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# Using DesignOps framework to lead design work



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## Using DesignOps framework to lead design work

The goal of the thesis was to research the DesignOps framework for orchestrating the design team at Silo AI, an artificial intelligence company. DesignOps consists of work topics helping to organise design operations for efficiency and impact. Company and team growth were the primary drivers for initiating the investigation. The need for specialisation and making a more profound impact with design were noted as latent needs. Hence, the thesis also discusses how better organisation of design teams can create value.

The thesis uses a service design approach to conduct an introspective study within the design team and the company. The selected research areas were career development, definitions of the designer role, unified design processes, guiding principles, and the perceived value of design work. The prominent research techniques involve workshops, interviews, and the examination of internal practices complemented by theory-driven methods.

The results highlight directions for professional growth. This helps the design team evolve in craft and make a difference in business through standard working methods and a shared value base. The DesignOps framework helped the team find crucial development items, thus proving its value as a gateway for sustainable team development.

Keywords:

career development, DesignOps, design process, leadership, service design, work community development

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## DesignOps-viitekehys muotoilutyön johtamisessa

Tämä opinnäytetyö tutkii DesignOps-viitekehysten käyttämistä muotoilutyön johtamiseen Silo AI -nimisessä tekoäly-yrityksessä. DesignOps-viitekehysten avulla voidaan ohjata muotoilutiimejä sekä kehittää niiden tehokkuutta ja vaikuttavuutta. Yrityksen ja sen muotoilutiimin kasvu toimivat vaikuttimina tutkimuksen aloittamiseen. Myös muotoilijana erikoistuminen sekä syvemmän vaikutuksen tekeminen muotoilulla koettiin piilevinä tarpeina. Opinnäytetyö käsittelee myös muotoilun arvontuottoa yrityksessä.

Opinnäytetyö lähestyy muotoilun tutkimusta palvelumuotoilun näkökulmasta hyödyntäen työpajatyöskentelyä ja haastatteluja keskeisinä tutkimusmenetelminään. Muotoilutiimin valitsemat keskeiset kehitysalueet olivat urakehitys, muotoilijan roolin määrittäminen, yhtenäiset muotoilumenetelmät, toimintaa ohjaavat periaatteet sekä muotoilutyön koettu arvo.

Tutkimustulokset korostavat muotoilijoiden ammatillisen kasvun mahdollisuuksia. Tämä auttaa muotoilijoita kehittymään työssään sekä vaikuttamaan liiketoimintaan yhteisten työskentelytapojen ja arvopohjan kautta. DesignOps-viitekehys ohjasi muotoilutiimiä löytämään tärkeimmät kehityskohteet ja osoitti siten arvonsa työyhteisön kehitysokaluna.

Asiasanat:

DesignOps, johtaminen, muotoiluprosessi, palvelumuotoilu, työyhteisön kehittäminen, urakehitys

# Content

<b>1</b>	<b>Introduction.....</b>	<b>9</b>
1.1	Background of the commission .....	9
1.2	Goals and research problem.....	9
1.3	Frame of reference .....	10
1.4	Process and schedule .....	13
1.5	Methodology .....	15
<b>2</b>	<b>DesignOps in theory .....</b>	<b>21</b>
2.1	Literature review .....	21
2.2	Origins of DesignOps .....	22
2.3	Defining design operations.....	23
<b>3</b>	<b>Design workflow operations .....</b>	<b>27</b>
3.1	Guiding principles and design standards.....	27
3.2	Design process .....	31
3.3	Value definition .....	33
<b>4</b>	<b>Design leadership .....</b>	<b>36</b>
4.1	Leadership skills for designers.....	36
4.2	Design maturity.....	37
4.3	Ramping up DesignOps .....	41
4.4	DesignOps the role.....	43
4.5	Designer's role definition .....	45
<b>5</b>	<b>Empirical part.....</b>	<b>52</b>
5.1	Kick-off workshop in 2023 .....	52
5.2	Limitations to the scope.....	56

5.3	Designer’s role definition .....	56
5.4	Career development .....	59
5.5	Design process .....	63
5.6	Guiding principles .....	68
5.7	The intrinsic value of design.....	70
<b>6</b>	<b>Discussion.....</b>	<b>74</b>
<b>7</b>	<b>Conclusion .....</b>	<b>78</b>
	<b>References.....</b>	<b>81</b>

## Appendices

Appendix 1. Design process interview questions

Appendix 2. Additional research conducted in the process

## List of figures

Figure 1. The design team works in cooperation with other company functions. .....	11
Figure 2. A typical AI development team comprises an AI scientist and an AI engineer. For special needs, the team can be boosted with additional expertise. .....	12
Figure 3. The Double Diamond design process was refigured from the Design Council’s original model from 2005 (Design Council, 2015). .....	13
Figure 4. The thesis process started in 2022 as a small side project. ....	14
Figure 5. The tri-track agile model overlays basic agile practices with a user-understanding track (Malouf, 2019, p. 13). .....	23
Figure 6. NN/g’s DesignOps Menu is divided into three main categories containing various subthemes (Kaplan K., 2019a). .....	24

Figure 7. Malouf describes the DesignOps framework as a lattice of interconnected factors. (Malouf, 2019, p. 22) .....	25
Figure 8. The refigured Malouf's DesignOps model (Malouf, 2019, p. 23) comprises three overlapping focus areas. ....	26
Figure 9. Universal Design framework requires ultimate accessibility from designs, including digital environments. (Burgstahler, 2021).....	29
Figure 10. Human-centred design loops a generic process or spirals to emphasise each iteration (Norman, 2013, p. 222). ....	32
Figure 11. The interplay of value creation aspects adapted from the <i>Forget Innovation</i> (Ruckenstein et al., 2011). ....	34
Figure 12. The Design Ladder describes four tiers of design maturity in organisations (Danish Design Centre, 2015).....	38
Figure 13. Invision crafted its design maturity model from survey data from the design industry (Invision, 2018). ....	39
Figure 14. Cultural stepping stones make the Design Ladder a usable development roadmap (Doherty et al., 2015). ....	40
Figure 15. Artefact's maturity model has five steps: initial, adopted, managed, integrated and driven (Artefact, 2015). ....	40
Figure 16. Project managers reside in the waters between specialists and managers (Kuster et al., 2015, p. 41). ....	50
Figure 17. The design team used the collaboration tool Miro to vote on essential development topics.....	53
Figure 18. Each selected DesignOps topic was placed on an urgency-impact matrix to highlight its relevance as a development topic. The bottom right area, typically containing time-sink items, is empty in this exploration, underlining how essential all topics are. ....	54
Figure 19. Dividers were drawn over the matrix to indicate the order of importance for the selected topics. ....	55
Figure 20. The workshop revealed unrecognised roles in which designers currently work.....	57

Figure 21. Separation of craft and leadership tracks in the career development framework can help seasoned experts grow in their profession (Cabanés et al., 2016).....	61
Figure 22. Skill mapping the team's combined competence can reveal latent career growth options (Krause, 2020).....	61
Figure 23. An effective DesignOps team can be built by combining dedicated roles or letting designers take additional roles alongside their operational tasks (Kaplan K., 2022).....	63
Figure 24. A new proposal for a process model expands the Double Diamond with a thorough business exploration and additional steps for roadmapping and scaling. ....	67
Figure 25. The team brainstormed proto-principles and grouped them into thematic sets of similar ideas. ....	69
Figure 26. Free-form ideation on values produced insights into the necessity of design work. ....	71

## Tables

Table 1. Designer roles in companies derived from a study (Perks et al., 2005). ....	47
Table 2. Research topics were separated by relevant research approach and application area within the DesignOps framework. The five final themes represent the scope of the thesis work. ....	56
Table 3. The uncovered designer roles align with Tan's roles (the role name is in bold) (Tan, 2009) and the DesignOps framework's topics (Kaplan K., 2019a). ....	59
Table 4. The design team compiled value aspects under theory-based characteristics. ....	73
Table 5. The design impact metrics are grouped by various traits (Björklund et al., 2018, p. 506).....	91

## List of abbreviations

AI	artificial intelligence (Oxford Dictionary, n.d.)
DesignOps	a shortening for design operations (Kaplan K., 2019b) coined by Dave Malouf (Malouf, 2019)
HR	the department in a company that deals with resourcing and employment issues (Oxford Dictionary, n.d.)
Lo-fi	low fidelity (Merriam-Webster, 2024)
NN/g	Nielsen Norman Group (Nielsen Norman Group, n.d.)
ResearchOps	a framework for managing user research participants and practices (ResearchOps Community, n.d.)
ROI	return on investment (Fernando, 2023)
UD	Universal Design (Burgstahler, 2021, p. 1)
WCAG	Web Content Accessibility Guidelines (W3C, n.d.)



# 1 Introduction

## 1.1 Background of the commission

It is recognised that companies have a competitive edge in the market when incorporating design into their operations. While designers acknowledge the value of design in a business context, leaders must also accept this fact. (Sheppard et al., 2018) This raises the question of leveraging design in terms of leadership and orchestrating the design work to benefit the whole organisation.

The thesis was commissioned by Silo AI, also being the employer of the author. Silo AI is the largest private AI lab in the Nordics, and it aims to grow to be a European flagship AI company. Silo AI offers a wide array of machine learning, computer vision and natural language processing services to its customers. The team consists of more than 300 AI experts, out of which over half hold a PhD in some of the AI application fields, not to forget designers who also work on customer projects.

The stay on top of their game, Silo AI's rather unorganised design team considered how they should work altogether. Better organisation of work was supposed to provide various perks, such as growing as designers, benefitting from standardised joint operations and bringing value to the whole company. The idea of utilising DesignOps to organise the company's design resources emerged from these discussions. Leadership through design has the potential to elevate corporate performance to meet aspirations and even exceed expectations (Turner & Topalian, 2002, p. 2).

## 1.2 Goals and research problem

The main goal of the thesis is to find out how the DesignOps framework can help organise design work and support professional growth. DesignOps is used as a leadership framework because it covers a multitude of work practices. The DesignOps framework covers themes like what type of communication and

teamwork should occur between experts, how to conduct design research together, how to measure impact, and what team roles are needed (Kaplan K., 2019a).

As a secondary goal, the thesis researches how a more organised way to lead design work could benefit the organisation as a whole and make design work more valuable across the board. Evidence shows that the money spent on design is the largest sum the organisation boards know least about (Turner & Topalian, 2002, p. 7).

Leadership aspects also cover bringing cohesion to daily routines and making work practices more efficient and effective. In the context of this thesis, DesignOps is considered a tool for the design team and is not intended to replace other leadership practices in the commissioning organisation.

Malouf (2019, p. 23) suggests viewing DesignOps through different lenses. The thesis covers DesignOps from two different perspectives: workflow and leadership operations. These practices match the design team's idea about separating work into different tiers uncovered in the workshops. The first tier concerns leadership and team organisation, while the second and third concerns working practices.

### 1.3 Frame of reference

The thesis discusses design work management and everyday operations in an artificial intelligence technology company, but the prevalent themes can be generalised to any industry using designers. The commissioning company builds applied artificial intelligence services to embedded and user-operated systems. Although AI is at the core of the business, the commissioner offers various supporting functions, such as data architecture, software engineering, and design.

The thesis explores different aspects of DesignOps, focusing mainly on how design creates value, which processes the design team should use and how to

support professional growth. Silo AI's design team collaborates with other company functions (Figure 1), so defining new working patterns should not clash with existing operations. Although the commissioner has a design team, the dedicated designers do not do all the design work. For example, the marketing team designs their own materials, and business developers work on business design issues. Design is not a standalone event but a process infused into various aspects of the business (Merholz & Skinner, 2016, p. 10).



Figure 1. The design team works in cooperation with other company functions.

The design team works on projects with software engineers and AI scientists. The business development team benefits from designers' knowledge of user interactions, service design methods and capability to work on project specifications. Designers help the HR department with hiring and role definition issues. People operations are involved when the design team helps to plan design-themed training activities. The design team has the vaguest connection with the marketing and communications department, with only a few joint

operations. The finance department falls into the same category and has no direct connections to design operations.

An AI development team (Figure 2) is based around AI science and AI engineering. The team is boosted by several optional roles supporting different types of projects. A designer can support the project with user research and enhancing user experience. Data scientists are helpful in data exploration and supporting analysis. MLOps engineers are needed for mature projects that require maintenance. Solution architects are required in large-scale projects that require a more comprehensive software architecture. One of the experts can take up the project owner's role, or the team can have an additional project owner. In addition, each team has an account owner responsible for the client's account. The client must appoint a product owner who is the primary contact from the client's side.

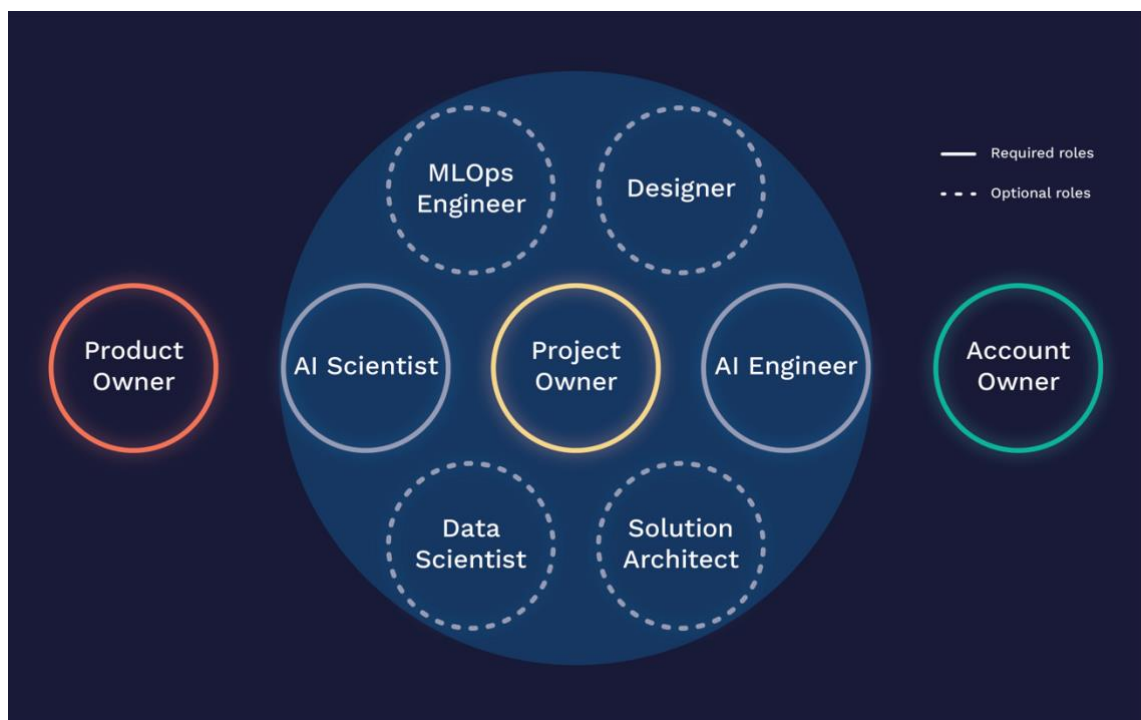


Figure 2. Each AI development team comprises an AI scientist and an AI engineer, with support from additional expert roles.

Silo AI produces artificial intelligence solutions limiting the research scope to the digital domain and applied design fields, such as service design and user

experience design. Since Quintas et al. (1997, p. 12) classify software as a service, it is safe to say Silo AI's design team works in the service sector rather than in a supportive role in software development.

#### 1.4 Process and schedule

The initial plan is to conduct internal research activities in the autumn of 2023 and finalise the thesis in the winter. Final presentations will happen during the spring of 2024. When applicable, the thesis process follows the Double Diamond framework (Figure 3) developed by the Design Council.

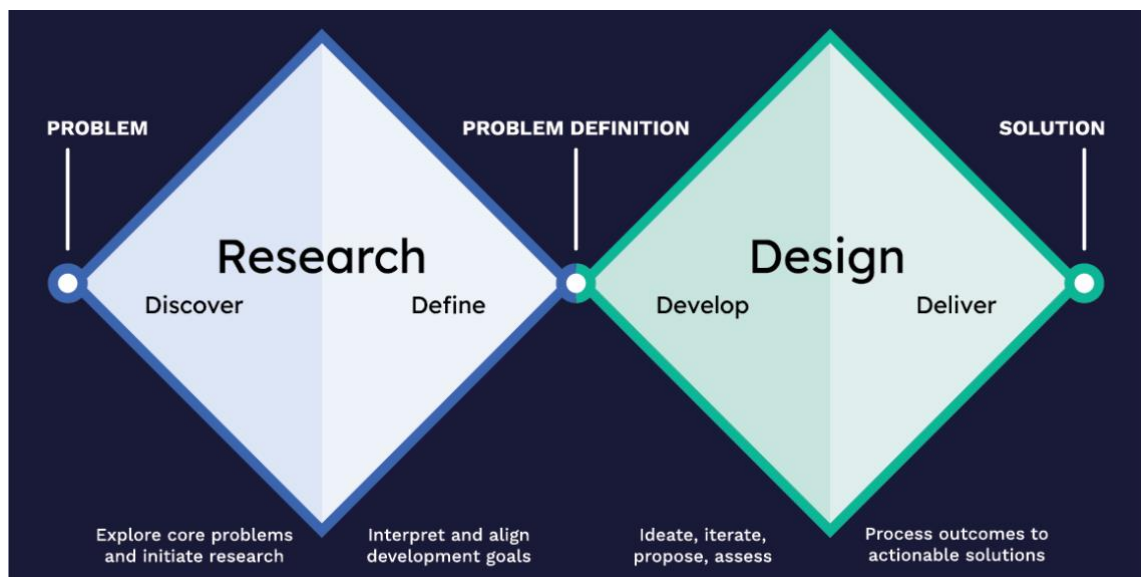


Figure 3. The Double Diamond design process was refigured from the Design Council's original model from 2005 (Design Council, 2015).

Double Diamond diagram combines divergent and convergent thinking into a unified process framework. (Design Council, 2015) The process starts with the discovery phase, in which the initial problem is identified. After this, the idea is defined in depth to align it with the business's key objectives. Hereafter, the model instructs to invent various solutions, test them, and finalise the surviving ideas. In solution space, ideas are rarely explored to their full extent, so the final deliverables should be considered incomplete. (Design Council, 2007, pp. 6–7)

From another perspective, Stickdorn (2011, p. 124) corrects that processes seldom are linear and should be considered more as iterative processes.

The thesis process (Figure 4) started in early 2022 with a general interest towards DesignOps. The design team gathered information about the topic, but nonetheless, the DesignOps transformation process was secondary due to busy project work.



Figure 4. The thesis process started in 2022 as a small side project.

The thesis work was on a partial hiatus during the spring of 2023. The first kick-off workshop in the summer of 2023 sparked interest in the process again. The work continued by formatting the identified themes into tasks in a task manager application and setting up workshop dates for different themes.

The process uses a service design approach since it connects people from different fields to work toward a common user-centred goal. Stickdorn (2018a, pp. 21–22) states that service design bridges the gap between opportunities, user needs, and business context by offering “boundary objects” that enable cross-disciplinary teams to solve problems together. Ironic enough, if design is seen only as a tool for problem-solving, divergent thinking is omitted altogether. This contradicts design theory since convergent and divergent thinking are found at the core of design thinking. Design is an effective instrument for defining problems and ensuring the focus is on bringing actual value to the case. (Merholz & Skinner, 2016, p. 8)

Silo AI uses a variety of work manuals and playbooks in daily work. The findings of the thesis will be used as a road map for compiling a Design Playbook for the commissioner. The Design Playbook will contain guidelines and

recommendations for organising the design team, arranging design tooling and other aspects of design work.

## 1.5 Methodology

Several methods are used to gain insight into the problem scope and achieve the selected research goals. The chosen methods enable new ways of thinking and highlight different options when narrowing down possible solutions. The following subchapters introduce the research methodology used in this thesis.

### 1.5.1 Service design approach

Services are the foundation of all economic activities. Service-dominant logic underscores that any good or operation can be considered as a service by grasping general axioms. Boundaries between tangible and intangible products blur in value-creation interactions between multiple parties or actors. One of the actors is always a beneficiary, who determines the perceived value for the products partaking in the exchange. All actors in the service interactions provide resources, which can be anything from physical goods to supporting services. Co-creation of value occurs by synchronising human-created rules, norms, symbols and practices. (Lusch & Vargo, 2014)

Service design is a multidisciplinary way to combine several methods into a new way of thinking. (Stickdorn & Schneider, 2011, p. 29) It is a field that encourages people from different backgrounds to join forces and find new perspectives together. (Moritz, 2005, p. 15) A service designer can be described as the synthesiser of work and a supporter of innovation. (Kälviäinen, 2019, p. 31) Most organisations have people responsible for enhancing and innovating services without recognising the practice as service design. Service design can be viewed as a central point which integrates the most effective tools from various fields to tackle the challenges of the service economy.

(Moritz, 2005, p. 48) Some organisations incorporate designers only after the problem space is fully explored (Merholz & Skinner, 2016, p. 13).

Because there is no universal definition of service design, different interpretations can be achieved by understanding its core principles (Stickdorn & Schneider, 2011, p. 34). Stickdorn (2018a, p. 27) lists six principles for service design: human-centred, collaborative, iterative, sequential, real and holistic. He continues that service design is a pragmatic approach to forming and enhancing services and service offerings, employing a humane toolset to coordinate development efforts expected by businesses and other stakeholders. Kälviäinen (2019, p. 33) continues that design concretises abstract thinking to tactile format, allowing re-iteration and valuing uncovered ideas.

Design thinking, the application of a design mindset, combines multiple areas of expertise, such as economics, strategic development, technology skills, sociology, or leading creativity. It is not limited to design work, although it has emerged as a solution to complex global processes or systemic business problems. (Kälviäinen, 2019, p. 31) Design thinking can unravel issues by providing relevant specifications and criteria and discerning the best ideas for complex structures and processes (Moritz, 2005, p. 40).

### **Human collaboration**

In design work, speaking about users instead of customers is recommended since research insight is usually gathered among end-users in their natural environments. A profound user understanding serves as a motivational goal for experts across different fields, facilitating the adoption of user-centric development methods within organisations. (Kälviäinen, 2019, p. 40) Putting real users' specific needs at the centre of the service design process requires authentic comprehension of users and their usage environment. The application of methods and tools opens up options to view the service in the broader ecosystem of interconnected services. (Stickdorn & Schneider, 2011, pp. 36–37) This new contextual understanding grants more possibilities when



considering the experience of all people affected by the service (Stickdorn et al., 2018a).

Service design challenges designers to team up with people; thus, new working methods are needed. While working with users has always been prevalent in design, the service design approach requires even tighter collaboration with the client and stakeholders. (Miettinen, 2011, p. 23)

Empathy is a crucial tool for uncovering latent user needs – needs that the user does not understand to ask for or cannot imagine having (Miettinen, 2011, p. 31). Empathy differentiates academic thinking from design thinking. Its primary function is to transform observations into insights, which in turn convert into services the user requires, services that activate participation and user involvement. (Brown, 2019, pp. 25, 46)

### **Service design for process and work design**

Long gone are the days when design was only a form of shaping products, environments, stationary, and other design artefacts. Service design combines product and experience design but can be extended to refiguring processes and systems beyond conventional definitions. It is a tool for policy-making, planning strategies, and changing thinking. (Moritz, 2005, p. 33)

Service design can be implemented even to process management and administering activities to improve quality, productivity, and operational efficiency, ultimately increasing client satisfaction (Moritz, 2005, p. 54). This methodological approach applies to work design, a field about reformatting how individuals and organisations work. Involving the people affected by the work design in planning and implementation ensures a lasting solution that is more likely to be adopted. Some of the work design activities may include production processes, cultural considerations, career and role updates and tooling. (Parker & Wall, 1998, pp. 122–124)

### 1.5.2 Desk research

Desk research, or secondary research, is a method of acquiring information from books, online sources, and publications. Good desk research starts with a literature review by finding relevant sources and what has been written before. Through this, the researcher can benchmark existing findings and inspiration for research topics. (Moore, 2006, p. 106)

The researcher may go through materials provided by an organisation and look into its practices. External desk research is conducted for information outside organisational boundaries, for example, by finding information in books and on the Internet. (Moore, 2006, pp. 106–108)

### 1.5.3 Interviews

An interview is a guided discussion in which the interviewee replies to a set of questions. The discussion can follow a formal structure or linger around the topic with only a few planned questions. For example, an empathy map may be used to structure the interview. Sometimes, the interview may produce boundary objects, such as system maps, scribbles or other visual representations of discussed topics. (Stickdorn et al., 2018a, p. 122)

Another form of interview is contextual inquiry, which occurs with an interviewee in a context relevant to the research question. The situation may reveal underlying emotions and uncover otherwise hidden information and agendas. Context interviews may occur in a working situation or during a service experience. (Stickdorn et al., 2018a, p. 121)

### 1.5.4 Workshops

Workshops are interactive sessions where participants work on tasks to achieve a goal or solve a problem. They reserve time from regular work to create space and time when all external thoughts can be left out, and the participants can

concentrate on the workshop activities. Workshops implement the co-creation aspect of service design. (Stickdorn et al., 2018a, p. 391)

The facilitator guides the workshop, gives instructions on the tasks, and helps the participants perform during activities. Facilitation is vital for maintaining a compelling atmosphere and engaging participants in workshop tasks. It is a facilitator's responsibility to help diverse groups of people thrive and outperform themselves during the workshop. (Stickdorn et al., 2018a, p. 391)

#### 1.5.5 Affinity charts

Teams can collate ideas collected on sticky notes by finding affinities and clusters of thoughts. This can be advantageous since novel information can be uncovered by organising notes in new ways. Ideas can be clustered as a side activity during a workshop or as a central theme. Organising affinity charts can be used as a tool to immerse and engage the workshop group with the produced materials. (Sibbet, 2010, pp. 74–75)

Freeform clustering can reveal new information, but the workshop participants can also work with a simple template that uses predetermined criteria, such as impact and ease of implementation (Sibbet, 2010, pp. 74–75). One implementation of this template is the *Eisenhower Box* or *Decision Matrix*, which uses importance and urgency as clustering factors. Placing sticky notes on each quadrant makes it easier to decide which tasks should be pursued first and which can be postponed or omitted. (Clear, 2014)

#### 1.5.6 Brainstorming and brainwriting

Brainstorming is an act of collecting ideas on a flip chart as a group without rejecting any bad ideas. In the activity, the facilitator writes down the presented ideas. Another option is to let small groups take notes on sticky notes and place them on the wall. After this, the ideas can be clustered with their affinities. (Sibbet, 2010, pp. 137–138)

Brainwriting is a workshop practice for gathering diverse ideas from participants in silence. Each participant processes ideas independently and passes the paper to the next participant, who may develop original ideas or expand on the already produced content. The method does not create energy but is excellent in empowering less extroverted and thoughtful participants or when there are too many people to perform a brainstorming session. The papers can be divided into themes or key questions. Brainstorming can be continued with brainwriting to process the results further. (Stickdorn et al., 2018b, pp. 117–119)

### 1.5.7 Dot voting

Dot voting is a polling method in which workshop participants choose their favourite ideas. The vote happens by placing small round stickers on preselected topics or workshop outcomes, such as ideas on sticky notes. The dots should be highly contrasted with the notes, as visibility is essential when analysing the poll results. Another option is to use markers to draw the votes. (Sibbet, 2010, p. 92)

For more than one criterion, participants can have dots in different colours. If each workshop participant has multiple votes, having one-third of the number of votable items is a good rule of thumb. Participants are not advised to place multiple votes on one sticky note since the method is more about finding workable ideas than selecting the best ones. (Sibbet, 2010, p. 93)

Utilising stickers for dot voting is practical when identifying exciting ideas, for example, after a sketching session. Providing unlimited votes is beneficial in this context, as the goal is to understand the overall appeal of individual features. Nonbinding polls also benefit from voting sessions because quiet participants might find it hard to express their opinions otherwise. In the final decision-making round, the Decider (a unique role in the Design Sprint method) can wield supervotes – larger stickers with greater emphasis – when choosing the surviving solutions. (Knapp & Zeratsky, 2016, pp. 132–141)

## 2 DesignOps in theory

The chapter discusses DesignOps and related topics, considered the primary development areas in the empirical part of the DesignOps journey. Malouf (2019, pp. 14-15) underlines that while design teams grow in size, organisations invent new business ideas, and design solutions become more complex, design as a practice demands a singular objective on the operations to maintain the optimal alignment of design's best interests and the organisation's business.

Research evidence supports the idea that the perceived value of DesignOps depends on the organisation. Team maturity is a key factor when choosing current concentration areas. Although DesignOps supports the team with a set framework, team evolution should be considered a holistic, over-arching theme with goals and activities shifting when needs arise. Flexibility ensures the longevity of DesignOps beyond solving individual problems. (Kaplan K., 2020a)

### 2.1 Literature review

The inventor of the DesignOps term, Dave Malouf et al. (2019), have authored a comprehensive *DesignOps Handbook* covering various aspects of design operations. It stands out as one of the only DesignOps books in the market, along with Malouf's other book, *What is Design Ops* (2020).

Nielsen Norman Group (NN/g), a significant player in the user experience market, has produced an extensive collection of DesignOps resources online, with Kate Kaplan being one of the significant contributors. NN/g is not the sole online author but the most prominent one, with consistent quality and thorough coverage of diverse design topics.

Besides these materials, there is practically no printed content on DesignOps, so the thesis covers various design aspects utilising a selection of varied literature. Various literary sources include leadership and management topics, but Merholz and Skinner (2016) take a comprehensive perspective on

organising design teams. The duo covers multiple aspects of DesignOps without calling them by their name. Otherwise, the thesis references studies conducted among design professionals and design maturity materials that help evaluate where the design team lies on the design spectrum.

## 2.2 Origins of DesignOps

In the traditional studio model, high-functioning design teams practised deconstructive creativity, utilised serendipity in their processes and lived with constant interruptions and criticism. With the rise of agile development, designers were levelled with engineers and their working culture, which forced design to be productional, superficial tasks rather than an open collaboration with the actual users. The focus of design work was diverted to solution engineering and mitigating possible risks in the delivery, which contradicts the freeform exploration designers were used to. (Malouf, 2019, pp. 7–11)

The original agile development model flowed only on one delivery track. Adding a discovery track to the process changed the agile landscape. The new dual-track agile emphasises discovery and validation and uses time-boxed experiments to test ideas. (Malouf, 2019, p. 12) A common problem in agile methodology is velocity prediction, which does not cover different types of tasks, like design and product management. While agile methods concentrate on shipping quality products, they do not cover planning and finding out what to ship or how end-users perceive the solutions. (Torres, 2021, pp. 15–16)

Malouf added a third track to the model (Figure 5), understanding, which is used to align team insight with user needs. The new addition was an essential step towards the adoption of design operations and the legitimate usage of the term DesignOps. (Malouf, 2019, p. 13) Continuous discovery expands these ideas to incorporate consistent refinement of product objectives, customer understanding and overall product development. In essence, continuous discovery is an iterative research initiative designed to help teams stay in close connection with customers. (Torres, 2021) These paradigms resemble each

other and have helped form the integral parts of DesignOps, i.e. managing how teams should work.

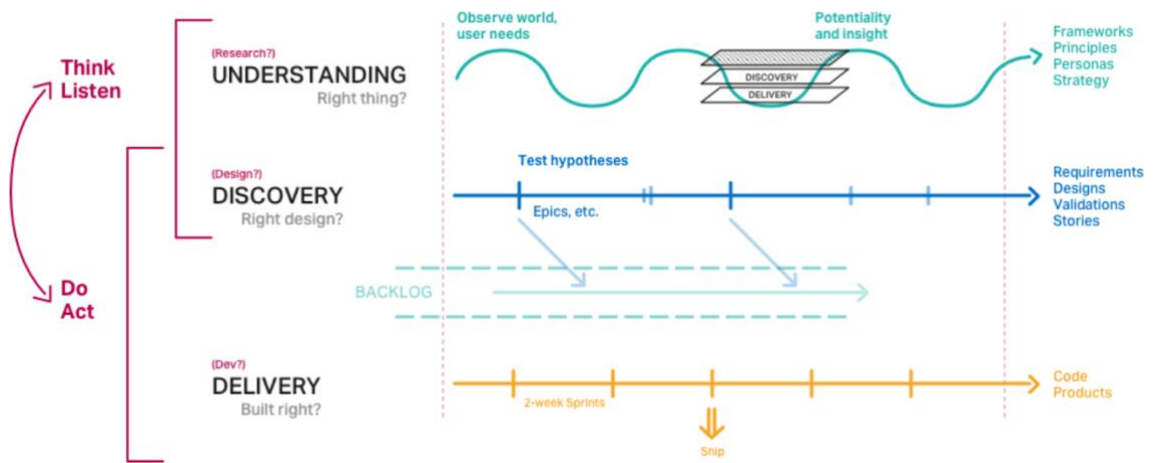


Figure 5. The tri-track agile model overlays basic agile practices with a user-understanding track (Malouf, 2019, p. 13).

### 2.3 Defining design operations

The idea of a sole master designer is an integral part of innovation work, but modern trends consider design as an inclusive team effort (Stenros, 2019, p. 55). DesignOps is a framework for building scalable design teams through a holistic approach to collaboration, shared resources and working methods. In other words, DesignOps is about the orchestration of people and workflows. Teams should be able to grow and evolve, work efficiently together and produce high-quality design deliverables. (Kaplan K., 2019a)

Kate Kaplan (2019a) presents DesignOps as a set of elements design teams should consider when planning their work (Figure 6). The framework contains three main categories: how to work together, get work done and create an impact. Each category is divided into three subthemes with respective topics, which are considered to be the core development items.



Figure 6. NN/g's DesignOps Menu is divided into three main categories containing various subthemes (Kaplan K., 2019a).

Malouf (2019, p. 19) emphasises that "DesignOps is everything that supports high-quality crafts, methods, and processes". Still, Kaplan (2019a) argues that every team can benefit from standardised operation models, proper tooling and working methods that enable efficient scaling.

Nielsen Norman Group gathered evidence from 557 design professionals across organisations. The survey results show that the DesignOps maturity in organisations is significantly low. Despite the low score, most organisations answered that they had various design operations. The answers were compiled together as the basis of the DesignOps framework. (Kaplan K., 2020b)

The originator of DesignOps, Dave Malouf, describes operations (Figure 7) as tools and environments needed to excel at specific tasks. Design craft with standardised methods according to agreed-upon processes produces high-



quality output. Of course, the craft needs tooling and infrastructure to support designers' work. On the management level, designers need predetermined workflows, governance (such as time tracking, contract negotiations, and other support functions), and people operations, like hiring and onboarding. This all forms the basic structure of DesignOps. (Malouf, 2019, pp. 18–20)

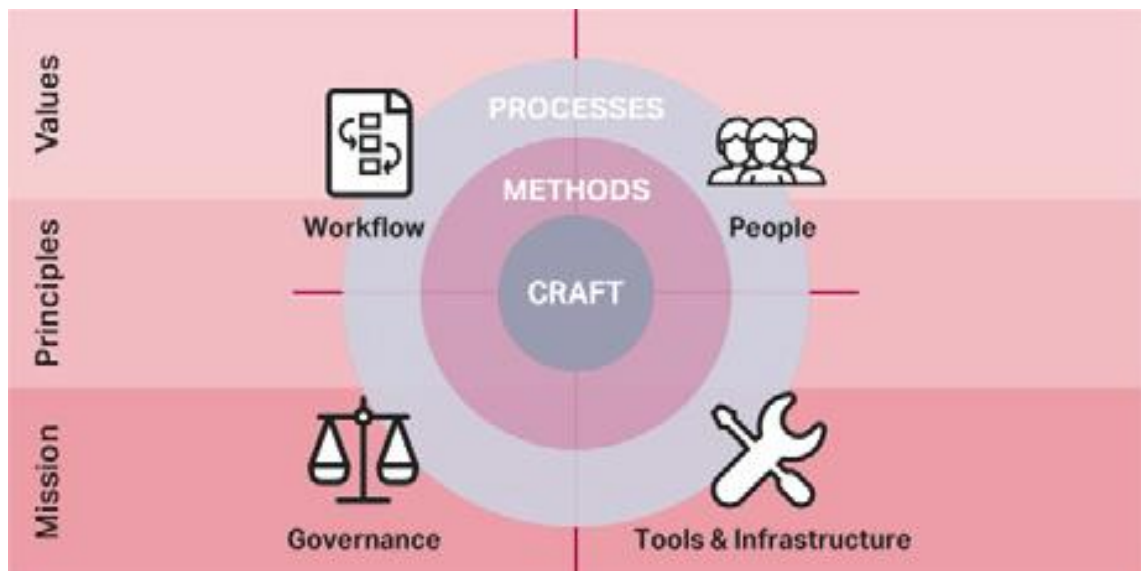


Figure 7. Malouf describes the DesignOps framework as a lattice of interconnected factors. (Malouf, 2019, p. 22)

Values, principles and the company's business mission create a guiding lattice for keeping the North Star shining bright. This cultural framework affects outcomes in the background but may not be present in day-to-day interactions. (Malouf, 2019, p. 21) The DesignOps practice consists of three focus areas (Figure 8): business operations, people operations and workflow operations. The model integrates parts of the framework to recognised working practices and everyday organisational activities. (Malouf, 2019, p. 23)

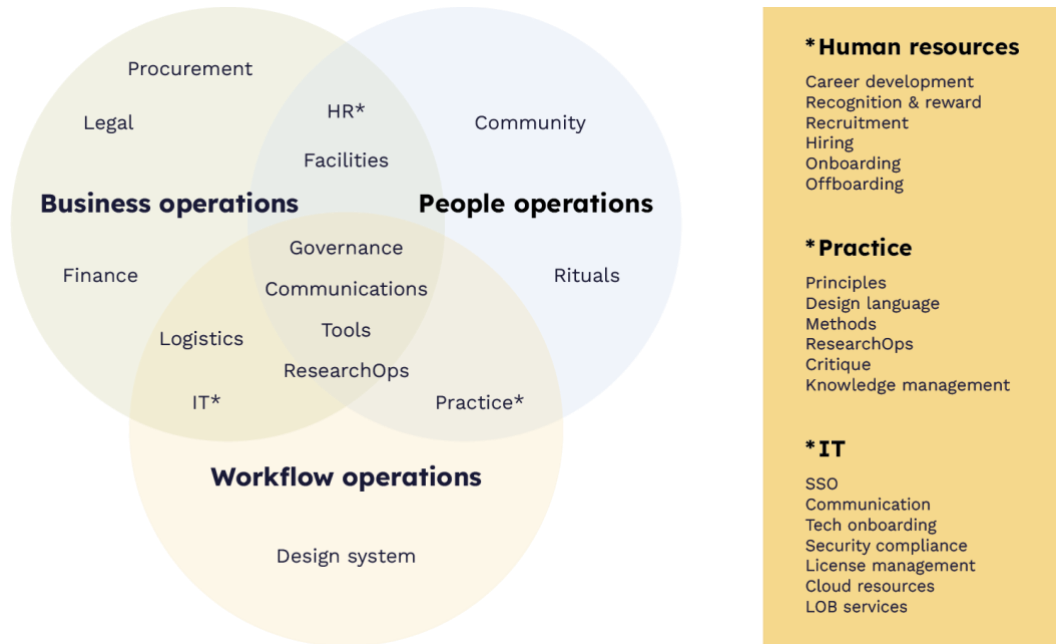


Figure 8. The refigured Malouf's DesignOps model (Malouf, 2019, p. 23) comprises three overlapping focus areas.

The DesignOps manager is responsible for organising production flows within the design team and integrating practices with other production roles in the organisation. These efforts include assessing design artefacts, implementing tooling and infrastructure to support collaboration, and communicating with resourcing and sales executives. (Malouf, 2019, p. 25)

## 3 Design workflow operations

### 3.1 Guiding principles and design standards

Design science is an emergent field, meaning various forms of design principles have been introduced in the past. Generally, principles are not universal or always true but are context-sensitive and depend on the problem. These fundamental rules are used to gain a foundational understanding of the problem and can lead to developing new tools for reaching an optimal solution. (Fu et al., 2016) Establishing team principles and core values enables the team to achieve more focused outcomes and collaborate towards business objectives. Principles offer the team a sense of purpose. (Merholz & Skinner, 2016, p. 23)

Design principles represent the utmost values used to guide design choices. Expressing the core values can help to differentiate principles from one another and inspire empathy towards users. (Rosala, 2020) Covey (1997, p. 40) stresses the importance of not mixing principles with values. Principles are enduring behavioural rules with established and lasting value.

Principles act as a guiding star, whereas guidelines show the way to the objective (Interaction Design Foundation, n.d.). By definition, guidelines are working instructions that give directions to reach goals. They are regarded as more context-sensitive than principles and less universal. Lastly, heuristics are minimal principles – rules of thumb or common strategies. Heuristics may help find the right solution, while a guideline is a surefire method. (Fu et al., 2016)

#### **Definitions of good design**

A German industrial and product designer Dieter Rams, often associated with the consumer electronics company Braun, challenged himself by asking, “Is my design good design?”. By responding to the question, Rams formatted ten principles highlighting various aspects of good design. (Kirk, 2016, s. 29)

1. "Good design is innovative.
2. Good design makes a product useful.
3. Good design is aesthetic.
4. Good design makes a product understandable.
5. Good design is unobtrusive.
6. Good design is honest.
7. Good design is long-lasting.
8. Good design is thorough down to the last detail.
9. Good design is environmentally-friendly.
10. Good design is as little design as possible." (Kirk, 2016, s. 29)

Kirk (2016, s. 30) expands on Ram's criteria to cover data visualisation design by claiming that data visualisations should be trustworthy, accessible, and elegant. Stickdorn (2018a, p. 360) complements that although different design processes look similar on paper, a wide range of mindsets and principles can accompany the main service design principles.

A different take on good design is the Universal Design framework (Figure 9), a set of inclusive design principles that herald products and environments as "usable by all people, to the greatest extent". The framework applies to various fields, from teaching to productivity design and IT to architecture. The fundamental tenets of any Universal Design practice or product entail accessibility, usability and inclusivity. (Burgstahler, 2021)

The digital application of Universal Design, Web Content Accessibility Guidelines (WCAG), addresses accessibility in digital environments. (W3C, n.d.) The guiding principles of WCAG require IT services to comply with four rules: perceivable, operable, understandable, and robust. (Burgstahler, 2021, p. 3) While WCAG offers concrete and standardised ways to tackle digital accessibility issues, it is only a checklist. A combination of design aspects with human interaction is mandatory to reach true accessibility. (W3C, n.d.)

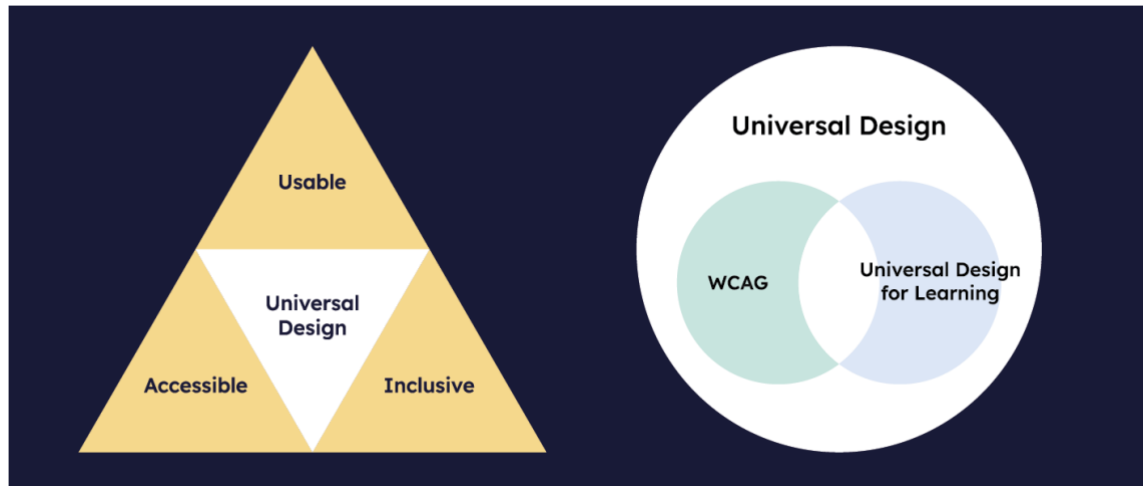


Figure 9. Universal Design framework requires ultimate accessibility from designs, including digital environments. (Burgstahler, 2021)

ISO-standardized WCAG guidelines (International Organization for Standardization, 2012) aid in meeting accessibility criteria and enhancing the usability of digital content to the general public. The European Accessibility Act (EU Directive 2019/882) mandates that public and private sector entities ensure the accessibility of certain services. By transposing the act to national law in Finland, society is taken closer to inclusivity and equality for all persons with or without disabilities. (Ministry of Social Affairs and Health, n.d.)

Universal Design elevates accessibility issues through its seven principles:

1. "Equitable use
2. Flexibility in use
3. Simple and intuitive
4. Perceptible information
5. Tolerance for error
6. Low physical effort
7. Size and space for approach and use." (Burgstahler, 2021)

In the age of artificial intelligence, the designer's role shifts from human-intensive design endeavours to delivering AI problem-solving loops. The

intricate task asks for the capability to formulate design rules for simple, repetitive tasks that can solve and output complex solutions. Incorporating AI enforces design thinking by eliminating scale, scope, and learning from the equation. (Verganti et al., 2020, pp. 221–222)

Research shows that artificial intelligence expands the possibilities of design thinking by developing tailored solutions for users, thus enforcing the original service design principle of a user-centred approach. (Verganti et al., 2020) This approach requires designers to be more sensitive to central data principles in social and ethical frontiers: fairness, privacy, and safety. (Zeng et al., 2019)

### **Standardised operations**

A heuristic is a quantifiable representation of a pragmatic standard. Standardisation happens through common specifications or standards (Fu et al., 2016), for example, in several international authorities. Comprehension of standards garners the designer's knowledge since standardised best practices are often transferable between design areas. The presence of standards may feel limiting, but they engage creative decision-making in design processes, freeing up the capacity to solve crucial problems and not get stuck on details. (Galley-Taylor et al., 2011)

Good designers are quick learners. Since fundamental principles are the same across all fields of design, experts can move from one assignment to another with ease. (Norman, 2013, p. 239)

Jakob Nielsen's set of usability heuristics is based on a factor analysis of usability problems uncovered in a variety of projects (Nielsen, 1994, p. 152), with the latest version being from 2005. (Nielsen, 2020)

Nielsen's usability heuristics are the following:

1. "Visibility of system status
2. Match between system and the real world

3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize, diagnose and recover from errors
10. Help and documentation.” (Nielsen, 2020)

Although heuristics can benefit work standardisation and address usability defects, they may introduce new problems regarding usage context and users’ cultural orientation (Nizamani et al., 2021). Some standards are designed with a specific population in mind. When a service follows these standards, users take the design for granted and may be unaware of the role of standards altogether. (Galley-Taylor et al., 2011, pp. 121, 125)

### 3.2 Design process

A designer’s job is to iterate designs over gained insight and test ideas for functionality, usability, and feasibility (Stickdorn & Schneider, 2011, p. 124). The generic design pattern is to wait for a market change to justify a substantial redesign, which is done only when the design investment supersedes the incremental value of a new iteration. During product use, feedback is halted, and the solutions quickly become outdated. (Verganti et al., 2020, p. 216)

The designers are tasked with three types of design problems – defined, underdefined, and undefined – thus making reliance on a single design process challenging. Designers have to tolerate a certain level of uncertainty. (Dorst, 2003) The initial step in the service design process involves tailoring a suitable process for the problem at hand. This creates a framework for assessing the designer’s influence on the final outcome. (Stickdorn & Schneider, 2011, p. 126) Designers never try to solve the presented problem but discover the root problem (Norman, 2013, p. 218).

While designing individual details, designers must consider the holistic approach and occasionally step back to view the solution from a broader perspective. (Stickdorn & Schneider, 2011, p. 127) A holistic approach through systems thinking can reveal a multitude of value dimensions throughout the process. (Ruckenstein et al., 2011, p. 20) This can occur through the powerful double-diamond model (Figure 3), which combines divergent and convergent thinking to resist jumping straight to easy solutions. (Norman, 2013, p. 219)

Human-centred Design (Figure 10) plays with the idea of repeated convergence and divergence by taking them to an iterative loop, yielding increasing amounts of insight on consecutive runs (Norman, 2013, pp. 221–222). Users have become significant actors in design work due to the emergence of co-design habits, which incorporate them in ideation and delivery (Moritz, 2005, p. 34).

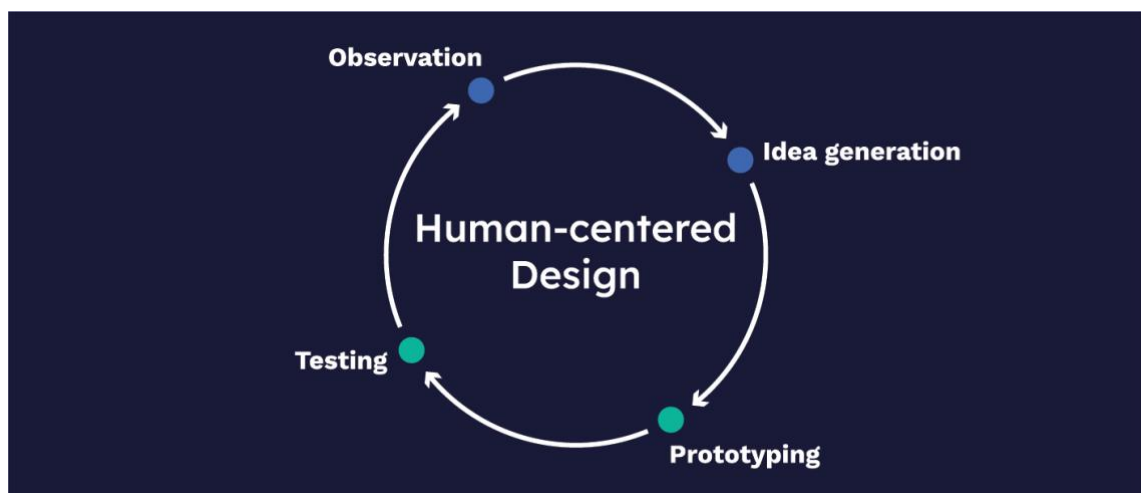


Figure 10. Human-centred design loops a generic process or spirals to emphasise each iteration (Norman, 2013, p. 222).

The design process of AI solutions starts with a regular human-centric design phase, where the solution space is thoroughly investigated. The second phase occurs in the developed solution, where the AI designs or outputs the solution to the user. This disrupts the original model since the solution's design, delivery, and use are concurrent. (Verganti et al., 2020, p. 221) The clever use of technology disrupts the service-supply chain as more services leverage self-service technologies (Field, 2017, p. 10).



While a shared design process can help deliver standardised artefacts, reliance on one process may make work too rigid. High-level processes help in communication, but following a playbook process step-by-step hinders thinking and limits the possible solution space. Therefore, the design team should document tried and true problem-solving techniques, building a toolkit for future challenges. (Merholz & Skinner, 2016, pp. 32-33)

### 3.3 Value definition

One of the main goals of any organisation is to produce value for its clients and other stakeholders. Value is not created in a vacuum; it is a multifactorial construct. Any product, service or solution must be appreciated by the users to achieve recognition or become economically successful. (Eljala & Luoto, 2019) The most successful innovations produce value for multiple parties, creating a sphere of inclusion (Ruckenstein et al., 2011, p. 15). This idea aligns with the theory of service-dominant logic (Stickdorn & Schneider, 2011).

Inherent value is created when benefits surpass the costs. The customer and the service provider must realise this value independently, but each party's final benefits can differ, ending in different final values. In the service business, value is produced in co-creation. (Field, 2017, p. 3) The co-creation of value relies on the task execution of both the service provider and the customer. In certain services, the customer may assume a dual role – consumer and co-creator – adding complexity to the service production. The customer might need training for the service provision, contribute their expertise, and still pay for the service, leading to blurred lines in value creation. (Field, 2017, pp. 25–27)

In the continuous pursuit of change and enhancement, the concept of value has acquired a kind of value by transforming it into a meaningful cultural entity. Yet a systemic definition of value is impossible to achieve since it is inherently relative – it depends on what is considered valuable. (Ruckenstein et al., 2011, pp. 44–45) Values can be viewed through three different lenses (Figure 11):

1. Sociological sense: what is considered good and desirable in being a human? This also contains political and moral dimensions about how communities should be built.
2. Economic sense: the attractiveness of objects in comparison with other similar things. How much are people willing to give up to acquire the object?
3. Differentiation: symbolic and linguistic differentiators and concrete actions which provide a desirable and good life. (Graeber, 2001, pp. 1–2)

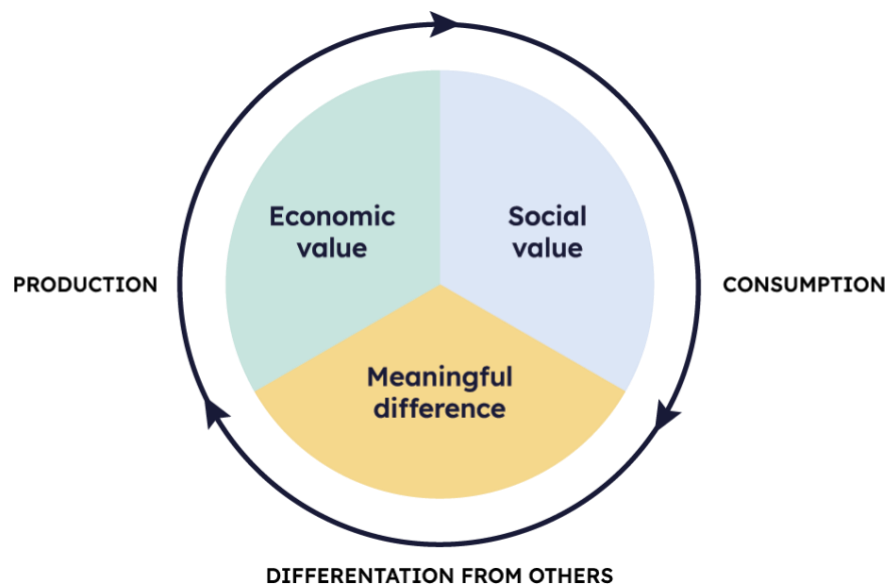


Figure 11. The interplay of value creation aspects adapted from the *Forget Innovation* (Ruckenstein et al., 2011).

The creation of value can also be viewed from the intersection of branding, user orientation and innovating new solutions (Eljala & Luoto, 2019, p. 77). User involvement in design work brings the designers closer to users' needs and helps align design with social and economic value creation aspects. (Eljala & Luoto, 2019, pp. 79–80) Research conducted by McKinsey has revealed that economic excellence is a byproduct of utilising design. This can be achieved through leadership, enhancing user experience, collaboration and continuous iteration, which are staples of the service design toolkit. (Sheppard et al., 2018)

Economic success is connected to social value and meaningful differentiation offered by the service. Practical support for innovation activities enables the creation of socially and economically sustainable value that benefits people's dreams and pursuits. The coordination of value-creating dimensions is crucial for organisations and employees to reveal the innate value factors in their services. (Ruckenstein et al., 2011, pp. 15–18)

When pursuing so-called Blue Oceans, innovations on unknown waters, design thinking opens new business opportunities. It grants an option to invent comprehensive end-solutions valuable to the whole business ecosystem. It is notable that Blue Oceans, characterised by limited competition, provide the opportunity to achieve substantial success. Organisations must leverage design and design thinking as their strategic assets to identify latent business potential and possible innovations. (Eljala & Luoto, 2019, pp. 81–83) If used in strategy planning, the design approach ensures all stakeholders have their say, visions do not misalign with internal motivations, and there are no conflicting requirements (Merholz & Skinner, 2016, p. 13).

## 4 Design leadership

### 4.1 Leadership skills for designers

Leading design work does not differ from regular leadership, as it covers proactively organising the work of designers. Design leader acts as the herald of design, ensuring it is remembered and addressed. Another related topic is design management, which involves facilitating processes and responding to business situations. (Turner & Topalian, 2002, pp. 1, 3) To make this a reality, design leaders must have organisational autonomy to guide the team toward their objectives. Despite this, the design leader must also have executive support to navigate the organisational politics. (Merholz & Skinner, 2016, p. 24)

*“The principal objective of design leaders is to ensure design is incorporated to deliver the best achievable experience at every point of contact between the company and stakeholders.”*

*(Turner & Topalian, 2002, p. 9)*

Large organisations in Finland are forerunners in utilising design services, while their small and medium counterparts need to catch up. The supply and demand for design services are misaligned since Finnish design agencies tend to be small, have limited networks, and lack internalisation. An ongoing public program, *Muotoile Suomi*, encourages small to medium enterprises to leverage design services in strategic development and innovation programs. The design program examines competitive advantage through a wide-angle lens aiming to perceive various welfare-creation factors. The new incentive makes design-led ventures eligible for public innovation funding and benefits enterprises with growth and internalisation opportunities, thus making leadership in design ventures more valuable to organisations. (Lehtonen & Lehto, 2019, pp. 23, 25)

Design leaders must ensure the integration of design to provide the best possible experience at every interaction between the company and its stakeholders (Turner & Topalian, 2002, p. 2). The highest-ranking enterprises

break barriers by integrating design aspects into their service and product offerings. After all, design is a cross-functional aspect that spans across departments. (Sheppard et al., 2018)

A multi-faceted leader helps others discover what they have already realised by themselves. Through resiliency, they rise above challenges to find alternative solutions time and again. (Stenros, 2019, pp. 59–61)

Future leaders need awareness to empower their teams by acknowledging intelligence and creativity to allow talents to emerge. Teams are emancipated when they are given control of decisions, thus no longer having to rely on their leader as the source of power. (Marquet, 2012) New technologies enable individuals to become experts, necessitating leadership skills from trained professionals to distinguish themselves as genuine visionaries (Stenros, 2019, p. 53).

*“Design is more than a feeling: it is a CEO-level priority for growth and long-term performance.”*

*(Sheppard et al., 2018)*

## 4.2 Design maturity

According to the Danish Design Centre (2015), assigning design a strategic position in the organisation enhances earnings or overall business success. The Design Ladder (Figure 12) was created in 2001 as a tool for organisations to assess their design maturity. The widely adopted Design Ladder has become a household staple, notably used in the European Union’s Innobarometer, which evaluates European companies’ design maturity (Björklund et al., 2018, p. 502). Although the ladder is presented as a framework, it is not a tool for integrating design but a model to elevate the importance of design ventures (Doherty et al., 2015, p. 66).



Figure 12. The Design Ladder describes four tiers of design maturity in organisations (Danish Design Centre, 2015).

Design is sporadic in the first maturity level; the design is an invisible part of development, where unreasoned hunches drive decisions. Organisations on the second level gain financial interest through utilising design as a form-giving factor. The third level demonstrates the integration of design thinking into processes, with design contributing to product development from conceptualisation to delivery, covering customer needs in the process. In the top tier, design assimilates to the organisation's core, serving as a guiding force towards realising visions. At this level, design becomes a fundamental model of operation rather than a component in the development process. (Björklund et al., 2018, pp. 503-505; Danish Design Centre, 2015)

Invision company's model (Figure 13) is based on a survey among designers about the activities taking place in their organisations. The study shows that 41 % of organisations reside on the design baseline, and only 5 % of companies leverage design to its fullest potential. The steps in the model are:

- Level 5: Visionaries. Design in business strategy.

- Level 4: Scientists. Design is a hypothesis and an experiment.
- Level 3: Architects. Design is a standardised process.
- Level 2: Connectors. Design is what happens in workshops.
- Level 1: Producers. Design is what happens on screens. (Invision, 2018)

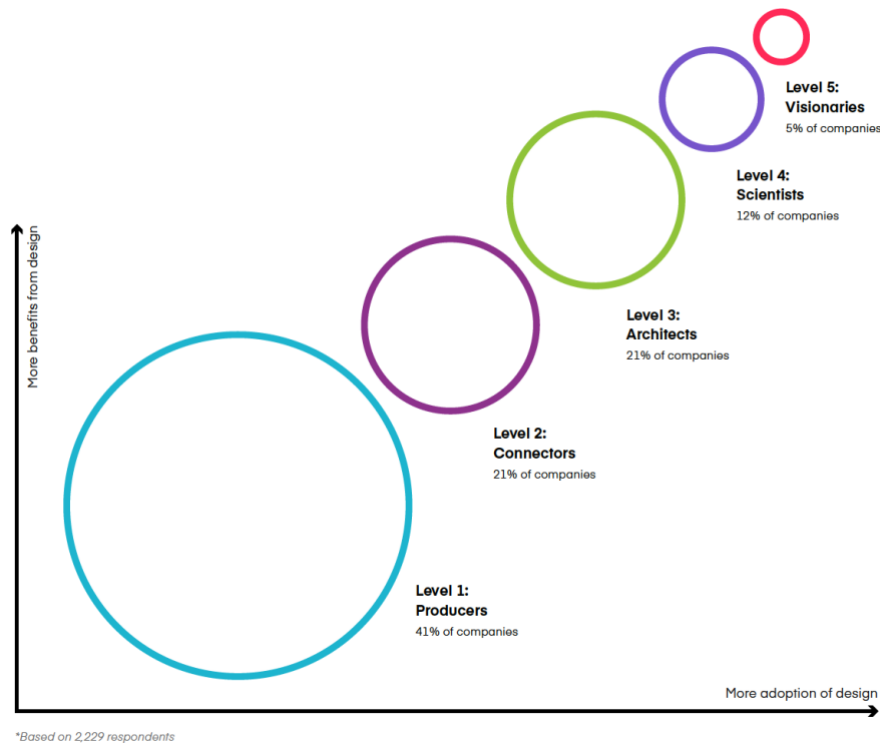


Figure 13. Invision crafted its design maturity model from survey data from the design industry (Invision, 2018).

Complementary solutions have been created to ease the navigation of maturity models. Björklund and her colleagues (2018) laid an impact evaluation criterion on top of the ladder (chapter 2). Doherty and colleagues (2015) suggest adding cultural stepping stones to the Design Ladder model (Figure 14) to allow a more straightforward implementation of design practices into the organisation's culture. Although the Design Ladder is not an integration tool, aspects of it can be utilised for developing design efforts. Maturity models provide an instrument to position the organisation and find solutions for change. The organisation can evolve to a new maturity level by following the discrete stages presented in the model. (Becker et al., 2009)

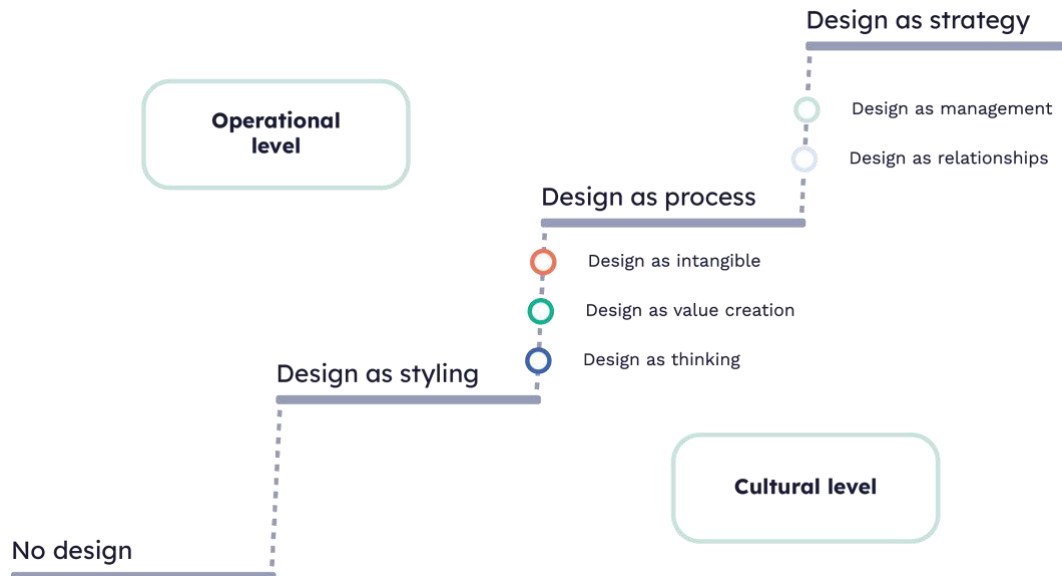


Figure 14. Cultural stepping stones make the Design Ladder a usable development roadmap (Doherty et al., 2015).

Also, other models can be used to evaluate an organisation's design maturity. Artefact Groups's model (Figure 15) stands on five pillars: empathy, mastery, character, performance, and impact. By evolving in these areas, the organisation can reach the next level of Artefact's maturity scale. (Artefact, 2015) Design can also be evaluated by its pervasiveness within the organisation: as a service, acting as a catalyst for change, and functioning as a strategic "design thinking" resource. The approach was later formatted as a Design Value Scorecard, helping to evaluate where design currently delivers value. (Westcott et al., 2013)



Figure 15. Artefact's maturity model has five steps: initial, adopted, managed, integrated and driven (Artefact, 2015).



### 4.3 Ramping up DesignOps

Concentrating on craft is necessary to create impact. When there is a team in charge of running DesignOps functions, it frees management time from designers. Increasing DesignOps activities across design functions can occur for various reasons: roles have been stretched too broad to add in responsibilities, the team has to grow due to syncing being at stake, or to make designers resilient to burnout. (Whitehead, 2019, pp. 35–36) Other possible reasons to adopt DesignOps practices are the fast pace of work, working in silos or the need to balance time spent on design and documenting design work (Kaplan K., 2022).

DesignOps as a holistic practice is relatively little known among designers and user experience professionals. The research supports the idea that organisations of different sizes can elevate their work by utilising facets of DesignOps. (Kaplan K., 2020a) However, teams may have the relevant skills for growing together but lack the sensitivity to operate at scale in an orchestrated manner (Merholz & Skinner, 2016, p. 22).

#### **Specialisation**

The fastest way to work in small teams is when everyone handles their tasks and responsibilities. Having a specialised DesignOps person at this scale might complicate things. (Whitehead, 2019, p. 36)

When organisations grow by extending their processes, design teams may need to scale and find specialised roles. Specialisation ensures people can concentrate on their craft and leave management for DesignOps operatives or managers. (Whitehead, 2019, p. 37) As experts assume new roles, leadership must evolve. Specialised experts require coaching, navigating change, counselling, and leading the way. (Stenros, 2019, pp. 56–57)

## **Team growth**

As a company expands, other teams start having requests for the design team, which becomes a responsibility for someone to take care of. Meeting the extended service demand requires optimised standard processes. (Whitehead, 2019, p. 38) DesignOps excels in maintaining processes that guarantee consistent quality at scale (Whitehead, 2019, p. 40).

Scale often introduces communication and consistency issues that can be mitigated with DesignOps (Kaplan K., 2022). Maturity models can help alleviate the smooth transition to more stable design operations. Organisational growth diverts designers' attention to managerial tasks, which indicates a need to operate DesignOps at scale. This can happen via expanding the design program manager's role or staffing the DesignOps team with specialised DesignOps roles. (Arnis & Fry-Pierce, 2022, p. 56) Merholz and Skinner (2016, p. 59) instruct to have a maximum of 10–15 designers per design program manager.

## **Resiliency towards burnout**

Design professionals are naturally susceptible to burnout due to negative feedback. Creative processes and criticism in an unempathetic environment can lead to severe discouragement. (Whitehead, 2019, p. 41) Another take on burnout is that design resources are spread too thin for the designers to fulfil all of their required roles (Krause & Rosala, 2020, p. 66).

DesignOps can solve various aspects of work but can also bumper workflow issues affecting team health. Through management practices, DesignOps can prepare the team for upcoming work, elevate design thinking for decision-making, and help estimate resourcing needs. (Whitehead, 2019, pp. 41–43)

#### 4.4 DesignOps the role

The job of the DesignOps team is to protect everyone's time and headspace within the design organisation (Whitehead, 2019, p. 36). The subject is complicated because design managers handle their own responsibilities and those carried out by design leaders (Turner & Topalian, 2002, p. 1). Designers often assume various roles. A dedicated DesignOps role or team covers managerial tasks, allowing designers to focus on the product and enhance user experience (Black, 2019, p. 54).

Design plays a crucial part in interlinking business operations to strategic objectives with daily business activities, thus maximising the effect of design investments (Turner & Topalian, 2002, p. 5). Negative or dismissive attitudes towards design vocation limit an organisation's growth, hence requiring designers to prove their worth in this constant uphill battle. This stems from problems such as role ambiguity and clear career paths. (Arnis & Fry-Pierce, 2022, pp. 32–33)

An effective needs to be in charge of its destiny, requiring focused leadership. This can be made true by appointing a leader from the design team; external design visionaries can lack the diplomatic skills to nurture the team. (Merholz & Skinner, 2016, p. 24) Design work is best represented by someone who knows the ins and outs of design processes and can build a cross-functional understanding of design's necessity (Black, 2019, p. 58). This can help craft a role that matches the organisation's preferences and DesignOps focus areas the organisation determines. The DesignOps representative must build organisational trust and buy-in in DesignOps to enable transparent communication. Proactive problem-solving is a vital skill among DesignOps specialists. (Kaplan K., 2022)

There are two overlapping DesignOps models with their specific flavours. The first model establishes standards for the entire team, while the other model blends into project work and enhances processes in tandem with design leadership. (Whitehead, 2019, pp. 43–44) Although there are two prevalent

approaches to managing DesignOps, teams can utilise the methodology however they want. Black (2019, p. 59) states that anyone willing to lead DesignOps must crave ambiguity and changing environments.

Kate Kaplan (2022) lists three supporting DesignOps partners: the design manager, the design lead and the ResearchOps lead. The manager covers workflow operations and people management in the team but can also help with operational tasks. The design lead is a quality manager of sorts, thus helping with processes and standards, as well as maintaining constant quality. The ResearchOps lead oversees user research, research hub management and user testing practices.

### **The operation support model**

The operations support model creates high-level standard guidelines by spotting problem areas (Whitehead, 2019, p. 44). It is run by a DesignOps Lead or Specialist whose primary responsibility is listening to design team members to understand gaps in processes and standard practices. The DesignOps Lead is tasked with arranging training for the team, tracking metrics and opportunities, optimising resources, and maintaining operational initiatives. (Kaplan K., 2022)

The model extends beyond project work and sets supporting standards, such as onboarding processes, meeting cadences, and design-themed curricula. This model is helpful for projects lacking project ownership or teams with freelance resources, giving internal and external resources a helpful touchpoint. (Whitehead, 2019, p. 46)

### **The project support model**

The project support manager participates in individual projects by helping with daily activities while maintaining top-level systems. The gist is that individual creatives can contribute to their projects while someone else handles

managerial functions. (Whitehead, 2019, pp. 47–48) The DesignOps Producer provides communication and visibility across teams about progress and business requirements (Kaplan K., 2022).

Typically, the producer is dedicated to one team or business area, acting in a cross-functional support role. This role includes managing scorecards, documenting and optimising design activities across multiple projects and developing design standards or guidelines. The producer role can be expanded to a program manager who oversees the organisation's DesignOps initiatives. The program manager ensures DesignOps scales, collaboration across teams works, and everyone benefits from standardised best practices. (Kaplan K., 2022)

#### 4.5 Designer's role definition

Any artefact or construct can result from people's actions, thus turning "everything" into design. This has made design research funding harder to reach since juries granting funding lack a general understanding of the field and its characteristics. Since everyone can design, distinguishing the design profession becomes complicated. (Ilstedt Hjelm, 2005, pp. 1–2)

Dahlman (2002, as cited in Ilstedt Hjelm, 2005, p. 2) describes designers as capable of turning ideas into concrete artefacts. He draws a clear line to keep design distinct from other general problem-solving topics, such as planning and decision-making. Ilstedt Hjelm (2005, p. 2) also states that designers' goal is to create a better world or, in other words, "good" artefacts, as opposed to scientists who strive to produce knowledge that is "true". Designers utilise tacit knowledge to "listen to" artefacts with the goal of making a design statement and giving form.

According to a survey conducted among user experience professionals, their duties vary wildly. Essential skills include prototyping, visual design and research, with data analysis being the most sought-after. Another aspect of the design profession is focusing only on research. User experience researchers

engage in testing, interviews, or various research activities, often resulting in a presentation of some sort. Their most desired skill was identified as visual design. (Krause & Rosala, 2020, pp. 8–9)

The study by Krause and Rosala (2020) reveals that user experience professionals endeavour to prototype, collaborate with clients, and review user interfaces. Visual aspects of design are also present in the peak place. Notably, user experience experts frequently cross paths with researchers and service designers because they need to work on user journeys and personas as well as conduct interviews and surveys. User experience researchers work more with qualitative testing on field studies and analysis of research findings.

To make resourcing easier, it is recommended that each designer's core skills be identified following organisational skill requirements. This helps to land suitable projects for the respective designers. (Black, 2019, p. 63) High-maturity organisations have more specialised designer roles. Designers in low-maturity organisations have greater responsibilities and lack access to user experience researchers. The survey reveals that designers' specialisation in their areas of expertise or interests aligns with team growth. (Krause & Rosala, 2020, p. 20)

To understand how designers can grow in their profession in the future, it is relevant to understand their roles and functions in organisations. Designs of the Time 07 initiative, conducted in the United Kingdom in 2007, hosted several design projects in the public sector. The initiative profiled seven different roles for the design professional: co-creator, researcher, provocateur, social entrepreneur, facilitator, capability builder and strategist. As the designers accumulate more layers of expertise, the possibility horizon of the individual designer and organisation widens. (Tan, 2009)

Another study differentiates three roles (Table 1) for designers in companies. Team-building and facilitation skills play a central role in the model. Concentration on design thinking as a tool can take the designer to a more potent role away from the more designerly activities. (Perks et al., 2005)

Table 1. Designer roles in companies derived from a study (Perks et al., 2005).

Designer role	Actions	Required skills
Design as functional specialism	Designer evaluated exclusively as a resource used for design tasks.	Traditional design skills: aesthetics, visualisation skills etc.
Design as part of multifunctional team	Designer seen as a facilitator of collaboration. An essential part of the team.	Skills to enable interaction and communication, coupled with Flexibility and team building capabilities.
Design as new product design process leader	Designer involved in research, overseeing product development processes and setting direction for visions.	A combination of research, analysis and management skills. Motivation and communication skills.

Although organisations have dedicated design experts, various design activities take place at all staff levels by “silent designers”. Unfortunately, the influence and design decisions of non-trained personnel are rarely recognised. Design leaders can bypass this problem by integrating a design mindset into organisational DNA. (Turner & Topalian, 2002, pp. 7, 9)

#### 4.5.1 Career development

Baruch and Rosenstein (1992) define career as “a process of development of employee along a path of experience and jobs in one or more organisations”. A career is a metaphorical life journey in which the hero faces challenges, builds identity, and gains self-actualisation (Baruch, 2004, p. 59).

Organisations have changed from offering secure life-long jobs to mere providers of development opportunities. The organisation and the employee form a psychological contract of job security – a long-term commitment to help the organisation with the employee’s unique expertise. Similarly, the expert

agrees with society to maintain their employability by maintaining and developing their specialisation. (Ghoshal et al., 1999, p. 15) Employability comprises a combination of qualities, skills, and knowledge essential to being effective in the workplace and becoming a valuable player in the labour market (Talbot, 2013, p. 94).

When a market situation indicates a need for differentiation, leaders should have the sensitivity to nurture designers to take a more central position in the development efforts. Growing in skills prepares designers for career options in more managerial positions. Still, acquiring broader business and collaboration skills requires considerable commitment from the designer and their organisation. (Perks et al., 2005, p. 123) Stepping away from the design practice to a lead role can prohibit career development in some organisations (Krause & Rosala, 2020, p. 69), although climbing the ladder has been the norm in career advancement (Baruch, 2004, p. 60). On the other hand, seniority can reveal new career opportunities since one's self-awareness improves over time (Hassan et al., 2022, p. 6).

Wiig (1993, pp. 121–122) proposes directing stagnated experts towards relevant new knowledge to re-channel valuable employee resources. It is recognised that creative careers require specialisation after 5 to 10 years of employment. An alternative perspective on career refresh can also occur by transitioning to a new, collaborative field (Wiig, 1993, pp. 121–122) or becoming a self-employed consultant (Talbot, 2013, p. 92). Evaluating a person's development potential is a crucial dimension in career planning, thus avoiding possible career dead ends. Career guidance in these situations has been proven to increase job satisfaction and overall experience of work. (Hassan et al., 2022, p. 3)

A short-sighted approach to career development may prove detrimental to the overall career or the workplace. One aspect of ineffective career planning is following trendy occupations or making career choices based on stereotypical views about different professions. From another perspective, wrong training or education can lead to the under-utilisation of talent and a lack of support for



one's aspirations. (Hassan et al., 2022, p. 3) Ginzberg's (1988, as cited in Hassan et al., 2022, p. 6) perspective on career development emphasises identifying the expert's weak areas and how they can be improved to find the next career step. The same skills that open new work-life doors make the expert employable in a higher-value position within the current employer (Ghoshal et al., 1999, p. 17). Merholz and Skinner (2016, p. 35) state that the design team should have an explicit budget for further education, such as attending conferences and workshops. This helps the designer to evolve on their career path.

A career can even take a new direction due to a change of organisation or one's innate aspirations, thus shedding new light on career success. The success of the new multidirectional career can be evaluated by overall life satisfaction, self-actualisation, and other measures of self-cognition, not only by counting the steps taken on the career ladder. (Baruch, 2004, p. 61) An example of flexible career models can be found in the academic world, where even downward movement along the flat career structure is accepted. In the academic world, professional development is appreciated over formal rank, stating merits bring career success instead of time on a position. (Baruch, 2004, pp. 68–69) f

A universal approach to career development among different vocations can deflate team morale. Like any other professional group, design teams need tailored support, rituals, and well-defined expectations aligned with their expertise. (Malouf, 2019, p. 24) Working in a low-maturity organisation may cause dissatisfaction among designers due to the organisation not recognising the importance of their work or the lack of growth paths (Krause & Rosala, 2020, pp. 64–66; Arnis & Fry-Pierce, 2022, p. 32). A banded salary model can also limit progress past a senior role (Krause & Rosala, 2020, p. 69).

Project organisations offer an intermediary project manager track (Figure 16) alongside the regular subject matter expert track and manager track. Project managers have a range of responsibilities, which should be described in detail in the organisation's project handbook. (Kuster et al., 2015, pp. 41, 115) The model presents a stimulating career path for experts not interested in

supervisory tasks. The branching paths recognise managers and deep experts as necessary competencies, providing attractive career prospects for rising technical talents. (Cabanès et al., 2016, p. 3)

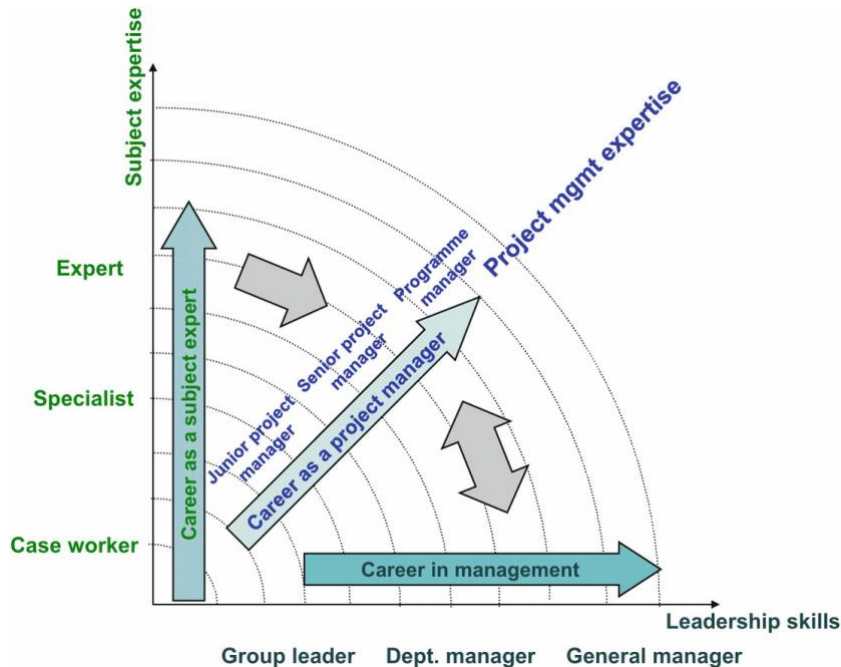


Figure 16. Project managers reside in the waters between specialists and managers (Kuster et al., 2015, p. 41).

*“Being a ‘designer’ goes beyond what the standard career ladders tell us.”*

*(Arnis & Fry-Pierce, 2022, p. 38)*

The career-track model fails to address the position of non-management roles in the organisation and their relevance to strategic issues. Without gaining organisational power, advancement in the expertise track may lead to unsatisfactory work careers and an ambiguous position in the organisation. On the contrary, the model offers a seductive career path for determined experts who value deepening their knowledge and contributing to the organisation’s business ventures. (Cabanès et al., 2016, pp. 3–4) The dual track model works well in a DesignOps environment, which requires a design program manager to oversee career development options for the team. On the other hand, a

designer can specialise in their craft or even take on some of the DesignOps roles and hence help their team excel in DesignOps. (Kaplan K., 2022)  
Inventing a genuine career path is possible by utilising design skills and working against conventional career roles (Arnis & Fry-Pierce, 2022, p. 38).

## 5 Empirical part

In the year 2022, Silo AI's design team discussed recognising the importance of design in the company. The design team discussed team composition, leading the limited design resources and managing tasks. When the small team got an additional member, a new-found spark towards structuring operations was lit.

As Kate Kaplan (2019a) suggests, research on relevant development tasks started with internal research. In the summer of 2023, the design team convened to determine which aspects of their work needed the most improvement. The team used Nielsen Norman Group's DesignOps menu (Figure 6) as their starting point. NN/g's framework felt the most reliable since it is based on research done among design professionals (Kaplan K., 2020b).

According to service-dominant logic, work and vocational practices undertaken as a team effort can be regarded as services. The design effort produces various design tokens as deliverables through institutionalised work processes. Service value can be created in collaboration, but in most customer projects, a sole designer serves the case by providing research, facilitation, and other design services to solve user problems uncovered through various methods. (Stickdorn & Schneider, 2011)

### 5.1 Kick-off workshop in 2023

The first workshop was held online in the summer of 2023 using the collaboration tool Miro. Three designers participated in the workshop. The main goal was to identify which DesignOps topics each designer found most relevant for development (Figure 17). The identification was done by dot voting. Topics were grouped according to the framework to promote the DesignOps mindset and help designers choose which topics to vote for. Before each vote, the author presented each topic and its meaning in the context of leading design operations.

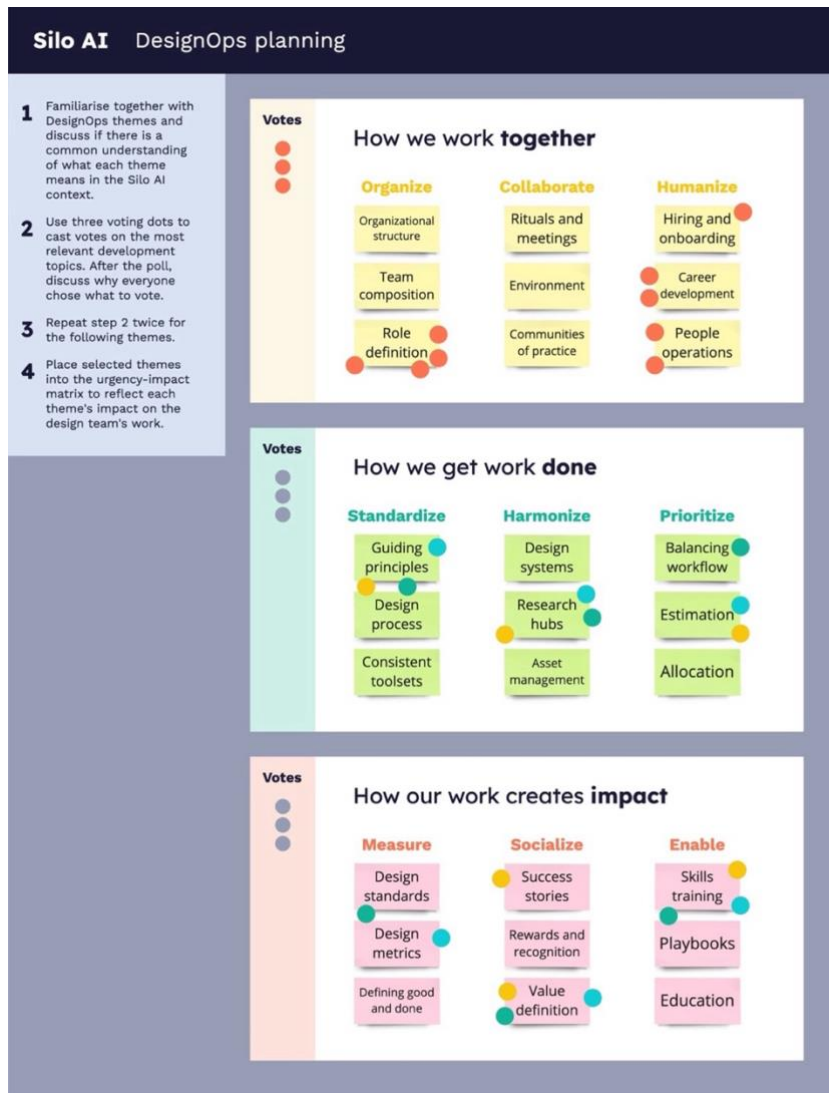


Figure 17. The design team used the collaboration tool Miro to vote on essential development topics.

Each designer had three votes in all of the three voting sessions. In the first round, votes were anonymous, but workshop participants decided to use coloured dots in the consecutive rounds to help recognise everyone's votes. Since some topics overlapped, participants used split votes in the second and third rounds.

The team continued by discussing selected topics and their relevance to the design team's current ways of working. Each selected topic was then placed into an urgency-impact matrix (Figure 18) to highlight its importance as a

development item. The matrix in use is a derivative of the four-quadrant *Eisenhower matrix*, with urgency and importance as its axes. The lower left area contains typical quick wins, while the top right area has the most urgent and impactful cases. The top left area contains the impact-themed topics, stressing their significance as impactful but not urgent development items. The centre area on the urgency scale contains most of the *How to get work done* items, highlighting their medium urgency compared to other topics.

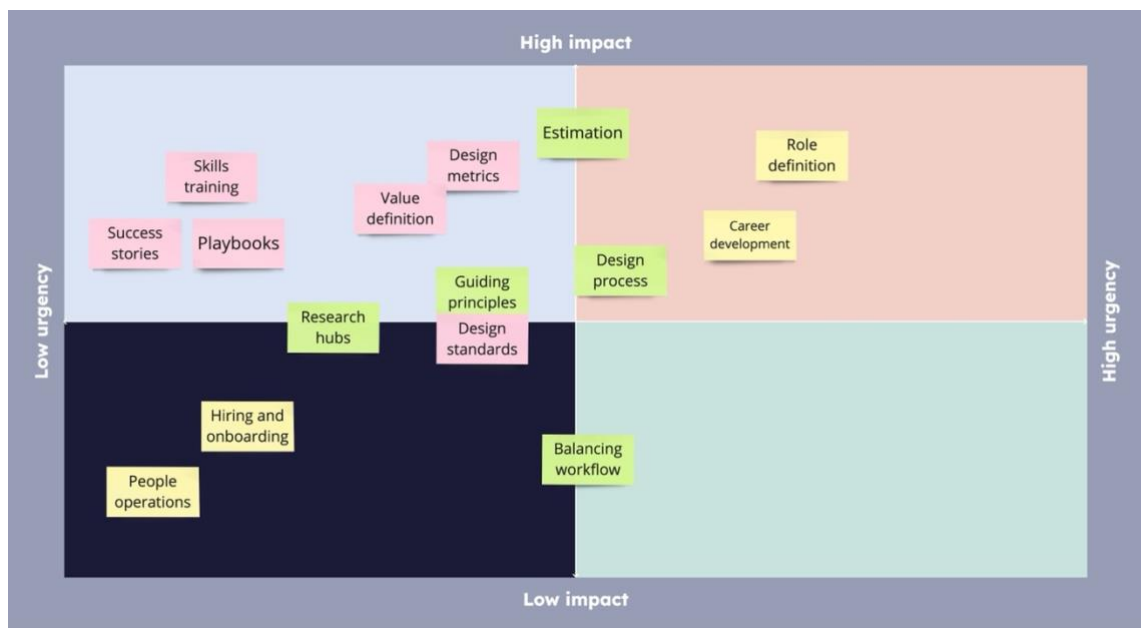


Figure 18. Each selected DesignOps topic was placed on an urgency-impact matrix to highlight its relevance as a development topic. The bottom right area, typically containing time-sink items, is empty in this exploration, underlining how essential all topics are.

The design team considered most of the DesignOps topics to have a high impact on overall work, as the lower part of the matrix was left mostly intact. The urgency scale was skewed to the left, indicating that the design work already functions well but can benefit from various development items. To emphasise the affinity of the topics, three dividers were drawn over the matrix to indicate the most critical opportunities to pursue (Figure 19). The dividers produced a natural order of importance for the development work.

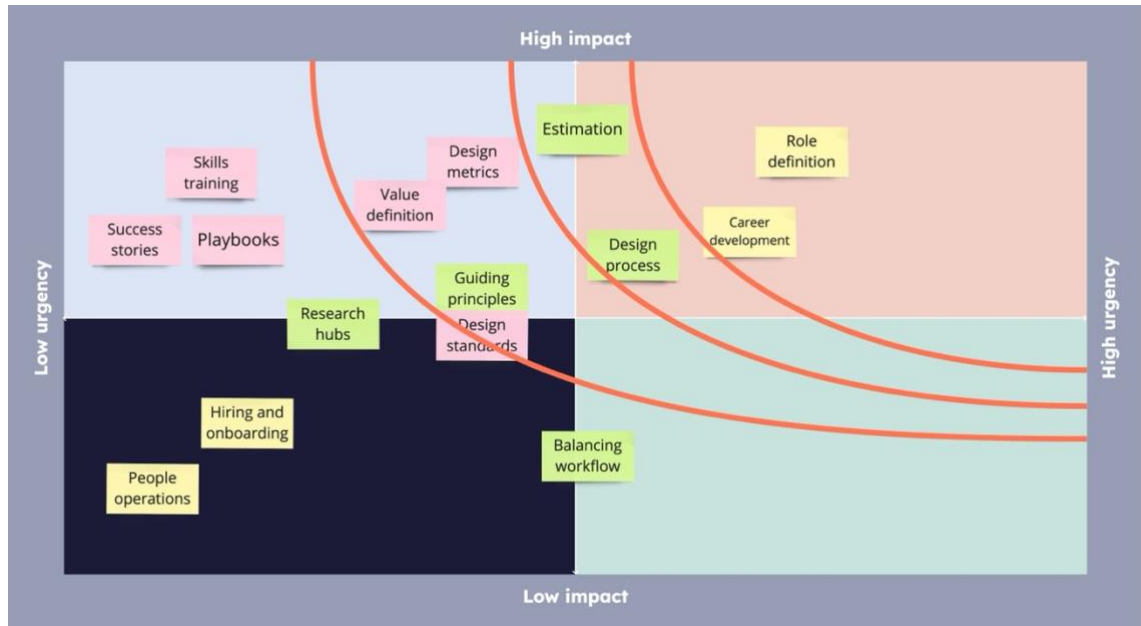


Figure 19. Dividers were drawn over the matrix to indicate the order of importance for the selected topics.

The selected development topics grouped into four tiers are the following:

#### First tier

- Career development
- Role definition

#### Second tier

- Estimation
- Design process

#### Third tier

- Design metrics
- Design standards

- Guiding principles
- Value definition

#### Fourth tier

- Balancing workflow
- Hiring and onboarding
- People operations
- Playbooks
- Research hubs
- Skills training
- Success stories.

## 5.2 Limitations to the scope

The first three tiers were selected as the primary investigation areas due to their importance in the affinity chart, and the fourth tier was ruled out of the research to keep the scope tighter. The team also made other justifications for limiting the scope and categorising work items (Table 2).

*Estimation* as a central theme was ruled out since it is tied to *design processes* in the second tier. This means both themes are covered to some extent in the end. *Design metrics* was considered too hard a problem to tackle since the team has limited resources to conduct continuous tasks. A deeper investigation of *design standards* was postponed until *guiding principles* were implemented.

Table 2. Research topics were separated by relevant research approach and application area within the DesignOps framework. The five final themes represent the scope of the thesis work.

Tier	Topic	DesignOps area	Research method
1	Career development	Leadership	Internal research
1	Role definition	Leadership	Workshop
2	Design process	Workflow	Interview
3	Guiding principles and design standards	Workflow	Workshop
3	Value definition	Leadership	Workshop

## 5.3 Designer's role definition

Designers explore and add new dimensions to their profession by adapting to economic, social, and environmental requirements. The activities accomplished by the designers differ in range and scale, thus resulting in ambiguous



descriptions of the profession. The stripped-down description states design as the capability to shape and create environments to fulfil needs and give meaning to lives. (Heskett, 2002) The blurred lines of designers' roles were also noticed in a workshop where the design team explored their daily activities.

Due to limited workshop time, three designers from the design team did a rapid brainwriting exercise (Figure 20) in November 2023. In the workshop, everyone listed their work tasks within the design team, internally for the company and in client projects. Each of the two other sectors gathered multiple notes, but tasks within the design team were more scarce. After the activity, the team discussed if there were unmanaged functions and what the team members would like to do more. These topics include business and service design, internal design advisory and mentoring, as well as more consistent knowledge-sharing activities.

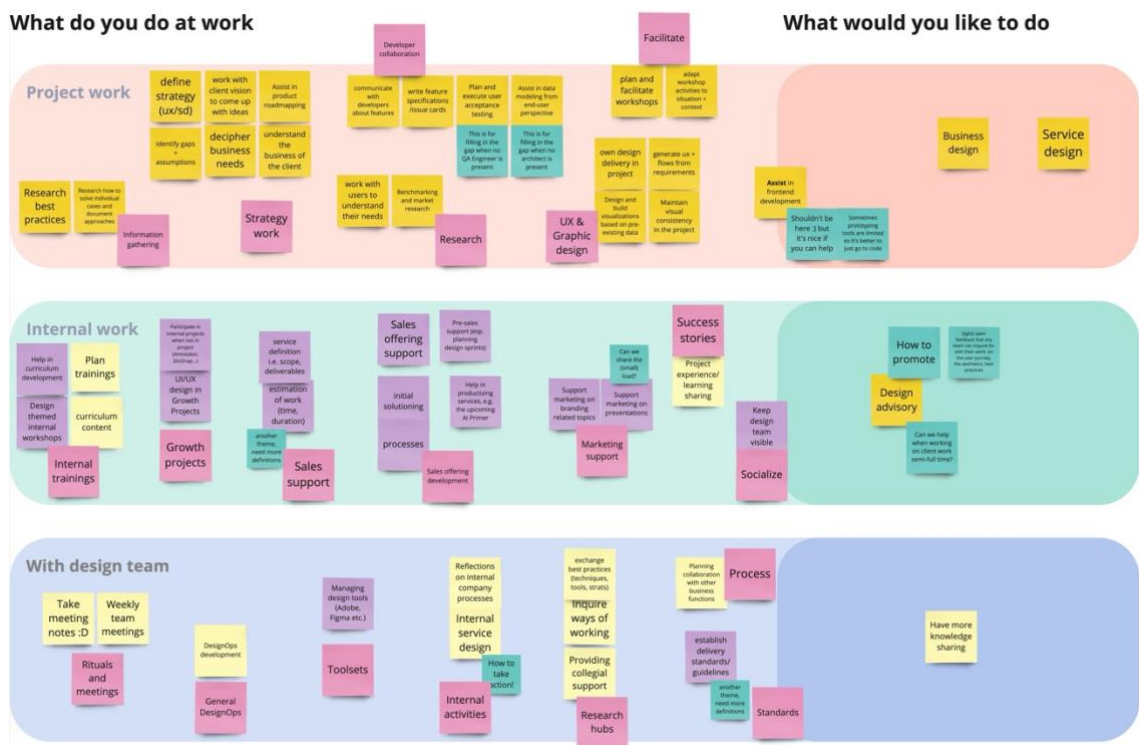


Figure 20. The workshop revealed unrecognised roles in which designers currently work.

Clustering the notes (Table 3) reveals two things: the uncovered roles match Tan's (2009) findings and tasks in the DesignOps framework (Kaplan K., 2019a). Two missing roles are *social entrepreneur* and *provocateur*, unique roles related to social innovation and cultural exchange. Silo AI's business cases regard improving workflows with artificial intelligence, so some aspects of Tan's missing roles are still present in design work in one way or another.

Since DesignOps covers work issues, it is no wonder some DesignOps themes are also present in the uncovered roles and tasks. Most of them are in the design team's activities, which aligns with the idea that DesignOps is a toolset for orchestrating teamwork. Other design tasks fall into the three main categories.

Understanding the designers' roles in the commissioning company helps recruit new talents by matching their skills to available tasks. The well-founded roles can be used to allocate design resources to client projects and support career development. The few functions not included in everybody's role definitions can be used further to develop role definitions and help in personal growth. As Heskett (2002) states, designers must take on multiple roles and adapt their knowledge to match the rising business needs, which is also true at the commissioner due to the wide range of unique roles.

Notably, the workshop results do not emphasise graphic design, which is typically considered one of the main tasks of user experience professionals. The multiple roles and responsibilities uncovered in the workshop display the varied skills and requirements of a designer working in a software development company. The roles align with the company's current agenda, which is more on use case exploration and helping client organisations leverage AI rather than software development of user-interface-heavy applications. The findings are also supported by Perks' (2005) research about designer roles in organisations in which visual design is not the essential professional focus.

Table 3. The uncovered designer roles align with Tan's roles (the role name is in bold) (Tan, 2009) and the DesignOps framework's topics (Kaplan K., 2019a).

	Project work	Internal work	Design team
Tan	Business design <b>(strategist)</b> <b>Facilitator</b> Service designer ( <b>co-creator</b> ) Design research <b>(researcher)</b> Lecturer ( <b>capability builder</b> )		
DesignOps		Internal trainings <b>(capability builder)</b> Success stories Socialize design	Rituals and meetings DesignOps development Toolsets Research hubs Design processes Establish standards
Other	Developer collaboration Graphic and user experience design	Sales support Marketing support Growth projects	Other internal activities

#### 5.4 Career development

The chapter covers ideas and perspectives on designers' career development at the commissioning organisation based on information about internal career development possibilities.

Silo AI employs only senior designers at the moment. This is because senior-level professionals can work independently on demanding client projects and navigate through intricate design problems. Mid- and junior-level experts may not yet have the same professionalism. Senior-level experts should also be able to work in cross-functional teams and even take on lead roles in project work. As the team grows, there may be career options for expert or even associate designers since the available seniors can support their professional growth.

The commissioner's role-level criteria emphasise making an internal impact when climbing the ladder. These efforts include working as a mentor and being active in sales, recruitment, and other internal activities. Seasoned experts should also be able to hold their own in increasingly complex client situations. One way to make an impact is to work as a project owner and drive development towards meaningful business goals.

Previously elusive higher designer positions have become attainable as the organisation has evolved in its design maturity. *The lead designer* title indicates the person's ability to influence work across teams and have strategic insight. Being a lead-level expert at Silo AI entails leadership at some level, for example, in project ownership or driving internal initiatives. From another perspective, *design lead* is more of a managerial role with responsibilities in managing personnel and having comprehensive accountability of the team's design work. A *principal designer* should have a more thorough responsibility for design quality work across various projects. Principals should also display thought leadership internally and in external relations. The commissioner does not currently have a design leadership career track.

Separating the two paths (Figure 21) can open new career options (Cabanes et al., 2016, p. 3) and elevate organisational design maturity. The model in Figure 21 combines the commissioner's current career model and the theoretical approach. To fully grasp the model's applicability, a more thorough exploration of the strategic values of different career tracks is required. Also, a comprehensive understanding of specialised craft leadership tracks must be gained to utilise them in career guidance.

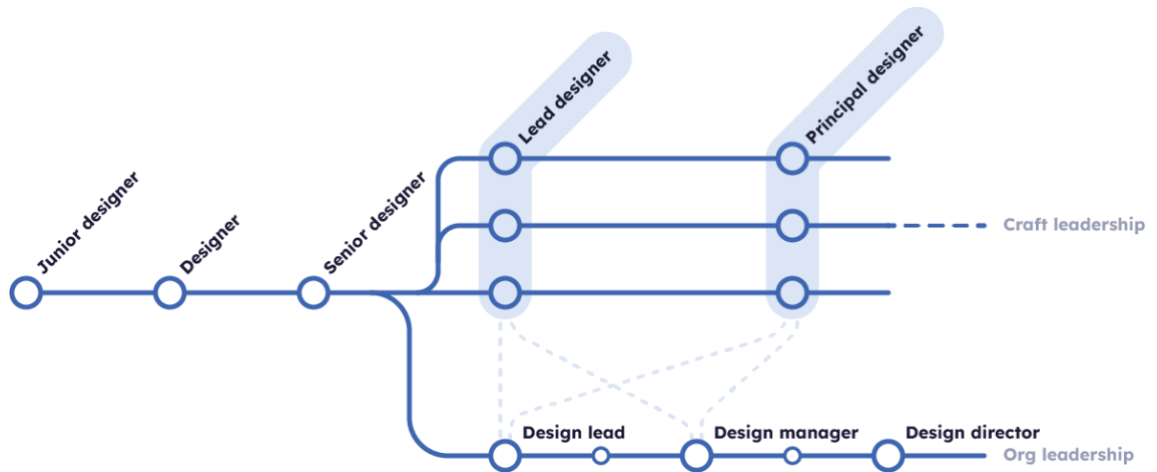


Figure 21. Separation of craft and leadership tracks in the career development framework can help seasoned experts grow in their profession (Cabanes et al., 2016).

Upskilling staff is a viable way to support career development. Krause (2020) suggests a skill-mapping evaluation (Figure 22) to highlight skill gaps in team composition. The team chooses different skills for assessment, puts them on a radar chart, and evaluates everyone's proficiency in the selected skill areas. Overlaying individual charts reveals weaknesses in the design team's overall skillset, thus allowing designers to find their niche. According to Krause, the exercise is also useful when hiring new team members and tracking personal growth.

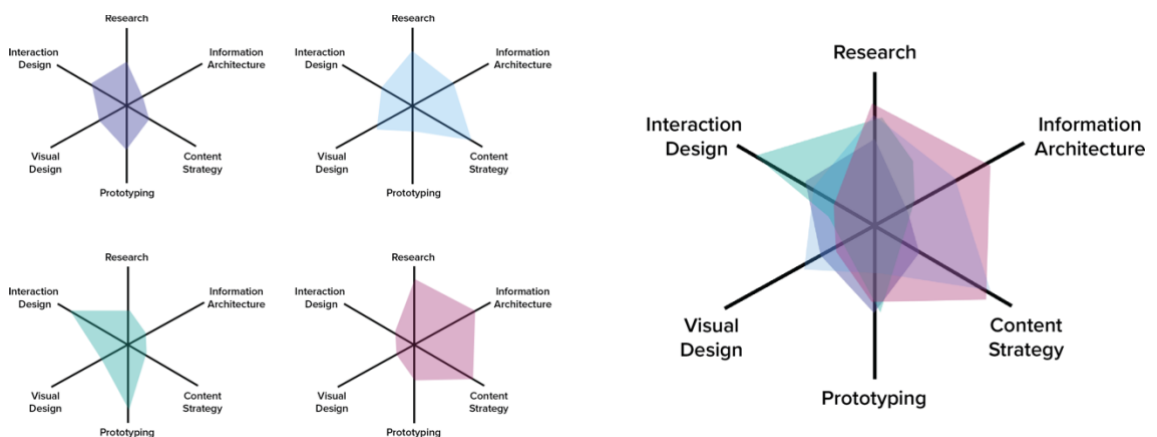


Figure 22. Skill mapping the team's combined competence can reveal latent career growth options (Krause, 2020).

At the senior level, the designer should already have a deep specialisation in at least one design sector. Boosting one's potential can occur by adopting a new role (Hassan et al., 2022, p. 6), for example, from the roles identified in the role workshop. This helps the designer to widen their expertise to cover multiple facets of the design profession. One option is to make a partial or complete move towards another department, such as sales or resourcing. This type of lateral movement within the organisation is supported by Ghoshal et al. (1999, p. 17).

The emergence of DesignOps introduces fresh roles (Figure 23) and partnership models (Kaplan K., 2022), building fascinating career horizons for designers. Overseeing DesignOps practices can be integrated into the design lead's responsibilities, or it can function as a part-time role as a program manager. One necessary role is leading design research and maintaining processes, standards and methods for user research. Although the growing team needs specialisation and managerial roles (Arnis & Fry-Pierce, 2022, p. 56), the actualisation of even one DesignOps role may not be feasible before the team has expanded to some extent. A typical DesignOps-to-designer ratio in the industry is 1:25 (Arnis & Fry-Pierce, 2022, p. 51), meaning the commissioner could currently have one person working roughly one day a week in a DesignOps role.

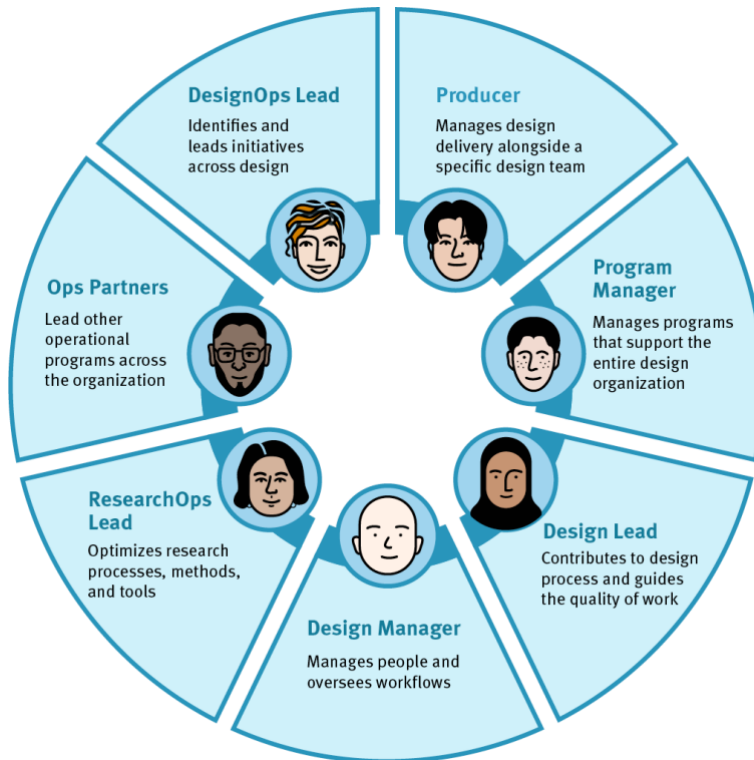


Figure 23. An effective DesignOps team can be built by combining dedicated roles or letting designers take additional roles alongside their operational tasks (Kaplan K., 2022).

One aspect of career development is to open growth options for software developers to step up as designers. Although this sounds like a feasible idea, limited design work in client projects might prevent this career change option altogether. Learning facilitation skills and conducting user research are still valid ways to incorporate a designer mindset into software or business development work. Using design thinking in software developers' work helps define problems in a structured manner and create user-friendly applications. Designers' approach to running processes overlaps also with the methods used by project managers. Therefore, they can also benefit from learning service design skills.

## 5.5 Design process

The author interviewed four design team members in January 2024 to understand how everyone works on design assignments and collaborates with

developers and clients. The interviews were semi-structured, with preselected questions and space for free discussion. The interview questions can be found in Appendix 1. The interview answers were gathered into a mindmap to organise similar themes or patterns in everyone's work.

Interviews revealed an interesting pattern: designers feel they need to follow a tighter design framework, but implicit answers highlight that they already follow formal design patterns. One justification was that projects tend to differ by scope and expected outcomes, so formalising processes feels hard. One interviewee mentioned loosely following the Double Diamond (Figure 3) process, which is present in one form or another in every team member's process. Using the process model was mentioned as a clever tool for client alignment and communicating the stage at which the design work is currently in.

### **Stages of the design process**

Based on interviews with the designers, the project work starts with an assignment and understanding the underlying factors behind it. The stage includes identifying users and familiarising everyone with the business case. Based on the interviews, this stage seems to differ from Double Diamond's problem definition phase by getting a more comprehensive understanding of any environmental and business factors that might affect the problem. It is helpful to link the expected outcomes with business metrics to verify success after delivering the solution.

The work continues with a research phase resembling the *Discovery* phase. The phase covers user research aspects, understanding the usage context and existing processes that may affect the user's reaction to the solution. All designers indicated that limited time and design allocation force them to rush user research, which might result in severe oversight in the solution development phase. Gathering any available data about the problem was advised to back up the next stage.



With a sufficient understanding of the problem scope, designers move to the *Definition* stage. A typical approach in this stage was to utilise user journey maps or service blueprints to assess possible gaps in the problem discovery and evaluate users' interactions throughout the process. In addition, it was mentioned that the service blueprint discloses which parts of the user journey require thorough solution exploration and which can be covered with domain-specific best practices. It was also noted that the deliverables in this stage help the client to perceive the value of design exploration if it has been neglected previously. At this point, the team should know if they are solving the right problem or if they should iterate over the research outputs.

The designers unanimously revealed that they developed low-level deliverables in the next stage. The wireframes should reflect the users' needs and address problems uncovered in the previous stages. Sometimes, it is helpful to mix and match old concepts into a new plan or borrow ideas from other solutions if previous solutions have had challenges.

The applied Double Diamond model closes with *Delivery*, where the designer hands the design artefacts to the development team. The low-detail wireframes can be filled with production-grade graphics, and the designer may create a live prototype. The interviewees mentioned writing use cases as user stories in close collaboration with the project owner and developers.

The interviews underline that most client cases require constant roadmapping through agile development practices. Initially, the team should incorporate the Minimum Viable Product approach and plan a more consistent feature roadmap later. A typical project has too many requirements for the available time frame, which the interviewees mentioned should be tackled by soft impact analysis. What helps the users the most was noted as the most significant influence on decision-making. The designers also mentioned customer value and user group size as other significant impact factors.

## Encountering hardships

Every designer mentioned limited resourcing as the main problem in most projects. This manifests as a sense of urgency in the research phase, a lack of understanding of the big picture, and a need to reduce deliveries to smaller bits or more straightforward features. Limited time also restricts time management, estimation, and iteration, resulting in suboptimal solutions. The limited designer allocation usually ends with superficial designs, which can be brushed aside if the designer is taken earlier to the customer process.

Communication with developers and other project team members was mentioned to be usually easy. Developers might solve problems with technology first, forcing designers to reconcile user needs with the developed solution. One interviewee suggested empowering developers with a design system. It can solve typical design patterns without contacting the designer for every design solution.

Although designers work closely with product owners to guide the work down the right path, product owners can also hinder problem exploration. They might try to act as users' advocates, preventing designers from accessing end users altogether; talking with real users is a requirement for empathising with them. Empathy and testing solutions with users are critical traits in design thinking (Brown, 2019).

## Suggestions for a design process

The interviews indicate that the designers already use a well-defined process and should stick to the reliable Double Diamond model with a few considerations. Designers should incorporate the design thinking mindset and meander between stages when needed. Also, reserving enough time for problem definition is crucial to achieving results that are valuable to the solution's end users, not only for the business. One designer said using the *Jobs-to-be-done* framework throughout the process to help understand users'

ultimate goals. Combining the framework with design thinking provides a fascinating view of solution-agnostic problem exploration.

Since designers fill various roles in development teams, sticking to one process model feels restrictive. The need to work in several roles derives from the current process model and the fact that most projects have only one designer working on them. From another perspective, working in multiple roles simultaneously opens new possibilities for incorporating holistic system-level thinking.

The holistic approach starts even before any research problems are said aloud. The new suggested process model (Figure 24) incorporates a business understanding stage in which the designer can align with the fundamental business goals and acquire knowledge about the field and its governing factors. The process model should also have a stage for production and scaling to make a strategic impact. Iterating the stages on the fly takes the model to new, usable extremes.

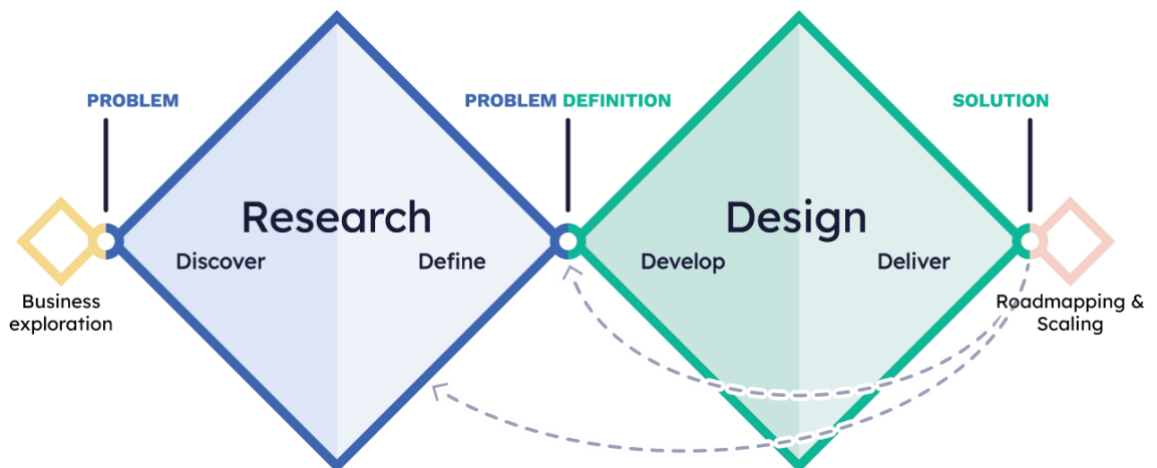


Figure 24. A new proposal for a process model expands the Double Diamond with a thorough business exploration and additional steps for roadmapping and scaling.

The new additions better answer Merholz’s and Skinner’s (2016, p. 13) initial stage definitions: “Build the right thing” and “Build the thing right.”

## 5.6 Guiding principles

Burgstahler (2021, p. 6) suggests applying Universal Design principles by identifying the application and field-specific best practices. Once the context is identified, a thorough understanding of potential users' characteristics and preferences is needed. By adapting the design process to the highest standards in the field, the design team can attain an evidence-based solution that best fits the intended use.

### **Principles workshop**

*“Design principles express a shared vision for great products.”*

The workshop was held in January 2024 with four designers present. The author kicked the session off with a short introduction to the topic. The author presented different perspectives on principles, explaining what they are, why they are essential, and how they can be formulated. The discussion led to a warmup task in which everyone presented their favourite design object and why they value it. Some of the reasonings included, among other things, tactile usability, how the objects help in identity change, and elegant but robust design.

The second warmup exercise brought the team closer to its primary goal of inventing its principles. The task was to use dot voting to select notable principles from a preselected arrangement of other organisations' principles (Airbnb, AI in tech, Seek company's design process, Australia DesignGov, Mozilla Photon, and Design Council's Inclusive Design principles). At this point, the team focused on simplicity, data-guided decision-making, and the use of empathy and inclusive design to promote usability.

After silent brainstorming on principles, the team reviewed the results by discussing each note. Bundling topics by affinity (Figure 25) proved an effective tool for collecting similar thoughts. At this point, the results were left to the author for further analysis.

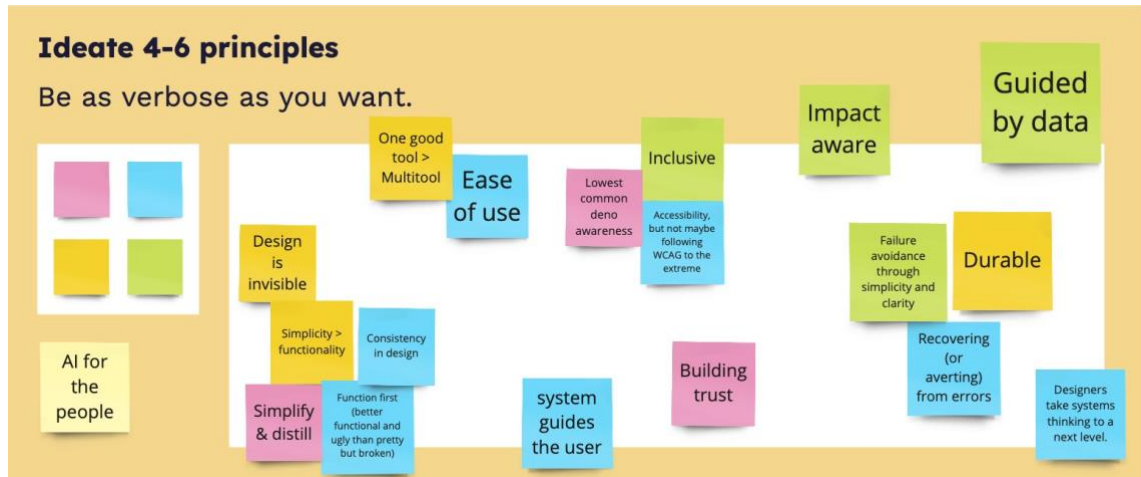


Figure 25. The team brainstormed proto-principles and grouped them into thematic sets of similar ideas.

One participant commented on working in a mixed reality project where users input data to online services but use papers to track work for convenience reasons.

### Formulating the principles

One of Silo AI's guiding messages is "*AI for the people*" (Silo AI, 2023, p. 4). Semantic analysis of the catchphrase reveals two different things. AI is an umbrella term for various technologies and scientific approaches that help people and systems benefit from the said technologies. The latter part of the phrase "*for the people*" emphasises accessibility, inclusivity and benefits for the society as a whole. Together, the message implies a user-friendly artificial technology that has an overall positive impact on the communal level. These ideas align well with the design team's general direction for guiding principles.

A simple clustering exercise of ideas revealed three prominent themes: inclusivity, simplicity and failure aversion. Inclusive design considers all users as equals. Simplicity promotes functionality and ease of use. Failure aversion indicates a robust user interface that helps users recover from errors and avert them.

Two topics raised in the discussion were holistic thinking and user research; these were also uncovered in the workshop exercise. Designers play an essential role as the champions of users, helping the team uncover their needs and find solutions to their problems. Understanding users' needs happens through research, and ignoring proper user research in an organisation as research-oriented as Silo AI would be dissonant.

The workshop results were formatted to five core principles for the design team. The core idea of the chosen principles is that they educate everyone using them. The chosen principles were:

- Design for inclusivity
- Design for clarity
- Design for functionality
- Design is holistic
- Design with data.

The team decided to investigate common design standards after incorporating the newly selected principles into everyone's workflows.

## 5.7 The intrinsic value of design

The design team researched the value creation of design in an online workshop consisting of a free-form brainstorming session for pre-selected themes (Figure 26): value to AI business and end-users. The workshop was held in February 2024, with three participants present. The author noted that the theory indicates that the value is not absolute but co-created in service interactions.

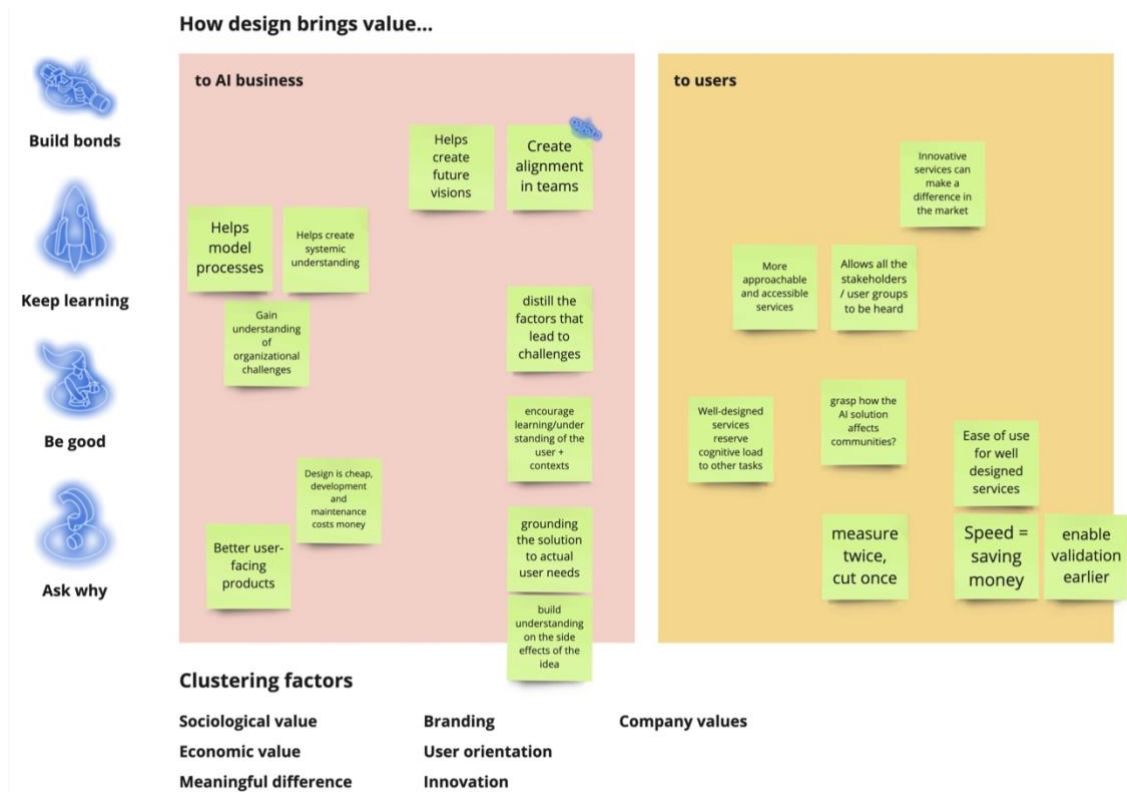


Figure 26. Free-form ideation on values produced insights into the necessity of design work.

The author started the workshop by recapping the company's vision, mission and strategy statements. After this, he presented the four company values that should align with the design work's value-creating aspects. The values are *Build bonds*, *Keep learning*, *Ask why* and *Be good*, of which *Ask why* is a principal tenet of design work.

It was discussed that the ongoing planning of AI enablement programs helps the company get closer to end-users by assisting them in better understanding AI. This is achieved through co-creational workshops in which clients learn how to leverage artificial intelligence in their business operations and uncover possible use cases for AI. The team finds this part of the value chain essential for building healthy customer relations.

One important remark was that design can mitigate the fears of utilising artificial intelligence and make the usage safe. The team discussed various economic

aspects, still maintaining the focus on end-users who benefit from well-designed solutions. Doing leg work among users is better than shooting a mile past the target. Design is also comparatively cheap, thanks to ideation and sketching, producing numerous innovative solutions that have not been considered before (Merholz & Skinner, 2016, p. 15).

The refined results were grouped under respective characteristics (Table 4) to validate the viability of the theoretical framework (Graeber, 2001). The three other theoretical characteristics (Eljala & Luoto, 2019) were used as well, but since the commissioner does not work with branding, the theme was excluded from the scope.

Most of the values were linked to existing company values to further emphasise the viability of the brainstormed values. The matching colours and symbols in Table 4 are red (\* Build bonds), blue (+ Ask why), green (! Be good) and yellow (# Keep Learning). Economic values could not be linked to any company value, although savings tend to bring general goodwill to customer relations, building bonds in the end. A noteworthy aspect is that user orientation was considered on an internal level as a way to smoothen customer interactions. At the same time, external parties find great user experience to be a factor of goodness.



Table 4. The design team compiled value aspects under theory-based characteristics.

	Internal	External
<b>Sociological</b>	<p>Create alignment in teams *</p> <p>Gain understanding of organizational challenges +</p>	<p>Allow all stakeholders and user groups to be heard *</p> <p>Mitigate fear of utilising AI *</p> <p>Grasp how the AI solution affects communities !</p>
<b>Economic</b>	<p>Helps to model processes</p> <p>Design is cheap, development not</p>	<p>Measure twice, cut once</p> <p>Speed = saving money</p>
<b>Meaningful difference</b>	<p>Helps create systemic understanding +</p> <p>Build understanding on the side effect of the idea !</p> <p>Distill factors that lead to challenges #</p>	<p>Enable validation earlier +</p> <p>Innovative services can make a difference in the market +</p>
<b>User orientation</b>	<p>Better user-facing products</p> <p>Encourage understanding of the user + context *</p> <p>Grounding the solution to actual user needs *</p>	<p>Well-designed services reserve cognitive load to other tasks !</p> <p>More approachable and accessible services !</p> <p>Ease of use for well-designed services !</p>
<b>Innovation</b>	<p>Helps create future visions #</p>	

## 6 Discussion

### Summary

The thesis looks at various work and leadership topics in the context of a small design team working in an artificial intelligence enterprise. The DesignOps framework was used as inspiration for finding relevant development areas, which the thesis author researched using service design methodology. The final DesignOps approach blends Nielsen Norman Group's and Dave Malouf's models. NNg's model contains 27 topics each design team should implement in their daily operations (Kaplan K., 2019a). Malouf's model (2019) has similar themes but divides them into workflow, people and business operations.

As Kate Kaplan suggests (2019a), the design team selected the most urgent development areas to ensure the ownership of the initiatives. After the initial selection, the thesis work was limited to five main topics: career development, role definition, design process, guiding principles, and value definition. Each topic was considered essential for orchestrating an efficient design team.

Through various service design methods and internal investigation, the thesis offers solutions and clarifications to each topic. The career development chapter introduces options for professional growth and a theory-based dual-track career model. The role definition chapter recognises different organisational designer roles usable for specialisation and hiring new talents. The practical embodiment of the design thinking method, the Double Diamond design process model, is suggested as the go-to design process. The chapter on guiding principles introduces new tenets for the design team to live by and guide design efforts. Lastly, the thesis explores ways design brings value to the daily operations of an AI company.

## Interpretations and implications

Nielsen Norman Group's DesignOps model presents 27 different development topics. They range from communication to rituals, working practices to team structures (Kaplan K., 2019a) – ideas collected from actual DesignOps practitioners' experiences (Kaplan K., 2020a). As the thesis results support, it would be strange if almost thirty work-related topics did not overlap.

Role definitions could be a subtopic of career development since specialisation in a new role can open new, seductive career paths (Kaplan K., 2022). From the topics left outside the thesis scope, estimation is a crucial part of a functioning design process. Design standards should be documented in a knowledge base, and one could argue the difference between a playbook and a knowledge base. The list goes on.

The thesis results may not be original, but they are novel in the context of the commissioning organisation. It is unknown how much of the current practices at the commissioner are theory-based, but the research results seem to fit the design team's vision. This indicates that service design is a valid method for investigating ways of working, especially when supported by theoretical research.

The thesis's empirical results align well with the theory. The dual-track career model is similar to the one presented by Kuster et al. (2015, p. 41) in that it separates the leadership growth path from that of a craftsperson. The commissioner's existing career guidance practices are similar to the guidance options suggested by Hassan et al. (2022, p. 3). As was expected, most of the design team's current roles and tasks are not that innovative, and they have already been presented by Tan (2009) and Kate Kaplan (2019a, 2022).

Only one of the interviewed designers mentioned consciously using the Double Diamond process, but the interview replies still indicated that a similar process model is used among the other designers. Whether this is due to design education, exposure to design literature, or pure accident was left uncovered.

Generic descriptions of the Double Diamond process do not discuss it in a broader context, which is one of the implications of the designer interviews. The suggested process model prepends the model with a business exploration stage and adds a consequent stage for scaling.

The results uncovered when investigating guiding principles and value definitions of design work are new, personalised content. Values and principles are unique to organisations and represent what is of the utmost importance to them (Rosala, 2020). The results may not be unique, but they are deeply personal, making them altogether invaluable in internal use and for anyone working in the same domain.

### **Validity of the results**

DesignOps is a relatively new phenomenon, and descriptions of the framework vary depending on the source material. The most well-defined descriptions of the framework paint a picture too vast for a single thesis to encapsulate. The main research question of validating DesignOps as a leadership doctrine is still covered. The conducted research and service design methodology indicate that DesignOps can be a valid discussion starter for design teams willing to investigate their ways of working. Whether DesignOps is a framework is left open and can be explored in another research paper.

The results do not indicate whether or not the small team size matters. Would a larger team find better solutions than a small one? The results per se do not display weaknesses; hence, the small team size should not be a debilitating factor in topical research. If the thesis utilised quantitative methods, one could question the reliability of the outcomes.

Kate Kaplan (2020c) suggests tracking chosen DesignOps initiatives and increasing organisational awareness of the steps taken. According to Kaplan, each initiative should have a relevant metric that can indicate its impact on work and help pivot as needed. Although the thesis presents views on the design team's most crucial development topics (5 out of 27: career development, role

definition, guiding principles, value definition, and design process), it remains to be seen how actionable the results are in practice. The suggestions are supported by theory, but without a longitudinal study approach, analysis of the validity of the results is left for the time being.

The thesis lays the groundwork for DesignOps development and helps to build DesignOps into a sustainable practice. The DesignOps work continues by researching, documenting, and integrating the remaining themes (22 out of 27) into the team's operations. The themes include aspects such as design metrics, working environments, team composition, and resource allocation in project work.

The research and uncovered information are used as a basis of a DesignOps playbook, an internal travel guide in the design realm. Since work documentation is never complete, it can be considered a prototype or a living document forever. Implementing the DesignOps aspects (Figure 6) to team activities will take time and effort, most likely over a year or more (Black, 2019, p. 62).

## 7 Conclusion

The DesignOps framework as a team orchestration paradigm is relatively new and unfortunately ill-defined. Searching various sources reveals vague descriptions and often unhelpful guides for implementing broad topics such as career development or team composition. This raises the question of whether DesignOps is or even should be a thing; why have a framework if most of the themes are already part of working organisations?

The thesis and analysis reveal that even an ambiguous framework can ease daily work and bring cohesion to support models. Serious discussion about ways of working sheds light on latent issues, alleviates confusion about growth options, and empowers designers by showing them their professional output's impact on the organisation. On the other hand, a too strict framework can limit problem exploration, whereas a more vague model is a fine conversation starter for designing working methods. As was stated, designers are masters of inventing their own approaches to problems. Hence, the indistinct nature of the DesignOps framework may provide the right amount of ambiguity for designers to let them plan their methods and tools.

The lack of academic definitions and research on DesignOps makes evaluating different models difficult. This also puts relevant DesignOps surveys in a bad light since the results may not be comparable. Nonetheless, it is questionable whether a definite academic interpretation of DesignOps would bring any value. People's understanding of any theme varies depending on their experience and worldview, thus resulting in a host of applications for the same topic.

**Research question 1: How the DesignOps framework can help organise design work and support professional growth.**

The five investigation areas of the thesis create structure and give meaning to the most urgent development items chosen by the design team. Career development and professional growth were mentioned as one of the primary

sources of confusion in the team. The thesis outlines a simple career structure and options for supporting designers' development along their chosen career path. Growth can also occur by gaining expertise in some of the uncovered designer roles if one is not ready to move to the leadership or craft specialist track.

The thesis proposes solutions for small design teams towards evolution. Introspective exploration of the team's growth options and working methods revealed standardised ways to function effectively. Down the line, goal-setting, accumulation of design expertise, facing challenges together, and empowering the team with unified tooling seem to be the keys to successful team-level actualisation. A company may not need design leadership, but it needs leadership-minded people who can manage their work and even let others grow as leaders.

DesignOps, despite being a helpful collection of discussion topics, only holds little value in itself. The thesis process shows that discussion and collaboration are essential ways to unravel confusion, thus enabling success in the long run.

### **Research question 2: How does a more organised way to lead design work benefit the organisation?**

The author conducted in-depth interviews about individual designers' processes, and surprisingly, everyone's design process flowed along similar lines. The significance of this discovery lies in the fact that stating the unstated truths lets the team harness the common design approach to its full potential. A standardised design process creates structures. It is a communication tool and provides an overview of what to expect from designers in each process stage. The benefits of a standard process expand beyond the design team, creating value in places where there was previously only a promise.

The investigation of value creation proved to be even more essential for the team's success than was expected. Although value is defined by each actor in the service provision, understanding value factors creates more meaningful

experiences. Understanding how design brings value helps the team to align their communication efforts and therefore brings them closer to the other departments inside Silo AI.

### **Research suggestions**

Additional academic research on DesignOps is needed to understand its applicability to different domains of design work. Longer-running research in a fully integrated DesignOps environment would reveal the framework's benefits and possible stumbling blocks. Further analysis of the framework descriptions is needed to understand the core elements and provide application instructions for anyone interested in increasing their organisational design maturity through DesignOps practices.

Derived from the DesignOps framework, one could make a more structured investigation of different support models for designers' professional growth. Since the thesis was sponsored by an artificial intelligence company, the application of design to the field of AI is an exciting research opportunity. Some of the tangential research areas include evaluating the impact of design in artificial intelligence development and the value proposition of AI in business.

Lastly, it is advised to explore intersectional areas of DesignOps topics thoroughly. This can result in a faster implementation of the framework and a more user-friendly DesignOps journey.



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## Design process interview questions

The transcripts of the interviews are not available due to confidential information. Thanks to the flowing nature of the discussions, some questions were not used in the interviews.

1. Describe your work in your own words.
2. Do you use any particular methods or frameworks to guide your work?
3. Please walk me through your workflow.
4. What are the biggest challenges you face in this workflow?
5. Please describe how you come up with solutions.
6. How do you discover user needs?
7. How do you balance different user needs?
8. How do you deal with criticism when facing it?
9. In your own words, describe how you approach problems.
10. How do you coordinate work with other designers, developers and AI scientists?
11. Does your culture fit with other teammates?
12. Please describe how you handle upcoming design tasks when there is still something old on the table (user testing or other validation).
13. In which part of the development process you are taken in?
14. If given the chance, how would you decide which features to add to the product under development?
15. Which tooling do you use?

## **Additional research conducted in the process**

### **1. Prototyping**

Prototypes simulate partial or complete services as low-fidelity representations of the final experience. They are crucial in investigating, assessing, and communicating design objectives throughout the service design process. In addition, prototypes enable collaboration and can evolve after the service delivery. The shape of a lo-fi prototype is not limited to a mock customer journey; it can be a cardboard version of a physical product, a cutout version of a digital user experience, or just rough scribbles on paper. (Stickdorn et al., 2018a, pp. 65–66) Prototypes are convenient when working with immaterial development targets. (Kälviäinen, 2019, p. 35)

Prototyping incorporates techniques to validate research questions faster over iterative evaluation and feedback loops. All services and products are part of a vast ecosystem. Therefore, each service can have various prototypes with varied prototyping methods. The prototypes can test business feasibility, the perceived value of the service, functions and integration with other nodes in the ecosystem, or process flows. (Stickdorn et al., 2018a, pp. 67–74)

Physical evidence of the design process allows trialling and analysis, making assessment easier. Transforming design thinking and service design concepts into concrete artefacts motivates a sense of purpose, which is crucial in interdisciplinary working environments. Through a continuous feedback loop, development teams explore the problem from multiple angles and produce alternative solution concepts, turning the design process into a rich and diverse field of interactions. (Kälviäinen, 2019, p. 39)

### **2. Design metrics**

Companies usually underestimate the feasibility of design initiatives, focusing on subjective opinions and emotions rather than hard facts. Design work

requires dedicated metrics to monitor the realisation of goals. Design measurement should be linked with standard business metrics for effective data utilisation. (Pitkänen & Veinola, 2019, pp. 68–69)

Various frameworks suggest transforming design into an organisation's core activity. However, organisational maturity and application of design may limit the selection of suitable metrics. This results in companies refusing to measure the feasibility of design altogether. (Björklund et al., 2018, p. 501) Setting metrics first can lead to purely tracking progress without understanding why the data is collected in the first place. It is best to identify goals first and decide the metrics based on the selected objectives. (Harley, 2017)

Business leaders often assess investments via financial indicators; hence qualitative evidence is not convincing enough (Pitkänen & Veinola, 2019, pp. 68–69). A popular way of monitoring design initiatives is to plan metrics according to The Design Ladder framework (Björklund et al., 2018, p. 502). Harley (2017) stresses that tracking metrics for pure measuring reasons is futile. Instead, it serves as a means to validate the current state of design.

Design profitability can be monitored by assessing the level of design, understanding the attainable benefit, and finding suitable metric characteristics (economic, qualitative, or quantitative) (Pitkänen & Veinola, 2019, p. 72). Another characterisation is the division into internal and external operation metrics. External factors include financial performance and customer feedback. The internal metrics are more diverse, with organisational design usage, project outcomes, process metrics, and employee outcomes as further characterisation criteria. One way to classify design metrics is to cross-tabulate the organisation's design maturity and different characteristics (Table 5. The design impact metrics are grouped by various traits (Björklund et al., 2018, p. 506).). (Björklund et al., 2018, p. 506)

Table 5. The design impact metrics are grouped by various traits (Björklund et al., 2018, p. 506).

Performance and operations		LEVEL 1 Non-design	LEVEL 2 Design as form-giving	LEVEL 3 Design as process	LEVEL 4 Design as strategy
<b>External</b>	Financial performance and valuation of the company	Benchmarking other, more design-centric, companies: Share prices Turnover growth Performance Acquisitions of design agencies Amount of innovations	Sales Revenue Return-of-investment (ROI)	Market valuation and market share Growth profitability	
	Customer related metrics		Customer satisfaction and feedback	Lifetime customer value Net promoter scores (NPS) Brand loyalty Brand perception Brand equity Conversion	
	Other		Product/service awards		Entering new markets
<b>Internal</b>	Design extent and emphasis indicators		Ratio of designers to developers Growth in the design budget	No. of projects No. of concepts finished No. of people trained in design	Seniority/rank of design positions within the organization
	Project outcomes		Cost savings Reductions in time to market	ROI per project Value and novelty of resulting service or product (averaging anonymous internal ratings) Usability metrics of resulting service or product	
	Development process			Internal feedback Amount and frequency of contact with users (running total of days without interaction with user, amount of users interacted with, amount of user categories interacted with) Amount and concurrency of prototype iterations (list with open/closed status)	Team collaboration (e.g. Interaction Dynamics Notation) Team effectiveness
	Employee outcomes			Customer centricity Responsiveness Empathy	Employee satisfaction Employee motivation Employee engagement

Design ROI's (return on investment) effects on business can be indirect or direct, mainly cash flow. Indirect consequences, such as knowledge and brand recognition, can lead to an increase in intangible capital. Evaluating the design ROI can be tricky because design is sometimes seen only as an investment and may be too separated from other key functions. (Pitkänen & Veinola, 2019, pp. 69–70)

A comparable measure to ROI is the return on quality (ROQ), evaluating the financial profitability of service quality investments. High-quality service nets contented customers, who attract new customers through word of mouth. If the profitability of these investments surpasses the initial innovation expenses,

service value grows. In essence, ROQ is a metric of collaborative value in the service-creation process. (Field, 2017, pp. 72–73)

To measure the impact of DesignOps, it is crucial to distinguish the difference between efficacy and efficiency. Efficacy involves capturing qualitative data by observing behaviours and work practices, whereas efficiency focuses on quantified performance results and measuring change. The initial step is to identify user groups and the problems they face. The subsequent step necessitates analysing relevant dimensions. The last part of the process is evaluating available data and determining the most effective course of action. (Bertini, 2021)

### 3. Estimation

Design projects have similar aspects to other projects requiring planning, coordination and communication skills. The lack of distinguishable work items is what differentiates design work from, for example, software development. (Bashir & Thomson, 2001, pp. 1, 6)

Two common approaches to estimating project work are *the practitioner's approach* and *the engineering approach*. The first is based on the expert judgment of previous experience in similar projects. This model is hardly transparent, and analysing its performance can prove challenging, although the expert level of craftsmanship may produce sharp estimates. (Abran, 2015, p. 4) Analogous estimation has accuracy issues but can be practical in the project selection stage to give ballpark estimates (Wells & Kloppenborg, 2015, p. 83).

The engineering approach analysis projects one requirement at a time fitted to a chosen process model. Assessing the project can utilise statistical data and adequate productivity models. (Abran, 2015, pp. 5–6) It is advised to break the assignment into a detailed, sequenced task list, which is the basis for estimating responsibilities, resources, deliverables and the project schedule (Olson, 2015, pp. 95–97). However, research shows that using a work breakdown structure

for design has limited capabilities, especially in large projects (Bashir & Thomson, 2001, p. 1).

In the worst-case scenario, functional and non-requirements are presented as a wish list, fed to the over-optimistic process model. With unrealistic project constraints and a “black box” estimation model, the team has to expect a miracle to happen. Research shows that in most cases, estimation fails or at least faces severe problems due to bad estimation practices. (Abran, 2015, pp. 6–11) Planning failures also occur when long-term estimation is required (Pries & Quigley, 2011, p. 22), for example, due to increased complexity or changing requirements (Bashir & Thomson, 2001, p. 6). A project database helps estimate execution times since information is not hidden behind the expert craftsman (Olson, 2015, p. 98).