't owning innovations" (field note, 10/04/'18). Similarly, Director 4 mentions about InnoHub's project selection, "That means that I need to be involved in deciding what they will work on. I can't let it happen anymore that they say, 'we're working on this project because we thought it would be cool…'". Manager 4 mentioned that one of the key goals of establishing portfolio management, was to be able to notice concepts that fell into a VoD (internal documentation). As manager of InnoHub during ARC 3, I encountered executives unaware of the status of projects that exploration hubs were performing on challenges in their domains (field note, 14/08/'18).

To conclude, centralised innovation portfolio management requires an overview of in-progress projects. At FlyCo, there was no need for such an overview. Without it, executives do not notice projects that are struggling to secure resources or that are 'in mid-air' between ownership of units. When no-one oversees the ownership transfer between units, this provides an opportunity for a VoD as concepts fall 'between the organisational cracks'. Without notifications, executives aren't moved to action and projects fall into a VoD.

Sidebar B

During a Design Doing Yearly meeting, I discussed the link between the VoD and portfolio management with CXO 3 (field note, 10/04/'18). Shortly after this, CXO 3 assigned Director 4 the task of setting-up organisation wide innovation portfolio management, for passenger services[77] (16/05/'18). Director 4 invited me to be a part of the project group tasked with setting-up this structure. During the meeting with this project group, the group struggled with the diversity of innovation teams, activities, methods, prioritisation and planning mechanisms (field note, 12/06/'18 and 10/07/'18). After several meetings, when my immersed period for this research ended, this project team had proposed an initial plan (internal documentation). In 2020, FlyCo invited a group of students to design the interactions for the portfolio management process (internal documentation). I was involved in coaching these students. During this process, I learned that FlyCo maintained a decentralised innovation portfolio management strategy.

[77] Thereby excluding the maintenance and cargo activities of FlyCo.

5.3.4 Competitive internal innovation marketplace[78]

At FlyCo, multiple exploration units and support partner units operate in parallel. Each unit is principally responsible for a specific scope (field note, CXO 1, 18/09/'17) and each unit invests its own blend of resources into innovation projects. For example, there's an Exploration Unit of consultants that uses Total Quality Management (TQM) techniques (Cao et al., 2000) to incrementally improve the operational efficiency of the European fleet (scope) (field note, 29/10/'18). But due to the complexity of airline operations these scopes regularly overlap. Additionally, resources in these units can be useful to achieve more goals than the scope of that specific unit. As such, units have considerable flexibility in deciding which strategic challenges to tackle.

To match the resources for innovation to the existing strategic challenges, FlyCo applies an internal market logic. There was little executive control and oversight over which new Exploration Hubs were created or what their scopes and assignments are. Instead, managers of exploration hubs and business executives meet regularly, but not collectively, to match offers (resources of exploration hubs and support partners) and demands (existing strategic/operational challenges) (interview, Director 4, 26/11/'18). FlyCo executives expect that this market mechanism promotes a 'survival of the fittest' culture between exploration hubs. This mechanism, they believed, benefits FlyCo as a whole because only the most effective innovation teams get enough assignments (and in return, support) from business executives. Low-performing innovation teams (perhaps with inadequate methods) are starved from resources and disband (field note, 25/09/'18).

As a result of this approach, exploration hubs and partner resource units compete for assignments. PO 4 explains his experience with this competition,

> What you notice is that you try to coordinate with the [management team operations] what assignment you're solving, but now for some reason that doesn't work anymore. Because everyone just tries to take as much as they can to make sure that they have enough work. That's really how it feels. So, everyone just starts running, running, running, which goes at the expense of quality in order to acquire as much assignments as possible

[78] This section is based on my 2019 *Design Management Journal* paper.

> about a certain topic. You become a sort of competitor of each other, which I think is weird because you should be cooperating, but that doesn't happen because we're three competing teams. You should integrate those, but that never, that phase, that structure was never established. (Interview, 01/11/'18)

In a similar manner, both S-Service Designer 1 (interview, 19/02/'18) and Manager 7 (interview, 14/02/'18) mention a 'fight' between exploration units. This competitive element shows when Director 4 mentions this survival challenge for InnoHub, "When the first product owner at [CE] is successful, we won't need [InnoHub] anymore… just like the [European fleet exploration team] is successful without [InnoHub] right now" (field note, 26/03/'18). To summarise, I observed competition between the various exploration hubs and support partners for assignments.

Contribution to VoD

Successful implementation requires that units collaborate to combine their resources and thereby create additional value. However, as SP Digital explains, the internal competition between units inhibits such collaboration and the subsequent pooling of resources, "Everyone wants to own everything and is busy protecting his/her turf, no-one plays the ball to each-other" (interview, 01/12/'17). PO 6 summarises this barrier when she is asked what FlyCo's biggest challenges are regarding innovation,

> I think there are a lot of resources and the right skills to be able to innovate, that's taken care of. However, our time-to-market that's something we need to figure out still. A possible barrier is that there are so many different innovation spaces within our organisation. This doesn't need to be a problem I think, because we're all working towards the same goal: improving [FlyCo]… But the culture is such that it doesn't work that way, political forces come into play because we're organised the way we are… the moment that an assignment comes from an operational unit and they ask us to solve it, but also this other unit and another, then it turns into a sort of game. We're left to wonder, 'what do you want? Our help or someone else's?'. It shouldn't really matter, but it becomes a fight because you want to be the unit that

> solves the challenge and be able to show it off. But then you will not be open to sharing your resources. (Interview, 07/11/'18)

Overall, FlyCo aims to improve innovation effectiveness by establishing an (informal) internal marketplace for exploration hubs and support resources. But the competition between units that results from this approach, dis-incentivized these units to collaborate and pool resources. As this pooling is vital to implementation, the result is that concepts ended in a VoD between competing units.

The previous four barriers described properties of FlyCo as a whole. As such, these barriers influenced all innovation projects. The following two barriers relate to a lower level-of-analysis, that of the specific project. Barriers 5 and 6 describe characteristics of specific projects that contribute to the VoD. In brief, a VoD is more likely for projects that aim to solve challenges in an inferior problem domain (insight 5) and projects in which the proposed solution (the concept) has a weak fit with the current organisation and/or environment of FlyCo (insight 6).

5.3.5 Inferior Founding Problem Frames

FlyCo's business executives identified challenges that Exploration hubs needed to be overcome to achieve corporate goals. These challenges, or *founding* problem frames, emphasised either the Airline logic, the Digital logic, or the Customer logic. For example,

- An Airline logic founding framing was: to lower the Turn Around Time (TAT) at the airport to allow more flight movements per plane;
- A Digital problem framing was: to convert more website visitors to booking passengers, and;
- A Customer problem framing was: to improve the boarding experience of European travellers.

At FlyCo, projects with founding problem frames in line with the Customer logic are more likely to encounter a VoD at FlyCo. As explained in Section 5.2.1, the Customer logic was competitive with, and inferior to, the Airline logic. PO 4 summarises this by referring to the typical target of Customer oriented projects: improving the Net Promoter Score (NPS) or Employee Promoter Score (EPS). He mentions, "I'd rather do operational topics than NPS or EPS topics. With operational topics, success is

measurable, NPS topics never get off the ground. For me NPS is more like a wish, nice if we can take it along" (interview, 01/11/'18). In addition, concepts with founding problem frames based on customer logic more often used a narrative based subjective and indirect performance indicators, rather than the objective, direct performance indicators related to the Airline[79] and Digital logic.

To motivate their request for resources from other organisational units, champions develop a narrative that explains the problem that the concept targets and the expected impact. In the operational domain, such narratives are based on objective measurements of performance. As P-Manager 3 explains, InnoHub starts their projects (which are predominantly operational) with an analysis phase. They start with readily available data, but often they perform additional measurements in the field such as timing processes (field note, 24/04/2018). In fact, one of InnoHub's core values is that they always operate from a measurable, operational ambition (internal documentation). These ambitions are subsequently linked to financial indicators, such as avoiding 'non-performance cost' or optimising 'number of ground staff needed', for which the accounting department creates detailed models. In the same manner, digital concepts were accompanied by 'business cases' that described how proposed concepts, for example, generate (measurable) additional revenue.

In contrast, the exploration hub at the Customer Experience (CE) department, for example, generates concepts that aim to improve the experience of customers. Here, narratives are based on subjective[80] measurements (e.g., customer satisfaction surveys) and an implied relationship between improving experiences (of customers and employees) and subsequent increases in customer loyalty. As Service Designer 1 mentions regarding her stranded project which focussed on improving the experience of the parents of children who fly alone, gathering resources with a narrative based on improving experiences is challenging,

> It's like not enough. But on the other hand, we are not talking about packages, we're talking about kids and we're taking about kids that fly alone and kids who have parents that are frequent

[79] Such as on-time performance, reliability and safety.

[80] Subjective measurements were self-reported and cannot be observed by others. The information was therefore open to interpretation, debatable and difficult to quantify.

> flyers who trust us as a company to send their kids with us. So, it had like a lot of user value, but not too much of a money, like return-on-investment and things like that. I don't think it's a process that we really make money on. It's more we make a lot of like engagement and marketing. (Interview, 28/02/'18)

To complement such qualitative argumentations, company-wide indicators for customer experience are defined which 'objectively' assess customer experience. According to CXO-2, the most important measurements of customer experience at FlyCo is the Net Promoter Score (NPS) (interview, 18/12/'17). As part of the transformation towards customer centricity, NPS became the only customer experience related indicator for which a target was set at the highest executive level (internal documents and for which senior executives are financially incentivised (field note, 15/01/'18).

Contribution to VoD

Because NPS is a high-level aggregated indicator of which the key drivers are difficult to dissect, it is difficult to predict how (much) concepts influence the NPS score. Because experiences are subjective and improving the customer experience is a complex endeavour, legitimising these concepts is challenging for champions that seek resources for further implementation.

In addition to the complex and subjective nature of experience related problem framings, several stakeholders highlight how the Airline logic is the dominant logic at FlyCo. For example, S-Service Designer 1 mentions, "They [senior management] can say that they want things on a customer priority level, but then [COO], he will always trump the game when it comes to operations" (interview, 19/02/'18). Similarly, CXO 2 mentioned, "The customer centricity word and deed are far apart. We say we want to be customer-centric, but we don't do it" (interview, 18/12/'17). Director 2 notices this when he mentions, "We've spent all this time together to decide on our customer priorities, why aren't we doing it?" (interview, 08/03/'18). Scepticism towards the Customer logic surfaces during discussions around concept legitimacy. For example, there is no widely accepted business case that links a higher NPS score (and thereby customer experience) to increased customer loyalty and increased repeat purchases. In general, there are stakeholders who do not believe that customer experience mattered in

purchasing behaviour (see Section 4.2.2). Other employees reasoned that an efficient and stable operation has the largest impact on the customer experience (field note, 29/05/'18). Overall, champions with founding problem frames in an inferior logic (at FlyCo with the Customer logic) face an uphill battle in gathering resources as their legitimacy is continuously questioned at the level of innovation priorities.

5.3.6 Solutions with a weak fit to the service system

Service concepts that diverge from the current service system are more difficult to implement than concepts that have a strong fit with the current system. Specifically, I observed this for two of the four components of the service system, the 'organisation and control' and the 'physical/technical environment'. The framework presented in Figure 41 summarises this observation. I developed this framework in discussions with Manager 7 (e.g., interview, 14/02/'18). Concepts in the lower-left corner of the framework, are more difficult to implement (red background colour) compared to concepts that neatly fit with the current organisation and environment. The most difficult to implement concept were internally called 'zero-to-one' concepts (interview, S-consultant 1, 29/11/'18). In the following paragraphs I explain both axes in more detail.

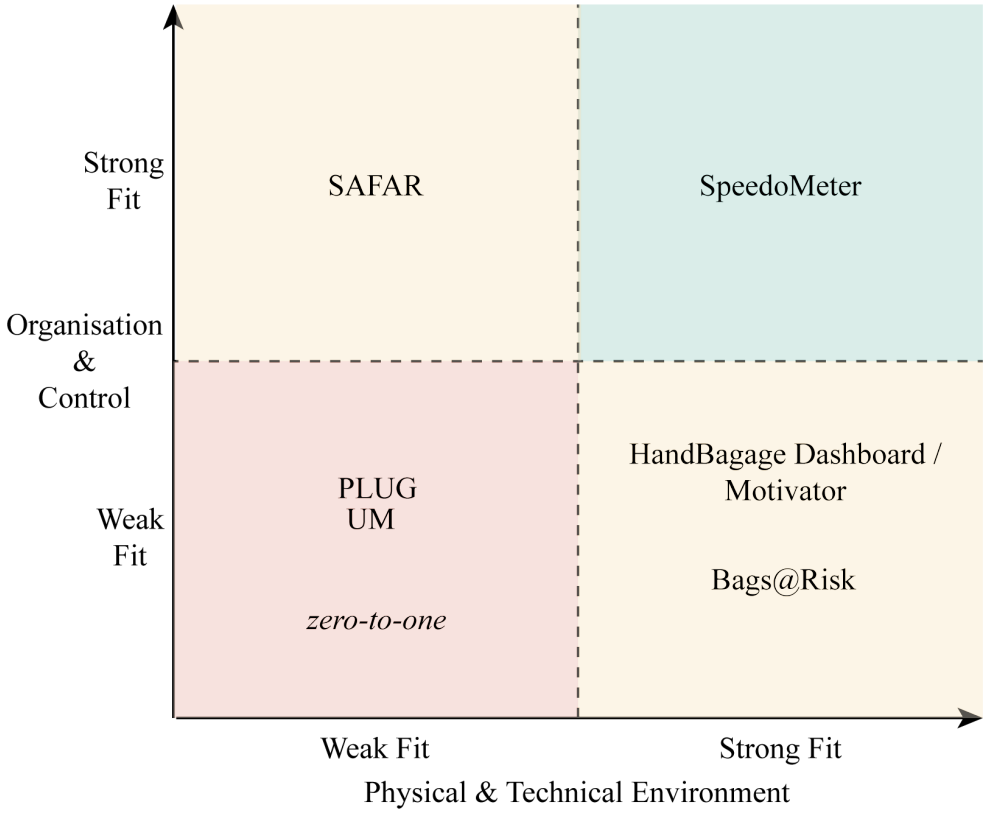

Figure 41: Framework in which innovation concepts can be positioned relative to the current organisation and environment

Fit with organisation and control

When innovators propose concepts that do not match the 'organisation and control' system[81] of an organisation, champions encounter ownership issues, which inhibits implementation. For these concepts, it is unclear who to involve in the implementation process, who should take ownership of the concept, who should monitor the performance of the concept, and who should invest resources. To implement these concepts, FlyCo needs to establish new teams and perhaps acquire new skills or competences.

The PLUG project was such a project. According to PO 1, a lack of organisational fit was one of the main challenges of the project. PLUG is an

[81] The organisational structure (i.e., the division into activity and profit centres); the administrative support systems; the interaction with customers and other interested parties; and the activities connected with marketing (Edvardsson, 1997).

application that aims to improve collaboration across organisational silos. However, the existing organisational structure focussed on optimisation within silos. As such, it was difficult to determine who should oversee the development of this application. The reason this concept was implemented in the end, was because CXO 3 personally oversaw implementation in the initial stages (interview, PO 1, 21/08/'18).

On the other extreme, concepts with a weak fit require resources from many units, across multiple departmental and organisational boundaries. Both the UM concept and the Bags@Risk concept are examples of this. As Service Designer 1 explains, "It [UM] was a concept that was really across different departments and across different teams. It was not something that you can just implement by doing something and then it's done. But you really needed to break it down into a lot of things" (interview, 28/02/'18). For the Bags@Risk project, resources from a supplier were needed and FlyCo was not used to such interaction with suppliers (S-Manager 3, interview, 19/11/'18). Concepts that have a weak fit with the organisation either 'fall between units' or require the resources of a wide variety of units dispersed throughout the organisation. Both situations contribute to a VoD.

Fit with physical & technical environment

The fit with the physical and technical environment[82] is the second component of the service system that I observed to be a potential barrier to implementation. As PO 5 explains, SAFAR was an example project that did fit with the organisation, but had a weak fit with the environment:

> Sometimes there is just no place where something can land. Other times we think of concepts that can land easily in existing [tablet] apps for example. … And then you see that it goes really fast, because there is already a team, there is budget and the only thing that you need to do is to get it prioritised. … [The users of SAFAR] don't have an iPad, they use the fax. So, if I would design a new process which uses the fax, it would've been much easier to implement… So yes, it's easier to implement something when there is a platform to land on. (Interview, 12/11/'18)

[82] This system includes "premises, computers and other technical systems but also the equipment at partners' and customers' premises" (Edvardsson & Olsson, 1996, p. 153).

For SAFAR, ownership wasn't an issue, the responsible operational manager was well aware of her role as owner of this application (field note, Director 5, 18/07/'18). But there was no 'platform' to build the proposed application on. Consequently, the cost of building this platform was added to the business case of the concept, which rendered the entire project unviable. I noted a similar situation in my journal, "The solution we propose requires a platform that the Business Owner doesn't see as valuable yet. How do we make that jump? Can we prove the value of the platform with just this concept?" (09/07/'18) Director 4 concludes that for InnoHub, the absence of such platforms is one of the key barriers to implementation:

> Each frontline staff member has an application on an Apple device… I see that we now successfully bridge the VoD when it comes to designing, co-creating, and delivering sometimes really important features in those apps. But outside those apps its difficult… where there is no distribution-architecture that we can use, that's where we don't make it. (Interview, 27/11/'18)

PO 1 notices that overcoming this barrier is key to implementing more radical concepts:

> The way we're organised right now, we're very much focussed on the coming quarter. The only things we will work on are concepts that can be realised in one quarter. But how can we deal with things that we need in a year that we need to start with right now? Those are never prioritised… thus, you never develop any breakthrough innovations. … Because of the process we've installed, we miss a lot of more radical innovation. (Interview, 21/08/'18)

The UM project perhaps would have been such a breakthrough, but it requires that staff at outstations have an iPad. As this was not the case at that time and the business case to purchase these devices for only this concept wasn't positive, the concept couldn't be implemented.

After two problem- and solution space related barriers, the following two barriers describe how characteristics of the innovation process influence implementation difficulties. Two properties of innovation processes emerge as contributors to a VoD. First, if not all crucial stakeholders are involved

from the start of the project, their late entrance can contribute to a VoD. Second, if important stakeholders do become involved mid-way, a champions' ability to adequately argument and communicate the legitimacy of a concept is vital in securing resources.

5.3.7 Stakeholders are Involved In-Medias-Res or Post-Rem[83]

At FlyCo, champions use one of three strategies for involving other stakeholders in this reconfiguration process. We can map these strategies to the three different narrative structures used in media and discussed in narratology literature (Ferriss-Hill, 2019; Manfred, 2021). From the perspective of the stakeholders that are asked to invest resources, the three different involvement strategies are: (1) Ab Ovo, (2) In Medias Res and (3) Post Rem. Involving stakeholders In Medias Res or Post Rem contributes to a VoD.

Involving Stakeholders Ab Ovo

When stakeholders are involved Ab Ovo (meaning 'from the egg'), all stakeholders whose resources are required for implementation, are involved in the project from the start. Within FlyCo, this strategy is the preferred strategy. Stakeholders recalled success stories of innovative concepts in which this strategy was taken. For example, PO 1 recounts such a story in the following quote:

> We received a problem from the Airport department and the first thing that is important to know is, who has an opinion on this, who should have an opinion on this and who do we need? From thereon we started to dissect what really the problem was. … From thereon we also involved the team who was going to develop the concept very early, already in the problem definition… and then in the end we again validated with both the business and the users and said: this is our concept, roast it to the max! (Interview, 21/08/'18)

In a similar manner, the project 'Bags@Risk' was mentioned on multiple occasions as a success story (e.g., interview S-Manager 3, 19/11/'18). The implementation of this concept required, amongst others, significant changes

[83] This section is based on my 2019 *Design Management Journal* paper.

in operational procedures, the development of predictive algorithms and the development of dashboards for digital touchpoints. A multi-disciplinary team, involving all disciplines necessary to develop and build this concept, had stood at the base of this concept. By being involved from the beginning, team members build an understanding of each other's organisational logic, learn together how to combine their logics, and explore which problem and solution frames are acceptable for all. Innovators agreed that when all necessary stakeholders are involved from the beginning, a VoD can be avoided.

However promising, the Ab Ovo strategy seems to represent the exception rather than the rule, because:

1. Due to the complexity of airline operations, it is difficult for stakeholders to predict what influence an innovation will have on the entire operation and identify all the necessary stakeholders at the beginning of a project.
2. Certain hubs specifically avoid commitment to a solution space at the project start[84] (internal documentation, InnoHub Core Values). As a result, they, "identify the necessary stakeholders late in the process. [Because they] don't want someone to own the process if they're not building it" (interview, PO4, 01/11/'18).
3. Gathering and involving all involved stakeholders beforehand slows the innovation process down and thereby limits the 'momentum' of the innovation. PO 7 describes this issue and its consequences:

> You really want to keep the spirit of not having to meet 1.000 times. … If you don't keep that spirit, you become a project organisation, and I don't think you want that… A 'Real FlyCo Project' is when people think: let's start a project, let's think long about what we want to reach and then we'll spend a month to talk to everyone and then we'll start recruiting people and in half a year we'll start writing some code. Like really those phases, old school phases of first planning and then we make sure we know what to do and then we're going

[84] This affords them the space to break with existing assumptions (and the existing organisation and environment) and design an optimal solution (interview, PO 7, 23/11/'18).

> to make it and then of course we'll do a test at the end. You don't want that, I think. (Interview, 23/11/'18)

This is problematic as momentum is seen as key success factor in achieving innovation implementation (Angle & Van de Ven, 2000). The project described in Sidebar C showcases this issue.

Involving stakeholders In Medias Res

Involving stakeholders In Medias Res refers to involving stakeholders in the middle of the process. In this case, stakeholders enter a process in which a problem is framed and an initial solution is articulated. Stakeholders then became involved to further define the solution in a collaborative manner. To become involved like this, is like starting a movie midway; one doesn't know what happened and who is involved, and one needs to make sense of the situation as they go. Stakeholders under these circumstances are unaware of what happened during the project previously, what was learned and what decisions led to the articulation of the current proposed solution. Although this strategy affords the champion flexibility in terms of solution space, it prepares concepts to end in a VoD. When asked why InnoHub was being reorganised again at the end of ARC 3, S-Manager 3 describes the problem of inviting stakeholders In Medias Res:

> That's what we want to change. So, the whole circle of [InnoHubs] methodology until scale-up is great. They've proven that it works. But then the concepts need to be implemented in both the [operational] organisation and the IT-infrastructure… If you haven't involved these parties in the initial stages, then that becomes a reason why things don't go fast or not at all. These are project management lessons. If you do something so isolated, then you can't expect from other parties to just hop on your moving train. That is the challenge, between the organisations… So, you need to align people in time. (Interview, 19/11/'18)

Stakeholders that enter In Medias Res can trigger a VoD by introducing new constraints which render the proposed solution undesirable, unfeasible

or unviable.[85] When new constraints are introduced, new logic combinations need to be built, which takes time and can be unsuccessful. When this process is unsuccessful, concepts ended in a VoD.

In addition to introducing new constraints, stakeholders that become involved In Medias Res miss the shared learning about useful problem and solution frames that has transpired during a project. These new stakeholders operate from a different problem-solution frame. As discussed in more detail in Section 5.3.8 and 5.4.2, when champions are unable to convince new stakeholders of the legitimacy of their new framing, a VoD can appear.

Involving Stakeholders Post Rem

When a story is told Post Rem, one enters the narrative after the fact. In such stories, the process has unfolded and all that is left is to do, is to reflect and continue. Accordingly, the third strategy of involving stakeholders is to use a 'waterfall' approach where projects are 'handed over' after a phase is completed to a new unit.[86] When resources need to be combined in novel ways, such a linear process invokes the same issues as the In Medias Res strategy. Consultant 2 recounts such an experience:

> We always knew that the business was supporting our course, but it never occurred to us that the business could come back to us and say I don't like the solution, I'm not going to use it. For us it was kind of given that if they understood what was in the code, because we developed it with them in terms of like what costs go in etcetera. … that they would just trust that the solution was smart. And that was not the case at all. (Interview, 07/12/'18)

As with the In Medias Res strategy, new stakeholders impose new constraints when they 'receive' the material. What's more, in the Post Rem strategy, the window of opportunity for new stakeholders to learn about the project's previous trajectory is small. All the learning needs to happen *at the*

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[85] For example, the concept SAFAR ended in a VoD at a late stage of development when a new stakeholder entered the process who introduced a material constraint: a conflicting legal framework. (PO 5, interview, 12/11/'18).

[86] At FlyCo, this strategy is applied successfully for routine changes that are clearly scoped and where no new resource combinations need to be explored. Examples of these processes are the procurement of a new batch of airplanes, changes in the on-board menu or the set-up of a new outstation location.

handover. Previous research has shown that creating handover material that sufficiently captures this learning in design projects is challenging (Sleeswijk Visser et al., 2007). To conclude, involving stakeholders Post Rem, as with involving stakeholders In Medias Res, aggravates the VoD.

Sidebar C

PO 6 presented an example of when a large initial group of stakeholders inhibited project progress. Her project, which involved the pickup and delivery of baggage at the passengers' home and final destination rather than at the airport, had been staffed with a large team at the outset. Everyone who possibly was required was involved. In this team, a division appeared between members that wanted to plan elaborately and prevent all possible failures and others that recognised the importance of speed in realising change. She noticed that such a large project group made it impossible for her to 'keep it MVP' [Minimum Viable Product][87] and that little progress was being made (field note, 14/08/'18).

[87] An MVP is the simplest form of a concept that could be operated throughout the organisation, but with limited functionality. It is built to maximise learning from an innovative concept (see 5.1.1).

5.3.8 Inadequate Communication of Decisions

Champions base their concept decisions on what they learn during interviews, observations, experiments and other 'framing drivers' (van der Bijl-Brouwer, 2019). This process of coming to (deep) insights during the initial development phases of the innovation process is non-linear (Garud et al., 2013; Price & Wrigley, 2016). Additionally, in their drive for speed and momentum, champions do not always document their decisions or take the time to explicitly articulate the argumentation (Manager 7, field note, 08/06/'18). Successfully transferring insights regarding human experiences to outsiders of the learning process is a challenge in itself (Visser, 2009). As such, even when the decisions of innovators are of high quality, communication about these decisions isn't always on par. As a result, stakeholders that are asked to invest resources in some instances lacked confidence in the quality of the decisions that were made by the exploration hub. This is for example revealed by S-Service Designer 1 in the following quote:

> What sometimes happens, is I get sketches that were done in the last five minutes of a [brainstorm] phase. And then I start asking questions. And I started asking why certain assumptions were made… what were they based on or why were certain decisions made? And there are not many answers beyond like I think this is the right way. So, to me the [InnoHub] way of working follows the right phases and has the right intention, but not everything is either documented or explained in the proper way. (Interview, 19/02/'18)

If gatekeepers aren't convinced of the argumentation, they are not likely to invest their resources for fear of wasting their resources and damaging their reputation, as S-Service Designer 1 continues:

> But I want to know how they got here and why those decisions were made… how did you arrive at these conclusions? Show me the data. Show me the interviews. Show me like anything you've done.… we want people to respect the stuff we're working on. And if we're able to incorporate this… to make sure we deliver something that's benefiting all parties and benefiting the

> organisation as well, that's the dream. …that requires just discipline and maturity from all sides. (Interview, 19/02/'18)

Contribution to VoD

When communication about decisions *prior to involvement of a new unit* is unclear, incomplete, or unconvincing, gatekeepers are more likely to rely on their information processing heuristics to inform their legitimacy judgement. In that case, when concepts are presented by champions that operate under a different logic, proposals are rejected as part of the negative bias underlying the Not Invented Here attitude. S-Consultant 1 explains this as follows,

> The VoD arises because on one side of the valley there are people that think 'I'll just throw my concept over the fence, it's not my problem then anymore' and on the other side of the valley are people that think 'I'm not going to continue that concept, because I didn't make it and I don't know if people thought about this and that and whether it's a good idea to continue this project'. (Interview, 29/11/'18)

To conclude, if champions are unable to convincingly argue that their problem (re)framing was legitimate and that their solution contributes to mitigating that problem, their concept is rejected. Consequently, the required resources for implementation are not provided and concepts end in a VoD.

After these process related barriers, the final cluster of two barriers relate to the properties of exploration hubs specifically. They describe critical elements in the organisational design of these hubs.

5.3.9 Lack of 'Shadow of the Future'

In organisational theory, the 'shadow of the future' describes the expectation of future interaction between two actors, which functions as a generative mechanism for trust and thereby motivates successful collaboration (Poppo et al., 2008). In the context of service innovation implementation, a similar principle applies: if champions from an exploration hub expect future interaction with a concept, this improves the quality of the process and the concept itself, which in turn contributes to successful implementation. This translates to the following barrier: if exploration hub employees are (a) not involved in or responsible for implementation and/or if they are (b) not held

accountable for implementation, concepts from this hub are more likely to end in a VoD.

When mapped to the phases of innovation implementation as presented by Perry-Smit and Mannucci (2017) (reproduced in Figure 33), exploration hubs at FlyCo are either involved in- and responsible for (1) only idea generation; (2) idea generation and concept elaboration; or (3) idea generation, concept elaboration and production. Within FlyCo, student projects scope to idea generation because of time constraints and the limited industry and organisational knowledge at the students' disposal. Alternatively, InnoHub is responsible for idea generation and concept elaboration. After several reorganisations, teams at the FlyCo digital hub are responsible for the entire scope, as S-Service Designer 1 explains:

> So, you're not just doing waterfall but you're really… People are responsible for the end-to-end conceptualisation all the way to realisation. And I don't think there are a lot of teams in this company that are able to do the whole thing. That's why I believe you need to take people from different silos, put them together to make them seem if like they're part of something much bigger than themselves. Whereas right now they just want to deliver their one part and then they're done. (Interview, 19/02/'18)

Figure 33: Implementation process (adopted from Perry-Smit and Mannuci (2017))

According to S-Manager 3, the limited scope of InnoHub contributes to the VoD for InnoHub,

> What I've seen several times at [InnoHub] is that they go from 0 to 6 on a scale of 1 to 10. I always remember that [promotional] movie of [InnoHub] where PO 6 says, 'and then we arrive at our final phase [release] and then it's time for a party'. Well, then I jokingly say, 'and then the hang over comes because it's just the start!' (Interview, 19/11/'18).

Actions within the InnoScale project aimed to involve the team in later phases. One such action was renaming the last phase of their innovation process from 'release' to 'scale' (field note, 24/05/'18) and changing the 'definition of done' for this phase (field note, 12/06/'18). Eventually, during InnoScale, the InnoHub team was redesigned so that the innovators could continue until the production phase with the aim of mitigating the VoD (PO 5, interview, 12/11/'18). In the end, these events indicate that an Exploration hub where the innovators' involvement stops at the elaboration phase, contributes to the VoD.

Besides the involvement of the innovators, 'future interaction with concepts' takes place through the incentives of the exploration hub. In this case, the shadow of the future influences behaviour because champions know that, in the future, they will be held accountable for the results of their actions. In Sidebar D, I describe how the incentives of InnoHub influenced the champion's behaviour. PO 7 describes the three different performance indicators that are used at FlyCo to hold exploration hub employees accountable,

> There are multiple ways to measure performance… [1] you can measure performance by the amount of experiments that are performed successfully and are delivered to be scaled up… [2] You [can] measure whether we made an impact by implementing these concepts, did we do that easier or faster? … Or [3] [you can measure] whether we really made an impact on [KPIs]. (Interview, 23/11/'18)

When innovators in an exploration hub aren't held accountable for the implementation of their concepts, this contributes to the VoD.

Contribution to VoD

The shadow of the future (through involvement or through incentives) influences the VoD in two ways. First, it forces innovators to be critical of their concepts and the chances of their concept to become implemented. It forces innovators to think about the consequences of their decisions on 'implementability' of their concepts throughout the process. In other words, it incorporates scaling-up into their day-to-day thinking (Director 4, field note, 07/05/'18). S-Consultant 1 explains this in detail:

> What I think is the problem of [InnoHub] is… they don't go further than the idea and a bit of prototyping, maybe a little MVP, but not the real thing, when it is used and it works. And if you don't have the shadow of the future, so not the forward view in which you think, 'if we don't do this right, if we don't think this through properly, then we are the ones with a problem when we try to implement or support this concept…' [if you don't have the shadow of the future] than it's so easy to just, in your words, push stuff into the VoD. 'Yeah, what do I care?', Right? (Interview, 29/11/'18)

Director 4 makes a similar remark:

> You once showed me the IDEO stages of design… whichever model you take, the prototype is just an element of the entire design journey to put it that way. … And I think that's also a large part of the reason why we're not crossing the VoD, it's because that's not considered the goal. If the goal is to work really hard to produce prototypes and sometimes test these in the operation, then the goal isn't to make sure that you deliver concepts that are scalable or to scale and implement them. (Interview, 20/08/'18)

These stakeholders argue that champions who experience the shadow of the future develop more 'implementable' concepts from those who aren't held responsible for the implementation of their designs.

Other employees pointed to a different effect of the shadow of the future on the VoD. They noted that the shadow of the future changes the behaviour of champions. As P-Manager 5 explains, "We [InnoHub] stop too early! We should be held accountable for implementation, not just testing. Then, you take a different process, you involve people more and earlier… for example, you involve [digital platform developers] earlier" (field note, 15/05/'18). Furthermore, PO 5 expects a different approach induced by the shadow of the future, but she expects changes in the generation phase of projects instead of at the production phase,

> I don't think the gain will be that we get involved with implementation. I think that the improvement lies at the beginning: to make sure that you're working on the right ambitions. That people really say: 'Yes, this is what I want you to

> solve for me. If you've done that, you've solved my biggest problem and I will make the most resources available to do this. I will pour all my budget into this because I need you to solve it'. (Interview, 12/11/'18)

In conclusion, by changing the concept itself or the innovatio process (at the beginning of the process or towards the end), a shadow of the future helps to mitigate the VoD.

Sidebar D

At InnoHub, as the VoD phenomenon became clearer, there was a growing recognition that indicators related to implementation needed to be introduced, "Because we [InnoHub] don't reflect back on the results" (Manager 7, interview, 14/02/2018). In the InnoScale project, I introduced a 'shadow of the future' indicator: the number of concepts implemented (field note, 12/02/'18). I made progress along this indicator visible in the physical workspace (field note, 10/07/'18). S-Manager 3 noted that this accountability was a necessary, but large shift in the work practice of InnoHub,

If the [InnoHub] PO's take end-to-end capability, they are going to need to move towards the backend of process… into the world of the [IT project management organisation] and then there're different ways to collaborate and organise this, but in the end, they need to be held accountable for it. … I think it'll be a challenge for some and that for some it might take the fun out of working at [InnoHub]. (Interview, 19/11/'18)

The introduction of these metrics prompted new discussions between champions during the elaboration phase (e.g., a higher focus on costs involved) and resulted in different behaviour in later phases (e.g., more follow-ups with key stakeholders).

5.3.10 Limited Access to Resources

Exploration hubs have varying levels of access to the resources that are needed to progress to implementation. Relative to each resource (e.g., budget, access, specific knowledge), hubs are on a spectrum regarding how easy they can access such resources. Hubs either: internalise a resource; couple (or collaborate) with units that control a resource, or; gain formal or informal access to an external resource. I identified a relation between how external a required resource is to an exploration hub and the likeliness of a VoD: concepts that require resources that are more external to the exploration hub are more likely to fall in a VoD. In line with this, exploration hubs that internalise resources can mitigate implementation barriers, to an extent.

Exploration hubs with internal resources can access the resource at their own discretion and have full control over how resources are used. For example, from the start, InnoHub members have had unlimited access to airport processes. Employees at this hub can test prototypes and do research in-context whenever they need to. Not only is this arranged formally (e.g., each member had an all-access pass to the airport), but operational employees are also familiar with InnoHub and generally open to collaborating in tests and evaluations. This access is regarded as one of the key resources of InnoHub (interview, Manager 4, 27/08/'18). On the contrary, to the CE exploration hub, access to the operation is more difficult (interview, Manager 4, 27/08/'18). With internal resources, exploration hubs mitigate their dependency on support partners or the operation and thereby avoid potential conflicts that contribute to the VoD.

Exploration hubs can couple with units that control resources that the hubs require regularly. These couplings are built more easily between units with the same organisational logic. For example, the CE Hub coupled with the 'Customer Insights Research' unit and at the Digital department coupled with the 'Digital Design Lab'. InnoHub also leveraged such a coupling. InnoHub had exclusive access to two teams of software developers that were officially part of the Digital department, the InnoHub-tech teams. As S-Manager 3 noted, this situation introduced risks {interview, 19/11/'18). During ARC 3, the Digital department revoked the access to the development teams (field note, 5/9/'18). As a result of this, the members of InnoHub experienced more difficulties while acquiring resources for the implementation of their concepts. In sum, hubs can establish (formal or informal) couplings with

support partners or operational units with similar logics to access external resources more easily.

When concepts require resources that are external to a hub this contributes to a VoD. For instance, for the Exploration hub at the Digital department, access to the operation is an external resource. At the CE hub, almost all resources are external (Director 2, interview, 13/08/'18). Director 2 acknowledges this as their greatest challenge related to innovation:

> For example, at [operational department] … there are product managers and they also have their own vision, their own innovation and their own policy and they have the resources to build themselves. So, we're constantly trying to link with these [Capacity and Service Providers] in order to secure the same vision, priorities and way of working. Our disadvantage in the end is that we don't have the resources, the money, and people, to build anything. … I think that our projects often fail because we don't have a dedicated development or innovation stream. (Interview, 13/08/'18)

At InnoHub, PO 6 mentions that one of her greatest challenges in implementing concepts was getting access to external resources at the IT department. As she explains, she needs to battle for access to these resources at the IT department with other exploration hubs. Evidently, IT-resources are also needed for non-innovation related projects,

> [IT] don't have the budget for that [innovation], they don't have the resources for that. It's not organised for that. … If you come from a place like [InnoHub], [DigitalOps], [another hub] or [another hub] and you have a good idea that you've proven valuable, and you need their help to get it implemented, because they need to become owner of the new concept or you're innovating their process, that won't happen… All these new initiatives need to be squeezed in, and everything that's new also costs more time, and that needs to be done by those same people? … You'll need to fight to get a place on the backlog. (Interview, 07/11/'18)

To gain access to external resources, members of exploration hubs need to convince gatekeepers, which could be a time-consuming process in which logic conflicts often surfaced.

As an alternative to convincing gatekeepers, exploration hubs can gain access to resources through two ways: they can internalise resources that already exist within an organisation or they can acquire resources from outside the firm (i.e., duplicate resources). During InnoScale, to mitigate the VoD, InnoHub increasingly internalised resources from other units within FlyCo. For example, we moved a data scientist from DigitalOps to InnoHub (field note, 20/06/'18). S-Manager 3 explained that at DigitalOps they acquired resources from outside the firm for their development teams (interview, 19/11/'18). At CE, Director 3 internalised the required resources for design research after project DesignCapability from two other units within FlyCo (interview, 25/06/'19). Internalising or duplicating resources can help to mitigate the VoD.

This mitigation strategy isn't always possible or plausible. Not all resources can be duplicated. For example, software developers and designers can be acquired, if units possess sufficient budget. However, there is only one IT infrastructure for which system architects control access at FlyCo. In addition, some resources are used so sporadically that internalising would be inefficient from an organisational perspective. For example, as Manager 7 notes, the resources that are needed to perform safety checks were deliberately not internalised at InnoHub because access was required only for a small selection of concepts (field note, 26/10/'17).

To conclude, exploration hubs at FlyCo had access to a specific set of resources, either by design or after a process of internalisation. Hubs coupled with other units to gain access to resources more easily. If other (more external) resources are needed to implement service concepts, a VoD was more likely to occur because logic conflicts are likely to surface during the championing process.

5.3.11 Summary Insight 3: Barriers Contributing to VoD

This chapter introduced the 10 barriers that contribute to the VoD at FlyCo. Four clusters of barriers were identified:

- 6.3.1 - 6.3.4 are organisational level barriers;
- 6.3.5 and 6.3.6 are barriers related to the innovation project, the problem framing and solution fit;

- 6.3.7 and 6.3.8 are process barriers related to the experience of stakeholders; and
- 6.3.9 and 6.3.10 are barriers related to how exploration hubs are organised and incentivised.

For each barrier, I described the property, situation or condition as observed at FlyCo and how this contributed to the VoD. In brief, the ten barriers are:

1. A complex and siloed organisation design obstructs champions from identifying required stakeholders in the organisation or results in communication overload as too many stakeholders feel they needed to be involved.
2. Due to a lack of a shared service vision, gatekeepers sustain differing beliefs relating to which projects need to be prioritised; projects are started that don't have organisational support, and; operational executives are reluctant to take ownership of innovation concept implementation.
3. Decentralised innovation portfolio management fosters investment in projects that don't have organisation-wide support. In addition, it exempts senior executives from having an overview of current innovation projects. Without this overview, executives don't notice projects that diverge from the organisational strategy or stall within departments or during ownership transfer.
4. FlyCo relies on an (informal) internal marketplace to match innovation resources with operational challenges. The competition between (exploration and support partner) units that results from this approach, dis-incentivizes these units to collaborate and pool resources.
5. Projects that have founding problem-frames in line with the inferior Customer logic face an uphill battle in gathering resources for implementation as their legitimacy is continuously questioned at the level of innovation priorities.
6. Innovation concepts that have a weak fit with the current organisation suffer from ownership issues. Concepts with a weak fit with the (physical or technical) environment require additional investments to create 'platforms', which render more radical projects unviable.
7. When stakeholders become involved In Medias Res or Post Rem, they can impose new constraints that inhibit further implementation.

These stakeholders also need to be convinced of the legitimacy of the project (re)framing.

8. Convincing gatekeepers of project legitimacy depends on the quality of the concept and on the communication of the champions regarding earlier decisions in the innovation process.
9. Without a ‘Shadow of the Future’ at exploration hubs, champions propose unviable concepts or pursue innovation approaches that contribute to a VoD.
10. Exploration hubs that have limited access to resources are more vulnerable for the VoD as each acquisition of external resources provides an opportunity for logic conflicts to surface.

5.4 How Design Principles and Practices Contribute to Innovation Implementation

5.4.1 Design as Problem-Solving for Implementation[88]

Design as *creative problem-solving* entails: "The development of creative and original solutions to meet emerging user needs. The main aim of this kind of design thinking is to solve problems leveraging creativity, assuming that users have a need, a problem, a desire, searching for the best solution" {Dell'Era, 2020 #233 @330}. This innovation approach contributes to service implementation by influencing the innovation process and the outcome of this process (i.e., the innovative service concept). I first describe how practices related to experimentation and embracing diversity help to avoid biases (Price & Lloyd, 2021) and thereby produce concepts that can be readily implemented. In the second part of this section, I describe how practices related to user-centeredness and materialisation influence the innovation process to promote alignment and mitigate the VoD. Table xix summarises these insights.

Table xix: How design principles contribute to innovation implementation

Design Principle	**Contributes by**	**Promotes implementation through**
Experimentation	Surface invalid assumptions	More holistic concepts
Embracing Diversity	Mitigating focusing illusion and egocentric empathy gap	More holistic concepts
Experiential Learning	Supports experimentation and embracing diversity	More holistic concepts
Embracing Diversity	Gathering support from stakeholders through involvement	More aligned process
User-centeredness	Supports 'perspective taking' (NIH mitigation strategy)	More aligned process
Materialisation (and Visualisation)	Support 'perspective taking' and communication	More aligned process

[88] This section is based on my 2019 *Design Management Journal* paper.

Holistic service concepts

Through experimentation and incorporating multiple perspectives (i.e., embracing diversity), champions can produce concepts that are less affected by biases, more holistic and thereby more likely to become implemented. By holistic, I refer to Fayard et al. (2017), who describe service designers as taking a system view, understanding the different actors and factors[89] involved in time and space in this sense.

Through experimentation, champions became aware of the assumptions that underpin their concepts and can test initial problem frames (Dorst, 2017). Director 4 notices: "It is all about coming to solutions quickly and then you go out there to test it and it turns out there's a lot of things not right yet" (field note, 20/08/'18). Sidebar E describes an episode where I witnessed how experimentation unearthed a previously unnoticed bias. Experimentation furthermore mitigates the 'projection bias'[90]. PO 4 presents a case wherein InnoHub was asked to solve the problems that obstructed the load sheet[91] from being on board in time. PO 4 recounts,

> We always challenge these factors, like the load sheet. We got the load sheet KPI (Key Performance Indicators) and then we first asked what the goal was of this KPI. And we got answered: we'll leave on time more often. Well, after two months of experiments and data-analysis we could say: 'we can make it [the Loadsheat] 100% but performance on on-time departure will only increase maybe 2%'. (Interview, 1/11/'18)

In other words, InnoHub invalidated the management teams assumptions. Through experimentation, champions can mitigate biases and thereby develop concepts that are more 'implementable'.

Besides experimentation, champions that apply a design approach deliberately incorporate multiple perspectives (i.e., embraced diversity (Carlgren et al., 2016b)). For example, PO 6 describes how she included front-line staff in her projects: "We started to involve certain players such has baggage employees or in-flight personnel, they became a sort of delegate

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[89] Desirability (what users need and want), viability (what meets business objectives), and feasibility (what is organisationally feasible) (Aricò, 2018; Brown, 2009).

[90] The projection of past experiences onto similar future projects (Price & Lloyd, 2021).

[91] A document that summarises and approves the weight distribution of a plane.

from the business. They could guide projects from their view… to think from their expertise and help create a solution" (interview, 07/11/'18). Similarly, PO 7 mentions, "The [operational employees] have another role besides supporting us, they are also the access to- and consciousness of the operation, that's also an important part of our way of working" (interview, 23/11/'18). As with practices related to experimentation, practices related to embracing diversity help create more implementable concepts by mitigating two biases: a focusing illusion and the egocentric empathy gap.

When champions include different perspectives, they are less likely to overemphasise particular elements of a problem (Liedtka, 2015) (i.e., succumb to a focusing illusion (Price & Lloyd, 2021)). S-Designer 1 provides an example of overemphasis (and her designer's response to it) when she discusses a case in which she was asked by an operational business executive to create solutions to accelerate the boarding process,

> He wants to make sure that [boarding is] as fast and efficient as possible, meaning the flight will leave on time. What he's not thinking about is that the customers end up standing in the Aviabrug[92], right? So, they end up actually waiting. Because you turn one knob, something else broke over here. So, to me it's really important to account for this. And the only way you can do that is give people who work in operation, gate agents who notice that… because they see customers right behind them lining up… give them a voice. (Interview, 19/02/ '18)

By incorporating the opinions and experiences of many involved stakeholders, champions can avoid proposing concepts that stall at a later stage because of overseen requirements. Instead, they can propose concepts that are better thought-through.

S-Designer has experienced the egocentric empathy gap, or "the projection of own preferences onto others" (Price & Lloyd, 2021). She explains,

> They've been working in that field. They're experts in passenger services. They both come from an operational background. Sometimes they push solutions that are more for them as users than for the users themselves. And they have an [team of

[92] The bridge through which passengers enter a plane from a gate.

> collaborators] which is quite of course fantastic to have people available in the operation, because that's fairly rare. But these people are way more comfortable with digital and technology than most of the population. (Interview, 19/02/'18)

Innovators at InnoHub are especially aware of this bias. This became apparent during project InnoHub, in a session where the team tried to define its core values. The results of this session are shown in Figure 42. In the middle of the whiteboard (with a circle around it), central to InnoHub's core values is the notion of "we don't know, so we learn by doing". Their approach to mitigating this bias is portrayed in this image: innovators at InnoHub believe in co-creation, empathy, "Never doing it alone, but being multidisciplinary" (top-right corner) and that, "One conversation between three people will provide more insight than surveying 300" (bottom-right corner). In other words, InnoHub embraces diversity to mitigate biases and thus produce concepts that are feasible and viable.

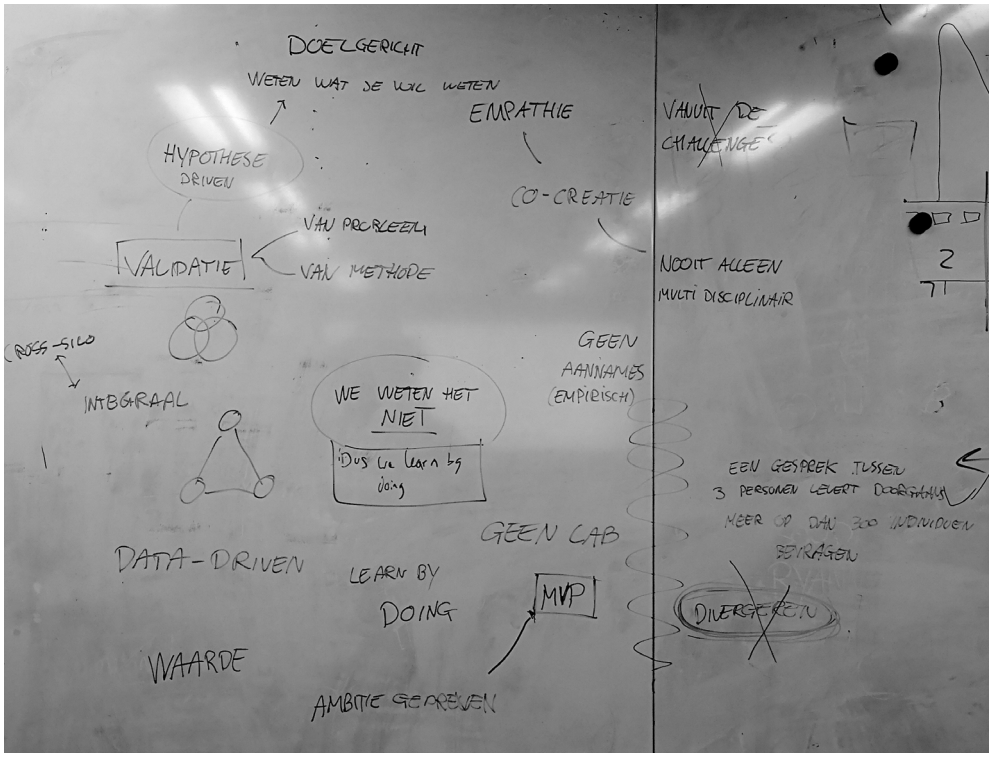

Figure 42: Core values of InnoHub (09/08/'18)

Third, Price and Lloyd (2021) highlight the importance of experiential learning and reflection in a design approach for the quality of a concept. I observed this emphasis on reflection and the interplay of action and reflection (Beckman & Barry, 2007) at FlyCo. For example, Manager 7 notes that their final concepts often aren't produced in the brainstorm phase, but instead emerge during prototyping, "Most ideas actually come from the dummy phase, we learn in operation, the ideas come from doing it" *(*field note, 06/08/'18). Similarly, PO 4 mentions: "What my objection is, is that we don't know! I always want to take a step back and think: 'what is really the problem?' That's in my DNA now. To question whether this really is the best solution that we're proposing" (interview, 01/11/'18). This learning process strengthens the effect of experimentation and embracing diversity on creating concepts that were holistic and implementable.

Aligned Innovation Process

Besides contributing to a more holistic concept, I observed that design-driven problem solving informed the way an innovation (or recombination) process is approached. At FlyCo, when design practices are used, champions more easily overcome conflicts fuelled by logic misalignment, thereby mitigating the VoD and stimulating successful implementation. In this way, practices related to three themes of design contributed to mitigating the VoD: (again) embracing diversity, user-centeredness, and visualisation (or materialisation) (Carlgren et al., 2016b).

First, to embrace diversity, design innovation champions go beyond interviewing and observing stakeholders, to including them in the entire design process. As mentioned above, for instance, co-creation is a core value of InnoHub. Besides additional knowledge that improved the service concept, this leads to support from the people involved and their social environment. As PO 6 explains, after mentioning that she included baggage employees and in-flight staff as 'delegates of the business':

> They helped in setting the conditions. If we [InnoHub] wanted to test in the baggage-environment, they would organise that we could do that, they would make sure that everyone knew we were coming. They made sure all the conditions were in order for us to do what we wanted to do. (Interview, 07/11/'18)

In line with this, as mentioned in the description of project DesignCapability, when I asked CXO 2 why he introduced design to his unit, he answered that he thought it would help the employees in his unit to align the stakeholders in their projects. In line with this, during the follow-up trainings, Manager 4 asks: "How do we take non-PSMs [CE innovators] and partners along? This [design] is the way of working, we all need to be able to do this" (field note, 07/12/'17). Hence, I observed that by inviting stakeholders to co-create solutions, support can be gathered from these stakeholders and their related units.

A second route through which design contributes to mitigating conflicts, is by focussing the attention of all stakeholders involved on the user. As S-Service Designer 1 states: "I truly believe, from a designer background, is that we help facilitate that process. That what we're building is not just to get functionality out there, it's to get functionality that's needed and wanted by someone" (interview, 19/02/'18). In the words of Manager 12, practices related to user-centeredness guided actors to focus less on current systems and existing solutions to shift focus and align around user needs, problems, and outcomes (internal document, 03/'17). As manager 11 explains: "Designers work more holistically. It's not number-driven but people driven. ... They think on an emotional and experiential level: that's a different perspective" (internal document, 03/'17).

The value of being user-centric is founded in what Carlgren and colleagues describe as "empathy building, deep user understanding and user involvement" (2016b, p. 46). These attributes are usually viewed as important in the generative context of design. However, my observations indicate that this is an additional, more internally oriented advantage to being user centred. Manager 7 highlights this effect during a review meeting with one top executive of FlyCo, "Since the design training, the [innovators in CE] aren't solution-oriented anymore" (field note, 11/05/'18). He indicated that instead of pushing their preconceived solutions, which had often resulted in a VoD, the champions now involved other stakeholders in the problem-solving progress, which allowed them to mitigate a possible VoD. By focusing the attention of all involved stakeholders on leveraging customer insights (as opposed to internal issues), champions are able to establish a shared perspective and avoid logic conflicts. Design in this way stimulates what Hannen and colleagues (2019) call 'perspective taking' or "the ability to put

oneself in another person's shoes" (p. 103822). As they found in their study, it is an effective Not Invented Here countermeasure.

Third, I observed that practices related to materialising or visualisation (Carlgren et al., 2016b) contribute to mitigating the VoD. As concluded by Hargadon and Sutton (1997), designers help teams to align with their visual approach. Carlgren (2013) notes that the tangibility that visualisation achieves facilitates perspective sharing and visualising can assist in building constructive dialogue during innovation processes (Carlgren et al., 2016b). Indeed, I found that visuals help designers during the innovation process to mitigate logic conflicts, at least in part by facilitating perspective taking. For example, Manager 11 notes: "For me the visualisation, prototyping, making it tangible... this process is very important in bringing the train up to speed, because people feel what this can bring. Also, this makes them understand: 'This is helping me' … it brings enthusiasm*"* (internal document, 03/'17).

Manager 12 voices a similar observation, when she refers to a video that designers she worked with had used to align stakeholders*:* "What worked very well is that we had the movie as a boundary object. … A lot of people, especially at the operations departments, saw the movie and it helped to create an image for them" (internal document, 03/'17). Service Designer 1 provides more elaboration: "It is not the same to explain what the project is about to a programmer, to a business analyst or to a ground service agent. You always need to tailor the story to a level of detail and interest. What always worked as an ice breaker was the movie, even if it creates a lot of questions, it perfectly works to put everyone on the same page" (internal document, 03/'17). Summing up, I observed that designers' practices related to visualisation contribute to mitigating the VoD by facilitating perspective taking and helping stakeholders to formulate their perspective more coherently so that others can understand their logic more easily.

Sidebar E

During a project named 'FeedbackSnow', I witnessed how experimentation unearthed a previously unnoticed bias, the 'say/do gap' which captures humans' inability to accurately describe their own preferences (Price & Lloyd, 2021). The FeedbackSnow concept includes a physical device that can be used to ask feedback from customers (see Figure 43). This feedback is sent to a command post where it is analysed in real-time, and instructions can be given to a 'crisis team' that helps front-line staff to improve the service (internal documentation). However, as PO 2 recounted, during an experiment at the gate, front-line employees consistently approached the InnoHub team (who were performing the experiment) to see the responses for themselves: they wanted to know how they were doing (field note, 06/08/'18).

During prior research by the InnoHub team, front-line staff had resisted such real-time updates, arguing that it would distract them from their jobs. But when the concept was put to the test in live-operation, employees realised it provided them valuable insights at little cost. Not only did this experience help business owners understand the value of the concept, but it also led to a redesign of the concept, which made implementation more feasible.

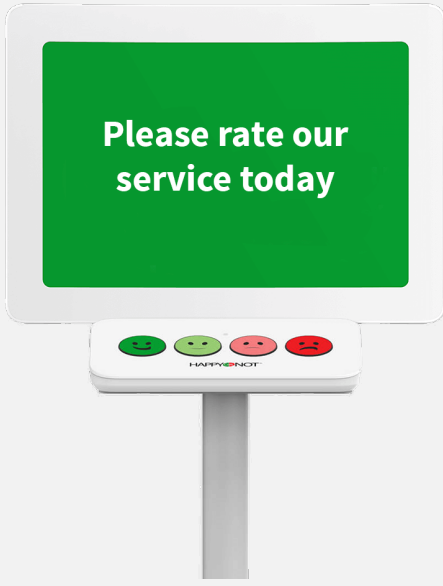

Figure 43: Similar device to that used in FeedbackSnow (www.happy-or-not.com)

5.4.2 Design as Inquiry Process for Implementation

The fifth theme that Carlgren et al. (2016b) discuss as being central to design is 'reframing'. Similarly, Price and Lloyd (2021) mention that, "Together with empathy, exploration to define and reframe problems typifies a designerly approach". Dorst (2019a) states that the value of a design approach lies mostly in this reframing process. Prematurely fixing the problem and solution space cancels the creative potential of designerly thinking (Dorst & Cross, 2001). Dorst describes reframing as designers' routine to "Change the design problem in the light of their exploration of possible solutions, until they can create a good 'fit' between problem and solution ('an idea' that bridges between problem and solution)" (2019a, p. 60). [93] In relation to design as problem-solving, he notes that, "Organisations need to move from problem solving to a much more designerly way of thinking: truly complex problem situations require a thoughtful exploration by (repeatedly) proposing interpretations of the problem situation, creating and testing possible interventions until a good 'fit' between problem and solution emerges" (Dorst, 2019a, p. 61). I observed that practices related to reframing can lead to more holistic concepts, but reframing can also introduce additional stakeholder management challenges which can result in a VoD.

When reframing mitigates the VoD

At FlyCo, I encountered several stakeholders who were open to reframing in their innovation projects. For example, PO 5 notes:

> The InnoHub way of working means making sure we take all the right steps, but also to be critical at each step. To think: 'Is this what we should be doing? Do we have the solution to the real problem here? Are we even targeting the real problem that achieves the goal that we want to achieve?' That is a big part of what I do, constantly challenging whether it makes sense what we're saying and think we should be doing. And then eventually to test prototypes in a live environment and see whether it indeed is the solution. (Interview, 12/11/'18)

Reframing here refers to reconsidering the scope of the founding problem space. By considering a wider problem space (and subsequent solution space),

[93] Referring to his earlier work with Cross (Dorst & Cross, 2001).

champions are able to avoid local optimisation, partial solutions and concepts that merely push technology, rather than effectively solving a problem. In other words, the designed concepts become more holistic as explained during one of the strategy sessions of Project InnoHub, "Our way of working [reframing] helps to solve the real problem instead of fixing a workaround on a workaround" (field note, 09/08/'18). S-Service Designer 1 explains in more detail what happens when innovators don't reframe to include the whole system:

> What we ended up building is not actually for anyone. And then we all celebrate because we've launched something, but how is it actually then incorporated into the organisation? Because that's to me, The Death Valley… when we ship something, an app, and they don't accept it… it wasn't thought about how it's going to integrate into the current process, what it's going to replace. It doesn't think about whether we need new skills and that people who are already here. If we're talking about artificial intelligence within HR… the ladies who we have currently sitting at our HR shared service centre, they're not ready for it. Therefore, management is talking about AI while people on the floor are just answering phone calls. … it's always like just focus on one, whereas you must think about the full picture. (Interview, 19/02/'18)

To conclude, designers that challenge frames by reconsidering the founding problem space are able to design more holistic concepts, which contributes to innovation implementation.

When reframing aggravates the VoD

On the other hand, in line with conclusions by Carlgren, Elmquist and Rauth (2016a), I observed that a design approach may aggravate implementation challenges because of, "The strong focus on reframing problems and building on deep user insights in DT [design thinking]" (p. 355). This can be explained by referring to Dorsts' explanation of a frame being a "General implication that by applying a certain working principle, we will create a specific value" (2011, p. 524) and that in service innovation, reframing happens at the level of the project team (van der Bijl-Brouwer, 2019). When new frames emerge that involve a different aspired value, the accompanying working principle

may influence the required set of stakeholders. This represents an increased risk of a VoD in two situations: (1) if the working principle requires new stakeholders (not part of the founding problem frame) to become involved or (2) if the new frame isn't accepted by all involved stakeholders. Similarly, Dorst mentions that a key challenge of 'social' design is "to manage multiple stakeholders in the problem space as well as in the solution space" (2019b, p. 119). Failing to adequately manage these stakeholders can result in a VoD.

When a new frame informs the involvement of a new stakeholder (as opposed to progression in the innovation process as presented in Section 5.1.1), the same driving mechanism introduces the risk of a VoD: does the new stakeholders' logic align with the proposed frame? The description in Sidebar F, reproduced from internal documents and field notes during ARC 3, portrays the development of a concept named "Be like Bill", which was an example of when a new frame resulted in the involvement of a new stakeholder which nearly resulted in a VoD for this concept.

The second mechanism through which reframing contributes to the VoD is when the champion is unable to convince all the stakeholders in the project of the legitimacy of a new frame. The narrative of 'Personal Benefit Selector', described in Sidebar G and based on internal documentation and field notes in ARC 2, is an example of when a champion wasn't able to convince other stakeholders involved in the project of the legitimacy of a new frame, after which further development wasn't pursued.

Summing up, when champions reframe by enlarging the problem space to generate more holistic concepts, this can contribute to innovation implementation. However, as portrayed in the two sidebar texts, reframing in some cases resulted in a new aspired value for the innovation project. When the proposed working principle to achieve this new value requires new stakeholders to become involved, a VoD is looming, and implementation is at risk. To successfully mitigate a VoD in this case, champions need to convince stakeholders in the problem and solution space of the legitimacy of their new proposed frame.

Sidebar F

One of the tactics that low-cost airlines employ is the unbundling of the airline service. In Europe, low-cost airlines decided to unbundle hold luggage: they lowered prices overall but started to ask an additional fee to passengers who wanted to travel with larger and heavier suitcases. After several years operating under severe price pressure, FlyCo (not a low-cost carrier) also introduced this regulation and started to ask a fee to check-in large and heavy bags. To avoid extra costs, passengers started to pack large bags to be taken onboard, as large as the new regulation allowed. However, FlyCo's airplanes weren't designed to fit a large bag per each passenger. Consequently, gate-agents needed to force passengers to check-in the baggage they'd prepared to take on board last minute once the in-cabin storage space was full during boarding. This development evidently had an impact on the experience of customers: the Net Promoter Score of customers that were forced to check-in their bags was significantly lower.

PO 3 (InnoHub, Customer logic) was asked to design a solution for this problem. She was asked to work with the 'airside' department (Airline logic) and make the boarding experience less frustrating for passengers that were forced to check-in their bags. During this process, PO 3 started to reframe the problem. She realised that instead of trying to fix a few bad last-minute individual experiences, she could make the collective group of passengers co-owner of the problem. Following this reframe, a concept was designed in which passengers on busy flights were informed of the luggage problem before-hand via text message. These passengers were asked to check-in their (cabin-sized) luggage voluntarily at the check-in counter. Experiments with prototypes showed that passengers were willing to check-in their bags and that this didn't influence their NPS. However, the implementation of this concept required procedural changes from the operational staff at the check-in counter and it required investment from units from the Digital department. This staff wasn't part of the 'airside' department, and they weren't responsible for the passenger experience at the gate. Not being part of the problem, they were reluctant to invest in the solution. Thus, 'Be like Bill' was headed for a VoD. However, PO 3 eventually convinced the new stakeholders to invest resources by explaining that

they would be helping their 'airside' colleagues. In effect, she presented the solution so that it would align with the Digital and Operational logic again, making it a legitimate investment for these units.

Sidebar G

Airlines are known for their extensive loyalty programs. Through these programs, high income generating passengers are awarded free benefits such has priority boarding, access to the airport lounge or access to speed-lanes which allow them to move across the airport quicker. FlyCo offered a longstanding loyalty program, which was highly valued by its most valuable customers. However, over the years, several units at FlyCo had become more generous with these benefits. For example, passengers were offered priority boarding for free when they bought a certain type of ticket (regardless of their loyalty status), and lounge access was sold for a discount to business travelers with long lay overs. As a result, the value of these benefits diluted in the opinion of the passengers.

When Manager 6 (CE) was asked to lead a team that would find a solution for this problem, the problem frame was informed by an Operational logic: the demand for benefits was too high for the supply. The team planned to do research to determine the maximum supply under which customers wouldn't feel the benefits would be diluted and consequently optimise the demand by withdrawing the benefits of the least valuable loyalty groups. Following this frame, Manager 6 asked an external consultant to make a quotation for the necessary research. This option was named 'dividing the cake'.

However, based on research with customers, Manager 6 gained a crucial insight: passengers often are not aware of their benefits and not all passengers equally value and use all benefits. Based on this insight, she developed an alternative frame, one that didn't focus on solving an internal problem (supply and demand), but one that focused on solving customer needs (Customer logic): what if, instead of optimising the current offer (whereby benefit packages were kept intact), FlyCo would redesign how they offer their attributes and offer a personalised set of benefits to each passenger. This frame, named 'enlarging the cake', spurred further concepts in which technology was leveraged to develop a system in which customers swapped loyalty points for benefits. This way, benefits would not dilute, and passengers would feel like their service was personalised, which was a key target for the CE unit. This alternative frame and accompanying concepts were further developed

and later presented to the team. However, during this meeting, Manager 6 was unable to convince the other stakeholders in the team to explore the frame further. Stakeholders explained that further exploration of this direction would have required other stakeholders than those currently involved. As such, the concept of 'enlarging the cake' ended in the VoD.

5.4.3 Managing by Design for Implementation[94]

In the previous two sections, I focussed on how design contributes to coming up with concepts that are particularly likely to be implemented and how design altered the champion's innovation process to foster implementation. Yet as argued by Dougherty and Hardy (1996), to realise *sustained* innovation (which requires implementation), FlyCo needs to change its: "structures and strategies… that reinforce existing practices and… are hostile to creativity" (p. 1122). In this third and final section, I describe my findings regarding the use of design practices to alter the organisational infrastructure in which innovation took place. In this section, I explore the potential of 'Managing by Design' to promote innovation implementation. Although I applied this mode of designing throughout the research project (for instance, I introduced new team targets during InnoScale), there were two occasions on which this was done more formally: during project DigitalOps and project InnoHub.

I present two sets of insights: the potential benefits of the approach and the challenges that design needs to overcome to be applied effectively to organisational matters. The findings in this section are less directly linked to innovation implementation or the VoD, yet they have emerged from an organisational inquiry with the goal of mitigating the VoD.

Benefits of Managing by Design

I identified two benefits to approaching the redesign of organisations as if I were redesigning a service or product. First, similar to Junginger's findings (2005), by involving the users in the design process, they are engaged in the process and feel ownership of change. In FlyCo, organisational design decisions are often executed by executives (interview, Consultant 2, 07/12/'18), as is often the case (Dunbar & Bechky, 2016). In contrast, to be both user-centric and to embrace diversity, we asked the 'users' of the new organisation (i.e., the employees) to co-create the new organisation. During a member check, PO 2 and PO 3 recount how valuable this was for them,

> We had this conversation, because we had this feeling of 'Okay, I know where this is going, but do we still want this? Can we have a say in this?'… We want to be taken along in that part too instead

[94] This section is based on my 2019 *Academy for Design Innovation Management* conference paper.

> of feeling like we're being involved too late. … Not that people do this on purpose, they do think *about* us, but it's not *with* us. Then we could just have our say about it and that was it. That's a shame, because together we can maybe get to a reframe more quickly. (Interview, 09/12/'19)

As a result of being involved, the involved stakeholders gain a sense of ownership of the change and the end-result. For example, during project DigitalOps employees were involved who weren't yet part of the DigitalOps department but were expected to be heavily involved with DigitalOps activities. Over the course of the project, these external employees started to refer to the DigitalOps department as "their DigitalOps" (field note, 15/11/'18). PO 2 and 3 elaborate on feeling ownership after being involved,

> I absolutely think there are benefits to co-creation. Eventually, when you come to a conclusion together, that has benefits… I think that we adopted the new design quickly, but the process before, that wasn't easy. In the end we accepted the new design, and we didn't feel like we were forced to accept it although we didn't want it. In the end, it was just the way it was, and we just went for it, that's the funny thing, though we fought for a long time. (Interview, 09/12/'19)

The employees at InnoHub were designers, who were used to involving their users in a co-creation process. After positioning this organisational redesign process as a service design process, these designers thought it was only natural that they became involved in the process:

> We just want to be taken along in the process, I mean that's also part of our core-values… we always try to guard our core values, not just in the content of our work, but also in how we organise. We're trying to find similarities… that's probably what makes it so comfortable as an employee. … It is basically 'practice what you preach', I mean we go through all this trouble for our customers [to involve them in the design process], then I don't want to be treated differently than the customer that we do this for in the end. (Interview, 09/12/'19)

By involving the stakeholders of the organisation that is being designed in a co-creative process, these stakeholders gain a sense of ownership of the

change. Managing as Designing may be especially suitable for organisations in which designers operate. On this occasion, the organisational design practices align with the practices employed by those who are being organised, which may amplify they effect.

The second benefit is that an explorative, experimental, and iterative approach allows for the problem and solution to co-evolve, leading to more holistic solutions. As Boland and Collopy (2004a) describe, "A design attitude fosters an acceptance of and a comfort with a problem-solving process that remains liquid and open, celebrating new alternatives as it strives to develop a best design solution" (p. 10). The renowned architect Frank Gehry contributes to this topic "The dangerous thing for us is to crystallise [our design] before we have all the information, before we know what the issues are, and if we've addressed all of them" (2004, p. 30). As Consultant 2 explained, when managers redesign organisations, they typically define the scope of the organisation to be redesigned and the problem to be solved before the project starts. In these cases, there is a clear division between problem description (including solution requirements) and solution generation (interview, 07/12/'18).

In contrast, through design practices, employees recognise and explore the multiple frames that exist (i.e., embrace the diversity). For example, for project InnoHub, an initial exploration of the design requirements surfaced that stakeholders held varying beliefs regarding what InnoHubs core capability was. According to PO 4, InnoHub had unique research capabilities and therefore could educate the business on their needs (interview, 1/11/'18). Others referred to InnoHub as 'the team that came up with the concepts that customers didn't know they wanted'. Yet others thought InnoHub's main strength was their capability to co-create solutions with employees. As PO 3 explains, these different frames existed within the team as well:

> Within the team there were differences regarding the future of the team. We worked hard and discussed for a long time, but we just couldn't agree on some things… that was difficult. … So, then someone needs to decide because we couldn't get it straight, we could on some issues, but not on the complete picture. … And you know, there's no wrong or right here, it all has to do with your interpretation and how you look at it. (Interview, 09/12/'19)

While developing solutions, we uncovered that to be able to implement a solution, this required changes in the organisation of another unit as well. This conclusion essentially broadened the scope of the both the problem and solution space (i.e., the frame unfroze and then recrystallised). Eventually, this move led to a proposed new organisation that was regarded as original and holistic. During DigitalOps, I observed a similar move when the frame shifted from: 'how do we organise to build optimizers [software] as fast as possible' to 'how do we organise to *redesign the operation* and build what is needed to achieve this' (field note, 22/11/'17). In sum, the second benefit of Managing By Design is that when solution generation and problem definition are allowed to co-evolve, the resulting organisational designs can be more holistic and original.

Challenges of Managing by Design

Besides the benefits of employing design practices during organisational inquiry, I observed three challenges that are unique (or uniquely prominent) to applying design practices at the organisational level.

1. An established bond of trust between the involved stakeholders in the design process is an important success factor.
2. Whereas design practices can contribute to original solutions and shared ownership, execution speed may suffer.
3. To be effective organisational inquirers, there is a need to define what 'material' can be used to come to a solution.
4. I now discuss each challenge in more detail.

During project InnoHub, the relation between employees at InnoHub and Director 4 was strained. Specifically, there was a decreased level of trust (field note, 12/06/'18). As PO 3 mentioned: "We never built-up anything, trust is something that can diminish, but I don't think our trust was ever high" (interview, 09/12/'19). There also appeared to be a figurative 'distance' between InnoHub and the rest of the DigitalOps unit (field note, 25/05/'18). This situation complicated the design process. For instance, I noted that team members weren't forthcoming about their concerns and viewpoints on the problem to be tackled through project InnoHub (field note, 12/06/'18).

A lack of trust manifested on two additional issues. Stakeholders were unsure about each-others intentions and they were unsure about the level of knowledge of others. The first issue surfaced when, during project InnoHub, the team indicated that they found it challenging to work with and towards a

design that wasn't completely detailed yet, as long as they couldn't trust that their vision was aligned with that of the director (field note, 22/10/'19). Similarly, when the final design was presented to the team. They mentioned that they missed the connection between what they had felt owner of through co-creation and what was presented back to them (field notes, 05/10/'19 and 03/12/'19). On that second issue, Director 4 specifically points to the importance of having 'shared context' during a co-creative organisational inquiry process:

> That you don't just explain that it's logical what you do, they need to go through the process with you together. I can explain to them that it makes sense to relocate their office to closer to here, it may be logical for me, but they'll have a lot to say about it and there will be another context that relates to it… so shared context. That's part of the social contract: we will only agree with the decision, even if I make it on my own, maybe it doesn't even need to be co-created, but there needs to be a sense of shared context. Only if we know for sure that you understand what's happening here and what we care about, if you've taken that into account, if we trust that, then we're okay with it. (Interview, 22/05/'19)

Trust between stakeholders in a co-creation process has been mentioned as crucial by previous authors (Pera et al., 2016). Without this trust, the process of reframing is more difficult (reflective journal, 26/07/'18). In this context, trust appeared to be crucial because the result of the design process would directly influence the lives of the involved stakeholders - instead of designing for a user, employees designed for themselves.

There is also another side of the coin of co-creating organisations: it requires time and may overemphasise what a specific unit needs over what is optimal for the larger organisational. Director 4 mentions this challenge:

> What I notice is that this process [project InnoHub] also creates new challenges for leadership, for management. If you really, honestly want to co-create, then you need to go through this whole process with your people. But what if you already know the answer? And if you can't or don't want to transfer your context to everyone that's impacted by the change? Then you'd have to explain to 33.000 people what the executive board knows. You

> can try this, of course, but it's complicated and time-consuming. (Interview, 22/05/'19)

He called this issue the 'Catch 22 of co-creation'. Although he recognised benefits of employing design in this context, in current form he found them time-consuming. He and PO 7 doubted whether design practices are suitable for every situation (interview, 22/05/'19). PO 3 expresses a similar concern during her member check of that same project:

> It's difficult… because I've had moments in which I thought 'I'm happy that I'm being involved in this and that I can express my opinion', but I've also had moments… that I thought 'I understand that you're doing this with the best intentions and that you want us to have a say, but if you have a better idea, I will follow'. (Interview, 09/12/'19)

Director 4 concludes that a balance needs to be sought,

> We shouldn't choose between the two approaches; we should combine them. That's exactly what often goes wrong in companies like [FlyCo]… everyone suddenly starts to focus on experience, emotions and desires and then you forget that you also need to make profit of a chair or you'll go bankrupt. We need to combine these two approaches to make ourselves fit for the future. (Interview, 22/05/'19)

The third and final challenge surfaced throughout the entire research (not just during project DigitalOps and InnoHub). Throughout this project, it noticed that I lacked an overview of the available design material. Similar to how product designers need knowledge of materials and experience designers need to understand the interface and interaction components available to them, I continuously discovered new 'designable' organisational aspects. For example, whereas I initially focussed on hierarchical structures and team composition, later interventions impacted Key Performance Indicators and project prioritisation mechanisms.

In conclusion, I identified two potential benefits and three potential challenges during my attempts to employ Managing by Design with the aim of mitigating the VoD. Practices associated with being user-centric and embracing diversity contributed to a shared sense of ownership of the proposed changes. In addition, by colliding the problem definition and

solution generation phase, reframing practices can contribute to original and holistic solutions. On the other hand, challenges that I identified were: the need to establish a bond of trust, the risk of overemphasising local needs and losing agility and the current lack of knowledge of 'designable' material.

5.4.4 Summary Insight 4: Design Practices and Innovation Implementation

In this chapter, I describe how design can contribute to innovation implementation. I considered two conceptualisations of how design:

1. Design as Problem-Solving approach, focussing on practices related to embracing diversity, materialisation, user centricity and experimentation, and;
2. Design as Inquiry Process, focussing on practices related to managing uncertainty, problem-solution co-evolution, and reframing.

Three aspects of the innovation process can be influenced by design to promote implementation:

- The innovation process,
- The product of this process (i.e., the concept), and;
- The organisational context in which this process takes place.

As problem-solving approach, practices related to experimentation and embracing diversity help to avoid biases and thereby produce concepts that are more holistic and can be readily implemented. Practices related to user-centricity and materialisation influence the innovation process to promote alignment and mitigate the VoD.

As inquiry process, design can mitigate or aggravate, implementation issues. When champions reframe by enlarging the problem space to generate more holistic concepts, this can contribute to innovation implementation. However, when reframing results in a new aspired value for the innovation project, this requires a new working principle. Consequently, new stakeholders need to become involved, which aggravates the risk of a VoD.

Finally, I employed Managing by Design to redesign an organisational infrastructure. The accompanying practices result in a sense of shared ownership and in more original and holistic organisational designs. However, these benefits can only be achieved when there is a strong sense of trust. Furthermore, these practices invoke the risk of overemphasising local needs and losing organisational agility. Finally, the current lack of knowledge of 'designable' material challenges the use of design on an organisational level.

Chapter 6. Conclusion

6.0 Chapter Overview

In this concluding chapter, I present the major contributions of this thesis and place them in a wider context. In the first sub-chapter (6.1), I answer to the research questions based on my insights. In Sub-chapter 6.2, I identify my principal contributions to literature. Sub-chapter 6.3 concerns limitations to the action research approach and proposed future research. In Sub-chapter 6.4, I translate my insights into practical design guidelines for managers who aim to design organisational infrastructure that facilitates championing to implement innovations. Finally, Sub-chapter 6.5 contains reflections on the research approach, designing organisational infrastructure and on design education.

6.1 Answers to Research Questions

With this research, I aim to expand our understanding of how design can catalyse innovation implementation at a service organisation. I studied an airline (FlyCo) which aimed to undergo an architectural transformation (Safrudin et al., 2014) by leveraging innovation hubs. After an initial exploration of literature and FlyCo's challenges, I determined that this research should focus on *implementing* innovative concepts, not their initiation. Specifically, this research focusses on the "Valley of Death" (VoD) (Markham et al., 2010), which is one major hurdle towards innovation implementation when organisations apply innovation hubs.

To study this phenomenon, I undertook an Action Research (AR) study. As is typical in AR, research sub-questions emerged as the research progressed (Dick, 1993). Initially, I explored the VoD phenomenon in this novel context (Q. 1) and identified a mechanism that drove concepts into the VoD (Q. 2). After this 'zoom-in', I 'zoomed out' to investigate the organisational barriers that contribute to a VoD, and consequently hinder implementation (Q. 3). Throughout this research, I explored how design principles and practices could mitigate the driving VoD mechanism or otherwise contribute to innovation implementation (Q. 4). Figure 44 visualises this progression of questions. Next, I answer these questions based on this research.

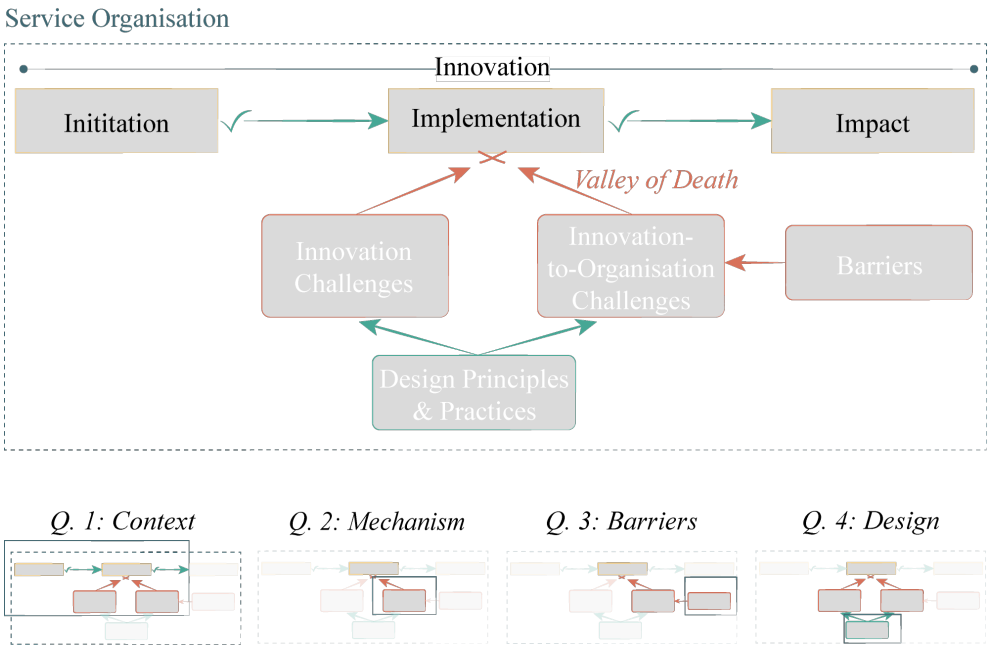

Figure 44: Overview of the development of sub-research questions

6.1.1 How does the VoD manifest in the context of a service organisation?

To explain the VoD in a service organisation context, I first developed an innovation implementation process model, visualised in figure 45. This model diverts from existing descriptions of the VoD because it builds on the insight that (in the studied context) **three, not two, organisational unit types**[95] **are involved in achieving implementation**. In addition to exploration hubs (i.e., research resources) and the operation (i.e., commercialisation resources), resources of *support partners* are required to achieve implementation.

The model builds on Perry-Smith and Mannucci's (2017) phases of innovation and describes how innovative concepts progress through multiple stages of concept production and elaboration. In these stages, innovation project teams develop new and increasingly developed artefacts (A(T), A(T+1), etc.). The number of stages (N) differs per innovation. At a point along this journey (T+N), when the team settles upon a frame, the core

[95] Distinguishable by their role in the concept development and implementation process.

concept is 'frozen'. From here on, the focus shifts towards adoption[96] - or impact - after which only minor, local adaptations to the concept are made.

As Angle and Van de Ven (2000) note, "Innovations terminate either when they are implemented and institutionalised or when resources run out" (p. 667). In between the development stages, innovators need to champion to gain the required resources to continue development. When champions fail to solve innovation-to-organisation challenges, they run out of resources. When champions can't "connect new products with organisational resources, processes, and strategy" (Dougherty & Hardy, 1996, p. 1120), the VoD manifests**. In the context of a service organisation, the VoD manifests as: when concept development terminates because champions fail to gather the required resources for further development because of innovation-to-organisation challenges.**[97] In Section 6.2.1, I discuss the implications of this reconceptualisation of the VoD in more depth.

[96] "Gaining targeted organisational members' appropriate and committed use of an innovation" (Klein & Sorra, 1996, p. 1055).

[97] This definition is an extension of the proposed definition in Section 5.1.1.

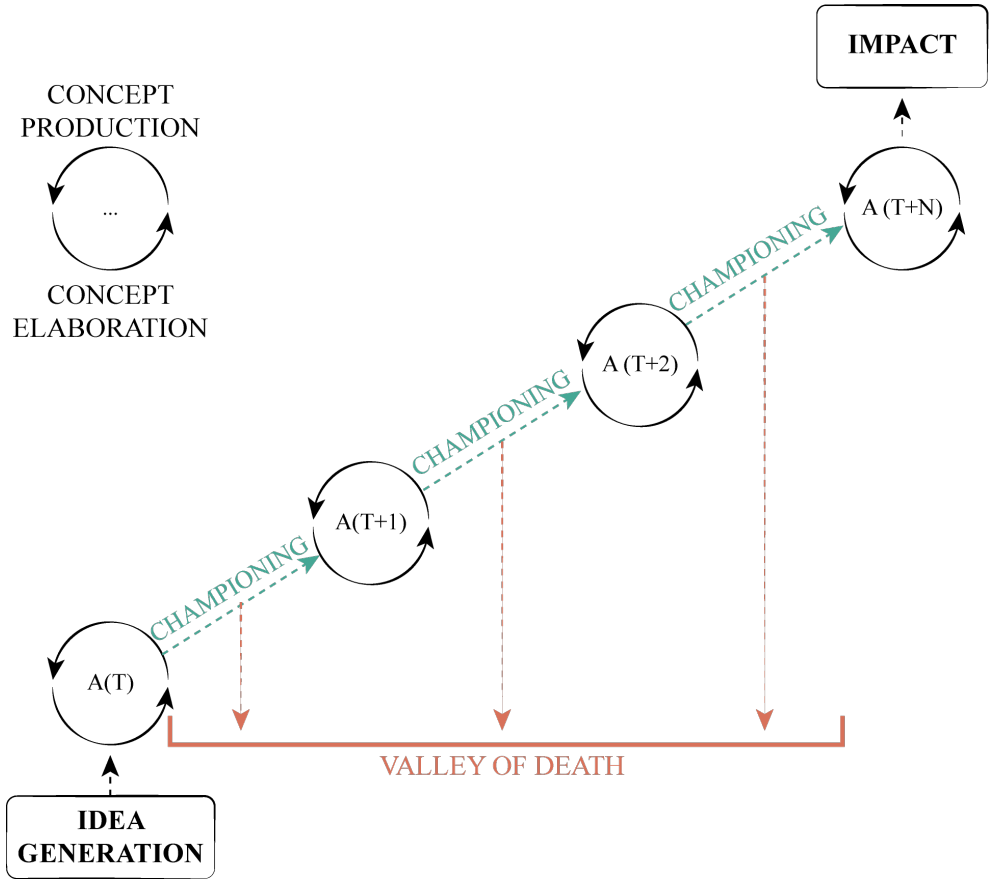

Figure 45: Model of the implementation process and the VoD

6.1.2 What mechanism drives service concepts to arrive at the VoD?

Innovators, from exploration hubs, aim championing efforts at gatekeepers who control resources. The previous answer thus suggests a need to identify the mechanism that underpins the resource allocation decisions of gatekeepers, to better understand the VoD. I visualise the mechanism I identified in Figure 39. To progress from service concept to service innovation, actors need to reconfigure how resources are integrated (Holmlid et al., 2017). The decision to explore new resource integrations is made by gatekeepers who control (human or non-human) resources. I find that legitimacy is an important driver for these decisions and that institutional logics (in FlyCo's case, a constellation of three organisational logics[98])

[98] Airline logic, Customer logic and Digital logic.

influence what gatekeepers judge as legitimate. If no recombinant strategy exists that guides how these logics should be married, conflicts arise over whether innovations are legitimate. These conflicts materialise in three fields: (1) innovation priorities, (2) innovation processes, and (3) founding problem frames. For example, under the Airline logic legitimate innovation processes are linear, whilst the Customer logic fosters iterative and explorative processes. Due to these conflicts, concepts are driven into the VoD.

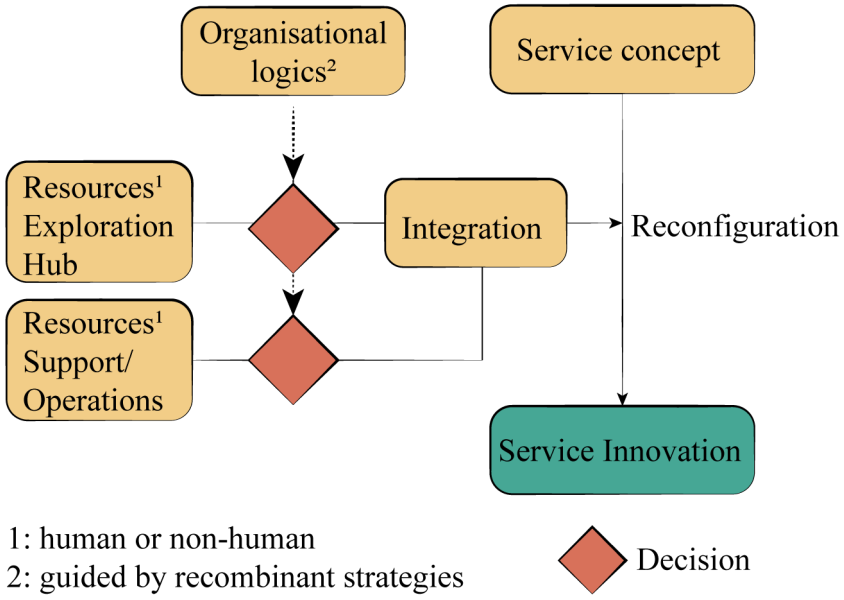

Figure 39: The mechanism through which organisational logics influence resource acquisition (i.e., championing)

In Section 6.2.2, I describe this mechanism in more detail. This section describes how these logic conflicts inform a Not Invented Here response (Antons & Piller, 2015) from gatekeepers which contributes to a VoD.

6.1.3 What are the organisational barriers that contribute to the VoD?

Besides 'zooming in' on the mechanism that drives the VoD, I 'zoomed out' and explored organisational conditions that foster a VoD. When innovation projects take place amongst several of the barriers, it is difficult to successfully implement an innovative concept. I identify 10 barriers, classified in four clusters:

Organisational barriers:

1. A complex, siloed organisational structure;
2. Lack of a shared service vision;
3. Decentralised innovation portfolio management, and;
4. Competitive internal innovation marketplace.

Project problem and solution barriers:

5. Concepts with a founding problem frame in an inferior domain, and;
6. Solutions with a weak fit to the current organisational or physical service system.

Innovation process barriers:

7. Stakeholders become involved In-Medias-Res or Post-Rem of the innovation process, and;
8. Inadequate communication of previous design decisions.

Exploration hub barriers:

9. Lack of a 'Shadow of the Future', and;
10. Limited access to resources.

Managers can design organisational infrastructure to mitigate these barriers. For example, employees at exploration hubs can be evaluated for their realised impact (as opposed to their output) to create a 'Shadow of the Future'. Similarly, to mitigate logic conflicts when stakeholder enter a project In-Medias-Res, leadership can formulate a service vision and mandate shared processes for innovation. In Sub-chapter 6.4, I propose these and other practical guidelines for leaders who want to design *organisational infrastructure* that mitigates the VoD.

6.1.4 How can design principles and practices contribute to service innovation implementation?

Design principles and practices, when applied as problem-solving tools, can contribute to service innovation implementation success by contributing to more holistic, more *implementable*, concepts or by fostering alignment during the innovation process. Specifically:

- **Experimentation** contributes to more holistic concepts because it surfaces invalid assumptions;

- **Embracing diversity** contributes to more holistic concepts because it mitigates the focusing illusion and egocentric empathy gap *and* contributes to a more aligned process because it generates support from stakeholders who become involved during the process;
- **Experiential learning** contributes to more holistic concepts because it supports experimentation and embracing diversity;
- **User-centeredness** contributes to a more aligned process because it supports 'perspective taking' as all stakeholders focus their attention on understanding the user, and;
- **Materialisation** contributes to a more aligned process because it supports 'perspective taking' and communication between stakeholders operating under different logics.

When design sparks a more fundamental inquiry, the contribution of design is paradoxical. On the one hand, design principles and practices can help identify frames and solutions which more effectively address systemic problems and thereby foster implementation. On the other hand, design can aggravate implementation issues because new frames can introduce challenging dynamics in stakeholder management. When new frames require the involvement of new actors or a large mindset shift from the existing involved stakeholders, this provides ample opportunity for a concept to fall into the VoD.

The answers above contain several insights that contribute to or shed new light on existing knowledge. In the following section, I highlight these contributions.

6.2 Contributions and Future Research

6.2.1 Reiterating Development and Implementation

My principal contribution to literature is the reconceptualisation of service innovation implementation. I find that 'bricolage' is key to crossing the VoD in a service organisation, in line with Garud and Karnøe's findings on the ecosystem level (2003). [99] In addition, I add detail to what Garud and Karnøe describe as the "micro-learning processes that allow for the mutual co-

[99] As Garud and Karnøe describe it: "Technological initiatives that do not build upon the inputs of relevant actors may neither mobilize the required skills and resources nor ensure its acceptance in the wider community" (2003, p. 296).

shaping of emerging technological paths to occur" (2003, p. 296). I conclude that, instead of consisting of three sequential phases 'elaboration', 'championing' and 'production' (Perry-Smith & Mannucci, 2017) (see Figure 46, bottom), these three micro-processes are actually reiterating.

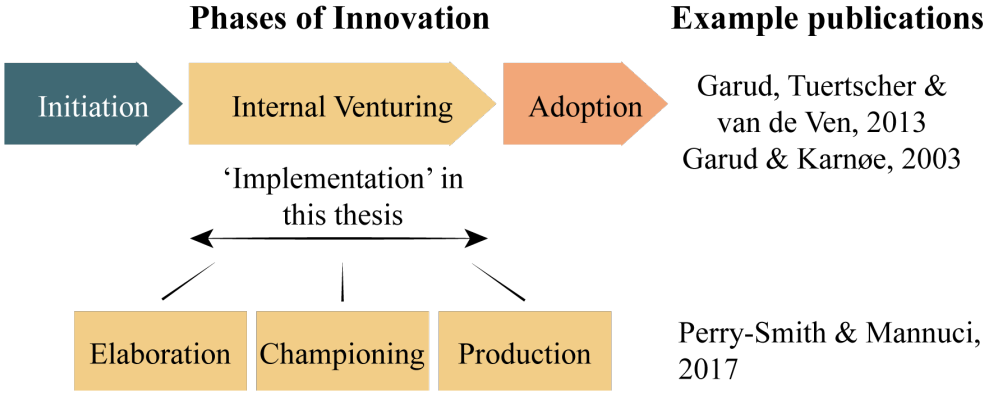

Figure 46: Variants of process models in literature

I visualise this reiterating process in Figure 47. In one process stream, innovation teams solve 'innovation challenges' (Dougherty & Hardy, 1996) through concept elaboration and production. Innovation-challenges are independent of the organisational context, they broadly refer to solving viability, feasibility, and desirability challenges such as making sure the innovation improves the customer experience. In the other stream, championing in the organisation sphere aims to solve 'innovation-to-organisation challenges' (Dougherty & Hardy, 1996). Innovation-to-organisation challenges "involve reaching across major organisational boundaries, such as working with another business unit and determining whether a product fits the company's strategy" (Dougherty & Hardy, 1996, p. 1130). Champions use produced artefacts (such as concept drawings) as a resource (e.g., as boundary object (Suib et al., 2020)) and input for championing; championing results in resources (e.g., hours from programmers) and input (e.g., requirements) from other actors, which are combined with the existing resources for concept iterations. This contribution implies that innovation researchers must take a holistic perspective, both in a temporal sense[100] and in the sense that they must take social and political

[100] What happens during (or before) the concept development phase (e.g., problem framing) may impact implementation success as much as 'implementation strategies'.

dynamics into account. Understanding innovation requires a sensitivity to *who* is involved, *when,* and to *what* is being implemented.

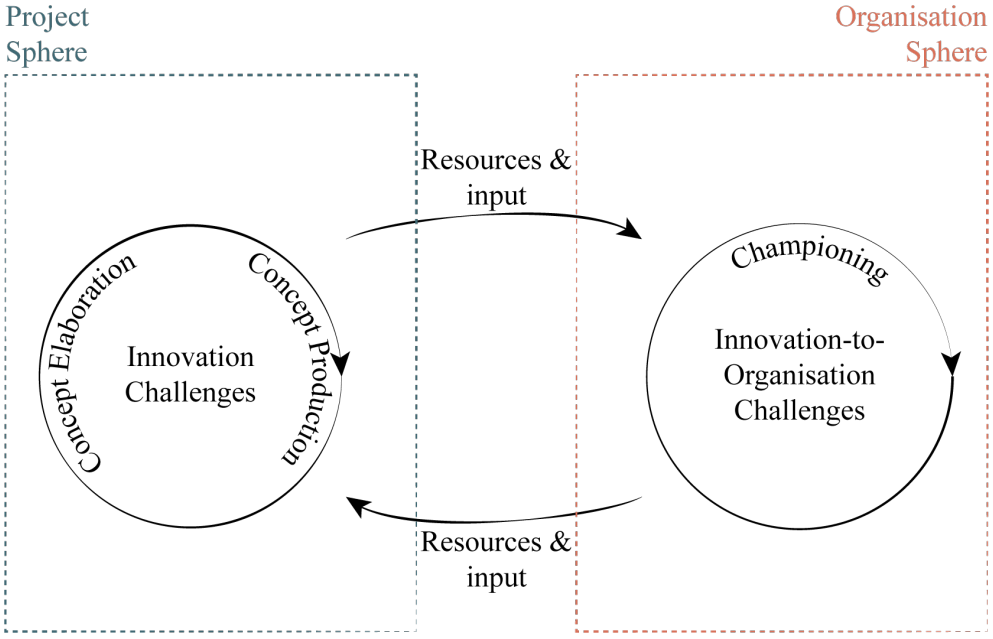

Figure 47: The parallel processes of championing and concept iterations

The second addition to existing theory is the proposed classification of three types of organisational units involved in innovation. Existing VoD literature emphasises a gap between research and commercialisation units (Markham et al., 2010). However, this research (in a service organisation) reveals gaps between explorative units, support resources, and operational units. This categorisation provides a new lens through which we can view the ecosystem of teams and departments engaged in innovation.[101] I challenge whether the dichotomous conceptualisation of a VoD does justice to the complexities of achieving alignment for reform within service organisations. The recognition of support partners as separate category of organisational unit shows that implementing service innovations requires the integration, not only of service design capabilities with service operation knowledge but also with development capabilities (Sangiorgi et al., 2017; Yu & Sangiorgi, 2014).

The third contribution to literature, which follows from conceptualising championing as a recurring activity, is that the VoD is not a singular gap.

[101] This may be especially applicable to *digital* transformations where digital capabilities will often be structured as support resources.

Innovation projects are continuously at risk of falling into the VoD. When new stakeholders need to become involved, this risk is greatest because logic conflicts (as discussed in 6.1.2) may arise. This is why a VoD regularly exists between departments with misaligned logics, such as research and commercialisation departments.

These contributions highlight the importance of recognising the development phase as a separate phase in the innovation process, for researchers and practitioners. This is in line with Markham et al. (2010) and Garud et al. (2013) and challenges the common practice of conflating this phase with the previous (generation) phase (e.g., Klein & Knight, 2005) or subsequent (adoption) phase (e.g., Anderson et al., 2014), as visualised in Figure 48. This finding also substantiates conclusions by Chandler et al. (2019), that the innovation process in service ecosystems consists of three phases: the idea, institutional reconciliation, and the solution. It is in this process of institutional reconciliation, that tensions and divergences may overpower expected value and ideas of service, which leads to a VoD.

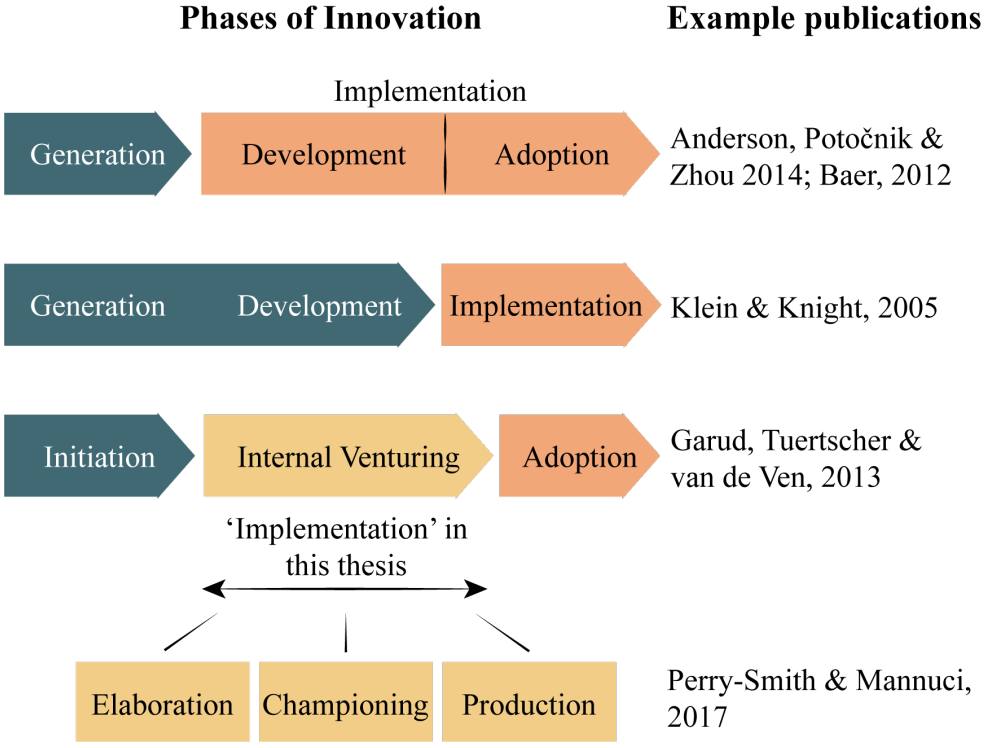

Figure 48: Variants of process models in literature (copy of Figure 5 in 2.1.1)

Regarding future research, this conclusion suggests sensitivity to the different dynamics of these three phases of the innovation process. For example, researchers have studied the relationship between organisational complexity and innovation effectiveness. Although most of these studies find a positive correlation between organisational complexity and innovativeness (Damanpour & Aravind, 2012) (complexity fosters innovation), several studies conclude otherwise, including this research. By separating the innovation phases, we can see how organisational complexity may work positively for initiation, but not for implementation. This is in line with Perry-Smith and Mannucci (2017), who propose that different phases of the idea journey require different social networks.

Together, these findings concur with recent calls from process scholars in organisational science who advocate a 'performative view' (Garud & Gehman, 2019; Garud et al., 2018). These scholars embrace a socio-technical view of change, where multiple actors shape innovations through 'contestation and justification' (Tuertscher et al., 2014). For example, Garud et al. (2017) mention that, "On the one hand, actors must be committed to their projects based on their beliefs to convince and enrol the necessary stakeholders and resources… [on the other hand] these actors must also be ready to 'discredit' their own beliefs and convictions" (p. 459). Similar findings surface in entrepreneurship studies (Ding, 2019; Selden & Fletcher, 2015) and a nascent subfield of organisation studies that frames innovation as a dialectic process in search of equilibrium (Bledow et al., 2009; Chung & Choi, 2018). This literature was out-of-scope for this thesis, but further consideration may yield interesting insights.

6.2.2 Logic Misalignment & Not Invented Here

When actors champion to overcome innovation-to-organisation challenges (and thus mitigate the VoD), the legitimacy of both the innovator and the concept become central. To understand this mechanism better, I turned to institutional theory (and to the more tangible sub-field of organisational logics) because institutions and logics influence what actors perceive as meaningful and appropriate behaviour. Edvardsson et al. conclude that on an *ecosystem* level, "Logics matter when coordinating resources" (2014, p. 291) because (regulatory, normative, and cognitive) logics, "are the coordinating link that have an impact on value co-creation efforts… of actors involved as well as their value assessment" (Edvardsson et al., 2014, p. 291). I add that

also on a lower level, organisational[102] 'logics matter' when reconfiguring resource integration. Logics matter because they facilitate or inhibit championing as logics help gatekeepers determine whether to invest their resources in the development of an innovative concept. This contribution supports the view of institutional theory as a multi-layered lens (Friedland & Robert, 1991) and is in alignment with Kurtmollaiev et al. (2018) who identify macro- *and* microlevel effects of introducing service design logic.

I contribute two more insights to existing knowledge. First, I identify three 'fields of conflict' where tensions between logics become apparent. These three fields are innovation priorities, innovation processes and founding problem frames. This finding expands earlier conclusions that "Innovation is in the eye of the beholder. While one beholder can view an issue as a problem, another beholder can view the same issue as a solution." (Chandler et al., 2019, p. 87) Second, I note that logic conflicts informed a Not-Invented-Here attitude from gatekeepers. Gatekeepers subconsciously and habitually[103] devalued or ignored knowledge (Antons & Piller, 2015) that supported the legitimacy of an innovative concept, when this knowledge originated from a unit that operated under a different logic. Thus far, research has identified Not Invented Here attitudes in relation to contextual, spatial, and organisational boundaries (Antons & Piller, 2015). This research adds a novel contribution that *logic boundaries* can cause a Not Invented Here response. More research to investigate the relationship between organisational logics and Not Invented Here attitudes is however necessary.

6.2.3 Design Implementation Paradox

One aim of this thesis is to understand better the relationship between applying design principles and practices in innovation and service innovation implementation. Subsequently, one contribution of my research is that I propose the first model that identifies how design can contribute to implementation success, visualised in Figure 49. In this figure, I highlight the contribution of design in the innovation process model proposed in Section 6.2.1. The contribution of design is highlighted in green. Through mitigating

[102] Institutional logics, localised in time and space, inform organisational logics (Kurtmollaiev et al., 2018).

[103] In the pragmatic sense of the word habit: "The essence of habit is an acquired predisposition to ways or modes of response, not to particular acts" (Dewey, 1922).

cognitive biases (Price & Lloyd, 2021), experimentation and embracing diversity, design contributes to solving innovation challenges which ultimately leads to more holistic and implementable concepts (see also Sections 5.4.1 and 5.4.2). This finding is in line with Yu and Sangiorgi (2018), who note that "contextual and holistic understandings of user experiences [as a result of applying service design practices] can inform value propositions that better fit users' value-in-use" and that "prototyping can optimize firms' resource and process configuration to facilitate users' engagement with the service " (p. 50) I find that an experiential learning process (triggered by design practices) (Beckman & Barry, 2007) and reframing contribute to more effective systemic frames and more holistic and effective solutions. The latter finding is in line with Kersten et al. (2017), who find that embracing diversity encourages more 'scalable' solutions and with Vink et al. (2019) who find that embodying alternatives helps actors to experiment with alternative mental models and understand their implications.

Regarding innovation-to-organisation challenges, practices related to embracing diversity, user-centricity and materialisation contributed to mitigating logic conflicts - and to mitigating a VoD - and thus to implementation success. This is also in line with Yu and Sangoirgi (2018), who conclude that "aligning system actors to the user experience can organize and mobilize them to better support users' value creation" (p. 50). This conclusion is also supported by earlier findings of Vink et al. (2019) that supportive physical materials and including a diverse set of actors helps stakeholders to perceive multiples and in turn change their mental model to enable innovation.

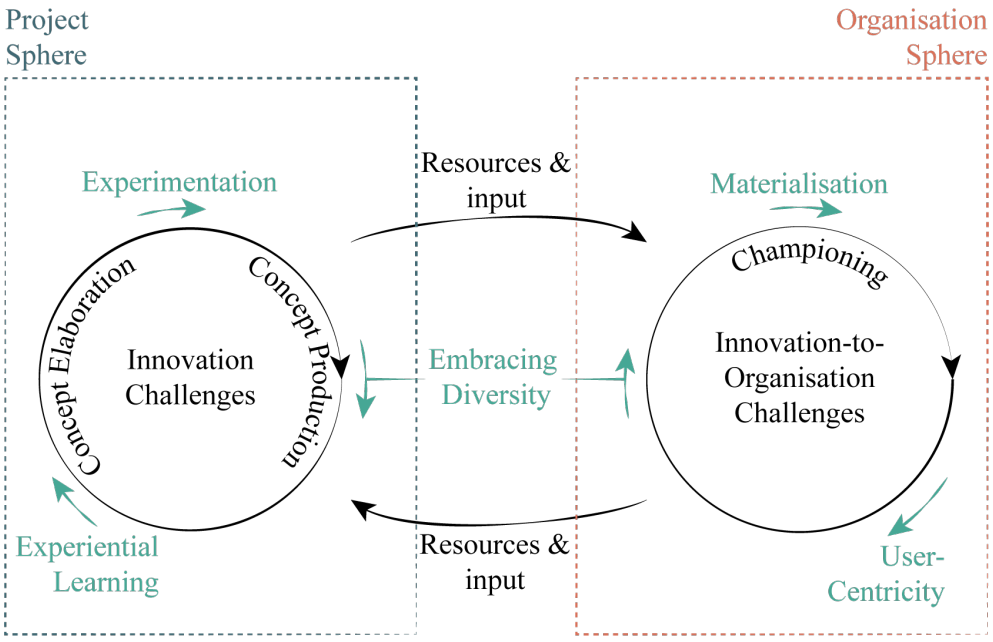

Figure 49: How design practices contribute to implementation success

However, paradoxically, design can also *contribute* to a VoD when reframing leads to a shift in the stakeholder field or when champions fail to convince involved stakeholders of this new frame. To identify the best proposition, a design process allows problem and solution co-evolution (Dorst, 2019a). During this process, not only the working principle and the solution are dynamic, "The nature of the outcome—the value to be achieved—can also shift, depending on that fit" (Dorst, 2019b, p. 120). Innovators need to champion the legitimacy of the desired value and working principle of new frames and overcome any additional logic conflicts before they can gain resources. This research thereby substantiates the propositions set forth by Vink et al. (2021) that "Service ecosystem design is a collective endeavour by multiple actor constellations influenced by ongoing interactions within and between both conflicting and aligned design and non-design processes." Also, this research may contribute a first tentative answer to the question "whether inter-organizational stakeholder engagement always augments innovative output, or whether too strong cognitive, emotional and behavioural engagement across organizational boundaries may harm co-innovative outcomes." (Jonas et al., 2018, p. 411) Findings from this research indicate that, in the context of intra-organizational innovation, involvement of a diverse set of authors may also hinder implementation. In any case, the

success of championing determines whether innovation proceeds or ends in a VoD.

Through my research approach, I was able to identify possible contributions of design, yet more research is required to investigate this paradox further and confirm the effects. For example, follow-up research could identify in which situations design contributes to a VoD instead of mitigating it. Dorst identifies 'hyper complexity' and the absence of a clear target user (such as in 'social design') as contributing situational properties (2019b). Similarly, Overkamp (2019) identifies two types of service transformations, distinguished by whether the end-state of the transformation is determined at the outset. He concludes that, "Design takes place as part of the design phase of the New Service Development" (p. 230) for the more 'determined' transformation. Yet design is, "An intentional effort to learn about value co-creating relations in a service" (Overkamp, 2019, p. 230) for the more open-ended transformation. In the latter, he acknowledges that, "the matters which are addressed might stretch beyond the scope of the initial project and might include actors who were not considered from the beginning" (p. 232) Research is needed to further crystallise these situations.

Regarding design practice, this research surfaces challenges of managing service design innovation projects. The paradox described above challenges the effectiveness of a priori problem specifications and predetermined stage-gates and project outcomes (Bergema, 2015; Reich & Subrahmanian, 2015). Additionally, it suggests that (service) designers need to be attentive to (the perception of) their stakeholders. To achieve change, designers must skilfully navigate the tension between challenging the status quo and delivering outcomes that can be implemented in (current) service systems.

6.3 Limitations

Through the action research approach applied in this thesis, I leveraged a unique opportunity (at FlyCo) to explore a relatively unknown phenomenon, the VoD. This approach made use of insider access, 'back-stage' knowledge and longitudinal data. It allowed pragmatic knowledge generation as I designed and performed interventions. There are limitations to this research approach. In this sub-chapter, I explore these limitations and provide suggestions for further research.

I studied one organisation, which limits transferability as I haven't explored whether my findings apply to other (types of) organisations. For

example, the identified barriers may not be applicable to smaller organisations or organisations that operate in less commoditised markets. By focussing on one organisation, I gained time to build a wide network and deep bonds of trust inside FlyCo. Future research can build on my conclusions (and increase transferability) by explicating what factors may affect whether the insights apply in other settings (Morgan, 2007). Future research can explore the applicability of my insights to other operational service organisations (e.g., other airlines, utility-providers), other types of service organisations (e.g., knowledge-intensive service firms such as consultants) or even other large organisations (including manufacturing organisation).

While gathering data, I focussed on the organisational context. The advantage of this approach is that I achieved a multi-levelled perspective. For instance, several of the barriers that I identified are not limited to one level-of-analysis. The barrier 'solutions with a weak fit to the service system' relates to a specific project (the proposed solution) and the organisational context (the current service system). Neither of these elements are barriers in their own right, it is in their relation that friction occurs. Through this focus on organisational context, I studied several projects in different stages, in line with a view of innovation as a complex process (Garud et al., 2013). The limitation of this approach is that I didn't systematically analyse innovation projects on a case-by-case basis. Future research can validate my findings by longitudinally studying innovation projects across various organisations. Such data would allow for more 'strong' process-oriented analysis approaches, such as bracketing and sequential analysis. This research could identify additional underlying mechanisms to the VoD and identify which barriers apply to specific contexts. However, it would be important for such research to consider the long period required to achieve implementation and that the implemented outcome may take a different form than the originally presented concept (Sangiorgi et al., 2017).

6.4. Organisational Design Guidelines for Innovation Implementation

In the previous sub-chapters, I answered the research questions, highlighted academic contributions, and proposed future research. But what can practitioners do with my insights? To answer this question, I translate the insights from this research to recommendations for managers and designers

who aim to design organisational infrastructure that facilitates innovation implementation.

Organisational Infrastructure

This thesis focusses on identifying organisational-level conditions that facilitate innovation implementation (as opposed to individual or project-level solutions). To identify these conditions, I developed the concept of 'organisational infrastructure' (see Section 5.4.3). I developed this new vocabulary to gain a fresh perspective and avoid a bias towards (and limitation to) pre-existing categories of organisational design such as 'governance' or 'budget processes'. I assumed Larkin's (2013) definition of infrastructure as the "built networks that facilitate the flow of goods, people, or ideas and allow for their exchange over space" (p. 328). He highlights that infrastructure only becomes valuable in interaction with human labour. We built infrastructure to achieve something else, not as an end goal (Agid, 2018; Prud'homme, 2004); we build bridges to facilitate transportation. This vocabulary inspired a human-centred view of the organisation, it informed my perception of a budget system as a means for employees to receive capital for their project, not to distribute the available capital. We build infrastructure for the long-term and infrastructure tells us something about what a community (such as an organisation) values (Russel & Vinsel, 2016). An infrastructure perspective aligns with conceptualising innovation as a complex process which is difficult to 'manage' (Dougherty & Hardy, 1996) but instead can be harnessed and nurtured (Garud et al., 2013).

Design guidelines

I identify six design guidelines regarding organisational infrastructure for innovation implementation:

1. To resolve innovation-to-organisation problems, large service organisations can use innovation hubs, because this infrastructure facilitates the required social dynamics.
2. To avoid a Not Invented Here attitude, the infrastructure of these innovation hubs can promote institutionalisation and legitimisation of innovation concepts.
3. To motivate aligned innovation process and 'implementable' concepts, the infrastructure of innovation must act as a 'shadow of the future'.

4. To align decisions making across organisational units, a service vision - which describes what value the organisation wants to create in the future - should be formulated and shared.
5. To ensure alignment between resource allocation and the innovation vision, and to spot potential VoD issues, centralised innovation portfolio management can be applied
6. To align the innovation portfolio with the current technological and organisational system, the service system-fit framework can be applied.

First, innovation hubs are relatively uncommon in service organisations compared to manufacturing organisations (Blindenbach-Driessen & Van Den Ende, 2014) despite evidence that supports their effectiveness (Chang et al., 2012). Without organisational infrastructure to support innovation projects, champions are likely to fail because they don't possess the necessary (formal and informal) connections and power (yet) (Baer, 2012; Govindarajan & Trimble, 2010). Innovation hubs centralise innovation activity (West, 2002). This infrastructure can build and sustain relationships throughout the organisation. Through this network, this infrastructure helps to overcome the organisational complexity issues mentioned in Section 5.3.1, without diminishing that complexity for the rest of the organisation (which fuels innovation initiation). Hubs function like 'start-up incubators' that develop ecosystems of investors, universities and technology partners. Additionally, as Pisano concludes, "An organisation's capacity for innovation stems from an innovation system: a *coherent* set of interdependent processes and structures" (2015, p. 46) [italics added]. In an innovation hub, processes can be aligned to mitigate the conflicts discussed in Sub-chapter 5.2. Access to resources (the barrier discussed in 6.3.9) can be facilitated. Moreover, as described in 6.3.4 (and as Kalling (2007) finds), a decentralised innovation structure (without hubs) can foster competition for resources between actors involved in innovation as opposed to a collaborative atmosphere, which is crucial for innovation (Kleinaltenkamp et al., 2012). Centralised hubs, when designed effectively, may overcome silos, and facilitate collaboration (O'Reilly & Binns, 2019). In line with this, guideline one is:

1. To resolve innovation-to-organisation problems, large service organisations can use innovation hubs, because this infrastructure facilitates the required social dynamics.

Part of the value of innovation hubs is that they protect 'embryonic' concepts (O'Reilly & Binns, 2019). However, managers must build hubs in such a way that this protection doesn't result in a VoD between the hub and the rest of the organisation (Dougherty & Hardy, 1996). My insights suggest that there must be an infrastructure in place which facilitates interaction between the innovation teams and the units which the proposed innovation influences. This is especially important for service innovation, where innovation and service delivery are often inseparable (Blindenbach-Driessen & Van Den Ende, 2014). Infrastructure should support innovation teams to gradually build legitimacy by showcasing interim concepts. During these interactions, innovation-to-organisation issues are allowed to surface, which the team can then resolve. This way, the interactions promote institutionalisation. Examples of such infrastructure are stage-gate meetings when these are not merely focussed on making go/no-go decisions but provide a platform to discuss development issues. A multi-disciplinary team set-up (as suggested by Brown (2018) and Govindarajan and Trimble (2010)) is another example of such infrastructure. In these teams, employees from the innovation hub, support partners and the operation collaborate to develop and implement innovations. [104] Therefore, guideline two is:

2. To avoid a Not Invented Here attitude, the infrastructure of these innovation hubs can promote institutionalisation and legitimisation of innovation concepts.

While guideline two facilitates interaction between an innovation team and the rest of the organisation, guideline three prescribes infrastructure that is targeted at the innovation hub specifically. As noted in Section 6.3.9, the infrastructure of an innovation hub influences the behaviour of champions both during development and after a hand-over. If the infrastructure rewards employees of an innovation hub for generating innovative concepts, they may under-appreciate and consequently under-invest in solving implementation problems. However, as Baer notes, "Individuals [are] able to improve the otherwise negative odds of their creative ideas being realised when they

[104] Depending on the stage of the innovation, employees from units may be more or less involved. For example, certain exploration hub employees may move to the background as the project nears implementation while the operations personnel become more prominent.

expected positive outcomes to be associated with their implementation efforts" (2012, p. 1102). If organisational infrastructure pulls forward the 'problems of the future' to these champions, for example, by making the innovators partly responsible for the implementation process or by rewarding them for *implemented* innovations, they change their behaviour. Guideline three is:

3. To motivate aligned innovation process and 'implementable' concepts, the infrastructure of innovation must act as a 'shadow of the future'.

Even when champions are motivated to create implementable concepts and pursue an aligned process, concepts can end in a VoD when actors across the organisations do not share a vision of where the organisation needs to go. Like a rowboat without a rudder, actors within an organisation that don't agree on what direction the organisation should go, are likely to get nowhere at all. Organisations can benefit from a forward-looking vision that is shared throughout the organisation, which explains how the organisation aims to create (and capture) value in the future. Importantly, this vision needs not specify the specific technologies or products required to create this value (exploring this is part of the innovation process). As Pisano notes, "Diverse perspectives are critical to successful innovation. But without a strategy to integrate and align those perspectives around common priorities, the power of diversity is blunted or, worse, becomes self-defeating" (2015, p. 64). This research identifies that an innovation vision facilitates implementation along the complete development trajectory. Especially for service organisations, where innovation implementation requires different units to combine resources (Cipriani & Rossi).

A vision helps generate the right concepts, as Dell'era et al. state: "In a world where options are abundant, without a shared purpose, companies fall into the paradox of ideas: the more ideas they create, the more they move in different directions, the less innovation happens. In this vein quantity can increase confusion and entropy" (2020, p. 10).

A vision aligns gatekeepers as it guides their resource-allocation decisions, as O'Reilly and Binns mention: "Unless there is a clear strategy… the tendency is for the mature business to either starve the new business or to impose on it the performance standards of the mature business, an easy way to kill the new venture" (2019, p. 50).

Finally, when the operation is involved in the vision creation process, it helps to gain buy-in and ownership (Reid et al., 2014). Kester et al. (2014) already provided evidence that strategic alignment in the NPD portfolio is crucial for an organisations' overall innovation success, this research explains how this alignment is important to foster implementation. Such a vision would be an example of a recombinant strategy[105] (Dalpiaz et al., 2016) to marry a constellation of (conflicting) organisational logics in a large service organisation. Guideline four is:

4. To align decisions making[106] across organisational units, a service vision - which describes what value the organisation wants to create in the future - should be formulated and shared.

Navigation requires a compass and a map. If a service vision is the compass hat guides and aligns actors in an organisation, centralised innovation portfolio is the map that shows potential obstacles and pockets of value. Innovation portfolio management helps to achieve innovation implementation two reasons. First, portfolio management requires an overview of projects that are in development. This overview allows top-management to:

- Gain insight into how resources are spent relative to the innovation vision;
- Ensure that all projects contribute to a strategic pillar and that all pillars are served;
- Ensure that projects don't overlap, and;
- Spot concepts that are in danger of 'falling between the cracks' of the portfolio of two units.

Additionally, such an overview can help to hold executives accountable for their innovation efforts because it highlights when projects are killed or when they don't progress. Therefore, guideline 5 is:

5. To ensure alignment between resource allocation and the innovation vision, and to spot potential VoD issues, centralised innovation portfolio management can be applied.

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[105] A recombinant strategy describes how practices and symbolic constructions from various logics are adopted to certain degrees and combined into a new dominant logic.

[106] By champions, gatekeepers and sponsors.

In addition to securing alignment with the vision of the *future*, leaders must monitor how their innovation portfolio fits with their *current* service system. The service system-fit framework from Section 6.3.6, can help to become aware of this (mis)fit. Management will plot their portfolio of innovative concepts in this framework to see how balanced their portfolio is. They then make deliberate decisions to develop concepts that fit the current system better (and are thus more easily implementable) or concepts that may have a weak fit currently but have more potential to create a value and to leap-frog the transformational path. In corporate venture lexicon, such concepts that deviate from current (organisational) assumptions and (technical) systems but have the potential to become a platform for change, are called 'zero to one' concepts (Thiel & Masters, 2014). To achieve architectural transformation, organisations need 'zero to one' concepts, but most concepts should fit the current service system to facilitate implementation. With the service system-fit framework, management can create a portfolio that achieves this. Consequently, the final guideline is:

6. To align the innovation portfolio with the current technological and organisational system, the service system-fit framework can be applied.

6.5 Reflections

In this final sub-chapter of the conclusion, I present three reflective outcomes of this research. I reflect on my research approach (6.5.1) and review implications of my conclusions for design research on organisations (6.5.2) and design education (6.5.3).

6.5.1 On Research Approach

Literature Use

I consulted a wide selection of literature throughout this research as my understanding of the research phenomenon developed. I ventured from my initial readings of innovation management and design literature to service design, service-dominant logic and finally towards organisational science (e.g., organisational design). In a pragmatic sense, this shifting literature scope helped me understand and explain my results. The theory I needed doesn't (yet) exist in, for instance, design research literature. Hence, I contributed to diverse research fields and even built bridges (e.g., between

'Not Invented Here' and institutional logics). However, it was also challenging for me to grasp this literature, and I recognise that various literature could provide additional understanding. Therefore, I encourage follow-up research, both building on (a deeper understanding of) the literature I refer to and on theories from fields such as 'implementation science' and 'organisational change'.

Project Selection

During this research, I engaged in projects as opportunities emerged. These opportunities were in part shaped by my increased understanding and in part by the needs of FlyCo, embodied through the FlyCo employees that actively approached me. This approach to project selection differs from the more traditional approach of pre-determining selection criteria and may be critiqued for being less rigorous. However, this responsiveness is a key strength of an AR approach. It allowed me to build and leverage relationships with FlyCo employees and gain unique insight into internal perspectives. Evidently, any researcher following in my footsteps would encounter a unique situation, undertake different projects, and consequently perhaps come to additional findings. As a pragmatic researcher, I appreciate these differences and suggest that additional knowledge can emerge from reflecting on the differences between these findings.

Ideally research cycles contain only one project and there would be no overlap between projects and cycles. Engagements would be separated by short periods of reflection and preparation. In my research however, similar to Price (2016), there was overlap. For example, Project DesignCommunity was initiated at the end of ARC 1 and remained active, albeit in the background, throughout the following cycles. Similarly, final actions of Project DesignCapability were performed during ARC 3. This is the result of operating in a large organisation, where organisational processes are unpredictable and researchers must be responsive to the environment (Dick et al., 2009). This overlap added difficulty to the analysis, as explained in Chapter 3. Yet it provided an opportunity to cross-check opinions and beliefs across stakeholder groups. For instance, by operating both at the level of the DigitalOps department and the level of the InnoHub unit - a subsidiary department of DigitalOps - I could consider the interaction between actors within these two departments from both perspectives. Other action researchers have attempted to achieve this triangulation or dialectic between

various viewpoints by interviewing various stakeholders (Kindon et al., 2007). I complimented these interviews by moving back-and-forth between stakeholder groups.

Research Scope

I specifically focused on service organisations in this research. I was educated as an industrial design engineer, with a focus on physical products whereby I gained experience as a designer (during my studies) in a large ball-bearing manufacturer and a large FMCG firm. When I review my conclusions from this research against the backdrop of that experience, it seems several of my findings could apply to all large commercial organisations, including manufacturing organisations. Perhaps the service context merely highlighted certain aspects of the innovation journey. The initial responses of executives from manufacturing organisations to my research findings are encouraging. It would thus be interesting, as future research, to explore this further.

6.5.2 On Designing Organisational Infrastructure

In this thesis, I explore how design principles and practices can contribute to service innovation implementation. I believe design can contribute on three levels:

- On the project level, by contributing to holistic concepts;
- On the process level, by contributing to aligned stakeholders, and;
- On the organisational level, by providing alternative approaches to designing organisational infrastructure (see Section 5.4.3).

However, the answers I present in Sub-chapter 6.1 concern only the first two levels. This is because I have generated insufficient data and insights to reliably address the third level. Nevertheless, I can formulate some preliminary insights (addressed below) regarding how an alternative approach to designing organisational infrastructure could contribute to mitigate the VoD and encourage future research on this topic.

This research reveals two possible advantages of approaching organisational infrastructure design as a 'regular' design process: ownership and novelty (as portrayed in Section 5.4.3). First, this type of organisation design is generally described as a top-down activity performed by managers with authority (Auernhammer & Leifer, 2019). This leads to mixed responses from employees, as Dunbar and Bechky note, "Depending on the design

approach, people may experience an organisation design as enabling because it provides support for mastering specific tasks, or as coercive, consisting of directives they must comply with" (2016, p. 545) In contrast, and similar to Junginger's findings (2005), managers who apply design principles and practices may find engaged employees who feel ownership of the change. With this sense of ownership comes an openness from employees to adopt the designed change. Second, by utilising a design approach, a novel and more coherent result may be achieved. By embracing diversity and reframing, new designs (e.g., that divert from hierarchical designs) which can be more effective, may emerge.

Besides these advantages, I encountered several hints towards challenges of applying design practices to organisational infrastructure design. First, an established bond of trust between those that are part of the organisation that is being redesigned and the facilitating designer is important. Overcoming ambiguity and uncertainty - typical characteristics of a design process - requires trust. When actors in the design process are both co-designers and benefactors of the outcome, this introduces an additional level of involvement. This involvement may magnify trust issues. The advice to organisational designers is to be attentive to these issues and ensure the involvement of *all* relevant stakeholders regularly to mitigate these challenges. Second, this research suggests that the abstract nature of the topic requires that designers must invest continuous effort to ensure all stakeholders are aware of the frame that is being explored (as similarly suggested by Golsby-Smith (1996)). When problem frames divert between involved stakeholders, this confuses and frustrates actors as viable solutions to problems are ignored or undervalued by actors pursing a different frame. Finally, it requires time and effort to engage employees in a co-creative, iterative design process; perhaps it requires more time than a top-down approach. In his book about managers who 'try to do well, by doing good', O'Toole discusses the efforts of Spedan Lewis (of the retail giant John Lewis & partners) to involve employees in issues of organisation design. O'Toole notes the "inherent, and perhaps inescapable, tension Spedan struggled with between the necessity of maintaining managerial prerogatives, on the one hand, and authentic employee participation on the other" (2018, p. 127). When managers embrace design practices for organisation inquiry, they must constantly balance speed and decisiveness with consideration and employee engagement. Although this balancing act invites challenges for managers, I

believe it may be a worthwhile endeavour, for managers to experiment with and for researchers to study in the long-term.

6.5.3 Education Recommendations

Besides a researcher, I have been a design educator during the past years. Foremost, I intensively coached more than a hundred (100) master design students (with various specialities) during a five-months course in which 'design for implementation' was a key learning goal. The students worked on real FlyCo challenges and in close collaboration with FlyCo employees. This experience combined with my research insights (especially 6.2.1 to 6.2.3) taught me that design education will need to adjust to meet the more strategic role that designers are assuming. If design is going 'beyond design' (Dorst, 2019b) to contribute to solving the world challenges, then educators need to go beyond teaching future designers how to generate innovative interfaces, products, and systems. It is crucial that we teach them how to contribute to implementation and, ultimately, impact. I have three recommendations based on my findings.

First, the 'problem-solving view' of design is embedded in the institutions that govern much design education. This influences, amongst others, how we evaluate students, the learning objectives we formulate and the environment in which we set educational activities. Students are taught to create solutions that satisfy pre-set requirements. However, to ensure those solutions become implemented, this research suggests that designers need to see the design process as an inquiry that stretches beyond 'solution definition'. A broader view of design suggests, for example, more integration with the organisational contexts in which students will eventually work and evaluating students' final outcome *as well as* their process (e.g., the involvement of organisational stakeholders). Therefore, recommendation one is:

1. A broader understanding of design in design education can contribute to developing designers who more effectively realise organisational transformation.

If design is taught from this more brand perspective, then we need to provide students the tools to achieve implementation. In line with suggestions by previous scholars (Golsby-Smith, 1996; Yu & Sangiorgi, 2014), students then need to be proficient at understanding the organisational pre-text and con-text (Junginger & Bailey, 2017). They need to meaningfully integrate

diverse perspectives and communicate at various levels of abstractions and with different disciplines (Voûte et al., 2020). For this, tools from other disciplines such as organisational studies and business administration may be suitable, or new tools that help to gain 'business empathy' may need to be developed (Waring et al., 2019). Therefore, my second recommendation is:

2. If design education aims to develop designers who make impact through innovation implementation, I recommend offering students tools and skills to be more sensitive to organisational contexts.

Besides gaining a general understanding of context, students will need to develop a framework for identifying and understanding factors that influence the implementation process. Rylander proposes one way to develop this understanding: "Design education should therefore give future designers permission to play with different roles and identities as appropriate—in the same way as they understand that some design thinking is rational, and some is intuitive" (2009, p. 15). In addition, we can teach students strategies that promote implementation. Many strategies, such as incrementalism (Norman & Stappers, 2015), will require students to look beyond idea generation and actively play a role in implementation. However, we can also design products/services/systems that are more implementable, for instance, by introducing modularity (Norman & Stappers, 2015). Therefore, recommendation three is:

3. If design education aims to develop designers who make impact through innovation implementation, we must teach students what factors influence implementation and strategies to achieve implementation

6.6 Chapter Summary

In this concluding chapter, I answered the research questions and reflected on the implications of my insights. In the first sub-chapter (6.1), I answered the four research questions that emerged during this research. In Sub-chapter 6.2, I present three major contributions to literature. I propose a new conceptualisation of the implementation process, which captures the relation between artefact development and the process of resolving innovation-to-organisation challenges. The second contribution centres on the role of organisational logics in implementation and how logic misalignment can lead

to a Not-Invented-Here attitude. The final contribution introduces the design implementation paradox identified in this research. In Sub-chapter 6.3, I review several limitations to the research approach and suggest future research. Sub-chapter 6.4 includes six design guidelines, based on this research, for managers who aim to design organisational infrastructure that supports championing to foster innovation implementation. Finally, in Sub-chapter 6.5, I reflect on the research approach, suggest the need to further explore the use of design principles and practices when generating organisational infrastructure and provide suggestions for changes to design education to align with the increasingly strategic role of design and designers.

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Appendices

Appendix A: Action Research Characteristics

As mentioned, AR can be seen as a family of research methods[107] (Reason & Bradbury, 2008a), which reveal various "purposes, positionalities, espistemologies, ideological commitments, and, in many cases, different research traditions that grew out of very different social contexts" (Herr & Anderson, 2005, p. 2). It is seen as an alternative to 'disinterested' social science research practices (Bradbury et al., 2019) by "being future-oriented, collaborative, agnostic, and situational" (Coghlan, 2011, p. 62).

Despite their differences, scholars have also articulated what characterises AR methodologies, besides the cyclical process described above. These characteristics are: a focus on local problems and practical knowledge; emergence; twin goal of change and knowledge generation and; research *with* people rather than *on* people (Reason & Bradbury, 2008a). I will now summarise each of these characteristics before describing why this type of research fits this research project and my philosophical assumptions.

Local problems and practical knowledge

AR is 'context sensitive' (Scaratti et al., 2018) as it aims to generate knowledge that is useful to address real-life (Greenwood & Levin, 2007) practical problems of individuals, organisations, and communities (Reason & Bradbury, 2008a). It draws on various ways of knowing (Greenwood & Levin, 2007; Reason & Bradbury, 2008a) to produce 'practical knowing' which "directs us to the concerns of human living and the successful performance of daily tasks and discovering immediate solutions that work" (Coghlan, 2011, p. 60).

Emergent research design

According to Dick, the most important reason for choosing an AR design is because the situation demands responsiveness (Dick, 1993). The cyclical nature of AR allows researcher to study phenomena that are initially 'fuzzy' (Chisholm & Elden, 1993; Dick) in a context which is uncontrollable, unstable, and uncertain (Scaratti et al., 2018). As opposed to a completely pre-determined research approach based on 'objective universally valid procedures', action researchers adapt their methods to the changing context

[107] My approach comes closest to 'pragmatic action research' (Greenwood, 2014, p. 645).

(Scaratti et al., 2018) and to their (participants') progressed understanding (Reason & Bradbury, 2008a). As Coghlan posits, "as an emergent inquiry process, it [AR] engages in an unfolding story, where data shift as a consequence of intervention and where it is not possible to predict or to control what takes place" (Coghlan, 2011, p. 54).

Change and knowledge generation

AR researchers (and their collaborators) aim to develop actionable knowledge, but they are also driven by a desire to realise change (Brydon-Miller et al., 2003). As Scaratti et al. note,

> The researcher is no longer a neutral and detached actor, but a co-producer and co-author of change, which he or she contributes to generating and developing. In relating to the, sometimes complex, need for transformation, the researcher enters into relationship with the problems of existence, and is thus not separate from the world but immersed in it. (Scaratti et al., 2018, p. 291)

This twin goal introduces complexity and (according to some) challenges regarding rigour, yet it also represents a key advantage of the approach (Herr & Anderson, 2005). In AR, social action results from the construction of new meaning (Greenwood & Levin, 2007). Also, change is not only a fundamental goal of AR, but core to the mechanism of how AR is performed (Argyris, 1993).

Research with people rather than on people

AR does away with the monopoly of knowledge creation from academics (Reason, 2003) as knowledge in AR is cogenerated with participants (Coghlan, 2011) in 'communicative spaces' (Reason & Bradbury, 2008a). As Herr and Anderson note, "the most important feature [of AR] is that it shifts its locus of control in varying degrees from professional or academic researchers to those who have been traditionally called the subjects of research" (p. 2). AR thereby challenges entrenched perspectives about *whose* knowledge matters (Bradbury et al., 2019). Participants assume various roles in AR. Minimally, they participate in a reflexive dialog with researchers (Greenwood & Levin, 2007) but they may (and according to some they must) also engage in shared problem-setting and determination of the research agenda (Scaratti et al., 2018). This involvement is required to understand the

meaning of situations, grasp the complexity of socially embedded phenomena and capture the tacit and unconscious knowledge of the involved stakeholders (Scaratti et al., 2018).

Appendix B: Interview guides

ARC 1[108]

- Introduction-self
  - PhD topic I will come to in a moment
- Innovation definition
- Introduction Interviewee
  - What is your role?
  - What is the role of your department at FlyCo?
    - What are the activities that go with it?
- How are you involved in innovations?
  - Who are you involved with?
- Innovation process
  - What is the typical/formal innovation process?
  - Who are involved in it?
    - At what stage?
- What is a recent innovation that you are pleased with (regarding process)?
  - What was the process of that?
  - Who were involved in that?
    - In what phase?
- What is a recent innovation that you are pleased with (regarding content)?
  - What was the process for that?
  - Who were involved?
    - In what phase?
- What are the top 3 challenges in innovation?
  - Why?
  - Probes:
    - Culture?
    - (Infra)structure?
    - Process / methodology / tools?
- Innovation value chain
  - Do people in your unit create good ideas on their own?

[108] Both guides have been translated.

    - Do you create good ideas by working across the company?
    - Do you source enough good ideas from outside the firm?
    - Are you good at screening, funnelling and funding new ideas?
    - Are you good at turning ideas into viable, feasible and desirable innovations?
    - Are you good at diffusing developed ideas across the company?
- Why do we find this difficult?
- What kinds of innovations do we find harder and what kinds do we find easier?
- Valley of Death
    - Explanation
        - Between departments
        - Does not depend on quality of the idea itself
- VoD within FlyCo?
    - In a specific type of innovations?
- Where does this VoD lie?
    - Where in the process?
    - Between which parties?
- What problems underlie it?
    - Probes:
        - Strategy? Why we are developing it
        - Subject matter? What we are developing
        - Process? How we develop it

<u>ARC 3</u>

- Introduction
    - Scope of the research
- What is the current infrastructure?
    - What do we define as infrastructure?
    - What does not fall under infrastructure?
- Probes:
- Team
- Location
- Hierarchy
- Budget

- Evaluating criteria concept (beginning? through?)
- Evaluation criteria team
- Formal network (partners/resources/colleagues/etc.)
    - Proximity diagram
- Roles/functions
- Additions?
- What is the current performance?
    - About Valley of Death: are many things being built/implemented?
    - Why are they (not)?
- Why are we implementing a change?
- What will change?
- What are your expectations based on the changes?
    - Why?
    - And in 3/6/12 months?
- What are the expectations regarding performance of InnoHub?
    - How does this change?
    - Why do you expect this?

Appendix C: Respondents list

Interview type	Name in Thesis	Position Respondent	Department
Formal	CXO 1	Chief Officer	Board of Directors
Formal	CXO 2	Chief Officer	Board of Directors
Informal	SP Digital	Senior President	Digital Innovation
Formal	Service Designer 1	Service Designer	Digital Innovation
Informal	Service Designer 2	Service Designer	Digital Innovation
Formal	S-Service Designer 1	Senior Service Designer	Digital Innovation
Formal	PO 1	Product Owner	Digital Innovation
Informal	S-Manager 1	Senior Manager	Digital Innovation
Informal	Director 1	Director	Finance
Informal	S-Manager 2	Senior Manager	Digital Commercial
Informal	Manager 1	Manager	Digital Commercial
Informal	P-Manager 1	Project Manager	Corporate Innovation
Informal	P-Manager 2	Project Manager	Corporate Innovation
Formal & Informal	Director 2	Director	Customer Experience
Formal	Director 3	Director	Customer Experience
Formal	Manager 4	Customer Journey Manager	Customer Experience
Informal	Manager 5	Customer Journey Manager	Customer Experience
Informal	Manager 6	Customer Journey Manager	Customer Experience
Formal	Service Designer 3 & 4	Service Designers	Customer Experience
Formal & Informal	Director 4	Director	Digital Operational Innovation
Informal	Manager 7	Manager	Digital Operational Innovation
Informal	P-Manager 3	Project Manager	Digital Operational Innovation

Informal	P-Manager 4	Project Manager	Digital Operational Innovation
Informal	P-Manager 5	Project Manager	Digital Operational Innovation
Formal & Informal	PO 2	Product Owner	Digital Operational Innovation
Formal & Informal	PO 3	Product Owner	Digital Operational Innovation
Formal & Informal	PO 4	Product Owner	Digital Operational Innovation
Formal & Informal	PO 5	Product Owner	Digital Operational Innovation
Formal & Informal	PO 6	Product Owner	Digital Operational Innovation
Informal	Service Designer 5	Service Designer	Digital Operational Innovation
Formal	S-Manager 3	Senior Manager	Digital Operational Innovation
Formal	Consultant 1	HR Consultant	Digital Operational Innovation
Formal	PO 7	Product Owner	Digital Operational Innovation
Formal	S-Consultant 1	Senior Consultant	Digital Operational Innovation
Formal	PO 7	Product Owner	Digital Operational Innovation
Formal	Consultant 2	Consultant	Digital Operational Innovation
Informal	Manager 8	Manager	Airside Operation
Informal	Manager 9	Manager	Landside Operation
Informal	Manager 10	Manager	International Station Operations
Informal	SP Hub	Senior President	Airside & Landside Operation
Informal	Director 5	Director	Airside operation
Informal	Director 6	Director	Airside operation

Informal	CXO 3	Chief Officer	Board of Directors
Informal	S-Consultant 2	Senior Consultant	Digital Operational Innovation
N.A.	Manager 11	Manager	Digital Commercial
N.A.	Manager 12	Manager	Digital Commercial
Informal	P-Manager 6	Project manager	IT
Informal	P-Manager 7	project manager 7	Maintenance operation
Informal	Consultant 3	Project Consultant	CE/Digital
Informal	S-Service Designer 2	Service Designer	Digital Commercial
Informal	Manager 13	Manager	Corporate Support

Appendix D: Research Context

This section includes information gathered *during* the research in addition to publicly available documents and literature. Specifically, this section includes insights from ARC 1, in which one of the main aims was to build an understanding of FlyCo and the aviation industry. Also note that the following section describes a snapshot of FlyCo at the moment of entry. Therefore, it is written in past tense. Since, the organisation has developed, not in the least because of recent developments in the travel industry (the Corona pandemic).

This section is structured by increasing levels of detail. First, I take 10.000 feet perspective and discuss the aviation industry in general. Then, I zoom in to a 3.000 feet perspective and portray FlyCo. Subsequently, I present a 'from the ground' perspective of how design and innovation were integrated in FlyCo when I entered the organisation. This section includes a description of the three units that I collaborated with most intensely (DigitalOps/Innohub, Design Doing and Customer Excellence) and of the transformation that FlyCo aimed to realise. I close the chapter with a description of how I entered the field and gained access to the company.

Aviation Industry

The aviation industry started with the invention of the first powered aircraft in 1903 by the Wright brothers and is an archetypical service industry. Indeed, the case that Shostack used in her 1977 foundational service marketing paper, was an airline (Shostack, 1977). As mentioned in the literature review, service quality and operational efficiency are of paramount importance for service organisations and subsequently so is service innovation. Additionally, innovation is needed to mitigate the impact of the industry on the environment (Price et al., 2019). However, there are several factors that inhibit innovation, and it is an industry that is known for being slow to adopt innovations (Sampere, 2016).

First, the industry is highly regulated for safety and security purposes (Sampere, 2016). Airlines need to adhere to a wealth of national and international regulations and report to several regulatory bodies. Additionally, this implies that airlines are high-reliability organisations (Price, 2016), which experience the dilemma of performing error-free and stable operations while reacting to dynamic conditions (Danner-Schröder & Geiger, 2016). These circumstances promote a culture where risks are

avoided and deviation is seen as negative. This limits experimentation and breakthrough innovation.

The aviation industry is also a complex industry, where "ecosystems are characterized by diversities in cultures, ages, backgrounds, and travel purposes" (Verganti et al., 2020, p. 17). Airlines must deliver a service that is acceptable for a wide range of customers, while catering to specific needs at the same time. Additionally, the industry supply chain is complex and networked (Price et al., 2019). Airlines need to collaborate intimately with a large array of partners (airports, food suppliers, maintenance operators, airplane manufacturers) to deliver their service. As a result, the innovative capacity of airlines is limited by that of their partners.

Furthermore, the economics of the industry favour exploitation of value over exploration of new value. Following the global deregulation (and de-nationalisation) of the industry, the industry has seen the entry (but also subsequent exit) of many airlines (Goetz & Vowles, 2009). Aviation companies need to make considerable capital investments (i.e., buy airplanes), the products of which need to be used for long periods (decades) to be profitable. These factors combined have resulted in a commoditised industry, where price is often an important buying criterion (as opposed to product quality) and where earning healthy margins and creating a competitive advantage are especially difficult (Rothkopf & Wald, 2011).

Consequently, airlines have generally competed on other factors than product quality. Three important levers that organisations can pull to create a competitive advantage are network development, load factor and operational efficiency. As I experienced early in my research, there is a deep-seated belief that the purchase behaviour of customers is almost entirely driven by availability: which routes are offered. Airlines (including FlyCo) thus spend much of their effort in identifying potential profitable routes, opening and closing departure and arrival locations (which requires, for instance, setting-up a catering network) and tweaking their network. The load factor, often expressed in percentage of available seat kilometres occupied, is an important Key Performance Indicator (KPI) for airlines as each empty seat represents unfulfilled revenue potential. According to IATA, the global aviation authority, load factors have risen by more than 10 percentage points in the last 15 years (International Air Transport Association, 2019). Operational efficiency heavily influences an airline's possibility. Efficiency is influenced by many decisions in the long-term (e.g., which aircraft to buy), medium-term

(which routes to operate and when to perform maintenance) and short-term (how to handle disruptions). In sum, airlines have several avenues to gain a competitive advantage besides service quality.

After this '30.000-foot' overview of the aviation industry, the next section zooms in on FlyCo as an airline specifically.

FlyCo

FlyCo is a relatively small, legacy airline carrier. There are three types of international airline carriers[109]: budget airlines (e.g., EasyJet, FlyBe, Southwest); 'Gulf' carriers (Emirates, Etihad & Qatar Airways); and (former) national, legacy carriers (British Airways, China Southern, American Airlines Group). The former are highly efficient and standardised, which allows them to offer low prices. 'Gulf' carriers offer a premium service (e.g., large seats, direct flights, special 'first' class) for a premium price. Legacy carriers, such as FlyCo, generally offer a better service than budget airlines (e.g., allowing free check-in baggage), but aim for a lower price point than their premium competitors. They leverage their network (their most valuable inherited legacy) and brand to draw passengers. Regarding size, on a scale from very small airlines (few dozen aircraft) to very large airlines,[110] FlyCo can be considered small. It generates a revenue of more than €10 billion, serves more than 30 million passengers and has several tens of thousands of employees.

At the time of writing, FlyCo was a profitable airline. They enjoyed a four-star rating (out of five) from SKYTRAX (the international air transport rating organisation) and generally ranked within the top twenty (20) or thirty (30) airlines in the world according to that same agency. They had a reputation for being safe and punctual, which they also regularly won awards. Finally, they were considered to be a relatively sustainable airline, consistently occupying one of the top rankings for airlines in the Dow Jones Sustainability Index (DJSI).

FlyCo operated a traditional, hierarchical organisational structure as the simplified organisational chart (of 2017) illustrated in Figure 19 shows. The largest portion of employees (~4 out of 5) was employed in what was known as 'the operation'. This part of the organisation, overseen by the COO, included all the operational staff working at the airport, in the aircraft and

[109] There are also many small and medium-sized regional airlines.

[110] For example, American Airlines group operates approximately 1.800 aircraft.

elsewhere in the supply chain. This part of the organisation was overseen by a team of operational executives that met regularly to take major decisions, which I'll call the operations committee. The CEO managed several staff functions, such as HR and public affairs as well as the cargo and maintenance subsidiaries. Operating under the CFO (the third member of the Executive Management Team), the CIO was responsible for the IT systems, which included a specific unit responsible for 'digitizing' the operation.

There were three peculiarities about the organisation that are worth mentioning.[111] First, there was a separate department, operating directly under the CEO, that focussed on improving the customer experience (Customer Excellence), which also included branding. Like the operation, there was a team of executives (which in part consisted of the same people) that met regularly to take major decisions regarding the customer experience, the Customer Excellence Committee. Additionally, a separate department ('Digital') was responsible for digital marketing and communication. Finally, in 2015 the CEO established an indefinite 'transformation office' - responsible for large-scale change initiatives - under the assumption that change was inevitable and FlyCo needed to become more dynamic.

[111] Besides that, the CIO reported to the CFO. This is not so much peculiar, but it is becoming less common and may imply that IT is seen primarily as a cost centre.

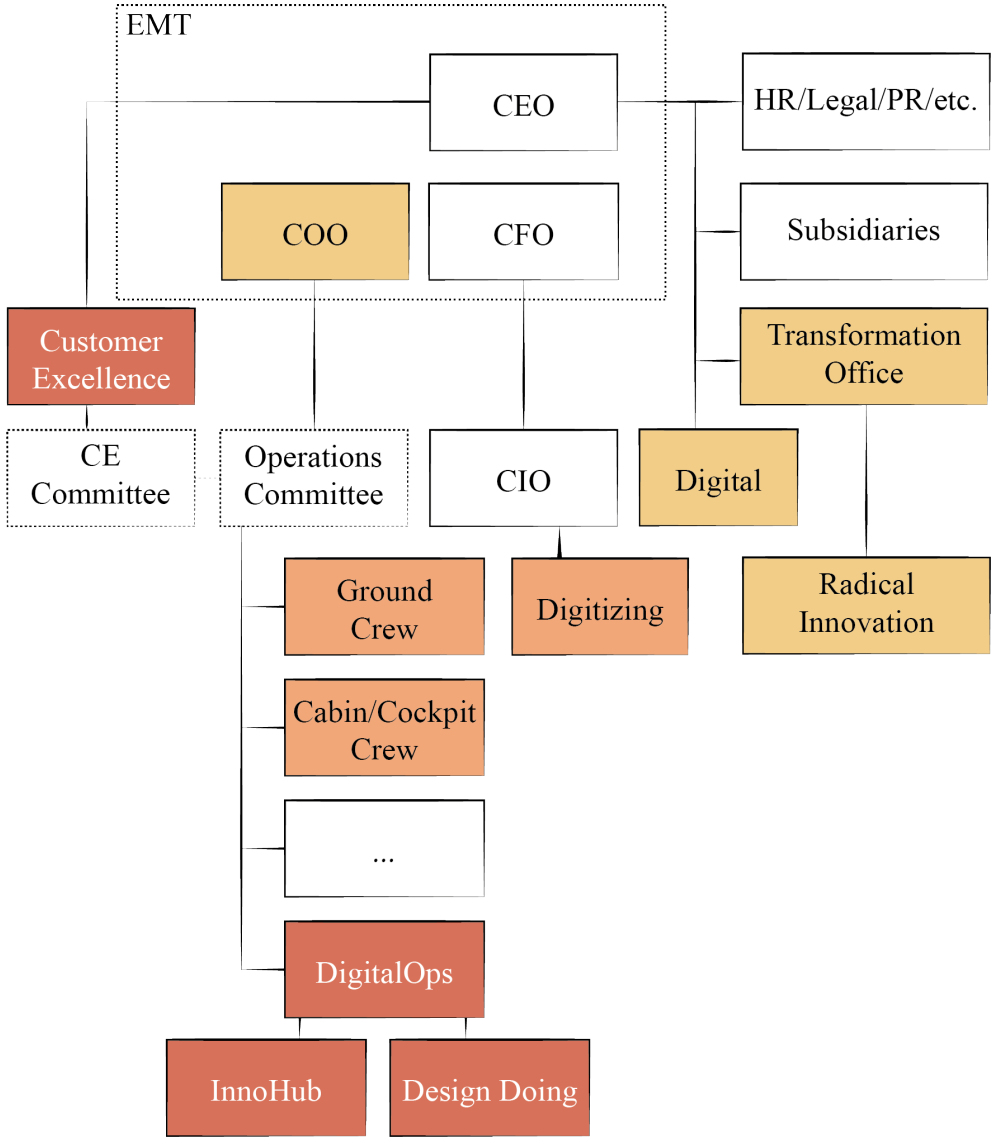

Figure 19: Simplified illustration of the corporate structure of FlyCo

The colours of the boxes in Figure 19 relate to the level of involvement of these units in this research. The red boxes include the departments that I collaborated with intimately throughout my research. As described in chapter 4, In ARC 1, I collaborated mostly with DigitalOps, InnoHub and Design Doing. In ARC 2, I engaged with the Customer Excellence Department. In ARC 3, I became part of the management team of DigitalOps, as interim manager of the InnoHub team. The units with orange boxes were involved

with the research but weren't involved in the design of the cycles or determining the aims of projects. For example, I collaborated with designers from the 'digitizing' unit during project 4 (ARC 2), but this project was driven by CE stakeholders. Finally, the yellow boxes are units where I merely conducted interviews (I also conducted interviews with stakeholders from all red and orange boxes). For instance, I interviewed the executive of the transformation office and I engaged with the COO during Design Doing events. Figure 19 gives a broad image of where my research took place in FlyCo. More details can be found in the cycle descriptions in chapter 4 and the respondent list attached in appendix B.

I finish this description with a brief description of the culture of FlyCo, as perceived by myself and FlyCo stakeholders. FlyCo's culture was described as a typical 'airline culture' with high regard for safety. There were official procedures, codes of conduct and rules for all matters. These were implicit, but also often visible throughout the offices in the form of posters and stickers. Stakeholders mentioned that this culture resulted from FlyCo's history but also that many employees started as operational personnel before assuming 'corporate positions', taking the 'high-reliability' mindset with them as they moved up the organisation. Relatedly, the culture was described as risk averse and short-term focussed.[112] Interestingly and in contrast, stakeholders also mentioned that FlyCo had been successful through its 'pioneering spirit'. In the past, FlyCo had pioneered both business-model as well as technological advancements (e.g., the early use of social media to contact customers). There was a noticeable and pronounced urge to return to this culture.

In addition, and as already becomes apparent from the chart above, FlyCo was a hierarchical organisation. This again, was linked to the aviation circumstances, where chain-of-command is an important safety principle.[113] Furthermore, the culture was described by stakeholders as 'operation is king'. By this, they referred to the perceived dominance of operational interests (as opposed to customer experience or sales) in business decisions. Finally, FlyCo fostered a competitive culture. This was noticeable both externally as

[112] According to an executive, FlyCo never created strategies that looked further ahead than one year.

[113] Internally, this was also linked to a 'tile culture'. This was a nod to an urban legend that ground crew in the past were expected to remain on specific positions during operation ('on their floor tile') if they didn't have specific permission to break protocol.

well as internally. For example, on several occasions, units and stakeholders gravitated towards internal competition over turf as opposed to collaborating. As a result, FlyCo was often described as having a silo culture.

Transformation, Innovation & Design

Recent marketplace developments, noticeably pressure from both low-cost airlines as well as high-quality 'Gulf' carriers, placed FlyCo in a challenging competitive position. In 2014, a new CEO was named, who announced a new corporate goal in 2015. The new goal called for FlyCo to become "the most customer-centric, innovative and cost-efficient network carrier" of the region. Subsequently, the CEO presented a 5-year strategy that, amongst others, included two pillars: an effort to become more customer centric and digitalisation.

As noted by Schanz (Schanz & De Lille, 2017), organisations can achieve customer-centricity by establishing a customer excellence organisation driven by design methodologies. Indeed, among other initiatives, design thinking was positioned as a driving force for achieving customer experience. The new strategy also included a shift to become more digital. There were many opportunities for FlyCo to become more cost-efficient as well as to improve customer experience using technology. Examples of these opportunities were supplying the ground staff with connected devices and digital tooling and using software to optimise planning and operations. This, however, did imply the introduction of new ways of working. According to Safrudin et al., the described transformation is an *architectural transformation*, where "the enterprise architecture is overhauled, yet the components and core concepts remain unchanged, i.e. they are still performing the same work in spite of the fundamental changes" (Safrudin et al., 2014, p. 36). In other words, FlyCo wanted to deliver the same services, but they were prepared to fundamentally alter the organisation and operating model to improve their performance.

When I entered the organisation, this transformation had been ongoing for two years. However, in discussions with stakeholders, I learned that the transformation was hindered as projects often encountered a VoD. I noticed recognition of this phenomenon across various units of the firm. Stakeholders recognised it as a key problematic issue at the current stage of transformation across different types of innovations, across the value-chain and for innovations that targeted 'behind the scenes' operations as well as innovations that involved the customer interaction. The severity of the issue was

confirmed in 2018, when thousands of FlyCo employees gathered for a yearly address. Halfway through the event, one of the chief executives entered the stage to provide his view on how the company was developing. He had one main message for his audience: "We've invested a lot in our capacity to generate new ideas and create prototypes, now it's time to become good at implementing these ideas. Innovation is implementation." FlyCo experienced a VoD and thereby provided the case context needed for this research.

Over the subsequent period, I built an understanding of how innovation was organised within FlyCo. As is typical in service organisations (Blindenbach-Driessen & Van Den Ende, 2014), innovation wasn't organised or managed centrally, even though literature suggested that this had benefits for service firms (Chang et al., 2012). Instead, operational units were responsible for changes and several hubs existed that engaged with innovation efforts (i.e., the radical innovation team at the transformation office). The innovation budget wasn't controlled centrally, but spread throughout the organisation, locked in departmental budgets. Finally, digital development capabilities - central to the innovation strategy of FlyCo - were also dispersed over the various digital units described in the previous section.

I encountered a similar situation when studying how design and where 'design' was located inside the organisation. As stakeholders mentioned, there was no 'design legacy' at FlyCo. FlyCo did not have a design department for example. As a result, there weren't many designers at FlyCo. Also, designers and design teams were spread thinly throughout the organisation with little to no connection to each-other. Most of the designers were part of the various digital (and digitizing) initiatives, yet also these designers worked on different projects, had little contact, and deployed different practices. However, there were two (related) initiatives at FlyCo that aimed to promote the impact of design at FlyCo: Design Doing and InnoHub.

In 2017, after several years of pilot programmes, FlyCo formalised a partnership with the design faculty of a university. As the COO mentioned in a news bulletin announcing the partnership: "it's great to have a strong scientific partner such as [partner university] by our side that can help us innovate and teach us how to apply Design Thinking at a large scale. Thanks to this collaboration, we can offer our passengers even more service and comfort in the future". As part of this agreement, which included funding for my research project, design students would continue to perform design projects in collaboration with FlyCo employees. Additionally, the university

and FlyCo collaborated to strengthen FlyCo's design capabilities. However, during initial meetings with involved employees, they expressed a growing awareness that promising innovation initiatives, including more than a hundred (100) student design projects, never reached implementation. They were also experiencing a VoD.

FlyCo had also recently established an innovation hub, inspired by similar hubs that were established by other (hospitality) service organisations (Ahuja, 2019; Verganti et al., 2020). This hub was tasked with designing and prototyping operational innovations. This unit had its own, separate office space, with proximity to the operation and boasted its ability to test their operations in the live operation. They employed a design-driven innovation methodology, which they developed in collaboration with a university (Stoimenova & De Lille, 2017) and had achieved several high-profile successes. However, as many other innovation hubs (Solis et al., 2015), this unit also increasingly noticed that they encountered difficulties during the implementation process. The manager of InnoHub noticed the severity of the issue when he mentioned: "everything else that we do is useless if we do not implement". Positively, they were open to collaborate with me to investigate the issue together, which formed the initiation of my research project.

In the next section, I explain in more detail how I gained access to the research projects and how I leveraged previous research engagements to do so. I also exhibit how I build the needed trust to engage in the collaboration and how this was instrumental in maintaining access throughout the research.

Entering the Field

AR is initiated by a period which is referred to as 'entering' or 'accessing' the field (Cunliffe & Alcadipani, 2016; Riese, 2019). This final section describes that process. This description serves two purposes: (1) to provide transparency regarding the context in which this research was performed and (2) to offer insight in the research context by illuminating the process of gaining access (Bruni, 2006). For clarity, I describe this preceding period as two phases. These phases are visualised in Figure 50. These phases, which correspond with the following two sections are: 'previous research engagements' and 'gaining access & building trust'.

This research was part of a stream of research activities conducted by FlyCo and my research institute. A history of collaboration between these parties provided several benefits. It also influenced the research design in

terms of participant and project selection. These previous research engagements and their effect on this research are described in section 3.8.1. Additionally, to initiate the first projects (ARC 1), I needed to gain access and build trust. Section 3.8.2 describes key activities performed during the initial period of immersion that aimed to achieve this. Finally, access needed to be *maintained* throughout the entire research period and before each project; access was therefore best described as a trajectory, "a never-ending process of engaging with multiple actors and organisational dynamics which can lead in different directions" (Bruni, 2006, p. 137). The final section of this chapter therefore highlights several actions which were performed to maintain access during specific projects.

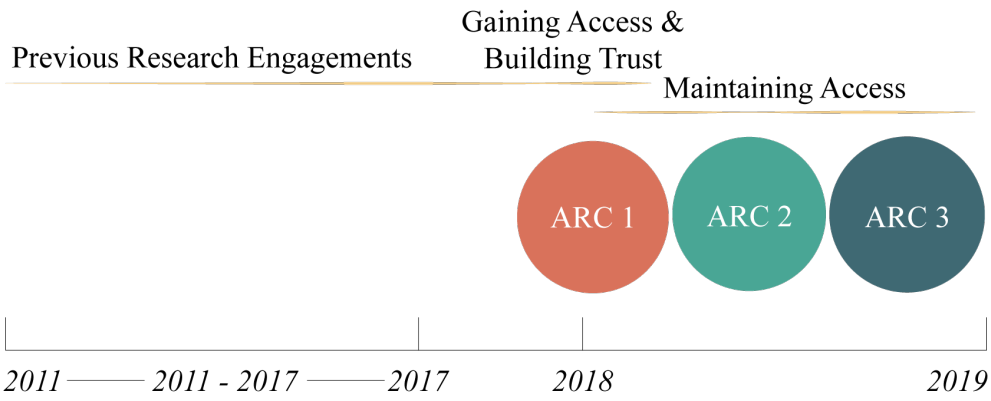

Figure 50: Timeline of phases related to access

Previous Research Engagements

Figure 51, adapted from a publication by Price, de Lille and Bergema (Price et al., 2019), illustrates the timeline of a selection of previous projects in which FlyCo and my research institute collaborated. The green dot (on the right-hand side of the figure) represents the start of my PhD project. Through this shared history of projects, FlyCo and my research institute prepared the ground for the long-term research commitment that my PhD was a part of.

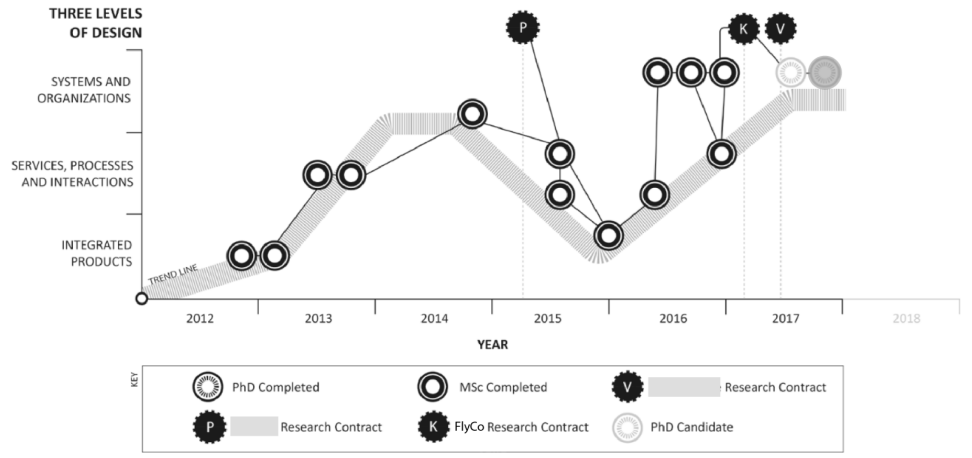

Figure 51: Timeline of the research collaboration (in Price et al., 2019)

Building on this history provided three key advantages: initial network opportunities, established legitimacy and trust and access to previously gathered data.

Initial Network Opportunities

Although (as explained in detail in section 4.2.1) one of the goals of the first ARC was to build a personal network (focussed on my research topic), an existing informal network was available to be leveraged. This network consisted of employees who had worked with design researchers or students from my research institute before or were themselves alumni. Although employees from this network were clustered in specific teams, it provided access to almost all relevant departments of FlyCo. This network served as an entry into the organisation both because of the information they could provide (about innovation and design at FlyCo) and because of their internal connections.

Legitimacy and Trust

Previous projects with design students had generated positive outcomes for FlyCo. Results of these projects had generated public exposure (in the form of press attention or industry awards), provided inspiration for employees, or resulted in innovative projects that provided operational or customer experience improvement. As discussed in section 3.7.3, these projects created

the momentum for an investment in design in the form of the Design Doing programme. This investment, the accompanying endorsement by a chief executive of FlyCo and the results that were already achieved provided legitimacy to design as an approach to innovation and to myself as a design researcher. As described by Cunliffe & Alcadipani (Cunliffe & Alcadipani, 2016): "reputational capital, that is, the status and credibility of the fieldworker and his or her institution, can be a key factor in negotiating access and establishing relationships" (p. 8). In this case, previous projects with the organisation and the status of the research institute as a top university in the field of design provided me with the capital needed to acquire access.

Beyond getting 'access' to the front stage, an AR approach requires a bond of trust between the organisation's members and the researcher (Monk, 2007): to get access to the backstage {Cunliffe, 2016 #226. In the research cycle descriptions (chapter 4), I illustrate how I built trust on a personal level through initial projects and 'acts of commitment'. Prior to this however, it was the legitimacy of design and my research institute that generated enough trust to gain internal employees' commitment to engage in initial projects.

Previously gathered data

As a result of the ongoing collaboration between FlyCo and my research institute, a significant amount of data had been generated by students and researchers on a wide variety of topics. This data was published in (academic) papers and in the form of (publicly available or privately held) student theses and reports. This information helped to gain an initial understanding of the organisation, it provided insight on previous projects and initiatives, and it helped me to become sensitive to 'turf' {Monk, 2007 #1309}. However, the data were not included in the formal research analysis as the majority was out of scope and because research methods and quality could not be verified in all instances.

There is one exception in which I did include previously gathered data (by another researcher) in the analysis, as discussed in the first step of the thematic data analysis protocol (section 3.5). This *responsiveness* to opportunities in the field is, as argument extensively by Dick (Dick, 1993), a key strength of AR and was crucial to developing a situated understanding of the studied phenomenon.

Gaining Access and Building Trust

Access in organisational research can be conceptualised as being of two kinds: frontstage and backstage (Cunliffe & Alcadipani, 2016). The difference between these two types of access is in the type of data that researchers are given. When researchers gain access to frontstage, they can retrieve (formal) documents, company statements and perform interviews with company representatives. These describe the public image of a company. However, as Cunliffe and Alcadipani (Cunliffe & Alcadipani, 2016) state, "backstage (secondary access) is where lived experience and real work in organisations happens, where rich, in-depth data lie" (p. 15). It is backstage where, "'normal' unmanaged interactions and conversations take place, where meanings and actions are contested, negotiated, and worked out…" (p.16) and where the less heroic and conflicting stories live (Cunliffe & Alcadipani, 2016). To understand the innovation process as it unfolded in FlyCo, I thus needed to gain access to the backstage.

Backstage data can be accessed through *immersion*. When researchers are immersed, they are "so deeply embedded in an organisation that members are willing to discuss issues, share thoughts and even feelings" (Cunliffe & Alcadipani, 2016, p. 11). Additionally, immersion allowed me to use myself as data source by giving a reflective account of my experience. Although not always described in these terms, immersion is often part of the action researchers' journey (Herr & Anderson, 2005).

When researchers are immersed, they engage more intimately with research stakeholders. In building my network, I thus built different types of relationships with different stakeholders. In addition to building *instrumental* relationships, I engaged in *transactional* and *relational* relationships (Cunliffe & Alcadipani, 2016, p. 11). Employees of FlyCo were seen as *respondents* with knowledge that could be acquired through interviews (instrumental). An example of such a relationship was with S-Service Designer 1, whom I only engaged with once to acquire an understanding of her department. On the other hand, with more senior *informants*, such as CXO 2 and SP Digital, I engaged in a transactional relationship, where I provided services in return for access. Most intimately, in the relationships with *research participants* (e.g., Director 4 and PO 7) there was mutuality and a high degree of self-disclosure. This relational perspective on access required a constant balancing act between personal involvement and professional

practice (Cunliffe & Alcadipani, 2016, p. 11). In maintaining a spectrum of relations, I gained broad backstage access to the organisation, whilst guarding against 'going native' and losing the outsider perspective (Herr & Anderson, 2005).

Achieving deep immersion is a complex process, because it requires "negotiating boundaries between hierarchical levels, different departments and positions" (Cunliffe & Alcadipani, 2016, p. 16). Equally important however, this type of access is not acquired with merely reputational capital (which may provide acceptance and credibility); immersion requires building trust from organisational stakeholders. Although trust building is a continuous process, I now highlight three actions that were performed specifically to gain trust: learning the lingo, leveraging internal sponsors and "humanising" the researcher.

Learning the Lingo

To 'learn the lingo' (Costas & Grey, 2014), refers to adopting the language that is used by participants. As becomes evident quickly once immersed, the language of airline employees is distinct. Adopting this language and familiarising myself with the lexicon was thus vital, not only to 'blend-in', but also to make-sense of the environment. This lexicon included terms that have connotations that are unique to the airline business (e.g., *Combi* planes carry both passengers and large amounts of cargo) and words that are unique to the business (e.g., the *slot portfolio* describes where and how often planes from FlyCo may land at certain airports). Also, terms are often abbreviated; The Turn Around Time becomes the TAT, the key performance indicator for flights arriving within 15 minutes after scheduled arrival time is called A15 and the operation that runs the intercontinental routes is named ICA. This tendency to abbreviate is extended to internal communication and structures; the Customer Experience Committee is named the CEC, the key performance indicator for personnel satisfaction is the EPS (Employee Promotor Score) and GrandFly100 are the 100 most senior managers. One of the students who did an internship at FlyCo created an online dictionary of abbreviations for colleagues that came after her. This is telling of the importance and uniqueness of the lexicon in the airline business, which I adopted to gain access to the backstage.

Internal Sponsors

A second strategy that was leveraged to build trust was to leverage internal sponsors. Sponsors are organisational members who facilitate and champion the research within the organisation, and who may even facilitate and engage in data collection (MacLean et al., 2006). Chiefly, Director 4, Director 2 and CXO2 performed this role. These sponsors not only used their network to identify stakeholders (as described in section 4.2), they also (directly and indirectly) supported in gaining access by attaching their support or reputation to the research initiatives.

A specific related action worth noting is the annual 'design doing review meeting' in which I participated. During these meetings, preliminary results and research plans were presented to CXO 3. The continued support of this executive was considered a key asset in gaining and maintaining access throughout the research project. As described in the section 4.4.3, on at least one occasion (securing the internal position through which ARC 3 was performed), the trust from CXO 3 was vital in gaining and maintaining access.

Humanising researcher

Building trust from a relational perspective also requires *humanizing* as a researcher (Cunliffe & Alcadipani, 2016; Daniel-Echols, 2003). I thus participated in social activities, both formal and informal, to build a relationship with research participants. These activities ranged from joining after-work drinks/dinners to participating in team outings and contributing to collaborative gifts for parting members of the organisation. During these events, connection on a personal level was sought with research participants. Additionally, similar to the sporting events of Price (2016), these events provided an opportunity for networking with new organisational members.

One specific example of these social events was the cross-cultural lunch that was organised by the InnoHub. These lunches were organised at moments that corresponded with celebratory days such as Christmas. After being omitted from the invitation list for the Christmas lunch in December 2017, I captured my disappointment and the sense of 'being an outsider' in my field notes. However, after several occasions in which I sought a connection with the members of this team, an invitation to later lunches followed. This was interpreted as a signal that I was being treated more as 'a member of the team'.

Gaining entry is vital, however as Cunliffe and Alcadipani note, access is an "ongoing process of discovery, of opening various doors, building relationships, and maintaining secondary access once in the field" (Cunliffe & Alcadipani, 2016, p. 12). The next and final section highlights how I maintained access throughout the research.

Maintaining Access

Maintaining access requires "being continually sensitive to attitudes of suspicion and trust…when meeting different members of the organisation" (Cunliffe & Alcadipani, 2016, p. 16) and acting upon these suspicions. My actions to maintain access can be summarised in four guidelines:

1. Explain the research aim and set-up

During the immersed period, I spent a large amount of time explaining the research I was conducting. For example, by explaining that the research aims were in line with FlyCo's aims, I was able to quickly gain the trust of new actors. In project 2, when new employees joined the team, I took the initiative to arrange a meeting with them and explain the background (field notes, 17/11/'17 and 15/05/'18).

2. Take context in consideration when designing actions

When designing actions, I was open to include local knowledge and respond to a changing context. For example, when an internal consultant proposed a different approach during project 1, I included relevant suggestions to our plan. During project 3, the priorities of the CE department shifted, which led to a request to lower the frequency of interventions. This new context challenged the timeline of my research project, yet I complied in the interest of maintaining the access. Additionally, this guideline implied being open about the intentions and managing expectations. For example, during project 3, there were open discussions about what type of problems could be mitigated when a design approach was applied and to what extend different results could be expected.

3. Respect local culture

In daily engagements, I followed the explicit and implicit 'rules of engagement' at FlyCo. For example, and exemplary of the hierarchical culture, it was custom that when outsiders like myself initiated meetings with

senior executives, these were preceded by briefings with their direct reports. For instance, by consequently pre-briefing my meetings with CXO 2 with Director 2, I ensured that I maintained trust of Director 2, and thereby access to the team that reported to him with whom I performed part of my actions.

4. Be neutral to units, but in favour of the organisation

Finally, and perhaps most crucially, I took care to remain a 'neutral' agent at FlyCo - distanced from politics and 'turf wars' - whilst showing commitment to FlyCo as a whole. This required me to be cautious with passing-on information from stakeholders to others and to avoid speaking out in favour of any party in general. I wasn't always successful at this. For example, as noted during a member check (19/12/'18), the InnoHub team projected their lack of trust towards Director 4 on me. I had noticed this before and found that it required several 'commitment acts' - "acts that 'humanize researchers'' because they aim at building trust without necessarily expecting any gain" (Cunliffe & Alcadipani, 2016, p. 14) - to become 'neutral' in their opinion again (field note, 12/06/'18). Concurrently, I aimed to maintain access through performing several commitment acts to show that I acted in the best interest of FlyCo as a whole. For example, I continued to perform interventions (trainings) related to project 3 in ARC 2 whilst preparing for ARC 3, because CXO 2 specifically requested it. These interventions weren't necessary for the research project anymore, but to maintain access in the future, I finished them.

In sum, I performed several acts to ensure continued access to the field, both in daily interactions and in designing and enacting the action research cycles.

Appendix E: Gaining Project Access

Here, I provide short descriptions of how I gained access to each project. This information is not crucial to understanding the narrative or the insights. However, as discussed by Bradbury et al. in their refreshed statement of quality choice points for good action research, clarity about self-location and access benefits the quality of AR (Bradbury et al., 2019, p. 17). This information contextualises the outcomes.

E1. Gaining Access to Project 1

The groundwork for my involvement in this project was laid during my initial job interview for the position of researcher in this project (field note, 17/07/'17). As part of the hiring process, I discussed my previous research and professional experience with Director 4. One of the topics of that meeting was my experience managing a small team and our shared interest in the potential value of design practices in organisational design processes. After the selection procedure, Director 4 and I held a kick-off meeting, in which he noted that he had confidence in the value of design, but that he was unsure about the application of design practices in a process that was traditionally governed by business school practices. During this meeting, we discussed his need to redesign the organisation he managed (DigitalOps) and the potential to use this as field work (field note, 10/10/'17). After this meeting, Director 4 added me to the team that was tasked with organising an event named 'DigitalOps Reset', mentioning that I would contribute by bringing "Inspiration from the design world" (internal communication, 26/10/'17). Director 4 also asked a design student to contribute to this process and facilitate the event (from hereon referred to as Facilitator 1); I was asked to mentor this student in the process. From 02/11/'17 onwards, this team (including myself and Facilitator 1) organised meetings to prepare this event (later renamed to DigitalOps Accelerator).

E2. Gaining Access to Project 2a

As part of my exploration of FlyCo at the start of this ARC, I interviewed stakeholders from a unit that already employed design practices to propose operational innovations: InnoHub. This unit was part of the DigitalOps department (managed by my internal sponsor Director 4) and had collaborated extensively with my research institute. I spoke with Manager 7

(27/09/'17); P-Manager 3 (28/09/'17); S-Manager 3, P-Manager 3, and Service Designer 5 (28/09/'17), Service Designer 5 (03/10/'17) and finally with Director 4 again (10/10/'17). During these conversations, I presented my (preliminary) research questions and we explored the challenges of InnoHub.

During these interviews, among other challenges, the interviewees described InnoHubs' implementation challenges. Their descriptions of the problem aligned closely with my interpretation of the VoD phenomenon. For example, S-Manager 3 mentioned that he noticed InnoHubs inability to go "from InnoHub to the 'real world.'" (28/09/'17) P-Manager 3, at that time responsible for 'scaling' the innovation practices of InnoHub, explained that he had initiated a taskforce that would focus on mitigating implementation problems and I asked to join these meetings (27/09/'17). During the first meeting of this taskforce, I offered theoretical insights regarding design-driven innovation which were regarded as helpful. As such, I established my role and ensured continued engagement with this project (26/10/'17).

E3. Gaining Access to Project 3

Project 3 was initiated in the months before this research started when FlyCo proposed to add a service to the collaboration agreement with the research institute: capability building. Under the extended agreement, this research institute would provide trainings and other services with the aim of building a design capability at FlyCo.

The first pilot design training was given in the form of a 2-day workshop to the CE department. After assuming the PhD position, I was asked to help execute this training. Initially, I supported and observed a preparatory session to the pilot training (field note, 23/10/'17), depicted in Figure 52. In the time between the preparatory session and the 2-day training, I provided input and collaborated with Manager 7 and Consultant 3 (who was responsible for improving CE's innovation capabilities). This collaboration was effective which resulted in gained trust from both sides (field note, 26/10/'17).

I was present as observer during the majority of the 2-day pilot training and used this time to build relationships with the employees of the CE department (field note, 08/11/'17), among which the manager of the department (Director 2) and their chief executive (CXO 2). Towards the end of the training, I facilitated a training in a design tool: Value Proposition Mapping (Osterwalder et al., 2014) for which I was presented as expert in

design and innovation by my research institute colleagues (field note, 09/11/'17).

As manager 7 would later recall, from that moment onwards "[CE] looked to design to structure their projects and to me as their 'guru'" (field note, 14/02/'18). In the evaluation meeting of the training, follow-up trainings were proposed and I was asked to facilitate these trainings by Director 2 (CE), Consultant 3 (CE) and Manager 12 (responsible for Design Doing at FlyCo) (field note, 16/11/'17). Over this period, Director 2 had become an internal sponsor for design and my research project (like Director 4 at DigitalOps). Whilst I collaborated with Consultant 3 to shape the trainings, Director 2 drove engagement from CE employees.

Finally, besides gaining access to the department as trainer/coach, I needed to gain buy-in to gather data for my research. With this aim, during the first follow-up training, I introduced my research to the employees at CE who were participating in the training and asked for their approval and collaboration (field note, 07/12/'17). Also, I met with CXO 2 and Director 2 to discuss the research aims and methods. During this meeting, CXO 2 agreed to the research if I would present my findings back to him and discuss the implications. Also, he asked for a 'commitment act' or an "act that 'humanise researchers'' because they aim at building trust without necessarily expecting any gain" (Cunliffe & Alcadipani, 2016, p. 14). He asked for a 'panic button' or the opportunity to call me whenever he needed help with regards to design and innovation projects, to which I committed.

Figure 52: Participants during preparation of the first 2-day design training

E4. Gaining Access to Project 4

Several events lead to project DesignCommunity. In each event, I connected with stakeholders with an interest in (expanding the impact of) design practices at FlyCo. These events were:

I visited the internal 'launch' of a FlyCo service that was developed by design students. Here, I first connected with S-Service Designer 2.

Following this exchange, Manger 12 asked S-Service Designer 2 to collaborate with me in facilitating a workshop for a design conference (field note, 24/10/'17).

Leveraging existing relationships between my institute and FlyCo, Service Designer 2 facilitated a meeting between me and S-Service Designer 1 (field note, 01/11/'17).

As a design student, I had collaborated with S-Manager 2. I used this connection to arrange a meeting with him to discuss the role of design at FlyCo (field note, 09/01/'18).

Through project InnoScale, I established a relationship with Manager 7 and P-Manager 3.

Through project DesignCapability, I established relationships with CE's Director 2 and Consultant 3.

During these events, I noticed overlapping interests between each of these stakeholders but also that these stakeholders and their initiatives weren't connected. I initiated the first step towards converging these groups when I leveraged an initiative (by Director 2) to create a 'design toolbox' and asked stakeholders from InnoScale to contribute to this effort (internal communication, 30/11/'17). S-Manager 2 and S-Service Designer 2 were later also included in this initiative. Finally, after an event (organised by Manager 12, Service Designer 5 and myself) in which design students presented their work and design was promoted to a broad audience at FlyCo, Service Designer 2 and S-Service Designer 1 became involved in the project.

E5. Gaining Access to Project 5

Gaining access as manager of InnoHub

The opportunity to become manager of InnoHub emerged during a research meeting with Director 4. During this meeting, he notified me that Manager 7 would take a new position at FlyCo. I inquired whether he'd selected a successor yet. He mentioned that he had not, so I proposed to fulfil the position ad interim while he searched for a permanent replacement (field note, 23/04/'18). Shortly thereafter, Director 4 notified me that he had discussed my candidature with other executives at FlyCo and CXO 3 (who needed to authorise the choice). Although other executives (such as Director 2) were supportive (mentioning previous experiences with this research), CXO 3 was hesitant. He argued that he preferred a candidate who already worked at FlyCo (field note, 16/05/'18). Director 4 and I discussed the advantages and disadvantages of the interim construction. We decided to continue with the plan, arguing that my temporary status provided a near-blank canvas to create a new organising principle and that I had accumulated valuable knowledge through previous ARCs that was useful for Project InnoHub (field note, 05/05/'18).

Establishing rapport with InnoHub

Although I was formally recruited to be the manager of the InnoHub team, I also needed the team to acknowledge me as their manager. This was challenging. The origin of this challenge was a conflict between Director 2 and Manager 7 (former manager of InnoHub). As a result, Manager 7 halted his activities as manager of InnoHub and his support for a transition period (field note, 14/05/'18). In addition, I learned that Manager 7 had presented my assignment as 'keeping the business running', which was opposite from the assignment from Director 2. Director 2 asked me to redesign the structure of the team (field note, 16/05/'18). As a result of these developments, by the time I had a kick-off meeting with the InnoHub team, they regarded me as an opponent of Manager 7, their original 'founder' and 'protector' (field note, 24/05/'18.

During this kick-off meeting, employees at InnoHub showed distrust (field note, 24/05/'18), mentioning that I needed to gain their trust before they would start "telling [me] what's bothering us or we start listening to [me]" (field note, 24/05/'18). In a follow-up meeting however, Director 2 and I managed to overcome this friction by emphasising the involvement that the InnoHub employees would have in decisions regarding the structure of their team. Concurrently, I used this meeting to introduce my research aims and plan (field note, 25/05/'18).

Appendix F: Project Timelines

F1. Timeline Project 1

Figure *53* shows a general timeline of events during project 1. The project consisted of three phases: preparation of the accelerator events, the events, and the spin-off 'Road to production' meetings. The 'notes' column shows general descriptions of what happened at the events.

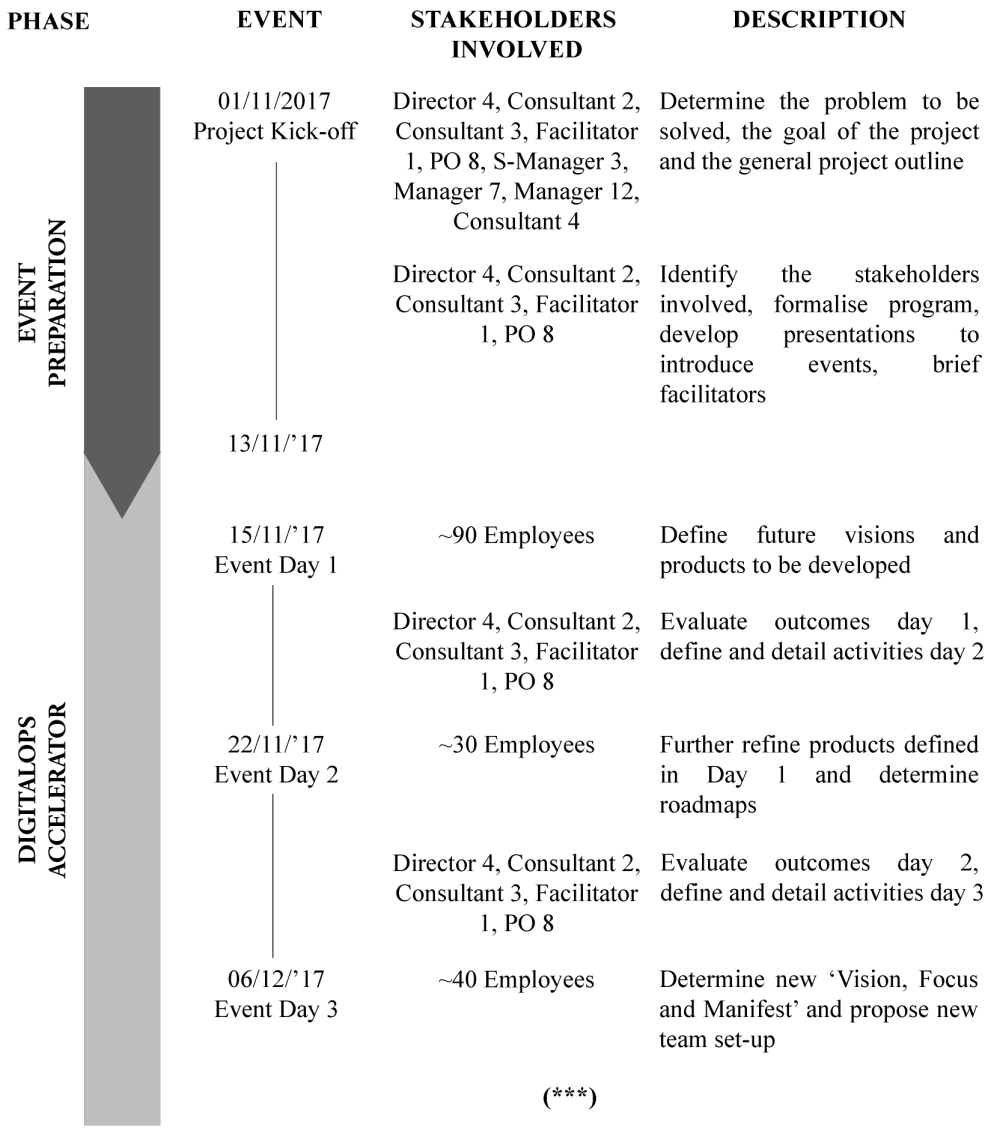

Figure 53: General timeline of phases and events during project 1

PHASE	EVENT	STAKEHOLDERS INVOLVED	DESCRIPTION
DIGITALOPS ACCELERATOR	07-17/12/'17	Management DigitalOps	Process input from all days to propose new organisational structure and way of working
ROAD TO PRODUCTION	07-03-'18 Kick- off new organisation	~40 Employees	First department planning event according to new way of organising
	30-04-'18 Road-to-Production Event 1	~ 20 employees, core team, 3 facilitators	Determine challenges to implementation, define ideal process to implementation
	08/05-10/07/'18 Road-to-production follow-up meetings	Director 4, Consultant 2, Consultant 3, Facilitator 1, PO 8	Detailed design of new way of working with alternative team set-up to improve 'scale-up' process

Figure 53: General timeline of phases and events during project 1 continued

F2. Timeline Project 2a

In project 2A I performed actions that focused on scaling the methodology and implementing innovations. Although each of these sets of actions supported the other, some actions specifically aimed to scale the methodology (i.e., the Design Doing actions) and others to increase the impact of the InnoHub (most of the task force actions). Figure 54, presented below, visualises these actions in chronological order. As can be seen, interventions were done throughout the project and focussed on InnoHub's organisational structure. The Design Doing workshops in between acted as reflection moments in which the role of design and the diffusion of design as innovation practice were central.

EVENT		STAKEHOLDERS INVOLVED	NOTES
27/09-03/10//2017 Initial Interviews		P-Manager 3, S-Manager 3, Service Designer 5	- Exploration of challenges InnoHub and DigitalOps
26/10//2017 First task force meeting		Manager 7, P-Manager 3	- History & purpose of InnoScale project - Goal for this year - Contribution of design to InnoHub - Causes of Valley of Death challenge
06-17/11/'17 Task force meetings		P-Manager 3, Manager 7, Service Designer 5, Manager 12	- High number of requests for training, InnoHubs role as innovation hub and/or center of expertise
	28/11/'17 Design Doing workshop	Manager 7, Director 4, Manager 12	- Strategies for developing design as capability and communicating to internal stakeholders
28/11/'17-11/01 /'18 Task force meetings		P-Manager 3, Manager 7	- Initiated innovation project executed on GrandFly intranet to increase exposure and engage other stakeholders. - Intervention: changed project selection and prioritization mechanism InnoHub - InnoHub innovation method is recognized as 'standard' in strategy.
		(***)	

Figure 54: Timeline of phases and events during project 2

EVENT		STAKEHOLDERS INVOLVED	NOTES
27/09-03/10//2017 Initial Interviews		P-Manager 3, S-Manager 3, Service Designer 5	- Exploration of challenges InnoHub and DigitalOps
	15/01/'18 Design Doing workshop	Manager 7, Director 4, Manager 12, Service Designer 5	Formulating why, how and what of Design Doing programme
24/01-28/3/'18 Task force meetings		P-Manager 3, Manager 7, Director 4	- Intervention: started regular meetings with business executives and installed manager to manage DigitalOps portfolio - Intervention: introduced targets for InnoHub - Intervention: initiated coaching sessions with E&M hub
	10/04/'18 Design Doing yearly evaluation	Manager 7, Manager 12, Director 4, CXO 3	- Discussed implementation as key challenge for InnoHub - Contribution of portfolio management to Valley of Death
11 & 24/04-'18 Coaching E&M hub		P-Manager 3, P-Manager 7	- Core & unique InnoHub innovation methodology - Developed framework for scaling methodology
24/04-04/06/'18 Task force meetings		P-Manager 3, Manager 7	Intervention: renamed last phase in process of InnoHub ('release' -> 'scale') determine different approaches to scaling methodology based on involvement InnoHub

Figure 54: Timeline of phases and events during project 2 continued

F3. Timeline Project 3

There were four types of activities during project 3: the two-day basic design training, the follow-up training sessions with CE project managers, meetings with managers and directors and finally coaching sessions. These activities have been visualised in Figure 55.

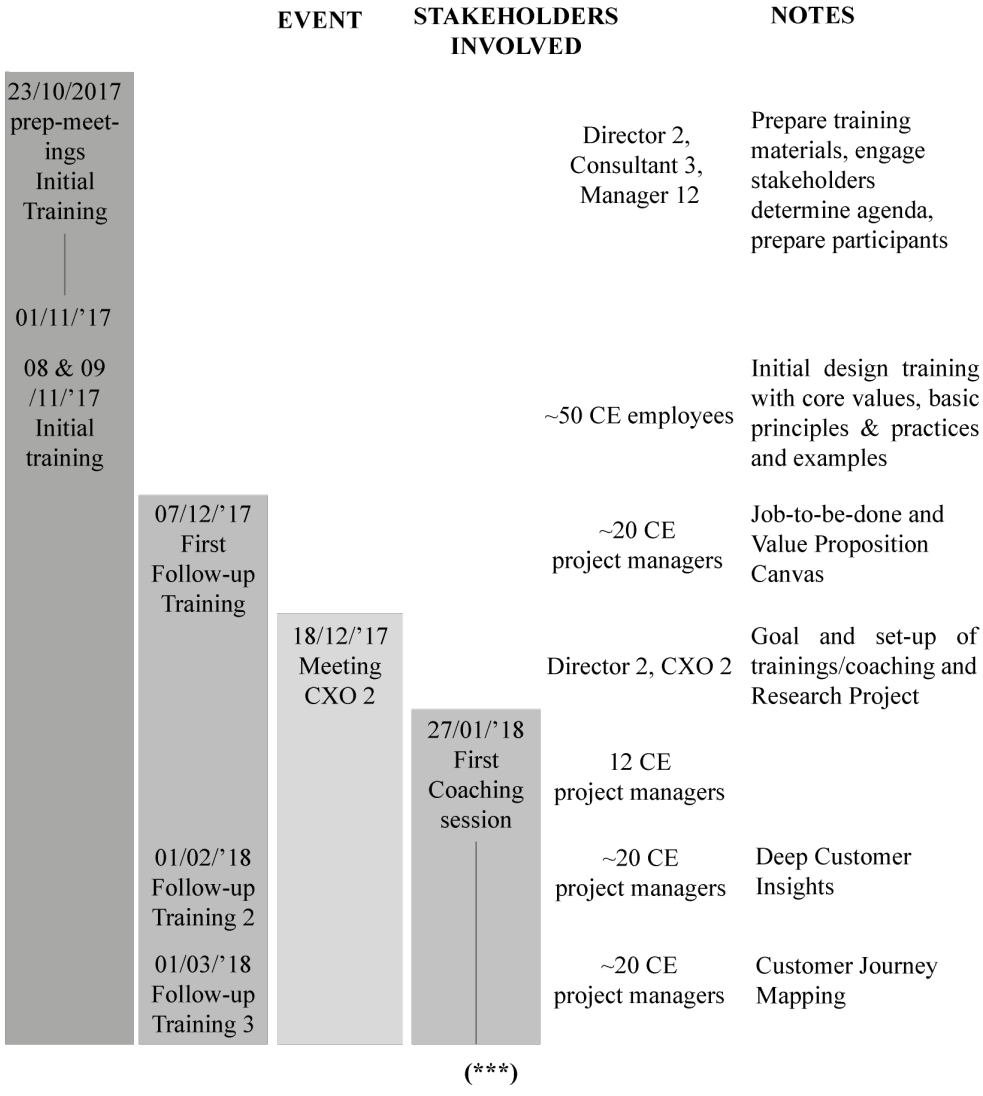

Figure 55: Timeline of events during project 3

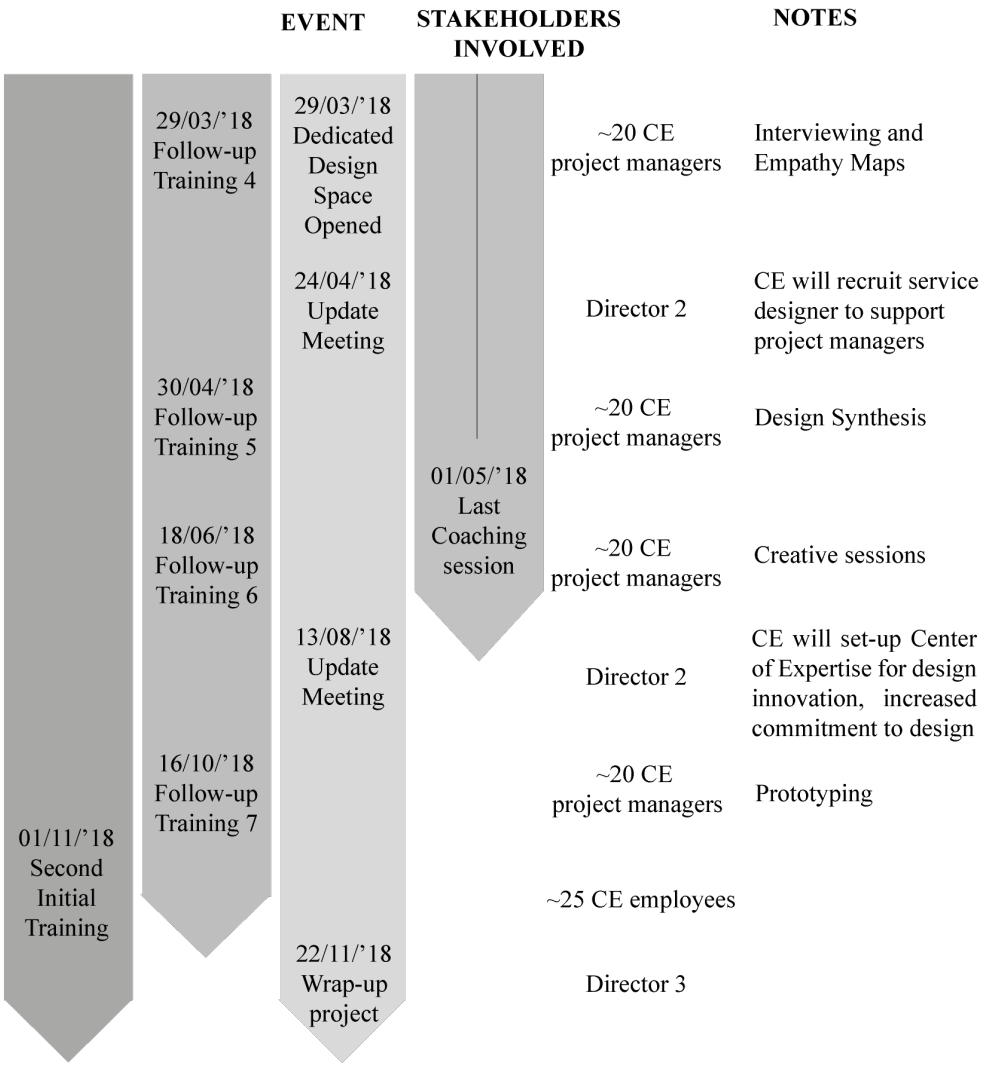

Figure 55: Timeline of events during project 3 continued

F4. Timeline Project 4

The initial phase of project DesignCommunity focussed on building the community and using the toolbox to pilot collaboration across units. After the prototype and roadmap for this toolbox were defined, activities shifted towards more general 'service design meet-ups'. By the time my immersion ended, these meetups (organised by different designers) were being attended by a large group of designers, also from units who had not been engaged in the initial 'toolbox' project.

EVENT	STAKEHOLDERS INVOLVED	NOTES
05-01-'18 CE Kick-off	Manager 7, P-Manager 3, Director 2, Consultant 3	Discussed ambition to develop a shared toolbox
12-01-'18 1st designers meeting	Manager 7, P-Manager 3, Director 2, S-Manager 2	Decided that all units first need to codify their own practices before these can be shared
29-01-'18 Community event	S-Manager 2, Manager 7, P-Manager 3, Service Designer 4, Consultant 3, Manager 12	Event (part of Design Doing programme) in which output of design students was presented and design was displayed to a large audience of GrandFly employees through workshops and presentati-ons
01-02-'18 meeting	Service Designer 2, Manager 12	Digital unit indicates that they want to join the community and promote design practices
12-02-'18 Designers meeting	Manager 7, S-Manager 2, P-Manager 3, Service Designer 4, Consultant 3, Manager 12	Discussed strategies & visions of design units, details and goals of toolbox, intended usecases of toolbox
19-04-'18 Designers meeting	Manager 7, S-Manager 2, P-Manager 3, Service Designer 4, Consultant 3, Manager 12	InnoHub presented their previous work on codifying their practice. Decided upon platform and format of toolbox.

(***)

Figure 56: general timeline of events during project 4

EVENT	STAKEHOLDERS INVOLVED	NOTES
14-08/'18 toolbox session	Director 2	Session with Director 2, discussed wishes and demands for first version of toolbox and roadmap to creating the toolbox
19-11-'18 Service Design meetup	S-Manager 2, PO 7, S-Service Designer 1, Service Designer 3	First of a series of events for the 'serice design community'. Discussed shared challenges: Valley of Death, tooling and persistent diversity of methods
08-01-'19 Service Design meetup 2	S-Service Designer 2, Service Designer 2, Service Designer 3	Discussed reorganisation at Digital and Digital Marketing and recruitment of designers at GrandFly
01-04-'19 Service Design meetup 3	Unknown	Unknown
16-08-'19 Service Design meetup 4	~20 Designers from 7 units	Unknown

Figure 56: general timeline of events during project 4 continued

F5. Timeline Project 5

Project DesignCapability can be divided into four phases: in the first phase an initial problem framing was established; in the second phase this framing was deepened; in the third phase a strategy and organisation design were generated, and; in the last phase the design was iterated. More detail on activities during each phase can be found in an earlier publication (Klitsie et al., 2019).

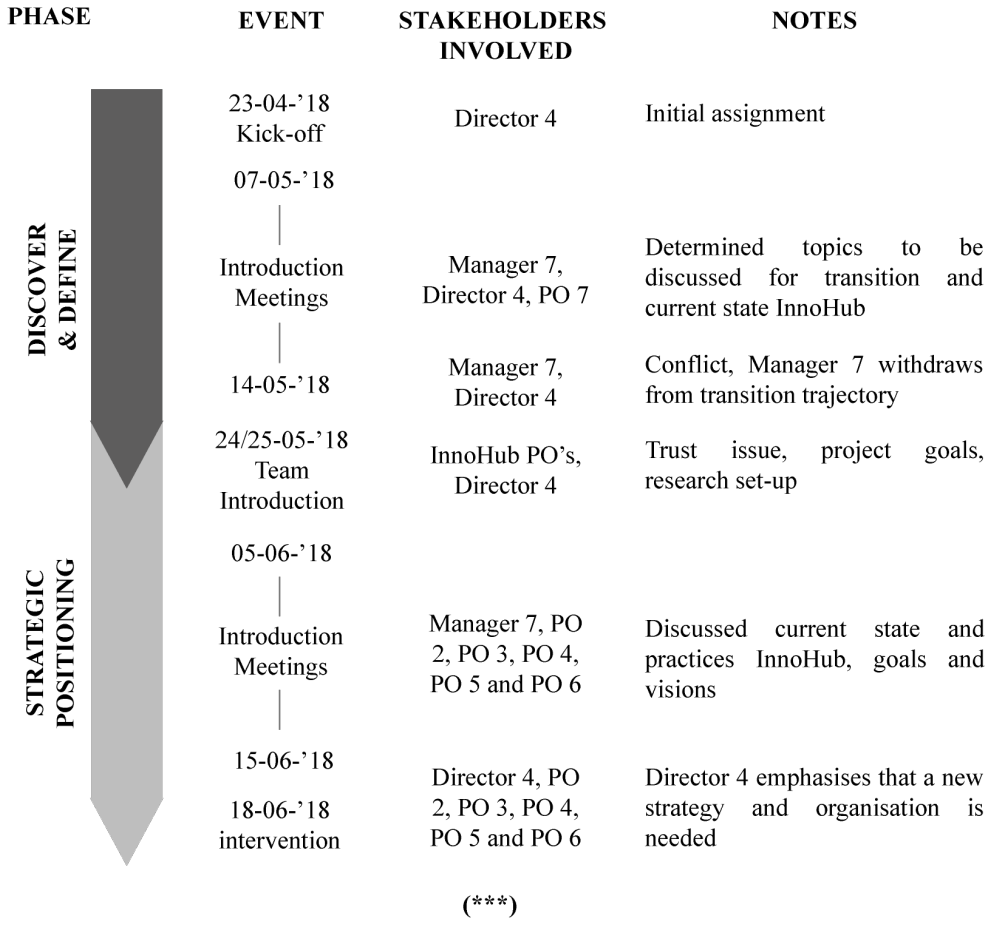

Figure 57: Timeline of events during project 5

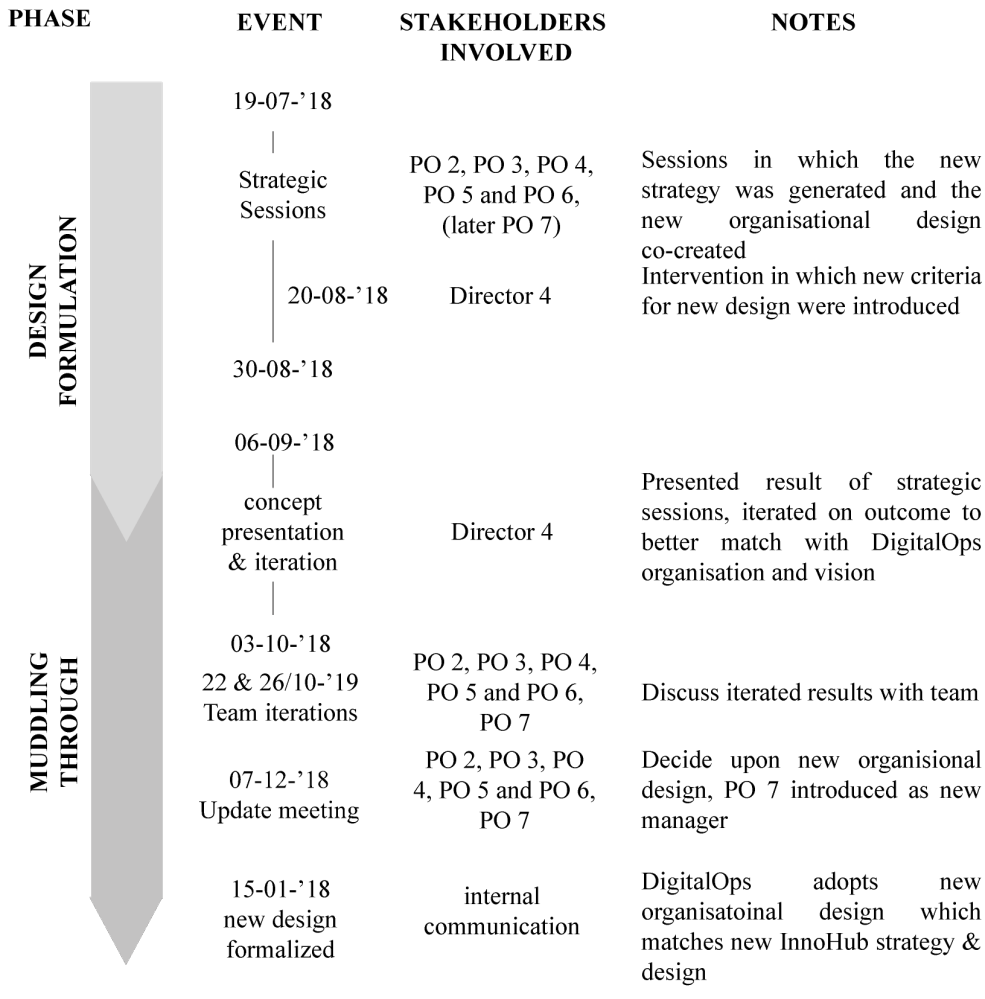

Figure 57: Timeline of events during project 5 continued

F6. Timeline Project 2b

In line with the goals and background as explained in Section 4.2.4. (InnoScale 2a), I performed actions in ARC 3 focused on scaling the methodology and implementing innovations. Figure 58, presented on the next pages, show the related actions and events. Although the actions reinforced each other (see 4.2.4.), I indicated whether events related specifically to increasing the impact of InnoHub (scaling solutions) or to diffusing design practices (scaling the methodology).

EVENT		STAKEHOLDERS INVOLVED	NOTES
Increasing Impact	**Diffusing Practice**		
15/05/'18		P-Manager 5, PO 7	Started experiment with dedicated project manager per department
16/05/'18		Director 4	Director 4 is assigned to initiate portfolio management at organizational level
	17/05/'18 DigitalOps design training	~50 Employees	Design basics for all DigitalOps employees
28/05/'18		P-Manager 5	New InnoHub activity: create vision based on bottom-up input
	05/06/'18 Training evaluation	Manager 12, P-Manager 3,	Main learnings: Practice/theory gap & training management team needed
05/06/'18 Intercontinental innovation team		8 Operational employees	First time participated in biweekly meeting with innovation unit.
	06/06/'18 Presentation intl. airline conference	Manager 12	Main learnings: importance of innovation ownership and stage-gates as allignment moments
12/06/'18 Team meeting		PO 2, 3, 4, 5 & 6	Intervention: added phase to internal design process protocol (implementation)
		(***)	

Figure 58: Timeline of events during project 2b

EVENT		STAKEHOLDERS INVOLVED	NOTES
Increasing Impact	**Diffusing Practice**		
12/06/'18 Portfolio project meeting		Director 4, PO 7, S-Consultant 1, Consultant 3	Project scoping
	12/06/'18 DigitalOps design training	~20 DigitalOps employees	Creative Facilitation, training for internal designers
20/06/'18 Team meeting		PO 2, 3, 4, 5 & 6	Intervention: Added dedicated data scientist to team to overcome prioritisation issues
	22/06/'18 Design practice presentation	Manager 10	Request for trainings department, toolbox and help with innovation organisation
	23/06/'18	Manager 13	Feedback from design coaching during 2a: unit will initiate design research project
10/07/'18 Team meeting		PO 2, 3, 4, 5 & 6	Intervention: made number of implemented innovations visible (digitally & physical)
02/07/'18 Portfolio project meeting		10 Senior GrandFly managers	Created overview of projects, identified prioritization mechanisms
	12/07/'18 DigitalOps Design Training	~50 Employees	Design tools and mindset
13/07/'18 DigitalOps MT offsite		Director 4, PO 7, S-Manager 3, S-Consultant 2	Future vision DigitalOps, discussed tension between exploitative and explorative (InnoHub) activities
19//07/'18 Portfolio project meeting		10 Senior GrandFly managers	Attempted to reframe challenge from top-down to bottom-up, discussed how to leave space for experimentation?
	24/07/'18 Intercontinental innovation team	8 Operational employees	Presented design approach to innovation
		(***)	

Figure 58: Timeline of events during project 2b continued

EVENT		STAKEHOLDERS INVOLVED	NOTES
Increasing Impact	**Diffusing Practice**		
14/08/'18 Team meeting		PO 2, 3, 4, 5 & 6	Initiated first customer-facing projects
23/08/'18 Project Kick-off		S-Consultant 2, PO 7, S-Manager 3	Kicked off new DigitalOps product team with new organisational design (from project DigitalOps)
05/09/'18		Manager 7	Budget for software development of InnoHub is revoked. Crucial resource for implementation lost.
14/09/'18		Manager 7	Digital department introduces portfolio prioritisation mechanism
	25/09/'18 OpEx Mcl. Preparations	S-Manager 3	Provided input to further integrate design into Operational Excellence Masterclass
	26/09/'18 DigitalOps Design Training	~50 Employees	Behavioural Design
	27/09/'18 Executives Design Training	~20 Senior executives	20 senior executives from the operational organisation are taught basics of (strategic) design during 1 day
02/10/'18 Team meeting		PO 2, 3, 4, 5 & 6	Employees from InnoHub tech team become part of planning cycle
	06/11/'18 DigitalOps Design Training	~20 Employees	Lean (Start-up) Innovation and Design, training for internal designers
26/11/'18		Director 4	How to best position design capability at DigitalOps in new organisation structure
13/07/'18 DigitalOps MT Meeting		Director 4, PO 7, S-Manager 3, S-Consultant 2, Consultant 1	Dashboard introduced to measure and manage impact of innovation projects
	31/01/'19 GrandFly Design Training	Consultant 1, Manager 12	Kick-off session for design training modules accessible to all GrandFly employees

Figure 58: Timeline of events during project 2b continued