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PORTUGUESA

MANAGING DESIGN THINKING

Dissertation submitted to Universidade Católica
Portuguesa to obtain a Master's Degree in Communication
Sciences with Specialization in Organization and
Leadership

By

Anne Dröge

Faculty of Human Sciences

September 2019



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Under the supervision of Peter Hanenberg

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Abstract

Over the course of the last decade *Design Thinking* (DT) has become a popular and successful tool in business. Many managers are interested in using DT within their organizations, but the implementation of DT is challenging due to two reasons: 1) the definition of DT is ambiguous, so oftentimes managers are unsure what exactly they aim to implement and 2) there are few resources that present the different ways DT can be implemented, therefore it is difficult for managers to choose the one that is most appropriate for their context. These two challenges result in the need for more information about the *management of DT*. This dissertation aims to cater this need. The exploratory study follows a qualitative research design and employs a mix of content analysis and semi-structured expert interviews as research methods. Based on the content analysis a comprehensive yet precise definition of DT is proposed. It is suggested that the aspects that make up DT can be divided into three layers according to their level of abstraction. In this sense DT is an ideology, methodology and a set of tools. The semi-structured expert interviews explore different ways of implementing DT. In total 9 interviews were conducted, with experts from a diverse geographical as well as professional background. DT can be used internally, externally (by contracting an agency) or as a combination of both. The interviews show that generally a combination of internal and external implementation is advisable. The internal implementation is more challenging, as the organizational culture and structures need to be aligned with the DT ideology. If an organization is not prepared to make these necessary changes they are advised to implement DT solely externally. The external implementation of DT is also advisable if an organization implements DT internally, due to the fact that an outside perspective is more objective.

Keywords: *Design Thinking, Management, Leadership, Implementation Strategy, Organizational Culture, Organizational Structures*

I dedicate this dissertation to my parents Martin Dröge and Monika Widlok-Dröge. Thank you for making me believe that I can do anything I set my mind to, for loving me and for helping me to indulge in my economically unviable adventures.

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Introduction

Over the last decade Design Thinking (DT) has become a well-known and widely used approach for innovation and problem solving. Across various industries the use of DT has turned into a measurable competitive advantage. Indexes like the *dmi:Design Value Index* (an index of design centric organizations) demonstrate the financial success of companies that use DT. Due to such success stories, an increasing amount of business leaders is becoming interested in implementing DT within their organizations. Nevertheless, the implementation of DT presents two challenges. Firstly the concept of DT is vague and the definition of DT remains ambiguous. Therefore oftentimes managers are unsure what exactly they aim to implement. Secondly there are few resources that present the different ways DT can be implemented, making it difficult for managers to choose the one that is most appropriate for their context. These two challenges result in the need for 1) a clear definition of DT and 2) resources that allow business leaders to make informed decisions when choosing an implementation strategy that is suitable to their unique context. Therefore this dissertation aims to explore the *management of DT* in order to provide such resources.

In order to guide the process of exploring the *management of DT*, two main research questions were comprised:

1. What is Design Thinking?
2. How can organizations best manage Design Thinking?

The process of exploring these two main research questions will additionally be guided by several sub research questions. The sub questions include: How is DT defined within the industry and academia? How do organizations currently manage DT? For which purpose is DT used? Who are the people that use DT? When is DT used? Is DT applied internally, externally or both? Why is DT applied in this way? What are the advantages and disadvantages of implementing DT internally, externally or both? What are the challenges of implementing DT internally, externally or both? These sub questions are mostly based on a set of questions posed by Abecassis-Moedas (2019) in her book *The Role of Design in Innovation*. In this book, Abecassis-Moedas dedicates one chapter to *the management of*

design and explains that *design management* is concerned with the questions of how an organization uses design, who uses design inside the organization, where design is used, when it is used and with which goal it is used. The *management of DT* can be seen as a subfield of *design management* and these questions are also relevant in the context of DT. Insights to these questions could help managers that are interested in using DT in their organizations to develop an appropriate implementation strategy.

One of the main aspects brought forward by Abecassis-Moedas (2019) regarding the *management of design* is the difference between *internal* and *external* use of design. Both forms have advantages and disadvantages and generally a combination of both is believed to work best. The concept of *internal* and *external* use will be a central topic in order to understand how companies can best implement DT. Additionally the above mentioned questions of why, how, where and when DT is used inside of companies will be used as guidance to explore the different possibilities in implementing DT and subsequently reflecting on the advantages and disadvantages of different implementation strategies. Due to the fact that the available literature does not provide clear answers to these questions, this research project sets out to expand on the existing body of knowledge by exploring how companies are currently using DT. The insights will be valuable for business leaders who struggle to develop an appropriate DT implementation strategy for their organizations. Additionally organizations that have already implemented DT can use the findings to reflect whether they are using DT to its full potential.

The dissertation is divided in three chapters. Chapter 1 presents the research design and methodology that is applied in order to explore the research questions. In this chapter the two data collection methods that are used in the scope of this project (content analysis and semi-structured expert interviews) are introduced. Furthermore the sample of experts that took part in the research by participating in an interview are introduced and it is explained which sampling method was used to comprise the sample. Subsequently it is explained how the data retrieved from the interviews was analyzed and the limitations of the research project are given thought. Chapter 2 comprises a conceptual framework. This chapter sets the theoretical scene of this dissertation as it introduces crucial key concepts and answers three central questions: 1) What is DT? 2) Why is DT relevant? and 3) Why is the

management of DT an area of interest? Subsequently chapter 3 presents the results and discussion of the expert interviews. After presenting an initial overview of the results, the insights retrieved from the interviews are discussed in detail. The discussion chapter is centered on a few key elements, namely the definition of DT, the issue of implementing DT internally vs. externally and general pitfalls to avoid when implementing DT. The definition of DT is revisited and enriched in light of the insights gained from the DT experts. Then the issue of implementing DT internally vs. externally is discussed. In order to be able to discuss this matter effectively first of all the terms *internal* and *external* are defined. Then arguments that speak for the internal use as well as arguments that speak for the external use of DT are explored. Afterwards it is debated how an organization can best implement DT internally and related topics including organizational culture, the Design Thinkers, leadership for DT, the DT space and when to use DT are explored. Thereupon a few important things to keep in mind when implementing DT externally are examined. The chapter ends with a discussion of general pitfalls that are commonly made in the process of implementing DT. This discussion is followed by a final conclusion and eventually by the bibliography and appendices.

1 Methodology

1.1 Data Collection

Due to the exploratory nature of the research project, a qualitative research design was chosen. The methods of data collection chosen were content analysis and semi-structured expert interviews. The two main issues for managers who want to implement DT are 1) the fact that the definition of DT is ambiguous, so oftentimes managers are unsure what exactly they aim to implement and 2) the fact that there are few resources that present the different ways DT can be implemented, so it is difficult for managers to choose the one that is most appropriate for their context. In order to derive a comprehensive yet precise definition of DT, content analysis was used to systematically evaluate previous definitions of DT. Subsequently semi-structured expert interviews were conducted in order to explore the different ways DT can be implemented.

Content Analysis

According to Duriau et al. (2007) content analysis is particularly promising for the rigorous exploration of important but difficult-to-study issues of interest to organizational researchers in areas as diverse as business policy and strategy, managerial and organizational cognition, organizational behavior, human resources, social-issues management, technology and innovation management, international management and organizational theory. Content analysis is a research technique that systematically evaluates texts (e.g. documents, oral communication and graphics). It is used to make replicable and valid inferences by interpreting and coding textual material. The method has been used frequently in the social sciences and has recently become more prevalent among organizational scholars (University of Georgia, 2019).

At the start of the research process the existing literature and previous research projects on DT were consulted in order to define the term DT for the scope of this dissertation and be able to compose relevant questions for the expert interviews. In this process, academic as well as non-academic sources were consulted, due to the fact that academic sources about DT are still relatively scarce. Comparatively there are many resources about DT are of non-academic nature. While these resources are often based at least partly on academic

findings, they cannot be classified as academic as such. Still they provide a valid resource to explore how DT is understood and used by the industry and should therefore not be disregarded. These non-academic resources include information shared by professionals, companies that work with DT and Design Thinking schools that do not operate as part of an academic university in the form of books, TED Talks, interviews, articles, blog posts and YouTube knowledge clips. Next to academic resources, such as academic books, peer-reviewed journal articles, master and PhD theses and online resources by accredited academic universities, this dissertation also draws upon such non-academic information provided by the industry. In order to show clearly which information is of academic nature and which information is non-academic, all sources were clearly labeled as either academic or non-academic.

The previous definitions of DT offered by these sources were studied carefully and a list of keywords that they featured was compiled. Subsequently the keywords were grouped into categories and themes and displayed in a table (see Table 1). In order to establish a logical connection between the different themes, a conceptual drawing was created that distinguishes the different aspects of DT according to the level of abstraction of an aspect (see Figure 1). In this way a comprehensive, yet precise definition of DT was derived.

Semi-Structured Expert Interviews

According to Cohen and Crabtree (2006) a semi-structured interview enables the researcher to gather uniform information and afterwards analyze and compare answers. For this reason a semi-structured interview was evaluated as the best research method to use for the collection of empirical data in the scope of this dissertation. An interview guide (see appendix A) was created in order to structure the interviews, but the questions were not necessarily asked in the same order every time and deviations from the interview guide to explore additional topics were also welcomed. In the end of the interviews, a creative exercise was conducted. The interviewees were provided with a worksheet (see appendix B) to imagine the “perfect” way of using DT. Similar to the methodology chosen by Carlgren et al. (2016)¹ mainly experts who are deeply involved with DT were chosen as participants. From June 17th 2019 until August 30th 2019, in total 9 expert interviews were

¹ Carlgren et al. (2016) also conducted an explorative study about DT.

held. The experts who were interviewed included DT consultants, as well as DT professionals working inside organizations that use DT. The interviews were held in person where possible and through Skype or telephone when a meeting in person was not possible due to geographical constraints. 8 interviews were held in English and one interview (the interview with Gabriel Batista) was held in Portuguese, due to the preference of the interviewee. 8 interviews were held with one expert at a time and due to the interviewees' preference one interview was held with two experts at the same time (the interview with Martina Rando and António Abreu).

1.2 Sample and Sampling Method

The sample was purposely chosen to be as broad as possible. Therefore DT experts that work as consultants as well as DT experts that work inside of organizations in different industries were chosen. Interviewees came from Germany, the Netherlands, Portugal, Italy and Brazil and worked in Germany, the Netherlands and Portugal. Several previous DT studies that explore the use in companies have been cross-national (e.g. Carlgren et al., 2016). As a sampling method convenience sampling² was used. In order to recruit interviewees I used my own network. I asked people inside my network to reach out to their networks in order to recruit experts for my research. I also interviewed some contacts that were already in my network and attended DT events specifically to grow my DT network and recruit experts. Below the 9 experts that took part in this project are introduced. Next to their name and country their expert category, DT background and the way they define DT is presented.

² Convenience sampling is a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher.

Interviewee Profiles



Name: Noralie Weusthuis

Country: Netherlands

Expert Category: Academic, Teacher, Consultant

DT Background: Studied DT in scope of bachelor thesis, taught DT skills to students and professionals at *Dutch design.school*³, lead DT projects and facilitated DT sessions for clients at *STUDIO.WHY*⁴

Definition of DT:

“DT is improving or developing new products or services from the stakeholders - or mostly the end users - point of view. It includes various perspectives. You work from the perspective of the end user, but you make sure that you collect every perspective on the issue at hand. Then you see how you ideally can improve the situation for all stakeholders. Including the employees of the company that have to deliver the new products or service.”



Name: António Cancela de Abreu

Country: Portugal

Expert Category: Consultant

DT Background: Leads DT projects and facilitates DT sessions for clients at *Bliss Applications*⁵

Definition of DT:

“DT is not about post-its and it is important that you understand the principles and then you apply it well and that is it. If then you tweak it and you do it by yourself and in your own way that is fine, that is even good. If you do it correctly, if you understand the basic principles of it that is what matters. What happens too often is that you end up solving the wrong problem and DT is great in the beginning to prevent that.”

³ *Dutch design.school* is an educational program organized by *STUDIO.WHY* (see below)

⁴ *STUDIO.WHY* is a company that helps individuals and organizations become more innovative. For more information visit studiowhy.com

⁵ *Bliss Applications* user-centered design company. For more information visit blissapplications.com



Name: Martina Rando

Country: Italian working in Portugal

Expert Category: Consultant

DT Background: Leads DT projects and facilitates DT sessions internally and for clients at *Bliss Applications*⁶

Definition of DT:

Martina Rando defines DT in the same way as António Cancela de Abreu (see above). The two experts were interviewed together and agreed on the same definition of DT.



Name: Alexander Stolz

Country: Germany

Expert Category: Professional

DT Background: Leads DT projects and facilitates DT sessions internally at *Deutsche Telekom Head Quarters*⁷

Definition of DT:

“DT is in the first place a very user centric approach to solving a problem. It is a very efficient approach because in every step of the process you are not aiming for the 100% solution but instead you go on and kind of build an 80% prototype/solution at each stage. And that is okay in the end, because a lot of the work that you are doing is going to the trash bin anyways. So that is why it is a very efficient method and it is also a very creative method, if you have a good coach, because the teams can really focus on problem solving and all the process around is taken care of by an experienced coach.”

⁶ *Bliss Applications* user-centered design company. For more information: www.blissapplications.com

⁷ *Deutsche Telekom AG* is a German telecommunications company headquartered in Bonn and by revenue the largest telecommunications provider in Europe.



Name: Youp Selen

Country: The Netherlands

Expert Category: Teacher, Consultant

DT Background: Teaches DT skills to students and professionals, helps organizations to bring the DT mindset into their organizations at *Performatory*⁸

Definition of DT:

“For me it is all about not having a fixed idea in the beginning and then strongly connecting to research to guide the way to a solution. You start from an idea and then do research together with the target group or the people involved. And by designing together you find out what the possible direction for the process is and keep steering it during the process instead of following a strict plan. We use the double diamond research approach and I really like this idea of not having a fixed plan. You just start somewhere and your target group becomes your research group.”



Name: Thomas Zaiser

Country: Germany

Expert Category: Professional

DT Background: Leads DT projects and facilitates DT sessions internally at *DTSE*⁹

Definition of DT:

“To me DT means, using a toolset – having another approach of finding solutions, thinking in a different way and approaching problems in a different way. Rethinking about what you achieved in a regular manner and last but not least ask in short periods what the customer wants.”

⁸ *Performatory* is an active-incubator for social innovation. For more information: www.performatory.nl

⁹ *DTSE* is the internal service provider of the Deutsche Telekom group.



Name: Rui Ferro

Country: Portugal

Expert Category: Graphic Designer, Consultant

DT Background: Consulted project leaders on how to conduct a design (thinking) project

Definition of DT:

“DT is a structured process. To be honest I don't know why people call it DT, because to me it is just “design”. I don't know what DT is. But I know what design is and design is problem solving. Business people are normally used to doing everything step-by-step. They use a waterfall approach to solving problems. In the beginning they do the analysis then they develop something and then they test it. Design on the other hand uses an agile approach. Everything is done at the same time and feedback is constantly asked from the target group in reiterative cycles.”



Name: Kathleen Braun

Country: Germany

Expert Category: Professional

DT Background: Leads DT projects and facilitates DT sessions internally at *USD*¹⁰

Definition of DT:

“DT for me is one agile approach/possibility to get to a solution. And it is customer based. So the customer makes the rules. He says what he wants and we come up with ideas and ideas. – A ton of ideas and totally free ourselves from restraints like "we don't have enough resources" or "I'm not allowed to do this". That is for me the most important thing that DT brings to the table. It is very creative and free. DT is free designing for the customer with the customer.”

¹⁰ *USD* stands for “Deutsche Telekom Segment Deutschland” and describes the part of Deutsche Telekom AG which is responsible for the German market.



Name: Tiago Nunes

Country: Portugal

Expert Category: Consultant

DT Background: Co-founder of *With Company*¹¹, where he leads DT projects and facilitates DT sessions for clients.

Definition of DT:

“In my opinion DT is first and foremost a set of principles. All of our projects have a different context. But there is a baseline in how we approach our clients and projects. And this approach is very rooted in the DT principles and what we experienced at the d.school. The most important principles I would say are: 1) giving importance to the physical space 2) multidisciplinary project teams 3) high collaboration; that's why we are "with company" because we work with and not just for 4) experimentation, meaning that we try to be experimental in the things that we do and in terms of the projects themselves, by trying things, doing prototyping, seeing what works, what doesn't work and using that as a constant learning process and of course 5) empathy. We put a lot of focus on human behavior and research. That is something that we preserve on every project that we do.”



Name: Gabriel Batista

Country: Brazilian living in Portugal

Expert Category: Consultant

DT Background: Involved in DT projects for clients at *beta-i*¹²

Definition of DT:

“In my personal opinion, DT is and should always be seen as a method. Nothing more than that. DT does not resolve all problems. It is a method to help find solutions to problems. It is always used with a specific goal. It is not a solution in/by itself.”

¹¹ *With Company* is a strategic design consultancy agency. For more information: www.with-company.com.

¹² *beta-i* is an organization that offers several services with the mission is to foster a true innovation culture. For more information: www.beta-i.com.

1.3 Data Analysis

Just like in the research project of Carlgren et al (2016), open and axial coding was chosen as a method for data analysis¹³. All interviews were transcribed completely and excerpts of the transcripts were given keywords in order to thematically sort them and identify emerging patterns across the data. In an iterative way, the themes were constantly adjusted and compared to the available previous literature.¹⁴

1.4 Limitations

There were a few limitations to the research project. As other researchers have pointed out the fact that DT is difficult to grasp makes it questionable whether an interview based research design makes it possible to truly gain insights about the topic, since interviewees may have different perceptions and interpretations of what DT is. As Carlgren et al (2016) point out, the likelihood of interviewees having different perceptions of what DT is leads to the danger of potentially comparing “apples and pears”. It was tried to overcome this limitation by asking all interviewees to explain what DT means to them and how they define it. This way even if they had different understandings of the concept, it was possible to take that into account when analyzing and comparing the answers. Again similar to the research design of Carlgren et al (2016), every step of the research design was carefully documented in order to increase the trustworthiness of the research. Furthermore the aim of this exploratory research is not to generalize but to provide examples of how companies are currently using DT and how experts envision the future use of DT in business.

¹³ The method was originally developed by Strauss and Corbin (1998)

¹⁴ As Carlgren et al (2016) point out, this is in line with the systematic combining approach of Dubois and Gadde (2002).

2 Conceptual Framework

This chapter provides a theoretical framework of the concepts that are relevant to the understanding of this dissertation. It will explain what DT is, why it is relevant and why the *management of DT* is an area of interest for the industry as well as academia. DT has become widely popular over the course of the last decade. Nevertheless academic sources about DT are still relatively limited and comparatively many resources about DT are of non-academic nature. While these resources are often based at least partly on academic findings, they cannot be classified as academic as such. Still they provide a valid resource to explore how DT is understood and used by the industry and should therefore not be disregarded. These non-academic resources include information shared by professionals, companies that work with DT and Design Thinking schools that do not operate as part of an academic university in the form of books, TED Talks, interviews, articles, blog posts and YouTube knowledge clips. Next to academic resources, such as academic books, peer-reviewed journal articles, master and PhD theses and online resources by accredited academic universities, this dissertation also draws upon such non-academic information provided by the industry. In order to show clearly which information is of academic nature and which information is non-academic, all sources are clearly labeled as either academic or non-academic.

2.1 Definition of Design Thinking: What is Design Thinking?

DT as a term was mainly coined by worldwide leading design agency IDEO and management scholars, who researched the way that designers work and how this can be relevant for the business setting (Carlgren, Elmqvist, & Rauth, 2016). It is often said that DT was invented by IDEO, but the origins of DT date back to before IDEO was even founded (IDEO, 2019a). Nevertheless IDEO did play an important role in popularizing the term and turning it into the buzzword it is today. Even though over the course of the last decade, DT has turned into a household word¹⁵ in several industries, the definition of the term is still ambiguous. There is no consensus on what is meant by DT, neither among practitioners nor among academics. Most scientific articles about DT therefore start out with a chapter on the definition of the term. Similarly, agencies who offer DT as a service,

¹⁵ According to Collins Dictionary, a household word is defined as “a common word, saying, name, or thing that is familiar to nearly everyone.”

companies who use it as a tool and educational organizations who offer training courses in DT usually also start out by explaining what DT means to them. In order to create a comprehensive definition of DT, the previous definitions offered by academia and professionals were studied carefully. Subsequently a table with recurring themes that were mentioned in several of the definitions was created (see Table 1)¹⁶. The table shows that while the definition of DT is ambiguous, there are several themes and keywords that are commonly mentioned throughout definitions. In an attempt to merge all of these aspects into one comprehensive definition of DT, a graphic was created that develops a logical connection between the different aspects (see Figure 1).

Table 1

Recurring themes in definitions of Design Thinking by industry and academia

Aspect of DT definition	Academic Sources	Non-academic Sources
1. DT is an ideology/approach/mindset		
1.1. DT is based on integrative thinking	Dunne & Martin (2006) Tromp & Hekkert (2010) Matthews & Wrigley (2017)	Brown (2009) Van Tyne (2016) EGR International (2017) Weston (2019)
1.2. DT is based on solution-based thinking	Lawson (2006) Glen et al. (2014) Pusca & Northwood (2018)	Naiman (2019) Stevens (2019) Dam & Siang (2019a)
1.3. DT is based on 4 principles: I. Human rule II. Ambiguity rule III. Redesign rule IV. Tangibility rule	Plattner et al. (2011) Tunga & Yıldırım (2017)	Cribb (2017) Stevens (2019)

¹⁶ In order to create a readable table, a list of keywords was created, which were then grouped into themes and displayed in a structured form in the table.

<p>1.4. DT is based on a set of values, including:</p> <ul style="list-style-type: none"> - human-centeredness - creativity - collaboration - embracing risk - experimentation 	<p>Tromp & Hekkert (2010) Matthews & Wrigley (2017) Liedtka (2015) Brenner et al. (2016)</p>	<p>Stevens (2019) AJ&Smart (2019) IDEO (2019b)</p>
<p>2. DT is a methodology</p>		
<p>2.1. The methodology is used for a specific purpose, e.g.</p> <ul style="list-style-type: none"> - innovation - solving (wicked) problems 	<p>Buchanan (1992) Rittel & Weber (1974) Lindberg et al. (2011) Dorst (2011) Carlgren (2016) Brenner et al. (2016) Reine (2017) Beligatamulla (2018)</p>	<p>Stevens (2019) AJ&Smart (2019) Naiman (2019) IDEO (2019c)</p>
<p>2.2. The methodology consists of a fluid, iterative process</p>	<p>Lawson (2006) Stanford d.school (2010)</p>	<p>Stevens (2019) AJ&Smart (2019)</p>
<p>2.3. The process consists of the following 5-steps:</p> <ol style="list-style-type: none"> I. Empathize II. Define III. Ideate IV. Prototype V. Test 	<p>Stanford d.school (2010)</p>	<p>Stevens (2019) Sprouts (2018) AJ&Smart (2019) Naiman (2019)</p>
<p>3. DT uses a set of tools</p>		
<p>3.1. There is a lot of flexibility in which tools/methods/templates are used during each step of the process</p>	<p>Stanford d.school (2010) Brenner et al. (2016)</p>	<p>AJ&Smart (2019)</p>

The three Layers of Design Thinking

Table 1 shows that DT is defined as a variety of things. Definitions range from an approach to a process or a set of tools. The conceptual drawing in Figure 1 shows that the aspects mentioned in Table 1 are not mutually exclusive. In fact they all interplay and support each other. Figure 1 shows that the aspects that are important to the definition of DT identified in Table 1 can logically be grouped in three different groups. The drawing structures the aspects in three layers according to the level of abstraction of each aspect. Grouping and structuring the aspects in this way provides a comprehensive overview of how previous definitions logically fit together.

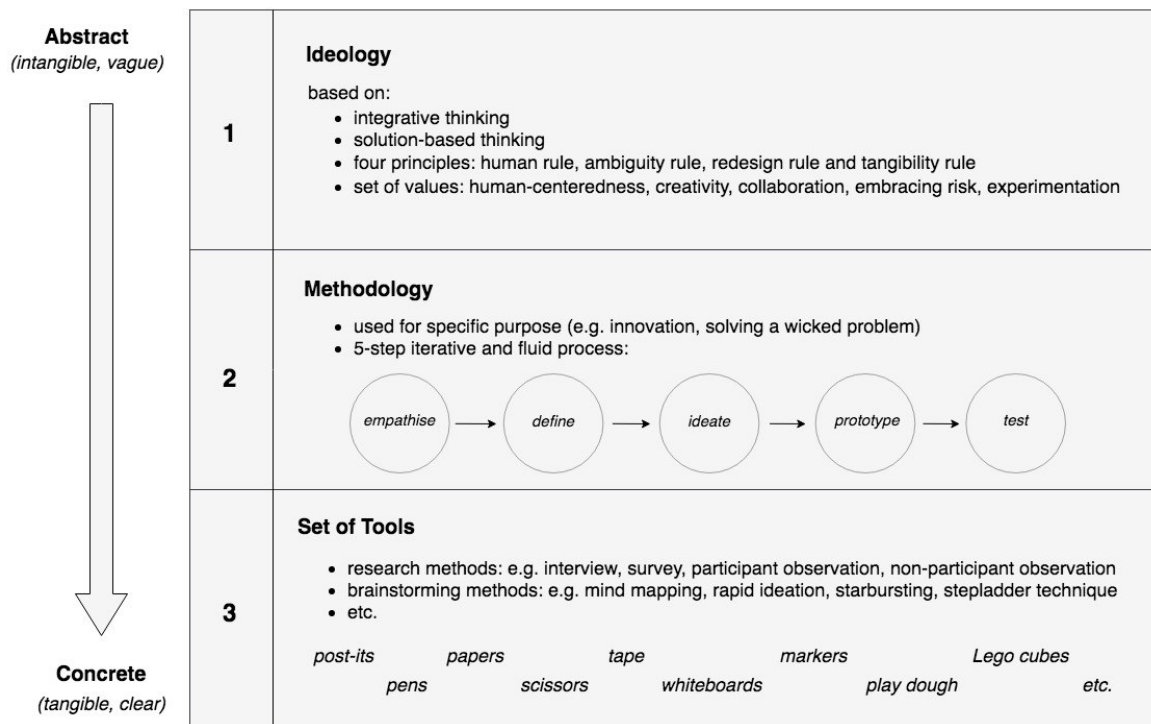


Figure 1. The three layers of Design Thinking. The figure shows the aspects that are important to the definition of Design Thinking grouped into three layers according to their level of abstraction.

The first layer is the most abstract. It consists of the notion that DT is an approach, ideology or mindset that is based on four principles: 1) the human rule, 2) the ambiguity rule, 3) all design is redesign and 4) the tangibility rule. In line with these principles DT is based on a set of values, including: human-centeredness, embracing risks, creativity, collaboration and sustainability. Moving towards a more concrete level of DT, we encounter the second layer. This layer entails the notion that DT is a methodology used for

a specific purpose, e.g. problem solving or innovation. The methodology consists of an iterative 5-step-process¹⁷ and follows a double-diamond-shaped strategy of diverging and converging in order to reach its goal. The third layer is the most concrete and entails the specific actions and tools that are actually used and can be experienced, for example research methods such as interviews, surveys and participant observation as well as tangible tools and items like post-its, pens and Lego blocks. All three levels are important to gain a holistic understanding of what DT is and are explained in more detail below.

Layer 1: Design Thinking is an Ideology

Many definitions convey the notion that DT is more than a method. Words that are commonly used to describe this notion are “ideology”, “approach” or “mindset”. While the terms may be different, the message is the same. These definitions entail the notion that DT is based on integrative thinking, solution-based thinking, four design principles and a set of values. Each of these aspects is explained in more detail below.

DT is based on integrative thinking

DT is based on integrative thinking. The concept of integrative thinking was mainly coined by Roger Martin, former Dean of the Rotman School of Management at the University of Toronto and describes the ability to exploit opposing ideas and opposing constraints to create new solutions. According to Tim Brown, CEO of IDEO, this means balancing design (what humans need) with technical feasibility and economic viability (Brown, 2009). The most valuable design exists at the intersection of desirability, feasibility and viability (see Figure 2). Desirability describes the human aspect of design and is concerned with the question “do they (the end user) want this?” It also is concerned with the usability of the solution that is designed. Viability describes the business side of a design project. It is concerned with the question “should we do this?” as it evaluates whether the project is financially viable. Feasibility describes the technological side of a design project. Its is concerned with the question “can we do this?” A project that is viable and feasible is possible, a project that is feasible as well as desirable is usable and a project that is desirable as well as viable is valuable. Therefore design is most meaningful at the

¹⁷ The 5 steps being: 1) empathise, 2) define, 3) ideate, 4) prototype and 5) test.

intersection of the three spheres. If design is feasible, desirable and viable it is possible, usable and valuable and therefore truly meaningful.

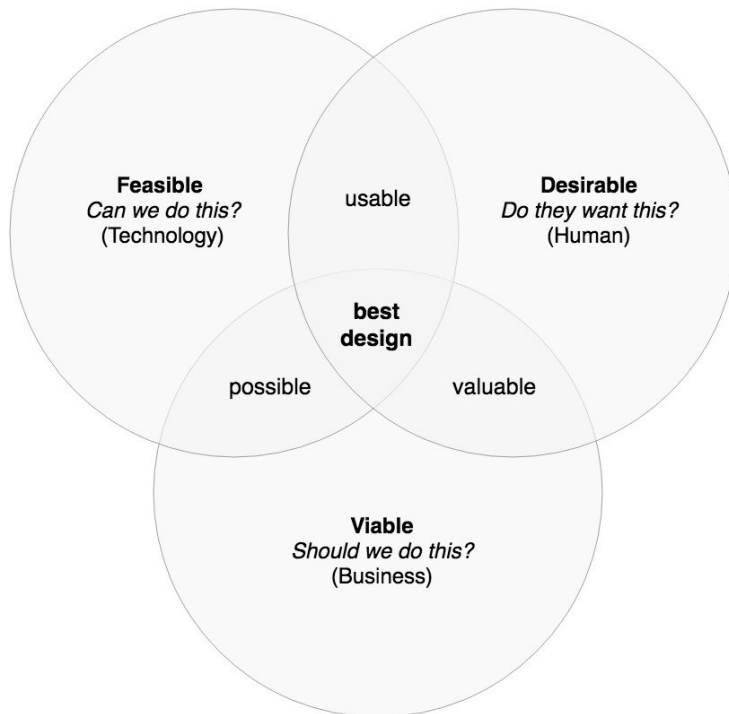


Figure 2. The Design Thinking ideology explained through integrative thinking (based on previous conceptual drawings by Brown, 2009; Van Tyne, 2016; EGR International, 2017 & Weston 2019)

DT is based on solution-based thinking

Solution-based thinking is the opposite of problem-based. As the term suggests, solution-based thinking focuses on finding solutions by coming up with constructive ideas to effectively tackle a certain problem. Problem-based (or critical thinking) in contrast tends to fixate on obstacles and limitations. The notion that DT is based on *solution-based thinking* was mainly coined by Lawson (2006). In his book “How Designers Think” he published results to a study on the different ways of approaching a certain problem among scientists and designers. He concluded his observations stating that the scientists that participated in his research focused on identifying the problem (problem-based thinking) whilst the designers prioritized the need to find the right solution.

The empirical study he carried out consisted of an experiment in which he set up a group of designers and a group of architects to create one-layer structures from a set of blocks. The perimeter of the structure had to use either as many red blocks or as many blue blocks as possible (this was the desired outcome, the solution), but there were unspecified rules regarding the placement and relationship of some of the blocks (this was the problem or limitation). Lawson reports that the scientists tried to maximize the information available to them about the allowed combinations, by trying out several designs which used as many different blocks and combinations of blocks as quickly as possible. Their aim was to discover the rule governing which combinations of blocks were allowed, in order to then search for an arrangement, which optimizes the required color around the layout. The designers, on the other hand approached the problem with a trial and error strategy. They directly selected blocks in order to achieve the desired colored perimeter. If the blocks they picked did not result in an acceptable combination, the next most favorably colored block combination was substituted until the desirable solution was reached. Lawson's experiment captures what DT is all about: iterative experimentation until reaching a suitable solution. Several authors have recognized this and argued that DT is based on solution-based thinking (e.g. Glen et al., 2014; Pusca & Northwood, 2018; Naiman, 2019; Stevens, 2019 and Dam & Siang, 2019a).

DT is based on four principles

The DT ideology is based on four principles (Stevens, 2019). The four principles are: 1) The human rule, 2) the ambiguity rule, 3) the redesign rule and 4) the tangibility rule. The *Human Rule* says that all design activity, no matter what the context, is social in nature. At the core of every design solution is a human need. Therefore designers should always think from a human-centric point of view and from the perspective of the end-user. The *Ambiguity Rule* says that ambiguity is inevitable and that risk-taking should therefore be embraced. In order to create something new, it is necessary to try something new and that means taking a risk. When doing something new, the result may be a product/service/process of incredible value or of no value at all. But in order to have the chance to create something of great value one needs to take risk. The *Redesign Rule* says that while technology and social circumstances may change, basic human needs remain unchanged. Essentially every design project just redesigns the means of fulfilling these

same needs or reaching a desired outcome. The *Tangibility Rule* says that prototypes help to make ideas tangible and enable designers to communicate their ideas effectively. This is in line with the value of experimentation and manifests itself in the creation of prototypes when developing ideas and collecting feedback for ideas.

DT is based on a set of values

The DT approach is based on values such as human-centeredness, collaboration, embracing risk and experimentation. In line with this, the description of DT that IDEO (2019b: 1) offers on their website emphasizes that DT is a human-centered approach to problem solving:

Design thinking has a human-centered core. It encourages organizations to focus on the people they're creating for, which leads to better products, services, and internal processes. When you sit down to create a solution for a business need, the first question should always be what's the human need behind it? In employing design thinking, you're pulling together what's desirable from a human point of view with what is technologically feasible and economically viable. It also allows those who aren't trained as designers to use creative tools to address a vast range of challenges. The process starts with taking action and understanding the right questions. It's about embracing simple mindset shifts and tackling problems from a new direction.

This notion is expressed by several other sources as well. The education platform Careerfoundry, which offers online courses in user experience design, user interfaces design and web development, mentions: "Design Thinking is extremely user-centric. It focuses on humans first and foremost, seeking to understand people's needs and come up with effective solutions to meet those needs. It is what we call a solution-based approach to problem-solving" (Stevens, 2019).

Additionally, according to IDEO (2019b) there are three essential pillars of DT. Namely: *empathy*, *ideation* and *experimentation*. *Empathy* stands for the human-centered approach of DT. Whenever designers design solutions, they need to constantly be aware of whom they are designing for. This is a challenge, since people usually think from their own frame of reference. It is very hard to think from someone else's perspective. DT provides a framework that helps designers to fully understand the needs of those they are designing for. *Ideation* is about generating a vast amount of ideas. When being creative often quantity is more valuable than quality. In order to generate a 'brilliant' new idea, a lot of ideas have to be generated and some of them will be more useful than others. Last but not least, *experimentation* describes the testing of these ideas with prototypes. The DT process

favors that prototypes are developed early on in the process in order to determine whether an idea is worth exploring to its full potential.

Layer 2: Design Thinking is a Methodology

On a slightly more tangible layer, DT is often described as a methodology. The methodology consists of a 5-step-process and is used for a specific purpose, e.g. innovation. The three pillars that DT is based on identified by IDEO can also be translated into the stages of the DT process. The stages of the DT process are reiterative. After ‘completing’ experimentation by building prototypes, DT practitioners take these prototypes back to their target group and gather feedback about the prototype. From here they ideate again and build new prototypes.

Purpose of using the DT methodology

As a methodology DT is used for a specific purpose. The main purpose DT is used for is innovation, but it can also be applied for other purposes. Abecassis-Moedas (2019) explains that while *design* is a conscious process that turns an intangible idea into a tangible product or service. DT first and foremost is an innovation method. Nevertheless the methodology is also used for several other purposes. For example, companies also use DT to address managerial problems, for example to develop corporate strategies and to redesign policies (Carlgren et al., 2016). Therefore it seems that DT does not replace traditional design. DT rather seems to add a new field of work, which is mainly connected to the early, strategic phase of innovation (Carlgren et al., 2016; Abecassis-Moedas, 2019).

Buchanan (1992) proposes that a way to generalize the purpose of DT is to solve *wicked problems*. The term *wicked problem* was originally coined by Rittel and Weber (1974) and describes a problem that is difficult or impossible to solve because of incomplete, contradictory and changing requirements that are often difficult to recognize. Due to this, each attempt to create a solution to a wicked problem changes the understanding of the problem. Wicked problems cannot be solved in a traditional linear fashion, because the problem definition evolves as new possible solutions are considered and/or implemented. In line with this Dorst (2011:522) explains that this is the main benefit of using DT. Designers have been dealing with open, complex problems for years. Adopting a

designer's mindset can help professionals of any industry deal with the fast-paced changes that are happening around them:

Studying the way designers work and adopting some designerly practices could be interesting to these organisations because designers have been dealing with open, complex problems for many years, and the designing disciplines have developed elaborate professional practices to do this.

The 5-Step Design Thinking Process

Definitions of DT by scholars and practitioners can be broad or detailed, but one thing that most of them in common is that they are somewhat vague. The most tangible definition of DT is that of a five-step model originally proposed by the d.school at Stanford University (2010). Practitioners use this representation of DT more often than academics. Nevertheless the illustration of the process presents an important aspect of the definition of DT as it transforms the otherwise rather vague methodology into a concrete process.

The five-step model of DT (see Figure 3) describes DT as a reiterative creative problem solving process with five stages. The five stages are *empathize*, *define*, *ideate*, *prototype* and *test*. These stages are in line with the pillars of DT proposed by IDEO (empathy, ideation and experimentation; see above). During the *empathize* stage, the DTer seeks to fully understand the needs of whom they are designing a solution for in a non-judgmental way, for example through interviews and shadowing. In the *define* stage challenges and pain points, which are experienced by whom the solution is designed for, are gathered and personas and role objectives are created in order to find a suitable solution. This is also the stage in which decisions are made regarding to what the actual problem is that will be tackled. In the following stage, *ideate*, a diverse group of stakeholders gets together to share ideas. All ideas are regarded as worthy and a “yes and” thinking is encouraged. This stage is all about diverging and coming up with as many creative ideas as possible. Afterwards priorities are made and the process converges again in order to select a few ideas for prototyping. In the following stage, *prototype*, mockups and storyboards are made in order to determine the potential of an idea. The reason for this is efficiency. It is better for inadequate ideas that originally seem feasible to fail fast than to invest a lot in actually creating a product, service or other solution and investing a lot of time and money that way before realizing that the idea does not solve the problem. The last stage of the process is about *testing*. In this stage prototypes are tested through role play and with the target group

in order to find out what does and does not work about the solution and iterate quickly for a time- and cost-efficient development of the final solution.

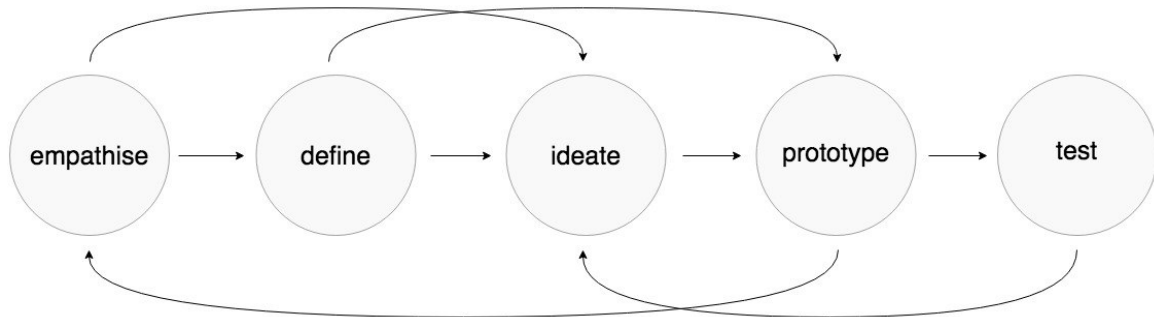


Figure 3. Five-step model of the Design Thinking process

Fluidity of the DT process

Important characteristics of this process are that it is fluid and iterative. The steps of the process are never followed linearly from beginning to end. Teams that use the process go back and forth between the steps and revisit all of them several times in varying orders depending on the evolution of the process (d.school Stanford, 2010; Stevens, 2019).

Layer 3: Design Thinking is a set of tools

Figure 4 shows examples of tools that can be used during each step of the DT process. The list of tools is virtually endless and providing a detailed overview of all options goes beyond the scope of this dissertation.¹⁸ In general it is important to note that the design thinker has a lot of freedom and flexibility in choosing the appropriate tools for a certain project and through practical experience design thinkers become more skilled in several tools and obtain the skill to assess which tools are better suited in the situation they currently face (AJ&Smart, 2019).

¹⁸ The dissertation aims to explore how companies can best manage DT within their organization. It is concerned with exploring DT on a more systematic, organizational level rather than a micro-level. There are several resources on the Internet for those interested in learning more about specific tools and methods that can be applied during the various stages of the DT process. A few recommendations follow: www.designkit.org/methods, www.circulardesignguide.com/resources, dschool.stanford.edu/resources, www.toolboxtoolbox.com and www.ideo.com/tools.

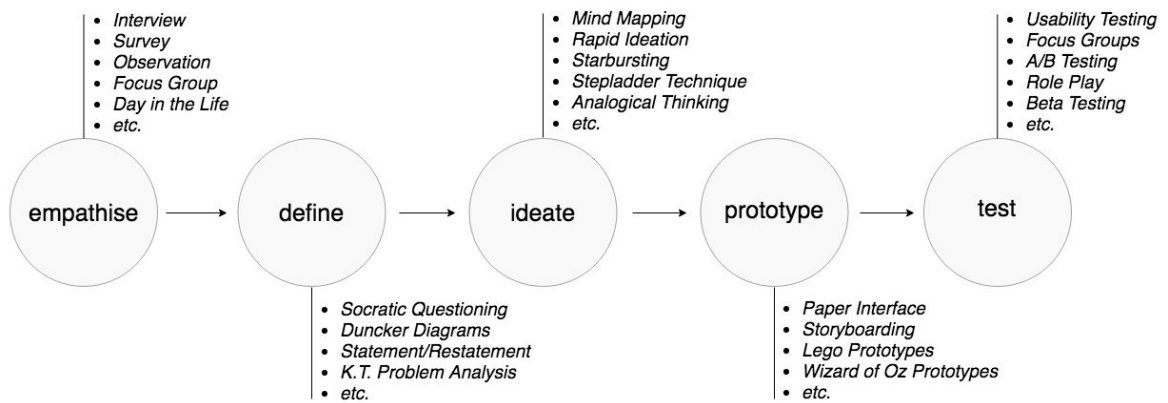


Figure 4. Design Thinking tools. The figure shows the Design Thinking process with examples of tools and characteristics of tools for each step of the process (based on Arbor, 2017; Board of Innovation, 2019; Dam & Siang, 2019b and Babich, 2017)

2.2 Why is Design Thinking relevant?

The relevance of DT can be explained through the increasing attention business journals and business schools are paying it, the trend of big consultancy agencies acquiring smaller design agencies and the measurable success DT has brought to the companies that use it. While the origins of DT are in the world of design, the practice keeps getting more and more important in the realm of business and management. As Abecassis-Moedas (2019) points out, business journals like the Harvard Business Review are including more and more articles on DT and Business schools are increasingly offering courses in DT (e.g. Stanford Business School, Harvard Business School, INSEAD, the University of Virginia Darden, MIT Sloan and many others). A group of professors at St. Gallen University who set out to write a book about DT as a tool for innovation management found themselves eventually writing a management book with a focus on innovation management (Brenner et al., 2016). Furthermore the trend of many big consultancy agencies taking over design firms also shows the rising importance of DT in business. Deloitte, Accenture and McKinsey all acquired smaller design agencies in the past years (Abecassis-Moedas, 2019). There even seems to be a correlation between financial success and DT. In fact the combined revenue of the top companies listed in the *dmi:Design Value Index* (an index of design centric organizations) is higher than that of the traditional *S&P 500 Index*¹⁹. The index of design centric organizations was created by the *Design Management Institute* and *Motiv Strategies* with funding by *Microsoft* and analyzes the performance of US companies committed to design as an integral part of their business strategy. Results of this index show that in 2015 design-led companies had maintained significant stock market advantage, outperforming the S&P by an extraordinary 211% throughout the previous decade (Design Management Institute, 2019).

¹⁹ The S&P 500, or just the S&P, is an American stock market index based on the market capitalizations of 500 large companies having common stock listed on the NYSE, NASDAQ, or the Cboe BZX Exchange.

2.3 Why is the *Management of Design Thinking* an area of interest?

As DT is becoming increasingly relevant for organizations across industries, naturally many organizations become interested in using DT. As this conceptual framework has shown, merely understanding what DT is, presents a challenge already. Understanding how one's organizations can best implement DT is even harder and while there are few resources that can help guide organizations through the process of implementing DT in the way that is most suitable for their specific situation and context. This subchapter provides an overview of information provided by the industry and academic related to the *management of DT*. It will draw attention to why the use of DT can be complicated for organizations, proposing that there is a need for more information on how companies can best manage DT within their organizations.

The use of Design Thinking in Organizations

Since the definition of DT is ambiguous it is unclear how organizations use DT (Reine, 2017). Carlgren et al (2016) conducted an explorative study among large organizations that claim to use DT and found that almost all participants of their interview study described DT in a different way, making it hard to draw general conclusions about how these organizations use DT. This is in line with other research projects that find that statements by researchers and practitioners are often seemingly contradicting with each other (e.g. Reine, 2017). In the managerial setting, DT is often promoted as a user-centered approach that can be used by any organization to solve any wicked problem and DT has been adopted widely as a tool for innovation by all sorts of organizations. But while DT may be most popular in its application for innovation purposes, but DT can be applied for several purposes including product design, service and experience design, business design, leadership and organizational change (IDEO, 2019; Carlgren et al. 2016). Additionally, companies may employ tools that are very similar or the same as DT tools, without calling it DT (Carlgren et al., 2016).

Abacassis-Moedas (2019) introduces the difference between *internal* and *external* use of design. In the case of DT, external use could be interpreted as the use of DT through external agencies whereas an internal use would be in form of DTers inside the organization. Both applications have pros and cons and generally a combination of both is

believed to work best. A study by Lindberg et al. (2011: 16) suggests that start-ups are more likely use DT internally than established organizations. Most established companies that work with Design Thinking outsource their DT efforts either to “external design agencies (such as IDEO), semi-autonomous research labs (such as the T-labs of the Deutsche Telekom) or are restricted to selected working methods which are integrated into the established organizational workflows.” On the other hand an explorative study by Carlgren et al (2016: 29) suggests that established companies actually prefer to apply DT internally:

Finally, most of the DT activities were carried out by employees - if outsiders were involved it was often in the initial stages of implementation. Most firms seemed to prefer to have the competence in-house once DT was a bit more established. In some cases students were involved in separate projects, often as an attempt for the firm to investigate whether DT was an interesting concept to invest in.

Additionally, the mere fact there indexes like the *dmi:Design Value Index* include a variety of established organizations gives reason to further explore whether this is true or not (Design Management Institute, 2019). Since the available literature does not provide a clear picture of how companies are actually using DT, more research would be needed to make a confident statement about how organizations are using DT.

Challenges associated with implementing Design Thinking in an Organization

Even though the available literature does not provide a clear picture of how exactly organizations are using DT, there are many mentions of challenges that companies will face if they want to implement DT. These challenges are mainly related to the internal use of DT. The challenges associated with implementing DT in organizations that were identified during the literature review are summarized in below (see Table 2). Below relevant quotes will be presented in order to explain the challenges that were identified in the literature review.

Table 2

Challenges associated with implementation of Design Thinking

Theme	Reference
Strong focus on efficient operations and short-term profits	Rauth, Carlgren and Elmquist (2015); Lindberg, Meinel and Wagner (2011)
Lack of conviction among middle management	Björklund, Hannukainen and Manninen (2018)
Conflict of interest between departments	Liedtka (2014)
Change management issues	Lindberg, Meinel and Wagner (2011)
Financing structures	Gloger (2018)
Organizational culture	Carlgren et al. (2016)

Strong focus on efficient operations and short-term profits

Rauth et al. (2015) found that many large firms find it challenging to be innovative and that this may be due to a strong focus on efficient operations and short-term profits. If an organization is too concerned with efficient operations and short-term profits, there is no room for employees to be creative and take risks. The research focuses on innovation in general, but since the challenges related to the implementation of DT are similar to the challenges of implementing other innovation methodologies, their research findings are nevertheless an indicator of why it is so challenging to integrate DT in large organizations. In line with this, Lindberg et al. (2011) found that tight and fixed time schedules with scarce resources that lead to employee evaluation being based on punctual shipments and budgeted resource plans can hinder DT from working in organizations. As the authors explain, if employee evaluation is based mainly on punctual shipment and budgeted resource plans and employees thus work in tight and fixed time schedules with scarce resources, this conflicts when the same employees deal with product development approaches that entail the uncertainty of extensive divergent thinking. Other authors recognized the challenge for companies to combine their need for control with the entrepreneurial approach of DT as well. For example (Lindberg, T., Meinel, C., & Wagner,

2011: 15) who conclude: “How to bridge the gap between a company’s need for reliable control of their processes and resource flows and an open and entrepreneurial approach to new product development.”

Lack of conviction among middle management

Björklund et al. (2018) found that oftentimes employees in large organizations are interested in DT but not convinced that it is useful to solve problems that occur during their own work. This is a big problem. It is crucial for the employees of an organization to believe in the use of DT. If employees and especially middle management do not favor the use of DT it is almost impossible to implement DT. The authors suggest that in order to “sell” DT to the employees, it may be helpful to offer proof of the effectiveness of DT by involving external experts and then developing internal success stories.

Conflict of interest between departments

Sometimes the departments within a large organization have different interests related to the innovation efforts of the organization. (Liedtka, 2014: 40) interviewed leaders who operate at the intersection of design and business in a number of Fortune 100 organizations. From these conversations they concluded that the process of innovation in large organization often resembles a “battlefield in which R&D, marketing and business development functions seemed to wrestling for control and often work at cross-purposes with each other.” This conflict of interest between departments was a challenge to the implementation of DT, because proponents of DT seemed to be frequently get caught in the crossfire.

Change management issues

Lindberg et al. (2011) researched established companies that are on the journey of turning themselves into design-centered organizations and found that these companies are dealing with fundamental change management issues. While “change management issues” is a very broad key term related to the challenges of implementing DT in organizations, it cannot be disregarded in this list. Change management issues can mean a lot of things and it will be interesting to explore further which change management issues are most relevant here. In order to understand this, it is important nevertheless to first gain a better

understanding of how organizations use DT currently (or strive to use DT). Subsequently it will be possible to determine what are the change management issues with implementing this.

Financing Structures

Traditionally the budget in big companies is decided in the very beginning of an innovation project. But this does not make a lot of sense (Gloger, 2018). Therefore a financing structure similar to the concept of *gates* in the *stage-gate method* is advisable to break down the financing decision in various moments throughout the project development. This method proposes to clearly separate the work of the project team and management interventions. This way micro-management is avoided and more importantly financing decisions can be made after every crucial step in the project. Making finance decisions gradually as the project proceeds, forecomes that projects are not finished, even though more and more money is invested even though it might not be making sense anymore. By having multiple moments during the innovation process, which also function as milestones for investment decisions, projects that are not viable anymore could be “killed” and this way risk could also be diminished. Other aspects of the stage-gate method are not as relevant to the implementation of a DT focus in the organization, because as Lindberg et al (2011) demonstrate this type of innovation method inhibits DT. For example because the prototyping and close feedback circles with the target group, which are central features of the DT process, are only included in the last stages of the stage-gate method.

Organizational culture

As explained during the definition of DT, DT is not just a process that uses a set of tools. It is also an ideology based on values such as human-centeredness, embracing risks, creativity, collaboration and sustainability. If an organization’s culture does not embrace these values, the internal implementation of DT is extremely difficult. A research by Carlgren et al. (2016) shows that it is important for companies to evaluate DT holistically and aim to integrate it within the general organizational culture. If companies fail to do this, it may likely be the reason why the integration of DT is not successful.

3 Results and Discussion

3.1 Results

The tables displayed in this subchapter exhibit the insights gained through the expert interviews conducted in the scope of this dissertation. The aim of presenting these tables is to guarantee transparency regarding the data analysis process. In the process of data analysis, all interviews were transcribed and excerpts of the transcripts were grouped thematically in order to identify emerging patterns, form categories and logically structure the insights gained. The tables allow the reader to comprehend which expert revealed a certain insight. Each table displays key insights learned through the expert interviews. Behind each insight a letter (A-I) indicates which expert interview(s) the insights are based on. A legend of which letter corresponds to which expert can be found in the first column of Table 3. Through this indication, readers are able to retrace which expert interview a certain insight is based on and can then consult detailed quotes in the respective interview transcript (see Appendices C-K).

Table 3

Legend of letters assigned to experts and information about experts

Interviews	Country of Residence	Relation with DT	Experience with DT
A) Noralie Weusthuis B) António Abreu and Martina Rando C) Alexander Stolz D) Youp Selen E) Thomas Zaiser F) Rui Ferro G) Kathleen Braun H) Tiago Nunes I) Gabriel Batista	1) Netherlands (A, D) 2) Portugal (B, F, H) 3) Italian working in Portugal (B) 4) Germany (C, E, G) 5) Brazilian working in Portugal (I)	1) Academic (A) 2) Teacher (A, D) 3) Consultant (A, B, D, F, H, I) 4) Professional (C, E, G) 5) Designer (F)	1) Teaching DT courses/workshops (A, D) 2) Being a DTer 2.1) <i>For clients (A, B, D, I)</i> 2.2) <i>For own company (A, B, C, D, E, G)</i> 3) Consulting on how to conduct a design (thinking) project (F)

Table 4

Overview of insights gained through expert interviews – Part 1

Definition of DT	Purpose of using DT
1) DT as an ideology – layer 1 (A, B, C, D, E, F, G, H) 2) DT is collaborative (A, B, D, H) 3) DT is human centered (A, C, D, E, F, G, H) 4) DT is creative (C, G) 5) DT is based on a set of principles (B) 6) DT is about quick prototyping and reiterative feedback loops (F) 7) DT as a methodology – layer 2 (A, B, C, D, E, G, I) 8) DT methodology is a structured process (B) 9) DT process uses double diamond approach (B, D) 10) DT methodology can be adapted to specific project and combined with other tools (B, C) 11) DT as a set of tools – layer 3 (B, C, D, E) 12) Layer 1 is most important (A, B, D, E, G, H)	1) Increase focus on customer (A, C, E, G, H) 2) Innovation (A, B, C, I) 3) Improve existing value proposition e.g. products or services (A, B, C, E, G, H) 4) Align stakeholder’s interests (A, B) 5) Explore the problem space (B, C, E, G) 6) Redesign processes (C) 7) Solve wicked problems (D, E, F, G, H)

Table 5

Overview of insights gained through expert interviews – Part 2

Verdict Internal vs. External	Arguments for Internal Implementation
1) Combination of both (B, C, G) 2) Overall more in favor of internal (E) 3) This distinction belong to the “old system” (D) 4) Depends on maturity level of organization (H, I) 5) Undecided (F)	1) Follow up on results is more likely (A, B, D) 2) Knowledge about company can be an advantage (C, G) 3) Cost efficiency (C, E, G) 4) Less bureaucracy and therefore quicker (C)

Table 6

Overview of insights gained through expert interviews – Part 3

Arguments for External Implementation	Important when Implementing Externally
1) Different perspective (B, C, F, G, H) 2) Less issues related to hierarchy (B, H) 3) Organization can learn from agency (C, D, G, H) 4) External people are more easily perceived as experts (C, G) 5) Avoids challenges associated with internal implementation (A) 6) Helps to dedicate importance to first two steps of DT process (B)	1) Agency needs to be given autonomy (F, H) 2) Organization still needs to be involved DT process (A, B, D, H, I) 3) Special attention has to be paid to reinforce follow-up on results of DT sessions (A, B, D, F)

Table 7

Overview of insights gained through expert interviews – Part 4

Organizational Culture and Structures for DT	The DTers
<ul style="list-style-type: none"> 1) Organizational culture and structures depend on maturity of organization (H, I) 2) Most start-ups organically have organizational culture and structures that are aligned with the DT ideology (I) 3) Ideal organizational culture embraces the same values as DT ideology (H, I) 4) Ideal organizational structure has low hierarchies and self-steering, competence based teams (A, D, G, H, I) 5) Changing organizational culture and structures takes time (D, G, H) 6) Change process regarding organizational culture and structures needs to be facilitated (G) 7) Big departments & top management have to lead by example (G) 8) Using DT can also help to change culture (G) 9) It may be necessary to let people go, if they cannot adapt with the organization (G) 	<ul style="list-style-type: none"> 1) Hierarchical position is irrelevant (B, D, G, H) 2) Employees of all hierarchical positions should be DTers (B, D, G, H) 3) Educational background is irrelevant (B, D, F, G, H) 4) It should be tried to have a diverse group of people as DTers (B, D, F, G, H) 5) The values of the DTer should be aligned with the DT ideology (H) 6) Soft skills like excellent communication skills are most important attribute of a DTer (H) 7) DTers need to go through an intensive, offline training course (A, C, D, E, F, G, H) 8) DTer should immediately start working after completing their training (A, C, E, G) 9) A part-time solution of working as DTer and in other function is a promising way of managing DTers (C, E, G) 10) There should be an overall DT Lead (B, D)

Table 8

Overview of insights gained through expert interviews – Part 5

The DT Space	The right Moment to use DT
<ul style="list-style-type: none"> 1) Is a reflection of what DTer and collaborators aspire to be (H) 2) Should be flexible and adaptable to demands of DT session (C, G, H) 3) The space should facilitate: <ul style="list-style-type: none"> 3.1) <i>Subdivide big group into smaller group (C)</i> 3.2) <i>Come together as a big group (C)</i> 3.3) <i>Presentations (C)</i> 3.4) <i>Distract mind and relax (D)</i> 4) It is important that the DT space is maintained well (G) 5) Often DT work can and should be done outside of office (C, D) 	<ul style="list-style-type: none"> 1) As an ideology DT should be omnipresent (A, B, D, H) 2) As a methodology DT should be used whenever a project requires it (F, I) 3) The DT methodology is especially valuable for the beginning of projects in order to explore the problem space (C) 4) The DT toolset should be applied whenever it is useful (C, H) 5) The organization should develop structures that continuously facilitate the reflection on day-to-day activities (E)

Table 9

Overview of insights gained through expert interviews – Part 6

General Pitfalls of using DT
<ul style="list-style-type: none"> 1) Selling DT as a magic tool (B, E) 2) Using DT as a marketing stunt (B, H) 3) Innovating for the sake of innovation (B) 4) Rushing the first two steps of the DT process (B, E, G) 5) Applying DT superficially (B, F, H) 6) Expecting too much from participants (B) 7) Neglecting other methods (G)

3.2 Discussion

There are several aspects that are important regarding the management of DT. These aspects are represented in a conceptual drawing in Figure 5. The major decision that any organization that wants to work with DT faces is the decision whether DT will be implemented internally or externally. Two aspects influence this decision majorly: the purpose for which the company is looking to use DT and the current organizational culture and structures. After this decision has been made it is crucial for the organization to understand how to implement DT internally, this includes ways of adapting their organizational culture and structures, selecting and training DTers, creating the right DT space and knowing when to use DT. It is also crucial for organizations to know what to keep in mind when implementing DT externally. Last but not least there are a few general pitfalls associated with DT that organizations can avoid if they are aware of them. Before discussing these aspects in detail, the definition of DT proposed according to the content analysis in chapter 2 will be revisited and reflected in retrospect based on the new information revealed through the expert interviews. The interviews show that the three layers of DT that are introduced in chapter 2 are not equally important to the successful implementation of DT. In fact aligning the organization's culture and structures with the DT ideology is much more important than following the steps of the DT process incrementally in the way it is proposed theoretically or using the DT tools exactly according to the instructions provided by DT schools or knowledge resources.

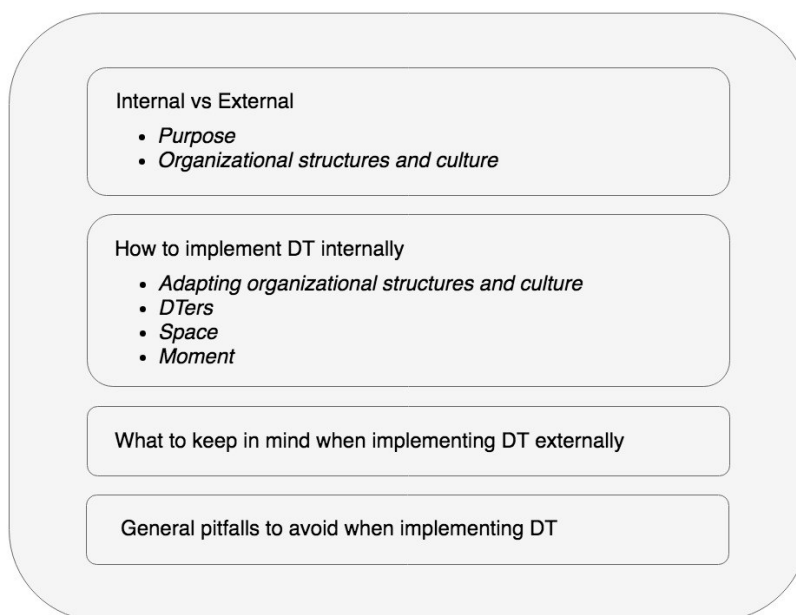


Figure 5. Aspects related to the *management of Design Thinking*

3.2.1 The three layers of Design Thinking revisited

The expert interviews show that the three layers of DT conceptualized in chapter 2 are not equally important to the successful implementation of DT. The more concrete an aspect of DT is, the less important it becomes. Figure 6 illustrates this by placing layer 1 at the core of DT. Inspired by the golden circle²⁰ of Sinek (2009), the three layers can be ranked according to the way they answer the questions *why*, *how* and *what*. Layer 1, the ideology behind DT, answers the question *why*. DT is used because the people who use it believe in the four principles it is based on and values such as human-centeredness, embracing risks, creativity, collaboration and sustainability. Layer 2, the methodology, answers the question *how*. DT employs a 5-step process in order to solve a problem or innovate. Finally, layer 3 answers the question *what*. What DTers actually do is observe customers, create colorful concept maps with post-its and build prototypes with Lego cubes.

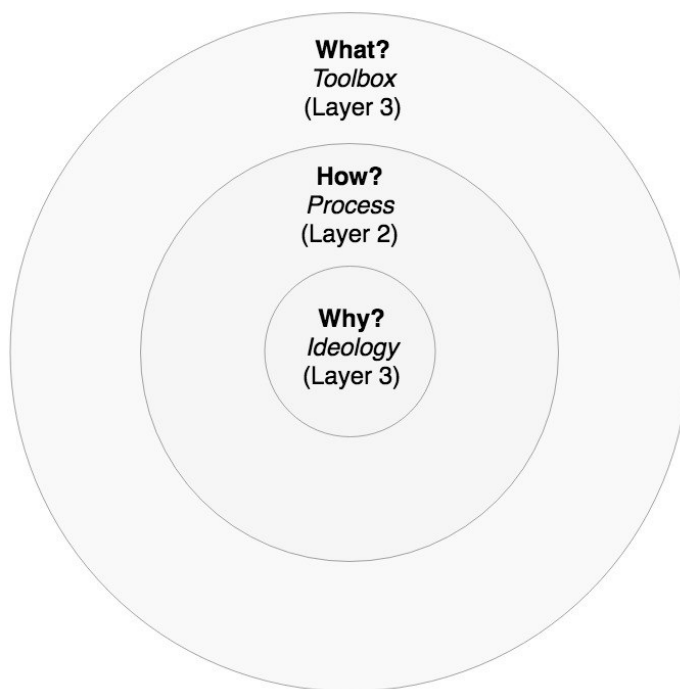


Figure 6. The core of Design Thinking. The figure illustrates the three layers of Design Thinking with layer 1 at the core of Design Thinking

²⁰ As described in his book “Start with Why” (2009), Sinek’s golden circle is originally used with branding in mind. The idea behind the three circles is that successful companies pay most attention to the question *why* and communicate from the inside of the circle to the outside.

The experts shared that they often experience companies that do not pay enough attention to *why* they are using DT. They think that they can apply DT as a methodology, go through the five-step-process and use its tools without aligning the organizational culture and structures with the DT ideology. When this happens, usually DT is less effective. This shows, that in fact it is more important to align the organizational culture with the DT ideology than using the tools exactly as they are described “in the books”. If the ideology is truly understood and integrated in the organization, it does not matter whether the process is tweaked a little bit or the DT tools are used in a slightly different way. In fact this may even be desirable. If the DTers truly work from a DT mindset and have completely internalized the principles and values that go along with it, they are able to tweak the DT methodology and tools to the best fit for each specific situation. On the other hand, if someone executes the DT process with precision and uses all tools exactly the way that they are proposed in DT books and courses without internalizing why they are working in this way, the outcomes are likely to still be inferior.

In conclusion this means that layer 1 is in fact the most important to the success of DT, but due to the fact that it is somewhat vague and intangible it often remains unnoticed. What people see and understand are layer 3 and (to some extent) layer 2. The more abstract the layer of DT is, the more vague it becomes and therefore the harder it is to grasp. That is why a lot of companies overlook the first layer of DT. In a way, DT is like an iceberg (see Figure 8). What most people see are the concrete aspects, such as the use of post-its and Lego blocks. Due to this organizations that want to implement DT are at risk to make the miscalculated guess that these concrete aspects are what DT is all about. The reason why many companies make this mistake is logical and the iceberg metaphor illustrates it well. Just like an iceberg, which hides the majority of its mass underneath the water, there is more to DT than meets the eye. While layer 3 is the most obvious and tangible manifestation of DT, layer 1 builds the important foundation for it. Companies that fail to see this often make the mistake to apply DT on a superficial basis, only implementing layers 1 and 2 and disregarding layer 3. They think they can implement the DT process and use DT tools without aligning the culture and structures of the organization. Oftentimes this is the reason why DT fails to achieve its purpose.

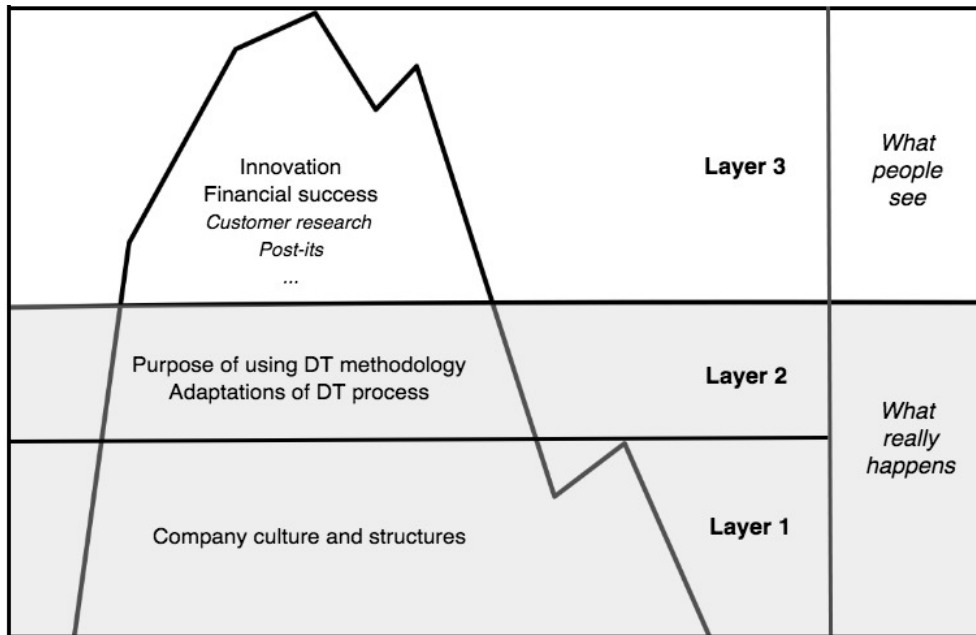


Figure 7. The iceberg metaphor applied to Design Thinking

3.2.2 Internal vs. External Implementation

One of the biggest choices an organization has to make when implementing DT is whether to implement DT internally or externally. Both options have benefits as well as drawbacks. The general verdict is that a combination of both forms of implementation is ideal. The majority of interviewees agree that a combination of internal and external application of DT is the most effective and desirable way to manage DT. This is in line with the conclusion that Abecassis-Moedas (2019) draws about the internal vs. external use of design in general. Abecassis-Moedas also argues that both applications have pros and cons and that generally a combination of both is believed to work best. In the case of DT, which type of implementation is better suited and more likely to lead to the expected results greatly depends on the specific situation and context of the organization. Based on the insights of the experts interviewed in the scope of this dissertation, an overview of arguments that speak for each option is provided below. Additionally the decision-making process is discussed.

3.2.2.1 Definition of Internal and External

The interviews show that the concept of *internal* and *external* is rather vague and might in fact be outdated. Nowadays the lines between a person who is *internal* and *external* are starting to become blurry in some circumstances and this is expected to increase in the future. Therefore it is necessary to explain what exactly is meant by *internal* and *external*. Thomas Zaiser explains that in his opinion *internal* and *external* is a question of expertise, not payroll. An *external* person is someone who is not familiar with the problem or project for which DT is applied. He further explains that especially in big companies, like the one he works for, a person that is employed by the same company can function as an *external* person in this way. Whether an individual is evaluated as *external* or *internal* should hence be based on a project level and not on whether the person is employed by the same company or not. Furthermore there seems to be a trend for agencies to work less in the sense of consultants and rather in the way of mentors. Youp Selen and Noralie Weusthuis explain that the agencies they work for are moving towards a longer involvement with the client and Rui Ferro criticizes that consultants start a lot of projects but do not finish them. Hence we can infer that there is frustration with the way consultants are now working and a wish/need for a change into a partnership where consultants do not just start projects but also finish them. Youp Selen describes that instead of a consultant being hired on the base

of a project, it may be more likely that in the future consultants are hired for a certain amount of hours and spend time working with the company on regular basis for several years. Such a model could be the answer to the desire expressed by Rui Ferro. Such a change also adds to the boundaries between *internal* and *external* becoming increasingly blurry. As Youp Selen explains:

We talk about external and internal only because we know it from the old system. So the words make it hard to answer. Because if I look at Surplus I think some of our colleagues are almost internal for them. So I think not as a consultant, I don't see a future as a consultant, but what I see more and more is that the old consultant now is not saying like "this is what I will deliver" but they make an agreement like "I will be in your company for 2 years, 5 hours a week". And that is the agreement and then we will see what is there, we evaluate a lot together and reflect and then -again that is DT also in this role - then every time we will adjust the approach. Instead of doing it the old way, in which you have a consultant coming in at 5 moments and doing these workshops. So in a way the external person becomes an internal person in the deal they make.

Youp Selen argues further that *internal* and *external* are concepts that belong to the old system. He introduces a notion that leads us to reflect on the above in a different light. He proposes that the notion of *internal* and *external* is based on the way that we see companies in the industrial revolution. He predicts that in the future the lines between *internal* and *external* will become increasingly blurry. It will be normal for people to work for several companies at the same time and companies will profit from the knowledge and skills someone learned outside their company.

I believe in the future – and I don't know how close we are to this moment – we will live in different communities. And this is not only related to work. If you think about all the social media: Facebook, Twitter, all these kinds of things. We are now connected to everybody and there is a need in society to make more quality connections. Meaning that we will have separate communities. So I am part of different communities in the future. In one community for example I share my interest for education and in another community I share my interest in Apple material. But these two communities have no connection, only me. So if you look at it in the same way, how you live your life and how you do your work, I think that it will be less normal in the future to only have one company where you work. But that is interesting for companies that their employees are not only working for them, but that they bring in knowledge from other communities that they are part of. And in a way this is connected to what I was talking about regarding the consultant being more inside the company. So these consultants they should develop more of a professional identity, like what is the typical thing that they do and that is why they are connected to different communities and that is why they are interesting for a company and no longer as an employee only giving their knowledge to one company, because it is limiting the input (Youp Selen).

3.2.2.2 Arguments that speak for Internal Use

Three main arguments that speak for the internal use of DT were identified. These are:

- 1) follow up on results is more likely
- 2) knowledge about company can be advantage and
- 3) cost efficiency.

Follow up on results is more likely

If an organization does not use DT internally there is a high risk that the DT sessions organized by the agency will be a positive transformative experience for the employees of the company that will leave them inspired and with many good ideas. But the danger is that as soon as they return into their companies, they immediately get stuck in their old habits again and the great ideas that were thought of during the DT sessions do not get implemented. António Abreu explains: “I don't think we have a lack of ideas, we have a lack of good execution.” Especially the consultants who were interviewed recognized this trend. Many times their clients did not end up following up on the results that the DT process left them with. As Martina Rando points out, it is therefore very important that the consulting agency makes sure the DT process leads to an actual outcome, a result, not just an idea. Nevertheless if a company does not work with DT internally and especially if the organizational culture and structures are very traditional and different from the DT approach, the implementation will be very hard. Therefore it adds a lot of value if an organization uses DT internally, since it makes the follow up on results a lot more likely.

Noralie Weusthuis and Youp Selen both explain that the companies they work for changed their ways of working because of the fact that their clients oftentimes did not really implement the ideas that stemmed from DT sessions. Even if the client company's employees were involved in the DT sessions, most of the time the results from these sessions ended up in “a drawer” and the people that had joined the sessions immediately fell back into their own routines and structures. The reason why this follow up was so hard, was because the employees of the client company did not have any knowledge about DT and the culture at the company was very different from the culture that DT is based on. The culture and company structures usually were quite conservative and traditional. People were occupied with deadlines and budgets and there was no room for creativity or innovation. This is in line with the studies by Rauth et al. (2015) and Lindberg et al. (2011)

introduced in chapter 2. These studies suggested that a strong focus on efficient operations and short-term profits inhibits the implementation of DT inside an organization.

In an attempt to increase the likelihood of the results of the DT process to be followed up on, the company Noralie Weusthuis works for restructured their services to offer more training programs for their client company's employees and the company. She explains that when she started working for the company, it was operating a lot like a think tank. Their agency developed creative ideas to solve the client's problem and handed them over to the client. Unfortunately oftentimes the ideas eventually ended up in "in a drawer" and the client "never looked at it again." This is why they realized that it was a lot more effective to train their clients to be able to come up with creative ideas themselves. Therefore they started to amend their service in order to function less like a consultancy agency and more like a training institution and mentor that infuses the DT ideology and DT skills into their client companies. Similarly the agency Youp Selen works for moved from a business model in which the agency is contracted for a relatively short time period or project to a more continuous model, in which the "consultant" works with the client company for a couple of hours every week for a longer duration. This way the external "consultant" becomes "internalized" in a way and can make sure that the results of DT sessions are followed up on.

Knowledge about company can be advantage

While knowledge about the company can sometimes be a downside, because it makes it hard to overcome bias, in other circumstances knowledge about the company can also be an advantage. As Alexander Stolz explains, when DT is implemented internally, it provides the advantage that the DTer knows how processes are handled within the organization. Kathleen Braun expands that if a DTer only works agile and does not work inside a standard department of the organization, they might have difficulties determining what a department really needs.

Cost efficiency

Last but not least a compelling argument for the internal implementation of DT is cost efficiency. Hiring a DT agency can be very pricey. Therefore implementing DT internally may be more cost efficient. In order to implement DT internally an organization will likely

need to provide training for their current employees to become DTers. The interviewees who received such training by their employers propose that the return on investment on such training courses is a lot higher than when hiring an agency. Alexander Stolz explains that hiring external DTers is extremely expensive. He reports that it is not unusual to pay 1200€-1500€ a day for an external DTer. Of course, therefore it is a lot more cost efficient if the DTers are employees of the company.

3.2.2.3 Arguments that speak for External Use

Four main arguments that speak for the external use of DT were identified. These are:

1) different perspective 2) less issues related to hierarchy 3) company can learn from agency and 4) external people are more easily perceived as experts.

Different Perspective

The main advantage of an outside entity being involved in DT is that people from outside the organization have a completely different perspective. This has two advantages. First of all, the perspective is objective and second of all it is inspiring. Having an objective perspective is very important when trying to improve a product or service that the company offers because the employees usually hold a lot of assumptions about the status quo. Including an external person that does not have expertise regarding the content of a project opens up space to ask “stupid questions”, as Rui Ferro puts it. Furthermore it is easier for an external person to enforce the importance of diligently going through the first two steps of the DT process in order to make sure the problem statement is not based on assumptions.

Alexander Stolz explains that while in his opinion it is worthwhile to have internal coaches he would not limit the implementation of DT to that, because of the fresh view and external perspective an external DTer brings to the table. António Abreu also stresses the importance of involving external people. He explains that besides their experience and know-how from other projects and companies and sectors they also bring another perspective. If people work on a project for a long time, they can become so embedded in their own culture or the problem that they are working on and know so much about, that they lose perspective. Therefore it helps them to have somebody from the outside, who is

not a client or a user and has less know-how but more perspective on what they are saying. If a company does not work with external partners it is likely that their habits and biases will be evident in the DT process. Kathleen Braun similarly expresses that while providing many benefits, a solely internal implementation has drawbacks. If the DTers are internal, it is easy for them to get caught up in their internal world and keep swimming in their own “soup”. They act and think within the boundaries of their own environment. External support can break these boundaries. Kathleen stresses that in order to do this, it suffices if the external people are merely taking on a support role. The main DTers on a project can still be internal, but it is advisable that these internal DTers are in some way supported by external partners in order to spark their creativity.

Less issues related to hierarchy

On top of the fact that an external partner adds a different perspective, it is also easier for an external person to overcome issues related hierarchical structures that may occur during the process. For example, if the CEO of a company and a junior employee takes part in a DT session together, it is challenging to detach the hierarchical dynamics from what is happening inside the session. It is easier for an external person to take on this challenge than for a DTer who also is a subordinate of the CEO. While in the perfect world, the organizational structures of a company that implements DT are flat and the organizational culture would be based on collaboration and the firm believe that the insight of a junior employee is just as valid as that of the CEO, most companies today still have a hierarchy of some kind. Therefore this is a valid points for organizations to consider when developing an implementation strategy right now.

Organization can learn from agency

If DT is implemented internally as well, a tandem facilitation system that pairs internal DTers with external DTers can provide a system for internal DTers to learn from the expertise of the external DTers. But even if DT is exclusively implemented externally, employees of the organizations can still learn from the work of the agency. The DT ideology is based on the value of collaboration. Therefore DTers strongly believe in the value of including all stakeholders in the DT process. This means that even if the DTers are external, the employees of an organization will take part in DT sessions. By being exposed to these sessions and applying DT skills during the sessions, employees will

naturally absorb some of the DT tools and may be able to employ them during some of their other projects. As Alexander Stolz explains: “even if you have only been a participant in one of these workshops²¹ you can take something for yourself and apply this in different scenarios (and) only in part as well.”

External people are perceived are more easily perceived as experts

Last but not least the fact that external people are perceived more easily as experts, can be an advantage of the external implementation of DT. Alexander Stolz suggests that external people may be perceived as more professional than internal people. He explains this notion through the German proverb "der Prophet gilt nichts im eigenen Land" (meaning: a prophet has no honor in his own country). Often it takes someone from the outside, to teach people something deep about themselves and their situation. That someone from their own ranks has perhaps already pointed out the same thing, does not matter. In this way, an idea that was previously submitted by an employee unsuccessfully can all of a sudden be praised as the right way to go once a consultant comes in proposes it.

²¹ In this quote the term “workshop” that Alexander Stolz uses is equivalent to the term “DT session” that was used to build this argument.

3.2.2.4 The decision-making process

There are several factors that an organization should consider before making the decision to implement DT internally, externally or as a combination of both. In this subchapter some of the factors that can help an organization to make this decision in an informed way are presented and discussed. Figure 8 proposes a flowchart that structures the decision-making process of whether to implement DT internally or externally. A good point for companies to start evaluating how they can best implement DT is by reflecting on the purpose for which DT is used. The expert interviews show that oftentimes companies try to solve problems with DT that cannot be solved with it. Therefore first of all an organization should analyze whether DT is a suitable solution for what they want to achieve. If the evaluation shows that DT is a suitable approach, the organization subsequently can evaluate whether to use DT internally or externally. In order to do this, they should evaluate whether their organizational culture and structures are already aligned with the DT ideology. If this is the case, the organization can implement DT internally. If it is possible for an organization to implement DT internally, it should always do so, because the internal implementation provides a variety of benefits such as cost-efficiency and an increased likelihood of the results of the DT process being followed up afterwards. Nevertheless organizations should not disregard the external implementation either. Even if the organization is in a position to implement DT internally, the external implementation bears a few unique benefits, such as the objectivity an external person can bring to the project. Therefore DT should never be implemented exclusively internally. If the organization is in a position to implement DT internally, it should implement DT internally as well as externally. If the organizational culture and structures are not yet aligned with the DT ideology the organization needs to decide whether they are willing to adapt them. If changes to the organizational culture and structures are denied, the organization is better off to implement DT externally. In contrast, if the organization is open to adapting its culture and structures, after doing so it is also eligible to implement DT in a mix of internal and external implementation.

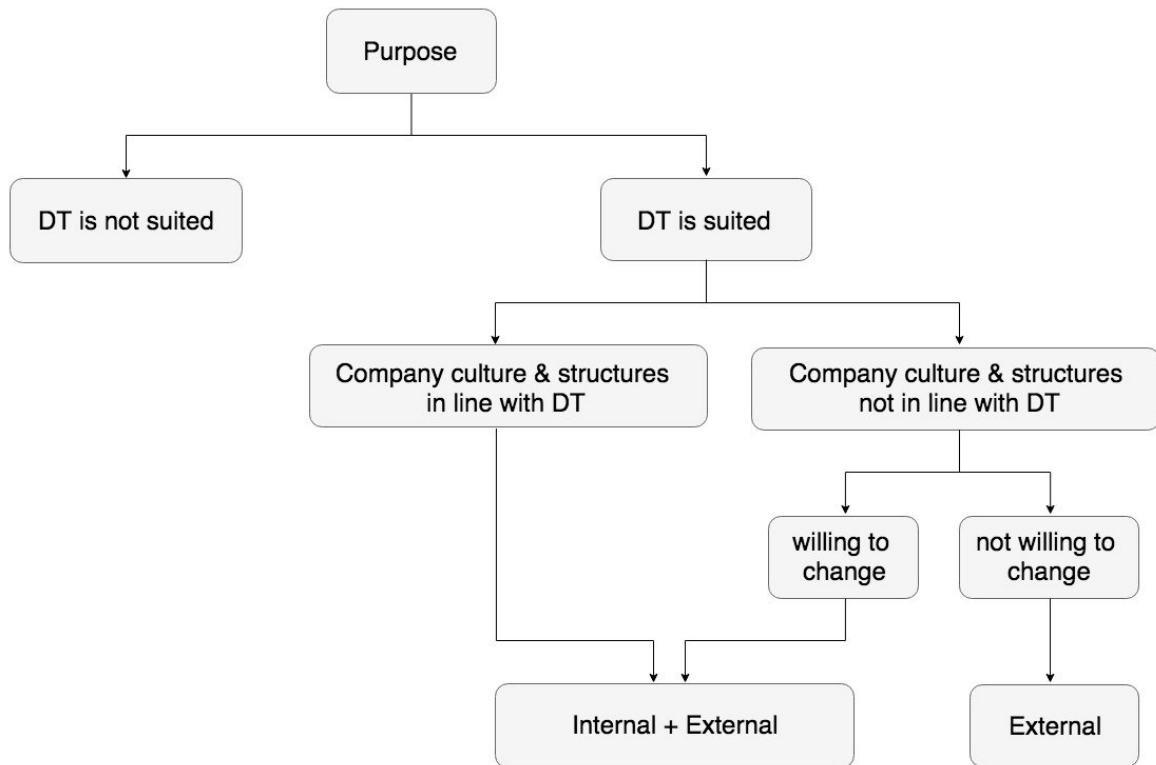


Figure 8. Flowchart of decision-making process of internal vs. external application of Design Thinking

Purpose of using Design Thinking

The literature review shows that the main purpose of using the DT is solving wicked problems (see chapter 2). The information gathered from the experts is in line with this, but there are a few additional situations in which an organization can benefit from the application of DT.

Increase focus on customer

All of the experts expressed that they saw the biggest value of DT in the fact that it puts such a high focus on the end-user. Designing for someone else is a challenge and it is easy to let personal opinions and preferences influence the decision-making process even when designing for someone else. DT forces the design team to constantly go back to the customer's point of view and base all decisions directly on the feedback and insights gathered from the target group.

Innovation

In line with the findings of the literature review many of the experts saw great potential of DT in its application to innovation. In order to innovate one needs to be creative and in order to be creative one needs to feel comfortable with taking risks. By aligning organizational structures and culture with the DT ideology, innovation capabilities in general are increased within the company. Furthermore the design process is a great methodology for innovating new processes, products and services. The interviews also reveal a few alternative tools and techniques to innovation that can be applied instead of the DT process or implemented as methods during parts of it. Youp Selen talks about the concept of an *in-company start-up*. And Gabriel Batista explains what *open innovation* projects are and how these often help his company's clients to be innovative.

An in-company start-up combines the disruptive potential of a start-up with the experience and knowledge of an established organization. As Youp Selen explains, that the whole idea of an in-company start-up is to hire a group of young people in order to start competing with the existing products or services the company is offering. Companies like Philips for example use this innovation method. In the case of Philips for example the company has a department that makes lighting solutions. Many of the people that work in this department have been developing lighting solutions for the last 20 years and have acquired a lot of expertise. By introducing an in-company start-up a glass office is put into the middle of the work floor. In this glass office 4-5 young people start to create a product that will compete with the existing products the department offers. They are not restricted by any rules and have the possibility to access all the knowledge of the people that work on the floor. In this way, the knowledge that has been built up over 20 years is propelled by young experimental energy. A danger of implementing this innovation method is that the employees who have worked for the company for 20 years are mostly not happy about the situation, because there is someone internal competing with the work that they have been developing for 20 years. Nevertheless once these employees see the success of this way of working and are involved in developing new ideas further, over time they are likely to realize that this way of innovating is beneficial for the organization and hence for them as individuals as well.

A different interesting opportunity to harness young experimental energy is to work with open innovation. As Gabriel Batista explains, open innovation is a form of innovating that makes use of resources outside the organization. For example, if Airbus sets out to create a new airplane, they can do so within the boundaries of their own R&D center or they can create an open innovation project, in which start-ups from all over the world sign up to create the best airplane possible and in the end Airbus collaborates or invests in the start-up that came up with the best solution. This form of innovation has actually become quite popular in recent years. Batista reports on several open innovation projects that the organization he works is currently involved in, for example an innovation project with EDP (Energias de Portugal) about new ways of producing and distributing energy. Start-ups from all over the world are involved in this project in order to innovate new solutions for the energy sector.

Improve existing value proposition

To the majority of experts, the ability of using DT in order to reflect on day-to-day activities and improve the existing processes, products and services was even more important than innovation. Oftentimes it is not necessary to create a completely new solution in order to reach a desired outcome. A few tweaks to the existing solution may be sufficient to reach the desired outcome. Furthermore an organization should make sure that they maintain the standard of quality of the products and services they already offer, before creating new ones. António Abreu denoted a trend of clients wanting to work with very innovative methods such as artificial intelligence or crypto currency to attract customers when in fact the reason why consumers did not choose their brand is that the core service was slacking. In other words: better than solving problems is not having problems in the first place. Applying DT in order to reflect on what the organization currently does and how it does what it does can anticipate potential problems before they occur. Since it is especially hard to break out of one's habits and biases when a project is related to the day-to-day activities that are part of a person's routine, for every day problems it is extremely important to seek external partners in order to gain an objective perspective on the project. If the purpose of using DT nevertheless is innovation, this might not be such a big issue. In general it still counts: a combination of both is most effective. Antonio Abreu explains:

I think in the most present issues it is more important (in both cases, but more so here) to have an outside perspective. Because that is where the bias is, because you are used

to these problems. Maybe you don't even know what problems there are. The CEO doesn't go to the bank. So there are problems that they don't even see. So in those issues I think it is where it is better to have an outside perspective. Regarding innovation I think it is also good but it is also okay if they do it themselves. It is so far away, that the objective perspective is less important.

Align stakeholder's interests

Due to its collaborative nature, DT is also a great tool in order to align interests and gain support for new ways of working by all stakeholders. Since all stakeholders are involved in the DT process and hence co-create new solutions, they immediately are onboard with them, since they share the ownership of the new idea. Previously a top level manager might have decided to make a significant change to the company, for example that everyone from then on will work from 10-18h instead of from 9-17h. While the reasons for this change may be plausible, it is likely that a lot of employees and other stakeholders who are affected by this change do not immediately embrace this idea. If representatives of each group of stakeholders were involved in the process of making this decision on the other hand, it is more likely that support and understanding of such a change will be spread through all parts of the organization organically.

Exploring the problem space

Another extremely important benefit and hence purpose of DT that was highlighted by the experts was the way the method explores the problem space thoroughly before ideating in order to find a solution. The experts give many examples and explain that without DT, oftentimes the problem definition is based on assumptions and the wrong problem is attempted to solve.

Organizational Culture and Structures

One of the main factors that influences the decision whether to implement DT internally are the organizational culture and structures. The ideal organizational culture is based on the same values as the DT ideology and embraces human-centeredness, creativity, collaboration and experimentation. If the culture of an organization is not already based on these values the organization needs to align their organizational culture with the DT ideology in order to properly be able to implement DT internally. Tiago Nunes explains that organizations should ask themselves:

Are we an organization that already has strong collaboration between people? Are we already an organization that by nature experiments a lot and gives freedom to people to fail and does not punish them? Are we an organization that already takes into account the physical needs to support these kind of approaches and methodologies

This may explain why start-ups are more likely use DT internally than established organizations (as suggested by Lindberg et al., 2011). Gabriel Batista suggests that most start-ups organically are the kind of organizations that collaborate strongly, experiment by nature, give a lot of freedom to their employees, embrace risk-taking and work in flexible physical spaces that are well suited for methodologies like DT.

The ideal organizational structures to facilitate the internal implementation of DT are centered on low hierarchies and self-steering, competence based teams. As Youp Selen explains, implementing DT starts with changing the idea of striving to achieve fixed results and having a clear plan how to get there to embracing the ambiguity of experimenting. This entails embarking on the journey of a DT process without knowing where the process will lead and also to trust that teams are competent to steer themselves. Team-based working and self-steering teams are based on the same basic principle to give power to the people who have the knowledge. People are the biggest asset of an organization. Therefore the organization should focus on making the people that work for it smarter and giving them the power to make decisions themselves. Instead of focusing on product results, the organization should focus on making their teams smarter and harnessing their employees potential through knowledge management. Furthermore, as Gabriel Batista explains, especially in multidisciplinary teams that are characteristic for DT, it makes most sense for the leadership of a team to be competency-based. In competency-based project teams, is the person that has the most knowledge about the project takes on the role of the team leader. This results in the fact that different people take on a leading role in different projects, according to their expertise.

Start-ups naturally have less organizational structures and therefore these organizations are more flexible in changing their organizational structures. For established organizations changing organizational structures is a bigger challenge. As Tiago Nunes points out, big corporations are really good at adopting new processes. This can become a problem in the context of DT, because while DT is a process (layer 2), to Tiago Nunes and most of the other interviewees DT is more than a process or a method (layer 1). It is a mindset.

Established organizations run a higher risk of forgetting about the fact that DT is a mindset and that the organizational culture and structures need to be compatible with this mindset for DT to work. This does not mean that established organizations should not implement DT internally, but they have to be aware of the challenges that such an implementation brings along and make an informed and conscious decision whether they want to and are prepared to overcome these challenges. As Tiago Nunes explains further, organizations should ask themselves questions like “are we already an organization that by nature experiments a lot and gives freedom to people to fail and doesn't punish them?” Since DT is first and foremost an ideology, if a company’s culture is based on different values than the DT mindset, it is unlikely that the company will be able to implement DT successfully internally. Therefore companies with organizational cultures that are not aligned with the DT ideology are advised to implement DT externally. Furthermore, traditional organizational structures may inhibit the internal use of DT. Therefore companies that have very traditional organizational structures are likely to face challenges when trying to implement DT internally. The ideal organizational structure has low hierarchies and offers flexibility to employees regarding their work hours and from where they work.

The decision of how to implement DT is additionally influenced by vary practical factors. For example by the budget a company has. Hiring a DT agency as well as arranging DT training for current employees can be very expensive. Therefore these options in some cases may be reserved for big companies. But there are ways for smaller companies with lower budgets to overcome these challenges. If they want to work with an external agency they can opt to work with a small agency or a start-up, since these are usually cheaper. And if they want to implement DT internally they might opt for hiring a promising DT student instead of paying for a training course for an employee.

3.2.3 Internal Implementation of Design Thinking

Once an organization has evaluated that their context allows for them to implement DT internally, the next challenge is to understand how to implement DT internally. If the organizational culture and structures are not already in line with the DT ideology, this means first of all adapting the organizational culture and structures. Furthermore this includes selecting and training DTers, leading and managing the DTers, creating a DT space and understanding at which moments DT should be used.

3.2.3.1 Adapting Organizational Culture and Structures

If the organization went through the decision-making process as explained in 3.2.2.4 and followed the flowchart displayed in Figure 8 to decide whether internal implementation is advisable for them, the decision-makers based their decision partly on whether the organizational culture and structures of their organization are aligned with DT. If the organizational culture and structures are not yet aligned with DT, but the organization is willing to make changes to them in order to infuse the DT ideology to the organization, the first step of implementing DT internally is adapting the organizational culture and structures. This is in line with the findings from the review of the previous literature that determined organizational culture as one of the main challenges regarding the implementation of DT in organizations (Carlgren et al., 2016).

Tiago Nunes points out that it is crucial to realize that making changes to the organizational culture and structures takes time. He tells a success story of an organization he worked with that tackled the challenge in an effective way. In 2012/2013 Nunes was involved in a project with SAP in Brazil. The organization had decided to implement DT internally and adapt the organizational culture and structures accordingly. In order to do this they followed a “more traditional change management process”, in which the change movement starts with a group of people, who become change agents and will then start acting as influencers within the company. What Nunes liked most about this approach is that SAP realized that this process would take time. They had already started to implement this change two to three years prior to him getting involved in the project and invested a lot to not just implement DT as a methodology and set of tools, but also to infuse the DT ideology to the company.

Kathleen Braun emphasizes the importance of properly facilitating the change process of aligning organizational culture and structures with DT and also suggests that in some cases it may be necessary to let employees go, if they are unable to find their place in the new system. In Braun's opinion it is critical that the internal implementation of DT is facilitated with the managers. She suggests that first the big departments and business leaders should adopt the DT (on all three layers) in order to lead by example. Furthermore it is necessary to facilitate the introduction of DT with the line managers. Since changes in the organizational culture often mean that hierarchies are broken down, managers need to be assured that DT is not a threat but an opportunity. Braun herself is a manager and sees the benefit of working in an agile environment. She says that agile people are more creative and open-minded. And perhaps more importantly, they like to work and think along. Therefore managers should not see moving from a traditional hierarchy to agile structures with self-steering teams as "loosing." In contrast they should see it as "getting better." If the organization has more agile people it can develop better products and services for their customer and eventually the company will grow instead of declining like many traditionally structured companies, including the one Braun works for, are at the moment.

Similarly Youp Selen tells about his involvement in re-structuring the organizational structures at Breda University to work with self-steering teams. He shares that based on his experience in this project, the biggest challenge of facilitating such changes, is that employees "are scared that things are changing and that they won't manage to be (a) part of it." Selen concludes that this means the team that is facilitating this change needs to slow down, listen and investigate how far people are and what they can deal with. Based on this the next step of introducing the new organizational culture can be taken.

These notions are in line with the challenges of implementing DT defined during the literature review. Lindberg et al. (2011) identified change management issues like these as one of the biggest challenges regarding the implementation of DT in organizations and Björklund et al. (2018) suggested that a lack of conviction among the middle management of an organization oftentimes is the reason why the implementation of DT in an organization is not successful.

Along with changing the organizational structures from a more traditional hierarchy to self-steering and competency-based teams, organizations also need to change their control mechanisms. For example the way employees are evaluated and provided with feedback. In a traditionally structured organization, usually the manager evaluates the employees that work underneath him or her and provides them with feedback. If the employees work in self-steering, competency-based teams though it is hard for a manager to evaluate them, since he was not supervising their work. Kathleen Braun suggests that instead of reviewing people once a year (like the company she works for is currently doing it), organizations should implement a small review after each project. Team members of self-steering teams could give each other feedback based on the work they did together during a project. She also introduces the concept of 360-degree feedback and evaluation. 360-degree feedback is a feedback process in which the superior as well as colleagues and sometimes even stakeholders and customers evaluate an employee anonymously. The employee is subsequently able to respond to the feedback in the form of a self-assessment.

According to Heathfield (2019) the use of 360-degree feedback is a promising method for providing employees with performance feedback. But there are a few things that organizations that are thinking about employing 360-degree feedback need to be aware of: First of all 360-degree feedback can only serve as part of an overall performance measurement system. Secondly 360-degree feedback can cause organizational issues, if implemented in hasty or incomplete fashion. It can also fail to add value if not effectively woven into existing performance plans. Furthermore 360-degree feedback prevents recipients from getting more information about their feedback because the process is anonymous and if rivalries exist between employees this method of feedback may be tainted by personal agendas. Last but not least 360-degree feedback can require a large degree of data collection and processing in some cases. While these are challenges an organization should be aware of when considering the implementation of 360-degree feedback, the method has a lot of benefits over traditional feedback tools. It provides feedback to employees from a variety of sources, develops and strengthens teamwork and accountability, uncovers procedural issues that can hinder employee growth, reveals specific career development areas, reduces rater bias and discrimination tendencies, offers constructive feedback to improve employee outputs and supplies insight on training needs.

Therefore 360-degree feedback may be an interesting approach for organizations that change their organizational structures to self-steering teams in order to overcome issues related to employee evaluation and feedback.

Regarding other the overall performance measurement system, Gabriel Batista explains that many organizations make the mistake to micro-manage their employees when this is not necessary. As Tiago Nunes further explains, in order for DT to work, DTers need to feel comfortable to leave their desk in order to talk to their client for half a day without being questioned by their superiors. What an organization is really concerned with is the result of a project and that the overall results from the DT approach lead to a competitive advantage and financial success. In order to track this, it is not necessary to prescribe how employees reach their goal, it suffices to assess whether they achieved their targets. The organization that Gabriel Nunes works for provides a good example of how an organization can assess their employees' performance without micro-managing them. The organization, *beta-i*, is structured based on self-steering competency-based teams and gives a lot of freedom to their employees. The organizational culture is based on several values, one of which is responsibility. This entails the belief that everybody is responsible for their own actions and their own work. In line with this, every employee has deadlines and is responsible for making these deadlines by delivering quality work. Each employee has individual targets for profit generation and other metrics. This way the organization can track and assess the performance of employees, without the necessity of managers micro-managing subordinates.

3.2.3.2 The Design Thinkers

DT is executed by people and cannot exist independent from people. The people who lead the DT process are crucial to the success of DT. Therefore an important aspect of the *management of DT* is the management of the people who actually work with DT. In order for organizations to make informed decisions regarding the selection, training and management of Design Thinkers in this section a few key points are discussed.

The expert interviews show that potential design thinkers (DTers) do not need to have a specific educational or professional background. People from any background can take part in a DT training course and learn the theoretical knowledge that is needed to become an effective DTer. There are a few general characteristics a DTer should have. This includes: a high emotional intelligence and above average communication skills, curiosity and creative confidence. While some of these characteristics can also be learned, it is a lot easier if a potential DTer has these traits naturally.

Definition of “Design Thinker”

In order to discuss which kind of people should take on the role of Design Thinkers in an organization it is important to first of all define what exactly is meant by the term Design Thinker (DTer). If DT is a mindset and everyone in the organization has adopted this mindset, to a certain extent every employee of the company can be seen as a DTer. Brown (2009) proposes in one of the earliest talks about DT, that everyone should be a DTer. This does not mean that everybody should take on the task of facilitating DT sessions, but everyone in the company should adopt the DT mindset and be aligned with the DT values and principles. If DT is seen as process, one could argue that all people who take part in DT sessions that are part of the DT process are DTers. Since DT is a collaborative approach that counts on the involvement of all stakeholders, this would again come down to almost everyone in the company. Therefore, when discussing the *management of DT* it seems to make most sense to define those people who lead the DT process and facilitate DT sessions as DTers. The following subchapters discuss relevant aspects to the management of DTers according to this definition.

Selection

In order to guide the selection process of DTERS and provide a base for informed decision-making regarding who should become a DTER, a profile of a DTER was created based on the expert interviews (see below). The profile is subsequently explained and discussed in relation to the existing literature.



Profile of the Perfect Potential Design Thinker

Hierarchical Position: Does not matter

Educational Background: Does not matter

Values: Completely aligned with DT ideology

Soft Skills: High emotional intelligence, good communication skills, curiosity, open-mindedness, creative confidence.

Hierarchical position

The interviewees mentioned that ideally people from all levels of management should be DTERS. Just like the educational or professional background does not eliminate someone from becoming a promising DTER, the level of management at which they work also does not play a role. While an arrangement in the 20/80 solution becomes increasingly difficult the higher the position of an employee is a company should strive to also have managers who are DTERS.

Educational background

Basically all interviewees agreed that DT is not exclusive to designers in the traditional sense. People from any background can become DTERS. In fact the interviewees expressed that oftentimes it can even be helpful and stimulating if a DTER has a different background. This is in line with what Tim Brown (2009), CEO of IDEO, says in one of his early TED Talks about DT (2009). He proposes that design may have its greatest impact when it is taken out of the hands of designers and put into the hands of everyone. Therefore everyone in the company, independent of their background can become a DTER and actually it is beneficial if people with backgrounds from a diverse array of disciplines become DTERS. At Deutsche Telekom the grand majority of DTERS do not have a traditional design

background. Their formal education can be from any field, ranging from Finance to Human Resources or Marketing. DT is based on the values of co-creation and interdisciplinary teams. This seems to be in line with the values of co-creation and interdisciplinary team that are embedded in the DT philosophy.

Soft skills

More important than a training course in DT are the soft skills that a potential DTer should have. DTers should have above average interpersonal skills, emotional intelligence and communicational skills. Furthermore it is helpful if they are curious by nature, open-minded and creatively confident. While a lot of these soft skills can be learned and trained as well it is easier if the DTer already has a disposition towards them. As Tiago Nunes explains, DTers should have a lot of human and social skills. They need to have the ability to talk and interact with others and create empathy. Additionally they need to be curious in order to question the status and open minded enough to accept if others are questioning their opinions and ways of working. Moreover, DTers should lead by example and therefore need to have creative confidence. If a DTer wants the participants of their ideation session to come up with “crazy ideas”, they need to be the “fire starter” and have to be the first ones to do it.

Training

It is important that DTers receive appropriate training that enables them to lead DT projects and facilitate DT sessions successfully. The most promising way for companies to manage the training of existing employees, as DTers seems to be a combination of an intensive offline DT course followed by on the job learning through tandem facilitation with more experienced DTers. This section stresses and explains a few aspects organizations that plan to train their own employees to become DTers should be aware of. All interviewees shared the opinion that proper DT training can never take place online. Hence potential DTers should always take part in an offline training course. As Tiago Nunes explains, the many online courses that are available on the Internet can function as a starting point, to get people interested in DT and inspire them to want to learn more and do a face-to-face course, but an online course by itself can never be enough to train a DTer appropriately. In order to adopt the DT mindset many potential DTers need to have a

transformative experience, which is almost impossible to facilitate online. Furthermore, DT is learned through practice and even after an intensive offline training course potential DTers usually still lack the confidence to lead DT projects by themselves. Deutsche Telekom employs tandem facilitation as a system to bridge the gap between finishing the training course and becoming a confident and highly skilled DTer. At Deutsche Telekom DTers always work in a team of two to lead and facilitate DT projects. By pairing more experienced DTers with less experienced DTers the less experienced DTers can still learn on the job after completing the formal DT course and build their confidence and toolset as a DTer.

At Deutsche Telekom employees have the opportunity to follow a training course in DT in order to become a DTer and dedicate 20% of their working time to DT. The training course is divided in several block seminars and lasts around 15 days in total. The interviewees evaluated this training course as sufficient to lead DT projects and sessions afterwards. They did mention the importance of starting to work as a DTer immediately after finishing the training course, due to the fact that practical training is indispensable in order to properly develop oneself as a DTer.

Potential Pitfalls of DT Training

It can be problematic if too much time passes between the training course and the actual start of working as a DTer. Several interviewees stressed the importance of immediately starting to work as a DTer after finishing the training course in order to compliment the intensive training course with practical experiences and learning moments. Since this can pose conflicts with the responsibilities an employee has in their current function, organizations should make sure to plan ahead and keep this in mind when they divide the workload. Furthermore Noralie Weusthuis points out that DTers need to practice their craft in order to become confident practitioners.

Strategy to avoid Pitfalls

As soon as someone is scheduled to receive DT training, their workload for after the training course has finished should immediately decreased in the planning in order to guarantee that they are able to compliment the training course with necessary practical

experience. Additionally Thomas Zaiser explains that it is crucial that DTERS who were trained also get enough projects in order to keep the momentum going afterwards and practice more in order to not forget what they learned.

Everyday Management

In order to reflect on the best way to manage the aspect of DTERS, a few key points that an organization should keep in mind are concluded below.

Fulltime vs. Part-time-solution

Working as a DTER 100% of the work time has the benefit that the DTER will become a true DT expert, who can easily keep up with all new trends and methods that evolve in the DT community. Nevertheless a part-time-solution, in which an employee dedicates for example 30% of their work time to being a DTER and 70% of their work time in the function they had before, also has important benefits. When working creatively, routine should always be avoided and such a solution avoids that DT becomes a routine. Additionally the interviews show that only dedicating a limited amount of the work time to DT increases the motivation and work satisfaction among DTERS.

At Deutsche Telekom, most DTERS do not work with DT 100% of their time. The company uses a 20%-80%-solution in which DTERS work in their traditional job 80% of the time and as a DTER 20% of the time. The interviewees liked this arrangement a lot. Due to the fact that they did not work with DT 100% of their time, they were able to avoid a routine. When working creatively, it should always be avoided to fall into a routine. Therefore this was evaluated as a very positive aspect. Furthermore their motivation to work on DT projects was a lot higher because of this arrangement. Since they only attributed a small amount of their work time to DT every time they were able to work with DT they were very excited and motivated. Since employee satisfaction and motivation has a direct influence on the quality of their work this is an interesting benefit to notice for organizations that want to train their own employees from any background as DTERS.

Potential Pitfalls of 20%-80% Solution

The 20%-80% solution is a great concept in theory. Nevertheless the interviewees pointed out that oftentimes their main job is too demanding and prevents them from actually dedicating 20% of their time to DT. Additionally it may be hard to keep up with developments in the DT scene, due to the limited amount of time DTers can dedicate to this aspect of their job.

Strategy to avoid Pitfalls

Kathleen Braun suggests that a 30%-70% or 40%-60% solution might work better. Either way, companies who do choose to implement this very promising system should make it a priority to implement control methods that verify that the system works as it is supposed to.

Overall DT Lead

There should always be a designated role for a leader among the group of DTers. The leader can take on responsibilities of facilitating the process of selection and training of DTers, engage and motivate the DTers and nurture the DT community. As Martina Rando explains, it is important that people are aligned and “fight the same fight”:

I think the key is that people are engaged. So you need a good leader who is taking part of the process. Since DT is very abstract, even though there are pragmatic things to deliver, you otherwise lose the contact with what you are doing. So the team really has to be engaged and think that they are fighting for the same fight. To me that is the key, if everybody is on board and engaged and aligned with the purpose and then it will work. (Martina Rando)

Some interviewees even proposed the function of a Chief Design Office, who infuses design from the top of the company. This person could also take on the function of DT Lead.

3.2.3.3 Leadership for Design Thinking

In 2017 IDEO CEO Tim Brown wrote a blog post on “How to Lead a Design-Driven Organization”.²² In this blog post he proposes that autocratic leadership is outdated and belongs to the era when companies were run like machines with predictable outcomes. Leaders of design driven organizations should play four different roles: the Explorer, the

²² The blog post was published on designthinking.ideo.com, which was the home of IDEO's Design Thinking blog, written by the company's CEO Tim Brown, from 2008-2018.

Gardener, the Player/Coach and the Storyteller. The metaphor of the Explorer stands for the ability to see the bigger picture. Since the leader is a step away from the day-to-day activities they have the possibility to zoom out and consider the bigger picture of their division. It is easy for organizations to get caught up in details and lose sight of the bigger picture. The exploratory leader sees beyond the immediate work of their division and asks the right questions that lead to opportunities for the future. The metaphor of the Gardener stands for the ability to cultivate a culture that is aligned with the DT ideology. In order to create conditions in which DT can prosper inside the organization a certain culture and structures need to be cultivated. A leader should ensure that the setting in the organization is according to the DT mindset. This entails ensuring that there is a tolerance for risk-taking, organizing interventions that facilitate the sharing between teams and making sure that the physical space and resources are inspiring and allow people to think with their hands and prototype. The metaphor of the Player/Coach stands for the ability to lead while being part of the team. Effective leaders should be close to the teams they lead and involved in their work in order to be able to help immediately when help is needed and make decision-making loops shorter. If the leader is involved in the projects, they understand better what needs to be done and which resources are needed in order to get it done. Additionally working alongside the team creates empathy, respect and enthusiasm because the leader truly appreciates the challenges the team faces and the hard work it delivers. Last but not least the metaphor of the Storyteller stands for the ability to enthuse everyone inside the organization. Leaders of design driven organizations need to be able to connect to employees at all levels in the organization. They need to have a truly human-centered mindset to empathize with their employees, understand their pain points and speak their language in order to motivate and enthuse them. A combination of these four roles results in the modern entrepreneur and design-driven organizations need this kind of leadership in order to innovate successfully. Their leaders need to be visionaries to imagine where the journey may take the company and provide their teams with everything they need in order to get there together.

3.2.3.4 The Design Thinking Space

Part of the DT process is naturally performed outside the premises of the organization. For example, the first step of the process (empathize) is naturally done in the field in order to observe the end user in their natural setting. Additionally due to the fact that routine kills creativity in the ideal situation, DT sessions would not always take place in the same space. In order to spark creativity, DT sessions could be held anywhere from Disneyland, to the park or an old kindergarten. Nevertheless an organization that implements DT internally must provide a physical space for DT sessions to be conducted within the premises of the office buildings. Regarding these DT spaces, there are some general features the space should provide. The space should be flexible and easily adaptable to the different needs of the DT process. This entails that the room is big enough to offer space to walk around and to subdivide a bigger group into smaller groups. There should also be an area to come together as a big group, a place to give presentations and some space to relax.

Tiago Nunes explains that the importance given to the physical space can be seen as a central principal of DT. The DT space is not just an aesthetic space. DTers believe that the space is a reflection of what they and their collaborators aspire to be. It is a reflection of the creativity that is used during the DT process and of the ideas that stem from it. Therefore everything in the DT space should be flexible. The furniture should have wheels, so that it can be moved in order to reconfigure the space as needed. The DT space should have the potential to create different project areas. Each team should have their own project space with desks in order to do computer work, but also with some empty space in order to come together and exchange ideas. In conclusion, rather than the location it is more important what the space brings and the capabilities it provides. Tiago Nunes elaborates:

the fact that DTers stick post-its to the wall is not just because they are colorful and pretty and then you have a nice and colorful wall, but it is also because you develop this physical memory in terms of the information. And it is easy to manipulate information. It is easy to relate information, it is even easier to aggregate and to have this like zoom in, zoom out perspective and talk flow.

In line with this, Thomas Zaiser explains that in his opinion the perfect DT space is a big room with almost nothing in it and a lot of walls to draw on, to paint, to wipe away again and be creative with your hands. Furthermore the DT space would also provide a way of

distracting the mind from the project in order to receive fresh creative energy. One way to provide this could be a foosball table.

3.2.3.5 The right Moment to use Design Thinking

The answer to when DT should be used depends greatly on the layer of DT that is referred to. In its form as an ideology DT should be omnipresent, in the form of a methodology DT should only be used when a project requires it and DT tools should be used whenever they can add value.

Layer 1: the ideology

When talking about DT as an ideology, there is no specific moment in which DT is used. DT should be an integral part of the organizational culture and evident in everything the organization does.

Layer 2: the methodology

The DT methodology on the other hand is used only in specific circumstances. Even if an organization implements DT internally this does not mean that they need to use DT all the time. DT will only be applied for purposes that are compatible with the methodology such as innovation, improvement of existing products and services and exploring the problem space.

Layer 3: the toolbox

Since ideally the DT ideology is completely infused into the organization, the use of DT tools is not limited to the DT process itself. Every time a tool may add value, even if no complete DT process is gone through, the DT toolbox can be helpful. Therefore it should be used anytime it adds value.

The expert interviews show that an important advantage of organizations that use DT well is that they are able to anticipate problems before they occur and identify opportunities for improvement constantly. In order to facilitate these capabilities organizations can implement structured moments during which employees are given the opportunity to dedicate their time to identify threats and opportunities. The method of observation for

example could be used in order to monitor the quality of the products and services of the organization. For instance, managers of a bank should standardly walk into the bank a few times a year to experience first hand what their customers experience when they visit the bank. If they play customer for a day and go through procedures like opening a bank account themselves, managers can easily identify weaknesses and strengths and monitor the quality of their core service. A way to facilitate this in a structured way might be to schedule one day a year for each employee to walk around the company's offices, stores or factories in order to observe what is happening, ask questions and this way identify opportunities for improvement. Once an opportunity for improvement is detected, if necessary a full DT process or other methodology can then be initiated in order to find a solution.

3.2.4 External Implementation of Design Thinking

When outsourcing DT to an external agency, organizational culture weighs less into the success of DT. Nevertheless companies, whose culture is very different from the DT ideology still face a few challenges when applying DT externally. There are three main things that organizations that just implement DT externally should keep in mind: 1) the agency needs to be given autonomy 2) the organization still needs to be involved in the DT process and 3) the organization has to pay special attention to reinforce that they follow up on the results of DT sessions.

The agency needs to be given autonomy

One of the challenges an organization that has not adopted the DT culture typically faces is to trust the DT agency they hired. As DT consultant Tiago Nunes explains that from a two-partner-relation between the organization and the DT agency, the best way to manage DT is for the organization to “trust” the agency. He explains that sometimes that the fact that DT operates in an unstructured way often elicits discomfort on the side of the client. Due to the fact that it is not clear where the DT process will lead the project, the client then tries to bring a lot of structure to something that should be left unstructured. Nunes refers to the motto of a HR-Manager that worked for Google and once said something along the lines of “if we hire people because they are talented we should allow them to use their talent”. This motto captures the essence of the frustration many DT agencies experience. If an organization hires a DT agency because they think the agency can add value to their operations, they should let the agency work without interfering. Usually organizations that solely implements DT externally hires the agency because of the fact that they work in a different way and they perceive value in doing things in a different way. Therefore they should also allow the agency to do things according to their way.

The organization still needs to be involved

Since one of the central values that DT is based on is collaboration, even if DT is implemented externally the employees of the organization still need to be involved in the process. Several interviewees stressed the importance of including all stakeholders during the DT process. As the experts explain, DT draws on the knowledge and insights of all stakeholders in order to co-create solutions. Organizations need to be aware of this and

willing to cooperate with the DT agency in order to bring all stakeholders together to co-create solutions under the guidance of the agency. If the organization is not willing to do this, then DT might not be the right methodology for the organization. Without the involvement of the organization, even the external implementation of DT will be nearly impossible. Therefore organizations that are not interested in participating in the DT process in any way might be well advised to consider other alternatives altogether.

Special care has to be taken to reinforce follow-up on results of DT sessions

Additionally, as explained above²³ one of the challenges that go along with the external implementation of DT is the fact that the implementation of the results derived from the DT process are particularly challenging. In order to overcome this challenge organizations that solely seek to implement DT externally should consider a more long-term consultancy model as previously introduced by Youp Selen and Noralie Weusthuis. In this kind of long term partnership the DT agency is not only hired for the short duration of a project, but instead the consultant is hired to be inside the company a couple of hours each week continuously for the duration of a longer time frame. As explained above, this kind of partnership increases the chances of an organization actually following-up on results of DT sessions, because the consultant can accompany the process.

²³ The relevant information that is referred to can be found in chapter 3.2.2.2 *Arguments that speak for Internal Use* underneath the subheading *Follow up on results is more likely*.

3.2.5 Pitfalls of Implementing Design Thinking

Independent from whether DT is implemented internally or externally, there are some general things to keep in mind when using DT. There are common mistakes organizations make when they start to use DT. This chapter draws attention to a few of these pitfalls. By spreading awareness of potential pitfalls, organizations are able to avoid them in the future. General pitfalls regarding the use of DT as pointed out by the experts include: 1) selling DT as a magic tool 2) using DT as a marketing stunt 3) innovating for the sake of innovation 4) rushing the first two steps of the DT process 5) applying DT superficially 6) expecting too much from participants 7) neglecting all other methods.

Selling DT as a magic tool

Oftentimes DT is promoted as a tool that can fix all problems. This leads to unrealistic expectations and should therefore be avoided. António Abreu points out that it is problematic if consultants tell their clients that DT will be the answer to all of their problems, because this is simply unrealistic. While DT is an effective tool if it is applied in the right way, it is not the solution to every problem. Similarly, Thomas Zaiser points out that he sometimes feels like his superiors think that DT is a magic tool and everything is possible by using this magic tool. This results in managers having unrealistic expectations. For example, managers demand problems to be solved with DT that cannot be solved with DT or expect problems that can potentially be solved with DT to be solved in an unrealistically short time frame. This leaves DTers in an inconvenient position because they have to disappoint the problem owner and explain the reality of DT, which oftentimes leads to frustration on both sides. DT is an effective method when it is applied in the right way. But it is important to promote realistic expectations within the organization.

Using DT as a marketing stunt

António Abreu points out that many companies share pictures of DT sessions on social media and use DT rather as a marketing stunt than an actual approach. This leads to the company being perceived as more innovative by their clients, but is not actually making the company more innovative. Tiago Nunes also reports that he sees a trend of big corporations incorporating DT just because it is trendy, their competitors are doing it and if you are not doing it you are not “innovative”. Unfortunately this often leads to the

organization implementing DT in a superficial way. What they should focus on is the consideration whether DT can actually bring value to their organization and how they can implement DT appropriately.

Innovating for the sake of innovation

António Abreu warns that organizations should not fall into the trap of innovating for the sake of innovation. He explains that many organizations are investing a lot in farfetched technologies like block chain, artificial intelligence and crypto currency while getting sidetracked from their core products and services²⁴. In his opinion these organizations should scale down and worry less about innovation and more about what is currently happening in their organizations. As explained above, DT can be used for this purpose as well. DT can play an important role in connecting to what is currently happening inside the organization and improving the status quo. If the organization has implemented structures to continuously guarantee their core products and services perform to a high standard, they can then apply DT also for more groundbreaking innovation.

Rushing the first two steps of the DT process

One way to make sure to not fall into the trap of innovating for the sake of innovating is to relentlessly dedicate importance to the first two steps of the DT process. Many companies make the mistake to base their problem statement on assumptions. If this is the case, oftentimes the problem that they have defined is not the actual problem the company is struggling with. If the problem is ill defined, any solution that is created to solve the problem will not lead to the desired effect. It is crucial to properly go through the steps of empathizing with the end user and defining the problem appropriately in order to prevent this. As Kathleen Braun points out, it is indispensable to keep an open mind in the research phase instead of “checking if what you already have in mind is fine for the consumers.” To decrease the chances of assumptions directing the process during these first two stages of the process it helps to have an external partner that has an objective view and can easily identify whether a decision is based on assumptions or actual insights from the end users.

²⁴ António Abreu provides the example of a bank and explains that in his opinion it is a shame, if these kinds of organizations invest a lot of money in promoting innovation while customers who go to the bank to open a bank account or get a loan have a second-class experience.

Applying DT superficially

Several experts stressed the danger of implementing DT superficially. Many organizations make the mistake to think that they can implement only the top of the DT-iceberg (see Figure 7) and use the DT methodology and toolset without aligning the organizational culture and structures with the DT ideology. This usually does not work, since it is crucial for the people inside the organization to trust the DT process and embrace the ambiguity of not knowing where the process will take them as well as the ambiguity of taking risks when creating something new. If an organization implements DT internally without aligning their organizational culture and structures, it is unlikely that the approach will have the desired effect. As discussed above, companies that are not willing to align their organizational culture and structures with the DT ideology are therefore advised to implement DT externally.

Expecting too much from participants

Especially if DT is a new approach that is used within the organizations it is likely that participants of DT sessions are overwhelmed by its creative approach. For example, they may feel completely comfortable to express their ideas by writing them down but uncomfortable to sketch them out. This can be explained through the concept of *creative confidence* (Kelly, 2012). Kelly proposes that it is a natural human trait to fear the judgment of peers. But just like other phobias, this fear can be treated. By going through a series of steps, by slowly introducing individuals to creative exercises, individuals can overcome the fear of not being creative. They can turn fear into familiarity and build their creative confidence. It is crucial for DTERS to acknowledge this and pick up the participants at the level of creative confidence that they are currently at, because if the participants are overwhelmed and feel uncomfortable with the use of certain DT methods, they are more likely to shut off rather than contribute.

Neglecting other methods

Kathleen Braun points out that sometimes organizations can also get too caught up in the implementation and use of DT. While it is important to commit to DT in order to implement it on all three layers, this does not mean that DT should be the only methodology that is used. In Braun's opinion, a big problem in recent times is that business

leaders look for “super-solutions”. The company she works for uses DT since 2014. Before DT was introduced, the employees effectively used facilitation as a methodology. But then DT was introduced and the organization “forgot all about facilitation.” Now the company is slowly realizing that this may have been a mistake and many employees are starting to use facilitation again. In conclusion, often the methods that were previously used within the organization are still valid and should not be neglected all together. A combination of previously used methods and DT is likely to result in the highest value for the organization.

Conclusion

The aim of this dissertation was to explore the *management of DT* in order to facilitate the journey of implementation for organizations that want to work with DT. Two main challenges related to this were identified. Firstly the definition of DT is ambiguous, so oftentimes managers are unsure what exactly they aim to implement and secondly there are few resources that present the different ways DT can be implemented, therefore it is difficult for managers to choose the one that is most appropriate for their context. These two challenges were translated into the need for a clear definition of DT and resources that allow business leaders to make informed decisions when choosing an implementation strategy that is suitable to their unique context. By further exploring the *management of DT*, the dissertation set out to provide such resources. This process of exploration was guided by two main research: 1) what is Design Thinking? And 2) how can organizations best manage Design Thinking?

In order to answer the first research question, a content analysis was made of texts about DT provided by the industry and academia. The content analysis resulted in the proposition that DT can be defined as a three-layered construct. DT is an ideology, a methodology as well as a set of tools. The expert interviews conducted in the scope of this dissertation further revealed that these three layers are not equally important when it comes to successfully implementing DT. Companies who dismiss the more abstract layer of DT being an ideology and attempt to implement DT more superficially in its form as a methodology and set of tools are less likely to reach their goal with DT than companies who recognize DT in its form as an ideology and align their organizational culture and structures with this ideology.

In order to answer the second research question, nine semi-structured interviews were conducted with DT experts from a diverse geographical and professional background. Consultants and professionals from Germany, the Netherlands, Portugal, Italy and Brazil were interviewed in order to gain a comprehensive understanding of how organizations are currently managing DT. It was found that a major decision regarding the management of DT is whether to implement DT internally, externally or in a combination of both. The interviews show that generally a combination of internal and external implementation is

advisable. The internal implementation is more challenging, as the organizational culture and structures need to be aligned with the DT ideology. If an organization is not prepared to make these necessary changes they are advised to implement DT solely externally. The external implementation of DT is always advisable, even if an organization implements DT internally, due to the fact that an outside perspective is more objective. Based on the interviews it was possible to create a set of tools that can help business leaders to make informed decisions when developing an implementation strategy that is suitable to the unique context of their organizations.

The tools that the dissertation results in include:

- Flowchart of the decision-making process of implementing DT internally or externally that guides managers chronologically through the different aspects that affect the decision of implementing DT internally or externally (see Figure 8)
- Detailed guide of how to implement DT internally
- Explanation of what to keep in mind when implementing DT externally
- List of commonly made mistakes regarding the implementation of DT that promotes awareness among managers and hence functions as the first step for them to avoid these pitfalls when implementing DT in their organizations

In the form of these tools, the dissertation succeeded in achieving its goal of providing resources that help business leaders to make informed decisions when creating an implementation strategy for DT. Since it depends on the specific context an organization operates in which implementation strategy is appropriate it is impossible to provide a generic guide on how to best manage DT. Nevertheless, these tools provide a base for business leaders to assess their organizations regarding the aspects that influence the decision of implementing DT internally or externally in their unique context. Furthermore they inform business leaders on what is important if they choose to implement DT internally and what to keep in mind when implementing DT externally. This way, business leaders are able to create an implementation strategy that fits their organization.

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Appendix A: Interview Guide

Permission to Record

Category	Question
Personal DT experience	In what extend have you worked with DT?
Understanding of DT - personal interpretation of the concept - main characteristics of concept	From your understanding, could you briefly explain: what is design thinking?
Personal experience w internal/external use	
Use of DT in company (Internal vs. External Use) Internal - fully integrated - Innovation labs External - agency Combination	Start with one example: E.g. “You say that you worked with Deutsche Telekom and DT? How exactly does Deutsche Telekom use DT?” → internally (full integration or innovation lab) → externally (agency) Compare to other: Can you pick one or two more examples of companies that you worked with and tell me how they used DT in a different way from Deutsche Telekom? Or How was the way Deutsche Telekom used DT different from other companies you worked with? Or Did any of the other companies you worked with use DT in a different way? Or Did all the companies you worked with use DT in the same way? If not, which one was different?
Exploring the Internal Use	
The users / design thinkers - “Designers” vs. other background - Department - Level of management - DT education - Other roles, tasks, responsibilities	In the example of Deutsche Telekom, who were the design thinkers inside the company? Were they actual designers? How were they educated in DT? What hierarchical level did they have? Which department were they from? Do DTers have other tasks besides DT? What are the priorities?

Where? - designated space vs. normal office area - head quarters vs. all quarters	In the example of Deutsche Telekom, where does the DT take place? Is there a designated space for the DT sessions? Was it at the normal desks/meeting rooms?
When?	When and how often do the people work with DT? Daily? Once a year in form of a bootcamp?
Reasons for Internal vs. External	
With which goal does company use DT? (general goal: innovation, but: - breakthrough innovation - product optimization - others	Did these companies have different goals for using DT? If yes what were the goals? Do you think this is why they used DT in different ways? Do you think that because of the goal they should have used it in a different way?
Reasons behind internal/external use - pros and cons - challenges of implementation	What are the reasons that DT was used in a certain way? Why do you think one used it this way and other in other way? What were pros/cons of the different ways of using DT? Was it hard to implement it that way? What do you think are the main challenges associated with using DT internally? Do you think this was the best way they could have used it? Why?/why not?
Best way to use DT	In the perfect world, how would your company/company X use DT?
	In the perfect world, how should a company use DT? For what purpose? Think about the space, who are the designers, how often DT is used every day etc
Other	
Company culture	The literature also suggests/It is often said, that company culture plays an important role when it comes to DT. What is your opinion on that?/experience with this?
Other challenges	After all of this, do you have any final ideas why it might be so hard to integrate DT in established organizations?

End

Thank for participation

Tell: If they think of something afterwards, more than welcome to contact me and share

Appendix B: Worksheet – the “perfect” way to use Design Thinking

THE "PERFECT" WAY TO MANAGE DESIGN THINKING

PURPOSE (WHY?)	INTERNAL VS EXTERNAL	MOMENT (WHEN?)
THE DESIGN THINKERS (WHO?)		OTHER THOUGHTS
	SPACE (WHERE?)	

Figure 9. Worksheet “the perfect way to manage Design Thinking” that was given to the interviewees

THE "PERFECT" WAY TO MANAGE DESIGN THINKING

PURPOSE (WHY?) <i>e.g.</i> - breakthrough innovation - reflection on day to day activities in order to improve them - process optimization	THE DESIGN THINKERS (WHO?) - “designers” vs. other background - department - level of management - design thinking education - other roles, tasks, responsibilities - integration of people from company and external help? - just external design thinking facilitators? - just employees of company as facilitators?	MOMENT (WHEN?) <i>When and how often do the people work with DT?</i> - daily? - once a year in form of bootcamp - regular intervals? - just when needed? - how often internally, how often externally?
INTERNAL VS EXTERNAL - work with an agency? - have design thinking facilitators in house? - semi-integrated innovation labs? - or a combination of several of the above? <i>If combination of internal and external:</i> - for which purpose should DT be used internally and for which externally?	SPACE (WHERE?) - designated space vs. normal office area - head quarters vs. all offices - at the external agency - completely different space - always the same space?	OTHER THOUGHTS

Figure 10. Worksheet “the perfect way to manage Design Thinking” with hints that was used by interviewer as a reference to stimulate the interviewee

Appendix C: Interview Transcript Noralie Weusthuis

Skype Interview

Date: June 17th

Duration: 45 minutes

First of all, from your understanding, could you briefly explain: what is design thinking?

Design Thinking is improving or developing new products or services from the stakeholders - or mostly the end users - point of view. But you include like various perspectives. Like you work from the end user, but you need to make sure that you collect every perspective and then see how you ideally can improve like for all stakeholders. Also for the people that work in the company and have to deliver new products or a new service.

In what extend have you worked with DT?

I worked at studio why and the Dutch d.school. We were operating design thinking projects what meant that they (the client) had a problem in their company or they wanted to innovate or a new perspective or idea, because they thought "you are young and you have young creative people and you can show what's possible" and also some were very intrigued by the way we did it, which was by the user, which was very logical. I also think it's a trend for companies to look like "oh yeah, we need to be more customer oriented" and then they think "oh let's do a project like that" that could also be sometimes the goal. But often it was also that they really wanted us to include their employees. So we did projects seperately, but if you do a project seperately it's harder in the end to implement. Because in the end if you have an idea then, nobody carries that idea. Only that consultancy company. So than you (they) are like "can you include us in brainstorm sessions" and that kind of stuff and sometimes it is also felt that instead of having brainstorm sessions just for creativity, it also felt like "draagkracht" that you have more people caring, carrying your idea that they feel included and that you have more support and that it eventually can also become something. That it would really be implemented. That was for the "waterschappen" (?) which protects the Netherlands against water. So from the sea and from the rivers, climate stuff that was a project for the government. And we did two projects for that, we also did a project that was for brown data. Basically there are a lot of feces in the sewage and their is a lot of information in that. So if people are sick and you

can monitor where there feces go, you can monitor where sicknesses are coming from and you can do something with that information and make sure that other people don't get sick. That was a huge perspective and then they wanted us to see just like what would be possible. The client had in mind that there are possibilities there and then he wanted us to explore the topic. And I also did DT for my thesis but that was for a company, for a hotel.

What I want to research is the management of DT, so if I am a company that wants to use DT, what is the best way for me to do it.

I really like that Studio Why in the beginning was really doing projects. So we were like a think tank. But we didn't want to be that. But we were then a consultancy agency. So we were consultants for other companies. But we realized that a lot of things you do then, even if you include the them (the client/client's employees) in brainstorms, still we are not gonna make sure that there is a culture of deisgn thinking in that company. And that was our goal. It was not our goal to make beautiful ideas and then they implement it, no, we really wanted to make sure that they could manage DT within their company. So there would be room for it and so on. Because if the just get the end document, they would just put it in their drawer and never look at it again. So then we, as a company, really moved more towards training. And then we did a mix. So: how can we make sure that the people adopt that mindset and experience that way of working. We designed then the d.school with a 4 months program, because we realized that if you really want to inherit that mindset and that way of working you really need to do it longer, it's not like 1 week practice and then you go to your job and implement it, because there is no room for it, the way they work is already probably set that way. So then we did 4 months but that was with young people so they were not really working. And for companies we did 1 week training nevertheless. Really intensive 1 week trainings and then they would come to studio Why and we trained them, but they could also work with their own projects that was what we did. So we still did projects, but the project was not the most important thing. It wasn't about the end result or having creative ideas. We really stressed that they were practicing the skills. It was about the tools, about the way of working, about the process. That is the most important thing to take home, because otherwise they will not be able to do it and actually it was more about a culture change in that company. Like their needs to be room in the companies that want to employ DT so after that training week we wanted to become more of a coach

as well, at one point as make consultant you need to make sure that you keep being there, otherwise they like loose all the tools and stuff.

You say you wanted to change the culture, how was the culture at the point you started then?

Yeah, just the old way of working, what they always did. This was during a project for defensie (the Dutch military) that I really realized it. They were really hierarchical, they were not really creative people, like they were just doing their job. You know that is also why eventually I left studio why, because I wanted to explore that, okay, what are we doing. We are giving trainings, but maybe I should work inside companies more often to experience different cultures, so that I really see the difference: where there is room for creativity, where there is new design thinking ways of working and when there is not. Because that's what I missed. Because we were saying like "yeah, we need to change the culture", but I was like "why is what we give what they need?". And how can we integrate that then in their work? And what they do now, also a really nice project, that studio why really want to become part of the trainee program of those companies, so that the young people already have already a program for 1 or 2 years and that they integrate DT, so that they can give it a place more easily from the beginning. And I also think a lot of companies are working with some parts of DT or some tools, but not really the one from theory. I'm also curious, how exactly then it is integrated inside the companies. I think that's also what you are curious about (laughs). And now I am also working in a consultancy where we do the first part, we do the customer research and then we deliver insights. I actually want to give a workshop their on some DT tools, because I think there is room for it. Now they work with interviews and quantitative methods and I think those are really good for DT I think it's a good combination. But they don't really employ different tools like daily life that kind of stuff. , Right now they work more science based and DT is more feeling and intuitive as well.

Do you think in the company you work now, the culture would be fit to implement DT?

I think there would be room for it, because it is a self-steering company. So we can do projects and the interviewers instead of calling or skyping it's already time consuming. Ah, they also do "klant-arenas" (kind of like focus groups), my boss sometimes does that, he

goes to a company and then he puts like 3 people from the company and 3 people from the client together and then they are gonna talk. More like a focus group. But I think that would be possible. In those qualitative ways of research I see possibilities. Because I think there are so many different ways to talk, but it is also time consuming to really go to their place. And that is why they do phonecalls or they are international clients. But I think if you do it via phone you miss a lot. But I think it should be possible. Our sister company is a factory, a employee satisfaction factory, so do something similar but then for employees. They decided to only do quantitative because qualitative is time consuming and they also wanted to be a science-based company. That is what they think companies are looking for. But I still think there are possibilities. I don't understand why they don't do a mix. Like combine what they do with some deep qualitative interviews, I think that would be stronger. But yeah, I think there would be a lot of possibilities for that. Because they are also looking at "okay we have these insights that are a problem now and then we give them to them and then we need another process on what to do with it" I think we have to develop ourselves in that and they want to, they want to like develop workshops and that's why I think I can also add some value there. Because our company knows that we can add value there as a company, but I don't know if the knowledge and the trainings are available yet. And to make the whole company more customer oriented. That's then also again the culture thing, where we now with this company also encounter. But they work with elements of DT but they don't really know what it is. If I talk to them about DT they don't really know what it is, or service design as well. One girl knows it, because she did a health care service design project before and she really liked it and is really curious about my workshop.

That would be nice if you could give a workshop

Yeah, but I when I hear what she was saying "I once did a service design project" that means they decided beforehand to work this way for that project. That is interesting because that means it is not integrated in the daily work but like they decided to do one isolated project and then everyone goes back to their normal thing. And I realized that at studio why, we also needed it. If you are interested in how we did it, because we are also a company that we said people should work with DT, but we also are the example and did we do it? That is the question. Because I realized that after some time, you forget it. One of

my colleagues always said "what do our customers want then?" and I thought "you are really good at realizing this every time". I think that is already a good thing, to be aware that you can drift away and take more time to think "for whom am I doing this" then it is also more in your culture already. Then that is the mindset and if you look at DT you have tools that you can employ and I did it sometimes, because for d.school to design the training program, I really talked to people, I talked to you. So that was in a DT way. But we didn't really do brainstorm sessions in that way that you see in the books. But we did brainstorming you know, so it is like then it is more integrated in your daily life but it is not always the way that they say you have to do it or you can do it, I think it is more the mindset that is more important, that you don't forget your customer, that you know where you are in the process and that you realize that you are doing it for someone else and that you don't say no. You know that kind of stuff I think is more important than doing like the techniques and the brainstorm, you know?

So in the perfect world, I mean I guess it depends on the company, but let's take defensie as an example maybe, what would be the perfect way for them to use DT?

If they have projects to really look at what are relevant things to include. Because you have so much you can choose from and not everything is relevant in DT. And I believe in it, but I also believe that the way you are doing projects can also be fine. But make sure that you do enough customer research beforehand and that's the part that they mostly don't really do and don't have time for, the customer research part. They think it's time consuming, they are not gonna talk, they don't have time for it. That would be ideal, that their company would give time for them to dive into the customer. And they say they don't have time to really talk to the people or they don't have the skills to have an empathetic conversation, but that would be ideal, if the company was not really looking like "we need to be done with this part now, because we have to go on" because business also wants to have numbers, but that would be ideal, if that would not be the main output you know? And also I really feel when they are in process and they feel like they need a separate session, where they need a brainstorm or that they can organize it and involve more people. But actually it would be ideal to not even organize a brainstorm session, but just have the atmosphere, if you are in the shower at home and you suddenly have that idea that you take that and that there is room to like give it attention. I don't know it's sometimes quite vague.

I think also especially what you said, that is again the company culture right? And also company structures. If a company focuses a lot on numbers, profits and timelines, there is basically no room for the people to work creatively. Like at Google they had that one day at work where companies were able to work on any project they wanted and that was when the most creative and successful innovations were created...

Yeah exactly, you know, I have a little bit more experience than you like working in the field. But I am also someone that read a lot. So I don't know if the things I am saying now, is that partly what I read? I think so. I have encountered it in the trainings when they said it. They were always really inspired and they said like "ah I didn't believe that that would work" but then they always asked us how to integrate it in a daily base. There is no room and time for it and also management does not understand it. If they don't understand DT, how are the employees going to sell it to them?

I think what is interesting as well is that studio why wanted to move a bit more to facilitating. So that they (the professionals taking part in training program) could lead a project this way. So that they would be the DT process lead, not really on content maybe, but then there are people in *defensie* that can do such projects. But yeah, 1 week was really quite short. That's why we wanted to have a follow up. But then like Scrum as well, you know you need Scrum trainers and there are a lot of companies that make sure that they do Scrum Master trainings and then they can do the process that way. And then maybe they should make a make a design thinker role, who can facilitate DT in the company. And then if there are projects they want to use DT on, they can do it that way. I know one guy who does that, he works for Gemeente Utrecht (Freek Hofste) and he works there as "design thinking trainee" and they put that vacancy online, without even knowing what they meant by it. But they knew it could be interesting. And now he is doing more process coaching and he did small inspiration sessions. But I think maybe you should talk to him...

Oh interesting. I will get in touch with him for sure. If you think about the implementation of DT in general, how do you think a company can best facilitate this?

Benjo was always saying "if you wanna innovate" because he was more about how to create an innovation culture "you need to make sure that you get people who want to

change from all levels of organization" "you need to make sure that you have the right people from different levels and then slowly as if it was an oil stain spread it". But yeah, I am now studying culture and change and I think this is really interesting. Like you need the support of management but then the actual change happens more local in the organization. So what happens local, maybe the managers that are above operational level -I am doing a research now on that- have a lot more influence than you think. Because they have direct daily interaction with the subordinates and they can use different language so that different words or different ways of working get a different meaning. Like with storytelling you can change people's minds but otherwise you can't. With the exception of a crisis situation. Of course the top management can also force these things on their employees and then they will do it, but not because they want to but because they have to, because they have no other choice. So there are different ways, but I think the local perspective is really interesting. That the daily experiences might be most important. Because people find their own work and own colleagues most important. So if their management says "you have to work like this" they might talk to their colleagues "I'm not gonna do it" "Why" "Because I don't understand" and then their colleague might be able to explain and together they have an own interpretation of what is meant by what the management proposed. They give their own sense. Sense making and sense giving, so yeah. I'm always curious, how would be the best way to change that... slowly and local. It has to start at the top management, a new idea or a new way of thinking. But then if you really want a change that needs to come from the bottom.

In the examples that you gave, what do you think was the main problem?

I think a lot of people need to have confidence in using DT. So if you do one training, nobody feels confident and then it is gone again. I mean I feel confident now, but it is because I was perseverant and I did it (DT) in various ways and I have a lot of knowledge about it. I think this is important. Companies (the people inside them) need to be convinced that this is a good way of working and that it is possible and if they are not trained properly or if they are not aware of what different projects are, so that not every project is the same project, what tools are used, then the DT quickly gets out of sight. Because it doesn't feel safe. (...me summarizing what she said...) I think the most important part is to include the customer research and to be aware that you are thinking from someone else's perspective.

To always be aware "those are the people we are doing this for and do we actually know what they want?" Just to be aware of what you are doing and whom you are doing it for. To be able to distinguish and realize if you are thinking from your own perspective or another point of view. And yeah leaving yourself behind actually. And that is what people cannot do easily. But if you are working well you yourself are not important. You work from other perspectives and that's the hardest thing. Also everyone always naturally kind of thinks their idea is the best right? So it can also make teamwork and decision making easier if you always take everything back to the customer and let them decide. Whatever they say is what counts. This is actually a very efficient way of working as well. And if you can make your customers happy you also have a nice environment in your own work and then you are happy with your work because you are delivering what the customer wants and then you have a nice harmonious atmosphere at work and then you are happy. And that is what life is about right? If you create more value for others you are also more happy and do meaningful work. So I think for me, I am not even sure if I want to work like I learned in DT but I want to make sure that I work from someone else's point of view, that I create those perspectives and give that more holistic perspectives.

It's what they also say about DT that service design is already more about improving instead of creating new stuff all the time, because I don't think you always have to create new stuff all the time, you can also just make little changes and that way you elevate the value. So if you want to create a better experience in a hotel, you need to discover how the employees are feeling. And if you there room for improvement that reflects back on the customer experience. And in the end you make it better for both. But it always sounds so ideal...

Appendix D: Interview Transcript António Abreu and Martina Rando

Face-to-Face Interview

Date: June 19th

Duration: 45 minutes

The first letters of the experts' first names are used in order to indicate which expert was speaking: António Cancela de Abreu (A) and Martina Rando (M)

In what extend does your company work with DT?

A: We are not actually doing DT

M: But it is following kind of the process

A: Yeah, okay. One of our clients is EDP, it's the biggest energy company here in Portugal they provide energy services, electricity, gas and mostly that. But they have a bunch of offerings. And we are doing a project that (when will your thesis be released.. september... okay, that would be okay) but we are helping them to figure out how their app-eco-system should be structured. So they have a bunch of apps, one is for checking invoices and to submit readings of your energy bill, of your energy consumption and there is another one for owners for electric vehicles for them to know how to charge, where to charge, how much they need to charge and there is another one to help you decide if you should purchase an electric vehicle and then there is a smart phone app and some regarding solar energy and other kinds of renewable energies. So that is a lot of apps. And if they don't have the structure well defined then in a couple of years they will have 20 apps with a couple of services that don't make sense and it will be very hard to manage. So they hired us to think, how they can structure all these apps, this app-eco-system.

M: What happens usually with clients is: They come, they have a problem and they want us to fix the problem. And sometimes we suggest that the problem they identified is not the correct problem. For example in the case of Ponto Verde. Ponto Verde is the company that collects the plastic trash in Portugal - and they wanted to make an app for users where all the bins are in the city. But we actually advised them that an app is not useful for them, it wouldn't serve the purpose. So what is your real problem? Maybe we shouldn't do an app. So the starting point is always identifying a problem and then suggest solutions that we come up with in a very short time, which is the time of the proposal. Then the client might

accept or not and then we start the research phase, the definition, the discovery etc. all the steps of the double diamond.

A: But actually in this case, what we proposed was the process itself. In that case it didn't go through, at least not yet. But what we proposed was what would be our process and it follows the DT principles, also actually they are the same... If you look at design sprint or UX methodologies, the principles are the same, the basis is mostly the same. And then we structure it to fit the client's purpose, the client's goal. We don't usually actually we have never used DT like it is straight from the book, but we figure out what fits better with our client. But we end up using something similar. So we start diverging, then converging then diverging and converging again and sometimes we just do the second diamond. Like the clients wants an app and it is an app and there is nothing we can do and we help them build the best app possible, so we start with the second diamond. But sometimes we have the opportunity to do both or even just the first one. Like with Ponto Verde, where we found that an app is actually not a solution for them and then it is good-bye.

Do you also use DT in your own company? Like you internally?

A: I think there is three different things. 1) There is a project that a client has for us 2) There is a proposal, but we still don't have the client, we just have the briefing and we use DT just internally, so we don't have the client's stakeholders etc. involved and we do it very fast and inexpensive as well, because it is a proposal and then 3) you have DT just for internal processes. The first example, where we have the client is the example of EDP the app-eco-system that I was talking about. So we interviewed the stakeholders, we did desk research, we did workshops with them and we are now on the definition phase, we are just finishing up with the output to finish up the process. And this is a strategy project. And then you have proposals, such as the Ponto Verde example, where we do chunks of the DT process. So we can do just the ideation phase, where we assume that the information the client is giving us is free of assumptions, so we assume if this is correct or if this is what they believe this would be the best solution. And sometimes what we do is we say: this is how we would approach it, but we suggest that you go back again and make sure the assumptions are correct. And then there is DT for internal projects, such as the onboarding process of new employees or employer branding or the culture of the company. Since we switched our office, Martina conducted a project.

M: Yeah, it was really nice.

What did you do in this internal DT project Martina?

M: Well before arriving to this huge space, each agency so Bliss, Performance, Fever and so on were in different offices and the pain point, the problem was that we would move into a new office all together and no one knew each other, it would have been a bit weird. So I started in this DT process, interviewing 3 people from each agency, we did a focus group, so different focus groups, each one with the people of the same agency. And I tried to get information about what they think of their own agency, the other agencies what they want to learn from the others what they think are their strengths, opportunities, threats and weaknesses and I collected all this information and then I designed the journey of a new employee that then becomes a current employee and then probably eventually leaves for somewhere else. I identified the pain points in each step of the journey. And then in the end I presented it to the CEOs of the agencies, like the best case scenario journey. And quick actions to solve problems that are very small and actually very easy to solve and then a longer plan to align the cultures of the agencies and to create a culture of the whole group that can survive the merger. (...) It was really nice, because everyone was actually really engaged during the process. For most it was the first time they did such an activity Anne: Well that sounds like the picture perfect DT/Service Design process.

A: Yeah, you can do that when it is internally. Well, sometimes. Because sometimes internally we also just do things like whatever. We have a saying here, it says em casa de ferreiro, espeto de pau which means we are experts at providing good design or we design websites for the clients and our website is crappy. So basically we are doing it softer when we are doing it internally.

Do you think the agency model works well for your clients?

A: Yes, if they are involved in the process. So if we do it they just hire to do DT internally (here) and then we propose some solutions, I don't think that's the purpose. So they have to be involved in the process and it helps to have people from the outside, besides them having experience and a lot of know how from other projects and companies and sectors but also another perspective. So they are so embedded in their own culture or whatever the problem is that they know so much about it that they loose perspective. So it helps them to

have somebody from the outside, who is not a client or a user and has less know how but more perspective on what they are saying. So this mix works really well. If they do it internally, the habits and the biases of the company itself will be shown in the process itself and the hierarchy will be very clear if you have the CEO and a junior employee there.

M: And it wouldn't be so reliable, it is always better if someone from the outside gives you a different perspective that is maybe more objective.

A: And this being said it also definitely helps if they have some knowhow about DT to apply, but for smaller tasks I think. It helps for them to have that knowhow. But if it is a difficult problem or something bigger, I think it is better to have a partner and even ourselves in the project we told you about, we did this. Martina was here for like 1 year or not even, so she was pretty fresh to the company and it was good to see somebody else from outside or that was recently employed. So we had that. But even so we talked to people externally that do this job professionally and we understood right away that if we want to do this well and to accelerate the results, we have to hire a specialist. And we still have that as a possibility. So even ourselves that do this internally, would prefer to hire somebody else to have that outside vision and expertise.

M: Yes, true. And also what needs to be said is that for the time being our clients have always shown interest in participating. No one closed the doors, they are always willing to be involved in the process, very open-minded.

How exactly do you integrate your clients in the processes that you do for them?

M: We have meetings, we interview them first, we organize desktop work-throughs, because usually as António said, we design apps and websites. So we have to see what is their current product, if they have one, so we organize this.

A: And workshops.

M: Workshops, focus groups and both the client itself, so the one that hired us and the other stakeholders they are always willing to participate.

A: I think it also depends on the client. From our experience it is like what Martina said.

M: Yeah, from my experience.

A: I think there is two things. One thing is if you go to maybe more old school....

Like a bank?

A: Not specifically a bank, but old school people. One of our most innovative projects and where we could apply most of these innovative principles was with a bank. Actually there is two projects. We have design teams that work exclusively for one bank and we have a very big project for another bank. And in both of those the executives are very "forward-looking" so they are open to it. But if you go to - basically it is older people (laughs)- I don't want to say it like that and it's okay.

M: But it's not necessarily about being old, like your grandfather for example, he is not like that. It really depends. I think it really just depends.

A: Yeah, he would love DT. But yes, it is mindset. That's 1. And the other thing is, we are still -here in Portugal at least- sick of DT. And I think this is happening in the UK, some places in the US, I don't know about Germany, but in the Netherlands for sure.

M: What do you mean we are sick?

A: There are companies that are sick or tired of having agencies or consultants coming there and saying DT will change your life.

You mean the word DT they are sick of?

A: It's the word and the way it is applied. And like the outputs that come from DT sessions. People take 2/3/4/5 days of hard work in workshops and you end up with a document that then it's parked somewhere and it has no results. There is a lot of companies that sell DT out of the box, without adjusting it to the project or client, just because it is sexy and sellable and still here it is very fresh. So we can still say we do DT and we are very innovative in Portugal. But if you go to more mature markets, especially within the digital industry, like people that work with digital marketing or products or services they are more used to it and they have already been through processes that didn't go well or didn't bring any output and they are more skeptical. I think we are not there yet here but we will get there. We have to make sure that every time we apply DT we do it well and the outputs are good and they actually lead to something (go forward).

You said before that a lot of times you do these 3 days of DT and then you have a piece of paper, an idea, some sort of solution but in the end nothing comes of it. If I understood correctly. What do you think is the underlying reason for that? Why doesn't anything come of it?

A: Well it never happened to us, but we are in the Portuguese context. I know this more from speaking to people that work in other places (geographical) and also people that write about this and we read a lot of things like "DT is bullshit", I don't think that. I just think that it is everything that gets packaged, one of the things that is good about DT, is that it packages (structures) the process that was chaotic and it is very good to have a beginning and an end and stages, just that is amazing. Ehm, but if you apply that just with very superficial knowledge and without good people managing that, then you will have a lot of ideas, that is just the idea box that people have had for 50 years in their companies, where people put their ideas. Some of them are good, some are bad but important is that some of them are applied. I don't think we have a lack of ideas, we have a lack of good execution.

Would a way to overcome this be that the guidance of the agency is extended? That you also help them to implement the ideas?

A: That could be an option. But sometimes it also comes up to whom the ideas are presented. And then if it gets there and it is like it's a very innovative thing and we put a post on FB and LinkedIn and Instagram and post it's everywhere and it is more of a marketing stunt than a real project, it serves the companies purpose by itself, but it didn't solve problem. I am saying this, but it has never happened with us. What I see happening with clients that we work with is they are very into farfetched stuff like block chain, AI and crypto currency and stuff but you try to book a hotel and it is crappy. So if they scale it down and worry less about innovation and more about what is happening currently we will be much better of and DT can have a role there. So for me DT is not about innovation. It helps you to get connected to what is really happening and then you can innovate from there. That is the purpose, it is not just innovation for the sake of innovation

To M: *Do you agree? Or what you think DT is or should be?*

M: I agree with A that DT is a process that helps having deliveries and keep track of what you did and wraps in phases what is necessary mostly when you think with intangible

things like ideas, but then you always need an output. Because it doesn't make sense for the people that we try to help without an output. And I agree that DT doesn't always end with an outcome, an output but it should. There should be a proper end to it and a reflection on this is what we learned, this is what we propose this is what we deliver. And instead for innovation processes I still think DT can be applied because of the diverge, converge structure. And it helps people get into that mindset of thinking about future scenarios. Open more your ideas, I am a bit confused right now and I would like to take some time to think about it, but I think it should also work for innovation. It depends. You can apply different scales of DT one that is more broad, more intangible like thinking on an upper level with a goal in ten years or 50 years and you can apply it with goals that are very close and very pragmatic.

A: I know, I agree I agree. And I think it is great for innovation. I just think that companies are sometimes more concerned with being innovative than with solving real, present problems and DT can be used for this as well.

M: Yeah, I completely agree.

Do your clients have knowhow of DT?

A: Yes most of them do

So maybe that also helps in some regard to implement the outputs.

A: Yeah. Definitely and I think this is the sweet spot now. People know what DT is, they have done it once or twice and they are very excited about it. I think the problem is in the future when they have done it like 20 times and of those 20 maybe half of it didn't result in anything and there is one more DT workshop that they have to go to... I mean it is like other forms of innovation in the past or traditional research methods. If you now speak to marketing departments about traditional focus groups they are like "I did this 200 hundred times and it's always the same and they all lie." And DT is a new way of thinking and discovering and it is still very sexy, at least here in Portugal, I don't know how it will be in 2 years time, it will probably get more mature. M: Yeah, it wont last forever, because anyway people will get bored with it, with the exercises with this framework and then will you know, "hate" the DT model.

A: Yeah, exactly but that being said it is better than everything there was before. People weren't communicating together, they weren't sitting together in a room, they weren't exchanging ideas, they were exchanging emails and doing research without participating. So it is definitely better than what there was before but it could be applied better.

M: Probably the real outcome of all these DT sessions and companies and whatever is that people are changing their mindset into a more collaborative one. Now it is not so weird anymore that stakeholders are sitting around a table together and do things together. So maybe that was the idea out of the DT in general. I mean it is normal, still there is progress that can be done. Sometimes we do workshops and we print a storyboard and canvas and all the squares are empty and then the idea is for the participants to fill it with some sketches, but no one wants to draw. But still they are there and they are willing to make their own story. Even if it is with words, which is fine. But you know like breaking the ice little by little is the way to go.

A: Yeah, maybe in a couple of years they will go there and draw everything really well.

You said before DT can be used for several purposes. Innovation and tweaking the everyday problems/grounding what you do and reflecting on it. Do you think that it depends on the purpose whether it is more favorable to work with DTers in house or externally, like with an agency?

A: I think DT can be applied to everything the most important thing besides having knowhow about how DT works, you need to have experience applying it. So you can understand what kind of process should be applied to different kinds of problems and shaping DT to fit each need and even the amount of people that you need to call, the amount of work you need to invest and so on. I think in the most present issues it is more important (in both cases, but more so here) to have an outside perspective. Because that is where the bias is, because you are used to these problems. Maybe you don't even know what problems there are. The CEO doesn't go to the bank. So there is problems that they don't even see. So in those issues I think it is where it is better to have an outside perspective. Regarding innovation I think it is also good but it is also okay if they do it themselves. It is so far away, that the objective perspective is less important. I don't know. I don't want to seem like a skeptic in innovation. Like we work in technology and there is innovation in small stuff. It is everywhere. If you are looking at a bank or energy

companies it is a shame that they invest so much money in big marketing campaigns to communicate their big new innovation and you go there and have a crappy experience. And they probably used a bunch of whatever processes to develop the new thing but it is not solving anyone's problem. So the first two steps of emphasize and define weren't done correctly and if those two steps aren't done correctly then the rest is worthless. So I think the emphasize part is crucial for the company themselves but it helps to have an outside perspective, e.g. an agency or consultant to help them emphasize that process. Otherwise they will just think they know that already, "I know already how it works" and they will start from there, while they should go a step back and actually speak to people, do the whole drill.

So, in the perfect world, how would be the best way to use DT?

A: Yeah, I was thinking.... If you have DT as a routine, it will start being a routine. So it is one of those meetings that you have every week and it will lose its importance and people will stop making effort or showing up. So I think it needs to be provoked and it has to have owners. There are banks for example that switch people's jobs to customer evangelists that people who are just working with improving the customer journey, they are working with innovation. The most important part is figuring out there is something that needs to be solved. It doesn't even need to be the right problem. You just need to see there is a pain point here or there is an opportunity. And having mechanics to figure that out and then kick off a DT process with or without external help. I think external is better, with an external company as well, but having the ability of figuring out that there is something here that I can solve or do better and then apply DT or service design or whatever process makes sense and do it proficiently and professionally. I think that would be the ideal thing. The best case scenario I think depends on the company itself.

Do you think that should be the sole task of the people that do this? They walk around all day identifying pain points?

If you have that person that is amazing. But the same comment as before going back to routine, if that is your sole task it becomes a routine.

(Anne: Introduce idea of maybe everyone gets a day to walk around).

A: Yes, exactly and like forcing the senior guy to go open an account in his own bank or look at the energy bill of his energy company and picking up people outside of their context and putting them as a user or a customer or a client will put the problem in their face. Showing them this thing is tricky. Make them call their call center, because there are so many issues with services everywhere that can be solved and some of them don't even need DT. It is just a simple fixes. But being aware about what needs to be solved is the most important thing and then having great execution on solving it.

– M thinks about bliss and the perfect way for them to use DT: So look at our offices this is where these are sitting, this is where those are sitting etc. talk about space wise what should happen in house and what should happen at the clients place and at which stages the client should be involved. Says that everything always depends on the client. –

A: DT is a tool that you have to have in your toolset. And then you have to know how to apply it and when to apply. But there is other tools as well. So it is not magic. But it is much better than what we did before, which wasn't much and when people do it well it is very very useful and it is a great process or a methodology.

M: I think the key is that people are engaged. So you need a good leader who is taking part of the process. Since DT is very abstract, even though there are pragmatic things to deliver, you otherwise loose the contact with what you are doing. So the team really has to be engaged and think that they are fighting for the same fight. To me that is the key, if everybody is on board and engaged and aligned with the purpose and then it will work.

Maybe we can actually still do this, I usually do this more in the beginning, but forgot about it. To define what DT even is to you.

M: I jump this question.

A: Yeah I think we are out of time now ;-) I think it is a methodology- and then I can talk you through the methodology- but it is to pinpoint the problem, to understand who has the problem and who is being impacted by the problem and figuring out what the real problem is and how to solve it, figure out initiatives of how you can solve it and then it stops there. The execution part is afterwards and it has it's own issues, but it is very very important the thing is if you solve the right problem what happens is amazing and to me DT is in the

beginning. ... Yeah, when you go to those posts about definitions, it gets really boring really quickly, what is UX design and service design and DT and where do they touch base. It doesn't matter. DT is not post its and it is important that you understand the principles and then you apply it well and that is it. If then you tweak it and you do it by yourself and in your own way that is fine, that is even good. If you do it correctly, if you understand the basic principles of it that is what matters. What happens too often is that you end up solving the wrong problem and DT is great in the beginning to prevent that. The definition itself is just words.

Appendix E: Interview Transcript Alexander Stolz

Phone Interview

Date: July 25th

Duration: 45 minutes

Can you tell me a bit more about DT at Deutsche Telekom?

DT is now an accepted method at Deutsche Telekom, which was introduced 2 years ago. Mainly coaches were hired from outside the company from various agencies, but since there was a high demand for DT coaches Telekom introduced an own, internal facilitation program where people could apply to get an education as a DT facilitator and this was mainly my first touch point with DT. So I did this facilitation program at Telekom, which took around 1 month of fulltime education. And people who are in this program have the chance to moderate DT workshops based on the 80/20 rule. So 80 percent of the time you are working on your normal projects and 20% of the time you are free to go to any workshop that you can support. I say "in theory" because obviously in reality this is usually far less time that you spend on coaching. But I do it on a very regular basis and mainly in the finance area. As you know I am working with Joachim Bauss, who is the Finance Digital Officer, so basically the main person responsible for digitalization in the finance field and within this area I also delivered a fair share of DT workshops. So there are different topics we are working on, mainly reporting or the future of reporting, where we work towards a more responsive design, for this we did a lot of workshops and also in the area of data analytics. These are the main areas in which I delivered DT workshops.

Can you tell me a bit more about the workshops?

I prepare the workshop together with the sponsor, that means the person that is demanding the workshop. And together we first work out the challenge together that will be addressed in the workshop. During the workshop we work in a small team, the development team for this DT workshop and usually I also take care of documentation afterwards, usually when people are not that familiar with DT it is hard for them to create a proper documentation afterwards.

Do you know how many DT facilitators there are at Deutsche Telekom?

I think they have been doing the education program for at least 3 years now. I'm not sure but I think we are more than 200 right now. 150-200. But the question is how many of them are actually active. Obviously these methods can help you also in your daily business, you can take some elements from DT and also if you are a coach and you use it within your work, that is fine too. But I don't know how many people are actively facilitating workshops for other teams.

Do you know if Telekom is also (in addition to the internal use) working with external partners to do DT?

Yeah, we are doing this. Because the demand is way higher than what we can deliver within the organization. So there is a lot of DT bought from agencies, at least in my perception.

Do you think internal & external works equally well?

Obviously there is a difference. I think both approaches have advantages as well as disadvantages. Regarding the advantages if you take an external party obviously it is kind of good to have a more neutral position to a project, especially when it comes to DT coaching. Another advantage is that, there is a German proverb: "Der Prophet gilt nichts im eigenen Land" (a prophet has no honor in his own country). You know, so somehow you seem to be perceived as more of an expert when you come from another organization. So maybe there is also an advantage in this. And what is also quite nice is obviously a fulltime agency has a slightly different approach to how we do DT internally. Which makes it more interesting. On the other hand when you do it internally, when you have your own coaches in house, there is one really big advantage, which is cost efficiency. Because DT coaches when you hire them externally they are very expensive, we are talking about 1200-1500 € a day and as a rough rule of thumb, that is what you have to estimate when you do one day of DT. You have the advantage when you have an internal coach that they know the company and that they know how processes are there. So sometimes this might be an advantage, Vice versa, being very neutral. It can help you to get some quicker results and sometimes you might already be a bit familiar with the topic, which might also help when you do it internally. And it is way quicker usually. There is less

hassle if you do it internally. Less bureaucracy. You don't have to go to procurement to higher the agency. So it can be very fast. So I wouldn't say one is better than the other, they can both make sense. But from a cost perspective and from a knowledge perspective it definitely makes sense to build up own capabilities in a big company like Deutsche Telekom for DT.

How would you describe the company culture at DT?

I think it is very hard to describe the culture in a few sentences. And obviously there are departments and teams that are very open and work in a very agile way and flat hierarchies. But there are also teams with a very traditional approach. And this is also part of the DT setting. Even if you work in a hierarchical setting, for the sake of the workshop you try to set an environment where the people feel comfortable to speak up freely and share their ideas. This is the task of the coach, which you also learn when you are doing a lot of workshops you get better at this. There are techniques to facilitate this. Sometimes it is harder, sometimes it is easier. We call this the "flow" of the workshop. Sometimes workshops are going really smoothly, where you have minimal interference to make it happen and some workshops are really hard and you as the facilitator have to work a lot to create the right atmosphere where ideas can flow.

I heard Telekom is also using something called T-Labs, can you explain what the difference between those and your work is?

Basically T-Labs is one department at Deutsche Telekom, it is called Telekom Innovation Laboratory and they are based in Berlin and what they are basically doing is they work with a lot of partners in academia, for example universities and they are basically the R&D and innovation powerhouse of Deutsche Telekom so what they are doing is that they address the big trends in the telecommunications industry very early on so this is mainly a research powerhouse if you want to put it in very simple terms. Maybe I am not describing it exactly the way it is or the way they envisioned their strategy, but basically in a nutshell that is what they do. And obviously they also use DT. I am working in a more formal setting, so I am in the group headquarters of Deutsche Telekom and I am kind of doing the digitalization process for the finance department of the whole group. So we are working more on the operational side of the business. So this is kind of the difference. However DT

is done in all parts of the company. For example in the customer service department, they are using it to see how they can improve the collaboration within the teams and in the call centers. The technical departments use it, HR, finance like my work and of course in the T-Labs as well. So DT is not exclusive for an innovation department or research department, but you can apply it to all different departments equally well. And I don't know if you heard it, but DT is also not limited to developing a product, you can also use it to redesign processes, which can come in very handy. And Telekom uses it for all different purposes. DT is used in every functional part and also geographically in all our business units, the so called nut code (?), we use it in different functions and also in different countries, it is basically used everywhere now

Maybe this can take us back to the general definition of DT. How would you personally even describe DT or summarize what is DT?

DT is in the first place a very user centric approach to solving a problem. It is a very efficient approach because in every step of the process you are not aiming for the 100% solution but instead you go on and kind of build an 80% prototype/solution at each stage. And that is okay in the end, because a lot of the work that you are doing is going to the trash bin anyways. So that is why it is a very efficient method and it is also a very creative method, if you have a good coach, because the teams can really focus on problem solving and all the process around is taken care of by an experienced coach.

What exactly does the logistical process look like when someone at Deutsche Telekom wants to hire a DT coach?

Usually when you want to do a DT workshop I assume you will try to get an internal coach, because as I told you it is much quicker and it is also way cheaper. So the first thing you would do is, if you know someone, who is a DT coach, you would approach them and ask them if they can help you out. So this might be someone in your team, who is a DTer or someone from another department that is working closely with you. So if you have a DT resource close to you like that, you would simply ask them, I assume. And if that is not the case, Telekom has something like an internal social intranet. You can imagine it a bit like Facebook for a company. We have that at Telekom. It is called You&Me and there are different kind of groups on there and there is also one group for DT facilitation. And what

you can do there is you can post your project and make a demand. So you say "I have this project and I am at this and this point and I am looking for a DT coach." So there you can request help from an experienced coach. If all of this doesn't work out then you obviously would have to hire an external DT coach and then you have to do it via the usual procurement process. You have your budget and then you would hire an agency to do it. In theory you can hire any company then, but you know, big companies have guidelines for procurement. So if you want to hire a company for the first time then you have to go to the procurement division and make an official request for a proposal, then they would request this demand and then they would usually compare at least 1 or 2 other companies, in order to avoid fraud in procurement. It is easier when you have an established company that has a master agreement in place, so a pre-defined agreement with procurement, then you can order directly. So in 90% of the cases, if you don't have a special demand, then you would go to the established agencies where these master agreements are in place. But this is more on the process side of the company

It seems like it is a lot easier for start-ups to do DT than for big companies because they have less organizational hassle like this. What is your opinion on that?

I would say both, yes and no. The biggest disadvantage for Deutsche Telekom is obviously the regulations with regard to procurement. For example it is very hard if you want to hire a start-up that is working with DT. And usually they tend to be more attractive than established agencies in regards of pricing and also in regards to specialization. But for example, I have a lot of friends that have start-ups and if I look at their example, what they usually lack is the money to buy external DT coaches. Because you really should not underestimate the cost of a DT agency. As I told you in the beginning the rates are very high and especially for a start-up they are not easy to absorb - if they are not funded.

If you think about the challenges associated with implementing DT internally in big companies, what comes to mind then?

From a company's perspective, when you introduce a new method, obviously usually people are always very skeptical. Because in a big organization it is usually not the first new methodology or framework used and introduced to the company. And often people then tend to say "hey, this is just a phase, in a few months or a year this will go away

again, so why should I take the time and really get involved in this". With regard to DT this is not the case at Deutsche Telekom, since we are doing it for many years now. However there are still colleagues who are skeptical towards this method because they say especially when they have worked in the company for a long time, they say I have seen so many methods come and go, so this might be a big impediment when you introduce DT in an organization for the first time. Another challenge, specifically regarding DT, is that setting and room is very important for DT. So you need to have the right room/space for the creative work. And often obviously in reality we have to adapt a little bit and re-work with a normal think tank or other room to suit the needs of the workshop. There are coming more and more rooms that are specifically for creative working and this makes a big difference, as the setting is very important in DT. And I would imagine that this is a big challenge for every organization first time dealing with this kind of method.

Then for a team obviously there are always budget constraints and the number of coaches who are available "for free" - obviously they are not really for free, because they are employees of Telekom, but they don't generate the same cost compared to an outside agency - it is very hard to get one of these coaches, since the demand is still way higher than what we can deliver internally. So demand is still and we have little coaches, so I would say budget constraints or constraints in these DT resources is also from the team perspective, when you want to apply DT a big constraint.

Does that mean that there is no one in the company who does DT 100%?

I think there are also people who are doing 100% DT. But from the training program I told you about, these people are usually in the 80/20 rule. Some people don't even work at all with DT after they finish the program. And to be completely honest I also don't always dedicate 20% of my time to DT projects. Sometimes it is a little bit more, when we have long DT sprints and sometimes it is way less, depending on the responsibilities I have in my own team. And that is also true for the other coaches, some have the opportunity to do a bit more and some a bit less, depending on the area they are working in.

This brings us to the last part of the interview, the worksheet I sent you. Basically what I want to do is, in a creative way, so it doesn't necessarily have to be realistic, is to imagine

what the perfect way to manage DT would be. Maybe, because it is your frame of reference, we can just use Deutsche Telekom as an example. So in the perfect world, what would be the “perfect” way for Deutsche Telekom to use DT?

Okay, let's start with the purpose, the why. This is a bit related to the question I answered before. It is a very user centric way and I also think it is a very efficient way compared to other methods. Also you are making sure that you are working on the right problem. Which often isn't the case if you aren't using any project management technique or framework, being in agile or whatever. In the end it doesn't really matter which method you are using, as long as it is a goal oriented one and one big risk if you are doing it freestyle - I mean there are obviously experienced people and experienced managers who can do this without a method, but you are often running a very high risk that you are solving the wrong problem. So these are the three main facts for DT. It is the user centric approach, it is the very cost or generally efficient approach in regards to time and you are making sure that you are solving the right problem.

Should DT be used in all part of the company and for all different goals?

Yes, if you are looking at a project I think DT is a very useful method for the beginning. I would usually not use it to deliver a whole process or product. I think the best approach is to combine different methods. For example you start with DT in the beginning of the project to clarify the problem and to work on the first quick theoretical prototype and the for example if you work on a software development, you go over to an agile framework and do scrum for example. So the big thing is combining different frameworks and methods whenever most appropriate and for DT I think it is a very good starting point usually.

– Continuing on the worksheet –

The design thinkers... I think it is very worthwhile to have internal coaches. However I would not limit the whole thing to that. Because it can be very valuable to have an external coach as well sometimes to get fresh views and an external perspective. And in general I think knowledge about DT also has potential on a personal level. Some of the methods you learn in DT you can use on a day to day basis. So you can pick up some of the exercises you are doing and applying them to your daily meetings or using it where appropriate. So

when you learn methods and frameworks you can also apply them in other situations as well. So it doesn't necessarily have to be a whole DT sprint. So I think when you are a DT coach or when you are learning about DT or even if you have only been a participant in one of these workshops, you can take something for yourself and apply this in different scenarios only in part as well.

– *Continuing on the worksheet* –

Regarding the space, I talked a little bit about space before, that it is important to have a good, creative environment. That means that you have a little bit more space to walk, it should be a bigger room and it should not be limited to a table. Instead you should have areas in the room where you can subdivide the group into smaller groups within a DT workshop. You have to have these confined spaces where you can work on an individual basis or with a smaller group. You need a space where you can come together as a big group, you need to have a part of the room where you can present something, so the space should be adaptable to the current demand of the exercise. And talking about geography or location I would say it largely depends on the project. Sometimes it helps to be in the actual space where the solution is needed and shall be implemented to directly observe and see and work in the environment. Sometimes it is also nice to be outside. So yeah, I would say for the space it really depends on the project and a big point is that the space should be adaptable to different exercises.

– *Continuing on the worksheet* –

Moment, when? I also talked a little about this. I think it makes sense to check, to challenge your pain points in the early stage of a project. So DT comes in very handy when you do something new. But also when you redesign a process but if you combine it with other methods you would usually apply DT in the beginning of a project.

In this sense, does that mean DT is used more as an innovation method after all?

Yes, maybe, but to be honest I have no real experience with innovation in the sense that you are really scouting the new thing. Although my daily work at first glance looks a little bit like an innovation department, it is not really, because what we are doing, my team and I, in the internal structures, we are taking existing solutions and adapting them. Maybe

working on a "new" thing but it has usually been done before. And with innovation it is usually scouting for the completely new thing. But on a product level, if you are talking about innovation in the sense of "bringing forward a product", in the definition that you combine stuff to bring a paradigm shift, then obviously DT comes in as a handy method in theory, however as I am not working with this field, I am not really developing new business models or something like this, I cannot really talk from experience here.

Explaining a bit more about the research project.

I also think from the DT perspective, in my opinion, certifications are important in the context of DT as well. However DT as a method, how I see it, you really get better at DT when you do it. There is no other way around it. So for some methods you learnt the theory and then you can directly apply it. I think with DT it is a little bit different. Because in order to become a really good coach you need to find your own style of coaching a workshop, because people are very different. You know some people are more outspoken and some are more timid or quiet. And both of these can work, but as a facilitator you need to work on your style and see what is the best way to help a team to get forward with a problem and this takes time. So there is no training or test or theory that can help you to master this, so you really get better over time. Especially also working with other coaches who have very different styles and then you can take what you perceive as the best way to facilitate into your own work. So you learn from other facilitators and integrate their style and methods into your own work.

And in general, do you think the 1 month training program was enough to make you feel confident as a DT coach?

Yes, absolutely. But in theory you are able to deliver a workshop then, but I highly recommend to work with other coaches in tandem. Also more experienced coaches of course what I did when I was starting, what I did, I started to use DT with friendly supporters. So people that I knew from before, with whom I knew it wont be a big problem if I mess up a little part. I think that is definitely a good starting point. For me the biggest shift from a skill level is always when I work with people who have a higher skill level than I do. That is the best thing you can do.

Appendix F: Interview Transcript Youp Selen

Skype Interview

Date: June 26th

Duration: 45 minutes

What is DT from your perspective?

First of all I am not sure if I am an expert on it, because I have some colleagues who teach DT. But for me it is all about not having a fixed idea in the beginning and then strongly connecting to research and that you start from an idea, doing research together with the target group or the people involved and by designing together find out what the possible direction is and steering it during the process instead of following a strict plan. We use it as, do you know the double diamond method? (Yeah) So that is the research approach that we use, but again, I am not an expert in it. I really like this idea of you don't have a fixed plan, you just start somewhere and your target group becomes your research group you could say. Does that fit your idea?

Yeah, I mean for me it is also a bit confusing sometimes, because I did Imagineering and now I am working on DT and it is not exactly the same, but a lot of things are very similar and then there is Service Design, which is also different but has some similarities. So I think there are a lot of words or concepts that in the end describe something similar.

Yeah and I think in the end it all starts from the basic idea that there are no simple problems anymore. So about complex problems and you need the involvement of everybody. And no longer acting as a consultant but being in the process, yeah involving actually the people who know best.

And you say that you have colleagues that teach DT, have you personally ever worked with "actual DT"?

No, not as the. I don't know if you look at it as a theory or a system to work with, but it is more like a more abstract approach. And a double diamond or even imagineering as more the process side are methods yeah, but I never used it as one system. For me it is more like

a daily approach, a way of working. But for example, maybe you know Studio Why. So some alumni of us are involved there. One alumni is even one of the owners of Studio Why. And they really work with like methods for 3 days, so I know that that exists, but in my role it is more like an approach that I generally use but not very systematic.

But you still work with imagineering right?

Yes, I do. And at the same time, like back then when you did the honours we really staged it as one program part, but nowadays at performatory it is more like in every part of the program the DT approach is in. So what you did was connected to process design, imagineering as a process designer, but we also have experience design and community design. It is all like a lab of 30 ECTS and in all the design labs we work with methods connected to the philosophy of DT.

And I remember from back then, the performatory also had some clients so you worked kind of like a consultancy. Is that still the case?

Yeah, but this also changed a little bit. Back then we really had products, like the design course of 3 days that we offered to companies and now it is more like for long term we work together and for example you have surplus, which is a care organization and there is a team of managers, around 15 and we actually guide them all the time. So we once did the design course and maybe we repeat it in a few months because there are new people working there, but we have meetings every month and then we see what are the topics they are working with at the moment. And then from more of a why(?) -level, a vision level, we try to guide them in their approach. But at the same time, we also made an educational design course. So where we help other schools to develop education and that for the upcoming year, we sold 5 I think. So in that way this whole DT that is what we sell more, but back then, what you mean is that we had the experience design course and that specific product we, yeah, to be honest we got a little bit bored by it. It was not really challenging for us anymore and that is our main reason: we want to develop knowledge not earn money.

Maybe we can take that Surplus example, it sounds really interesting. What kind of company are they?

They take responsibility for care that is not covered by the health care industry. So for example people helping each other, like neighbors helping each other and it is financed I think by the government. And it was organized in a very traditional way and they wanted to create a situation that they are more... I never like this way of explaining, but not top-down but bottom-up. But what they actually want is to give the people on the floor more responsibility. And that means that you can decide you work on a system level, where you say "okay, we organize ourselves in a different way" but at the end it is all about people who have another idea about their job or another idea about what they actually do. And instead of designing this new role, we helped them to find and define this role themselves and to reorganize maybe and then we are back on this system level. We tried to find out what is the real why or vision of this organization and from then on we had meetings every month and helped them to find the right way, to come to this new concession. But I am not guiding them myself, do remember Frank my colleague? He is in there and another colleague. And the interesting thing is that one of the managers who was our first contact is now in the team of facilitators. So then you see it is already becoming more from the organization instead of us coming in as the consultants.

Because this is basically what I want to research in my thesis, to see how companies use DT. But I think we can call this, what you are doing DT, it is a DT approach.

Yeah, for sure. I wrote an article, not really an academic article, just an article for a magazine about transformational events and what you see a lot and what Studio Why is doing a lot for example is that they have these 2 days, these hackathons like in a city center with questions from the city and then companies have assignments and then creative people, young people are sitting at the tables and they do a lot of sessions and at the same time most of these events are open and then people from the neighborhood walk in. And I think if you want to see DT then these moments are perfect. And it has a very transformational level, for the citizens who walk in to these events, they see what subjects are important to the city, they change their idea about the city. People who are involved at the tables they go to their companies with new ideas. So it has a very high transformational effect. But what is so hard is to grab the more product level effect. Because they go back to

their company not with a product, but with a new thought or a new idea or a new direction. And that is what we at some point concluded. It is instinct that we do these design courses, but it is not that interesting if we don't add a process afterwards to bring it into the company. Because otherwise it is like "okay, we had great 3 days, I am really inspired" and then you come back to the company and doing my normal job again and nothing changed. And I think that is a very important thing in DT. A lot of people when they talk about DT, they immediately see either the consultant doing research or the hackathon way of working. But I think the next step that we all need to work on is that we make it effective, that is has a result in the companies.

What would your ideal situation, perfect world scenario, then be regarding how they should use DT?

I think it starts with changing the idea of going for fixed results, from A to B and then it is ready. A company has to accept or implement a focus knowledge development. So instead of a product result the focus should be on making it a more healthy organization with more smart people working there. That means that it is a continuous process. And sometimes you have results out of it. A specific topic is part of the design research process, but I think with design research you can't think of a moment that it ends, it is like a continuous process. And that is what you see in a lot of organizations: team based working or self steering teams, all these kind of developments in companies are if you go back all rooted in the same idea, like giving the power to the people who have the knowledge. Making them smarter and giving them the power to make decisions themselves. But then the focus of the organization and the people managing it should be on making these people smarter. That is why we need people to be involved in research and in designing because then they will also in other moments that we are not there keep thinking from the same concept or idea.

So basically it should always be there, there is no specific moment that you go like "now we are going to do some DT" it should kind of be in the culture. Is that what you mean?

Yeah, like traditionally you had the managers and they were the smart people. They had the ideas about how things should be done in the organization and then they managed to bring the specific part of information to this specific target group within the organization so then they know what to do. But then you are not using all the knowledge in the

organization and definitely on a more value level nothing is changing. And I think that because of this complex society and the complex challenges companies are dealing with you need the involvement of everybody in the process of change. And that is why you see all these trends/initiatives like DT, action research, team based working, self steering teams but also a lot of online tools that are all focused on making people smarter and giving them more responsibilities and allowing them to make their own decisions (more autonomous). So it is like you had the industrial revolution, this is a new one. I don't know how exactly to frame it, but DT is not a topic on itself, it is a part of the paradigm shift that we are in.

And do you think everyone should be a DTer or more like the culture of DT should be within everyone at the company.

It should be a general approach, the same as if we had a managerial approach.

But do you think that the individual person should receive a DT education, or it is enough if it is like in the environment?

The question is what does it mean to receive a DT education. Does it mean that you can facilitate a DT session? I don't know if that is necessary. Do you know Arch L? It is a new way of project management and it is also based on the same ideas as DT. Like you start and during the project you adjust all the time with all the parties. And if you look at a big building project like for example the new campus of our university, they used this approach. And all the organizations that are involved in a certain time frame they have a meeting every week with everyone and then they adjust their plans together instead of one project leader saying then the plumber is coming, then the electricity company will come. And to do so, you have Arch L coaches to guide the process. In this sense I think that there will be new roles in companies, maybe DTers, but you can only have this role if the company also has the role if the company also has the culture and the idea that this will work. So you can have the people who are taught as DTers but I think most important thing is that you create a culture in which people are willing to work in this way and trust that it will also lead to results, because I am also involved now at the Breda University to change the way we work more into self-steering teams. And I see that the biggest challenge is that people are scared that things are changing and that they wont manage to be (a) part of it.

And that means that we need to slow down, listen, investigate how far are people what can they deal with, what is the next step we can give them and in a way that is DT.

Yeah, like the employees are then the "customers"

Yeah and what I see at Breda University and that they often make the mistake to fall back into the old way of doing things. Like they made a policy document that in 2 years we are all self-steering teams. That is a weird idea that people who have worked here for 25 years in a completely different way within 2 years time they will be on a value level, really internally feel like "yes, this is a good approach".

Because they put a time limit on it...

Yeah, it is really a weird idea. But anyways, we will just try.

We are talking about the perfect world right? If in the perfect situation a company somehow succeeds in creating this atmosphere, this culture you were talking about. Do you think there is any need for them to still work with external consultants?

That is a hard one. We talk about external and internal only because we know it from the old system. So the words make it hard to answer. Because if I look at Surplus I think some of our colleagues are almost internal for them. So I think not as a consultant, I don't see a future as a consultant, but what I see more and more is that the old consultant now is not saying like "this is what I will deliver" but they make an agreement like "I will be in your company for 2 years, 5 hours a week". And that is the agreement and then we will see what is there, we evaluate a lot together and reflect and then -again that is DT also in this role - then every time we will adjust the approach. Instead of doing it the old way, in which you have a consultant coming in at 5 moments and doing these workshops. So in a way the external person becomes an internal person in the deal they make.

That is really interesting

And I think this is really the future. And what we do now as a next step, that is also interesting, is that besides Surplus we work with other organizations in a similar way. And what we do now is bring these organizations in contact with each other. The managers from Surplus and the managers from other organizations that we are helping, one of our

rules is to bring these managers together so that they can learn from each other. And then they all become smarter in how this transformation works or they can even visit each other and that already is a DT approach. Because for us it is a research environment to learn how these processes work. So that is our next step and that is why we have drifted away from doing these two day design courses. We still do it if they ask for it, but we believe that is maybe an inspiration or a starting point, but it is not the solution.

And when you think about bringing these managers together that is really for them to talk about the process, how is your company, what are the challenges that you have, how did you solve them... Those kinds of things?

Yeah or for example what kind of knowledge do you need. Then maybe we can bring a knowledge moment where they are all together. And I think that for a knowledge institute like a university that is also the change that we are in. What use a lot lately is that we are no longer a university but much more a diversity, that brings in different perspectives. And that is our role, to bring these different perspectives together, that is how you can create knowledge around a topic instead of thinking as university like "we have the unique idea about how it works". But this is a very ideal way of explaining it. This is not what is happening at Breda University at the moment (laughs).

Yeah, but that makes sense I mean this whole idea of a university has existed not just for 25 years but for thousands of years, so it makes sense that changing this idea in the minds of people will take some time.

I tried to change the name of our university in Breda Diversity, but they didn't accept it (laughs).

They should have done it, I like it – I am still thinking very much from the old system in terms of my questions I am realizing now, but I will think about that afterwards (laughs). But space wise. This is maybe for being creative in general. In the company when you are not doing your day-to-day activities but when you want to do something that is creative. Often it is said that routine is bad for that, so in the perfect world. Where do you envision people to work? Is there an office or not?

I think there is not a general answer to this, because it also depends on whether you have an actual physical product then you probably need the space to work. So I think as DT works easier for people who work in the service or experience industry because you don't need a place where you have all your material. But yeah, I believe even not only work but in the future and I don't know how close we are to this moment, we live in different communities. Meaning that... okay, this is not a short answer... if you think about like all the social media, Facebook, Twitter, all these kinds of things. Now we are connected to everybody and there is a need in society to make more quality connections. Meaning that we will have separate communities. So I am part of different communities in the future. And in one community and in one community I share my interest in education and in another community I share my interest in Apple material but these two communities have no connection, only me. So if you look at it in the same way, how you live your life and how you do your work, I think that will be less regular in the future that you have 1 company where you work. But that is interesting for companies that their employees are not only working for them, but that they bring in knowledge from other communities that they are part of. And in a way this is connected to what I was talking about regarding the consultant being more inside the company. So these consultants they should develop more of a professional identity, like what is the typical thing that they do and that is why they are connected to different communities and that is why they are interesting for a company and no longer as an employee only giving their knowledge to one company, because it is limiting the input. It is a hard part to explain, but do you understand what I mean?

Yes, I understand what you mean. I think it sounds nice. I think a lot of companies will be scared then that their secrets, their knowledge will also get to the other companies. Because of course they want the knowledge from the other companies but they don't want to share their knowledge with them.

Yeah, but on the other hand, you see online a trend like with Wikipedia, or Facebook or all these things, the business model is drifting away from I produce something and you buy it, to who you are or what you know. And what we did wrong as humanity or as a world is that we accepted that there are some organizations that have the whole ownership. If we look at Facebook for example, they have the ownership on all our knowledge that we give to them. And I think that we will change into a more quality-focused situation, where for

example, it is the same with Breda University, it should be, it should act like Facebook. Like being the party who very transparently brings the people together that fit who we are. So that we are hosting this community.

It should be a social network?

Yeah, so like you are a member of the Breda University community still. And we know that when we contact you and connect you to other people we can make everybody smarter. So you will have jobs in the future via this community. But at the same time Breda University will ask you to share and will be the organization that has all the knowledge, because we combine all the things that you do. But of course that asks from you to share and from us to share. And that is the risky thing. That is the situation we are in. It is very strange at the moment. 2 reactions on this changing society. One reaction is keeping what I have, because everybody is taking it and the other reaction is opening it to make it more. And I think the second one is the most healthy one, but also the one that we are not used to. But I think in the future that is the most healthy approach for any company.

Sounds like a nice idea. Hopefully we will get there.

Yeah, I think we will get there.

You've already pointed to some challenges that you are facing with you colleagues who are resistant to change. Do you think that is the biggest challenge or is there other challenges in getting to this perfect reality?

No, I think the poverty of trust and imagination is the biggest challenge. And not only, now you are focusing on colleagues, but it is also in the system. Like what I did at creating performatory, I always kept away the system for a while. If you look at education then you have the government who assesses our education that is why we asses our teachers, that is why the teachers assess our students and the parents from the students they ask the government to check the education. So we are in a circle. And as long as we are all checking and assessing each other nothing will change. So what I did at Performatory is keeping away the pressure from the government, by just saying "okay, I take the risk, I have the trust and imagination that it can change, so I take the risk" and I gave the space to my colleagues to experiment and try things out, knowing that I was capable enough to

cover it if it was necessary. And then things changed, students became enthusiastic, teachers became enthusiastic, there was better results and that's why the government was happy and that is why they gave us more space. So change, the trust that change can bring us into a better situation is not only about the colleagues, it is something that the system should provide more. For example at the moment I am inviting the committee for accreditation of our courses to be a part of developing the course. Every 5 years a program in education is accredited by the government. We had accreditation I think 1, 5 years ago. And what I did now is I invited the committee again, already now. By saying okay, we want to do more experiments but I want you on board already now instead of only at the end and assessing. And they are scared of visiting us, because they are saying then we would give you preferential treatment, because we already give you insights. And I understand, but that is the only way to change it. They need to be involved. So in a way that is already again DT. Involving them, together do the research to create the next change instead of waiting, like in the other situation I am the only person taking the risk and they are assessing in the end. And now I try to bring them in already in the beginning of the process, to be part of this experiment.

And are they going to do it?

They are still hesitating. But we will manage. And even if they don't, look from a DT approach, I have planted the seed. And then we will see. Maybe in 5 years it will happen. I don't know. But what I try to explain by it, it is not just the... For me it is very easy to say "ahh, my colleagues they do not dare to change" but it is a system that is actually not providing space to experiment. And then of course that maybe the things that you do nowadays that someone might say that you are not doing it well. Then I think it is not strange that it is hard to change, because of the system.

Yeah, it is beyond the individual reality...

Yeah, for me it was always like I had my own company, it was not like that I had to earn my money from Breda University, so there was no risk on that level. One really important thing was that when I started I was really young, I didn't have a Master, so on all levels I didn't fit at all. So everything I did, they liked it, because it was like "ahh, this young colleague, he is coming up with all these ideas, he is a little bit naive but nice he is doing

it" so it gave me a lot of space to experiment and that is why for example at the moment I am trying to get young colleagues on board, because I need young, experimental people who dare to make mistakes. But the further you are in your career, the higher the risk is of changing.

What do you think companies can do to lower that risk?

Yeah, there is a very interesting concept, it is called "in company startup", I really like it and the whole idea about in company startup is that you have young people who start competing with the existing products. So for example if you look at Philips and then they have a department that makes light bulbs, LEDs and you have all these people who have been doing this for 20 years. And then really in the middle of this working floor they put an office of glass and then in there they give space for 4-5 young people to start creating a product that will compete with the existing product from the department. They are not restricted by any rules and they have the possibility to ask/access all the knowledge from the people on the floor. So the interesting thing is, all the knowledge is there that has been built up in 20 years, there are no limitations and you have young experimental energy. This is a very interesting way of innovating I think. And of course then the people who have worked there for 20 years they are mostly not happy. Because there is somebody internal competing with the work that they already did for 20 years. But if they are at a point that they see the effect and it is becoming instinct then usually the innovation goes really quick.

And then that becomes something that they work on again right?

Yeah

It seems like a competition, but in the end it is in house.

That is why it is important that the space in the middle is from glass, so that they see everything that is happening and build trust. And you could say that Performatory, in Breda University, is an in-company start-up. We started experimenting, but we could use all the knowledge that was there.

Yes, true! That is really interesting. I think I actually asked you all of my question. Do you have any final thoughts or remarks?

I was actually curious about your research approach. Are you using DT?

When I am doing the interview in person I have a little exercise that we do, when I ask them to envision the "perfect world" scenario how a company can use DT, I give them pen and paper and they can also draw something. To make it more interactive and creative. But that is probably the only thing.

Yeah, because what I think is really valuable to you, is to, but I can imagine it doesn't fit the time schedule of your research, but to also bring the people that you are interviewing in contact with each other. And see what comes out of it. Because then you do the same like I was talking about. Because now it is one moment. You and me and you are the consultant and you are going to work with this knowledge, but for you it is way more interesting fore example if I or maybe another colleague talks to somebody else in the interview. Because then you are open to new frames. Maybe at one of the theme days of process design, we talked about when you ask me a question it starts from your reference frame and I am only reacting on your frame. The more open you make the questions then and more like the turbo questions, then my frame starts and if you bring in somebody else then there are always new reference frames in and new perspectives.

You are right. That would be really interesting! So would you be up for another round if I organize one with more people?

As long as I am available, for sure!

Yeah, also schedule wise that would be a challenge to organize.

Yeah, I can imagine but you could say that you should do more of these things if you research DT.

Definitely! That is a good tip, a good idea!

Yeah?

Yeah, I think I am also still very much in the old system. So...

And that is interesting, we all are. And it is important that all the time we help each other to be aware. Because I also don't know how it works and how it will work. But the challenge is that we are always open and reflecting on it and thinking what can we do better and nothing is wrong, just try it out. So even if you don't make these combinations of people that doesn't mean that your research isn't good, it is just interesting to investigate these possibilities.

Exactly! And you planted the seed...

Yes!

Even if I don't do it now...

Exactly and that is what it is all about. And that is the opposite of managing the moment that you should do this. Because you are the smart person in here. You need to decide when this is interesting and when it is not. And in the traditional way the manager decides "from now on we do this kind of research".

Appendix G: Interview Transcript Thomas Zaiser

Phone Interview

Date: July 19th

Duration: 55 minutes

What exactly is your position at Deutsche Telekom?

I currently work for the employee transformation management, this is an organization in an AG form, we have about 2500 employees in our firm. We try to loose around 10-15% of these employees each year. And this is my duty, or the duty of my team and I to help the management to get rid of these people.

And in that, have you worked with DT before? Directly linked to your position?

Not directly linked to this position. It was in the previous position where I used DT, I use it at present in a project that a colleague of mine and I, we work with something called Serviceline and the top management of Serviceline, to help him to find new ways of delegation, new ways of working together, therefore we took the DT methods.

I'm going to ask you to go into a bit more detail about this. But maybe before we do this, you can briefly explain to me what DT even means to you?

DT means for me, using a toolset, having another approach of finding solutions, thinking in a different way and approaching problems in a different way. Rethink about what you achieved in a regular manner and last but not least ask in short periods what the customer wants.

And in the project that you just described, how exactly are you using DT?

It's me as the project leader and the colleague of mine, we work together with some people of the management team, some people of Serviceline, normal employees of Serviceline to find out new ways in collaboration, new ways of delegation, new ways in working together. The colleague of mine and I, we do the set up of the sessions, we try to find aspects for the group where they can have a look at and using the tools, not only the tools

as we learned in the toolset, also other tools for example in the beginning we took nearly a half day in informing the group. And explaining what DT is about.

To the people that would then be part of the process?

Yes

That is interesting. And those people had never heard of DT before then?

No

And were they excited about being a part of the project?

I think at the beginning lots of them were excited, they wanted to know what is really behind the word DT. We lost some in the project as they learned that they have to rethink a lot more than they had thought and also that they have to do something in these sessions or between the sessions. And this was for some managers I think they thought they only would have to work in the sessions, but I think they did not anticipate that they would have to work between the sessions.

But that wasn't a problem for the project? That they kind of dropped out?

No.

Okay, I'm glad to hear that. And you personally, how did you find out about DT? Do you remember the first time you heard about it?

I think it is about 2 or 3 years ago, I had an education about facilitation and as I heard of the DT project I was interested in it, I read a lot about DT and I thought and still think that it fits very well together. The facilitation and the thinking about facilitation with DT.

And that course was an internal course within Deutsche Telekom?

Yeah.

And that was a facilitation course and also some parts of the course had DT aspects?

I think if you look about the aspects behind the facilitation thinking you find a lot of these aspects in DT. First for example you have to put the customer in the center. Second don't

come across with answers where cannot really be sure that these are the answers for the customer. For example, in the facilitation, if somebody asks me to help him with facilitation, I tell him I can't tell you how much it will cost, I can't tell you how long it will last. I can tell you what we will focus on in this project, but I can't tell you that you wont do any change processes you don't need. Because you find out change processes by the employees, by the leaders and I think they know best what they need for change processes. And if you look at DT, in my opinion, it is nearly the same.

Yes, true. There are a lot of similarities. You just said that someone can ask you to be a facilitator, is that also internal within Deutsche Telekom that you basically have a position as a facilitator and other project leaders can ask you to help them with the facilitation?

Yes, this is the same thinking behind the DT approach.

And how exactly does that work? You are working your normal job and sometimes you are also a facilitator for other projects.

For change projects, correct and as a facilitator for DT, for DT projects.

Can you tell me more about the logistics behind this? How does it work? If I am a colleague in your company and I have a change management project. How do I reach you? Do I have to know you personally or is there some kind of system to arrange this?

Good question. Very good question. I can't tell you one generic way. It isn't always the same. There is no pool. You can easily find at the Deutsche Telekom. Usually you know some facilitators, some DTers. And us facilitators we meet once a year and I think it is normally in Germany you would say "Mundpropaganda" (=hearsay). And if some other facilitator needs help, he asks those facilitators he knows and those facilitators he likes to work with.

I'm just thinking of the perspective of the company. How Deutsche Telekom is doing this at the moment.

About the DT, we have a community and DT is in everybody's mouth. And if somebody wants to get help in DT, I think it is the shortest way to find out something about this community and I gave you the contact of Dirk Waskönig, he is one of the main players in

this community and he is one of the main trainers in this community. And he, perhaps, looks in the organization. For example the headquarter of Deutsche Telekom has about 15 or 20 DTers and if he has a project or if he is asked for project help in DT for the headquarters, he will ask some people in the headquarters organization.

Okay, so there are some people who are fulltime involved with DT?

No. As far as I know only 1 or 2 in the whole Deutsche Telekom.

And do you think it is an asset for you not to do DT fulltime but to also have your normal role?

Good question. I think if you want to be very close to the business it is much more helpful to have a regular work, because I think you look different at some areas, at some themes in the project. On the other hand, you need the professionalism to do such DT projects and therefore very often we work in groups of 2 DTers in those projects where we can mix someone who is from outside of the organization and someone who is not from outside the organization. So one has a really clear picture about the organization and the other one in his role has a clear picture about DT in the project.

But they are both still employees of Deutsche Telekom?

Yeah.

That seems to make sense to me. Do you know if Deutsche Telekom also works with completely external DTers?

A good question, I can't give you an answer about the whole Telekom, I think this would perhaps happen, but it is not just that what the Deutsche Telekom wants.

So they prefer to have in-house people?

Yeah. Because they do those trainings for DTers for about 3 or 4 years and these trainings are not really cheap. I think they are about 15 000 or 20 000 a person. And therefore you want to have something back for the money you invest.

Yeah, that makes sense. And do they work with the HPI or some DT school?

As far as I know the main people they work with in the training, they came from HPI, but they don't work for HPI anymore.

Then another question related to how Deutsche Telekom does DT. Are there any designated spaces/rooms to do DT sessions?

We have creative rooms, where we can do those sessions, but those rooms are often used by others for other sessions, for other meetings. So I can't say yes or no. It depends. We normally like to have those creative rooms, for DT but also for the facilitation work, because inside those rooms you don't have the desk and the chairs fitted in the room, you have the possibility to remove everything, you have the possibility to for example, don't laugh, to sit on the floor. This is basically impossible in the normal meeting rooms.

I can imagine.

So we try to get those rooms, but I think it is not a vacant space. If all the DT and facilitation projects could use those creative rooms in the best way if all they want to use those rooms, there is not enough vacant space.

And do you sometimes go out in the field? In completely different spaces?

Out in the field to ask or to work? In front of the building or what do you mean?

Well both, well first of all maybe in the first stage of the process to maybe observe your customers or interview them but then also, I don't know, you could also build a prototype in the park right?

The second I think this is not really often, I myself never had this, the first one this really happens and this really happens quite often. Asking and observing the customer. And therefore leaving these creative rooms the meeting rooms, the offices this happens quite often.

That sounds really nice. In general I feel like Deutsche Telekom already has a quite organized way of using DT which is really interesting. It seems to be a big part of the organization already.

A big part of the organization I don't know. I'm not sure if really anything or any idea about solving problems and finding solutions is a big thing in Deutsche Telekom. Agile I think is a big thing in Deutsche Telekom. Whether I would say DT is a big thing, actually not. But all those agile methods have become a big thing in Deutsche Telekom. Also agile organization. If you ask me whether DT is very well organized. I think if somebody needs help and if this one wants to solve a problem with a DT project, he will find a project leader who knows everything about DT. So if somebody really wants to use DT, he will get this. But I think we have a lot of people also in the management who don't know enough or much about DT and they want every problem to be solved with DT projects and in special cases they don't want to hear that several problems cannot be solved with DT.

Do you think this is also linked to the company culture of Deutsche Telekom maybe?

Quite good question. If by company culture you mean that most of the managers think that they know everything I would say yes. If you mean that all members of the big family Deutsche Telekom don't want DT or want to use DT in the way they want, I would say this is no cultural problem. But for a lot of leaders, for a lot of people in the management it is not a normal habit to say "I heard of that, but I am not really sure whether you can help me for example with a DT approach". So normally it goes like they tell you "I need a DT project, this is my problem, just do it with DT. And if you tell those people let's think about other approaches to solve this problem, they know it way better than you, which is the right way to solve the problem than you do.

And that can then be a problem for the image of DT, because then you might end up doing a session and it doesn't work.

Indeed. One example. I had a chief, XXX-Vorstand, in a smaller AG and she gave me a project "you got 2,5 hours to solve this problem with DT". And I told her if you want this problem to be solved and if you want to have this problem to be solved with DT, you have to look for another person. I am not the right person to do this in 2,5 hours. Because my opinion is that the project team will need more than 2,5 hours just to understand what DT

is. And then we have not solved any problem at all. And it was round about 2 or 3 weeks later, when not this chief officer came, but one of the people working for her and she told me "okay, Tommi, please be so kind to just do this with DT and take the time you need. Because we did not find anybody, who told that he or she will be able to do this in 2,5 hours"

And why do you think she originally thought that you could do it in 2,5 hours?

I'm sometimes of the opinion that they think this is a magic tool and everything is possible by using this magic tool.

And then in the end, do you think after the process, I don't know if it is still going on. But do you think afterwards she understood what DT is really about?

I had a preparation session, with the top management and the leaders of the several departments and I took, it was about 3 or 4 hours, using some brainstorming methods, some idea generation methods, just to show them what is the thinking and the main part in DT. Also explaining the circles and I think after that everyone knew much more about DT and the chief officer told me "I don't know why you did this, I now understand much more about DT, but we lost time, because we are not one minute closer to finding a solution for our problem."

Was that maybe because she had like a really tight budget or a fixed time schedule and therefore really needed a solution fast?

Good question, I think she wants a problem to be solved in a time nobody can solve this problem in.

So it wasn't really that the objective constraints forced her to think this way.

Yeah, I think it was not a problem with the budget, not a problem with the timeline. She only wants to have projects with a short run and if she has a problem she likes to have the first step in about 2 or 3 days and the solution in about 1 week. And this might often be problems or projects other know that you need much more than half a year to solve this problem. So this is a special kind of understanding how you can solve problems.

You said DT is mainly used as a problem solving approach and also this colleague that you were just describing, she wanted you to solve a problem. In most of the cases that you work with, what kind of problems are these usually that people want you to solve with DT or that you want to solve with DT?

In the last project or the project I am already in, as I told you, we have problems with the leadership, I would say they had a problem to find appropriate employees, because they... Yeah, if you hear people talk about this Serviceline, it has no good reputation and they want to get better. This was the last one. The one before I had a problem with a product and therefore I had a problem to solve with an IT system, the usability of the IT system or the IT system did not do what the users expected (wanted it to do) and therefore we had a problem about an organization to get better reviews by customers.

Alright, so all kinds of problems actually

Yes

– Start of exercise: the "best" way to manage DT –

Purpose. Do you think DT should be used for all kinds of problems to solve any kind of problem?

No. I can't believe that there is any tool existing that is able to help in every case.

So for what kinds of problems do you think it is suited?

I think it was a problem for the organization using DT what we do right now and we certainly do not only use DT aspects in the way we work. I think DT is very helpful if you want to understand. It is not really helpful if you think you already know what the customer wants or what somebody else needs. And you already have a special solution in mind. I think this is quite often, if you get a project, it is quite often that the one giving you the order of the project, the problem owner already thinks that they have a solution for the problem. I think it is quite often that you find that a part of the solution is already written in the target or in your work book for the project. And I think therefore you need somebody who is able or who wants to rethink about what he wants from you or from the project. And this is rare. And please don't ask me whether this is a part of the culture, because I don't have the answer to that.

Okay (laughs) then I won't ask you.

So can I summarize that for you really the empathy part of the process, the going out in the field, observing the customers, asking the customers, not assuming anything, if you build a prototype bring it back to the customer asking them for feedback, that is the main asset of DT?

Yeah.

So then it can still be kind of used for any kind of problem, but mostly for problems that include customers or clients in some way?

Yeah

Okay, got it.

Or interaction between persons. But not to find out any technical solution for something else.

Okay, yeah. Cause then it still is a really wide field that you can use it for. But not for like specific technical things. That makes sense. And we talked about this briefly, basically Deutsche Telekom right now is trying to use DT mostly internal, because you said the trainings are really expensive and of course they want to get an ROI, do you think that is not only logical but also good? Or do you think sometimes it might also be adding value to have an external person to come in?

I think it is a good idea to use it internally, in some special cases it might be useful to ask for external help, it might be useful, but I like much more the opinion if you train your staff, also try to use it. And don't ask externals for help.

And in that way, the DTers they are not only DTers, you said that basically all of them have another role in the organization, you already said that you think this is a good thing, because it gets you closer to the projects and you actually also said before that in some way you can within your company get someone who is external. If you have the tandem facilitation as you said, with two facilitators, if one person is kind of closer to the project

and one person is maybe from another field of the company, they are almost like an external person.

He can also be from another company, we have about 250 companies within Deutsche Telekom just in Germany. He can also be from another company, but from the Deutsche Telekom.

Yeah, actually for companies that are as big as Deutsche Telekom, the word "internal" is relative. Someone can be internal but kind of external.

But not external outside of the group Deutsche Telekom.

Yes, understood. Then maybe the next one, the DTers, you already said it is actually a good thing if people have other tasks and roles as well. And do you think that the training program for example the one that you did was good in that way?

I think our training was about 15 days and for me personally I think that was good and enough. So I wouldn't really change that. I think this works quite well and it can work quite well but you need to make sure that those who were trained need to get enough projects. To keep the momentum going afterwards and practice more and not forget what they learned.

Do you know some people who did the course and didn't immediately work and then

Yeah, I know like 3 people personally.

Yeah, that is a shame. Do you know why that was? Why they didn't immediately start working?

Good question, I think it was the direct leader who told them, it is quite a good idea to have this training and later on he said "but you won't help anybody else. Use it in my team, use it in my department, I don't have a problem right now that requires DT, but if I have a problem I will come to you for your help."

That almost sounds like there is some kind of rivalry between the departments or teams.

Yeah, that's true. I think this is a truth yeah.

That might be a challenge for a company like Telekom to overcome then.

Yupp, definitely.

Next thing, the space, you already explained about the creative spaces, but in the perfect world, doesn't necessarily have to be realistic right now, but what do you think would be the perfect space to do DT?

I think the perfect space to work with DT is a big room, with nearly nothing in it, with having a lot of walls where you can draw, where you can paint, where you can wipe it away, where you can be creative with your hands, where you can perhaps use something to come to distract your mind for example a Foosball table, some area to relax and I think one of the most important pieces of equipment you need, we have a separate DT suitcase and post-its.

What is in the suitcase if I may ask?

Oh, from scissors to papers to pipe cleaners, I don't know the word in English, to watches to several papers, play dough, stuff like that. All kinds of fun things to work with and be creative with in mind and in hands.

And you think that could always be the same space? If in your office building there was a space like that you could just use that space every time and that would be good?

Yeah

And, last but not least... The moment. When do you think DT should be used? Just to solve problems that already exist? Or maybe also to anticipate potential problems and reflect on the status quo?

In my personal opinion, I think the best way is not to have a problem. The best way is to ask your customer I wouldn't say daily but in a certain period of time. To check whether they are happy. Mostly you get the answer "it's too expensive" but yeah, I think this is the much better approach than solving problems. Not having problems is the better approach. And in my personal opinion, if you really want to understand the customer it is much easier to help the customer, it is much easier to solve problems, it is even easier to find solutions but it is hard work.

And I can imagine some people might not see the direct value, because there is no problem. Some people have the mentality of "never change a running system" and think why should I invest all these hours of work if everything is going fine.

Correct.

Appendix H: Interview Transcript Rui Ferro

Face-to-Face Interview

Date: July 23rd

Duration: 65 minutes

What is your current work situation right now?

I am starting a company, with two guys I met at Santander, they are really senior, they have a computer programming background. I on the other hand have a design background, so sometimes we don't understand each other, which is fine. So there is that which is in the embryo phase, it is very early on. And there is Carlsberg, I am working at Carlsberg. It's been 5 months I am leading a project. It was a bit of a mix, I was a Scrum Master but I was also an agile coach in between teams, yeah, management doesn't really know what they want.

And tell me about the project you did related to DT.

Yeah, there were two projects. One was Santander Hub, which was more a 3 day thing but it was heavy on what people now call DT. DT is a structured process, I don't know why people call it DT, because it is just design. I don't know what DT is. But I know what Design is and design is you have a problem, I'm going to solve it. It is a communications problem or it is some way to interact with other people, you don't know how to. I step up and I will help you. So this was, I'll go into the first one briefly. It was just a very legacy way to have all platforms or all applications of a bank and they wanted to have one single place to manage the communication between branches and manage the communication between the branch and headquarters and also in some cases manage the communication between the bank and the customers. So in 3 days we designed a simple solution. Very simple, 3 or 4 pages, really simple, then I put it in Illustrator and Photoshop and that was it. So I sat down with the functional analyst and every 2 hours I would come up to him and ask him "hey, what do you think of this? Would that be okay? Is that interesting?" So I would do it, I would show him what I was doing and get a brief feedback.

This was during the 3 days?

This was 3 days, this was like a design marathon. Design sprints, which is something that is popular in design. You brief me in the morning, I show you late in the day. And yeah that's it. We just keep doing this.

But it was just you working on it then?

Just me. This was not a job, this was just me building the screens the UX part and then eventually there would be someone developing the solution. Doing the "actual work", because they like to tease and say "that is just making it look pretty, that is not the actual work, people are not going to touch your design".

Does that mean they did a lot of research before and they presented you with it?

No, there was no research. I guess what I wanted to give you, was a case of design done wrong. Cause I didn't have the autonomy to go to the end customers to just experiment and do. Yeah, basically get the product in their hands and see what they say right? So in the other one, we did exactly that. We had a much more complex project, that's credit?-workflow, in which you do at the level of the branch there would be something for you as a branch manager or just the branch clerk that works at the branch, you would need an IT solution, you would need some sort of IT solution from the bank to simulate credit, to run peoples' financials through the application and then just understand whether or not they could apply for credit, what would be a good solution for them. And this would be for every single product of the bank. So this was 50 applications. So we had to streamline from 50 to 2 applications. Which was just for small and medium enterprises and then big companies. Cause obviously that was a split.

You said before that to you don't "know what DT is" and that to you DT is design.

So I've been a designer since I was 16. What is design? Design is, as I said, solving a problem. An engineer solves problems. An engineer writes puzzles, a designer makes puzzles, the only difference is that it is visual. So it is not screws, it is not rocker science, it is not computer engineering. It is visuals. It is image, it is geometric forms, it is colors.

So when an engineering solves a problem you wouldn't call that design?

I would. It is just in a different format. Design takes many forms. Steve Jobs for example he was special, because he saw the special potential that design could have to his business. He paid a lot of money to one of the best designers. The designer who built the ABC logo, the Westhouse logo, he was really good, he was a genius. And Steve Jobs was neither a designer nor an engineer, he wasn't visual, but he was a business man and he was very intelligent. Because he couldn't cope and he couldn't tell the difference between a square and a triangle, but he knew the importance of things and we need more people like that. Because there is obviously a problem and I am getting familiar with the problem that engineers have. I am talking to business and I have always been familiar with the problem that I have as a designer to kind of speak the same language as the business, because they don't see the benefit in what we do most times. And now I have another problem, which is to tell people that they need to trust the people that they hire.

So 50 applications into 2, how do you do that? First of all you tell them that this doesn't need to be that segmented anymore, they can just come up with a solution, I'm pretty sure they can come up with a solution from an engineering perspective that could most likely service to everybody and you can just segment it into market segments. Small business and big big businesses. They (the manager) liked the idea, but what we did next was we had to go to the branches, see what the difficulties were and then there were 20 people developing this new solution. But the problem was that there were separate teams for doing the research and for actually building the app. And to me that doesn't really make sense. Because then the people who will design the solution don't really understand the problem. So we made the people that were going to design the solution talk speak with the branch people. Unfortunately the branch people were not the ones in the session. I wanted the actual people that work at the counter to be in the sessions but whom they brought in was the brand manager. But it was better than nothing. It was constructive, but they didn't really understand what we were doing. So we had to go in several times. "Guys, forget about DT, what we are doing here is just design. What we are doing is listening to your problem and what we are going to do is drill your brain as much as possible so that you can give us every single pain point that you have and then I want you to give us suggestions on what

would be an ideal solution to help more customers and be quicker and more accurate in what you do." So they appreciated the honesty and the sessions were good. This lasted for a week. And this wasn't done by me, I was sort of on the side, but I was interacting sometimes. Because this was done by Accenture. I was sort of helping in steering the process. Because I was the only designer in there. The guys conducting the DT routine were just project managers from Accenture (is this a problem?? Other interviewees say no.). The whole team of development was Accenture. So they had no clue what design was.

So even though they were DTers and they called it DT, they didn't know what design was?
They weren't DTers. No, they just chased the trend. So yeah, I was kind of steering them in the right direction.

Do you think that is a problem? That they call something "design" when it is not design?
Yeah. Cause it helps build an image that is not correct. I saw something on LinkedIn a while ago. "We need to stop design thinking and start design doing". So there is something very similar that applies to my line of work now. I will always be a designer, but now I am into structuring peoples' work. You need to stop starting and you need to start finishing. So that is in some way, it applies to the same extend.

It's actually interesting. Because most of the people I interviewed who had a management background said that DT was really good to start a project.

It is good to start a process. Design is pretty straight forward. But for example with the new business that I am starting. If you come to me with a problem, like "Rui, I'm trying to create the Dröge brand. I want to be a writer so first I need you to study me and see where I fit. Come up with a symbol, that identifies me." and then I would obviously come up with some questions: Who is Anne Dröge? What does she like? That sort of thing. And that should be pretty quick. These people tied to management that work for consultancy firms and consultants don't finish projects. They want to open as many as possible. They want to build hours. They don't care about being productive. And so we clash. The more I finish the better. We are on opposite ends. And I get that every day

You also work with agile right? Because some people told me that DT is great because it has such a strong focus on the customer and then afterwards agile or Scrum is better to finish of the project.

Look, I'll give you an example. This is my first draft. What do you think? This is my second draft. What do you think? This is something that people in management are not used to. You know the difference between waterfall and agile? So this is waterfall, it is a management process. In the beginning you do the analysis then you develop something and test it. But why don't we do it all at the same time? So people in business are used to doing everything step by step (and DT tries to change this....!!). That is why it is called waterfall. It just goes down. In agile everything happens at the same time. I build something, I show it to you. You give me input and we keep going. We do chunks, little by little. So this is something that I am very familiar with. This is what I am used to doing. If you come to me with a problem Monday morning, Monday afternoon I already got to show you something. Cause when people have a communications problem they are not very patient or they want things done, that is the thing with design. Most people think they can do it. Computer programming has a natural barrier, which is it is another language. If I speak English that doesn't mean I can code in Python. Just the sequel is fairly simple. But it is still a long shot. So people do think that they can just draw some triangles and do some gradients and they can build a brand. Which is fine. But if you want to leave a mark, you got to speak to someone who knows what they are doing. But yeah, I would like to emphasize this, that DT is basically design and we need to go back and stop calling it DT and just call it design. This is something from the beginning it feels like business or management. But whoever it is, is just someone who is trying to take control of the process that has been here for ever. And it does depend on customer interaction and it is pretty straight forward as I told you. And if I'm designing something for you, you got to give me input. Daily, weekly and that is the most important part of design. The customer.

My focus related to DT is the management of DT, so how can companies best manage the way they use DT. And one aspect that I am interested in is the aspect of using it internally or externally. So for example whether a company works with an agency to do DT or does it internally with their own employees.

They should work with people in house. They should have their own designers, they should have their own engineers, they should have their own creative people and their own critical thinking people. I am pretty conservative about that. And why I am conservative about this, is you don't want to work as a freelancer your whole life. At some point you want to be in a place where you feel like you belong. I like that idea, it is a romantic idea, that you can work at a design studio or an agency or in a small co-working environment. I think you should have a permanent contract. But that is another discussion. Because they give you more, if they feel safe, they give you more in the long run.

Then again, in the project for Santander they hired you as an external person.

I was a consultant, yes.

You think it would have been better if you hadn't been external?

No, it wouldn't make a difference.

So what is it then? (laughs)

In terms of security it obviously makes a difference. But for the project it doesn't really. But you got me thinking now. If I am going to work at Santander I am already going to have a vision of what Santander is, because I am going to have emotions tied to it. So I had no emotional ties to Santander, other than my mum having a Santander bank account.

That could be a positive or a negative thing right?

Yeah, there is a difference. Right now what I was doing was establishing the process in a data engineering team. 25 people spread across two teams serving about ten projects. So we had multiple stakeholders, multiple customers in Denmark, in Switzerland, in Ukraine, the UK. All people working for Carlsberg. And what we did was to go for evolution instead of doing it the shrink way. What a shrink does he comes in and he destroys what is there so he can build it up little by little. So if you have a problem and you need an intervention, people are going to destroy you and then build you up little by little to bring you up. So that is revolution and that doesn't make sense, because our essence is evolution and that is why we are not monkeys anymore, because there was an evolution. Sorry, I am getting off topic. What were we talking about?

We were talking about the effect of having internal or external DTers on a project.

And I don't know the first thing about data science. It is very complex. There is a lot of math, there is a lot of computer programming. And I don't know if it was done on purpose by the person who hired me, but I actually like the idea that I am stepping in, to help people in a very technical area in which I have no idea what they actually do. Now I do, because it has been 5 months. I asked all sorts of stupid questions and I believe there needs to be someone who is totally ignorant, who is totally agnostic or at least atheist to what people are doing.

To go back to the start and ask all these stupid questions?

Yes, someone who has done 20-30 brainstorming questions in which there are no stupid questions. People laugh a lot, but they eventually come out of the session with a resolution.

– Perfect World Exercise begins –

Purpose... What do you think design should or can be used for?

Pretty much any problem that you have in the world can be solved with design. The world is made of many problems, complex, interesting problems. Humans are visual so the problems need to be simplified to a visual manner, with little noise and in a way that triggers the brain. You know what triggers the brain the most? Patterns. Because we make sense of the world in patterns.

About the DTers

What is the first thing we do when we get to kindergarten? Except for playing with toys or other kids? It's drawing. So that is something that you never should leave. It should be a constant part of your life. Because I don't believe in people who have this special ability to draw. They just dedicated more time to it. Like I can't draw better than you, I'm pretty sure. But I can do it in the computer, I can do it in the software. You have to draw to be a designer. If you explain it, you don't have it be a Picasso. That is something that we should be doing every time. Every point in our life we should be drawing. In that way, everyone

should take part in the process, design is not exclusive. No idea, no proposition is dumb or should be disregarded without being on trial.

So in that way everyone who is in the company or all the stakeholders should be involved in the design process?

Yeah, that is it exactly. Everybody should take part.

Internal vs. External

One thing that we are sure that the machines are not going to replace is creativity (is it though?). If design is important and the organization cares about the future: internal. Critical thinkers will be the most important people this century.

In that way, do you think design should almost be part of the culture of a company or is it more like a method that people can switch in and switch out from?

I think it should be a central part. A lot of organizations are bringing design to the core of their business these days. Apple has done it for a long time and Microsoft and others are following this trend now. So I think for a lot of organizations bringing design to the center of their organizations is the way to success.

Space

I don't think the space matters for design in specific. Of course no one wants work in a basement without light, but except for that I don't think it really matters.

Moment

When does design kick in? Whenever there is a problem. There is a misconception that engineers know nothing about design. Engineers know the best about design. They just haven't studied color. But they don't need to.

Yeah, you say design is visual, but in the end it is about problem solving right?

Yeah, as a discipline it is visual. But it is not tied to colors, it is tied to shapes, to organization, to process. It should be a simple expression.

Other thoughts

You need design in a lot of different circumstances. For example in IT you need design, not in the most obvious way, but you need it. You need to have a notion of design for other things and people don't know that what they are doing is design. So you know architecture. Architecture is building buildings. Is it just building buildings? No. There is criteria. They have to be functional. They have to be nice. But the functional side is the most important. For example the Ritz here in Lisbon. It is a Bauhaus style building. From the outside it doesn't look like much. But from the inside it is designed perfectly. (...) But design is everywhere. Systems architecture. Windows has an architecture. A data warehouse has an architecture. Again, design solves problems. It needs design for a landing page. But also for architecture. In architecture, functionalism is the main criteria, how things work inside the building, disposition of elements in space. Design helps solve that problem.

Appendix I: Interview Transcript Kathleen Braun

Phone Interview

Date: July 26th

Duration: 45 minutes

Can you explain what exactly you are doing with DT at Deutsche Telekom?

It's quite complicated. It's not my fulltime job. Mainly I work at the HR department for Health and Safety. We have a 80/20 rule here at Deutsche Telekom, meaning that you can work at your normal job for 80% of the time and then you can have an extra job, not an outside job but another job inside Deutsche Telekom, in another department. And in this 80/20 solution I work 80% in the HR and in the rest of the time I work with DT, facilitation and Scrum. And usually we have a mail book, so for the whole DT group, we are about 60 people doing this mostly in the 80/20 solution, some have 70/30 or 50/50 that depends on the leader of course. What is allowed in the department. So we have a mailbox and in this mailbox other people can send in requests like "I have this and this project, could you help me, could you support me with DT facilitation?" and then we check this request and do some clarifications and then we jump right in and look for possible DTers. That's basically the process to begin a workshop and then we find some DTers, like I say "oh, I have time and I am interested in this project and I have time and resources, I will do it" and then we do it usually in a tandem, so 2 people, sometimes more depends on the project of course.

Do you see a trend in the kind of projects that your colleagues require DT help for?

You have to understand that in the beginning there were mostly normal DTers without any facilitation or change knowledge. Of course they were aware of this, but there was no training for change and facilitation. So then we did it with normal DT, so product development, but we realized that the most product development processes are also change project. Because you have to leave your baby. So now we mostly have change projects, like transformation projects with DT. But also normal product development. It really depends on the request of the department. But I guess there is also a normal product development but it has a touch of change. So I would say the change is more requested, but

not directly, because the people don't know it, the requester never knows that it is basically a change project

So the requester thinks it is more on the product development side and then in the end it turns out that it is basically a change project?

Yes.

And from which department are most of the requests sent?

Oh there is also no trend, but this is actually also a little complicated. We have more than one company within Deutsche Telekom. You know Katja, she is working for DTSE, which is the department of so called group headquarters. So the main quarters from Deutsche Telekom. So "the Deutsche Telekom" if you want to call it like this, where all the managers are, the chairmen etc. they are with group headquarters and then I work for USD, Deutsche Telekom Segment Deutschland. And the X-Navigators where I am doing my DT are only responsible for USD. In GHS, in group headquarters, they have Design Academy. So we of course only get requests from Deutsche Telekom Segment. And T-Systems also have their own DT, cause they all do it in a different way. And ours is in the 80/20 solution as I said, we look for normal people from different departments and in group headquarters they have external DTers. That's their main job and not like with us, we are basically in the company and have this 80/20 solution.

The DTers, the 60 people you were talking about, how were they trained as DTers?

Yes, I had program of 2 weeks in total for DT training and 3 weeks in total for facilitation, like a boot camp. They call it boot camp and it really is a boot camp. And before you apply for this training you have to ask your manager and then the 80/20 rule kicks in, then the manager knows you are interested in and when you apply the manager has to sign off that from then on you are in this regulation and from then on 20/30% of your time will be dedicated to DT facilitation. So there is always a training.

Your manager obviously was okay with you doing the course, do you think most managers are excited about the process of someone in their team doing DT training or are they generally more skeptical about it?

No, I guess they are not really fine with it usually. In my old department, I worked in the finance department before and there they were keen on it, because we used DT and of course they wanted someone that has the training in the department to save some money. And also I was responsible for change, that's why I had the facilitation change. And when I applied at HR, I told them about it from the beginning and that I want to come but that I am in the 80/20 rule and they were fine with it. But I guess for most managers it is not fine. I mean here we are only 60 people and in Bonn alone we are over 5000. So I think that gives a good impression. And I also know a lot of people that did the training and had the approval of the manager, but now they are not working with DT anymore or they are not in the classes anymore. So normally the normal work is so overwhelming that they can't keep up working with DT.

What do you think a company could do to overcome this problem?

Mhh, that's complicated. I guess we need a good supporter, we have Tim Röttgers on our side, which is really good. But the managers under Tim are also fine with DT. But the normal line managers are not convinced of DT. They think it costs money and they take our resources, they shouldn't do it. If they want to have DTers, take external ones and we pay. That is a common attitude within Deutsche Telekom. We have our own people that know how to do this stuff, but we ask external ones like McKinsey or all the big companies to do it for us. The same is for facilitators. We have a lot of facilitators and DTers within the company, but usually we ask-(there are a lot of departments- that ask someone external to do this. I don't know why, because they cost money, we are paid by the company, but they don't have to pay extra for it. I really don't get it. But I guess the problem is that we believe the solution is within the system you know, within the people but they don't think that, they are not convinced, they think the solution is outside. And also there is another thing, let me give you an example, I have a conflict with a colleague now, because I want to do a DT project. And he thinks it's a good idea but he isn't convinced that it will work (do any good) because he thinks the customer doesn't know what he wants. And DT you

know, it's the other way around. And I guess a lot of people within Deutsche Telekom they have the same attitude. They think we have to tell the customer what they need.

I had another situation, ahhh, I really hate this DT project, I had a project two years ago, it was awful, they asked us to do the project and after one week we had a one week sprint, which was really exhausting because they had time limitations and it was really exhausting for us as DTers but we said we would do it, we will help you. And afterwards it turned out they only did it for the manager, because the manager was really convinced, but not the team itself. And we went to the customers and the customers gave them some input and really gave them solutions, there were people saying "do this and this, I want this product." The people, the team, didn't listen, it was really awful and now I watch TV and I see exactly that product developed by another company. I hate it. I really hate it. It makes me want to throw up. The customer said it. Really, I can give you the example. The customer said "Do GPS tracking on my cat and dog. I would really love that. I want to know where my cat and dog are." And now there is a solution for that. But yeah, so you see, they only wanted to ask their customer if what they had designed was fine for them. Yeah and most people are like this and most departments think they need to tell the customer what they want. ...and people are not open enough, some people. For them it is not the right thing to do. And it's okay. You know some people are really into the old project management style and DT is not a one-fits-all-solution and it doesn't fit all the time and it's fine. And we always emphasize that that is fine. And that is why some people step out of the projects sometimes and yeah, for us that is fine. We say maybe it is not a solution for all people in Deutsche Telekom.

I know this is a stereotype, but do you see a trend that it is mostly older people that are resistant to the new methodologies or it is really just a personal attitude?

As a first instinct I would say it is old people, but actually that's not true. I know a lot of open old people, they are coaches, they are even working with DT, I have a colleague, next year he will go into early retirement and I have two of them, they are DTers. So I actually don't think this is a trend. But, my colleague that I told you about, who thinks the customer doesn't know what he wants, he is really young. He is like 24. So I don't see a trend in this. We have a lot of old people in Deutsche Telekom, I guess that's why you think there is

such a trend. Because you know if you have 10 people and 9 of them are old and 5 of them think DT is shit then yeah, it seems like more old people are against it, but there is just more old people in general... Some are open and some are not. I guess it doesn't depend on the age, more on the attitude and how you live your own life, your private life.

Then my next question would be: Is there any designated spaces that you can use for DT or is it just the normal meeting rooms?

No, we have DT rooms. But also if we use normal rooms, in some office buildings, like in Bonn we have rooms where you can put away all the tables and chairs and make it really agile and then we have agile rooms, they are really colorful and full of DT stuff and we have mobile DT equipment and two suitcases. With the suitcases we go from meeting to meeting if we can't use our agile meeting room.

And are the rooms good the way they are? Are they basically perfectly designed or is there sometimes something that you miss?

We had a DT workshop on Tuesday and Wednesday and it was mhhh, the annoying things is actually not with the room itself, but with the system. You know the fact that people don't clean up after themselves. You know, we have to clean up after the workshops, put away all the waste and things like that and also we have to restore the equipment. If you use tons of post its for example and of course you go to the order manager and say "can you please order some post its, I need to put them in the DT room" and it's not a problem. But some DTers don't do it. They just leave it like it is in the end of a session and that's awful. It is more tidiness and cleaning that is the problem than the rooms themselves. They are okay. Of course it would be great, if we had more of these normal DT rooms and didn't need to take the suitcases, because they are really heavy and usually you don't have all the stuff you need. But that's okay, that's normal.

Then, you were talking about 3 different things: DT, Scrum and facilitation. Let's revisit these concepts and start with DT. What is DT to you?

DT for me is one agile approach/possibility to get to a solution. And it is customer based. So the customer makes the rules, he says what he wants and we come up with/create ideas and ideas, a ton of ideas and totally free ourselves from restraints like "we don't have

enough resources" or "I'm not allowed to do this". And we create ideas. That is for me the most important thing that DT brings to the table. It is very creative and free. And that is DT to me. Free designing for the customer with the customer.

On the other hand, what is Scrum? Or what is Scrum to you?

Scrum is not different. It is also agile. But the ideation phase, as I do DT and I guess it is the classical DT, it is divided in more than one process part. Step by step and after ideation you usually start with prototyping and testing and then implementing. And until you finished ideation you can also do scrum. Because prototyping and testing and implementing is also scrum. So for me it is only a supplement or addition, it is another way to do it. We use it at Deutsche Telekom usually for IT departments. You know scrum is classical for IT. Like you get a request and you don't need the idea anymore because the request is already there. And you only need to program it. That's how we use it at Deutsche Telekom mostly.

So then the main difference is that DT is more customer centric?

Yes. In the first part yes, because you ask your customer. Scrum you ask them afterwards as well, but it is more customer centric. Yeah.

And where does facilitation play in, in all of this?

The idea of facilitation is for transforming organizations, for changing organizations and it is also agile and all of these agile methods, they are all with change. That's what I said with leaving your baby. If you do DT and see oh damn, the customer doesn't want this. Okay, I'll do what the customer wants and the same goes for Scrum. In Scrum, what I really like about Scrum is that you look for the other teams as well. You say okay, I help you, I step in, I see you need help or we have to collaborate. That's what usually doesn't work. That's also change, because the people have to change their attitude to this. They have to look over their own barriers, they have to in German we say "Über den Tellerrand schauen".

And in that sense, might it be that the whole company culture at Deutsche Telekom is changing?

Yeah, I know what you mean. I think it is changing sloooowly, really slowly (laughs) but yeah. It is a big company and it is changing. We have departments that are working totally agile. Only agile and they don't have hierarchies anymore, of course they have a big manager but not the line managers anymore, the team leaders. But that is also kind of tricky. Because people are loosing their jobs, their profile, you have to train them, like you have to train the people that are responsible for others, the managers, that they are now working in an agile environment. Because then you have project teams and agile project teams but you still have these company structures around you, like you still have to give review and feedback. But the people that you have to give feedback on are not in your team anymore. Because they work in projects. So it is really complicated, I guess. Or rather complex, not complicated. But I guess we are on the right way and as we see it works then we are convinced. But I guess with all the managers, you know it is also the salary and all the goodies they get. If you loose your team that is maybe the change that they have to deal with. You can't see it as "loosing" you have to see it as "getting better". We have more agile people and we can develop more for the customer. Our company will grow and not decline like it is now.

And what do you think the company can do to facilitate that change? How can you make people realize that it is good?

Ahh, well you said it already, they have to facilitate it. I guess a big problem is that we look for super-solutions. That's what I call it. Like DT we use since 2014 and before we had a lot of facilitation but only small projects and then we said DT is the solution and we forgot about facilitation. And now it is coming back and it is personal drive (?). We have to facilitate the change with the managers. First of all for the big departments like Jim and his crew have to be an idol and they are not usually. They are open to DT and open to facilitation but they don't use it in their own conferences etc. For example, why do I have to send a PowerPoint always? Wouldn't a piece of paper work just as well? Doesn't have to always be beautiful, only finished. I think that is maybe the problem. We are still in our old structures and we need to facilitate the managers, we need to help them and explain that its not a threat but an opportunity. I'm a manager too by the way. And I think it is a good idea.

I like agile people because they are more creative and they are open and they like their work! That's a really important asset for me. They like to work and they like to think.

You said you are a manager. Does that mean the DTers in Deutsche Telekom come from all levels of management?

Yeah. Well not all levels. Like the top levels are usually not involved, because they are too busy. But yes, we have assistants or normal operational people or strategical employees or managers. Yes.

– perfect world exercise starts –

Purpose

For product development, so really classical product development. Cause for change I see more an opportunity for facilitation. But of course it can also be a combination. You can use one method also in facilitation and in Scrum and the other one also in DT. In the perfect world, I would say for product development it is perfect. It was really designed for it and yeah, for that it is perfect and yeah that would be great.

Internal vs External

Both. So you should have internal employees doing this but then you are in your internal world again that is basically the problem. You are then in your barriers again, in your own "soup" you know. You live and do in your own environment and I think it is good to have external supporters. But the emphasis is on supporters. You know, they are not the main people. So I think it shouldn't be mainly external people. I think it has to be a good mix. With one of my projects we do this, we sometimes have external people doing it with us or for us to give us another view on the point. Because there are so many new things developing in DT and facilitation and Scrum we don't have the possibility, opportunity or time to review this stuff and it's good to have an external view as well. So that you are not stuck in your own company too much. If you use a mix of internal external then you have two worlds and you get the best of both of them. I guess that is the best mix.

This makes me think of T-Labs, I heard they are innovation labs within Telekom. Do you know what do they do?

I know they mostly help start-ups to grow, so there is the possibility for start-ups to work there. But I'm not sure if they work with DT. I don't know. They are in a very creative environment that is for sure but I'm not sure if they are using DT.

Internal vs. External, should there be a mix on every project?

From time to time, it depends on the project, however it fits and on the people that are involved.

The DTers, people from different background 80/20? Or something else in perfect world?

From my point of view, I know we have the intention now to have people who work 100% as agile coaches, some departments do this. But for me it is not good. I thought of applying for this department, but then I decided not to, because I like doing "normal" work and then I like to do something totally different. And this way I am really excited about working with DT every time there is a project. Because it gets me out of my routine. And it allows me to think out of the box. But I don't want to do it every day, because you don't see the success of the project then or things like that. You are only a coach, a trainer that's okay. But I'm not a teacher. I'm not satisfied just doing that. I want to see the success as well. So I like it more like this (the way it is now) and I would leave it like this. But I know there is a trend now to have agile coaches, but I guess you know they also loose, I'm convinced we don't do facilitation, because we had external people doing it here and also DTers, we don't do it exactly like it is in the books. Because it doesn't fit in our company and that's fine and doesn't fit in all the departments and that is fine as well. And I guess if you only work agile you might loose the connection to the departments. It is going to be harder for you to determine what a department really needs. And you only on a higher level, get over educated. That could be a problem, in my world. So I would leave it like it is. Not 80/20 but 60/40 would be ideal or 70/30. 80/20 is really low.

And regarding the level of management?

Yes, it should always be a good mix. And that's what you do with facilitation as well and with DT, you need to have all the stakeholders involved.

And in the perfect world, what would the DT education be like?

There would be a slight difference to how it is at the moment. I would have DT and Scrum and Facilitation not as a combined class. I had it as an extra class, but now it is combined and I wouldn't do that. Because it is really overwhelming and I guess what I liked about facilitation is that you create a community. And that is what I miss in DT boot camp. So I would start with facilitation like 3 or 4 weeks, the way I had it. But of course not all the weeks together, because it is too overwhelming. One week, one week, one week. With time in between and then I would get to Scrum and DT in the same way. Not boot camp totally, like 6 days in total, but to do sprints like real sprints and that would be perfect. But I would always start with community building. Because that is what you need if you have this 80/20 and 70/30 solution you need a community. And you need the community feeling.

So all the classes with the same people? (Since you say it is important to build a DT community)

Yeah of course. You always have a track to train. It doesn't make sense to do it differently. Of course you can have some changes, like we had a couple of people who said "I don't really want to do it anymore" and someone else stepped in. That is okay. But I would start with the same people, because then you have a small group with a community feeling and you have another small group with a community feeling and then the community itself grows. And then you can do like pilot groups. You could take some people of group 1 and some people of group 2 and mix them in the next step. So build a bigger community step by step.

Space

They would be bigger, much bigger. And not in the normal office. I would prefer them, we have towers for instance or like in a factory. You know where you can get another input as well. Because in our spaces you always see the office. It looks like an office with creative elements. That's okay. But in the perfect world I would have it in an old factory or old nursery home, hospital, school, whatever. Maybe a kindergarten. And old kindergarten. Because then you are back in this creative level of kids. Or maybe in LEGOLAND. Like

you work with Lego in DT, why not having it all around you and see what possibilities there are. So I would switch location and would do it in very creative spaces. And also it is not only better for the DTers, but also for the employees having this workshop because they get to leave their "box". And it makes it easier to escape the "office thinking". They don't see the office anymore and that helps them to create new ideas. A kindergarten would really be perfect actually. I have to say that is my best idea. I would really love that.

General changes in company structure if it was the perfect world?

Yeah, I would get rid of them (laughs). But really, if you are not open... I'm really not a good changer in this sense, because I feel like if you are not open to change then leave it. I'm really for "changes - love it or leave it". And if it isn't your think then that is okay, but leave it - go. But of course we pay a high salary and there is a workers council so there are restraints. But if it were up to me, I would get rid of them. I would get rid of all the staff and be completely free. If they are not open to it, then please go.

And in regards to the issue of reviewing that you mentioned before... Can you think of systems that can overcome these challenges?

Don't review the people. Or at least not the way it is now, like once a year. Review them project by project. Talk to the people and say "in this project this was perfect what you did". And also of course the people within the project, like there is this approach of 360 degree. You know from all sorts of perspectives. Ask the customer. So in DT, if you are the coach the DT participants, ask them how they liked it and ask all the people that were involved and do a feedback. But not just reviewing the people in a small office. Dark. Cold.

Appendix J: Interview Transcript Tiago Nunes

Face-to-Face Interview

Date: August 6th

Duration: 55 minutes

Why don't you start by telling me your DT background? I think you actually studied in Germany, right?

So I am graduated in industrial Design by the fine arts university here in Lisbon, then I took a postgrad of three years after in strategic design and innovation, that's where I started to kind of go a little bit deeper on that interest of design applied for innovation and strategy and so on, so of course kind of intersecting with topics like DT and then kind of finding out that there was a sister school of d.school in Stanford in Berlin, Potsdam. So at the time of course if I had had the opportunity I would have gone to Stanford, but it was a little bit far and expensive. So it was a nice surprise that there was this sister, twin school founded by the same person, by Hasso Plattner. And at the time they didn't have any tuition fees, as long as you were enrolled in a university independent of the university being in Germany or somewhere else you could apply and then if you were accepted you just went. And this was like 2010. So I joined what they call the winter term. The d.school divides the program in 2 tracks, so the first track goes until like end of January and then from April until I think like June they call the advanced track and I did both.

And then afterwards you thought "let's start my own consultancy agency"

Yeah, well having something of my own has always been a goal ever since I was studying. I had the opportunity to work in the industry as a designer and mostly more into product design and strategy. When I went to d.school it was also with the intention to be even more skilled in the product design strategy field. And when I returned actually like with company story starts a little bit with d.school in the sense that both me Rui my business partner, we met during that time. When I was finished the basic track and I was starting the advanced track it was the moment that Rui joined the d.school. So we kind of met in that transition. He wanted to know how was my experience, he had applied already. And then we were both living together in Berlin, so finding time to be together as well. And then

after he had also finished the advanced track like he challenged me to do a three months project. Initially it was supposed to be two months, then it turned out to be three months. Where we would apply basically what we have learned during that year and also taking of course from our previous experience as product designers and working in strategy. Rui also is a designer coming more from branding and communication. So we did a project together. This was 2012, it was about a fresh fish family business from his side. And we tried to apply everything we had learned and that kind of sparked the idea of having our own thing. We worked really well together. So there was this desire of doing something more together and building something on the d.school experience but based on the principles that we believed in and that we still believe in. And yeah, it still took us like 2 years because in between I moved to Australia to work for a digital company and then I was back but working for them remotely and kind of assembling here a service design team and Rui went to Munich for IDEO for a while but then he returned and kept doing his freelance and started 2 other businesses. One is a “peixeria”, a fish shop that kind of came from the project we did together. And then by end 2014 we started working together, I quit the Australian company and we slowly started and beginning 2015 we decided to set up the company and do things in a more structured way.

And now it's been how many years?

It's been 5 years officially.

And you call yourself a strategic design consultancy does that mean you apply a mix of DT and your other design expertise like you mentioned before? To what extent do you still use DT?

So, I would say that DT is not just embedded in how we do things, by "do things" I mean like all the projects that we do and they differ a lot. We do branding projects, service design projects, product design projects more in the sense of digital products. We are actually now starting to have a more industrial product design project in September. Or like sometimes we have more research oriented projects. So we have been working in very different project types in term of output and also industry, from health to insurance to government to tech, retail. And also in terms of size. From working with start-ups to small, medium companies to big corporations to governments. So we have all these different

contexts. But I would say what is kind of a baseline is how we approach all of those clients and projects. It is the way we do things and that is very rooted on the DT principles and what we experienced at the d.school and also our constantly growing experience by doing these projects. There are a set of principles that in a way kind of ties with a more DT approach.

Maybe you can explain the principles?

So things like what you see here. The importance that we give to the physical space. It is not just a nice looking space, we believe it just be a reflection of what we - and our clients - aspire. Our ideas to be, creative and so on and complex as well. This part here (pointing at area in new office) is not fully done yet, but the walls, people can use them and soon we will also have as we had in the previous space like this vinyl that you can write on the walls as well. So everything is very flexible, everything has wheels so that you can move it, so we can reconfigure the space if we need it. So we can create different project areas, as you see there. So each team has their own project space. So they have the desks of course for more computer work, but they have the physical space where they can put information where they have a table to discuss and talk and usually its these high desk. Because there is some body language and behavior that also kind of stresses and helps you to be a little bit more fresh. So things about the space, things about how we set up the teams. We work with multidisciplinary teams. In each team we have strategists, designers, people from social science like anthropology and psychology we have people that are more connected with technology, communication. I mean we are currently, considering not just the core, but also like people that are on projects, we are around 21 people at the moment. And we assemble specific teams for each project. And normally it is someone from research, someone from strategy and a designer and depending on the output that we need to produce the designer can vary as well. If it is more branding, if it is more graphic, it will vary. And these teams work together from the beginning until the end of the project. So they take part on all the activities throughout the project, the entire process. But of course there are moments where a certain expertise takes a bit of the lead of the project. So the space, the teams and the high collaboration that we try to induce on the teams but also with the clients. That's why we are "with company" because we work with and not just for. So you know those kind of principles like importance of space, collaboration, the

experimentation - so we try to be a little bit experimental in the things that we do and also bring that in terms of the projects themselves by trying to do a lot of prototyping and testing, seeing what works, what doesn't work. And using that as a constant learning process. So those. And of course empathy. On the research part, the more behavioral aspect. We put a lot of focus on human behavior and research. That is something that we preserve on every project that we do and of course this varies on the amount of time that we have on the depth that we can go with the research. But even if we are doing a branding project where the output is a logo there is still an amount of research we do in the beginning, because we don't only feel that this will help us to make informed decisions along the way but can also spark a creative insight for where the whole branding strategy will be sustained. So you know these are kind of the principles, my perspective behind DT and I actually value this more than actually like this 5 or 7 step process. Like the process is there and I think it is important for us to be conscious about the process, because it gives us a sense of control and confidence, but I think it shouldn't be seen as a format. It is not just because you are going through the process that you will be successful or not. Sometimes these other aspects are even more important than following the process.

So it's not just a method it is a whole..

No, for me it is more, when I talk about DT I try not to use the word process but rather approach or mindset. Because it 's more broad and it kind of captures not only the process but also the mindset that people need to have, meaning these principles and these more structural elements.

This is a nice bridge to my next question. Because I am really interested in how companies can manage DT. And if I am a company now, any kind of company, imagine it could be one of your clients. I can choose to create a DT team in house or I can hire you guys for example or I can do a combination of both... if you say DT is a mindset not just a process, what do you think works best?

So I think it depends a lot on the maturity level of the organization. So and that is a good question. Because now we are getting to the point where I have a bit more critical perspective, in terms of how some organizations have been adopting DT. Where I feel that they have been looking at DT more as a process rather than a mindset, the culture around

it. And that's why I think often times they fail. Because big corporations they are really good at adopting new processes. And that's mostly what sometimes they seek. Because they are already kind of in this stage. It is about maintaining something a lot of the time. So processes kind of help in sustaining that. And since it is a process, it is more structured it also kind of helps them to have a certain level of trust. the problem with DT in a way is that it is a process, but it is a process I believe to give you a certain extend of control, a structure, but generally and since they miss out on working out the mindset and how people should look at problems and how they should look at innovation and at working with not just each other but other people it will not work. And at the end they will have respected the process and used a certain set of tools, but maybe not in the right way. You know? And I think a lot has to do with the maturity level of the organization.

For instance, I was in Brazil this was also in 2012/2013. I was at SAP in Brazil. Because it was part of this cultural change with implementing DT in the organization. But they had done it in a more traditional change management process. So you start by a group of people that become change agents and then they will start acting as influencers within the company. But in a good way they were aware that this wouldn't be something that happens from one day to another. They had started to implement this change since like 2 or 3 years before. So they invested a lot to not just create the capabilities but also to actually change how people look/how they should approach this kind of approach and especially how does this fit with like the core work flow of the organization. And that is the other thing. I think when companies or big corporates think about incorporating DT I think they shouldn't do it just because it is trendy and everyone is doing it and if you don't do it you are not innovative. But they have to consider how to actually bring it to the organization and understand what is the level of maturity of the organization even in regard to this principle. Like " Are we an organization that already has strong collaboration between people? Are we already an organization that by nature experiments a lot and gives freedom to people to fail and does not punish them? Are we an organization that already takes into account the physical needs to support these kind of approaches and methodologies. Like the more cultural aspect. And do this evaluation to then understand what would be the best model to fit. Because if it is just like "let's create a department have a group of people, just thinking that it will happen" - it might happen, if you have the right people and if you give them the

necessary autonomy and the means for them to exercise otherwise it is not going to work, it will be just show.

What we have been feeling now more and more is that, for instance, we are working with Fidelidade and they have what they call the center for transformations, so it is pretty much like the innovation part of the company. And what they have been doing there mostly is not what I would call a DT-structure, but kind of moving towards that. And still kind of facilitated by working with external partners. So they have a structure that allows them to internally identify opportunities and kind of define a little bit the project scopes. And they have these like project owners. And now they are, since also they don't have enough resources, to tackle different projects at the same time, of course they have to bring external partners. And by doing that they are also learning so eventually they can grow a little bit on that moment. I mean that is the thing. I don't think there is a yes or no or right and wrong answer. From my experience I think it depends a lot on the specific nature of each company. Their maturity and especially how they look to innovation and how they look to this kind of approach and how they are capable or whether they are giving the structure for DT to be something that is more coming from within rather than coming from the outside.

And regarding the DTers, you already said you are working with multidisciplinary teams in your company but also in other companies. Who do you think the DTers should be? What should be their background, what kind of education should they have had?

So that is the thing, considering that DT is more of a mindset rather than a discipline, it is pretty much open to any discipline. At the d.school in our time among 170 people there were 17 designers. Like although it has the "design" part in it that doesn't mean it is exclusive to designers in the traditional sense. Nevertheless I have to admit that designers are already a bit more aligned with the mindset, because to them it is not such a strange topic or let's say like process and approach. But still there are also a lot of things that are new to the designers. Like for me personally, the most enriching thing about going to d.school was also that self awareness of not just the design process but also the value of other disciplines and other truths from other disciplines like anthropology, sociology or psychology or even business or whatever and how that can enrich my capabilities as a

designer and in the same way or the opposite way for these other disciplines. Like I saw people for whom this was a very transformative experience. Because they came from more analytical background and have been taught that they weren't creative and then they had the opportunity to think creatively and discover that they were creative as well and that they can be creative as well. That kind of creative confidence. That David Kelly talks about. But yeah, I don't think it just belongs to designers. It can belong to everyone potentially. But like also I think for that to happen people really need to develop that mindset and that goes to sometimes like people thinking that if they do an online course that will be enough. I don't think that will be enough. I don't feel how you can have a very transformative experience by doing an online course. For sure there are really good online courses about DT but that is more like an initiation or an introduction for people to know what DT is a for people to actually be able to apply, to influence others, I think you need to have a much different level of experience. Like going through the frustration of doing very complex projects and operating more in this context of having really weird problems. Not structural problems not you know... wicked problems

And regarding their day to day, do you think they should be 100% DTers or should they have other responsibilities?

So looking to the reality of our company, we don't have such specific profiles of saying "this is the DT person". I think everyone here is a little bit a DTer. Of course there are people about whom I could say that they are mostly DTers, because they have more experience and more conscience about everything not just the process but all the other different aspects. So by having that they become more like facilitators of the projects and the teams as well. And I think when you frame it like that it is more like the DTer as the role of facilitator. And for that yes, I think you need to, again it depends on the context and project set up. But I would say that it requires, if you are not fulltime, which I would think would be for me the ideal, the best, it requires a really high level of commitment to that function. Because that is the thing, that I think is the difference between putting people running into a process or being a contributor to also how those people think. So therefore I also think that you need to be more present and explain also the importance of why you are doing things in a certain way.

So when you look at your company structure, do you have like an office manager etc.?

In a way we do yeah, Rui and I being the founders, we also take the role of kind of managing the company

And you do finance stuff and ...

Yeah, yeah. So Rui is more on like communication and new business, although I also do new business but then I am also more involved in the operational part. The management and so on. We have an office manager, but she is part time, because at the moment we don't have such a big need for that yet. It is growing now, since the company is growing too. But yes we have an office manager and she doesn't only give support to me in these more management related tasks like accounting etc. but also like seeing what are the things that are needed for the space, giving support for the teams when it is necessary, book trips, rent a car etc. Buy materials for workshops, book venues for workshops, so that more logistical support. So she does all of that and then on the more project part, we are starting to have a little bit of that segmentation. I have also been assuming more of the role of supervising the projects, so being close to the projects and becoming a contributor at certain moments. But of course it is becoming more and more difficult, as we have more and more projects going on at the same time it is more difficult and the company structure is growing as well and the management tasks are becoming more time consuming. So what we are doing is that we are kind of starting to have people on a project level that are a little bit in that same position as me, doing the supervision of different projects and can step in at specific moments to help to create value. Like questioning things and kind of pushing and keeping the quality that we expect and need to deliver. And then on more like a project-specific level, normally have within the team, if we have a team of 3 or 4, there is always 1 person that takes the role of the project lead. That person has an operational role as well, it can be the strategist or the designer or the researcher. Usually it is the person that has the most experience or perhaps the person that has been working for or with *with company* for the longest time. So they understand better how we want to do the projects. It kind of also assumes that role of project lead, so takes the ability to kind of steer the team along the way and basically manages the day to day of the project. You know like "we have to schedule these interviews" now it is time to do this and that, so more the micromanagement. Then we have this more supervising macro-management of these

people that now start to emerge, this is really recent. And I also sit along with them and then there is this more operational management front. That is kind of our structure.

You mentioned company culture before. Do you also think that culture of the country as a whole plays a role?

A lot. I experienced that when I was in Berlin and if you have been living here long enough I am sure you have also realized the differences between the Portuguese and the Germans. And on top of that the very enriching experience at d.school was that of course the majority of people were from Germany but there were also people from the US, from Spain, from Brazil, whatever. So there also was this diversity. I mean we have been having also some international projects and understanding the specific context and culture makes a really strong difference. Not just on the project aspect. If you are building a solution you have to understand the difference of whom you are designing for and if they come from different geographies, they for sure have different needs or they will look at what you are designing in a very different way. We had that when we were doing a project for retail of Jeronimo Martins, they are the business group behind Pingo Doce. And they also have a brand of stores in Poland and in Colombia and we were developing a solution for supermarket shopping management and we had to understand these different geographies and cultural differences and of course there were some things that were common among all of them but there also were a lot of things. And also influence by, again, I am using the same word, but the maturity of each culture. So if you compare Portugal with Poland and Colombia, they are at different states and levels. So how people relate with shopping is also different. And this influences the solutions and outcomes. And the same goes in a more internal aspect, when companies try to adopt DT or these kind of approaches, because that is the thing there are a number of cultural habits and cultural norms and a cultural mindset that influence this and either can make it easier or more difficult to bring such an approach to the company. For example, I remember giving this kind of master class in Russia, in Moscow. And it was really difficult and weird in the sense that they don't express a lot of emotions even for me as a facilitator it was very difficult because I didn't really have a feel of whether they were liking it or not and whether something was relevant or not. You know, you couldn't read in their faces what was the level of impact. Small things. It is different. And it doesn't mean that they are wrong or that I am wrong, it

just means that they express themselves in that way or in that case they have the tendency to not express that much. So probably if I was to go there again, I would have to adapt how I convey things and try to engage them more.

– perfect world exercise begins –

The DTers

People that have - and this is what I would describe rather than a specific discipline, so rather the profile - it has to be people that have a lot of human and social skills. So people that have the ability to talk and interact with others and create empathy. That is it essentially. And then they need to be curious and open minded enough to also question and allow to be questioned by others in terms of how they are doing things. Because I think that is also a way to lead by example. If you want people to be more curious and to question things, then you should allow others to question you as well. So I would say, usually it is people that have these human skill capabilities and also like some kind of minimum of creative confidence as well, to kind of be the fire starters, again like lead by example so if you want, like if you are facilitating a project or a team, you want them to have crazy ideas or whatever, many times you have to be the first one to do that. So you need to have that certain level of trust and confidence to do that. So I mean the facilitation or the more coaching, I mean for those who have it by nature it is easier, but it is definitely something that others can learn too.

Space

Well the moon or something (laughs), I would love to do a project on the moon. Like it would be kind of nice, it immediately put things in perspective. Like designing for our planet but from outer space. That could be a quite interesting exercise. But again, like rather than the location I think for me it is more about what the space brings and the capabilities it provides. So the fact that you put post its on the wall it is not just because they are colorful and pretty and then you have a nice and colorful wall, but it is also because you also develop this physical memory in terms of the information. And it is easy to manipulate information. It is easy to relate information, it is even easier to aggregate and to have this like zoom in, zoom out perspective and talk flow. So I think more than the where I think it is more the what it should allow.

Moment

The moment, so the when, what do you mean by this?

Well, for you since DT is not a method or a process it is more of a mindset I guess the answer would be "always" because it is a mindset and you always have to be in this mindset. If I can give the answer for you, I guess you would probably say "there is no moment when you specifically do it. It is always there"

Yeah, that is it exactly. That is something that bugs me when people say things like "I just did a DT session" you know, because they constrain it too much to a specific time and location. It just feels very narrow for me. Because that is the thing. Like if it is a mindset it is always there. You can be more aware of it, but it should always be there. Of course there are certain activities that are part of the process and this kind of mindset that help you, for example for doing research or brainstorming or if you are doing prototyping, but that could happen in different moments as well.

Internal vs. external

Again I think the difference could be because of the culture itself of the organization. So for instance on our case, the perfect way for us to manage DT internally would be to kind of keep the level of awareness of the principles behind it more constant in the sense that it is also normal but at the same time it can be dangerous in the sense that you are constantly doing the same kind of things that you eventually enter a loop. You are doing things because you are used to doing them that way. Sometimes we try to break that by giving small inputs even if they feel repetitive to some people in the team, because they have seen it before. But I think it helps to kind of give helps to remember that other level and the importance of why we are doing things the way we do them and why some rituals that we have should be preserved and why it is so important that they are sustained. Like sustaining this I think is important and the way to do it I think is by being conscious about it and finding these ways to do it. For instance you can do it by a weekly check in during which each team kind of presents what they are doing and also sharing some of their approaches or tools that they were using. So that is also a way of kind of transfer as well. Another thing could be really small inputs on the team, every time that they are maybe initiating a

different moment (phase) of the project or whatever you just kind of bring that freshness of inspiration or as we did last year in terms of like revising presentations of projects. We can go through the process as well and how do you approach this project and then you do this evaluation. So I think these are good ways, I don't know if they are "perfect" ones to do it, but this is for the internal aspect.

Externally, I mean like the engagement of the external people, either being clients or other stakeholders or whatever you know having that openness and sometimes even pushing for that in order to do that I think is a way to manage DT because again, you are giving yourself the opportunity to be inspired by others and you have others also to question your perspective or assumptions. But thinking from a client perspective, from a two-partner-relation I think a good way to also manage is to, I wouldn't say not trust maybe, because trust is a strong word, it is not that I feel that clients don't trust us, I feel that sometimes again since sometimes we operate in such an unstructured set up and sometimes we don't have all the answers yet in the beginning of the process I think this creates some discomfort among them. And I think that sometimes they try to bring a lot of structure to something that should be left unstructured. And I kind of took this motto/sentence from a guy from Google, I think he was from HR and he said "if we higher people because they are talented we should allow them to use their talent". That is the thing. If you bring someone onboard because you realize they are really good at this, then you have to allow them to use those capabilities. Otherwise if you bring someone on board that has a certain set of capabilities but then you don't really allow them to use them, then what is the point? What is the value of even bringing them onboard? And I think the same goes for that client relationship and agency model. For clients, if they hire us because we do things in a different way and they perceive the value of doing things in a different way then they have to allow us to do these things in our way. If not then what is the point?

Purpose

The purpose of using DT in the first place, I think it is a matter of 1) many times we don't have the answers to our problems yet and many times we have to be humble to understand that maybe we are not in the best position to know the answers, because maybe we will not be the ones who will be influenced by those answers and by the solutions (also really

important for my future social innovation projects and marketing projects etc. in general. So if I am a client building a product it could be that I am not the user or the target group of that product. So why should I be the one dictating how the product should work or how the problem should be addressed. And I think also the purpose is because sometimes there are really complex projects that we cannot foresee the answer and you really need to have this more human approach to really understand not just the people but again also the context around everything (customer journeys), the culture and all. We were doing a project for the Portuguese government about terrains, like forestation and agriculture properties and it was centered around the interior part of the country... I live in the city, so I cannot tell what people should or shouldn't do to register or identify their properties because I don't know the kind of difficulties they have. I don't know the kind of relations they have with that land you know? So I had to go there. To talk with the people. I had to live there for like a month, kind of actually living there and understanding you know these dynamics and this micro-culture that is a part of the macro-culture that is Portugal. Because of that, because if we want to do something in a way that it has more purpose or is more honest in the way that it is done we have to start from the (perspective of the people that we are designing for)

Basically the answer to the why is then, to better understand the people that you are designing for then? To move out of your own perspective?

Yeah, I feel that that is what corporations could easily do, but they also struggle to do. Because, like if you are a bank, why aren't you talking with your customers? It seems so obvious and I think a lot comes down to also skills, that they just get really scared of talking to people, about whatever. Like we already did some DT courses and this is something that we see a lot. This is always something that you see, you feel that it is a thing that a lot of people really struggle with. Like if you tell them "go on the street and just interview people" they just freeze you know. There are always people who are more comfortable with doing this, or it is because they have a more commercial profile so that is natural for them, but then for others who are usually more in a management position. For them it is like "Uhhh, I have to go out and talk to a stranger" you know and if you put the layer of talking about what they do puuuh, that makes it even more difficult. When actually

it is so easy. Or it should be so easy. And also if an organization doesn't give time to their people to do that then they will never give time for something like this to happen.

I think this goes more towards the notion of companies adopting DT as well. The importance of having like a top level sponsor. Otherwise it will be almost impossible. Because that is the thing. People shouldn't think that this would be questioned. If they want to take an hour to leave their desk and talk to their client because they want to understand them better to do their job better and provide a better solution for the client. And if this is something that employees feel is a problem, that they cannot go there because their boss might punish them or ask "why were you out for one hour" that is a problem. So that's why there is the need for that level of sponsorship. And I mean that's why you see that the companies that are actually able to better adopt DT are the ones that have that top-level - CEO-level- support or even sometimes there is this tendency of creating the position of a chief design officer, that then they have pretty much this role of infusing design as a cultural element. At the end of the day it is pretty much the same but infusing design at a core elements of how the organization should work and if they are building a product or service, whatever, kind of building that mindset.

Appendix K: Interview Transcript Gabriel Batista

Face-to-Face Interview

Date: August 30th

Duration: 40 minutes

Note: The interview was performed in Portuguese and translated to English by Anne Dröge.

Can you tell me a bit more about beta-i and how you use DT?

Beta-i was founded 9 years ago and it actually started out as an association between several people and organizations that wanted to promote innovation in Portugal. The goal was to create an eco-system of innovation in Portugal because at that point something like that didn't exist yet. 5 years ago, after some kind of ecosystem was created, beta-i then turned into a company with innovation as its core business. But the mission to create an innovation eco-system never stopped. Actually our current slogan is "building the innovation ecosystem" and we are still about bringing together different actors. We bring together companies, investors, start-ups and university students to create an ecosystem of innovation. And we work with three main segments: education, acceleration and innovation. Acceleration is all about start-ups and we organize events like the Lisbon Challenge during which start-ups apply to receive funding to come to Lisbon and work in the office building of beta-i for 3 months to work on their projects and in the end the best product receives an investment from one of our investors. The segment of innovation is split up into two parts: open innovation and business innovation. And in the latter one is where DT plays the biggest role. The innovation segment works for big companies, like Nestle, Ikea, banks etc. and we help these companies in two different forms. Open innovation is a form of doing innovation by using resources outside the company. For example, imagine, if Airbus wants to create a new type of airplane they can do it within their own R&D center or they can create an open innovation project in which start-ups from all over the world sign up to create the best airplane and in the end Airbus can invest in the start-up that came up with the best solution.

We have a project right now for one of our clients (EDP) that is about new ways of producing and distributing energy and start-ups from all around the world are involved. This is open innovation. The other form of innovation is business innovation and that means that we as beta-i directly work with our clients to innovate. To create new products, services or processes. We already worked with L'Oreal to innovate new tactics for hairdressers to sell their products, we already worked with Superbock to create new products and also to create an innovation center within the company, we already worked with Ikea to build a new shop here in Lisbon and to figure out where this shop should be build, we worked with Nestle to figure out how their products can become more sustainable, so in these cases the expertise of the employees of beta-i help the company to innovate. Our researchers and strategists work directly with the client companies. And this is the group that mainly uses DT.

We also work on the MEO Sudoeste music festival. Every year we are contracted to come up with a strategy for the festival. We go to the festival, camp there for a week with all the young festival-goers and spend our time observing and talking to the crowd, trying to understand how they use technology, what they eat, how they behave, what kind of music they like, why they visit the festival and so on. We collect all the insights we can to then use them in order to make a strategy for MEO for how the as a telecommunications company can tailor their products and marketing to this group. Basically the festival is kind of like a research lab.

And then we also have the area of education. We have created an educational program in collaboration with Nova University and the Chamber of Cascais, which is called *Singularity University*. *Singularity University* already existed in other countries but we founded it for Portugal. *Singularity University* originally is a university of all the companies in Silicon Valley in California and it is for professionals who are basically on top of their career already, it is a really big name in the world of innovation. And the campus here in Portugal will be housed inside the campus of Nova University with beta-i as a partner. This is our segment of education. And next to this we have our side segments, which are the events that we organize and host. And the hub, which is basically our

building, but it is not just a building but a collaborative social network of all the companies and people that are housed in here.

Really interesting. What is the organizational culture like here at beta-i?

I think the culture is incredible. Especially in a country like Portugal that is very conservative. For example, I am gay, everybody knows it and everybody is okay with it. Everybody can wear what they want, everybody can come to work at the time they want, there are no bosses in that sense, the structure is really horizontal, there basically isn't a vertical structure, there basically aren't hierarchies. We have incredible gender equality, here at beta-i we are 24 men and 25 women. Our COO here in Portugal is a woman and we are expanding to Brazil right now and our CEO there will be a woman too.

Since you guys don't have any hierarchies, how do you deal with control mechanisms like employee feedback?

One of our values is that everybody is responsible for their own actions and work. Everybody has deadlines and everybody is responsible for making the deadlines and delivering quality work. And we have targets for profit generation and other indicators that are a control for how employees perform. The thing is that oftentimes people think that in order to grow professionally they have to grow vertically, meaning that they have to move up in the hierarchy and work as a manager, have people working underneath them. But actually you can grow in different ways, for example by working more autonomously and your salary can be augmented even though you stay in the same function. Because sometimes a person is really good at something, at their job and that gets them a promotion to be in a managing role, but maybe this person isn't a good manager or leader or boss. So here we actually value a lot the personal evolution of employee. If they do what they do well and if they do what they like to do, they are bringing the most value to the company. And for example, since we are a horizontally structured company, we are also competence driven. Maybe in one project one person has more expertise so they take the lead. And in another project another person has more expertise so than they take the lead.

And about DT, in the case of business innovation, how exactly does it work?

DT actually is a methodology, that inspired us to create our own methodology that is called beta-shaping. Which is a methodology that combines DT with co-creation, prototyping, it entails the complete DT process with a very big research component. Which entails doing research in the field. So usually when a client contracts us we start with doing a lot of research. We spend 2 months getting to know the company, being inside the company, observing and talking to people in the supermarket or at their homes, depending on the project.

And is this just you doing this or do you include the employees of the company as well?

Depending on the project we include them. For example, I had a project for a big jewelry company, Parfois and I went to Barcelona every day I had to visit a different customer, look at their wardrobe and look at their suitcases, jewelry, clothes etc. ask about when they use which clothes and jewelry and why and afterwards I worked undercover for 3 days in a shop of Parfois in Barcelona to understand how the customers act in the space, interact with the staff, purchase products etc. And sometimes it is also the employees of the company who do the research activities. It always depends on the project. And sometimes we also work at the client's office and we work together closely with the employees.

My thesis is about the management of DT, companies can either use it internally or externally by contracting an agency.

In my personal opinion, DT is and should always be seen as a method. Nothing more than that. DT does not resolve all problems. It is a method to help find solutions to problems. It is always used with a specific goal. It is not a solution in/by itself. For example. If I want to create a new product, I can hire beta-i, but with the involvement of the employees of the company. DT is all about collaboration and DT needs the involvement of all stakeholders. It is practically impossible for an agency to do a DT project without the involvement of the employees of the company. Sometimes DT focuses too much on a specific problem or project and forgets about the context of it. It is like when the body has a headache and DT is a remedy against the headache. But maybe the headache exists because of a different disease that the body has and DT fails to see that (but that is why we explore the problem space right?). That is why research is so important. A metaphor that is very interesting

about our time is that 200 years ago we had big factories filled with machines producing physical products. And today we actually see the same factories (like LX factory) turned into creative hubs and instead of being filled with machines, they are now filled with people, with start-ups that are working creatively, creating technologies that are exported to the entire world, I think this metaphor summarizes well the evolution of the way that we work, the evolution of our industry.

And still we use a lot more technology than then

Yes, a lot lot lot more.

We just use it in a different way.

Exactly and just think about the fact that today we can buy any kind of product from anywhere in the world. And this product will arrive in your home within 3 days, that is globalization. A start-up here in Portugal can sell their products to anyone in the world. 50 years this wasn't possible, it was a huge effort and extremely expensive for companies to export their products. Today it is so easy. One click and the product is sold.

In the sense of globalization it is also a contrast right? Here in Portugal we work like this, very creatively but if you go to Bangladesh or somewhere it is as if you time travel and you can still see all those machines and people working like machines producing products.

It's complicated, but we also have other examples, like Singapore in Asia. To be honest, I don't know that much about Asia, but Korea as well for example managed to become a top industrial nation. I think it depends on politics. I don't think it is a geographical question. But of course socio-economically speaking Europe is doing extremely well. Brazil or Africa for example are way behind, but I think it is a political issue. And Portugal is a good example, of how innovation is integrated into politics. The last years there has been a lot of investments into innovation and as well government bodies are using innovative forms of working here in Portugal. For example we had a project with the maritime ministry (ministerio do mar) called blue tech. It was an open innovation project to improve harbors, ships etc. the whole industry of shipping to make it more sustainable. So the client here was the ministry, not a for-profit company. And we have another project Smart Open Lisboa Mobility (SOL-Mobility) with the camera municipal de Lisboa and in this open

innovation project start-ups from all over the world strive to create more sustainable forms of urban transportation in Lisbon. So this is the public sector practicing innovation. With open innovation, a company like EDP invests 10.000€ in 10.000 start-ups, but only one of them has the winning idea. And that idea pays for the investment in all of them. So companies invest in this, because they know that the result will earn them even more money than their investment was. The start-ups come here to Lisbon, they have some specific dates that they need to be here and during those days all costs are paid, hotels etc. But then they can go back to their countries and work in their own spaces and develop the idea and depending on the project they come back to present it in the end or something like this.