Leading Change and Nudging Employees Towards Digital Transformation by Utilising the Service Design Process

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Leading Transformational Change

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Laurea University of Applied Sciences **Abstract**

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Digital transformation is not just a technological change but a cultural change affecting companies' operations. It requires organisations to rethink their management models and develop employee skills to meet the new demands. The development task of this thesis was a project commissioned by a company operating in the energy sector, wanting to test how leading change and nudging employees towards digital transformation could be done by utilising designerly methods. The development work is based on the key concepts of strategy, strategic foresight, leadership, change models and nudging.

The energy company had digitalised numerous business processes, but a systematic approach and tools for leading and measuring digital development needed improving. The identified vital employees driving the company's digital transformation were the system administrators and software main users responsible for technical development. The aim of the project was to engage the system administrators in transforming their roles into active team players and find new ideas for speeding up the company's digital transformation. The key objectives were to innovate standard tools and operating models and find ways to evaluate the company's digital development maturity.

A modified Double Diamond service design process was applied in the development project. The insights were gathered by interviewing a pilot group of seven system administrators. During the process, system administrators' needs were identified and defined, solutions to meet the needs were devised and prototyped, and the requirements were iterated using various collaborative designerly tools. The ideas and insights were further validated with a group of fifty system administrators and compiled into a concept document and development roadmap.

As a result, several operating models such as the digitalisation leadership model, administrator day concept, rules for system descriptions and user guides, and practice for gathering tools and tips to ease the workload of system administrators were created. During the project, a preliminary concept for measuring digital transformation maturity was drawn. Also, several further development streams and innovative ideas, such as better utilisation of robotics and automation, were identified.

Utilising design in engaging employees and leading digital transformation of a traditional, engineer-oriented industry proved to be fruitful. The company could benefit significantly from implementing the ideas and operational models as they promote operational efficiency, transparency and meaningful work aligned with the company strategy. In general, experimenting with human-centric management models and the service design process can be recommended to various companies. By combining different management models and designerly tools, new ways of looking at companies' technology challenges, business development and digital transformation possibilities can be found.

Keywords: Digital Transformation, Strategy, Futures Thinking, Change management, Service Design, Nudging

Laurea-ammattikorkeakoulu **Abstrakti**

Leading Transformational Change

Tradenomi (Ylempi AMK)

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Muutoksen johtaminen ja työntekijöiden tuuppaus kohti digitalisaatiota palvelumuotoiluprosessin avulla

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Digitaalinen muutos ei ole vain teknologinen muutos, vaan kulttuurinen muutos, joka vaikuttaa yritysten toimintaan ja vaatii johtamismallien uudelleenarviointia ja työntekijöiden taitojen kehittämistä vastaamaan uusia vaatimuksia. Tämän opinnäytetyön kehitysprojekti tehtiin energia-alalla toimivalle yritykselle, joka halusi testata muutoksen johtamista palvelumuotoilun metodeja hyödyntäen sekä kannustaa työntekijöitään edistämään yrityksen strategian mukaista digitalisaatiokehitystä. Kehitystyö perustuu strategian, strategisen ennakoinnin, muutosjohtamisen ja tuuppaamisen teorioihin.

Energiayrityksen liiketoimintaprosesseja ohjataan lukuisilla digitaalisilla järjestelmillä, mutta selkeät mallit digitaalisen transformaation ja järjestelmäkehityksen johtamiseksi puuttuivat. Teknisestä kehityksestä vastaavat järjestelmien pääkäyttäjät oli tunnistettu digitalisaation edistämisen avainpelaajiksi ja siksi heitä haluttiin osallistaa uusien toimintatapojen kehittämiseen. Kehitystyön tavoitteina oli innovoida pääkäyttäjille yhteisiä työkaluja ja toimintamalleja, kehittää tapoja järjestelmäkehityksen maturiteetin arviointiin ja mittaamiseen sekä tunnistaa uusia ideoita yrityksen digitaalisen muutoksen vauhdittamiseksi.

Kehitysprojektissa sovellettiin Double Diamond -palvelumuotoiluprosessia. Oivalluksia ja näkemyksiä kerättiin seitsemän pääkäyttäjän muodostamalta pilottiryhmältä haastatellen ja erilaisia yhteissuunnittelun työkaluja hyödyntäen. Prosessin aikana tunnistettiin erilaisiin käyttäjärooleihin liittyviä tarpeita, suunniteltiin niihin vastaavia ratkaisuja sekä innovoitiin uusia ideoita. Työssä syntyneitä näkemyksiä validoitiin viidenkymmenen pääkäyttäjän ryhmässä ennen kuin ne koottiin toimintaa ohjaavaksi konseptiksi ja kehitystiekartaksi.

Palvelumuotoiluprosessin lopputuloksena syntyi useita toimintamalleja, kuten digitalisaation johtamismalli, pääkäyttäjäpäivän konsepti, säännöt järjestelmäkuvausten ja oppaiden laatimiseksi sekä käytännöt pääkäyttäjien työtaakkaa helpottavien työkalujen ja vinkkien keräämiseen. Projektin aikana laadittiin myös alustava malli digitaalisen transformaation kypsyyden mittaamiseksi. Lisäksi työssä tunnistettiin lukuisia jatkokehitysprojekteja ja uusia ideoita digitalisaation edistämiseksi, kuten robotiikan ja automaation tehokkaampi hyödyntäminen.

Muotoilun hyödyntäminen perinteisen, insinööriosaamiseen painottuvan toimialan digitalisaatiokehityksen johtamisessa ja henkilökunnan osallistamisessa osoittautui hedelmälliseksi. Työssä kehitettyjen uusien toimintamallien käyttöönotolla voidaan edistää tehokkuutta, läpinäkyvyyttä ja mielekästä, yrityksen strategian mukaista työtä. Osallistava toimintamalli helpottaa myös strategian jalkauttamista. Ihmiskeskeisten johtamismallien ja muotoilumenetelmien kokeilemista voi suositella erilaisille yrityksille, jotka haluavat sitouttaa henkilökuntaansa muutokseen ja innovoida uusia, liiketoimintaa tukevia tapoja teknologiahaasteiden ratkaisemiseen ja digitaalisen transformaation edistämiseen.

Avainsanat: Digitaalinen transformaatio, strateginen ennakointi, muutosjohtaminen, palvelumuotoilu, tuuppaus

Contents

1 Introduction

Digital transformation means integrating digital technology into all business areas, fundamentally changing how companies and organisations operate and deliver value to their customers (Enterpriserproject 2016). Emerging technologies drive change and significantly impact society and work in all industries, enabling radically new ways to target various customer needs. Innovations and technological changes create products and services more accessible, making them readily available for many and making our lives easier (Digital SkillUp 2021).

By 2030 technology will work as an extension of people, helping orchestrate, manage, and automate many day-to-day activities (IFTP for Dell Technologies 2017). Machine learning systems will form partnerships with humans to support the challenging work of hiring and retaining talent (IFTP for Dell Technologies 2019). Companies can save much time, e.g., in automating recruitment and HR processes, reporting or management. Human-machine partnerships enable novel approaches to spreading decision-making and collaboration across networks (IFTP for Dell Technologies 2019). Digital transformation is more than just technological change. It is a cultural change that requires organisations to continually challenge the status quo, experiment, and get comfortable with the unexpected (The Enterprisers Project 2016).

Nobody knows what, e.g., the job market will be in the future, but it will be different. AI & robotics will change everything, many jobs will disappear, and new jobs will emerge. This kind of change is not unique to humankind – we know that the industrial revolution didn't make people useless; it made us adapt. We don't know what the relationship between humans and machines will be in 2050, but we should start preparing and teaching our children skills that prepare them to adapt to tomorrow's work. (Harari 2022.)

Current trends in digital transformation are, e.g., focusing on resiliency and sustainability, cloud-enabled innovation, artificial intelligence, machine learning and data management. Artificial intelligence can help recognise weak signals, trends, and markets. Machine learning will drive the virtual facilitators to ask questions, gather information and facilitate co-creation and collaborative processes combining different perspectives on virtual collaboration platforms. (Enterpriserproject 2016.)

In a technology-driven world, it is easy to be lured into the false belief that there is a magic-bullet technology out there solving all organisational problems, but choosing technology requires the context of the relationships the organisations want to improve or impact (Li 2018). Climate crisis, increasing emissions, environmental pollution, rising inequality and

pandemic have shown that environmental and global changes affect us all. Solving interconnected ecological, social, and complex problems requires creativity, systemic approaches, and interdisciplinary work (Design Council 2021). In society, complex public challenges involve numerous stakeholders from different sectors, companies, and objectives, each responsible for providing specific parts of a comprehensive entity (Wildhagen 2021).

Digitalisation accelerates the transformation processes of organisations and companies to achieve long-term growth and profitability (Enterpriserproject 2016). There is a need for modern change management and the ability to understand individual and cultural needs alongside continuous technological improvement and business demands (Pasanen 2022). IT will continue playing an essential role in driving digital transformation, but solving, implementing, and adapting to the changes related to digital transformation and systemic change falls to people. For this reason, digital transformation is a people issue (Enterpriserproject 2016.).

New expertise is required from future organisations. Sensemaking is the most critical humane future skill. People should adopt a lifelong learning attitude to successfully navigate a rapidly shifting landscape of organisational changes and skill requirements. Also, resilience, foresight skills, design mindset, insight, creativity, adaptability, imagination, and lifelong learning are needed for high performance. (Devin 2018.)

1.1 Thesis background

This thesis is closely related to my daily work as a digital transformation director and business lead at Knowit Insight Oy, a management consultancy driven by operational excellence, commercial excellence, human insight, and the latest technology. The development project is based on Knowit Insight Oy's client project, a digitalisation strategy conducted in the spring of 2022 for a company operating in the energy sector in Finland. In this thesis, the client company is called "The Energy Company". The digitalisation strategy consisted of

- Current state analysis
- Digital vision statement
- Clarification and visualisation of the digital strategy
- Operational leadership model drafts for leading digital development

Based on the insights identified in the digital strategy process, a need for a further development project emerged. One crucial understanding was that although the company has digitalised numerous business processes, the overall digital maturity and competence in leading objects-driven digital transformation varies in different business units (The Energy Company 2022).

The identified key employees driving the digital transformation were the system administrators and software main users responsible for technical development, development of network systems, solving software-related needs and problems, and collecting business and user needs for further development.

The Energy Company has numerous main users and systems administrators, but their work is not led systematically and lacks standard operating models and cooperation. The Energy Company wanted to transform the main user role into a modern administrator who is an active team player, systematically supporting the digital transformation development of the entire company. It was decided that the employees should be involved in further digital transformation planning. The client wanted to try modern and inclusive methods to support change management. Thus, the client ordered a development project where the aim was to engage the system administrators in developing their future roles.

The thesis's topic stemmed from The Energy Company's strategy and desire to experiment with human-oriented development methods in accelerating digital transformation. The assumption was that future work could benefit from adopting service design-based human-centric methodology to change leadership.

1.2 Objectives

The thesis aims to bring together knowledge and different perspectives that support the promotion and management of digital transformation and then implement the views in practice. The knowledge base focuses on summarising how leading digital transformation is not just leading technical development but also leading people. The objective is to produce useful information and novel perspectives about how design expertise can be evolved and used in a wide range of strategic level, agile and future-proof organisation development tasks and change management.

The practical development project aims to improve the future work of The Energy Company's system administrators and thus modify their job toward more productive, efficient, and strategic activities. The Energy Company needed a systematic approach and tools for leading and measuring digital development. The purpose is to test how The Energy Company could utilise service design methodology for strategy implementation, learn about existing good practices, identify scalable operating models, and create new tools for leading the change. Hopefully, other industries operating with complex digital service environments and willing to find novel approaches and tools for system administrators can utilise the results.

The development project seeks new ideas on these questions and themes:

- System administrators' tools and operating models:
  - How the system administrators' work could be led more systematically?
  - How could the system administrator be nudged towards strategy-based action?
- Measuring the development:
  - How could the Energy Company's digital system relevance and maturity be evaluated holistically?
- New ideas for speeding up digital transformation:
  - What results and new perspectives arise when we experiment with co-design methods?

This thesis is not about the energy sector's digital transformation but about one step of one company on the road to digitalisation. This change is not about a more comprehensive, systemic industrial change but about the development of the capabilities and enablers of one organisation. The thesis does not take a stand on technology, technical system development, or integration challenges. The Energy Company has a separate knowledge capital project running simultaneously, and the results of these development projects are cross-checked in joint meetings. The future goal is that the results of both projects can be used in developing and measuring the company's digital transformation maturity.

As the name of this thesis, "Managing change and nudging employees towards digital transformation utilising the service design process", suggests, the service design process plays a central role in this work. Service design is used in the context of change management and digital transformation, and the role of the service designer is examined critically. This thesis also encourages service and business designers to see how their tools and talents can be applied for various purposes.

1.3 Knowledge base and methodology

The thesis focuses first on clarifying the concepts and theoretical background of strategy, strategic foresight, leadership, change models and nudging and observes them in the context of developing new, collaborative ways of working. It is essential to compile and analyse the knowledge related to leading digital transformation and find new perspectives to support the development project. The development project is about finding a path from digital strategy to people-centric leadership and employee engagement. That is why the knowledge base

reviews modern ways of implementing strategy. The key concepts are presented in more detail in chapter 2, Key concepts of change management.

The development project is based on the hypothesis that strategic foresight and people-centric methods could support change management. Development refers to project-based activities, which have objectives, and defined policies, and it ensures an evaluation set-up and schedule. Development is also about change because something is being pursued better than previous practices or structures. (Toikko & Rantanen 2009, 14-16.) The project is action research, testing if The Energy Company could benefit from utilising service design methodology for strategy implementation and innovation of new operating models and tools.

The project assignment assumed that development work would be promoted with qualitative and human-centric methodology. Methodology refers to the systematic methods of operation the researcher uses to answer the set of research questions (Vuori 2022a). Qualitative research methods consist of different theories and approaches. Action research is a research strategy that studies reality and aims to change it by taking action, doing research, and linking it to critical reflection. Action research relates to collaboration between researchers and organisation members and aims to solve organisational problems. For action research, an action is a research object, a tool, and a goal. The key is to bring about activities aimed at social practices, leading to solving problems and changes. The focus is on the participation and involvement of the people involved in the practices. (Jyrkämä 2022.) As a research strategy, action research contains many different perspectives and can be implemented using various analysis methods.

For this development project, choosing a method that is not linear, accepts changes in direction and offers food for innovation and ideas was meaningful. In this thesis, there are many elements of action research as the researcher's role is, e.g., to act as an expert and facilitator to help the company innovate new tools and operating models. An action research approach is used in the development project by applying the service design process to manage change and nudge the company employees towards digital transformation. The service design process provides a good and systematic approach to innovating and engaging. It puts people first, builds on collaboration and iteration and aims to help people gain a shared understanding and ideate together (Design Council 2019). Thus, it was selected as the development project approach. The design perspective is presented in more detail in chapter 3: Utilising design thinking and service design methodology for leading change.

1.4 Thesis structure

The thesis comprises seven chapters: 1. Introduction, 2. Key concepts of change management, 3. Utilising design thinking and service design methodology for leading change,

4. The development project: System administrators' tools and operating models, 5. Development project results, 6. Conclusions and reflection, and 7. Discussion.

In the Knowledge base -chapter, the key concepts are reviewed in the context of leading organisational change and digital transformation. The literature review seeks to understand whether introducing human-oriented methods for innovating operating models is advantageous. Next, the service design methodology is presented and reviewed in the context of driving strategy implementation and change in people's operating patterns.

The development project: System administrators' tools and operating models -chapter deepens the Energy Company's development project background, objectives, and service design process implementation. The development project is an example of applying designerly methods to lead a specific change needed in a company. The chapter describes how service design methodology and tools can be used for leading change and nudging the company employees towards collaborative working and engaging them in developing their work. The development project is carried out using design methodology and reviewed with a constant connection to the knowledge base and dialogue between transformational leadership and human-centric company culture development. The design process is explained and examined from a leadership perspective by referring to change management, service design and behavioural economics-related publications.

Based on the development project's insights, the opportunities and possibilities of integrating design into driving digital transformation are further discussed. The best practices, tools, and operational models are summarised and explained. The development project results, ideas and further development areas that emerged during the project are presented as the outcome of the design process. Observations, findings, and insights are compiled into synthesis and processed in the chapter Conclusions and reflection, which reviews the applicability of design methods, research reliability and ethics. The last chapter, Discussion, binds the work to the broader context of digital transformation.

2 Key concepts of change management

Digitalisation and implementation of change are the company's strategic choices and require modern leadership. The thesis' knowledge base introduces the concepts of strategy and strategic foresight, compares different leadership and change management models, and seeks to understand how biases and emotions affect managerial judgement, decision-making and the employee experience. These concepts and the designerly tools for nudging subtle changes are presented next.

2.1 Strategy

Strategy can be defined as “the central, integrated, externally oriented concept of how we will achieve our objectives” (Hambrick & Fredrickson 2001, 50). The company’s objectives and mission drive a strategic plan, and it is based on strategic analysis. According to Collins and Rukstad (2008), one clear goal should move the business forward for the next five years. The goal should be precise, measurable and time-bound. Hambrick and Fredrickson (2001, 58) state that strategy lifespan has shortened, and a strategy horizon of two or three years has become more common.

Strategy means intentional, integrated and informed choices that help the business develop its actions towards common goals and serves as the company's roadmap (Hambrick & Fredrickson 2001, 58). Without a strategy, a company does not have a clear direction. Or, in the worst case, a company has as many rules as there are employees if everyone has their personal view and way of doing things (Hambrick & Fredrickson 2001, 49). A good strategy brings meaning to work and engages people to act together in common ways for common goals. It defines why a company exists, how it stands out in the market, what it wants to be in the future, and how it will achieve its vision.

Strategic planning is often mistaken for its pieces, such as a vision statement or a company mission, but strategy work is more than just strategy tools, frameworks, and strategic analysis. It consists of different elements but is always more comprehensive than its parts. (Hambrick & Fredrickson 2001, 49.) A strategy addresses organisational processes, capabilities, activities, and culture, which are all essential outputs of strategic planning. (Hambrick & Fredrickson 2001, 50.) Strategic planning can be explained by a “strategy diamond” (Figure 1).

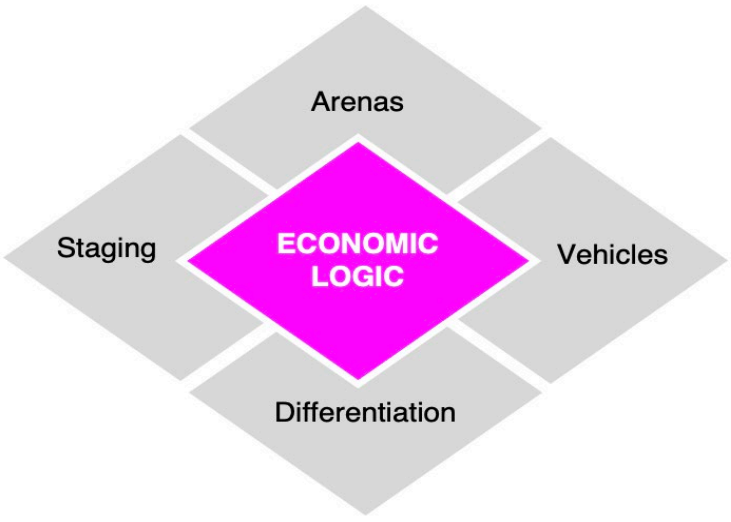

Figure 1: Strategy Diamond (Modified from source: Hambrick & Fredrickson 2005, 51)

The strategy diamond includes five elements:

- Arenas describe where the company will be active
- Vehicles represent how it reaches its objectives
- Differentiators define how the company is outperforming its rivals
- Staging sets the scene for the transformation speed and initiatives
- Economic logic explains how the revenues will be obtained

Strategic planning often produces templates, roadmaps, and filled frameworks, but strategic management is the ongoing monitoring and iterative improvement of those initial plans. The strategy can be dynamic. A good strategy is adaptable and evolving, and it should leave multiple options open because, in a constantly changing world, you cannot be too sure of anything. It can be iterated to meet the changing world. (Hambrick & Fredrickson 2001, 58.)

According to Kim and Mauborgne (1999), a company competes not only with its industry but also with other industry companies providing substitute products and services. Also, innovations emerge and produce new competitors. Disruptive innovation is a process that happens when a new, innovative product or service starting from the bottom of the market begins moving upmarket, displacing established competitors. Disruption doesn't happen overnight. This causes incumbents to overlook disrupters and new competitors as they focus on their current customers and business models. (Christensen, Raynor & McDonald 2015; Christensen, McDonald, Altman & Palmer 2018, 1049.)

Strategic management is needed to prepare and react to market changes, execute the action plans, harness the right people for practical activities, and evaluate the successful actions and changes necessary to reach the objectives. Great strategists are iterative thinkers who understand the rapid changes in the environment and are ready to grab new opportunities when they arise (Hambrick & Fredrickson 2005). Technology and digital transformation might boost innovations and changes in the competitive landscape. Still, for the incumbents, it is not as much the inability to adapt to new technologies but the inability to change the current business models challenged by emerging innovations. Disruption can be seen as more of a business model problem than a technology problem. (Christensen & al. 2018, 1068.)

Strategic management is not only about determining what the company should do. It is also choosing what to avoid. Porter (1996) points out three fundamental principles in strategic management: positioning, trade-offs and fit among different company activities. Strategy creates a unique and valuable position involving various actions. Operational effectiveness and outperforming competitors are essential, but it is more important to perform different activities than the company's rivals – or similar activities in diverse ways.

Differentiation can be achieved by weighing the values and attributes of each competitor in the market and selecting the attributes worth strengthening or diminishing. The aim is to find opportunities from where no competitor has yet entered. Differentiation and customer value depend on interrelated activities and strategies (Jurevicius 2022). Porter (1996) recommends that if a company is broadening within an industry, it might be best to separate new offerings from the traditional business to avoid the risks to strategy. If the new strategy is based on growth and, e.g., an extensive new digital offering is needed, it might be a good tactic to build a stand-alone unit with these new tasks because you cannot measure new ventures by the same metrics as the incumbent business.

Trade-offs are obliged because it is not possible to have it all. If a company wants to differentiate by granting employees full autonomy in developing new initiatives, it might need to let go of strict processes and prescribed reporting requirements. (Porter 1996.) Creating fit is about aligning the company activities and eliminating the partial optimisation of different business units to support the strategy. Managers are often measured by their unit's achievements, which might lead to a blurred vision of what is required at the company level. A fit amongst the company's activities is needed to sustain a shared direction. Positioning based on systems of activities is more sustainable than positioning based on individual activities. (Porter 1996.)

Strategy implementation demands leading by example and showing the way. The right people must own the implementation processes and document the processes and first initiatives. On top of sufficient resources, time and money are to be allocated for implementation. Before interpreting and applying the operations, managers should understand the strategy, goals, and the changing nature of the organisational environment and the world of customers and stakeholders. It is common for strategy implementation to be incomplete when there are no clear guidelines for performance and goals. (Collis & Rukstad 2008.)

One key role in strategic management is to teach the strategy to others and to set limits for choice-making (Porter 1996). When diverse activities are aligned meaningfully, it leaves less room for illogical and self-supporting managerial judgment. Managerial decision-making is critical, but it is imperative to make well-read choices benefiting the whole company, not just the operational effectiveness of a particular business unit.

Communication plays a vital part in strategic implementation. Most leaders of even the biggest and most successful companies cannot crystallise the strategy so that the company's goals, perspectives, and business benefits are reflected (Collis & Rukstad 2008). The crystallisation of the strategy is challenging and takes time, but it is needed to create a fit and align the company's activities. It is crucial to have all employees on board and share the same vision.

The implementation will be more straightforward if the strategy process has already engaged and involved various stakeholders. Different implementations, innovations and new service structures interact with the surrounding world, employees, and customers. The managers must receive continuous feedback from multiple sources to learn whether the interpretation is working. The realisation should be guided by experimentation and analytics to understand which strategic choices are going in the right direction. Measuring the effect of each option is particularly important.

2.2 Developing strategic foresight

Strategic foresight, aka futures thinking, is a general approach to thinking ahead. It is a "multi-disciplinary field of science that discovers, examines, evaluates, and presents possible, probable and preferable futures" (Ahrio 2017, 10). Strategic foresight refers to proactive actions to transform the business to fit changing situations (Ahrio 2017, 14). According to Lustig (2015, 10), strategic foresight is a practice that engages strategic thinking to develop strategies or futures. It helps manage change, make flexible strategic decisions, support risk management, and generate ideas for innovation and implementation strategy. (Lustig 2015, 18, Meristö & Laitinen 2009, 13.)

Futures thinking is a discipline that draws on design thinking and service design traditions and methodology. There are many similarities between service design and futures thinking. They are both about creative problem-solving aimed at seizing new opportunities and have unique elements that supplement each other (Ojasalo, Koskelo, & Nousiainen 2015, 201). Futures thinking is participatory, collaborative, and holistic (Lustig 2015, 19). It provides a framework for figuring out what is happening and how to make sense of emerging trends and signals.

Strategic foresight is born from multiple perspectives and bumping ideas and ideologies together. It provides tools for broadening the service design expertise and strategy creation. Instead of just making sense, the aim is to seize the findings, act, and design ways to reach the preferred futures. (Ojasalo & al. 2010, 203–207.) The business planning horizon should be a generation ahead. That is why it is crucial to understand what the possibilities of the future might be and how each future scenario might affect the business. (Lustig 2015, 14–15.)

If a company wants to understand where the world might be going, scanning the operational environment must be a continuous process of exploring and monitoring the world and learning and building knowledge to forecast change and disruption. (Lustig 2015, 77.) Futures thinking utilises several frameworks and tools that help structure the future and visualise and communicate options.

STEEPLED is a framework for gathering information and analysing the social, technological, economic, environmental, political, legal, ethical, and demographic factors in the external environment of an organisation (Koskelo 2020). It is a helpful framework for spotting and listing the current driving forces and megatrends, emerging trends, and potential future trends. It focuses on the drivers of change but not on the impacts. Monitoring the steepled factors should include observing different industry sectors and various perspectives. A holistic view of the driving forces helps in imagining alternative futures, creating action points, and designing solutions. The idea is to observe and register what has already happened in different STEEPLED sectors and project hindsight and insight into future foresight. Ruijter (2014,30) points out that it is essential to map all the trends and avoid choosing the ones we like because an open-minded trendspotting process is a vital tool for learning new and avoiding biases in thinking.

The STEEPLED analysis is the starting point for future research and for identifying threats and opportunities. It helps in sensing and making sense of trends, signals, and driving forces. It also allows the development of future consciousness and creates future industry and customer behaviour scenarios. Lustig (2015, 79) reminds us that STEEPLED does not work on its own, and besides spotting and sensing the changes, it is essential to make sense of what has been discovered and make meaning for the things learned. The findings must be shared and discussed in a diverse group to get different perspectives (Ruijter 2014, 65). Lustig (2015, 78) recommends complementing STEEPLED with SWOT analysis, a commonly used strategy tool.

Value chain analysis identifies value-adding activities to a company's products and services and studies the activities to promote operational excellence or increase differentiation. (Jurevicius 2022). The key in value chain analysis is to identify what creates value for each segment and start prioritising and maximising value creation in all ventures. It is used to understand what activities create the most value for customers, stakeholders, businesses, and employees, which activities or capabilities should be strengthened, and which could be improved to provide a competitive advantage. (Treece 2022.)

In leading a company's cultural change, it is essential to focus on those value chain activities that contribute the most to creating employee value. Value chain analysis can be used for identifying, e.g., bottlenecks and inefficiencies in workflow and de-prioritizing unproductive tasks and other inefficiencies (Treece 2022). The outcomes could be, e.g., setting target levels for operative models and processes. After a thorough value chain analysis, leadership understands better how the company could achieve its strategic objectives. The research is needed for making strategic choices, such as what kind of talent they should recruit or what company acquisitions and mergers they might need to consider in the future (Hambrick & Fredrickson 2001, 51).

Unpredictable changes force company leaders to predict future possibilities and create scenarios for rapid changes. Modern and dynamic strategies are based on different scenarios and the possible strategic directions the organisation can take. (Ruijter 2014, 61). Scenarios are a way to summarise the results of future research and the whole foresight process (Meristö & Laitinen, 2009). They are created from the emerging trends and insights collected from environmental scanning. Meristö and Laitinen (2009, 6) define scenarios as "internally consistent, plausible, and logical stories of the future, which illustrate the development from the present towards the possible future and vice versa". Identifying those stories, extreme worlds, and alternative possibilities can help prepare for future changes (Ruijter 2014, 11).

Scenario planning is a disciplined method for imagining the possible futures and exploring the collective impact of multiple uncertainties to be used in corporate strategy planning and vision building (Schoemaker 1995, 26). The process is collaborative, analytic, imaginative, and based on subjective ideas. Ruijter (2014, 62) suggests determining the relevant uncertainties for the company's future and using them as the basis for elaborating future scenarios. The scenarios should be created by considering the impact of various sectors, trends, and changing environmental factors. Each scenario should form a credible story of a future possibility (Ruijter 2014, 72). Managers can use scenarios to increase the ability to imagine the future collectively. On top of mapping alternative futures and identifying factors and development paths leading to different future outcomes, the necessary actions are suggested (Meristö & Laitinen 2009, 13).

Where the trends and scenarios show potential future circumstances for the company, a company vision should be the eventual goal to pursue regardless of environmental changes. The vision expresses the organisation's ultimate objectives. It describes what the company wants to achieve in the future and represents the desired state the company intends to reach by the end of a selected horizon (Ruijter 2014, 117).

A vision statement summarises the vision in a vivid description of the idea to inspire, energise, and help others create a mental picture of the objectives (Carleton, Cockayne & Tahvanainen 2013, 203). It creates an image of the desired future status, visualises what excellence looks like, and shows the best scenario for the time. It illustrates how the company wants to appear to employees, stakeholders, and competitors. The vision statement concentrates the strategy on one explicit goal that will take the business forward for the following years and tells what the company wants to become. It is a robust and value-driven tool that helps motivate and inspire employees, provides one purpose to work for, and provides help for the strategic management process. (Carleton & al. 2013, 204)

2.3 Leadership models and frameworks

Strategy implementation requires leadership and change management skills. Men and Stacks (2013) present two leadership concepts, transactional and transformational, which have different leadership styles and ways to empower employees and significantly impact perceived organisational reputation.

Transactional leadership is authoritarian, and the managers tend to focus on economic and instrumental transactions in treating employees. Transactional leaders use bureaucracy, policy, and power to lead and maintain control, and the employees are rewarded based on their performance. (Men & Stacks 2013, 174). Companies led by transactional leaders are often very result oriented, and they focus on achieving the set goals. However, they are often inflexible and demotivating workplaces that don't foster innovation (Lutkevich & Pratt 2022).

Transactional leadership is an exchange process. Previous leadership scholars (Bass 1985; Podsakoff, MacKenzie, Moorman, & Fetter 1990) have identified contingent reward, which involves leaders clarifying roles and task expectations and providing contingent rewards on the fulfilment of contractual obligations, as the principal behaviour to represent transactional leadership because it "captures the exchange notion fundamental to transactional leader behaviour" (Podsakoff & al. 1990, p. 113). The transactional style works best in workplaces with stable protocols and procedures requiring a high level of repetition and rigid structure. (Lutkevich & Pratt 2022.)

Transformational leadership is strategic, charismatic, inspiring, democratic, and relational oriented, and it "fosters a climate of trust, nurtures employees' confidence, and encourages their individual development" (Men & Stacks 2013, 174). According to Simon Sinek, great leaders communicate differently than others. Sinek's theory, the Golden Circle, is a pattern of human decision-making and motivation, presenting three circles: what, how and why. Sinek states that "everybody knows what they do, some know how to do out, but only a few know why they are doing it". An inspirational leader does not need to tell what he can do when he can tell what he believes in. (Sinek 2009.)

Several different leadership and change models are based on the ideas of transactional leadership and transformational leadership. As this thesis is about leading transformational change and employee empowerment, it is meaningful to observe more of the different ones emancipating from the transformational point of view. Table 1 presents an overview of three well-known change models, Kotter's 8 Steps -model, the Adaptive Action -model and the Appreciative Inquiry -model and highlights perspectives of different models for promoting change (Organizing Engagement 2022; Eoyang & Holladay 2018; Juneja 2022). The additional change models provide diverse starting points and approaches for analysing or managing the change process within the company.

Table 1: Change model comparison (Organizing Engagement 2022; Eoyang & Holladay 2018; Juneja 2022).

Change model	KOTTER'S 8 STEPS	ADAPTIVE ACTION	APPRECIATIVE INQUIRY
The change process	The change is managed by following 8 steps in order: Sense of Urgency, Guiding Coalition, Vision for Change, Communicate the Vision, Remove Obstacles, Create Short Term Wins, Consolidate Improvements, Anchor the Changes.	The change is tackled with an iterative process of three stages: what, so what and now what. Data should be collected and analysed to make sense of the constantly changing situation and act.	The key to success is in positive dialog and involving people and understanding multiple stories. The change should be built around what works, rather than trying to fix problems. The Appreciative Inquiry process steps: Discovery, Dream, Design, Destiny.
Believed about organizations in this model	Change in organisations is happening all the time but creating successful change is hard. Change can be planned and controlled.	Organizations are complex adaptive systems consisting of individual parts, forming continuous patterns in a complex world.	All human systems have something positive and something that works right. Organizations can be changed and managed by conversations.
In what paradigm this model belongs?	The model is based on Kotter's business and empirical experience. The worldview is rational.	Uncertainty is the only certainty, and the world is complex. Change cannot be controlled but it can be prepared.	Focusing on strengths instead of problems. Emphasising interaction, subjectivity, stories, and the language people use about change.
From whose perspective is change approaches?	The change is lead and managed from above. There is a need for strong leaders and capable managers who need to empower the workers. Communication plays a key role.	The model reflects the knowledge of the personnel who are part of the complex system. Organizations set their goals and the individuals and groups are empowered to develop their own working environment.	The people construct their worlds and form diverse groups with different stories and meanings. Facilitators gather information and facilitate collaborative processes.
Strengths of the model	It provides easy to follow steps and instructions for the change process. it concentrates on creating acceptability for the successful change.	It gives tools for individuals and smaller groups to tackle the change in their everyday work and situations. It focuses on defining what to do next to reach the desired goals.	Co-creation, participation and sharing ideas engage people in the process. Positive focus thrives positive thinking and builds positive spirit. Lots of easy-to-follow methods can be used.
Weaknesses of the model?	All steps are not always needed in all change situations. Model does not provide tools for change	Not for traditional organisations where everything needs to be clearly scoped and planned.	Finding the right focus might be difficult if people are used to problem-solving rather than focusing on the good. Positive

	resistance or ensuring commitment. It does not encourage for real participation or co-creation	Requires a lot of engagement and if the people resist or are too busy for constant evaluation and action, it cannot work.	approach might not work for everybody, especially if there are a lot of weaknesses that should have been tackled long ago.
What changes this model is best for? Why?	Businesses in need of a change in challenging market environment. The model is easy to follow and communicate.	Slight changes that need to be made every day close to the people in the changing environment.	Good for organisational development and re-inventing the roles and structures and relationships within organisation.

Dialogic organisation development mindset believes organisations are socially constructed realities with many different truths where the employees are continuously creating meanings and multiple stories. Dialogic organisation development mindset also believes transformational changes require having and holding an intention for change but embracing not knowing what the future holds. (Bushe & Marshak 2015,1–2.) Organisations are valued as dialogic networks encouraging discourse and generativity. Dialogic approaches are used as they foster imagination and develop new possibilities rather than finding problems to solve, changing the existing narratives and stories that limit new thinking.

The Appreciative Inquiry change model states that the key to success is positive dialogue, involving people, and understanding multiple stories. When any organisation finds itself in a demanding situation, the general tendency is to focus on the problems and find ways of dealing with them (Srinivasulu 2018). The most significant feature of using Appreciate Inquiry is that instead of focusing on the problems, it focuses on what is working well in an organisation. The idea is to collect stories and experiences of successes and use them as a catalyst for change and the development of innovative ideas (Organizing Engagement 2022). Focusing on the positives of a situation changes thought patterns and translates into greater positivity in action. Change can be created and sustained by changing the meaning of the words and stories the employees tend to use (Bushe & Marshak 2015,1). Creating new and better stories is a powerful way to transform organisations and encourage people to dream of alternative futures together (Bushe 1998).

Management consulting companies often also have their respective change leadership frameworks and models reflecting their paradigms, value propositions and customer promises. Knowit Insight is a management consulting that believes that future organisations must prioritise the employees' speed and autonomy and engage them in the change. One commonly used change model for understanding the change maturity by Knowit Insight is The Capability Assessment (Figure 2), a tool focused on seven topics regarding an organisation's capabilities and processes maturity to support change (Knowit 2022).

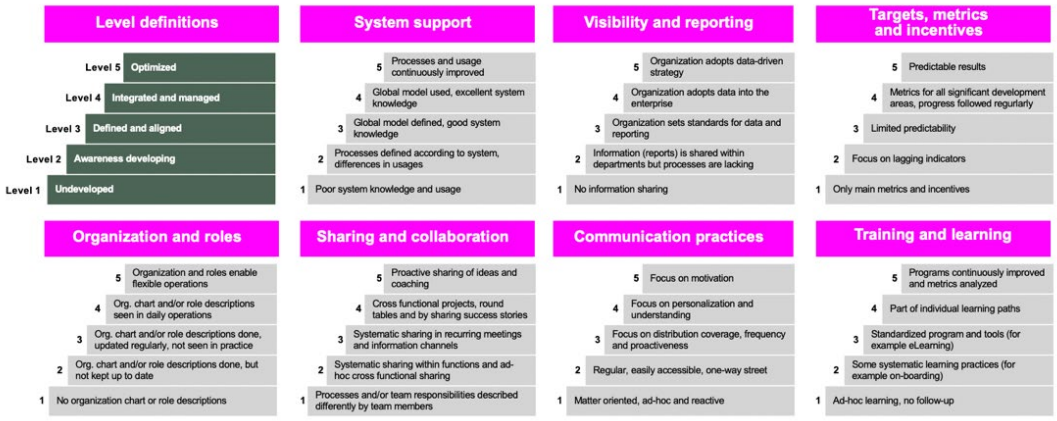

Figure 2: Capability Assessment Model (Modified from source: Knowit 2022).

Capability maturity models and frameworks can be used to understand the maturity level of an organisation, team or specific capability (The Organisation Development Tools Institute 2022). The information is gathered via surveys or interviews and is used for preparing for the change projects to gain an overall picture of the client's organisational capabilities and culture. Understanding the company's maturity from different business perspectives helps set performance targets and plan the steps toward the business goals, building new capabilities and target maturity levels.

Various change management assessment tools and frameworks can help companies in enabling change through people-driven interactions and visualising barriers for pull, and addressing several issues, such as

- What might slow us down?
- What is the most critical problem to solve?
- What generates value?
- What knowledge do we need?
- How could leadership utilise that knowledge?
- How to motivate? (Pasanen 2022.)

The constant technological innovations boost rapid changes, which makes the future unpredictable. A new kind of agility is needed to respond to changed expectations and needs. Digital transformation as a cultural change requires organisations to challenge the status quo, experiment continually, and get comfortable with failure. If the employee behaviour needs to change, it is hard to force by authoritarian leadership style (Lutkevich & Pratt 2022).

Agility is a business term that refers to how fast a company can respond to changes. Agile methods are already commonly used in software development. Agile software development

embraces a feedback-based approach, collaborative mindset, flexible methodology and working in iterative and overlapping phases – sprints (Mathenge & Shiff 2021). Business agility combines the ideas behind transformational leadership and an adaptive, agile development mindset. Agile Business Consortium, a global not-for-profit organisation for sharing knowledge about agile methodology and research, defines business agility as "agility in an organisation's culture, leadership, strategy, and governance that adds value to all stakeholders who operate in uncertain, complex, and ambiguous environments" (Agile Business Consortium 2022a).

The framework for Business Agility (Figure 3) includes five elements needed to make an organisation agile: culture, leadership, strategy, governance, and people (Agile Business Consortium 2022b). Agile Culture refers to core values, behaviours and practices that allow the company to prosper. Agile leadership principles include leading by example, reviewing the situation, soliciting meaningful and timely feedback, building a common purpose, encouraging people in innovation and engagement, fostering a healthy working environment and empowering people (Agile Business Consortium 2022a). The agile strategy combines strategy development with iterative and regular testing principles and external environment monitoring for changes. Agile Governance is characterised by demonstrating control through process transparency, and Agile people refer to liberating the collaborative creativity of people and how they work together. (Agile Business Consortium 2022b.)

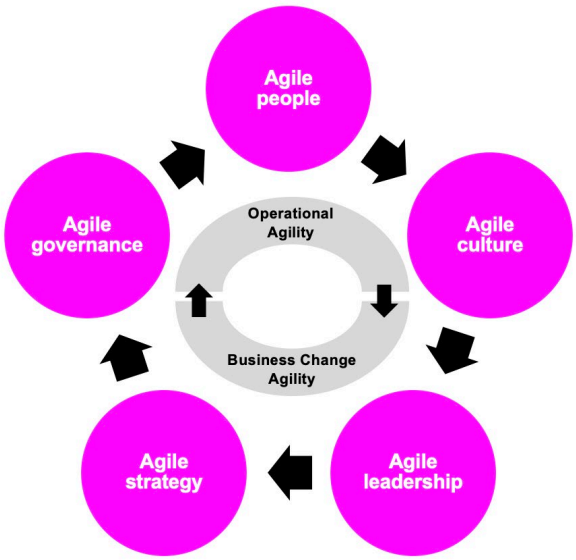

Figure 3: The framework for Business Agility (Modified from source: Agile Business Consortium 2022b).

Business agility can be viewed as a modern change model that has been born spurred on by digital transformation and agile development methods. Becoming agile requires leadership skills called agile coaching. Agile coaching competencies can be described as process-focused competencies such as coaching & facilitating skills, content-focused competencies like

teaching & mentoring, and agile-lean practitioner knowledge and ability to use agile and lean practices on real teams and organisations. (Spayd & Adkins 2011.) Agile coaches typically work with agile development teams and focus on improving team performance and operational efficiency. Comprehensive business agility requires Agile Enterprise coaches, who work developing company leaders and management, extending agile principles across the departments to enable an empathetic and iterative approach to the vision and strategic goals of the organisation. (Adventures with Agile 2021.)

2.4 Emotions and biases in managerial judgement

Empathy is crucial in leading the change as change often involves loss, which can lead to grieving. For some people, their work is the centre of the universe, providing meaning and status. The work identity can be so strong that the change feels overwhelming and creates grief. Emotions will shape the anticipation, the experience, and the aftermath of change (Fineman 2003, 115–117). Fear of failure, personal gain, loss, missing support, and lack of information are four types of fears that reduce an employee's commitment to change (Luo, Song, Gebert, Zhang & Feng 2016, 246).

According to Heathfield (2021), resistance to change is evident in actions such as:

- Criticism
- Nit-picking
- Snide comments or sarcastic remarks
- Missed meetings
- Failed commitments
- Endless arguments
- Sabotage

Communication plays a crucial role in reducing fears, and when the uncertainties related to change can be removed, a positive willingness to change can begin. Communication for change must address the known fears so that they do not become forces threatening change. Understanding fears, emotions and human behaviour are essential in managing change, and leadership requires the leaders and managers to work closely with the decisions of others, reviewing recommendations, transforming recommendations into decisions, and adjusting decisions made by others in the past (Bazerman & Moore 2017b, 195).

Emotional intelligence is a crucial skill for change managers as it enables them to:

- Communicate effectively with others by listening, despite of own prejudice

- Manage relationships with employees and between colleagues to eliminate conflict and tighten connections in the change process
- Emotional maturity can help in managing emotional responses to changes and uncertainty. (Unitt 2021.)

In addition to emotional intelligence, a manager needs to be aware of patterns of action and preconceived notions that affect decision-making, thinking, communication, and handling situations. Researchers have found that people rely on simplifying the rules of thumb when making decisions. These decision strategies are called heuristics. They help us cope with the complex decision-making environment by helping us rely on what we already know and evaluating the profitability of the issue without having to investigate all its consequences thoroughly and its effects. Generally, heuristics produce good decisions. However, while heuristics are helpful in many situations, they can also lead to cognitive biases and managers making systematically biased judgments. (Bazerman & Moore 2017b, 6.)

People are not as rational as they tend to believe when emotions and irrationalities in thinking drive their behaviour. We make mistakes and let several biases affect decision-making. Cognitive biases are unconscious biases, learned assumptions, beliefs, and mental shortcuts that aid decision-making attitudes (Asana 2021). In Wikipedia (2022), biases are defined as systematic patterns of deviation from norm and rationality in judgment, often studied in psychology, sociology, and behavioural economics. They develop over time when people are exposed to different stereotypes and experiences (Asana 2021). Biases are likely to affect the judgment of all professionals, from auditors to politicians to salespeople (Bazerman & Moore 2017b, 6). And from transformational leaders to business leaders, service designers and system administrators, as “they affect the way we hire, interact with colleagues, and make business decisions” (Asana 2021).

Our judgment is falsely based on representativeness and likelihood, we suffer from insensitivity to sample size or prior probability of outcomes, and we let misconceptions of chance impact our decisions (Tversky & Kahneman 1973). It is difficult to imagine and get over feelings, blind spots, and biases with similar people (Lustig 2015, 43). Becoming aware of cognitive biases could help in making better decisions. Behavioural insights have been used a lot in governmental and public policymaking. Still, the principles can also be applied in an organisational context to promote change and to nudge the managers and employees to better align with the organisation’s objectives (Ebert & Freibichler 2017).

Biases affect belief formation, reasoning processes, business and economic decisions, and human behaviours in general, and they have implications for managerial judgement. Biases rely on past experiences and applying prior knowledge, particularly in decision-making (Unitt 2021). Instead of humbly considering alternatives, people continue to believe they are

correct, better, and smarter than they are (Bazerman & Moore 2017a, 15). People tend to anchor their decisions to the information offered and draw different conclusions from the same information, depending on how the information is framed. It is an advantage for the manager to understand the most common biases, as it might help to develop their management style, understand employees better, and lead change.

Here are some of the biases and heuristics that can have an impact on managerial decisions and leading the change.

- **Overconfidence** refers to a false feeling of confidence where people believe they know the truth already, are too confident in what they know and underestimate what they do not understand (Bazerman & Moore 2017a, 58). Overconfidence might lead managers to despise others' perspectives or alternatives and reach for like-minded people to back up their ideas – even if they are not sustainably based on further research.

- **Bounded awareness** causes people to make judgments based on the information available and ignore other information needed for a good decision, eventually narrowing their attention and focus (Bazerman & Moore 2017a, 63, 81). People tend to anchor their choices to the information offered and draw different conclusions from the same information, depending on how the data is framed.

- **Status quo bias** may lead to change resistance because people prefer the current state rather than accepting change (Paulin 2019). Constantly hiring employees from the same demographic group and avoiding responsibility to enhance diversity is one example of a managerial status quo bias in a company (Asana 2021).

- **Affinity bias** is the tendency to favour people with similar interests, backgrounds, and experiences, as we tend to feel more comfortable around people like us (Asana 2021).

- **Non-rational escalation of commitment** is often justified due to our own previous initial choices – or when facing competition, we want to win. Sometimes the benefits are too precious, and we tend to stick to what we have gained, but the sunk costs should not be considered when thinking about future actions. (Bazerman & Moore 2017b, 101–103.) Justifying previous commitments and neglecting our non-rational patterns prevents the change

from happening. A good manager should have the courage to change course to create something better.

- **The unilateral escalation paradigm** describes the tendency to escalate commitment to the chosen course of action. We should focus on future costs or benefits instead of thinking about what happened earlier, but our decisions tend to be biased toward our past efforts. (Bazerman & Moore 2017b, 103–105.) Additional competitive forces drive the escalation instead of individual judgement. The desire to win the competition adds motivation to escalate commitment and abandon rationality.

- **Perceptual biases** occur due to our tendency to focus on perceptions confirming and supporting our previous observations. Suppose the managers are responsible for hiring or promoting people. They are often biased to stick with their last image of the employees and tend to confirm their initial opinions and act according to their sentiments. Managers should consider and deliberately seek more perspectives to support their decision-making to eliminate perceptual biases. (Bazerman & Moore 2017b, 103–105.)

- **The affect heuristic** is where current emotions, such as fear or joy, influence decision-making. When driving the change within employees, it is crucial to understand how the different feelings influence their behaviour, as the emotional stage significantly impacts their judgement. The affect heuristic suggests that if the feelings towards an activity are negative, people are more likely to perceive the risks as high and benefits low. Making things easy to use and evoking positive emotions is crucial if you want people to complete the given tasks. A good flow and effortless employee experience keep them happier and more satisfied, leading to better company culture. (Bazerman & Moore 2017b, 9.)

Realising and understanding different biases is essential for every manager leading the change, managing change resistance, and nudging the employees towards the wanted direction. All these irrationalities lead to repeating missteps in thinking, both from the managerial and employee perspective. It is hard to admit that one might be biased, and sometimes it takes courage to realise that a second opinion is needed. Stepping out of the comfort zone is hard. People are too content with things; changing habits and adopting new perspectives is tricky. It is critical to understand that virtually everyone is subject to judgment biases, and having them does not imply one is a poor decision-maker. Still, simply that one is human (Bazerman & Moore 2017b, 191). In a perfect world, people could always

make the best and most rational choices and decisions, but the world is not perfect and to err is human.

2.5 Nudging

Behavioural insights have been used a lot in governmental contexts and public policymaking. Still, the principles can also be applied in an organisational context to promote change and to nudge the managers and employees to better align with the organisation's objectives (Ebert & Freibichler 2017). Thaler (2017) underlines how economics combined with social sciences and understanding human nature can change how we do business and design environments where we need to make decisions. Leveraging social norms and showing standards of the desired behaviour can profoundly influence individual employee behaviour (Paulin 2019).

Nudging is a nascent field of thinking aiming to guide people through decision-making. It is a subtle way to create change and persuade instead of forcing people to behave in a specific way. (Fusaro & Sperling-Magro 2021). It can be a robust design strategy, emphasising the concept of creating with intention and influencing people in the aspired direction by giving slight but definitive hints and nudges. Nudges aim to influence people to make better decisions while leaving them freedom of choice (Barton & Grüne-Yanoff 2015, 341). The goal of a nudge is to alter people's behaviour to pay attention towards the wanted direction (Fusaro & Sperling-Magro 2021).

Nudging people to make better decisions can benefit the organisation and strengthen the pursued organisational culture. Behavioural insights encourage experimenting with workable solutions to identify what strategies work, where, and in what context (Paulin 2019). The most effective nudges are based on behavioural science and understanding how people behave and respond (Sunstein 2014). There are many fine options to improve the environments where we need to make decisions and complete tasks. Sunstein (2014) lists some of the most essential nudges, such as default rules, simplification, increases in ease and convenience, reminders, and informing people of the consequences of their own past choices. The goal of nudging is usually to make life simpler, safer, or more accessible for people to navigate (Sunstein 2014). When designing a nudge, it is essential to understand what heuristics might influence users' choices or what types of nudges could counter or increase the influence of biases.

Thaler and Sunstein define choice architecture "as the context in which people make decisions, and a nudge as many aspects of the choice architecture that predictably alters people's behaviour without forbidding any options or significantly changing their economic incentives" (Barton & Grüne-Yanoff 2015, 342). Choice architects are responsible for organising and presenting the context where people make decisions (Thaler & Sunstein

2021,3). Any situation where a choice is made has an architecture designed by somebody (Fusaro & Sperling-Magro 2021). Choice architects can improve the lives of others by designing user-friendly environments and services. They can insist on active choosing, persuade certain voices, and offer specific suggestions, but the freedom to choose remains. The choosers are human, so the choice architects should design the options to ease their lives (Thaler & Sunstein 2021, 16-18). Suppose the managers want to improve employee engagement and experience. In that case, they need to be sure the employees understand where the company is going and nudge them tenderly in the desired strategic direction.

Choice architects can shift behaviour simply by informing what others are already doing, as informing about the social norm can be highly effective (Thaler & Sunstein 2021, 83). In change management, this could mean, for example, illustrating cultural values with insights into future work, providing specified guidelines for strategic foresight processes and tools, or designing incentive schemes based on behaviour promoting future thinking and initiatives. In a commercial and business context, understanding behavioural economics and nudging can be used, e.g., for incentives, pricing, making rational choices in negotiations, preventing investment mistakes, trading, motivating, and creating value (Thaler & Sunstein 2021; Bazerman & Moore 2017b).

Due to digital transformation, daily decisions are made increasingly in the digital environment. Digital devices create possibilities to nudge efficiently and effectively (Fusaro & Sperling-Magro 2021). Schneider, Weinmann and Brocke (2018) discuss how designers, the choice architects, can estimate the consequences of nudges when designing digital choice environments. They state that any user interface, from a corporate website to a mobile app, can be viewed as a digital choice environment where nudges are composed, whether deliberately or unintentionally. In digital environments, user experience designers have typically had a significant role as choice architects because any user interface, from organisational websites to mobile apps, can be viewed as a digital choice environment (Schneider & al. 2018).

Digital nudging works by modifying the content and choices and how it is visualised in the user interface (Johnson, Shu, Dellaert, Fox, Goldstein, Häubl, Larrick, Payne, Peters, Schkade, Wansink & Weber 2012). There are several methods to use behavioural understanding in choice architecture. E.g., the decoy effect describes how it is possible to influence our perception of two choices by adding a third, less attractive option alongside the two options. The decoy can drive the attention towards the wanted direction (The Decision Lab 2022). Middle-option bias is the tendency to choose options in the middle of a choice set (Hendricks 2018.). The scarcity effect causes people to value something more when it is less available (Inquivix 2022). Schneider & al. (2018) report a study of nudging people toward a singular option through the decoy effect, scarcity effect and middle-option bias, proving that

designers can create digital nudges consciously based on the psychological principles of human decision-making to influence people's online behaviour. Some nudges aiming to pave the way to a specific trajectory might be deliberate, but some are not. Not all designers are familiar with behavioural economics or the different biases influencing users.

Digital services are filled with subtle persuasions such as buttons, colours, shapes, calls to action, content structures, information hierarchies and carefully designed user paths for different user needs (Schneider & al. 2018). The persuasion is not meant for users to be noticed but to guide the user forward on his user path to fulfil the task to be done. Digital choice environments nudge people by presenting alternatives, organising workflows, and making digital nudging (Fusaro & Sperling-Magro 2021). Digital nudging works by either altering or showing how things are presented. In other words, the content and visualisation impact people's decisions, whether the designer's choices were deliberate or not.

3 Utilising design thinking and service design methodology for leading change

The development project tests if The Energy Company could benefit from utilising service design methodology for strategy implementation and innovation of new operating models and tools. The Service design principles and the designer's role in the change management process are discussed next.

3.1 Service design

Service design refers to developing services in a user or customer-oriented manner. Service design is already an essential part of public and private sector development and is used for designing new services and service processes. It is by nature agile, human-centric and collaborative. It is iterative, and improvements are made continuously based on measuring success. Service design can serve as a force for change that helps management from the boardroom to the shop floor to identify the need for transformation and crystallise a plan to launch it. (Interaction Design Foundation, 2020.)

Different service design descriptions point out that the key to innovating, developing, and realising new services lies in emphasising the significant role of the user and engaging the users and stakeholders in the design process (Wetter-Edman 2014, 38). According to Penin (2019, 151), the principles of service design are:

- Service design is people-centric
- Service design depends on participation and co-design
- Service design is communicated through service narratives

- Service design includes the material side of services
- Service design is holistic

According to Vaajakallio (2012), service design emphasises user experience as a driving force in service development previously characterised by business and technology-driven approaches. Also, Wetter-Edman (2014, 38) points out that human-centeredness is essential for service design.

More than 15 years ago, the service design overview model illustrated how service design operates as a mediator between organisations and clients (Figure 4). Service design is often known as a discipline enhancing productivity and customer satisfaction. However, service design can also help establish strategy, create organisational concepts, and change the company culture (Moritz 2005, 152).

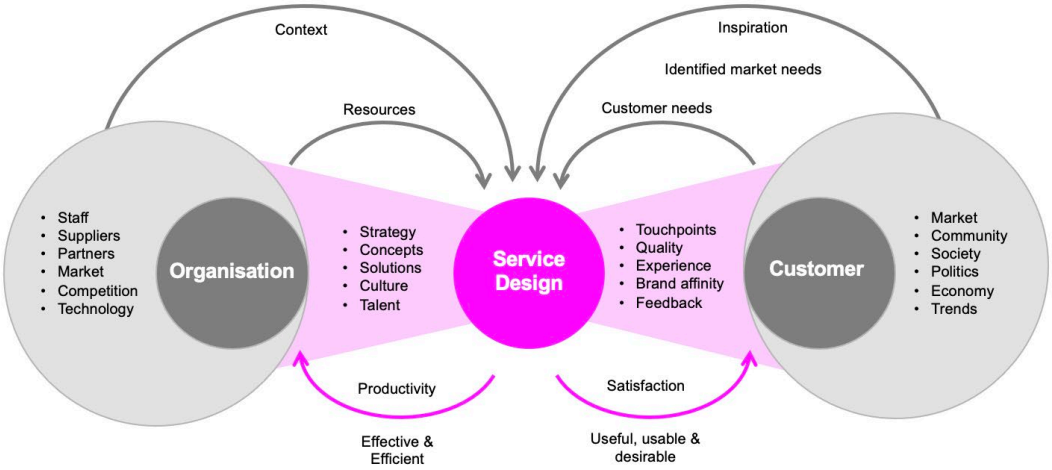

Figure 4: Service design model as a mediator between organisations and clients (Modified from source: Moritz 2005, 152).

Service design principles can support more strategic business decisions, change management and organisational culture development. Change management can utilise participatory tools and processes familiar with service design to help experiment with agile alternatives, reduce unnecessary work, and identify new opportunities for efficiency. A people-oriented and multidisciplinary approach to business and management challenges helps identify what creates value now and eventually, what prevents and slows down, and how to involve people in change. (Pasanen 2022.) The change can be promoted by a multidisciplinary team looking at business development from a cultural, strategic, and technological perspective.

Segelström (2013, 27) defines service design as “the use of a designerly way of working when improving or developing people-intensive service systems through the engagement of

stakeholders". Service designers' designerly ways mean, e.g., involving users by using methods and approaches from a variety of disciplines such as product design, interaction design, and human-centred design together with service marketing and management (Wetter-Edman 2014, 199). Design and innovation methods can create knowledge by building new documents, services, technologies, rules, and systems, piloting them, and evaluating them (Legal Design Alliance 2019).

Designerly ways also mean productive routines and processes, such as the Design Council's design methodology, the Double Diamond, a visual representation of the design and innovation process (Figure 5). It was first launched in 2004 and has since become world-renowned among designers (Design Council, 2019). The Double Diamond is a "straightforward way to describe the steps taken in any design and innovation project, irrespective of the methods and tools used" (Ball 2019).

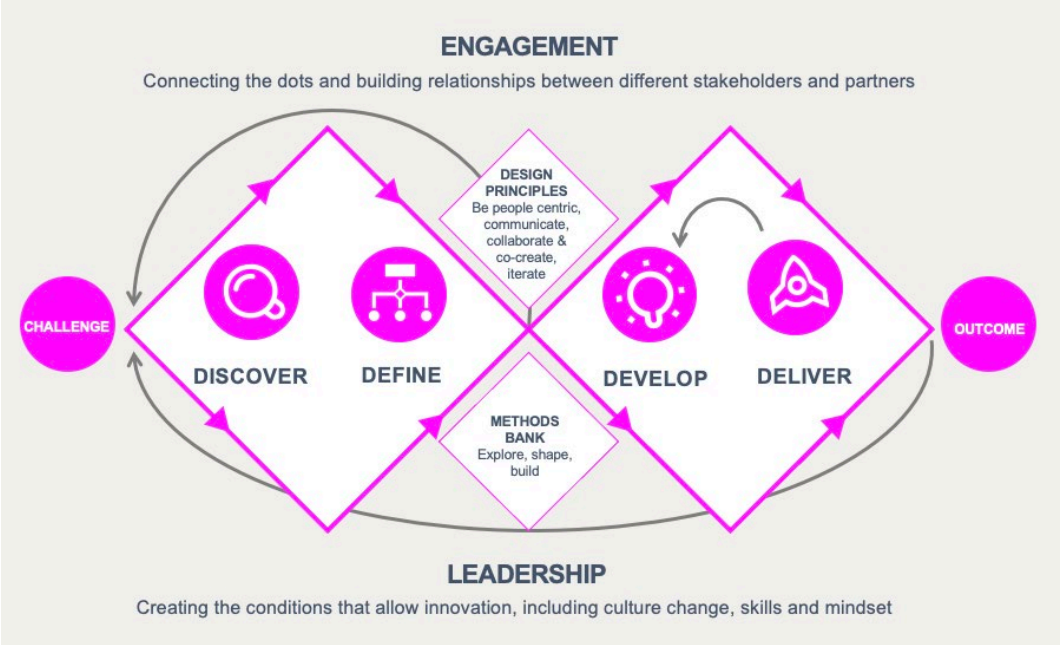

Figure 5: Double Diamond framework for Innovation (Modified from source: Design Council 2019).

The service design process structure and innovation framework "understand customers and their problems and explore creative and innovative ways to solve their problems and delight them" (Heffernan 2017). The process is based on "two diamonds", each alternating a divergent and convergent phase (Penin 2019, 185; Design Council 2019). It is not linear but iterative, and every stage includes several ways to test and prototype the ideas. However, following a process and a toolkit does not equal designing a workable solution to the right problem. The Double Diamond is about the mindsets as the tools, and the actual value of mastering is in the outcomes. (Drew, 2019.)

The Double Diamond process consists of four phases: Discover, Define, Develop and Deliver (Figure 5, Design Council, 2019).

a. **Discover.** The first phase frames the problem. Customer insight aims to discover and understand the cause-and-effect relationships, latent needs, and motivations embedded in our culture and environment. Understanding is created by focusing on user goals, thoughts, feelings, and what they find meaningful. Understanding requires empathy – the skill and interest in seeing designs from the customer's perspective. Insight and compassion grow when we explore these themes with a wide variety of different people.

b. **Define.** This phase will narrow the insights and establish the project's main challenge. By involving all the key people as early as possible, it is possible to be sure that all the essential internal insight has been collected and critical persons are more involved in the development in the future.

c. **Develop.** Co-design creates different solutions for the problem. Testing the visualised solution hypotheses with users and stakeholders will provide a thorough understanding of which services bring real value to customers. Solution hypotheses are constantly iterated during this phase. The validated customer insight will be elaborated on and formulated into conceptual visions.

d. **Deliver.** The concepts are created, prototyped, tested, and iterated in this phase. Testing concept prototypes and different solutions before further development helps to decide which ideas work and should be further iterated. Also, creating a roadmap for the eventual experimentation and implementation phases is essential.

3.2 Service designers' evolving role

Changes in customer needs, technology disruption and the economic situation are considerable contributors to change. Technology is essential for organisational efficiency, innovation, and new growth, but it will only be meaningful if it truly meets the needs of staff, business, partners, customers, and end users. Digitalisation is, therefore, not just about developing digital services and adopting technology but a change in the operating culture. (Pasanen 2022.)

Today, innovation is considered an integrated business driver, not just a project for designing artefacts. Design tasks often involve redesigning systems or the organisations themselves, and they are not designed in a void space but in a legacy and existing culture (Penin 2019, 135). The design extends from the separate disciplines to the processes and systems behind experiences to strategies and philosophies (Moritz 2005, 32).

Design Council (2021) suggests that designers should adapt systemic design methods, skills, and core roles to lead the way in system change (Figure 6). Critical future designer skills are, e.g., seeing the interconnections in a bigger picture and the ability to zoom between the micro and the macro and across silos. Also, storytelling, the ability to use versatile designerly methods, and creativity to make things happen and connect people from different backgrounds are considered essential skills.

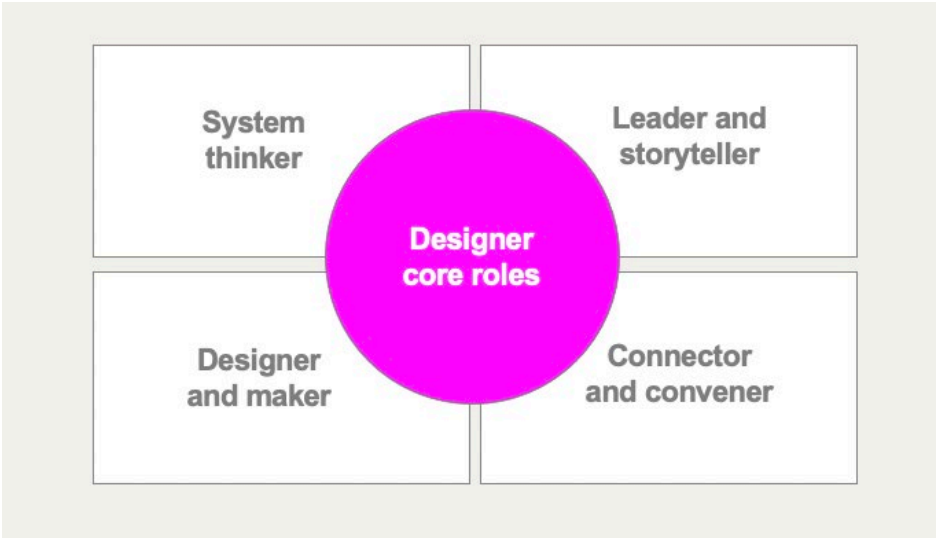

Figure 6: Designer core roles (Modified from source: Design Council 2021, 44).

Service design as a design discipline has changed the focus from relatively simple products of more traditional design fields such as graphic design to complex systems, interactions, and a range of services (Wetter-Edman 2014, 36). Traditionally, designers used to have a specific design-related area of competence. Now designers increasingly use their design methods and skills in collaborating with non-designers and distinctive design disciplines. (Wetter-Edman 2014, 31.)

To help designers work more sustainably and systemically, The Design Council has published The Systemic Design Framework and the new design process (Figure 7), an improved version of the classic Double Diamond model and innovation framework. It emphasises the orientation and vision setting because the idea of solving a problem isn't enough in complex environmental and social challenges. Understanding the more extensive system and adapting a value-driven approach is crucial in rethinking our world. Also, in the new model, it is

stressed that in dynamic systems, the work is never done. Continuing the journey and learning from mistakes is extremely important. The design process outcomes should be open-ended and focused on creating new knowledge for future work. (Design Council 2021, 44–52.)

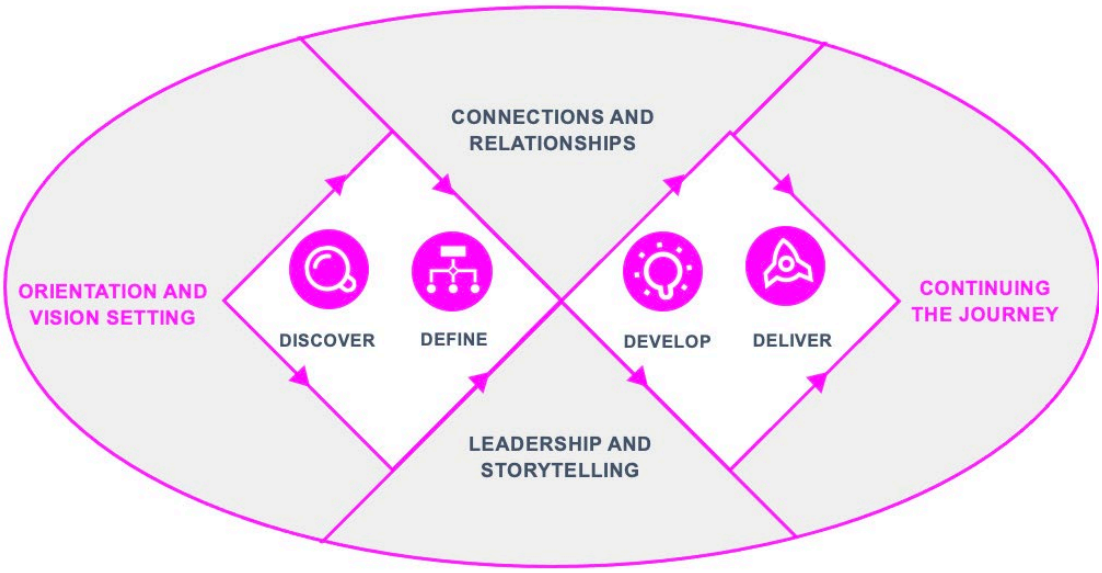

Figure 7: The Systemic Design Framework (Modified from source: Design Council 2021, 44–52).

Modern designers are becoming more strategic. Their work is not limited to designing functional products, software, or services – they also help organisations to rethink their internal innovation culture, provide strategic guidance and thus contribute to future decision-making. Designers must understand that managerial and organisational capabilities are essential for service design (Penin 2019, 135). Strategic & systemic design, customer-centric thinking and service design methodology and tools can provide a good starting point to support digital transformation and change management. Understanding the possibilities and capabilities needed to help customers with their digital transformation becomes crucial.

3.3 Enriching the design process with change management perspectives

Adapting an enhanced service design process grounded on strategic foresight ideology and agile principles forms a good toolbox for strategists, leaders, changemakers and operative managers (Pasanen 2022). When implementing strategies or selecting the best ways to drive change, it is imperative to understand the stakeholders and employees on emotional and cultural levels. The ideas of engaging people in innovation, having a curious mindset, gathering constant feedback and insight and testing before implementation are similar in many development and leadership models. Business Agility shares several similarities with service design methodology and futures thinking. There are also similarities between the four stages of the Appreciative Inquiry model and typical design processes and models such as the

Double Diamond (Table 2). Also, the phases are defined similarly in strategic foresight and futures thinking (Ojasalo & al. 2015, 202). Phases 1 and 2 aim to discover insight and construct a mental picture and first hypotheses of how the findings can be converted into strengths. Phases 3 and 4 in all presented models aim to identify and refine actions supporting the identified possibilities and how they can be converted to activities.

Table 2: Similarities of transformational models and practices (Design Council 2019; Organizing Engagement 2022; Ojasalo & al. 2015, 201; Lustig 2015, 19).

Model	**The Appreciative Inquiry (AI) change model**	**The Double Diamond model (Service Design)**	**Strategic foresight and futures thinking**	**Objectives and similarities**
Phases				
Phase 1	Discovery	Discover	Map & understand	Understanding the context, studying of previous as well as current experiences.
Phase 2	Dream	Define	Forecast & ideate	Constructing a mental picture and first hypotheses of how the findings can be converted into strengths.
Phase 3	Design	Develop	Model & evaluate	Identifying and refining actions supporting the new possibilities identified
Phase 4	Destiny	Deliver	Conceptualize & Influence	Plans for supporting and sustaining the planned actions
Paradigm				
Model's paradigm and distinguishing features	Focusing on strengths instead of problems. Emphasising interaction, subjective views, stories, and the language people use about change.	The Double Diamond process includes exploring first more widely or deeply (divergent) and then taking focused action (convergent).	Futures Research brings benefits and essential substance into the design work in terms of anticipating and offering optional futures for designers.	Methodological similarities: • Forward-looking • Emphasizing new opportunities • Participatory • Creative • Change that takes people and context into account

Digital transformation requires new skills and strategies from management and a desire to do things differently. Utilising service design in change management can help develop an organisational culture in a multidisciplinary and people-oriented manner and to identify what knowledge and skills are needed to support the desired change (Pasanen 2022). The summary of transformational model similarities highlights several methods and practices, and by comparing them, it is possible to find perspectives and complementary tools suitable for each situation at hand.

Understanding behavioural sciences and the biases affecting people's judgement can help plan and implement transformation or organisational change. Employees can be subtly nudged in the right direction by, for example, offering subtle hints about what the company considers essential. Service designer as a choice architect has a lot to do with how the different options are framed, including how the diverse options are communicated – and how people can be convinced to engage in different situations. The insights based on the knowledge base and literature review are applied in the development task.

4 The development project: System administrators' tools and operating models

The development project was commissioned by The Energy Company, which develops intelligent and efficient energy solutions to benefit its customers. Their operations are based on energy production, heat and electricity network services, and circular economy as they move toward carbon-neutral energy production. Energy is a bulk product for the masses. The opportunities for differentiation come from providing services, networks, and operating models. Based on its strategy, The Energy Company has chosen to start investing in digital transformation. (The Energy Company 2022.)

4.1 The target group and development challenge

70 % of the world's carbon emissions are linked to how infrastructure is planned, built, or operated (Evans 2022). The changes in the environment, economic climate, customer needs, and behaviour make room for innovations that can disrupt and eventually change the whole portfolio of providing services, making way for sustainable innovations and new markets. Digitalisation impacts the entire energy value chain, from energy generation to transport, distribution, supply, and consumption (European Commission, 2021). Over the coming decades, digital technologies will enable intelligent, efficient, reliable, and sustainable energy systems. Data-driven innovation requires cyber-secure ICT, sensor technology, artificial intelligence, and the internet of things to drive innovation of new ways to use energy and help find solutions to decarbonise energy systems. Consumers and their changing

needs play a vital role in the digital transformation of the energy sector, and digital solutions provide the tools for consumers to become active participants in the energy market. (European Commission 2021.)

The Energy Company needs to improve in terms of operating methods or digital productivity. There are dozens of digital systems related to energy production, distribution, and monitoring, but lacking systematic digitalisation development processes. Producing and innovating modern, people-centric services requires redesigning processes and new capabilities. Strategic goals must be met by motivating staff, building modern corporate culture, good leadership and creating an inspiring atmosphere. The Energy Company wants to be appreciated by its customers. The customer-centric approach, design thinking, and service design methods are crucial when planning the future, innovating new services, and leading the change towards strategic goals. Investment in engaging the employees and recruiting new talents could build an agile and adaptable work culture that is suitable for innovation and further development. (The Energy Company 2022.)

The Energy Company has more than 200 systems and software in use, and approximately fifty system administrators and main users are responsible for developing and maintaining them. Administrators' work is considered paramount and valuable as they are at the forefront of digital development and act as the contacts and the face of the systems for other employees. Together with the business leadership, their task is to develop systems and processes to better meet staff and customers' needs. Collaboration between system administrators and main users is considered important from the point of view of streamlining operations and enhancing operational efficiency. (The Energy Company 2022.)

The development project aims to find perspectives and new ideas on these themes and questions:

- System administrators’ tools and operating models:
  - How the system administrators’ work could be led more systematically?
  - How could the system administrator be nudged towards strategy-based action?
- Measuring the development:
  - How could the Energy Company’s digital system relevance and maturity be evaluated holistically?
- New ideas for speeding up digital transformation:
  - What results and new perspectives arise when we experiment with co-design methods?

The objective of the development project is to make system administrators' and main users' work visible and create added value for the entire wide range of users of The Energy Company's applications, i.e., for personnel - and thus for the business. Also, identifying new perspectives and operating models is a key target of the development project. The aim is to understand could the system administrators break the business silos and collaborate to improve sharing economy and networks and understand if their collaboration could lead to better stakeholder and customer processes. The development project is based on the hypothesis that strategic foresight and people-centric methods could support change management.

4.2 Implementation of the service design process at The Energy Company

The development project was considered an excellent place to test and gather experiences on whether participatory and transformational change management models could lead the company towards the wanted future. According to Heffernan (2017), the Double Diamond service design structure can be used to understand people and their problems and explore creative and innovative ways to solve and delight them. This was precisely the need for the development project, so utilising a modified Double Diamond process seemed appropriate.

Several service design methods and designerly tools were used to engage company employees in developing new ways to manage their daily work. These methods and tools are presented as part of the phases and practical work of the service design process.

Table 3: Applied tools and methods

Service design methods and tools applied in this development project	
Phase	Tools and methods
Focus	Setting the scene, Vision statement, Context analysis, Pilot group
Discover	Background material study, Contextual interviews, Affinity diagram
Define	Brainstorming and weekly meetings, Archetypes, KPI's, Visualisation, Design drivers
Develop	Nudge design, Prototyping, Brainstorming workshop
Deliver	Concept & roadmap, Further validating

The Double Diamond process is valuable for creating and communicating the project plan and phases. It is also a helpful tool for communicating the iterative nature of the design process. The first version of the project plan was illustrated using a modified Double Diamond process (Figure 8).

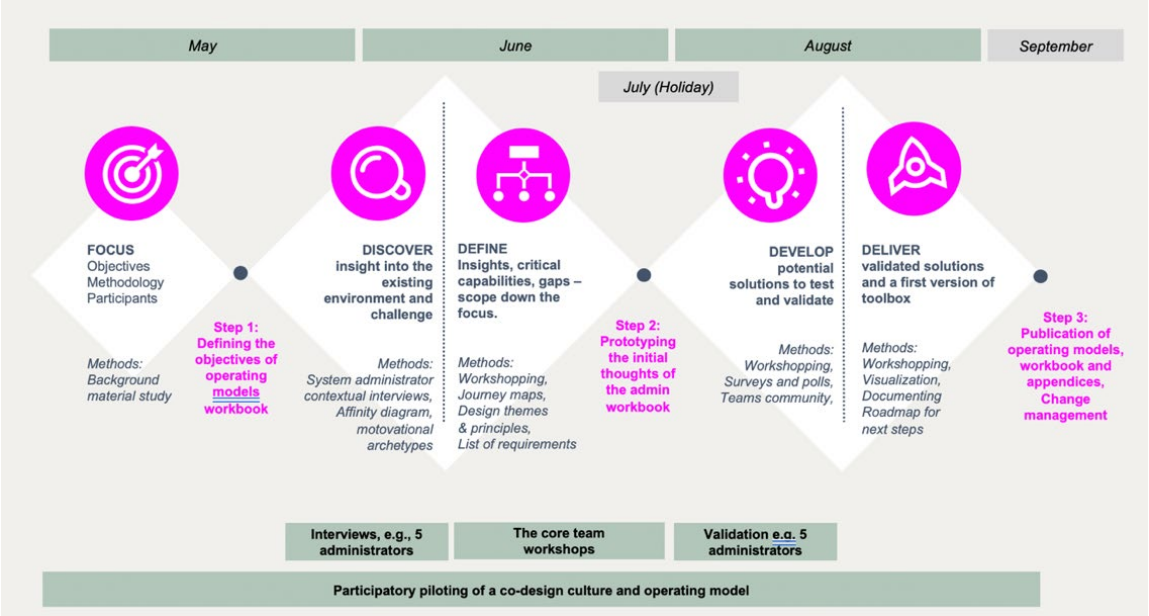

Figure 8: Initial project plan

The selected project model serves as a framework that helps structure the process and provides shareable tools for negotiating with project stakeholders (Penin 2019, 185). This development project's structure was based on the combination of the ideas and paradigms of the appreciative inquiry model and methodologies deriving from strategic foresight and service design because they provide tools for quickly gathering insight into the as-is situation and the business and team-related objectives (table 2).

The purpose of this chapter is to present how the challenge was approached using design methods. The project structure follows the Double Diamond process, and the phases, experiments and results are documented and discussed next.

4.2.1 Focus: The development project planning

The development project was launched with a Focus phase to ensure orientation. The focus phase is an early planning stage for evaluating and planning the project, choosing a methodology, understanding what is already known and what is not, defining the development project objectives and selecting the project participants. It sets the frames for the design principles, development direction, project management, goals, and metrics.

Planning something new takes time, and it is said that you should plan more time than you ever thought necessary to prepare the content, the delivery, and the essential follow-up (Kislik 2018). That is why planning and focusing before starting the development is valuable.

Table 4: Focus phase tools and methods

Service design methods and tools applied in the Focus phase	
Setting the scene	Defining roles, selecting participants and drafting the project plan.
Vision statement	Digital strategy vision statement was revised to pave the way for the process, frame the as-is situation and set the goals for the development work.
Context analysis	The STEEPLED tool was used already in the digital strategy process, and the insights were visualised as a context map, showing the different contexts. The visualisation served as background material for this work.
Pilot group	A pilot group of seven system administrators representing different functions and systems, from business-critical operational solutions to the Energy Company's HR systems, was formed. The pilot group was to participate in this development project as interviewees and workshop participants.

The project was commissioned by The Energy Company's IT and digitalisation director, whose role was to act as a contact person for the organisation and the system administrators and the leader and face of the process, building trust in the development theme and the employees. Together with the customer, the first steps were agreed upon.

- Mutual understanding of the roles and responsibilities
- Defined objectives and milestones for the project
- Key participants and ways of working for each stage
- An initial project plan and schedule

Action research is about solving organisational problems in collaboration between researchers and organisation members (Jyrkämä 2022). Thus, the role of a researcher is to act as a team member, gather insights, test new hypotheses, draw experiments and act as the digital transformation specialist. Due to the consultative nature of customer work, the client hired the consultant to serve as a facilitator, coach, and service design methodology expert, independently carrying out the process and using design tools, engaging the employees, and

nudging them towards the wanted future. The role was to ask questions, gather information, and facilitate co-creation and collaborative processes combining different perspectives. The main tasks as a facilitator were to:

- Choose the right collaborative tools and schedule joint meetings.
- To encourage positive dialogue and involve people.
- Guide participants in idea documentation, workshop notes and comments and final documentation

Research processes often progress from research problems to method choices and data collection. Still, sometimes the process can work the other way around, and the research idea can be based on previously produced material (Günther & Hasanen 2022). The Energy Company already had a strong vision statement guiding the future digitalisation development, and the project was based on the needs identified in the previous digital strategy work. The vision was refined and visualised in an easily understandable form.

A vision statement and current state context analysis provide a good start for any transformation need as they pave the way for the process, frame the as-is situation and set the goals for the development work. The goals must be reached from the current state, and the purpose of the design process is to identify different means and possibilities toward the goals. The STEEPLED tool was used already in the digital strategy process, and the insights were visualised as a context map, showing the different contexts – Political Climate, Economic Climate, Environmental Trends, Technology Trends, Cultural Trends, Social Climate and Uncertainties – where The Energy Company operates (Figure 9). This visualisation was used in starting the project and reminding the participants of the expected direction.

Figure 9: Visualized context map (The Energy Company, 2022)

At the end of this phase, a pilot group of seven system administrators representing different functions and systems, from business-critical operational solutions to the Energy Company's HR systems, was formed. The pilot group was to participate in the development project as interviewees and workshop participants. With them, the purpose was to build and test operating model hypotheses and solutions, which could be further iterated later with a broader group of participants.

4.2.2 Discover: Contextual interviews as a research method

The Discovery phase produces information that cannot exist without understanding people. People-centric research focuses on understanding relevant stakeholders' needs, wants and expectations. Service designers often use qualitative over quantitative methods, as talking and observing are effective ways to learn what people do and why (Wetter-Edman 2014, 99). In the Discovery-phase the pilot group of seven system administrators was interviewed.

Table 5: Discovery phase tools and methods

Service design methods and tools applied in the Discovery phase	
Background material study	The development project started by familiarizing with other ongoing development projects of The Energy Company. Key concepts and knowledge base of this thesis were put together.
Contextual interviews	Seven half-structured contextual interviews were conducted to get insight and understand the administrators' daily work with various systems, stakeholders, and ICT development schemes.
Affinity diagram	An affinity diagram was used for identifying critical issues and themes from the interview material for further planning.

First step of the project was to read the background materials and understand the other ongoing digitalisation projects' objectives. For example, information capital analysis was closely related to the work of system administrators, and its insights helped to understand the diverse system field. A background material study was carried out to strengthen the understanding of the key concepts related to digital transformation.

The objective was to understand the system administrations' daily tasks better and discover possibilities to transform their job to better align with the strategy. Understanding all the different feelings about the change and evolution of the system administrator's role in different phases of the process was essential to prevent change resistance. Understanding the

current situation and the obstacles preventing the system administrator’s collaboration, opportunities, and possibilities required empathy. Qualitative research through personal interviews is a promising approach for a researcher who wants to hear and understand the interviewees’ perspectives genuinely and empathetically (Penin 2019, 2014). Thus, the contextual interview was selected as the research method.

A contextual interview is a user research method providing insight into the context in which a design is used (Interaction Design Foundation 2022). It is beneficial when researching complex systems and work processes. The interviews can provide insight and fill the gaps from the designer’s viewpoint, expose flaws in design considerations, and optimise the overall design (Interaction Design Foundation 2022). It is typically half-structured and open-ended, often guided by research-related themes (Penin 2019, 2014). Commonly, the interviewee is treated as an expert on how to use a particular product. In this development project, the pilot group employees were treated as experts in developing specific systems and operating within the company culture.

Seven half-structured contextual interviews were conducted to get insight and understand the administrators' daily work with various systems, stakeholders, and ICT development schemes. Participants were acting as subject matter experts in their responsibility areas. The interviewees were asked about their work, feelings, fears, or hopes during their careers. It was essential to understand how the system administrators operate currently, how the components of the operating environment, organisation, partners, and customer expectations influence their operations, objectives and success, and how overall strategic goals affect the requirements placed on administrator operations and plans. It was essential to find out whether there already are some standard, company-wide good operating models for the main users and system development.

In the interviews, the key topics discussed were

- strategy and objectives for digital transformation
- what administrator-related tasks do the systems require
- how the system's risk management is organised
- how the system administrators’ and main users’ collaboration works
- what kind of support would they appreciate from the rest of the organisation

The interviews were conducted using Microsoft Teams and transcribed using the program's transliteration software. To protect privacy, the interviews were saved in The Energy Company's digital working environment in a folder to which only the project team had access.

In the interviews, there were many similar observations, wishes and needs, but also discrepancies related to the system administrators’ and main users’ work requirements

associated with the different systems. The outputs of the interviews were broken down using the affinity diagram, a visualisation method that helps unify substantial amounts of data by connecting relationships between concepts and ideas (Dam & Siam 2022). The technique was used to identify critical issues and themes from the interview material for further planning (Figure 11). An affinity diagram was created on a virtual Miro board with virtual post-it notes, used for clustering the insights into themes and initial development ideas. First, all interviews were examined, and critical insights were written on post-it notes. Then similar pieces of data were clustered and combined into bigger development themes to provide a better foundation for further ideation.

Figure 10: Affinity diagram

Key findings of the interviews indicated that the current processes are scattered. Based on the interviews and affinity diagram visualisation, critical problems were identified.

- Much time is wasted on trivial work that could be automated.
- The documentation of various systems and their purposes is relatively poor.
- System descriptions or user manuals are not prepared or updated systematically.
- It is difficult to find the contact information of the administrators of each system.
- Help is needed to understand, manage, and grant system user rights.
- Guidelines are needed, for example, for familiarising new employees, for understanding the overall picture in integration situations, and in general, for using systems.
- Quick instructions are needed to perform functions for which users have no routines.

- It is necessary to agree on what and at what level will be documented and where the documents will be placed.

After the analysis, the interview recordings and transliterations were deleted, and the company and respondents were kept anonymous. The choice was also made because the company's industry was irrelevant to the research questions and for discussing the issues related to managing change or digital transformation. Since the interviews consisted of open questions, a deductive micro-coding approach was used. The chosen methods, such as the affinity diagram, also partially faded the voice of the different respondents so that they cannot be recognised from this work.

4.2.3 Define: Development initiatives based on the interview analysis

This phase typically narrows the gathered insights and establishes the project's main challenge. The idea is to bring people together, synthesise insights, and reframe opportunities through different lenses, with a clarified purpose and challenge in the focal point (Design Council, 2021).

Table 6: Define phase tools and methods

Service design methods and tools applied in the Define phase	
Brainstorming and weekly meetings	Based on the interviews and brainstorming discussions, the need and purpose for creating standard tools and operating processes were clarified, and preliminary development initiatives were defined. In the weekly meetings, the progress of the work was discussed together with the client. In these discussions, ideas were sketched, and decisions were made.
Archetypes	The system administrator and main user archetypes were drafted based on the collected insight. Archetypes visualised the key characteristics and major differences of the main user roles.
KPI's	During the define-phase weekly discussions, three key performance indicators for monitoring digital maturity growth were identified: business unit digitalisation maturity, system development progress, and employee satisfaction.
Visualisation	A quick visualisation of The Energy Company's digital twin and future operating model for the change maturity measuring process and visualising data and value streams was created.
Design drivers	Based on the gathered insight, the basic principles for developing solutions were summarised as design drivers: all future operational models and tools must be engaging, accessible and valuable for the system administrators

Based on the interviews, the need and purpose for creating standard tools and operating processes were clarified in weekly meetings and brainstorming discussions. Preliminary development hypotheses were defined:

- Standard tools and operating models could strengthen strategic development direction as they help to measure and clarify system development goals.
- Quick guides support the day-to-day life of the main users and make it easier to create an overall picture of system development and communicate it to businesses, management, and system users.
- Extensively documented system descriptions and simple user instructions help increase transparency and work in exceptional situations, such as during holidays.
- There is a need to set clear metrics for system development and create ways to monitor digital transformation progress.

Specific characteristics and needs of different administrator roles were identified in the interviews. Patti Sanchez suggests some valuable strategies for utilising empathy in organisational change. One is creating personas of specific audiences and getting a sample perspective on distinct mindsets (Sanchez 2018). Based on the collected insight, the central system administrator and main user archetypes were drafted. Archetypes are behavioural or attitudinal representations of audience clusters, visualising the key characteristics and significant differences across a few types of users. They capture behaviours, attitudes, motivations, pain points, and goals archetypes. (Laubheimer 2022.) A task-based division was utilised in visualising the archetypes (Figure 12).

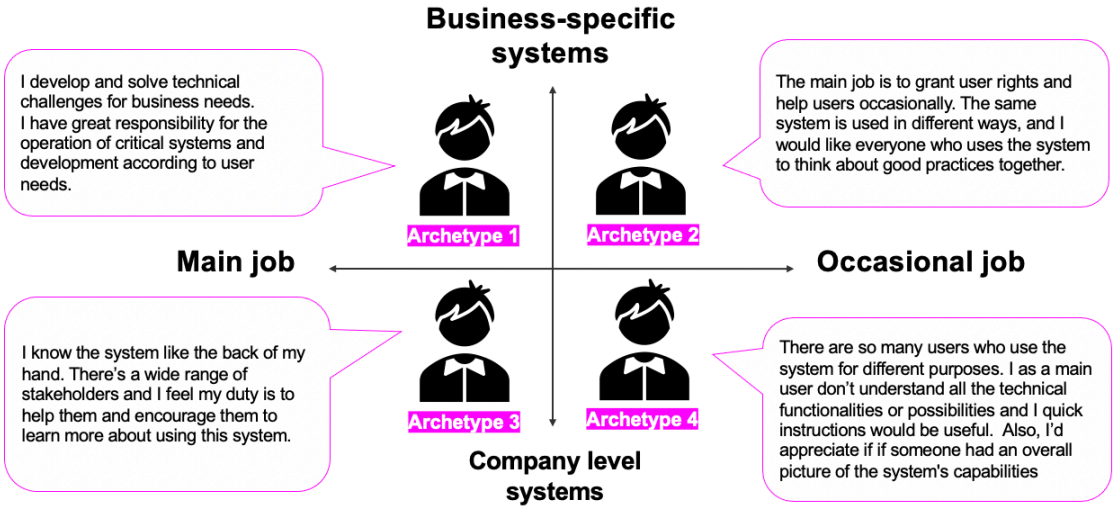

Figure 11: Archetype framework (Modified from the source: The Energy Company, 2022)

The task is connected firmly to the system's business processes and user base on the vertical axis. The horizontal axis describes how time-consuming the administrator / main user work is compared to the person's other job tasks. The framework's purpose was to illustrate the differences between typical system administrator roles. They were created to underline the main users' and system administrators' current state, needs and wishes for operating models. They help focus on relevant features and ideas in further planning.

During the define-phase weekly meetings and discussions, three key performance indicators for monitoring digital maturity growth were identified: business unit digitalisation maturity, system development progress, and employee satisfaction (Table 3). It was decided that the development phase should focus on further ideation of measuring digital maturity in an engaging, accessible, and helpful way.

Table 7: Preliminary key performance indicators for monitoring digital maturity

	Business	System developmet	Employee experience
Why measure?	To see the change in digital transformation maturity and meet strategic goals. Change management.	The development of individual systems requires transparency and predictability.	Promoting a common operating culture and building participatory, easy and useful tools.
What is being measured?	Assessment of readiness for change and progress, e.g. System development, Data transparency, Organizational learning, development of roles and job description	Have the necessary changes been made, development queue, documentation, prioritization, competence and resources	Do we act according to common drivers? How does the transformation feel. Are things becoming easier, is this useful?
How to measure?	Businesses' maturity assessment model for evaluating readiness for change and progress. The data will be connected to digital twin in the future.	Survey for main users, which evaluating common themes from the perspective of each system. The data will be connected to digital twin in the future.	Survey for the main users, evaluating common themes from the point of view of their everyday life. The data will be connected to digital twin in the future.

The initial idea was that it might be beneficial to connect the digital development measuring to The Energy Company's digital twin in the future. A Digital twin is a real-time digital counterpart of a physical object or process used for understanding and predicting the physical counterpart's performance and monitoring the progress of digitalisation and the current situation with the help of analytics. (Tuttle 2022.) Digital twins can help companies simulate scenarios, innovations, and procedures and test them virtually instead of physically experimenting (Olavsrud 2021). Operations, maintenance services, and value-adding digital services wrapped around twins provide visualisation, collaboration, cybersecurity, data analytics, and AI-enabled preventative maintenance possibilities (Evans, 2022). In the future, The Energy Company could use a digital twin for monitoring the progress of digitalisation both on the business unit level and system development level, combining the employee experience and the state of the supplier and stakeholder cooperation.

Fast visualisation makes concepts understandable (Design Council 2019). Visual sketching of service elements and processes helps the design team communicate better together and assists in asking for feedback on ideas. It is a clever idea to start sketching ideas quickly without much deliberation (Goodwin 2009, 443.) A quick visualisation of The Energy Company's digital twin and future operating model for the change maturity measuring process and visualising data and value streams was created (Figure 13). The different views and scenarios were envisioned to help communicate the initial ideas. The purpose of the draft was to serve as a primer on how to speak to system administrators about their essential contribution and role as part of the bigger picture.

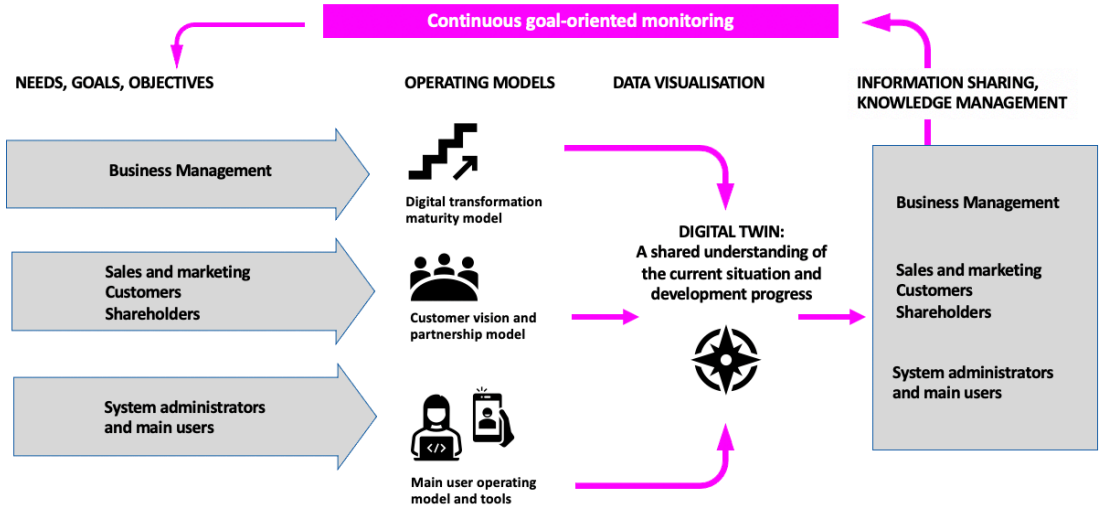

Figure 12: The operating model for the change maturity measuring process (Modified from the source: The Energy Company, 2022)

The purpose of the visualisation was to underline that in the future, the operating model for measuring system development will be an essential task not only for business management but also for the system administrators and main system users. For continuous, goal-oriented monitoring, comprehensive and versatile data is needed. The future digital twin could provide an excellent opportunity to visualise digital maturity direction.

The main output of the Define phase was the initial ideas of new operating models and tools for promoting digital change to be tested in the development phase. Different roles need different tools, but the basic principles for developing standard operating models should be the same for everyone. The basic principles for developing solutions were summarised as design drivers: all future operational models and tools must be engaging, accessible and valuable for the system administrators. Design drivers describe what we want the services or products to be or do. They tell what the solution should feel like and provide a vision against which the design ideas can be quickly judged. (Driver 2018.)

4.2.4 Develop: Nudging, testing, iterating and validating ideas

On the strength of the interview-based hypotheses, preliminary ideas and visualisation of the change index operating model, an assumption was that the system administrators could provide valuable insights into their respective systems and measuring the system development could provide valuable data for measuring the progress of digital transformation. This and other ideas were tested and validated with the pilot group using collaborative methods in the development phase.

Table 8: Develop phase tools and methods

Service design methods and tools applied in the Develop phase	
Nudge design	The choice architecture for nudging was designed.
Prototyping	The design was developed into a functionable prototype to test ideas by simulating a real interaction.
Brainstorming workshop	The pilot group of seven system administrators jointly evaluated the usefulness of the ideas, iterated them and gave feedback in a facilitated workshop. The prototype was tested and compared to the design drivers by the pilot group.

The idea was to test collecting data and simultaneously nudge the pilot group toward strategy-based thinking. It was considered essential to testing a simple way to nudge the employees to realise what the strategy-based action might mean in their daily work and to see what aspects the company management values and help them notice what is expected.

A simple nudge and choice architecture was designed to test the idea. The nudge design and choice architecture process are closely related to any design or systems development process. It can be split into defining goals, understanding the users, designing the nudge, and testing the nudge. There is nothing revolutionary in the process itself. However, designing nudges raises specific questions designers need to address, such as what the ethical implications of nudging are, what heuristics might influence users' choices, or what types of nudges could counter or increase the influence of biases. (Schneider & al. 2018.)

Based on the choice architecture, a digital survey prototype was created. A survey is a classic example of choice architecture. The questionnaire creator can decide what is asked and in what wording and options are offered to the respondents. The choice architecture creates the overall structure of the survey and organises the content in a user-oriented way: it allows the user to find content and perform tasks intuitively. It defines the visual map, the needs of the functional buttons, the page elements and the navigation. (Jackson & Ciolek 2017, 8, 53.) A

design approach is essential for practically realising service logic (Wetter-Edman 2014, 20). When sketching ideas, designers should focus on how the user makes decisions rather than, for example, the final screenshot. In the background, it is good to consider the principles and models of design. Experiential features, or attributes, describe how the views of a service provider and a user's goals meet. They tell how the message or personality of the service should be experienced. The most helpful experience attributes are adjectives that describe goals and can be presented visually. They serve as tools for discussion and decision-making. (Goodwin 2009, 331-333, 337.)

The prototype content was loosely based on Knowit Insight's Capability Assessment model, which was simplified and translated into the language of system experts (Figure 14). The survey prototype was created using a digital tool, Google forms, chosen because it is a free online tool; it is quick to deploy, edit and share. The key elements in designing user experiences are alignment, balance, contrast, hierarchy, closeness, repetition, similarity, space, and similarity (Jackson & al. 2017, 10-11). Critical components in user interface design include fonts, images, colours, graphic elements, icons, navigation, and brand elements (Jackson & Ciolek 2017, 50). The experience attributes and design drivers for developing standard operating methods and drafting the prototype were already defined based on the interviews – engaging, accessible and valuable. It was considered necessary that the prototype was on brand and looked familiar and engaging.

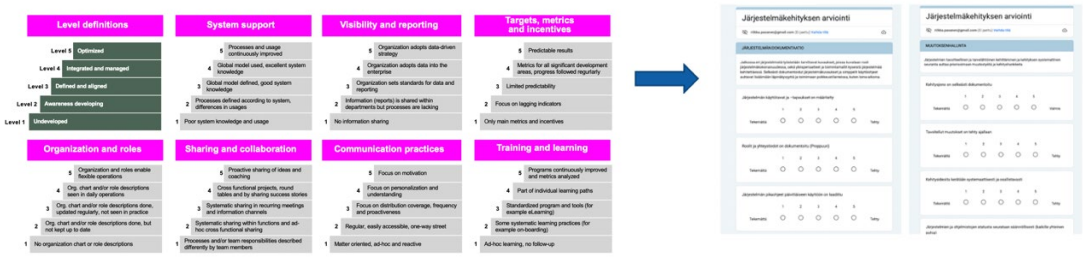

Figure 13: From Capability Assessment model to initial prototype draft (Modified from source: Knowit 2022)

The survey prototype addressed the critical areas of system development and company digitalisation and had five themes, each presenting different perspectives on digital development and transformation.

1. System documentation
2. Human-centric development
3. Organisation and resources
4. Collaboration
5. Value-based operating models

Choice architecture can be used to nudge the respondents towards choosing a particular option. The choice architect could present the desired reward option as the default option or add unattractive choices as decoys. The selected option could be offered first or last to leverage primacy and recency effects or arrange the options to present the preferred reward as the middle option (Schneider et al. 2018). In this prototype, the desired option was indicated in the survey texts written to imply the desired state in the future. For example, the system documentation theme description nudged the respondents already towards the future target state: “In the future, the system descriptions will be created, documented, and updated systematically. Also, the system's general principles, user guides and operating models are documented as they help increase transparency in exceptional situations, such as during holidays.” The following survey questions were also formed to nudge the respondents to consider the essential future tasks (Figure 15).

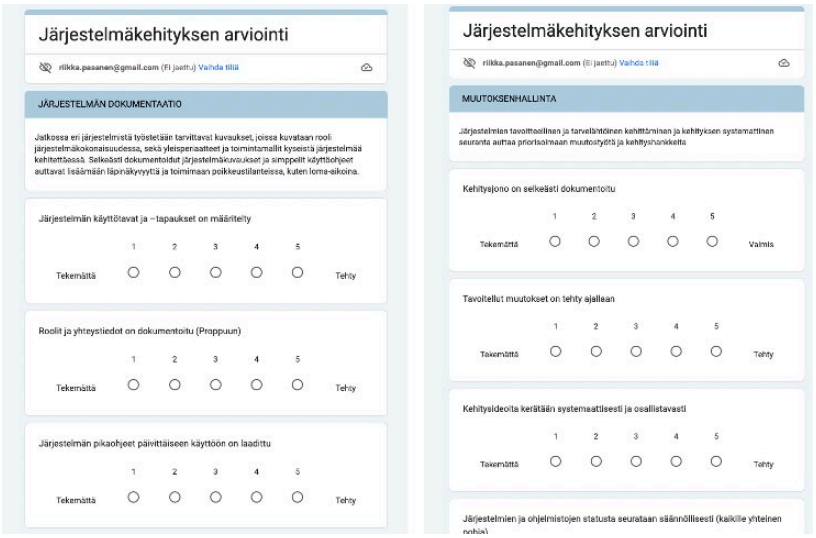

Figure 14: The survey prototype

The survey prototype was presented to the pilot group in a workshop. The seven pilot group members got to test the prototype to validate the idea, functionality and ease of use. In the workshop, insights from the interviews were discussed, and ideas were further developed. The workshop's purpose was to bring people together and practice engaging with small brainstorming exercises by giving all participants a fair chance to participate.

Workshop goals and objectives were:

- Collaborate with system administrators to ideate solutions for critical gaps and increase the sense of ownership in developing the team’s ways of working
- To engage people to drive the change
- Create shared understanding and generate ideas and next steps for operating model development.

- Structure the new operating model
- Understand better how the information could be packaged and communicated to a broader group of system administrators

After the introduction, the topics were promoted with discussion and rotating speeches. Although the workshop did not use a wide variety of design methods, suggestions, additions, and innovative ideas, feedback on the presented ideas was gathered.

Key insights of the workshop were:

- Participants expect tools and operating models to bring clarity to chaos, and unified practices and procedures are highly welcomed. Clarity is needed regarding reporting practices and possibilities.
- However, it is essential to understand the different system administrator roles and provide optional tools rather than force them to use them. Diverse levels of technical expertise require various solutions.
- If future tasks and processes are implemented, more time will have to be organised for the main users. Automation and robotics could be used to perform repetitive and trivial tasks and free up the time of the main users.
- A broader understanding of what current systems can do and how they could be developed to match business processes better is needed.
- Simple language is valued. Most of the main users are not technology experts, so many technical terms are unfamiliar.

4.2.5 Deliver: The concept for tools and operating models

Deliver phase summaries of all the insights, mockups and ideas gathered during the process and turns them into a comprehensive documentation and plan for further development and testing. Also, the delivery phase is typically iterative in the service design process and includes further testing (Design Council 2015).

Table 9: Deliver phase tools and methods

Service design methods and tools applied in the Deliver phase	
Concept & roadmap	The insights, iterated tools, and operating models innovated in the development project were compiled into a concept document describing the goals the digital vision, digitalisation objectives and the needs and ideas emerged during the development project.

Further validating	Managing risks before launching the new tools and operating models included on a large scale the new operating model concept and new ideas were validated with 50 system administrators.

When creating new operating models, it is crucial to communicate them effectively. A key in communication is a concept, a tool for generating mutual understanding. A concept answers the questions of What, Whom and Why. Stanford Legal Design Lab (2019) defines the concept as a "design space framework" for making and documenting intentional design choices. It includes such best practices as defining the stakeholder context, intended outcomes & metrics, development direction, evaluation methods and instruments. It is a manuscript which clarifies the problem and makes the ideas behind the solutions easily understandable for wider audiences.

The insights, iterated tools, and operating models innovated in the development project were compiled into a concept document summarising the digital strategy's goals and the needs and ideas identified during the process. During the design project, numerous topics for further development were identified and put on the roadmap (figure 16).

	Vastuu	Tehtävät	Roadmap 2022 – 2023					
			2022		2023			
			Q3	Q4	Q1	Q2	Q3	Q4
Järjestelmäkuvaukset	Pääkäyttäjät	Kuvataan järjestelmän rooli kokonaisuudessa, yleisperiaatteet ja toimintamallit kyseistä järjestelmää kehitettäessä.						
Simppelit käyttöohjeet	Pääkäyttäjät	Tärkeimmistä käyttötapauksista laaditaan selkeät pikaohjeet. Pääkäyttäjien yhteystiedot selkeästi esiin.						
Pääkäyttäjäpäivät	Digijohtaja	2 x vuodessa yhteinen kokoontuminen. Tavoitteena jakaa tietoa siitä, kuinka digitalisaatio etenee.						
Vinkit ja parhaat käytännöt	Pääkäyttäjät	Koostetaan yhteiseen työkalupakkiin yleisiä selkeitä työkaluja, jotka voivat auttaa jossain haasteessa. Kirjoitetaan lyhyt kuvaus työkalun käytöstä.						
Digikehityksen operatiivinen ohjausmalli	Pääkäyttäjä ICT Projektihenkilöt Liiketoiminnan edustaja	Liiketoiminnan digitiimin tehtävät: Vastaa digitaalisten palvelujen ja järjestelmien kehittämisen ohella kumppanuuksien ja toimittajayhteistyön kehittämisestä						
Järjestelmäkehityksen ja digitalisaation etenemisen arviointi	Digijohtaja Pääkäyttäjät	Digitalisaatioon liittyvä etenemisen arviointi – työkalu ja dokumentointi digitaaliseen kaksoseen antaa analytiikan avulla ymmärryksen tilannekuvasta ja nostaa esiin tärkeitä asioita.						
Resursointi ja viestintä	Digijohtaja							

Figure 15: Roadmap for further development

Before launching the new operating models and tools, opening the ideas to a broader audience was imperative. The idea is to scale the insights gathered from a small pilot group and try them out with a bigger group before deployment. If something doesn't work, it is possible to solve the emerging issues and concerns and update the plan before it affects many users. (Design Council 2015.)

Thus, all The Energy Company's fifty system administrators were invited to a joint opportunity to get to know each other and to truly live the communal ways of working that were developed at work. The event was called Administrator Day. It was a three-hour event in which the strategy, vision, near-future projects, and new, proposed working methods were extensively reviewed. At this event, all system administrators got to develop the operational model concept further and give feedback on the ideas presented. The event included one hour of workshopping when the participants evaluated the results of the development work by discussing it in small groups. Feedback and development proposals were given in writing, and opinions were collected by voting (Figure 17).

After the event, the feedback was read through and analysed by tasks and questions. No significant development proposals were received for thoughts and ideas, and no idea was utterly rejected. Minor development proposals were identified, but as a rule, the feedback was encouraging. It ensured a need and order for standard operating models and system administrator tools developed in this project.

Figure 16: Gathering feedback from a wider audience

After the Administrator Day workshop, the concept was revised based on the input. The ideas and results of implementing the service design process are presented in more detail in the next chapter, Development project results.

5 Development project results and suggestions

The development project objective was to improve the future work of The Energy Company's system administrators and modify their job descriptions toward more productive, efficient, and strategic activities to promote digital transformation. During the service design process, system administrators' needs were identified, solutions to meet the needs were devised, and the requirements were validated and further developed using various collaborative design methods and tools.

The development project aimed to find perspectives and new ideas on these key themes and questions:

- System administrators' tools and operating models:
  - How the system administrators' work could be led more systematically?
  - How could the system administrator be nudged towards strategy-based action?
- Measuring the development:
  - How could the Energy Company's digital system relevance and maturity be evaluated holistically?
- New ideas for speeding up digital transformation:
  - What results and new perspectives arise when we experiment with co-design methods?

Next, the development project results are presented according to the above questions.

5.1 System administrators' tools and operating models

Five operating models and processes were identified, prototyped, validated, and iterated during the service design process. It was also examined whether the system administrators could be nudged towards strategy-based action with the help of a questionnaire. In the survey prototype, the principles of nudging were used to awaken the participants to notice what aspects the management considers essential in their work. In the end, five operating models aiming to help manage the system administrators' work more systematically were selected and launched.

a) The initial concept for administrator days

- Two annual gatherings for the system administrators and main users shall be arranged to share information about digital transformation progress.

- There the administrators get to know each other, participate in workshops, and present their work and good system development practices to colleagues.
- Event themes and content topics related to information security, enhancing user experience, supplier cooperation, innovation processes, energy sector future trends etc., serve as the basis for workshops and information streams.
- Participants' different interests and levels of technical skills are considered when planning the administrator day content.

b) Digital tools and tips to help daily operations

- There are many main users – it is an efficient use of time to take advantage of digital tools and best practices. Agile and easy-to-use online tools can facilitate collaboration with different organisations and suppliers.
- A process for documenting tools and tips was agreed upon.

c) System descriptions

- The purpose of the description manuals is to ease the everyday life and workload of both main and occasional users.
- Basic system descriptions describing the role and use cases should be written for each system and the general principles and operating models are documented and updated when developing the system.
- A schedule and instructions for documenting descriptions was launched.

d) Guides

- The user manuals ease the everyday life and workload of both main and occasional users. Quick instructions should be prepared for the most critical use cases to spare time.
- A common place for the guidelines and a process for updating the policies was decided.

e) An operational leadership model for further digital development

- Defined leadership responsibilities were defined, e.g., for:
    - Developing partnerships and supplier cooperation
    - Drafting guidelines and documenting system descriptions
    - Evaluating future growth based on agreed metrics
    - Preparing presentations and workshops for administrator days
    - Communicating the team's work companywide

5.2 Models for measuring digital development

The second development theme was understanding how The Energy Company's digital system relevance and maturity could be evaluated holistically. A preliminary concept for measuring digital transformation maturity was drawn based on the tested survey prototype. It was decided to combine the needs identified in this development work with the soon-to-be-started digital twin project.

a) Further development of the digital transformation maturity models

The system development assessment survey prototype was considered an inclusive, accessible, and valuable method. Still, before the content or structure of the prototype is developed further, it makes more sense to start developing a comprehensive process for evaluating the digital transformation maturity on a business level. Measuring and managing digitalisation development requires building an objective-driven project portfolio for each business and support function. The Energy Company's business and support functions should create their own goal-oriented digital transformation maturity models - which define function-specific goals and practical actions & projects for improving digitalisation maturity. Digital transformation maturity should be evaluated considering the strategy-based goals set by the business units, the employee experience, and the smoothness of supplier and stakeholder cooperation.

b) Digital twin development

In the future, the digital transformation maturity evaluation tool and documentation shall be part of the digital twin. The Energy Company generates data, e.g., about product distribution and operational effectiveness. With a digital twin, it is possible to visualise the data and pave the way for real-time decision-making and better leadership to add value, resilience, and efficiency to operating and business models (Tuttle 2022). The energy sector's digital twins are often virtual, real-time doubles of the physical grid assets. The digital twin captures relevant data and analyses it to provide insights for better decision-making. Performance-based digital twins can be used for planning, specifications, recognising new business opportunities, measuring operational data, improving production efficiency, and monitoring and reducing carbon emissions to reach environmental targets. (Bischofberger 2022 & Tuttle 2022.)

The Energy Company aims to create value for the industry by collecting and processing data to understand which solutions work and which do not. Data tools and real-time monitoring make it easier to detect errors as soon as they occur

and prevent them from being reproduced. With digital tools, on-site information could be analysed and visualised for everyone's benefit. In the future, the digital twin could help monitor the progress of The Energy Company's digital transformation, but no twin can replace managing people and processes. For the twin to be able to model the right things in the future, it is crucial to plan the change index measuring and objectives first. This requires understanding multiple stories and viewpoints and the business needs, technology requirements, possibilities, and capabilities.

Also, including the customers' voice in the digital twin is essential, especially when The Energy Company wants to shift its operations and services to customer-centric. Genuinely customer-centric organisations utilise social listening and organisational processes to be as close to the customer as possible (Li 2018). The company needs to understand the weak signals and react to them to develop the services their employees, customers and stakeholders need. The Energy Company could benefit from a more systematic process of engaging with customers on social media and listening to online conversations.

c) An evaluation model for digital development

In the survey prototype, the principles of nudging were used to awaken the participants to notice what aspects the management considers essential in their work. The survey was considered an easy way to remind of the tasks that the management finds necessary. It was also considered an exemplary method for collecting information on system development progress.

- A bi-monthly survey for the main users and system administrators could be established to map the development progress.
- The evaluation questionnaire can help to notice which jointly agreed things had been done and which are in progress.

5.3 New ideas for speeding up digital transformation

Engaging the system administrators in developing the operational models and the digital transformation maturity measuring is just one step in the comprehensive digital transformation process. Several development streams were defined and decided during the project, and innovative ideas emerged. Here is a list of projects already agreed upon during the project, as well as new opportunities for promoting digital maturity development, transformational leadership, and human-centric business development in the future.

d) Robotics and automation

Checklists and reminders can be terrific nudges (Thaler & Sunstein 2021, 93). The Energy company could benefit significantly from setting automated reminders, e.g., reminders to check that the jointly agreed instructions are up to date. Checklists also serve as a constant reminder of what management wants the employees to accomplish, and follow-up questions and surveys keep the topics on the air. Further investigation of the possibilities of utilising automation and robotics was of primary interest in the workshop discussions. New employment relationships start, and old ones end every week, which means continuously running routine HR processes for personnel management and supervisors. Software robots could manage employee data between systems according to predefined functions. Robots could automatically handle the updates related to the user account and rights to other systems based on the employee's information updated in the HR systems. Robots could also ensure that employees have completed mandatory online processes related to information security and trivial tasks such as updating guidelines and system descriptions. Artificial intelligence solutions such as process mining, chatbots, and machine learning applications could lead to proactivity, improved quality, reduced costs, and lower risks.

e) Business agile competencies

The Business Agility Framework and The Agile Culture Matrix present elements to be considered when developing a future-proof and agile organisation and can also be applied to creating a digital transformation assessment model (Agile Business Consortium 2022c). If The Energy Company wants to actively develop and test innovations, allowing ideas to fail fast, further agile coaching is needed on both the team and enterprise levels.

For The Energy Company, agility could mean moving systematically towards continuous learning and improvement, purpose-driven culture, enhancing collaboration and innovation and faster and leaner processes and tools that help improve software faster than the traditional software development and infrastructure management processes (Figure 14).

	Survival	Stabilising	Secure	Thriving	Transformed
Purpose and results	Clear and compelling organisational purpose, strategic vision, transformation roadmap.				
Agile leadership	Leaders act in a self-less and supportive way. Management methods, sponsorship, and resources are clear.				
Well-being and Fulfilment	People have a deep sense of fulfilment and achievement at work.				
Collaboration and Autonomy	People have an appropriate level of autonomy to carry out their work. Roles, expertise and capabilities are clear.				
Trust and Transparency	There's complete honesty and transparency in day-to-day working. Customer centricity and openness are at the core of the company culture.				
Adaptability to change	New ideas are quickly adapted if appropriate or discontinued if not.				
Innovation and Learning	A growth mindset, strong commitment to reflection and learning.				
Governance	Communication & collaboration, KPI's, and alignment are clear.				

Figure 17: Agile culture development matrix (Modified from sources: Agile Business Consortium 2022c, Steimel 2015).

f) Focusing on reporting and self-service business intelligence systems

During the development process, the need for better reporting emerged. In the future, the digital twin will help monitor system development and provide information on digital transformation maturity. Still, it does not eliminate the need for various recurring or ad hoc reports. Self-service business intelligence (BI) is “an approach to data analytics that enables business users to access and explore data sets even if they don't have a background in BI or related functions like data mining and statistical analysis” (Stedman, Pratt & Biscobing 2021). Systematically governed self-service business intelligence tools might boost day-to-day efficiency for several employees.

During the project, it was understood that all main users and employees were not tech-savvy — some needed help, e.g., understanding what kind of reports they could make. Providing good and intuitive self-service BI tools and comprehensive training could reduce pressure on development and business teams when the users can easily find answers to relevant questions to their work. The self-service BI tools allow users to filter, sort, analyse and visualise data, run queries, and create their own data visualisations, dashboards, and reports.

To create a comprehensive self-service BI vision and operating model, it is crucial to understand emerging user needs and connect them to business processes. More informed decision-making and self-service tools can result in positive business

outcomes, such as increased efficiency and use of BI and IT resources, faster data analysis and decision-making, better customer satisfaction, higher revenue and profits, and data-driven culture. (Stedman & al. 2021.)

g) Communication and nudging

People anchor their decisions to the information offered and draw different conclusions based on the same information, depending on how the information is framed. That is why it is crucial to provide employees with excellent, attractive, simplified messages and repeat them enough for people to notice them (Paulin 2019). Communication should be valued highly and not just a mere support function related to external marketing. Communication can have a significant impact on the way people work. The proper framing and words reveal the company's attitudes, values, and what should be considered most important. Sunstein (2014) lists some of the most essential nudges, such as default rules, simplification, increases in ease and convenience, reminders, and informing people of the consequences of their own past choices. A strong emphasis on workplace communication and subtle nudging towards wanted actions could promote cooperation and productivity, create trust, and increase employee satisfaction.

The nudge management approach used by many successful companies, such as Google, aims to control the choice architecture of the employees through subtle nudging and not to prevent but to improve the knowledge workers' perceived freedom (Ebert & Freibichler 2017). The Energy Company could benefit from purposeful nudge management. Sunstein (2014) suggests creating a separate nudge unit to research, design, and test nudges. Digital nudging works by modifying the content and choices and how it is visualised in the user interface (Johnson & al. 2012). The Energy Company has a comprehensive set of digital tools and infrastructure. Information systems offer unique opportunities, such as real-time tracking and analysis of user behaviour and message personalisation (Schneider & al. 2018). In the digital environment, reminders and notifications are easy to implement, e.g., in the hour reporting system, intranet, email and HR solutions. With a bit of help and knowledge, they could alter the messaging and layouts of their digital interfaces, and existing digital systems provide many opportunities for experimenting with nudges and choice architecture.

This could mean, for example, illustrating cultural values with examples, providing specified guidelines, showing data on the intranet's front page on how most employees are already adapting new operational models, or designing

incentive schemes based on strategy-supporting behaviour. Nudging people to act and make decisions in line with the strategy can be a powerful tool for implementing strategy. For The Energy Company, this could mean, e.g., subtly encouraging people to read about strategic topics, performing activities in line with the strategy, and following the agreed operating procedures.

h) Promoting foresight and ecosystem thinking, and collaboration

The Energy Company is developing their operations to make them more future-proof. Creating a strategic foresight culture helps the employees be better prepared for the future and improves their capability to adapt to changes (Lustig 2015, 23). Changing the company culture is complex, but understanding behavioural economics helps interact with employees, support them in decision-making, and promote change.

Hines and Gold (2012) discuss the diverse ways of developing foresight knowledge in organisations and the difficulties they face when fitting the findings into existing decision-making processes. They suggest that an organisational futurist role could help to bridge that gap by acting as a broker between internal clients and consulting futurists. Organisational futurists could work as internal or external consultants raising awareness of foresight capabilities and carrying out the actual foresight work. In the interviews, it came out that in some business units of The Energy Company, there is already good cooperation between different energy companies, and information, ideas and thoughts are regularly exchanged. This information sharing and collaboration could be expanded into a broader knowledge-sharing ecosystem to introduce and institutionalise futures thinking-related topics to energy sector innovators.

6 Conclusions and reflection

The objective of this thesis was to bring together knowledge and different perspectives that can support digital transformation in one organisation and then implement the views in practice, utilising the service design process.

6.1 Conclusions from the development project results

The purpose was to develop working life in a future-oriented way and test how a company could utilise service design methodology for strategy implementation, learn about existing good practices, identify scalable operating models, and create new tools for leading the change. In this thesis, the theoretical framework of service design and key concepts of

strategy, strategic foresight, change models and nudging were described and connected in leading digital transformation and implemented in practice. New perspectives and ideas were sought in the development project utilising service design methodology and process.

The first key development theme was to innovate new tools and operating models to support system administrators' work and promote The Energy Company's digital transformation. The project resulted in five new operating models, e.g., an operational leadership model, which takes a stand on how development work is managed, documented, instructed and communicated in the future. The new tools and operating models also aimed to nudge the system administrators towards strategy-based action. A survey prototype presenting a choice architecture for nudging system administrators to pay attention to the critical strategic themes was created. The chosen method for nudging towards desired behaviour was considered a promising approach by the pilot group. It serves as a compelling reminder of strategic goals, underlining an effortless way the users expect.

The second key development theme was measuring the development and finding ways to evaluate The Energy Company’s digital system relevance and maturity. Preliminary key performance indicators for monitoring digital maturity and operating model for the change maturity measuring process were drafted based on the insights, discussions, validation and iteration during the service design process. It was concluded that it is essential to continue the development work with the business units to set the goals for the digital transformation and proceed with the digital twin development.

The third development theme aimed to find new ideas and perspectives to speed up The Energy Company’s digital transformation. Many theoretical background themes were identified in the development work, bringing depth to the project. Numerous practical measures and objectives were placed, and innovative ideas, such as using robotics, emerged.

The change process included relevant people, and the foundation of transformation was constructed together. New ideas were based on the gathered insights. The improvements made to existing processes might seem small, but based on the pilot group feedback, they are meaningful and constructive. Even minor improvements construct meaningfulness and the feeling of being an essential part of the community, even though the employees might work in separate business units. Based on the feedback, the project's most important contribution was working together, engaging people, and raising employees as the architect of their future work. A similar design process can be adapted for solving various development challenges in the future.

Judging from the feedback and results of the interviews, workshop, the presented tools and operation models, and the insights and ideas delivered, the development project was well received and paved the way for further development. The participatory approach received

appreciative feedback, and the participants felt they were listened to. Since the development project was commissioned, it had a schedule, budget, and goals. Regarding these, it can be stated that the project was successful. All operating models identified in this project will be implemented, as they were found to improve the daily work of the employees.

Utilising designerly methods in engaging employees and leading digital transformation of a traditional, engineer-oriented industry proved to be fruitful. The company found it can benefit significantly from implementing the ideas and operational models as they promote operational efficiency, transparency and meaningful work aligned with the company strategy.

6.2 Reliability and validity

Qualitative research aims to understand the experience in detail, so it is not important to know how many people might have certain needs or ideas. The number of people needed for an interview study is often relatively small. There are enough people involved when the interviews no longer reveal new things, and it is noticed that the same themes start to repeat themselves, and no new insights are provided. This is called saturation. (Rosala 2021.)

In this study, the pilot group consisted of seven system administrators interviewed in the discovery phase. The selected interviewees were responsible for developing the systems in numerous ways. Their activities combined administrative activities, operational ability and expertise, technical expertise, subcontractor relations, and coaching and teaching peers in implementation and system usage. In terms of the reliability of this work, it was essential to get a comprehensive and accurate picture of the daily work of system administrators. The results of the interviews are subject to limitations arising from the small sample size. However, the saturation point was reached early during the interview round as the participants had similar needs and very like-minded ideas about valuable tools and operating models regardless of their roles.

Since the interviews were just the first step of a more extensive transformation continuum and iterative collaboration, small sample size does not threaten reliability or validity. The results and ideas were validated and iterated with 50 system administrators to ensure that the operating models and tools address the problem they are built to solve. The documentation and communication of the project and involving a broader audience give better chances of success for implementation.

When facing complex systemic changes, taking multiple angles and understanding different paradigms and ideas are essential. When the project started, it was assumed that the design methods and tools could help solve the challenge. For support, studying literature and online publications was sought for an understanding of other change management methods. The knowledge base was supplemented and refined along the way, simultaneously with the

project's progress. Some of the source literature is academic research, and some are written by technology and business experts. In this kind of development work, it is meaningful to refer also to the writings of current business and technology professionals, who often rely on practical experiences and the latest market understanding.

The challenge when drafting the thesis was to what extent theory is included and limited. The theoretical framework was broad and diverse. In terms of learning, maintaining the thesis focus on the development project seemed secondary compared to discussing the similarities in several participatory change management models. The literature, articles and electronic source materials supported the planning of the interviews, and the principles and observations presented in them helped justify the chosen methods and human-centric approach to the customer and the participants.

Although the theoretical framework is comprehensive, the dialogue and choices of this thesis are based on subjective thinking and conclusions instead of extensive qualitative interview materials. The generalizability of the development project results might seem insignificant, as the perspectives and outputs are built to meet the needs of one company. However, applying people-centric methods and examining different management models will hopefully inspire other companies to involve employees in implementing organisational change. The applicability of the design process should not be viewed only through the results but also through the dimension brought by the reference framework. The knowledge base improves the generalizability of the study and helps to underline the connection between service design, strategy, and people-centric change management models in promoting transformation.

6.3 Reflecting on the design process as a change method

The thesis process started briefly after the completed digital strategy project for The Energy Company. Strategy work provided a roadmap, built a bridge between the current state and the future vision, and paved the way for decision-making on the development project. Modern strategies and roadmaps should look at business systems, information systems, and competencies, as, within digital transformation, the technology angle cannot be ignored. The interdependencies between different subprojects were already recognised so that the digital strategy implementation work would not be done in silos without understanding the broader context. The Energy Company's digital transformation is a multidimensional and long, systemic venture, and the client wanted to start from somewhere. The service design process was chosen right from the beginning as the base of the project plan because its iterative nature accepts that the direction might change along the way and that the project results are not known in advance.

The Double Diamond process serves as a good framework. Still, it is not a silver bullet within traditional and often change-resistant organisations, where there are several challenges facing service design practitioners, such as poor awareness of what service design is, hardships in getting people and stakeholders on board the design process, and disbelief of the business and organisational value of service design and its role within organisational change. Siloed organisations might not be mature or willing to try new methods, have unfavourable attitudes towards design, and face resistance to change. (Blomkvist, Rodrigues & Overkamp 2020.) The designerly methods were adapted with curiosity in this development work.

This development project was to test participatory methods in practice and engage the system administrators in leading digital transformation. Collaborative workshops can be fruitful in developing innovative ideas together. However, similar thinking people tend to reinforce each other's views (Thaler & Sunstein 2021, 70). That is why there are significant benefits to diversity. The choice architect needs to think about how, for example, in workshops, to avoid the fact that people quickly start to accompany the information provided without questioning. Due to the participants' busyness and summer vacations, there was time to hold only one two-hour workshop, an online meeting. Interactive sections and pair work could have been increased if there had been more time.

Testing the service hypotheses fast in the field and learning before proceeding any further was a novel approach for the pilot group. There were some challenges in maintaining the right level of abstraction, e.g., in the workshop, the focus shifted more toward criticising the preliminary content than the idea. In the workshop, it was sometimes necessary to subtly nudge the participants to discuss the big picture instead of the details. As this was the first time to engage the system administrators, most of the planned time was used for clarifying the strategy and underlining the importance of the system administrators’ work. Even if the strategy's main principles were clear, a set of interviews and one workshop do not guarantee a change in future behaviour. It is crucial to keep up the systematic work and engage broader audiences in collaboration and further innovation.

Nudging via social influence is one of the most essential nudges. Humans are easily nudged by other humans because we like to conform to what other people do or say. (Thaler & Sunstein 2021, 65–67.) Putting employees, the system administrators, at the centre of the strategic implementation already served as an incentive as providing certain information and engaging people can be considered nudging. If people are told their work is essential, their thoughts are anchored towards a common goal. The pilot group of system administrators appreciated that they had been asked to participate and that standard working methods were being promoted and considered necessary.

Unifying siloes and engaging employees set the bar high for leadership. A leader's role is to get employees to perform beyond expectations. Leveraging social norms and showing examples of the desired behaviour can profoundly influence individual employee behaviour (Paulin 2019). The transformational leader serves as a role model, treats people as individuals and motivates employees to gain their trust, respect, appreciation, and loyalty (Thompson, 2019). Transformational leaders understand relationships and encourage ongoing learning and development, and with this development project, the IT management's strong commitment to engaging employees was made visible. Since this kind of engaging development process work was novel to the participants, it was essential to communicate the process and build trust that all results would be acceptable if some learning happened along the way.

The transformative leadership style fits our time and is becoming popular, but it also has some pitfalls as some employees need accurate and defined tasks, and for them, the style might feel too conceptual. Transformational leaders emphasise the company culture and values. Still, the downside is that this might lead to demotivation and burnout in some employees, who would instead concentrate on doing their job and go home (Thompson, 2019). It is essential to know and recognise different employees' motivations. Not all people get excited about the same things, and what is necessary to one person may seem pointless to another. In this project, there was no visible resistance to change. This was no surprise, as only enthusiastic and reform-minded people were chosen for the pilot group.

Along the process, it became clear that participatory methods and agile coaching are not yet widely used in The Energy Company. There is a long way to go to adapt to agile business culture. It became apparent that the project is only a tiny part of a more extensive change journey. However, all the themes were examined thoroughly, and several answers and perspectives were found for the research questions. The modified service design process served as a reasonable frame for the project. Still, in retrospect, it can be said that few design-specific collaborative tools were used during the process.

Service Design does not traditionally address the transformation work needed to change the company's conditions. Thus, an integrated approach that focuses on relationships, interdependencies, and implications is required. (Mhanna 2022; Design Council 2021.) According to Woolliscroft (2020), "the limitation with service design is that it is often conducted by designers who do not fully understand the bigger picture of strategic, policy and social challenges". Schneider & al. (2018) state that when designing user interfaces, many designers focus primarily on usability and aesthetics, neglecting the potential behavioural effects of alternative methods. Service design thinking is currently dominated by a focus on the user journey and therefore is insufficient for overly complex cross-sectoral challenges. Today's complex, dynamic, and systemic challenges require more time and resources than most organisations can release. They need a systemic perspective. (Wildhagen

2021.) One problem with the Double Diamond process is that the discovery phase is predictable, but delivery is not. Depending on the issues uncovered, solutions may take years to develop and implement (The Brand Manual 2019).

The criticism of the service design practitioners is insightful. Service design alone rarely provides a comprehensive solution. The systemic design framework supports designers and commissioners who want to work with complex and systemic challenges (Design Council 2021). It offers insightful principles and role descriptions for future designers. Leading transformational change requires broad general education, an insightful mind, and a deep understanding of the topics to be solved. If the service designer is to act as a transformation agent or lead business development, extensive knowledge of technology, business and human behaviour is required.

Carrying out a service design process and managing client expectations is routine work for a seasoned designer, so there were no surprises regarding the schedule or the project plan. The gift of this development project was the extensive background material and knowledge base, which brought new depth to routine work. The shift in the focus towards initial planning of the digital twin and emphasising the importance of finding ways to measure digitalisation was exciting and rewarding. Deep diving into a new industry and the business needs and challenges of a client is very rewarding in a consultant's work. The service design methodology served well in a change project of this scale, but alone, this project will not bring about change. The outputs of this development work must be combined with all other digital transformation-related ongoing schemes. Promoting change is slow, and instead of individual projects and development projects, digital transformation is about continuous and long-term actions promoted simultaneously at various levels and in different projects. Keeping the direction and vision clear is extremely important.

6.4 Ethicality

In this report, numerous choices have been made about what to write and what not to write. General ethical research principles state that the research must respect the human dignity, privacy, self-determination, and other rights of the subjects and participants of the study. It is also crucial to avoid causing significant risks, damages and harm to the people, communities, and other research subjects. (Vuori 2022b.) The aim of maintaining a high ethical level of the thesis was conducted by fading The Energy Company into the background. The key driver was that the company under study and the persons who participated in the study were anonymised. This choice was made because matters critical to business operations should not be disclosed.

Sometimes in commissioned customer projects, it feels like pressure to do what the customer expects and wishes for. Cognitive biases allow us to act in ways that contradict our ethical standards (Bazerman & Moore 2017b, 135). This is called bounded ethicality, which refers to the psychological processes that make people behave unethically and controversial to their preferred ethics, e.g., when an executive makes a judgement not only harming others but also inconsistent with their conscious beliefs. This often happens in high-paced environments where managerial decisions demand speed. (Bazerman & Moore 2017b, 123-124.) That is why managing expectations is essential. During the development project, there were numerous conversations with the client, ensuring we shared the same vision and were going in the right direction. We also agreed that the most important thing is the journey and learning together instead of some pre-defined results.

Insider, such as the company director, is often subjective decision maker. An outsider, e.g., a hired consultant, on the other hand, is more capable of generalising across situations and identifying similarities (Bazerman & Moore 2017b, 194). In a dialogic organisation mindset, consultants are seen as part of the community, immersed in action rather than staying apart in the margins (Bushe & Marshak 2015,4). Utilising a design expert consultant as a facilitator in promoting digital transformation and supporting IT management was a novel approach for The Energy Company. It brought human understanding to support technical expertise. Also, the pilot group might have been more easily subject to bias and tension if a director had acted as a facilitator for new ideas and innovation. Having an outsider facilitator and process expert hopefully ensured that everyone was given a chance to speak without pressure.

Knowledge is power, and understanding human behaviour provides tools for deliberately misleading people. Nudging aims to manipulate with good intentions, but it can be viewed as manipulative if the reason behind nudging is not apparent. Influencing intentionally in people's behaviour might seem obscure. Behavioural ethics nudging may also violate normative notions of personal autonomy, and it remains an essential question if all nudges can be considered ethically appropriate. (Haugh 2017, 688.) Nudges should preserve freedom of choice to a large degree and increase the welfare of the people being nudged (Haugh 2017, 690). Nudges should be considered design drivers if the aim is to affect user preferences, guide user choices, and nudge the employees subtly in the wanted direction. Choice architects have many opportunities to choose how things and designs are presented. It can be done in ways that are self-serving or welfare-enhancing. Companies can select defaults that are well-meaning guesses or self-serving choices for making more money. It would be naïve to believe nudging is always used purely for good, especially in the private sector; a lot of self-interest nudging might happen. (Thaler & Sunstein 2021, 313.)

Nudging does not have to be shady and has no debilitating effect if the persons know they are deliberately being nudged (Thaler & Sunstein 2021, 323–324). In the development project, the

new digital strategy was thoroughly explained. It was stated that the company management wants to shift the system administrator's work toward collaborative and participatory operating models. It was also told that the survey prototype aimed to illustrate the subjects and themes the management wants them to pay attention to in the future. It was emphasised that the aim was to find ways to make the new operating models popular and engaging. Nudging is a valuable tool for leading change and persuading instead of forcing and commanding. In this project, nudging was used gently, transparently and with constant discussion of the purpose.

7 Discussion

Robotics, artificial intelligence and machine learning, virtual and augmented reality, and cloud computing will significantly impact society by 2030 (IFTP for Dell Technologies 2017). People and machines will think better together in the future. Computers and robots will relieve humanity from routine labour and discover new insights from the masses of data we generate. This requires modern strategies, fresh perspectives and ways of working. Adapting strategic foresight into work gives a greater perspective on strategy work and implementation; it helps understand what generates value for the business, stakeholders, employees, and customers. Instead of a fixed path and strategy implementation process, the leaders should make choices along the way, recognise different scenarios, validate hypotheses, and adapt to the current situations.

Human-machine partnerships enable novel approaches to spreading decision-making and collaboration across networks (IFTP for Dell Technologies 2019). Leadership will significantly benefit from data processing and predictive algorithms forecasting future trends and people’s behaviour. However, a people-centric and inclusive approach can help identify what essential data or knowledge is missing, where it is obtained, and how it should be harnessed to support leadership or employees. Utilising design expertise helps outline what is most critical and identifies which factors slow down the implementation of digital change. Everyday challenges can be brought closer to the management through engaging people and gathering tacit knowledge from the employees, customers, and stakeholders.

Human intelligence, creativity and empathy are traditionally considered hard to automate. Harari (2022), however, reminds us that AI already excels in our skills in pattern recognition. Thus, intellectual skills can be automated. Computers can also be more creative than people, e.g., creating AI-aided art and composing music based on learnt patterns. In the future, computers might replace some jobs requiring empathy as AI learns to recognise feelings, as emotions are also trackable patterns. AI might even outperform people in recognising emotions as machines are not biased by their feelings. But creativity, insight, and

adaptability are not the most straightforward skills to automate; thus, they are valuable in an increasingly mechanised environment. (Devin 2016.) Machines are good at solving patterns, but people can feel things. We are good at embracing emotional intelligence, helping each other, mastering new skills throughout our lives, looking for further information and telling the difference between reliable and unreliable information. Humans are good at changing, adapting, and coping; thus, the best bet is to develop the potential we already have. (Harari 2022.)

Behavioural economics, combined with social sciences and an understanding of human nature, can change how people do business and design the environments where decisions are made (Thaler 2017). New technologies and concepts such as digital twins and augmented reality brings new business opportunities and require unique expertise and core skills from managers, employees, partners and consultants. For a transformational leader, it is crucial to understand how different feelings influence people's behaviour, as our emotional stage significantly impacts our judgement. Several transformational change models, service design methodologies and futures thinking tools value co-creation, curiosity, involving people and focusing on creating value together rather than just trying to fix emerging problems. These methodologies can build closer leadership to people and more genuinely inclusive cultures.

The holistic combination of technology's possibilities, limitations, required capabilities and costs, human insight, business understanding, data and knowledge management, empathy, and systemic design skills will help plan future actions and organisations. In IT, management consulting and service business consulting companies, super talented and skilful generalists who understand technology, human behaviour, and new business opportunities are in demand. Service designers often possess unique skills vital for most companies as they are creative, resourceful, and innovative thinkers and doers. Still, they must learn to look at the bigger picture about policy and strategy making and have design skills (Woolliscroft 2020). Applied knowledge skills help in critical and creative thinking and analysing and communicating information logically.

Emerging interfaces integrate haptic feedback, gesture recognition and smell to provide alternative mediums for displaying and interacting with data (IFTP for Dell Technologies 2019). Not all future services have visual user interfaces because the experience can consist of various elements such as real-time data processing, location services, AI, visual assistance, and voice guidance. Designing the choice environment could also be acknowledged as a future data analyst and system designer job (Schneider & al. 2018). In the time of the non-visual user interface, it becomes vital to understand a user's role in each context. A comprehensive understanding of emerging technologies, ethnography, psychology, and philosophy will become handy in all business development.

Understanding behavioural economics and biases affecting people’s judgement will become even more critical when trying to prevent algorithm biases and develop the ethics of artificial intelligence. The relationship between humans and machines will be a partnership, where machines will accurately speed up all processes, and humans will master the fundamental, instinctive skills of intuition, judgment, and emotional intelligence (IFTP for Dell Technologies 2017).

In general, experimenting with human-centric management models and service design process can be recommended to various companies. By combining different management models, operating models and human-centric methods, new ways of looking at companies' technology development challenges and digital transformation possibilities can be found. A business-oriented mindset coupled with an understanding of the biased decision-making processes would be a powerful addition to a responsible and profound leader’s toolbox.

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Figures

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