Master´s Thesis

Optimizing Onboarding Processes for the Integration of
the NN Planner Tool
within New Departments in Novo Nordisk.

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1 Abstract

In today's fast-paced corporate landscape, effective onboarding processes are crucial for large organizations like Novo Nordisk to adapt to market demands and inspire innovation. As companies expand, the integration of new employees becomes more complex; thus, a structured onboarding journey is vital for enhancing employee satisfaction, retention, and overall productivity.

This thesis investigates and proposes a tailored onboarding solution designed to facilitate the integration of new employees into Novo Nordisk's digital product, "NN Planner," which supports over five thousand employees worldwide in their daily activities. The project employs a user-centered approach to understand the unique challenges that users and stakeholders face during onboarding. Through an iterative Design Thinking process and the utilization of qualitative research methods, this thesis develops an online platform that offers comprehensive training and resources for users adopting NN Planner, including user journey guides tailored for new employees and their teams. Key findings highlight the importance of user involvement and the complex, non-linear nature of the onboarding landscape, which features varied user needs that complicate standardized processes.

To enhance future onboarding solutions, the research suggests conducting additional research with a wider array of users and teams across different demographics and experience levels. Ultimately, this work establishes a scalable onboarding framework and offers valuable insights that advocate for a user-centric approach to addressing onboarding challenges, promising to benefit organizations and digital product teams both within and beyond Novo Nordisk.

2 Introduction

NN Planner is a project management tool created by Novo Nordisk and utilized across various departments within the company. Initially developed in 2018 by the Quality Control (QC) laboratories, the NN Planner tool has since expanded its user base to over 5,000 users globally, across multiple departments within the organization. The application is cloud-based and helps teams plan their day-to-day tasks and activities. Integrating NN Planner into workflows offers numerous advantages for both Novo Nordisk and its users by enhancing efficiency and productivity. To date, the application is the recommended standard tool for planning at Novo Nordisk and is used by more than 200 teams worldwide. By providing a centralized platform, NN Planner enables users to obtain and maintain a comprehensive overview of tasks and activities, both planned and in progress, fostering greater transparency within their teams. The application's high degree of customization allows users to tailor the interface and functionalities to meet their specific team needs, ensuring relevance and usability. With the capability to consolidate tasks from various source systems used by the company, NN Planner streamlines data management and improves coordination. Moreover, its cross-device accessibility—available on desktop computers,

laptops, touch-screen devices, and mobile phones—ensures that team members can stay updated and engaged from anywhere. Automated planning features maximize team capacity utilization and reduce lead times, allowing for more efficient project execution. Additionally, NN Planner aids in maintaining compliance with standard or customer-defined deadlines, ensuring that teams stay on track. Designed with user needs at its core, each new feature of NN Planner is developed through direct user feedback, ensuring that the application continuously evolves to meet the demands of its users. Figure 1 displays the user interface, highlighting an example of a team plan. Additionally, Figures 2 and 3 illustrate how teams operated before the digitalization process of transitioning to NN Planner, compared to the ways of working for a team that has adopted NN Planner.
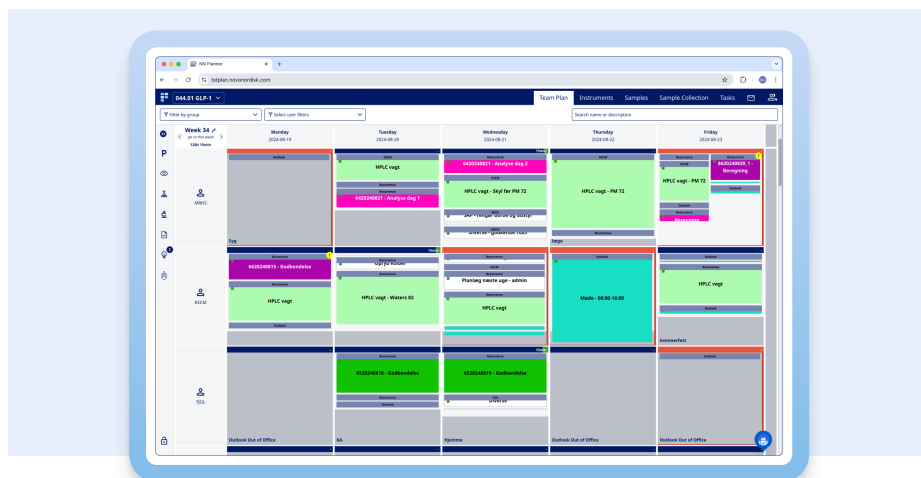
Fig. 1. Overview of the NN Planner User Interface

2.a My role within NN Planner

During my time at Novo Nordisk, I held the position of UX (User Experience) Research Student Assistant within the NN Planner development team while working on this thesis. The NN Planner development team, consisted of the Product Owner (PO) and a total of thirteen members, including roles such as front-end developers, back-end developers, and a Scrum Master. Within this team, there were two designers: my partner, whose role was Senior UI/UX Designer, and myself. Upon joining the team, I was assigned to the onboarding project for NN Planner, which is documented and closely tied to this thesis work. Throughout this project, I worked closely with the Senior UX/UI Designer and the Product Owner, who provided valuable insights about the product, the users, and

Fig. 2. Team ways of working prior adopting NN Planner

Fig. 3. Team ways of working after adopting of NN Planner

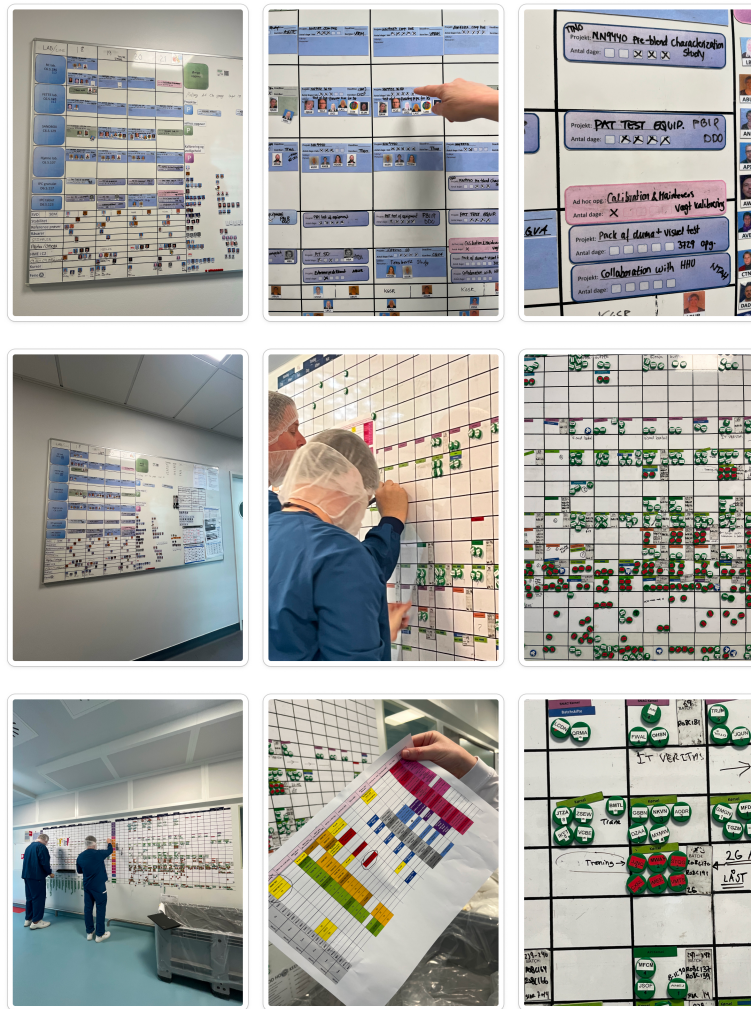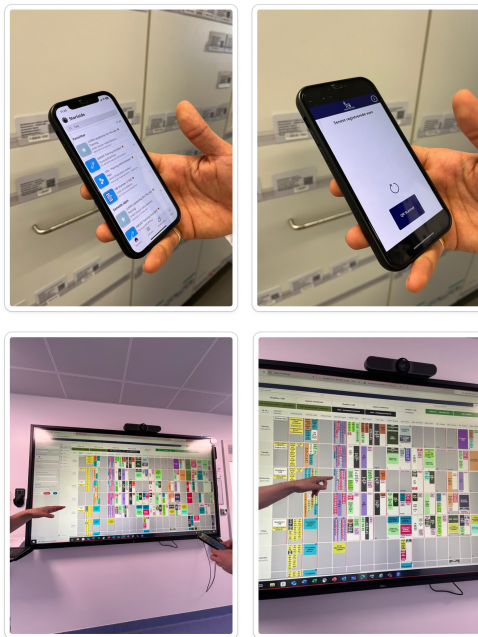the challenges they face. While I conducted most of the research for this thesis independently, I collaborated with them during various stages of the process. As a result, some parts of this thesis are written from a collective perspective using "we" instead of "I" to clarify the decisions that were made or that affected the team. In the following section, I provide a more detailed description of the underlying problem this thesis work aims to address.

2.b   Problem formulation

Based on initial discussions with the PO and the UX/UI Designer, we have identified the following problem areas related to NN Planner.

1. **User Base and Complexity**: As NN Planner has grown to be used by more than five thousand users across diverse departments, its complexity has increased significantly, posing challenges related to user knowledge and understanding of interactions. The rapid expansion has led to issues such as a lack of comprehensive insight into user interactions with the system and a limited understanding of the diverse user base.

2. **Resistance to Change**: Moreover, since NN Planner is deeply integrated into users' daily workflows, there exists a resistance to adopting new methods that may disrupt established routines. This resistance presents a significant challenge when proposing the integration of the tool and the adoption of new features and workflows.

3. **Onboarding and User Experience**: The lack of a well-defined onboarding journey for NN Planner users further exacerbates the issue. This absence of a structured onboarding process prevents the effective utilization of the tool and contributes to user reluctance in embracing its full potential.

2.b.1   Problem statement

How can an onboarding be design for the NN Planner tool to integrate and enable new users to incorporate the tool into their daily workflow at Novo Nordisk?

RQ1: How can we gain insights into users' experiences while being onboarded into the NN Planner product?

RQ2: What methods can be used for structuring and designing an onboarding journey for NN Planner users to facilitate the integration and sustained utilization of the tool?

RQ3: What insights and lessons can we derive from the onboarding process of NN Planner to inform the design and implementation of effective onboarding strategies for users?

3   Design Methodologies

According to Felder et al. (2023), design as a practice is about creating and applying new ideas. This process involves collecting knowledge and experiences from a network of people and using that information to develop new strategies for organizations. The goals of design practice can include solving problems, enhancing situations, coming up with innovative actions, and tackling specific challenges in complex organizational settings (Felder et al., 2023). For this project, I have chosen to utilize Design Thinking as the design methodology. Luchs (2015) describes Design Thinking, as "a systematic and collaborative approach for identifying and creatively solving problems" (Luchs, 2015, p. 4). This approach refers to a set of cognitive processes and methods within the broad design spectrum, specifically aimed at identifying and addressing stakeholder needs while tackling complex problems. Design Thinking is a future-oriented, exploratory, and problem-solving approach that follows specific research and development cycles (Felder et al., 2023). A key aspect of Design Thinking is "the designer's ability to consider the relationship between human needs, technical feasibility and business viability (Felder et al., 2023, p.4)"

In the following sections, I will begin by providing a detailed description of the Design Thinking framework and its components. Next, I will outline the complex nature of the problem at hand and explain why Design Thinking is an appropriate approach for solving it. Subsequently, I will introduce pragmatism as the selected philosophy of science. Finally, I will discuss Kujala's (2008) approach to user involvement and how it was applied throughout this project.

3.a   Design thinking

The Design Thinking framework integrates empathy, creativity, and rationality to rethink organizational strategies, subjecting them to continuous and creative evaluation Felder et al. (2023); Luchs (2015). It seeks to understand users' needs, define problems, and create innovative solutions Dam and Teo (2021). In Luchs' (2015) framework of Design Thinking, there are two primary phases: identification and solution, which encompass four modes: discovery, definition, creation, and evaluation. Each step entails inquiry and is better understood as a nonlinear iterative process rather than a linear sequence of actions (Luchs, 2015). Although alternative Design Thinking frameworks may utilize slightly different terminology, such as empathize, define, ideate, prototype, and test, they fundamentally encompass the same phases and modes. The structure of this thesis follows a five-stage model: empathize, define, ideate, prototype, and test (Dam & Teo, 2025), as shown in Figure 4. By using this iterative approach, I aim to create a final design that users and stakeholders of the NN Planner will find effective and valuable. The flexibility of the Design Thinking approach allows me to move quickly through different stages to test solutions, helping me identify the most important user needs. This method aids in effectively prioritizing and avoiding the waste of resources on solutions that may not be as critical as initially assumed, as revealed through prototyping and testing Luchs (2015).
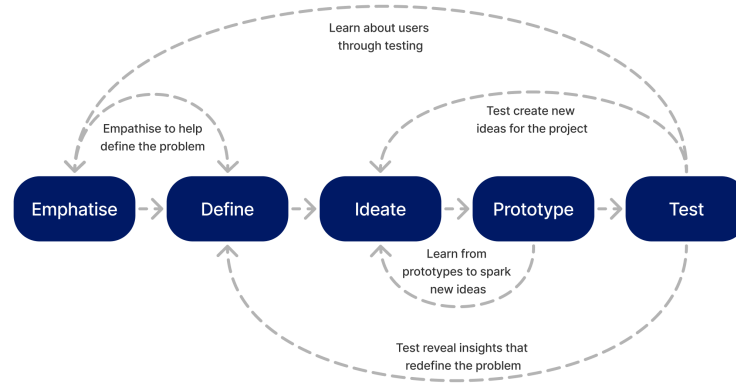
Fig. 4. The Non-Linear Nature of Design Thinking" by Dam & Siang (2021), redesigned to align with Novo Nordisk's visual identity

3.b Wicked problem

According to (Buchanan, 1992), There are several approaches to solving problems. The conventional linear, sequential model usually consists of two main stages: defining the problem and solving it. However, this approach is not always effective in solving 'complex problems' which Rittel (1967) describes as 'wicked problems'. According to him, a wicked problem is multifaceted and does not have a definitive formulation; there are no stopping rules, it is unique, and there are no right or wrong solutions, only good or bad ones. He further explains how there is never one correct solution or approach to such a problem because the problem involves different stakeholders with different values which, therefore, can create conflicts among their individual visions (Rittel, 1967, as cited in Buchanan, 1992)

The difference between these approaches lies in the relationship between determinacy and indeterminacy. According to (Buchanan, 1992), there is fundamental indeterminacy in all but the most trivial design problems. Wicked problems, therefore, address issues characterized by a complex interaction among different users and aspects (Buchanan, 1992). In other words, design problems are indeterminate and wicked because design is not a subject matter on its own but is based on the designer's understanding (Buchanan, 1992). Furthermore, he argues that in the application process, the designer must discover or invent a particular subject out of the problems and issues arising from specific circumstances (Buchanan, 1992; Ejsing-Duun & Skovbjerg, 2019). Therefore, the designer is

not merely discovering, uncovering, and explaining the phenomenon in question (which is indeterminate), but is also suggesting other possibilities and creating and transforming the matter. Inquiry is a process that begins with doubt and ends with knowledge and a set of beliefs so concrete that they can be acted upon, either overtly or in one's imagination (Dewey, 2009; Ejsing-Duun & Skovbjerg, 2019).

For this project, I aim to develop an onboarding solution; therefore, it is essential to recognize that there is no one-size-fits-all approach, as each individual user undergoing onboarding has unique learning preferences and needs. As a result, designing an onboarding solution for the NN Planner tool within Novo Nordisk poses a wicked problem due to its multifaceted nature, which involves diverse stakeholder perspectives, unclear requirements, and a dynamic technological and organizational landscape. Consequently, I believe that employing a Design Thinking approach is crucial for crafting a good onboarding experience. By deeply empathizing with users, stakeholders, and their environments, ideating, prototyping, testing, iterating based on feedback, and continually refining the process, I aim to create an onboarding experience that addresses the varied requirements necessary to fulfill the NN Planner's ambitions.

3.c Philosophy of science

In this project, I have embraced the pragmatic philosophy of science as advocated by Dewey (1938). While some studies may hide their philosophical viewpoint, having transparency in this area can allow readers to understand not just the results of the research, but also the context in which it is conducted, as this can impact the overall research approach.

The pragmatic viewpoint centers on the notion of creating knowledge through action and change. According to pragmatism, something is considered true as long as it is effective in the moment. Thus, pragmatism underscores practical application and its impact on knowledge creation by observing user actions and behaviors when presented with various solutions (Dewey, 2009; Ejsing-Duun & Skovbjerg, 2019). Additionally, pragmatism is rooted in real-life situations, emphasizing action and change. Pragmatists are not merely interested in conducting research for its own sake; rather, the goal of pragmatic inquiry is to generate knowledge that can be applied in practice to actualize changes in real-life situations. In this way, pragmatism also looks towards the future, operating under the belief that research can help create a better tomorrow through action (Schön, 1983). Moreover, recognizing the problem occurs during the exploration as we unveil the true nature of the issue, relates to design thinking because identifying and framing a problem are fundamental components of the framework Schön (1983). Framing refers to the context in which the problem will be tackled Schön (1983). In this project, this recognition arises during the empathy and define stages, where I gain insights into the user's challenges and determine my approach to addressing them. As I gather more information and assess potential

solutions, the framing of the problem may evolve, thereby enhancing my understanding of these issues and enriching the inquiry process (Buchanan, 1992; Dalsgaard, 2014). However, it is through a comprehensive understanding of practice that this context becomes evident. The pragmatic approach relates to this by emphasizing the evaluation of ideas based on their real-world consequences, which will enhance our use of design thinking, assisting in problem definition and solution generation (Dewey, 2009). Additionally, reflection is a crucial element of pragmatism. Documenting my own reflections and those of the user will facilitate the development of new solutions, and the Design Thinking process will support this reflection throughout the project (Dalsgaard, 2014; Schön, 1983). Schön (1983) describes two forms of reflection: reflection-on-action and reflection-in-action. Reflection-in-action can occur both while I am working with ideas and throughout the project, while reflection-on-action is discussed further in Section 9. Within this thesis, reflection is essential for the knowledge we aim to create in response to my third research question (RQ3), which is formulated in Section 2.b.1.

3.d   User involvement

Design Thinking underscores the importance of exploring users' needs, which is why I aim to place users at the core of this research project, as they will be the ones experiencing the onboarding process for NN Planner. However, implementing a user-centered approach necessitates the collection and analysis of extensive information about the users, as different users have different needs and interactive products need to be designed accordingly. (Preece, Sharp, & Rogers, 2002j, 2002k).

Kujala (2008) suggests a methodology that enhances our understanding of users' needs while incorporating various expertise from different users into the future solution. Moreover, when users are engaged in the development of a product and feel that their contributions matter, they are more likely to develop a sense of "ownership" towards the product and be receptive to it once it is released (Kujala, 2008; Preece et al., 2002j). Kujala's research focuses on user involvement within the context of product development. She classifies user involvement in the design process based on the different roles users can take, which range from *informative*, to *consultative*, and up to *participative*. As she notes, "users may take active roles, or they may be involved as providers of information, commentators, or objects for observations" (Kujala, 2008, p.458).

To gain a deep understanding of their needs, they can be explored through various methods. One effective method is conducting field studies, where users, their tasks, and the environments in which they operate are examined in real-life contexts using qualitative techniques. This approach not only enhances our understanding of user needs but also enables the collection of more precise user requirements (Kujala, 2008). Furthermore, Kujala (2008) claims that early user involvement does not only provide useful information about the users but also increases the understanding of user values and improves the quality of the final

product. The lack of user involvement in product development can, on the other hand, decrease the quality of the product and lead to failed projects. Furthermore, engaging users early in the development process to reduce costs later on (Kujala, 2008; Preece, Sharp, & Rogers, 2002d).

Kujala (2008) identified six main steps of early user involvement for identifying and analyzing user needs. Below, I will go through the different steps and explain how I incorporated them into this project and the Design Thinking process:

1. *Identify stakeholders and user groups*

   First, it is essential to identify and describe key stakeholders and user groups to effectively reach representatives through field studies (Kujala, 2008). In this project, this task is detailed in Section 4.b.1 of this report, where I outline relevant stakeholders, user types, and their responsibilities within NN Planner. Additionally, figures 6, 7, and 8 illustrate the interactions and collaboration among these groups.

2. *Visiting users and explore their needs*

   In this step, I conducted various interviews and engaged with users in their natural environments to gather authentic insights. For this project, I organized a field trip to one of the Quality Control (QC) laboratories that utilize NN Planner. During the visit, I conducted semi-structured interviews with key stakeholders and captured photographs while observing their interactions with the product. The details of this field trip are documented in Section 4.c.1 of this report.

3. *Describing the current situation*

   At this stage, I investigate how the onboarding of NN Planner users currently occurs by reviewing existing onboarding materials, documentation, and processes. Additionally, I analyze previous research in the area. This analysis is documented in Section 4.b.

4. *Analyzing and prioritize the problems and possibilities*

   Understanding the challenges users face is crucial for developing new products that effectively meet their needs (Kujala, 2008). In this project, I uncovered the challenges expressed by users and stakeholders, drawing on various findings from the Empathize stage. During the define stage, I employed different methods and tools to analyze and prioritize these issues, subsequently exploring potential solutions in the ideate stage. This portion of the project was conducted in collaboration with two colleagues from NN Planner and is detailed in Sections 5 and 6.

5. *Redesigning the current situation*

   At this stage, I began conceptualizing a digital solution to address the underlying problem. This process involved redesigning the existing scenario and

defining the product's role within its intended context of use. The redesign was accomplished through ideation and the creation of prototypes. The final design outcome is presented in Section 7 of this report.

6. *Defining user requirements*

   In addition to redesigning the current situation, identifying specific user requirements is essential. In this project, these requirements encompass various onboarding materials and guides that the final solution should incorporate. I initially identified these materials through a review of related works (Section 4.b). Later, I facilitated discussions and a card sorting exercise with colleagues from the NN Planner team. This collaborative process helped me identify the materials needed for the new solution, those requiring revision, and new materials to be created in the future. Finally, we categorized and prioritized these materials accordingly. The outcomes of this process are illustrated in Figure 16.

4   Empathize

This stage is a fundamental aspect of the Design Thinking approach and serves to inform and to inspire designers to create products that fit the user's needs (Kouprie & Sleeswijk Visser, 2009). According to Köppen and Meinel (2015), empathize "is about exploring the nature of the problem and understanding the users and their needs" (Köppen & Meinel, 2015, p. 18). To achieve this, it is essential to comprehend the experiences and circumstances of the people for whom we are designing solutions, as well as the perspectives of all stakeholders involved in the process (Kouprie & Sleeswijk Visser, 2009).

Furthermore, engaging in direct observations, or even stepping into the users' shoes, enables designers to immerse ourselves in their environment (Kouprie & Sleeswijk Visser, 2009). Ultimately, understanding the user goes beyond mere knowledge; it requires a deeper connection with their experiences, "which involves relating to, more than just knowing about the user"
(Kouprie & Sleeswijk Visser, 2009, p. 440).

In this project, the empathize stage encompasses several crucial aspects of my research. Specifically, it includes a deep dive into the roles of users and stakeholders at NN Planner, an extensive literature review, a field trip to one of the laboratories using NN Planner, and interviews with other relevant stakeholders.

The literature review aims to provide us with a solid foundational understanding of digital product onboarding, particularly within the context of rapidly growing companies. This background knowledge is essential for informing our approach and decisions throughout the project. In contrast, the interviews and the laboratory visit are designed to deepen our understanding of the individuals we are collaborating with, as well as their work environment. By engaging directly with

them, we can gain valuable insights into their experiences, challenges, and needs, which will ultimately enhance the effectiveness of our research.

4.a   Organizational culture

According to Schein and Schein (2016), individuals possess diverse biases and assumptions regarding what is important. As a result, culture is deep, pervasive, complex, patterned, and morally neutral (Schein & Schein, 2016). The following subsections will explore Morgan's Images of Organizations as presented by Digha (2014), and examine how they relate to the organizational culture of this project.

In this section, I aim to analyze the work culture at Novo Nordisk from a theoretical perspective and discuss how it has influenced this project. The goal is to provide valuable insights into the structure and conditions within which the NN Planner team operates.

4.a.1   Images of organization

According to Digha (2014), Morgan's Images of Organizations consist of eight metaphors that serve as tools for analyzing organizational dynamics. Morgan (2006) introduces the concept of utilizing metaphors to better comprehend and address business challenges and organizational issues. He advocates for employing these metaphors not only individually but also in combination to enrich the understanding of organizations and their complexities. Essentially, Morgan posits that we can explore business organizations through multiple theoretical lenses rather than limiting ourselves to a singular viewpoint. The main goal is to offer fresh perspectives on organization and management, emphasizing the role of metaphors in sparking creative thinking (Digha, 2014). The eight metaphors identified by Morgan include *machines, organisms, brains, cultures, political systems, psychic prisons, flux and transformation, and instruments of domination* (Digha, 2014, p. 201). Each metaphor embodies distinct symbols and concepts that highlight specific aspects of an organization (Digha, 2014). In this section, I will first elaborate on each of the eight metaphors and then evaluate how they might relate to this project within Novo Nordisk as an organization.

According to Morgan (1998), the metaphor of an organization as a machine suggests that management involves a systematic process of planning, organizing, commanding, coordinating, and controlling. In a machine-like organization, efficiency is prioritized, leading to minimal waste and a strong focus on maintenance. Tasks are performed in a structured, orderly fashion, guided by standardized programs with clearly defined inputs and outputs. This structure is typical in public service organizations, known for their bureaucratic nature, established procedures, rules, and regulations. However, organizations that adopt this "machine" metaphor can struggle with adaptability in the face of change. This approach often fosters an undemocratic and rigid bureaucracy with predetermined responses and a limited vision for the future (Digha, 2014).

The organism metaphor likens organizations to living organisms that must adapt and thrive in ever-changing environments. Just like organisms, organizations are dynamic systems affected by their surroundings and must establish a suitable relationship with their environment to survive. As noted by Morgan (1998), organizations must be "open" to environmental influences to endure. This metaphor helps managers who are willing to embrace change by highlighting that organizations consist of interconnected elements—people, business processes, and technology—each with unique needs that must be addressed. It encourages managers to be adept at navigating corporate challenges and to create adaptable, organic systems resilient to environmental shifts. However, there are limitations to this metaphor. It assumes organizations function like biological organisms, which they do not. Additionally, it oversimplifies the complexity of organizational environments and often overestimates the degree of unity and cohesion typically found in modern organizations (Digha, 2014).

The brain metaphor highlights its crucial role in today's knowledge-based economy, where information, knowledge, and learning are essential resources. This metaphor underscores the importance of a learning-oriented structure that can adapt to the digital age. The brain symbolizes intelligence and control, acting as the hub for generating innovative ideas and enabling the organization to self-organize in response to emerging challenges. This involves continuous knowledge acquisition, learning, information processing, and the establishment of networks that facilitate these activities. Just as the brain regulates all bodily functions, a business organization mirrors this structure with various departments and roles. Here, managers and their teams are responsible for efficiently guiding the organization toward its objectives. Despite its strengths, this model may encounter challenges. Conflicts can arise between organizational learning and the realities of power dynamics, and learning devoid of a clear purpose may devolve into mere ideology (Digha, 2014).

The culture metaphor views organizations as small societies, each characterized by its unique set of values, rituals, ideologies, and beliefs. It highlights how these cultural elements shape the perception of events, actions, and interactions within an organization. Understanding an organization involves recognizing its shared vision, mission, and the diverse contexts in which these cultural aspects operate. However, this metaphor has limitations. It can be misused for ideological manipulation and control since managing culture is inherently challenging. Many important cultural elements remain obscure, while visible aspects may not be as significant. Moreover, culture often has a deep political dimension, complicating the understanding of its true impact (Digha, 2014).

The metaphor of an organization as political system can be viewed as political systems due to the competition of interests, conflicts, and power dynamics that occur within them. This political aspect includes factors such as interests, rights, authority, hidden agendas, alliances, censorship, leadership styles, and conflict management. Understanding these political elements is crucial, as they are an unavoidable part of corporate life. While recognizing the importance of politics

within organizations, it's essential to note that this political perspective can lead to more political maneuvering. Additionally, focusing too heavily on politics may overlook significant power imbalances and inequalities present in organizations (Digha, 2014).

The psychic prison metaphor describes organizations as being ensnared by their own thoughts and behaviors. This theory suggests that organizations become preoccupied with various psychological factors such as obsessions, repressed emotions, fears of death, and illusions of control. Such dynamics include both conscious and unconscious processes, involving mechanisms like denial, projection, and coping strategies that can lead to dysfunction and overwork among employees. Nevertheless, Focusing too much on unconscious processes can distract from other significant forces that influence control within organizations. Additionally, this metaphor may downplay the influence of vested interests that aim to maintain the status quo. There is a risk that it could be misused to manipulate the unconscious mind for organizational gain (Digha, 2014).

Organizations as flux and transformation metaphor refers to the ongoing changes within organizations, highlighting their transformation processes. It portrays organizations as continuously evolving entities, embodying concepts like self-organization, complexity, and the dynamic interplay of various factors (such as chaos and emergent properties). The metaphor suggests that the power within these organizations is ineffective, offering managers limited control over the changes and dynamics at play.

The organization as an instrument of domination metaphor regards organizations as systems that primarily exploit their employees, the environment, and the global economy for their own selfish interests. It highlights the ethical and social aspects of organizations as crucial areas to examine. This perspective suggests that organizations often operate cohesively while being exploitative and discriminatory. Common themes include alienation, repression of values, enforced compliance, the exercise of power, exploitation, division among workers, and prioritization of corporate interests (Digha, 2014). However, This metaphor can exacerbate divisions between social groups if employees misinterpret its objectives. It may lead to blaming decision-makers rather than recognizing the need for a systemic approach to address underlying issues. Additionally, it can hinder the exploration of alternative, non-dominating organizational structures due to existing patterns of power, and some may view this perspective as excessively negative (Digha, 2014).

4.a.2   Morgan's Images in the Context of NN Planner

Among the various metaphors proposed by Morgan (1998) to describe organizations, several resonate strongly with the objectives of this project. In particular, I have identified the metaphors of an organization as a brain, a political system, as flux and transformation, and as an instrument of domination as particularly relevant to the context of Novo Nordisk and NN Planner.

The metaphor of organization as a brain

Much like the brain processes and shares information among various regions, NN Planner and Novo Nordisk encourage a culture of open communication and collaboration. Platforms such as Microsoft Teams channels, Outlook email, and the SharePoint intranet enable users and stakeholders to share insights, challenges, and expertise. A learning-centric approach is vital for a knowledge-driven organization, and Novo Nordisk facilitates professional development opportunities, mentorship programs, and knowledge-sharing sessions to foster continuous skill enhancement.

NN Planner also provides users with access to learning and support materials, empowering them to maximize the tool's potential. To prevent learning from becoming an empty ideology, NN Planner should ensure that its initiatives align with clear, tangible objectives. As highlighted in our findings from interviews (see section 5.b), some users may lack the time to prioritize learning or professional development. Thus, it's essential to recognize the limitations of this metaphor and remain aware of potential conflicts that may hinder employees' professional development. Promoting transparency and communication will help mitigate these challenges, ensuring that learning aligns with the organization's overarching goals and values.

The metaphor of organization as a political system

The political dynamics within Novo Nordisk and the NN Planner team significantly influence decision-making. Leadership and the development team must balance the needs and priorities of various NN Planner users, which can sometimes conflict. Understanding these dynamics is crucial for making informed choices that align with the organization's strategic goals. During this project, I have observed several situations highlighting these dynamics within the organization and NN Planner. Below, I will share two examples.

First, the development team receives numerous requests from different departments. However, not all requests can be accommodated. Ultimately, it is the development team that determines what to prioritize in the development of NN Planner, with the product owner having the most influence over these decisions. Another example is when Novo Nordisk force teams in adopting the tool. Some end users in laboratories prefer to stick with traditional ways of working, such as using Excel sheets and whiteboards (see figure 2 for reference). These users are now required to transition to NN Planner to comply with the organization's interests. Acknowledging these conflicts and employing effective conflict resolution strategies can foster a positive organizational culture and enhance teamwork.

The metaphor of organization as flux and transformation

NN Planner promotes a culture of continuous improvement by encouraging users to develop working plans tailored to the specific needs of their teams. Employees are invited to innovate and adapt in response to the company's rapid growth

and emerging challenges. References to chaos and the butterfly effect highlight the importance of learning from both successes and failures. Additionally, Novo Nordisk actively fosters a learning culture where employees are encouraged to reflect on outcomes and refine processes based on past experiences.

The metaphor of organization as instrument of domination

As previously mentioned, new NN Planner users may perceive digitalization as an additional burden rather than a supportive tool. For example, older users may feel frustrated by the need to adapt to yet another digital tool, especially since NN Planner changes their everyday working methods. If the onboarding process lacks clear communication regarding the tool's objectives and benefits, it may foster uncertainty and resistance, reflecting the idea of domination.

For instance, in interviews with an SPC using NN Planner (see Section 5.b), some end users expressed concerns about potential micromanagement and a reluctance to relinquish control over their planning schedules. In conclusion, the successful adoption of NN Planner among new teams at Novo Nordisk will largely depend on how the initiative is communicated and implemented. This consideration will be vital when onboarding new teams into NN Planner.

4.b   Related work

In this section, I will begin by introducing the relevant onboarding materials currently available for NN Planner, along with the key stakeholders and users involved in this project. Additionally, I will outline their roles and characteristics and describe how they collaborate within NN Planner. Finally, I will detail the literature search process undertaken to explore existing research on digital product onboarding, particularly in fast-growing companies, concluding with a presentation of the findings from this search.

4.b.1   Describing the Current Situation

To describe the current onboarding process for users of NN Planner, I want to highlight that there is a dedicated page on the Novo Nordisk intranet that provides various onboarding materials. These materials include user testimonials, guides on how to download and access NN Planner, videos showcasing new features presented by the Product Owner, and slideshows for different tasks. Notably, there is a slideshow specifically designed for onboarding new teams. Figure 5 illustrates the onboarding journey for new teams using NN Planner. I believe this onboarding guide is crucial for my research, as it significantly contributes to the onboarding experience for new users of the NN Planner tool.

The intranet page also features training videos, demonstrations of key functionalities, and specific guides, including steps on how to download NN Planner. However, while these resources are valuable, they are not organized in a user-friendly manner. They are classified only by document type, which means that users must already know what they are looking for. Additionally, the intranet

page lacks a clear navigation structure, making it harder for users to find the materials they need. Furthermore, some of the content is outdated, which can lead to confusion for users.
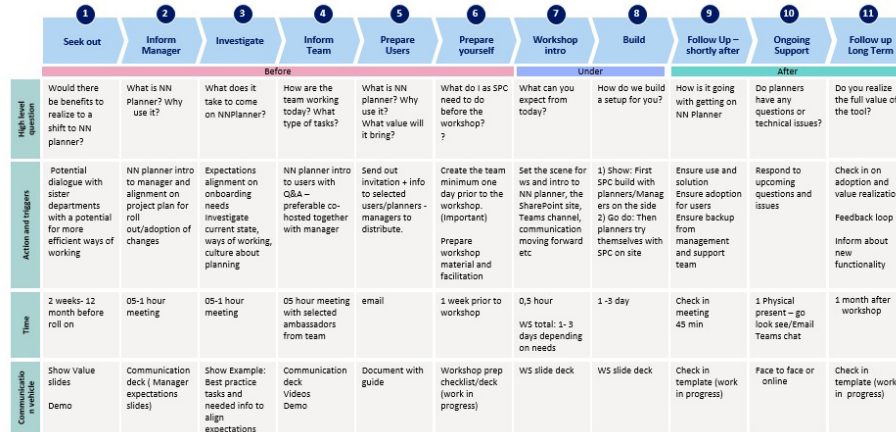
	1 Seek out	2 Inform Manager	3 Investigate	4 Inform Team	5 Prepare Users	6 Prepare yourself	7 Workshop intro	8 Build	9 Follow Up – shortly after	10 Ongoing Support	11 Follow up Long Term
	Before					Under			After		
High level question	Would there be benefits to realize to a shift to NN planner?	What is NN Planner? Why use it?	What does it take to come on NNPlanner?	How are the team working today? What type of tasks?	What is NN planner? Why use it? What value will it bring?	What do I as SPC need to do before the workshop??	What can you expect from today?	How do we build a setup for you?	How is it going with getting on NN Planner	Do planners have any questions or technical issues?	Do you realize the full value of the tool?
Action and triggers	Potential dialogue with sister departments with a potential for more efficient ways of working	NN planner intro to manager and alignment on project plan for roll out/adoption of changes	Expectations alignment on onboarding needs Investigate current state, ways of working, culture about planning	NN planner intro to users with Q&A – preferable co-hosted together with manager	Send out invitation + info to selected users/planners - managers to distribute.	Create the team minimum one day prior to the workshop. (Important) Prepare workshop material and facilitation	Set the scene for ws and intro to NN planner, the SharePoint site, Teams channel, communication moving forward etc	1) Show: First SPC build with planners/Managers on the side 2) Go do: Then planners try themselves with SPC on site	Ensure use and solution Ensure adoption for users Ensure backup from management and support team	Respond to upcoming questions and issues	Check in on adoption and value realization Feedback loop Inform about new functionality
Time	2 weeks- 12 month before roll on	05-1 hour meeting	05-1 hour meeting	05 hour meeting with selected ambassadors from team	email	1 week prior to workshop	0,5 hour WS total: 1- 3 days depending on needs	1 -3 day	Check in meeting 45 min	1 Physical present – go look see/Email Teams chat	1 month after workshop
Communication vehicle	Show Value slides Demo	Communication deck (Manager expectations slides)	Show Example: Best practice tasks and needed info to align expectations	Communication deck Videos Demo	Document with guide	Workshop prep checklist/deck (work in progress)	WS slide deck	WS slide deck	Check in template (work in progress)	Face to face or online	Check in template (work in progress)

Fig. 5. SPC Journey: Roll on a new team

User Roles and Stakeholders

Single Point of Contact (SPC):

The Single Point of Contact (SPC) is essential for facilitating the use of NN Planner. Typically, one SPC is assigned to each team, serving as the primary link between the Product Owner, leadership, and the team. SPCs play a key role in driving the adoption of NN Planner within their teams, ensuring its effective implementation and utilization. They are required to attend regular sessions and meetings to discuss best practices for adopting NN Planner. Additionally, they should actively seek feedback from their teams and provide insights to the NN Planner development team, serving as a vital communication channel.

Typically, SPCs dedicate between 50% and 100% of their time to NN Planner, meaning that a significant portion of their job responsibilities revolves around this role. The ideal SPC embodies a curious mindset, a willingness to learn, and a commitment to continuous improvement, while also being technically skilled and self-motivated.

Planner: Planners are the individuals assigned by the team to handle planning tasks on their behalf. They actively utilize the automation features of NN Planner and typically allocate about one hour per week to the tool. In addition to this, they have various responsibilities that require up to five additional hours each week, including setting up the NN Planner Admin Module, using automatic planning (checking and adjusting plans), manually inputting ad hoc team tasks,

prioritizing fast-track batches, managing day-to-day replanning, participating in demos, and flagging capacity forecasts (only for Quality Control). Planners are often the most experienced members of their teams, as they should be familiar with tasks and processes. In larger teams, they may also receive support from additional Planners. Like the SPC, a Planner should possess curiosity and a desire to learn about NN Planner, focusing on continuous improvement while demonstrating technical skills and self-direction.

End-User: The end-users of NN Planner encompass all individuals who are part of the team, which may or may not include SPCs. End-users are everyone who interacts with the tool, including those involved in the planning process as well as those affected by the plans.

Product Owner (PO): The Product Owner is responsible for the NN Planner product and serves as the key liaison between the laboratories and the development team. Key responsibilities include overseeing the product's organization and functionality, ensuring the scalability of NN Planner across Novo Nordisk, maintaining strategic alignment with Novo Planning and related source systems, prioritizing laboratory needs, and creating the product roadmap and vision.

Development Team: The development team consists of the individuals developing the NN Planner tool. As briefly outlined in section 2.a, this team now consists of 13 members, including front-end and back-end developers, a Scrum Master, a data analyst, and others. During the project, I collaborated with a Senior UX/UI Designer as part of this team. The development team interacts exclusively with users through the SPCs.

Figure 6 presents the team behind NN Planner, which includes users, SPCs and the development team Additionally, figure 8 illustrates the typical workflows and intended interactions among these different roles. Lastly, figure 7 highlights the three distinct user types within NN Planner, along with the various departments from which these teams may originate.

4.b.2   Literature review

Documenting search process

To gain an understanding of the existing literature on the subject of digital product onboarding within fast-growing companies, I conducted what is described by Cronin et al. (2008) as a traditional literature review. The main objective of a traditional literature review is to provide a comprehensive background for understanding current knowledge (Clark et al., 2021c). Additionally, it can "inspire research ideas by identifying gaps or inconsistencies in a body of knowledge, thus helping the researcher to determine or define research questions or hypotheses" (Cronin et al., 2008, p. 38).

Using databases relevant to the field of study for literature searches is important to limit results to only what is pertinent, as there is a significant amount of
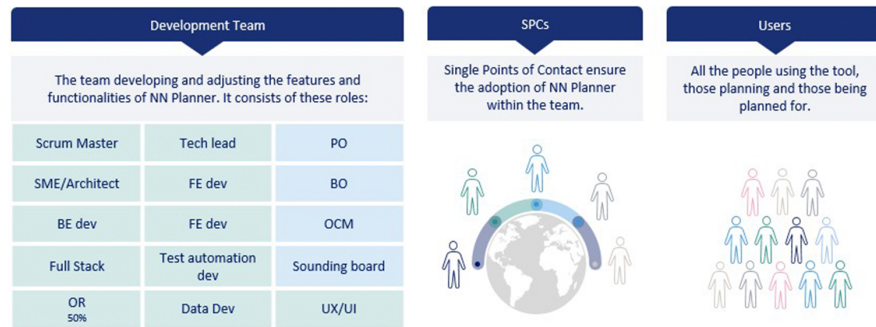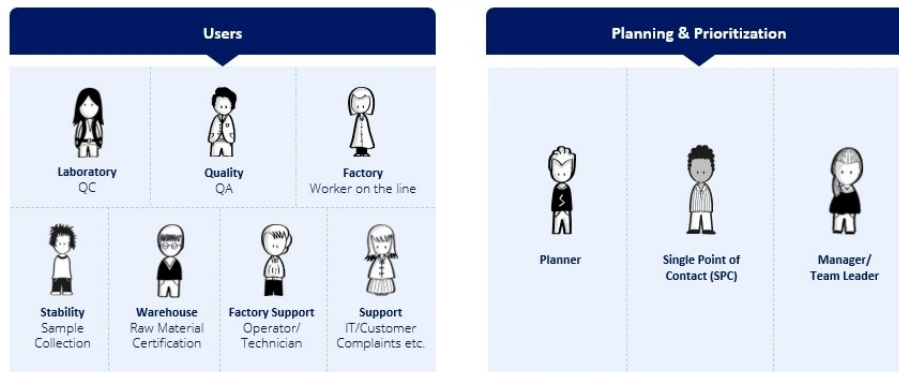
Fig. 6. The team behind NN Planner
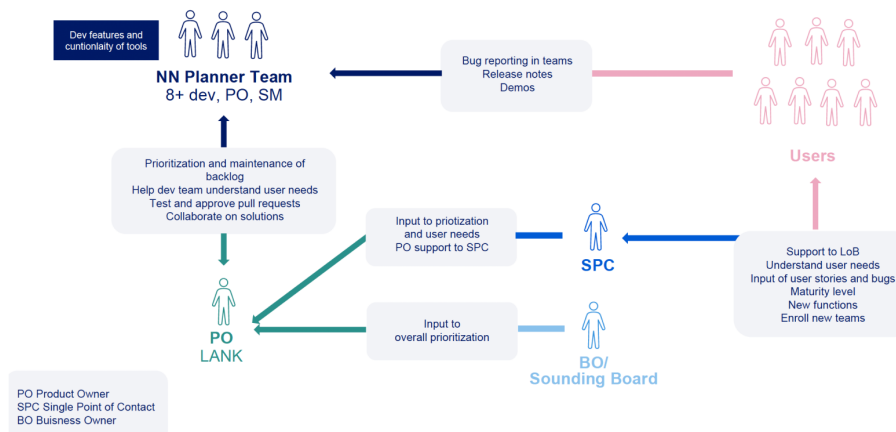

Fig. 7. User groups of NN Planner

Fig. 8. How the team works together

information available in online databases (Cronin et al., 2008). For the literature search, I used a combination of the ACM Digital Library, Scopus, Primo, and Google Scholar. While the ACM Digital Library and IEEE are specialized databases in the field of computer science, Google Scholar and Scopus are broader databases that collect multidisciplinary research. To ensure the discovery of as many relevant sources as possible, I conducted some of the same searches across multiple databases. Furthermore, I utilized the search methodology proposed by Zins (2000), known as "The Five Ws: What, Where, Words, Work, Wow." This strategy provides a systematic and effective approach to conducting searches, particularly within the context of information science (Zins, 2000). To find relevant literature, I began by examining the research question and breaking it into concepts and keywords. Using the Boolean operators `AND` and `OR`, I was able to combine the keywords in different combinations, as well as to search for synonyms (Cronin et al., 2008). For example, a search query might look like `"Digital product onboarding OR User training OR onboarding models AND Digital products OR IT"`. Another search method I employed was citation pearl growing, where you start from one document and use it to guide your further search (Rowley & Slack, 2004; Schlosser et al., 2006). When I identified papers relevant to the research, I used them to locate additional connected papers that could also be significant. For instance, I uncovered a study on "Developing Employee Onboarding Practices in Times of Remote Work" by (Baade, 2022) through the paper authored by (Koluacik, 2023). Additionally, I used the authors' keywords as inspiration for search terms. To filter the results and papers from the search, I applied a specific inclusion and exclusion criteria to the collected literature. Please refer to Appendix B for more information and documentation on the literature search process.

After collecting various relevant papers, I conducted an analysis inspired by thematic analysis as presented by (Braun & Clarke, 2006). Thematic analysis is a flexible and in-depth method for identifying and analyzing patterns and differences within data (Braun & Clarke, 2006). Later in the Define section (5) of this thesis, I will adhere more closely to the traditional approach of thematic analysis and provide a step-by-step explanation of the entire data analysis process. However, for this literature review, I first familiarized myself with the topics presented in each paper, highlighting different insights. Subsequently, I organized the data into potential themes (figure 9), which were further reviewed and synthesized. This process led to the identification of three main themes: "The Significance of Onboarding," "Digital Onboarding and Learning," and "Crafting a Well-Structured Onboarding Journey," which will be described below.

The Significance of onboarding

To comprehend the necessity and significance of onboarding, it is crucial to explore its benefits for both new users/employees and the company. This section presents relevant literature on the topic and delves into the advantages of a positive onboarding experience, as well as the potential drawbacks of inadequate onboarding.

Digital onboarding and learning through technology

Active vs
passive learning

a good structured on boarding journey

Information overload

Learning by observation

Formal vs informal
onboarding

Flexibility is important

Pre-onboarding

Buddy systems

Why is onboarding so important?

User motivations

Benefits for the company

General benefits for users/employees

Possible challenges from poor onboarding

Fig. 9. Analysis Process: Sorting Data into Potential Themes

When considering the motivations of users transitioning into a new digital product or company, it becomes evident that understanding the "why" behind the "what" they are learning is crucial. According to Zidena and Joob (2020), users choose to invest their time and energy into onboarding because motivation is at the core of their decision. This motivation serves as the driving force behind their performance and their desire for recognition and rewards (Sultana, Irum, Ahmed, & Mehmood, 2012; Zidena & Joob, 2020). New employees often show eagerness to demonstrate their skill sets and performance in a new job. Therefore, "the more highly motivated a trainee, the more quickly and systematically a new skill or knowledge is acquired" (Sultana et al., 2012, p. 647). According to Zidena and Joob (2020), ineffective onboarding can lead to a significant proportion of new employees contemplating leaving their new roles. Consequently, new employees seek an onboarding process that allows them to swiftly reduce the learning curve, ensuring their effectiveness and performance in their new positions. Their motivation lies in delivering results to the organization and receiving rewards in the shortest time possible. Additionally, "acceptance of digital onboarding is dependent on the employee's belief (self-efficacy) that digital onboarding is useful, providing the benefits necessary to complete tasks (outcome)" (Zidena & Joob, 2020, p. 12). Ultimately, a comprehensive onboarding process not only promotes employee engagement but also plays a pivotal role in reducing attrition, resulting in the cultivation of satisfied and engaged employees.

From the company's perspective, onboarding is equally important as it directly affects work commitment by aligning and connecting new employees with the organization's goals, vision, and mission (Boysen, 2017). According to Zidena and Joob (2020), companies that implement formal onboarding processes tend to produce more efficient employees compared to those utilizing informal onboarding practices. Furthermore, onboarding facilitates the rapid attainment of new employees' full potential and productivity, yielding a substantial return on investment for the organization (Zidena & Joob, 2020). Additionally, a comprehensive online onboarding and e-training handbook empowers newcomers, fostering their independence and enabling them to swiftly contribute to the company. The prompt integration of new employees not only accelerates their productivity but also directly influences the organization's return on investment Zidena and Joob (2020). Among the problems linked to poorly designed online onboarding, Koluacik (2023) emphasizes that it can "cause inefficient results for both the employee and the employer, especially in fast-growing companies" (Koluacik, 2023, p. 7). Furthermore, Coad, Daunfeldt, Hölzl, Johansson, and Nightingale (2014) reinforces this statement by explaining that in the context of rapid company growth, the accelerated pace can induce stress, flux, and uncertainty among employees, complicating the onboarding process. Additionally, overwhelming newcomers with excessive information within a limited time frame can lead to feelings of being overwhelmed (Koluacik, 2023). The absence of a well-structured remote onboarding program and inadequate e-training can further induce stress and evoke negative emotions among newcomers. It is crucial that onboarding be seen not just as a requirement, but as a relevant process, as it

forms the initial impression of the organization for incoming employees (Zidena & Joob, 2020).

In conclusion, onboarding is pivotal for both employees and the company. It significantly impacts work satisfaction, fosters enduring relationships and trust, and contributes to employee retention (Boysen, 2017; Zidena & Joob, 2020). Moreover, it plays a crucial role in enhancing employees' knowledge, skills, attitudes, and confidence at work, ultimately leading to higher levels of work commitment. Overall, onboarding serves as a vital bridge that aligns the aspirations of new employees with the strategic goals of the organization, paving the way for mutual growth and success (Sultana et al., 2012; Zidena & Joob, 2020).

Digital onboarding and learning

In crafting a blended learning environment, it is key to merge online and practical training by integrating e-learning with manual training. This approach not only incorporates passive learning methods but also contextualizes them within the product (Preece, Sharp, & Rogers, 2002i; Sousa & Martins, 2021; Zidena & Joob, 2020).

Technology plays a pivotal role in delivering a meaningful onboarding experience, offering numerous benefits for the onboarding process Zidena and Joob (2020). However, Compeau and Higgins (1995) asserted that a person's emotions and motivation to use technology are directly influenced by their perception of the ease of the technology's use. Consequently, users can benefit from features such as "easy access from different devices, the ability to search for a specific topic, and bookmarking it for future reference" (Zidena & Joob, 2020, p. 7). Furthermore, the automation of manual tasks streamlines processes and enhances overall efficiency (Zidena & Joob, 2020). While online onboarding and e-training offer multiple advantages, such as time efficiency, flexibility, and lower costs, they also present challenges (Sousa & Martins, 2021). Therefore, "understanding how humans learn is a key component for creating more meaningful products and experiences for users" (Sousa & Martins, 2021, p. 46).

According to Koluacik (2023), information overload and a lack of learning through observation are key drawbacks. To ensure a manageable onboarding experience, it is crucial to limit the volume of information provided to newcomers, especially during the first couple of weeks when a lot of material is offered as onboarding and training material (Baade, 2022). In relation to information overload, Baade (2022) explains that when companies design onboarding and e-training processes, they must consider the psychology of newcomers. To prevent feelings of being overwhelmed, communication with new users requires transparency in defining the goals of e-training (Baade, 2022; Koluacik, 2023). Additionally, "observation is considered to be one of the most effective tools when it comes to learning a new behavior or adapting to a new situation" (Koluacik, 2023, p. 21). Since some elements are more challenging to explain and teach virtually, the best way to absorb them is through observation and experience. Newcomers can engage in observation and ask experienced members to explain tasks, facilitating ex-

periential learning and the transfer of tacit knowledge (Baade, 2022; Koluacik, 2023).

Crafting a structured onboarding journey

According to Koluacik (2023), designing a well-structured onboarding plan is crucial for both newcomers and companies. The onboarding process serves as the initial point of contact for new employees, shaping "their first impression of the organization that they are about to join through how good their onboarding experience is" (Zidena & Joob, 2020, p. 735). Therefore, a well-planned onboarding experience can significantly influence how new employees perceive their role within the company and their ability to integrate effectively (Zidena & Joob, 2020). An effective onboarding process is not only about introducing new joiners to their roles and responsibilities but also about facilitating their integration into the social and performance aspects of the new job (Baade, 2022). It should be designed to help newcomers adjust to the expectations and culture of the organization, thereby reducing their learning curve and enabling them to contribute productively at an earlier stage (Baade, 2022; Koluacik, 2023). Koluacik (2023) states that there are four distinct perspectives for the onboarding process: Stages, through which newcomers progress; Actors, involved with the onboarding of newcomers; Tactics, and practices employed by organizations for onboarding newcomers; and Content, to be learned by newcomers during onboarding.

In recent times, there has been a growing emphasis on pre-onboarding, which can be viewed as a shift-left approach to onboarding. Pre-onboarding begins once the new hire has accepted the job offer and involves the use of digital training methods to engage and prepare employees before their official start date. Research indicates that "organizations employing pre-onboarding are 1.6 times more likely to achieve cost savings compared to those that do not" (Zidena & Joob, 2020, p. 738). This personalized and flexible approach not only saves valuable time during the onboarding process but also allows new employees to integrate into the work environment more efficiently, ultimately leading to a quicker return on the organization's investment in new talent (Zidena & Joob, 2020).

In conclusion, a well-structured onboarding journey is essential for the successful integration and performance of new employees. By carefully planning and implementing onboarding and pre-onboarding strategies, organizations can optimize the onboarding experience, leading to a more seamless transition for new hires and improved productivity in the long run.

4.c   Research methods

In the field of design thinking, as noted by Köppen and Meinel (2015), empathy plays a crucial role, emphasizing the importance of clear communication and continuous learning. During this project, I explored various research methods to gain insights into the onboarding processes of the NN Planner and to understand the users and the context in which the tool is utilized. Working within

Novo Nordisk, I faced certain constraints that influenced my choice of research methods. These constraints were primarily due to the demanding schedules of NN Planner users, who hold significant responsibilities. To address these challenges, I needed to adapt some research activities to align with existing company events and activities. This required a strategic approach to planning, ultimately leading to the selection of research methods that could be effectively integrated into the users' working environment and accommodate their schedules.

Below, I will explain the research methods used as part of our empathy stage. The data will not be analyzed until the Define stage (section 5), but I will describe how and why these methods were employed during the empathy stage, as that is when the data was gathered.

4.c.1   Field trip

According to Preece, Sharp, and Rogers (2002c), field studies are conducted in natural settings with the aim of enhancing the understanding of users' natural behaviors and how technology impacts them. In product design, field studies can help identify opportunities for new technology, determine design requirements, facilitate the introduction of technology, and evaluate its effectiveness (Preece et al., 2002c). Users can be observed in controlled laboratory-like conditions or in the natural environments where the products are utilized—in other words, the field. The method of observation depends on the purpose of the study and the chosen approach. Designers have access to a variety of observation techniques, including structured, semi-structured, and descriptive methods (Bryman, 2012d). Observation is beneficial at any stage of product development. Early in the design process, it aids designers in comprehending users' needs. Having a goal, even a broadly defined one, helps guide the observation, especially since there is often a significant amount of activity occurring. This focus encourages observers to pay closer attention to the context of events, the individuals involved, and the technology in use (Bryman, 2012d; Preece, Sharp, & Rogers, 2002a, 2002f). Given the complexity of evaluating user experiences, many experts utilize frameworks to structure and direct their observations. Such frameworks help observers maintain clarity regarding their goals and questions (Preece et al., 2002a, 2002f).

For this project, my team and I undertook a field trip to a Quality Control (QC) laboratory. During this visit, we engaged in an empathy exercise combining a photo safari with unstructured interviews. This hands-on approach allowed us to observe the work environment and see NN Planner through the users' eyes. Furthermore, I used a combination of photo safari and interviews as a data collection techniques, this provided us with direct insight into the daily operations of the laboratory and illustrated how NN Planner supports their daily workflow. I had the opportunity to speak with representatives from three user groups: an SPC, a Manager, and an End-user. I inquired about how they utilize NN Planner in their daily tasks, as well as the benefits and challenges of integrating it into their processes. This was instrumental in giving us a glimpse into their world, and it generated a wealth of data for future analysis. This

interactive experience allowed me to not only observe their work but also discuss functionalities that worked well and areas that required improvement. Watching how users interacted with their work space was particularly insightful, as it showed both the motivations and obstacles they faced.

To structure and direct the observation I utilized a journey map to help me think systematically on how the users interact with the NN Planner tool (Kelley & Kelley, 2015). here I documented the different phases, goals, actions, touchpoints, features, benefits, as well as identified painpoints and opportunities. An overview of the framework along with the journey map and pictures from the photo safari can be seen partly in figure 10, for a complete overview please refer to Appendix C.

The photo safari yielded numerous benefits. Primarily, it enabled us to immerse ourselves in the user's perspective, enhancing our empathy for their emotions, challenges, and needs in the workplace. Secondly, by observing users in a natural setting, we gathered authentic data that enriched our understanding of their behaviors and requirements. This perspective significantly contributed to my understanding of empathy. It is essential to employ diverse approaches to effectively grasp user requirements. By combining observation with interviews—as demonstrated through the photo safari and discussions—we gained profound insights into user motivations and potential areas for enhancement. This methodology embodies the two essential dimensions of empathy—external and internal—within the Design Thinking framework (Köppen & Meinel, 2015). According to Harper (2002), the difference between interviews using images and text, and the ones using words alone "lies in the ways we respond to these two forms of symbolic representation." (Harper, 2002, p. 13). These the use of photographs in interviews can evoke a different type of information rather than just more data, these images can connect individuals to past experiences or places, even if they are not directly related to the subjects' own lives Harper (2002).

Reflecting on the experience, I acknowledge Kujala (2008) assertion that "The power of field studies is in deeply understanding context of use" (Kujala, 2008, p. 461). While field studies are often regarded as time-consuming and generating a large amount of unstructured data that can be challenging to interpret, my visit to the laboratory provided invaluable understanding of the context in which NN Planner is used. It also offered insights into the organizational culture and the distinct roles of users, highlighting how each area benefits from the product in specific ways.

4.c.2   Interviews According to Preece et al. (2002a), interviews involve asking individuals a set of questions and can be broadly classified as open-ended or unstructured, structured, semi-structured, and group interviews, depending on how rigorously the interviewer adheres to a prepared set of questions. The most appropriate approach to interviewing depends on the evaluation goals, the questions to be addressed, and the paradigm adopted (Bryman, 2012a, 2012d; Preece et al., 2002a).
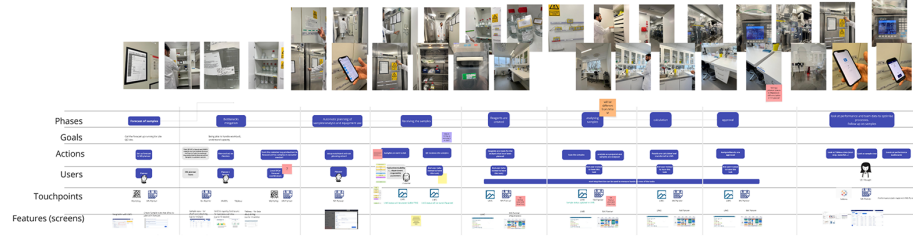
Fig. 10. User Journey: QC Lab Sample Process

To better understand the onboarding process for new users of NN Planner, I decided to conduct both unstructured and semi-structured interviews with different stakeholders. The first interview was unstructured and involved Louise, the Product Owner (PO) of NN Planner. Afterwards, I conducted a semi-structured interview with Daniel, who is not only an SPC but also responsible for onboarding new SPCs and teams into NN Planner. According to Clark et al. (2021a), in both unstructured and semi-structured interviews, the interviewer does not follow a fixed schedule, making the qualitative interview process inherently flexible and dynamic (Clark et al., 2021a). I considered this an appropriate approach for the flexibility needed during this exploratory phase of the research, as my intention was to gain insights into the process and gather the interviewees' perspectives on the onboarding experience. To capture their thoughts and feelings accurately, I allowed the interviews to follow an open-question format, covering a broad and evolving set of questions. This encouraged them to share what they deemed relevant and important while staying aligned with the research topic (Clark et al., 2021a).

At the time of my interview with Louise, I had no previous knowledge of the onboarding process for SPCs. As a result, the interview was unstructured, allowing for a relatively unconstrained discussion (Clark et al., 2021a). Louise, who had deep knowledge of the topic, took over the conversation, leaving me with less room to guide the discussion. The aim of this interview was to inquire broadly about the steps she takes when onboarding a new SPC into NN Planner. As detailed in the interview transcript, I asked an initial question, after which she spoke freely, describing the typical onboarding steps. Furthermore, I asked one follow-up question to delve deeper into her mention of the "buddy system." Reflecting on my interview with Louise, I recognize that she may have some bias or rigidity in her perspective on the onboarding process. Although she has extensive experience in onboarding and her position as a Product Owner grants her authority in shaping the vision and initiatives of NN Planner, I believe that as a researcher, I should remain aware of this potential bias. Therefore, at this stage of the research, I will treat her opinions as stakeholder input rather than absolute truths.

In contrast to my experience interviewing Louise, at the time of my interview with Daniel, I had a clearer focus on the research topic and was more interested in his perspective. Therefore, I prepared a more detailed interview guide with open-ended questions that allowed new themes to emerge (Clark et al., 2021a). According to (Clark et al., 2021a), in semi-structured interviews, we can observe forms of flexibility; while the questions served as a guide for covering all the topics I wanted to explore, the questionnaire was designed to accommodate a different order of questions since the participant sometimes anticipated certain inquiries (Clark et al., 2021a).

Please refer to Appendix D for access to interview transcripts and additional information about the interview process.

5 Define

The next stage of Design Thinking is often referred to as the Synthesis Process or "making sense of chaos" (Kolko, 2010). This stage aims to understand, create meaning, and contextualize the problem by leveraging the data collected during the preceding Empathize stage (section 4). To achieve this, I employ various methods, including thematic analysis to interpret the qualitative data from one of my interviews. This approach allows me to organize, interpret, and derive insights from the data (Dam & Teo, 2020). Additionally, I utilize Kolko's "Synthesis Framework" in conjunction with the User Journey Mapping method. This action-oriented process assists me in defining, organizing, and evaluating the relevance and validity of my findings, as well as identifying patterns within the data (Kolko, 2010). To deepen my understanding of the core problem, I apply Schön's concept of problem setting, which contextualizes the issues at hand (Schön, 1983). For this purpose, I employ the 'Point of View' (POV) technique, which enables me to empathize with users and grasp their needs effectively. Ultimately, these POVs translate into 'How Might We' (HMW) statements that guide me toward possible solutions (Dam & Teo, 2020).

It is essential to get this initial problem framing right, as it shapes my approach to subsequent solutions. While Design Thinking does not follow a strictly linear path, I have the flexibility to evolve my understanding of the problem as I move forward (Dam & Teo, 2020). According to Schön (Schön, 1983), naming and framing the problem allow designers to define both the framework and the various aspects of the problem. In conclusion, a clear definition of the problem steers me through the Design Thinking process and initiates the ideation stage (Dam & Teo, 2020).

5.a Choosing the right data analysis approach

According to Clark et al. (2021b), one of the key strengths of qualitative research lies in the depth and richness of the data it generates. The extensive material collected from interviews during the Empathize stage, exemplifies this richness.

However, these valuable attributes also make qualitative data analysis a complex task (Clark et al., 2021b).

In this thesis, I have considered various qualitative analysis methods to address the complexity of the data collected. I have chosen thematic analysis as my primary approach because it allows for a comprehensive exploration of the underlying relations, themes, and perspectives present in the dataset. This method was selected after careful consideration of other qualitative analysis techniques, such as content analysis, grounded theory, and narrative analysis, which are frequently cited strategies for qualitative data analysis (Clark et al., 2021b). Content analysis is a method that generates descriptions of communication's manifest content through an objective, systematic, and quantitative approach. While suitable for quantifying qualitative data, it may potentially limit the understanding of the deeper layers and connections within the data (Bryman, 2012c). Grounded theory is an inductive approach that focuses on discovering and organically developing theories from the data itself. However, its lengthy process did not align with the timeframe of this project (Bryman, 2012g). Similarly, narrative analysis specializes in exploring individual stories and contexts, yet it did not fulfill my goal of identifying overarching themes across participants' experiences (Bryman, 2012g).

Thematic analysis is a flexible and in-depth method for for identifying and analyzing patterns and differences in data. This approach enables researchers to explore meanings and connections rather than merely describing the data, which is why I selected it (Braun & Clarke, 2006). Themes or patterns can be identified using either an inductive or a deductive approach. In this case, the analysis was inductive, or data-driven, meaning that it involved "a process of coding the data without trying to fit it into a preexisting coding frame, or the researcher's analytic preconceptions" (Braun & Clarke, 2006, p. 83). Furthermore, the choice between inductive or deductive approaches depends on the coding purpose (Braun & Clarke, 2006). During this analysis, my goal was to gain a deeper understanding of the problem area rather than to answer a specific research question, aligning with an inductive approach. Moreover, I adopted the inductive methodology as outlined by Clark et al. (2021b) throughout the whole thesis project, beginning with a preliminary research question and progressing to develop a hypothetical explanation for the identified problem. In the Empathize stage, data was collected on cases that may help investigate the hypothesis and closely examine those cases. If I encounter a case contradicting the hypothesis, I may either redefine it to exclude the outlier or revise it to incorporate the new information, followed by additional data collection (Clark et al., 2021b) In contrast, a theoretical thematic analysis is typically driven by the researcher's theoretical interests in the subject matter (Braun & Clarke, 2006).

According to Clark et al. (2021b), "There are a number of different versions of thematic analysis" (Clark et al., 2021b, p. 1756). In this thesis, I utilized definitions from Ryan and Bernard (2003) and Braun and Clarke (2006) to establish what constitutes a theme. In the following section, I will go step by step through

Braun and Clarke (2006)'s six-step process for conducting thematic analysis, which is a recognized approach in this field.

5.b   Thematic analysis

To conduct a thematic analysis of the qualitative data collected from the interviews, I began by recording each session. For this, I utilized Dovetail software, which not only records the meetings but also automatically transcribes the recordings. In the following section, I will outline the different phases of thematic analysis and detail how I applied each phase specifically in my interview with the SPC, Daniel. As previously stated, all interview transcripts can be found in Appendix D.

The first phase of thematic analysis involves familiarization with the data. According to Braun and Clarke (2006), this process entails "reading the data in an active way, searching for meanings, patterns, and so on" (Braun & Clarke, 2006, p. 87). At this stage, I re-watched the interview with Daniel and carefully read through the transcript, highlighting specific instances where he addressed topics relevant to my investigation, particularly regarding the associated actions. Simultaneously, I gathered the notes I had taken during the interview and created additional notes reflecting ideas and questions that arose during the review.

Following that, I proceeded to the second phase, which involves producing initial codes from the data. According to Braun and Clarke (2006), there are two levels of coding: semantic and latent. The semantic approach focuses on describing the data at a surface level, using the participants' own concepts and wording. In contrast, the latent approach seeks to identify the underlying features that shape the data, assigning interpretation and meaning. I chose the semantic approach because it generates codes that are more closely aligned with the original source data. I find this option preferable, as it helps me avoid jumping to conclusions or assigning meaning too quickly. This approach keeps the analysis grounded in the user's perspective, allowing me to step away from my own interpretations of the data Braun and Clarke (2006); Bryman (2012e).

I collected all the coded data using post-it notes in a digital tool called FigJam (figure 11). After all data had been coded and collected, I moved on to the next phase of thematic analysis, which involves sorting the different codes into potential themes and collating all relevant coded data extracts within the identified themes. According to Ryan and Bernard (2003), themes come not only from the data (an inductive approach) but also from the investigator's prior theoretical understanding of the phenomenon under study (an a priori approach). Furthermore, Braun and Clarke (2006) stated that "this is when you start thinking about the relationship between codes, between themes, and between different levels of themes" (Braun & Clarke, 2006, p. 89). For instance, some themes were closely related, prompting me to reword them as subthemes. For example, the

theme "Onboarding Process" includes two subthemes: "Follow-Up Meetings" and "Training Materials."

After reviewing 72 notes, I identified eight new clusters of themes and retained 63 notes, as some were irrelevant—primarily notes taken during the interview that did not contribute to the analysis. The initial version of the themes includes: Difference Between Onboarding SPCs and Teams, Importance of Development Tasks, Resource Allocation for SPCs, Challenges in Onboarding, Importance of Management Support, Buddy System, and Onboarding Process. Additionally, the "Onboarding Process" theme has two subthemes: Follow-Up Meetings and Training Materials. Please see figure 11 for reference; this image in higher resolution can be found in the Appendix E.
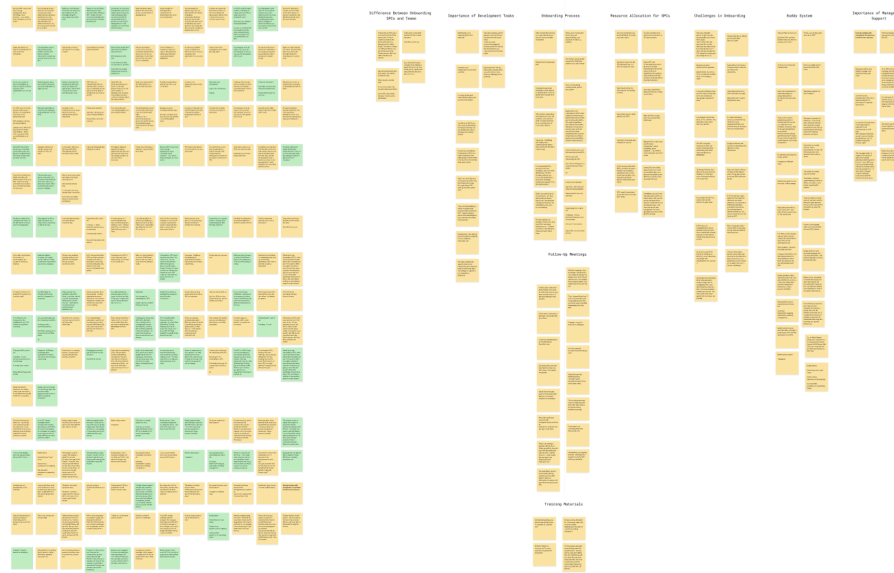
Fig. 11. Thematic Analysis: Phases 2 and 3 – Before and After Sorting for Themes

The next phase, after defining the first set of candidate themes, involves refining those themes. According to (Braun & Clarke, 2006), reviewing themes can be approached at two levels. Level one entails examining the coded data extracts, which involves reading all the collated extracts for each theme and assessing whether they form a coherent pattern. Level two involves a process similar to level one, but focuses on the entire data set. At this level, I need to consider the validity of individual themes in relation to the data set and assess whether the candidate thematic map accurately reflects the meanings evident in the data as a whole.

During this phase, it became evident that some of the candidate themes were not substantial. For example, I decided to remove "Difference Between Onboarding SPCs and Teams" because there was insufficient data to support it. Additionally, some themes overlapped and could be combined, while others may needed to be separated. For example, "Importance of Management Support" and "Resource Allocation for SPCs" were merged into a single theme. Each theme should fit together coherently, and there must be clear distinctions between them (Braun & Clarke, 2006).

Later, I revisited the data set with two objectives: first, to determine whether the themes were effective in relation to the data, and second, to identify any themes that might have been overlooked during the initial analysis (Braun & Clarke, 2006). To assist me during this process, I used Dovetail AI (Artificial Intelligence) tool to summarize all the data collected from the sticky notes and find patterns in the data. Some of the themes suggested by the tool were similar to my own, while others were more clustered. I used these results as inspiration to refine and create new themes until I was satisfied that "the candidate themes adequately capture the contours of the coded data" (Braun & Clarke, 2006, p. 91).

After reviewing and refining the themes, I organized them in a sequence that I believed would make the most sense for the analysis. This process led to two main themes: "SPC Onboarding Journey" and "Management and Resource Allocation for SPCs." Under the first theme, I identified four subthemes: "Training Materials," "Strengthening the Buddy System," "Follow-Up Meetings," and "Focus on Development Tasks." The following sections will provide a more detailed description of these themes and subthemes.

Phase five in thematic analysis centers on defining and naming themes. As noted by Braun and Clarke (2006) this stage involves the definition and refinement of the themes to be presented in the analysis, as well as analyzing the data within each theme. They emphasize, "it is important that by the end of this phase you can clearly define what your themes are and what they are not"(Braun & Clarke, 2006, p. 92). To do this, I created brief descriptions—just a few sentences—for each theme and sub-theme. These descriptions capture the essence of each theme, as well as the overarching themes, this may also facilitate the communication of this information to relevant stakeholders in the future.

The final phase of the thematic analysis, phase six, begins once I have a comprehensive set of fully developed themes. This phase involves completing the final analysis and writing the report, often referred to as the analysis stage (Braun & Clarke, 2006). According to Braun and Clarke (2006), when crafting the analysis, it's crucial to provide evidence for the themes identified in the data. This is achieved by presenting data extracts that illustrate the prevalence of the different themes. Furthermore, it's essential to ensure that "the analytic claims need to be grounded in, but go beyond, the 'surface' of the data, even for a 'semantic' level analysis"(Braun & Clarke, 2006, p. 94).

I present the themes individually below, along with the identified sub-themes and the specific insights they provide for this project.

– **Theme 1: SPC Onboarding Journey**

The SPC onboarding journey is crucial for the successful integration of new SPCs into their roles. As Daniel Boumher emphasized, a comprehensive onboarding process incorporates an initial introduction, ongoing support, and regular follow-up meetings.

The initial introduction, conducted by Luisa (Product Owner of NN Planner), sets the foundation by clarifying roles, responsibilities, and expectations. This introduction is followed by action-based follow-up meetings, which are essential for addressing challenges that SPCs encounter and for measuring their progress. These meetings ensure that continuous guidance is provided, enabling new SPCs to adapt and excel in their positions. Onboarding is viewed not as a finite process, but as an ongoing journey that prioritizes guiding newcomers towards development and offering them support during their onboarding journey.

- *Sub-theme 1: Training Materials*

  Training materials are crucial in the onboarding process, ensuring a standardized approach to education and communication among SPCs. Daniel highlighted the use of standard slides for onboarding and pointed out the resources available on the NN Planner SharePoint site, such as training videos, which help SPCs understand their mindset and responsibilities. This approach ensures that all new SPCs receive consistent training. However, he also emphasized that when sending out onboarding digital training materials, "you can not be naive and believe that NN Planner will just work". In other words, one cannot expect that newcomers will absorb all the learnings from the materials provided; some may not even go through them.

  Furthermore, Daniel clarified that even though he uses the standard slides available for onboarding, he typically tailors his presentations. As he mentioned during the interview, "I might add or remove slides depending on the team or area that is getting onboarded". This customization is necessary because some functions are more relevant to certain teams than others.

- *Sub-theme 2: Strengthening Buddy System*

  The buddy system is an instrumental component of the onboarding process for new SPCs to NN Planner. However, according to Daniel, it is not currently functioning as it should in practice. This may be due to the fact that buddy systems have only been implemented recently within NN Planner, more specifically in Q4 (Fourth Quarter) 2023.

In theory, pairing new SPCs with experienced mentors is intended to alleviate feelings of isolation and build confidence among newcomers. However, there is currently "no standard procedure for the buddy system". Although Daniel had a positive experience due to Louisa being close to him during his onboarding, he suspects that other SPCs might feel alone during their onboarding. As he stated during the interview, "I think you can feel quite alone as an SPC". During the interview, we also discussed how a buddy system fosters guidance and support, enabling new SPCs to navigate their responsibilities more effectively. Standardizing this system can enhance its effectiveness, ensuring that new SPCs receive consistent support and a clear understanding of their tasks. However, there are several issues regarding how we work with this system. For instance, Daniel emphasized that he has too many SPCs assigned to him, which prevents him from providing quality assistance to all of them. Consequently, he tends to prioritize the SPCs being onboarded in his local area, and does not offer as much assistance to those from other areas. As he mentioned during the interview, "They are free to reach out", but due to the high number of buddies assigned to him, he cannot assist them adequately. He further said that he feels overwhelmed because he does want to help, and he does not even know exactly how many new SPCs are assigned to him.

- *Sub-theme 3: Follow-Up Meetings*

  Regular follow-up meetings are essential in maintaining the engagement and development of new SPCs. Daniel describes these meetings as action-oriented, where specific tasks are assigned according to the "development plan" for each SPC. This plan is tailored to the functions that each SPC should learn to utilize in order to use NN Planner to its full potential. To facilitate this process, Daniel employs a "Maturity Mapping Model," which allows him to analyze the functions most frequently used by the SPCs. This analysis helps him identify key focus areas to achieve the greatest gains, including quick wins, while also addressing any challenges and tracking progress.

  According to Daniel, "you need follow-up and help actually getting started using the stuff that you learned; otherwise, it's a waste and you will not succeed as an SPC." Through these meetings, he emphasizes the importance of development, encouraging SPCs to move beyond basic tasks. As a result, SPCs receive essential support and guidance that not only reinforces their growth but also enables them to successfully adjust to their new roles.

- *Sub-theme 4: Focus on Development Tasks*

  Emphasizing development tasks over basic ones is critical for fostering long-term success within the SPC role and their teams. In our interview, Daniel articulates the importance of training SPCs and facilitating sus-

tainable change rather than merely completing routine or basic tasks within NN Planner. By focusing on development tasks, SPCs can advance in NN Planner, becoming empowered to build competencies within their teams and utilize the tool to its full potential. Conversely, if they concentrate solely on basic tasks, they risk becoming bottlenecks that prevent growth within their teams and slow down overall processes.

A suitable mindset is essential for SPCs to adopt this focus on development, positioning them as facilitators of change rather than just doers.

Sometimes, a regular user accustomed to performing planning tasks is appointed as the SPC for their own team, which can make it challenging for them to give up control. As Daniel elaborates, "right now, often Planners are chosen, but they often don't really do the role." Not all SPCs engage in the development aspect. In the following theme, I will elaborate on why this may occur.

– **Theme 2: Management and Resource Allocation for SPCs**

Management support plays a crucial role in allocating sufficient time and resources to SPCs, which significantly affects the long-term success of their teams and the NN Planner.

It is important for managers to provide adequate time and resources for SPCs to engage effectively in development tasks. According to Daniel, proper allocation not only yields immediate benefits but also promotes a sustainable and productive onboarding experience for the organization. Without sufficient hours, SPCs will struggle to fulfill their responsibilities.

As Daniel noted, "for managers, it can be difficult to say, for example, that you're 50% allocated, but in the long run, the time saved will be greater." He also mentioned that "managers will be more willing to allocate additional resources if they see the value in doing so." Furthermore, he emphasized the importance of regular meetings between managers and SPCs to ensure commitment and a clear understanding of the SPC role. These communication touchpoints are vital for prioritizing the objectives and resources relating to the NN Planner.

5.c   Synthesis framework

An important aspect of the design process is organizing chaotic data into a structured format (Dorst, 2011). In this project, I collected qualitative data during the Empathize stage using various methods, including reviewing related literature, conducting desk research, visiting one of the QC laboratories, interviewing relevant users and stakeholders, and examining previous efforts by NN Planner in this domain.

According to Kolko (2010), synthesizing this information can aid in making sense of chaos. He describes synthesis as a more insular and often obscure activity that

may not be easily grasped by outsiders. Designers engage in a user-centered discovery process to deeply explore a subject, which is followed by a reflective incubation phase. This iterative process ultimately culminates in the creation of a "tangible artifact as a visual representation of the reflection" (Kolko, 2010, p. 15). In this context, synthesis is an abductive, action-oriented sense-making process aimed at deriving the most plausible explanations from observations and experiences. As Kolko (2010) notes, synthesis reveals coherence and continuity; it indicates movement toward organization, reduction, and clarity. The framework for this synthesis is divided into three key steps: prioritization, judgment, and formation of connections. These steps enable us to define, organize, assess relevance and validity, and identify patterns across our data Kolko (2010).

Furthermore, Kolko (2011) emphasizes the importance of visualization in this process. For this reason, I created a visual representation of the data collected on a digital board, as it can be seen in Appendix E. This allowed me to identify patterns, understand the current situation, and develop potential solutions. Synthesizing the collected information enabled me to map out and explore new ideas, as well as identify emerging problem areas. Given the qualitative nature of the data—such as pictures, transcripts, and audio recordings—the data synthesis process "needs to be able to translate qualitative data into specific customer insights" (Luchs, 2015, p. 5). Luchs (2015) outlines several ways to achieve this, including coding transcripts, drafting personas and empathy maps of archetypical customers, and creating journey maps that depict the customer's current or ideal experience.

In this project, I determined that focusing on user journey mapping would be the most beneficial approach at this stage. This method effectively captures the onboarding journey of new SPCs as they transition into their roles, as well as the subsequent onboarding process that these SPCs should facilitate for new teams. Please see figures 12 and 13 for reference.

5.d   Use of AI within qualitative research

One of the most notable developments in qualitative research in recent years has been the arrival of computer software that facilitates the analysis of qualitative data (Bryman, 2012b). Furthermore, the proliferation of AI tools designed for this purpose has gained significant momentum (Lu et al., 2024). At Novo Nordisk, UX researchers utilize Dovetail software, which facilitates the automatic transcription of interviews, highlights key moments within the data, and aids in identifying recurring themes. Additionally, the tool enables users to discover common themes across various user interviews.

Other UX professionals and Human-Computer Interaction (HCI) researchers have examined the role of AI in qualitative data analysis, emphasizing the necessity of preserving human involvement in these processes (Lu et al., 2024). For example, Bryman (2012b) states that "having an awareness of context is crucial to many qualitative researchers, and the prospect of this element being sidelined

Fig. 12. User Journey Mapping: SPC onboarding to own role
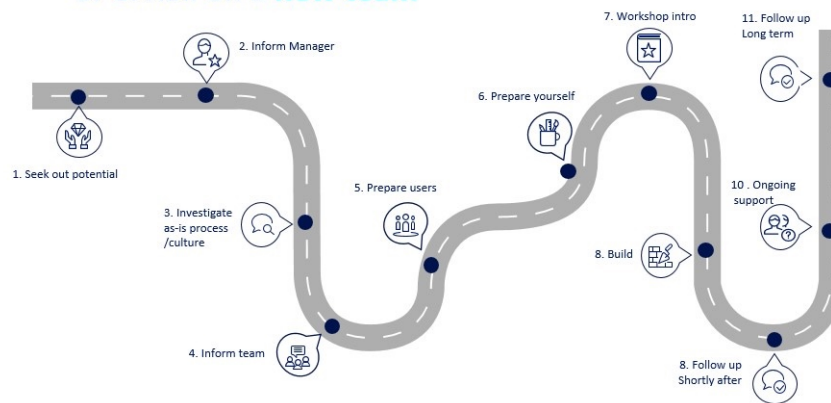
Fig. 13. User Journey Mapping: Roll-on experience for a new team

is not an attractive prospect" (Bryman, 2012b, p. 592). While some efforts have been made to automate qualitative analysis to enhance efficiency, research suggests that complete automation can disrupt established workflows and compromise data quality. Conversely, studies advocating for a structured, step-by-step approach to qualitative analysis—which allows for human agency—tend to produce superior psychological and performance outcomes (Lu et al., 2024).

As previously described, for this project, I opted for the traditional step-by-step process of thematic analysis. Once the themes within my interview data were delineated, I processed the data through Dovetail to compare my identified themes with those proposed by the software. This approach aimed to enhance both the internal reliability and credibility of the analysis. As stated by Bryman (2012f), internal reliability refers to the consistency achieved by having multiple people code a dataset to identify and resolve discrepancies in the codes (Bryman, 2012f). Credibility refers to the extent to which multiple coders reach similar conclusions about the data. When multiple coders independently arrive at the same themes, it strengthens confidence in the results (Bryman, 2012g). Although I conducted the thematic analysis independently, I used the results from Dovetail to evaluate my findings in terms of consistency. I decided to take this approach because thematic analysis is a subjective process that relies heavily on the researcher's interpretation of the data; thus, it is important to be aware of and avoid my own bias.

Furthermore, I recognize that analyzing extensive transcripts is labor-intensive, particularly since I undertook this process independently. Therefore, even though I chose to follow the traditional step-by-step method this time, I believe that AI tools can still be beneficial to UX researchers when utilized judiciously. I particularly value Dovetail as a resource, especially considering the additional interviews I may conduct as part of future work.

To conclude, organizing chaotic data into structured themes was an essential part of my reflective practice, as it enabled me to distill the vast array of qualitative data and observations into coherent insights. The thematic analysis revealed intertwined narratives that challenged preconceived notions and illuminated various aspects of user experience that needed to be addressed. Finally, I believe AI has the potential to effectively store, organize, and analyze large volumes of data, but it is the responsibility of the researcher to not undermine the complexity and nuance inherent in qualitative research.

5.e   Part conclusion

The insights from the interviews with users emphasize the interconnectedness of the onboarding processes for different users of NN Planner. It is essential for managers, SPCs and planners or end-users to receive comprehensive onboarding to fully leverage the software and enhance team effectiveness.

When managers are not adequately trained and do not grasp how NN Planner can benefit their teams, they are less likely to dedicate sufficient time for their

SPCs. Consequently, SPCs may find themselves limited to basic tasks, which can negatively impact their teams' performance and growth. Conversely, if SPCs lack support and encouragement to develop their skills, they may inadvertently hinder their teams from utilizing NN Planner to its fullest potential. In light of this, onboarding should be seen as an ongoing journey that encompasses initial introductions, continuous support, and regular follow-up meetings. These components are crucial for helping new SPCs acclimate and gain confidence in their roles. Providing effective training materials, tailoring presentations for different teams, and improving the buddy system are all vital aspects of this process.

Furthermore, while it is crucial for managers to allocate sufficient resources and time, it is our responsibility as the NN Planner development team to effectively communicate the long-term benefits that NN Planner can provide to both the team and the organization as a result of these efforts. Additionally, frequent communication between managers and SPCs is essential to align objectives and ensure that NN Planner is utilized to its full potential. By addressing these interrelated onboarding challenges, we can cultivate a more effective environment that maximizes success for both users and stakeholders.

5.f Problem setting

After synthesizing the data and deriving insights from it, I find it essential to deepen my understanding of the real problem. Understanding the meaningful challenge to be addressed and leveraging insights in the design efforts is essential for creating successful solutions (Doorley, Holcomb, Klebahn, Segovia, & Utley, 2018). To achieve this, I followed a pragmatic approach as described in section 3.c, utilizing the concepts of naming and framing the problem as presented by Schön (1983).

To reframe the problem, I employed the Point of View (POV) method as described by Dam and Teo (2020) and Doorley2018. According to them, the POV represents a distinct design vision crafted from insights gained during the empathy work.I utilized this method to place myself in the users' shoes, allowing me to gain a clearer understanding of their needs. This process involved identifying three key elements: 'who I am solving the problem for' (the user), 'why I am solving it' (the need), and 'what I am solving' (the insight) Dam and Teo (2020). Together, these elements form the framework for the POVs that I present in Table 1.

5.g "How Might We" statements

In this section, I translate the points of view (POVs) into potential solutions by applying the How Might We (HMW) method.

The phrase "How might we..." was introduced several years ago by Charles Warren and serves as an optimistic approach to exploring new possibilities in the

User	Need	Insight
Managers	To ensure that I can effectively support my team's use of NN Planner, maximizing its benefits for productivity and collaboration.	Managers often do not understand how NN Planner can improve team performance, resulting in them allocating insufficient time for SPCs to succeed in their roles.
SPCs	To ensure that they allow their teams to grow within NN Planner and fully leverage its capabilities, thereby enhancing my team's effectiveness and ability to deliver results.	Without adequate support and training, SPCs are restricted to basic tasks and struggle to use NN Planner effectively. Therefore, they need ongoing support, tailored training materials for their roles, and additional resources like time allocation and a supportive buddy system to enhance their development and confidence in using the tool.
End-users	To ensure the access to the full potential of NN Planner in daily tasks, allowing me to improve my productivity and contributing to overall team performance.	When SPCs focus on basic or planning tasks, they take over the end-users' primary role as planners. This leads to end-users feeling micromanaged, demotivated, and reluctant to record their data in NN Planner. Such issues hinder Novo Nordisk and NN Planner's goal of maintaining accurate process records to optimize workflows and conserve resources.

Table 1. POVs: User Group Points of View

world (Kelley & Kelley, 2015). As noted by Kelley and Kelley (2015), the term "how" implies that improvement is always possible, prompting us to consider how we can achieve success. Meanwhile, the word "might" temporarily lowers the bar, allowing us to entertain wild or improbable ideas without immediate self-censorship. This supportive environment enhances the chances of achieving a breakthrough. Additionally, "we" fosters a sense of ownership regarding the challenge, emphasizing that it will require a collective effort from our group. Importantly, the use of this phrase goes beyond mere semantics. As stated by (Kelley & Kelley, 2015, p. 200), "thoughts become words, and words become deeds." Therefore, choosing the right language can significantly influence behavior.

For an effective HMW question, it is crucial that it neither suggests a solution (even if it is a viable option) nor becomes too broad, which may hinder idea

generation. A well-crafted HMW question should facilitate the generation of diverse ideas (Kelley & Kelley, 2015). At this stage of the project, I have crafted these statements that define the problem formulation and serve as a framework for the subsequent section in which my team and I— including both the designer and the Product Owner of NN Planner—will work together to collaboratively explore ideas aimed at addressing these challenges.

- *HMW enable managers to better understand how NN Planner can enhance team performance to ensure they allocate sufficient time for SPCs?*

- *HMW provide mentorship and training for SPCs, allowing them to leverage NN Planner's full potential and enhance their team's effectiveness?*

- *HMW ensure that end-users can maximize their use of NN Planner without feeling micromanaged, thereby improving their productivity and motivation?*

Subsequently, I consolidate these three HMW questions into a unified problem statement, which will serve as the foundation for ideation in the next phase of the process. The final formulation of the HMW question is as follows:

> *How might we create a solution for SPCs of NN Planner that offers training and support to help them and their teams adopt the NN Planner product.*

Reflecting on the problem formulation, I found that the three initial "How Might We" questions were overly broad and ambitious for the scope of this project. Consequently, I opted to narrow the final HMW formulation to focus solely on the SPC user type. Nevertheless, as discussed earlier in Section 5.e, the onboarding processes for all types of users are interconnected. Thus, providing a solution for SPCs will inherently benefit the onboarding experience of other users as well, or, at the very least, inspire future opportunities for them.

In this thesis, I began the research process with an initial understanding of the problem, as described in Section 2.b.1. However, as the research progressed, insights gained from the Empathize stage revealed a more nuanced understanding of the problem's true nature. At this stage of the process, my team and I already have an idea of how the final product will look and that it will likely be hosted within the Novo Nordisk intranet (SharePoint). However, I believe it is crucial, as a designer, to refrain from hastily jumping to conclusions and to embrace the design thinking tools and opportunities for creativity and innovation. This is why I believe it is beneficial to frame the problem as a "How Might We...?" question, as it helps disarm my team's preconceived notions about what the solution might look like, fostering an environment conducive to creative thinking. This approach encourages idea generation and promotes the development of innovative concepts, effectively preparing my team and me for the card sorting exercise that will be described in the next section.

6 Ideate

In the ideation stage, the primary focus is to generate and develop creative ideas aimed at solving the problem in an innovative way. This requires expansive thinking to explore new solutions. My goal in this phase is to investigate a variety of ideas and potential solutions before selecting the most promising path forward (Doorley et al., 2018). According to Tanggaard and Wegener (2015), it is essential to approach innovative ideas from multiple perspectives and consider their applications in different contexts: "A successful innovation strategy is, therefore, to capture good ideas from a wide range of sources, play with them, and imagine their use in other contexts" (Tanggaard & Wegener, 2015, p. 3).

Brainstorming is a central method in the ideation phase, as it concentrates on one problem at a time, generating as many potential solutions as possible. These ideas can later be narrowed down to identify the best solution for prototyping Dam and Teo (2021); Preece, Sharp, and Rogers (2002g).

In this section, I first describe the design judgments made to direct the design process, defining the criteria and constraints that influence the ideation process. Following that, I present sketches outlining the structure of the final solution, Finally, I present the card sorting exercise conducted collaboratively within the team to evaluate what the final solution should encompass and how to organize its contents. Through these techniques, I aim to generate a diverse array of ideas, engage in discussions, and identify potential solutions that effectively address the problem outlined in this thesis. These ideas form the foundation for transitioning to the next stage: prototyping.

6.a Design judgment and criteria

Judgment making is a fundamental component of design, as highlighted by Nelson and Stolterman (2012). While it does not simply replicate decision-making, it is equally necessary. The ability to make informed design judgments often distinguishes an exceptional designer from an average one. By judgment, we mean the core of design wisdom—rooted in inquiry that leads to wise action. Essentially, design wisdom is characterized by good judgment, enabling appropriate actions aimed at effecting desirable change (Nelson & Stolterman, 2012). To fully grasp the concept of judgment, it is crucial to consider it in the context of knowledge, knowing, and the knower. In essence, judgment is a form of knowing that is inherently linked to the knower's experience. Design judgment entails the ability to derive subconscious insights from complex, ambiguous, and often paradoxical situations. This process leads to the emergence of meaning and value through the formation of relationships and connections, resulting in unity, forms, patterns, and compositions arising from what may initially appear chaotic. Thus, judgment can be seen as a holistic process that synthesizes disparate elements into a new, coherent whole (Nelson & Stolterman, 2012).

In the context of the project, I recognized early on that my team, including the Product Owner and Senior UX/UI Designer, viewed the onboarding solution

as part of a new Novo Nordisk Planner portal within SharePoint, the intranet utilized by the company. However, adhering to the design process, I was cautious about rushing into solutions, as I wanted to fully leverage the creativity and innovation fostered by the design thinking process.

Eventually, we reached a judgment regarding our approach: we would implement the solution within the Novo Nordisk intranet. This decision not only directed our design process but also provided the design team with a framework for understanding the criteria and constraints relevant to their efforts (Nelson & Stolterman, 2012, p. 147). Design criteria represent specific objectives that must be achieved for the project's success, thereby clarifying and embracing the scope of potential design outcomes while defining the boundaries of our conceptual framework (Nelson & Stolterman, 2012, p. 121).

There are several compelling reasons for integrating the onboarding of the NN Planner into the Novo Nordisk SharePoint intranet. First and foremost, Share-Point is established as the company's primary intranet platform and acts as a key communication tool, seamlessly integrating with various applications such as Microsoft Teams and Outlook. This existing infrastructure provides a robust foundation for hosting the onboarding solution. Additionally, numerous digital products within the organization already utilize SharePoint to disseminate information and resources effectively. As noted in Section 4.b.1, there is already a dedicated SharePoint page housing relevant materials for the Novo Nordisk Planner, further strengthening the case for integration. Moreover, consistency in user experience across multiple channels is essential for organizations, as highlighted by Rosenfeld, Morville, and Arango (2015c). While each channel may offer unique functionalities, it is crucial that the semantic structures remain familiar to users (Rosenfeld et al., 2015c, p. 18). In this context, hosting the new onboarding solution within SharePoint ensures that users, who are already accustomed to the existing site, will find the new solution intuitive and accessible. Finally, this approach also allows for the seamless redirection of the old site URL to the new resources, facilitating a smoother transition for users.

6.b   Sketching

According to Buxton (2007), sketching has long been a fundamental activity in design, characterized by its interactive imagery. It plays a crucial role in the cognitive process of design, fostering a dialogue rather than merely producing a finished product. Sketching introduces a unique dialectic into design reasoning, allowing designers to explore and communicate their ideas in the creative process (Buxton, 2007; Goldschmidt, 2003).

Buxton (2007) presents a handful of different attributes and advantages to sketching, among other things that it can be quick and timely, by giving the designer a chance to provide an illustration of an idea, which is also very inexpensive. The investment in a sketch should be in the concept, not in the execution, which makes it disposable (Buxton, 2007). Buxton (2007) highlights

several attributes and advantages of sketching, noting that it can be executed quickly and cost-effectively. The focus of investment in sketching should be on the concept rather than the execution, making sketches inherently disposable. Sketching significantly influences the creative thinking of designers, the essence of sketching lies in its ability to generate diverse opinions and interpretations through collaborative conversations among designers. While the physical sketch is important, it is largely the dialogue that serves as a key mechanism for exploring new ideas (Buxton, 2007; Nelson & Stolterman, 2012).

In this project, I employed sketching to facilitate communication within the NN Planner team and to design the overall structure of a new solution. The sketching process was initiated during a collaborative session with one of my designers from the NN Planner development team, using a whiteboard to stimulate discussion about what the new solution should encompass. Rather than seeking definitive answers, the goal was to explore options. This approach aligns with the philosophy that sketching is about inquiring into ideas rather than merely confirming known concepts Buxton (2007). Through this dialogue, we communicated various ideas, goals, and insights that our design solution needed to address, all while keeping the problem statement in focus. To facilitate this, I used 'How might we' statements to kickstart the sketching process and explore various ideas and concepts. For reference on this process, please see figure 14.

Finally, sketching enabled us to discuss the structure of a potential solution. During sketching, instead of focusing on getting the design right, we aimed to "get the right design" that would fulfill our users' needs (Buxton, 2007). Additionally, sketching fosters critical thinking, promotes open-mindedness, and encourages innovation, which are essential elements of Design Thinking (Buxton, 2007; Preece et al., 2002g).

6.c   Card sorting

Card sorting is described by Nawaz (2012) as a method typically used in UX design to understand users' mental models regarding website structure and to develop well-structured solutions. This technique reveals common patterns among users by categorizing information into various groups, thereby informing the organization of the information architecture and identifying the appropriate content groupings (Nawaz, 2012). Website content can typically be organized into different hierarchical levels and navigation structures, and having a well-defined website structure is crucial, as it influences users' response times and their ability to navigate effectively to find relevant information (Nawaz, 2012). The website structure in card sorting is derived from the topic groups created during a card sorting session. There are two main types of card sorting: open and closed. In open card sorting, participants are free to name each group of cards according to their understanding, categorizing the cards as they see fit. On the other hand, closed card sorting involves predefined groups, where participants sort cards into specific categories based on their content. Open card sorting can serve as valu-
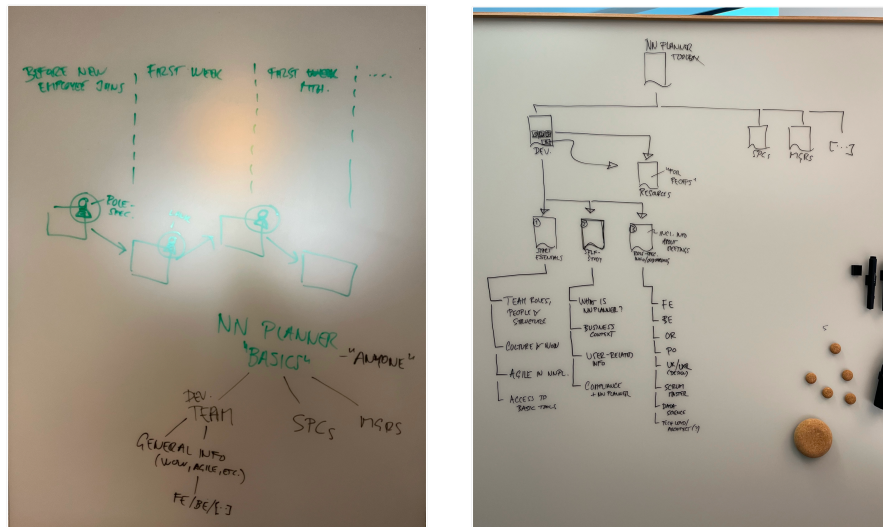
Fig. 14. Sketches: Information architecture

able data for new or existing services and products (Nawaz, 2012; Spencer & Warfel, 2004).

According to (Spencer & Warfel, 2004), group card sorting typically yields richer data than individual sorting, as participants openly discuss their decisions during the session. In summary, card sorting serves as a simple, reliable, and cost-effective method for gathering insights on the overall structure of the design solution, which I will present in the subsequent section. While it did not aim to provide a definitive structure for our solution, it proved instrumental in capturing valuable information for the ideation stage, ultimately contributing to a more user-friendly product (Spencer & Warfel, 2004).

For this project, I employed the card sorting method to organize both the structure and the content of the future design solution. I conducted the card sorting exercise alongside both the NN Planner designer and the product owner, as they possess greater knowledge of the materials. To do this, I first identified the content to be organized and prioritized and utilized the FigJam digital tool to create a space with post-it notes representing the content structure, as well as each material required for onboarding. This included existing resources but also held space for new materials and ideas for future content. This approach is beneficial as it will allow us to design a structure that can accommodate new items with minimal rework in the future (Spencer & Warfel, 2004).

Reflecting on the outcome of card sorting, I think is important to note that the website structure should not be finalized without further usability testing; con-
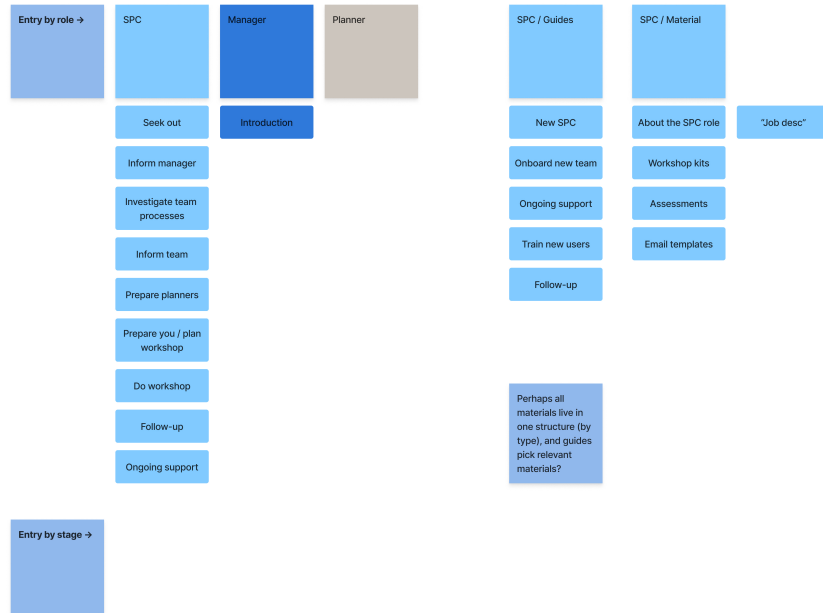
Fig. 15. Card Sorting: Outcome structure and scope
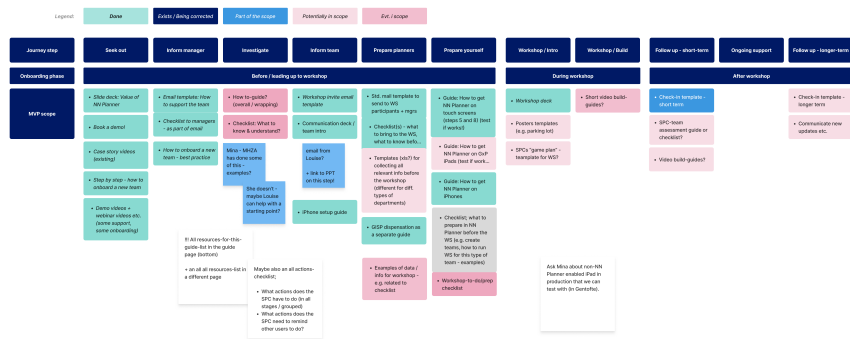
Fig. 16. Card Sorting: Outcome content and scope

ducting tests with real users will help validate our findings, as team-only sessions may not fully capture the complete user experience (Nawaz, 2012). Please refer to figure 15 to see the output of our card sorting session. Additional information on the Ideation process can be found in Appendix I.

6.d Information architecture

Information architecture (IA) requires designers to develop clear structures for information that can be tailored for different channels based on specific needs. The goal of establishing such a structure is to clarify how various elements fit together, ultimately simplifying the process of finding and understanding information (Rosenfeld et al., 2015c).

As highlighted by Rosenfeld et al. (2015c), many organizations face challenges in managing the vast amount of information and the diverse methods available for accessing it. To address this challenge, a systematic, comprehensive, and holistic approach is essential for effectively organizing information (Rosenfeld et al., 2015c).

For the NN Planner, we have a substantial amount of information to organize. Both users and stakeholders require access to various resources, such as onboarding materials, support guides, training videos, and more. These resources serve as supplemental materials that enhance the use of the NN Planner tool and provide assistance when needed, as illustrated in figure 17.

According to Rosenfeld et al. (2015b), digital systems that store highly structured data can be complex. While some users might know exactly what they are looking for, others might engage in what Rosenfeld et al. (2015b) refers to as "exploratory seeking," where they search for useful items without a clear idea of what they want. In these cases, users often seek to learn something through the process of searching and browsing.

There are multiple ways to categorize IA components; however, this project primarily focuses on organization systems, navigation systems, and contextual navigation systems, as described by Rosenfeld et al. (2015a). To create this, I need to imagine how different users could search for information. For example, when users search the intranet, they might begin by browsing through the intranet portal to the NN Planner site, then navigate to the SPC role, hoping to find the information they need. If their queries remain unanswered, they may send an email to a member of the development team for further assistance.

Navigation systems detail how users browse or navigate through information (Rosenfeld et al., 2015a, 2015b). In designing the information architecture for this project, I considered these information-seeking behaviors. As illustrated in figure 18, users can access information on the NN Planner portal in two main ways: by searching and filtering based on their specific role or by utilizing the "document repository," where they can sort materials by either name or document type.

Additionally, organization systems, also known as taxonomies and hierarchies, represent the primary means of categorizing or grouping content—whether by topic, task, audience, or chronology (Rosenfeld et al., 2015a). For example, in the top row, which represents the top navigation bar, I included a tab for filtering by user role, as well as an additional tab designed as a file repository where materials can be accessed by document type rather than by role. We decided to name this file repository "Learning & Support Universe." See figure 17 for reference.

Moreover, contextual navigation systems provide consistently presented links to related content, often embedded in text to connect specialized information within an environment (Rosenfeld et al., 2015a) . I considered this approach while creating various resources for SPC. For closely related onboarding materials, I ensured that contextual navigation systems were employed to help users navigate through these documents.

Finally, Rosenfeld et al. (2015a) emphasize the importance of visualizing information architecture. Given that the field can be abstract, many individuals who conceptually grasp the basics of IA might not fully understand it until they see and experience it. Therefore, I chose to further develop the visualization stemming from the sketching phase to illustrate the information architecture, facilitating effective communication with my colleagues from the NN Planner development team. For additional documentation on the information architecture and navigation flows, please refer to Appendix J.
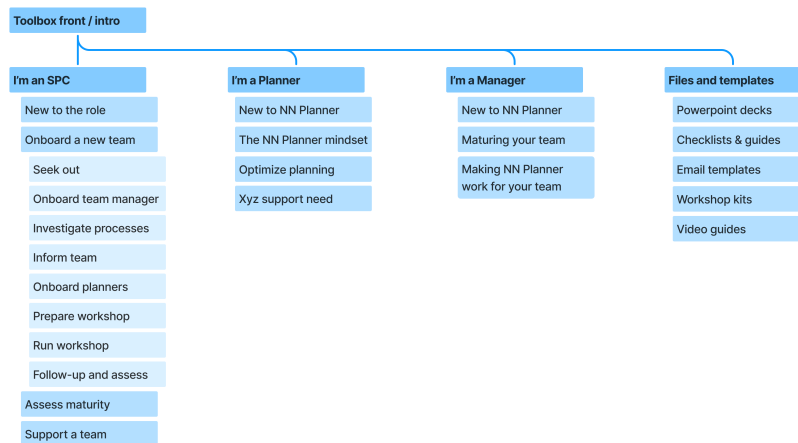
Fig. 17. Information Architecture: Resources Needed by Role
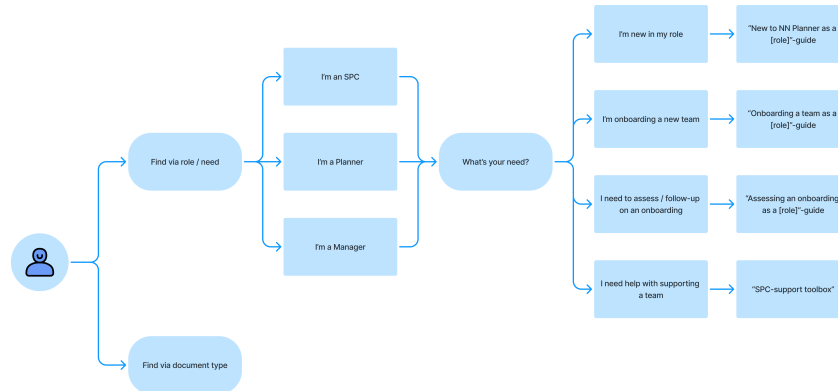
Fig. 18. Information Architecture: Flows and Navigation
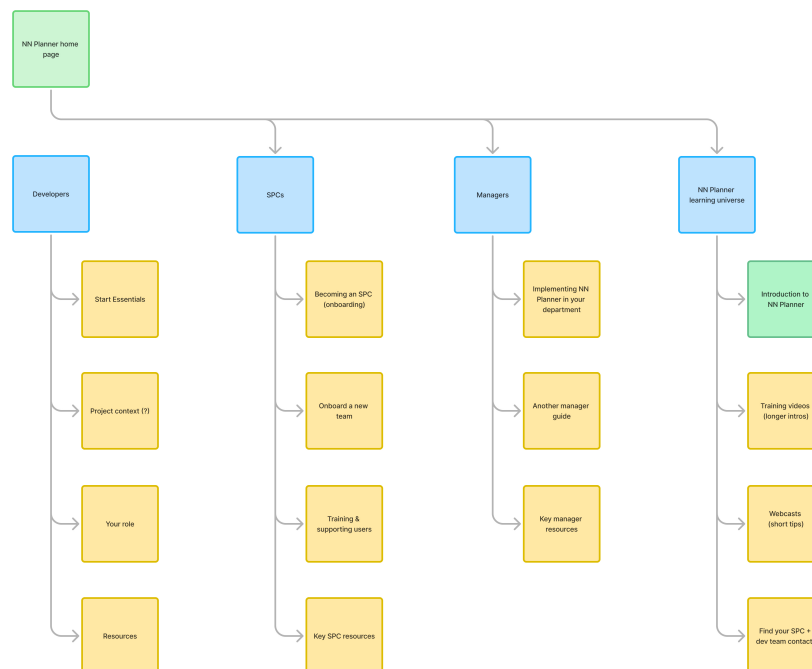
Fig. 19. Information Architecture: New NN Planner Website

7 Prototype

According to Camburn et al. (2017), a prototype serves as a pre-production representation of certain aspects of a concept or final design. In this stage, designers translate concepts and abstract ideas from the ideation phase into tangible artifacts. This step is fundamental in design thinking, acting as a convergence point where analyses and ideas unite to transform into concrete solutions (Camburn et al., 2017).

Lim, Stolterman, and Tenenberg (2008) emphasize the importance of creating manifestations during the design process that highlight the most intriguing characteristics, all while preserving a clear understanding of the overarching concept. Prototypes thus become vital tools for exploration, communication, and learning within the design process. They facilitate experimentation, testing, and iteration of ideas, which ultimately leads to a deeper comprehension of the design space and its various possibilities (Camburn et al., 2015, 2017).

Commonly, a distinction is made between virtual and physical models, as well as variations in the fidelity of prototypes concerning the final model (Camburn et al., 2015, 2017; Lim et al., 2008). As I develop a digital solution, the prototyping is conducted using the Figma software. In this section, I first describe both low and high-fidelity prototypes and outline the rationale for choosing one option over the other at this stage of the project. Subsequently, I present the initial version of the prototype and conclude by discussing the second iteration, highlighting the improvements made based on stakeholder feedback.

7.a Types of prototypes

As briefly outlined in the previous section, prototypes can be categorized into low-fidelity and high-fidelity types, each serving distinct purposes and being appropriate for various stages of the design process (Lim et al., 2008; Preece, Sharp, & Rogers, 2002b).

A low-fidelity prototype is typically a paper-based model that is more abstract and less detailed. Often employed in the early design stages, these prototypes facilitate design exploration and communication. Their simplicity can result in a superficial understanding of the user experience, potentially leading to misunderstandings regarding design challenges and validity (Lim et al., 2008). However, they are efficient for brainstorming, allowing for the testing and iteration of ideas without the need for detailed design commitments. One of the key advantages of low-fidelity prototypes is their flexibility; they can be easily modified and adapted based on feedback. Additionally, they can be created quickly, enabling rapid iterations while being cost-effective due to their minimal resource requirements. Moreover, through rapid prototyping tools such as mock-ups of graphical interfaces, the designer can generate quick ideas and gather feedback rapidly for iteration. (Chasanidou, Gasparini, & Lee, 2015; Lim et al., 2008)

In contrast, a high-fidelity prototype is utilized later in the design process when the concept is more refined. These prototypes closely resemble the final product, making them valuable for testing and evaluating user experience and interaction (Lim et al., 2008). Their detailed nature and similarity to the final product's appearance and functionality make them ideal for discussing ideas with stakeholders; they are a communication device among team members, and even an effective way to test out ideas for yourself (Preece et al., 2002b). However, Lim et al. (2008) cautions that high-fidelity prototypes may lead designers and stakeholders to prematurely commit to specific solutions, thereby reducing openness to alternative design ideas. Additionally, testing various flows and functionalities can result in misunderstandings about the product's actual capabilities and limitations, as users may respond based on their perception of the prototype as a finalized product rather than an iteration still in development (Lim et al., 2008).

To conclude, it is essential to use each type of prototype at the appropriate stage of the design process to take advantage on their respective benefits. Low-fidelity prototypes are invaluable for early exploration and rapid iteration, while high-fidelity prototypes are crucial for detailed testing and stakeholder engagement. A balanced approach utilizing both types can lead to a more efficient and thorough design process, ultimately resulting in a superior final product (Lim et al., 2008; Preece et al., 2002b).

In this project, I created sketches (see Section 6.b) that facilitated the initial ideation of the information architecture. Although some may consider sketches to be a form of low-fidelity prototype, Buxton (2007) argues differently, stating that "sketches dominate the early ideation stages, whereas prototypes are more concentrated in the later stages where things are converging within the design funnel" (Buxton, 2007, p. 139). At this stage of the project, I believe that developing a high-fidelity prototype is more appropriate, as many aspects of the design have already been defined.

Some of the reasons why a high-fidelity prototype is more appropriate include the fact that SharePoint will be the platform on which the design will reside. This further limits the design elements that can be employed according to Novo Nordisk standards, as the company has established design restrictions to ensure consistency across the intranet, thereby requiring employees who want to create new pages on SharePoint to adhere to the company's brand identity. Consequently, creating a high-fidelity prototype will provide greater value, as it offers a more realistic representation of the final product, incorporating colors, typography, and detailed interactions. Furthermore, the prototype will need to be presented to various stakeholders, and a polished, high-fidelity prototype can effectively visualize the end result, helping to persuade them to support the project, as it appears more professional and complete compared to a low-fidelity concept (Camburn et al., 2017). Finally, assistance from other employees may be necessary to develop the product on SharePoint. To facilitate clear commu-

nication and understanding with them, the prototype needs to be as detailed as possible.

7.b   First-iteration

To support my prototype design process, I investigated the prototype conceptualization framework proposed by (Lim et al., 2008). This framework enhanced my understanding of the essence of prototypes as it offers a vocabulary for describing the specific characteristics of individual prototypes. By utilizing this framework, I can more effectively define the objectives of each design iteration and formulate questions to address during the planning and creation of the prototypes. Additionally, it encourages me to think critically about the prototyping strategy (Lim et al., 2008).

In this framework, Lim et al. (2008) distinguishes prototyping along two key dimensions: prototypes as filters and prototypes as manifestations. The filtering dimension involves the designer identifying a preliminary set of design characteristics that a prototype may embody. The term "filter" is used because it emphasizes selecting the crucial aspects of a design idea to focus on while eliminating unnecessary elements that the specific prototype does not need to explore. On the other hand, when creating a prototype that encapsulates a specific design idea, designers must make choices regarding the prototype's materials, the level of detail (which relates to the concept of fidelity), and the range of elements covered (which determines whether the prototype engages with a single aspect of the design idea or multiple facets). These three aspects—material, resolution, and scope—are critical to what Lim et al. (2008) defines as the anatomy of the prototype. Collectively, they refer to these considerations as the manifestation dimensions (Lim et al., 2008).

In this project, the prototype includes three pages that were previously defined in the information architecture. These pages include the Homepage, a role-specific subpage for the SPC role, and a sub-subpage featuring a playbook guide for onboarding a new team as an SPC. We selected these three pages for prototyping as they represent the three primary hierarchies of the information architecture and encompass all necessary elements that need to be represented. This aligns with what Lim et al. (2008) describes as the economic principle of prototyping, which states that "the best prototype is one that, in the simplest and most efficient way, makes the possibilities and limitations of a design idea visible and measurable" (Lim et al., 2008, p. 4).

The prototype of the Homepage and the SPC subpage, along with the navigation interaction between the two pages, can be seen in figure 22. Additionally, the playbook guide, which provides a roadmap for onboarding a new team, is illustrated in figure 23. This page aims to display the onboarding journey with a step-by-step guide and can serve as a template for displaying other complex tasks that last extended periods, such as onboarding journeys. The various sections of the dropdown menu represent different steps of the onboarding process,

containing resources and other materials required for each stage. Furthermore, as illustrated in figures 20 and 21, we created two graphical elements: one that details the onboarding journey for SPCs transitioning into their roles, and another that illustrates the onboarding process for a new team being guided by an SPC.

We developed the prototypes using Figma. For colors and typography, we utilized the design system from Novo Nordisk. Although SharePoint has some pre-defined elements that we also considered, such as the navigation bar, buttons, and dropdown menus, we aimed for a cohesive design throughout. Finally, for the roadmap graphic element, we drew inspiration from other design journeys available online.

As this onboarding imagery is intended for the SPC, I did not include the pre-onboarding process in this journey prototype. However, the pre-onboarding action points can be found in Appendix F, along with additional imagery and information regarding the prototyping phase in Appendix K.

7.c Second-iteration

Once the first prototype was ready and there was a clearer understanding of what the SharePoint should include, a meeting was held with the product owner of the team to gather feedback. Following this, a consultation took place with an external SharePoint expert who would assist in developing the SharePoint portal, aiming to streamline the entire project.

In this section, I will outline the insights gathered from these meetings and how they influenced the project's direction, leading us to make changes to the prototype. The discussions with the developer revealed several limitations of SharePoint. These constraints arise not only from the editing interface, which offers a limited number of available elements but also from additional restrictions imposed by Novo Nordisk to maintain a consistent visual identity across the intranet.

As a result, we had to redesign the prototype. For instance, the Roadmap onboarding guide could not be created as originally designed in the first iteration (figure 23) because SharePoint did not allow positioning the roadmap graphic image next to a dropdown menu. Consequently, a second version of the playbook guide page was developed, as shown in figure 24. In this new version, the onboarding journey map opens as an image overlay, providing more space for the dropdown menu containing the various onboarding steps. Additionally, options for downloading and printing the image were included.

Furthermore, feedback was received after a meeting with the Product Owner of NN Planner, during which the prototypes were presented. Overall, the feedback was positive; however, a suggestion was made for the homepage to adopt a more sales-oriented appearance, as many external visitors unfamiliar with the NN Planner tool would form their first impression based on this page. This
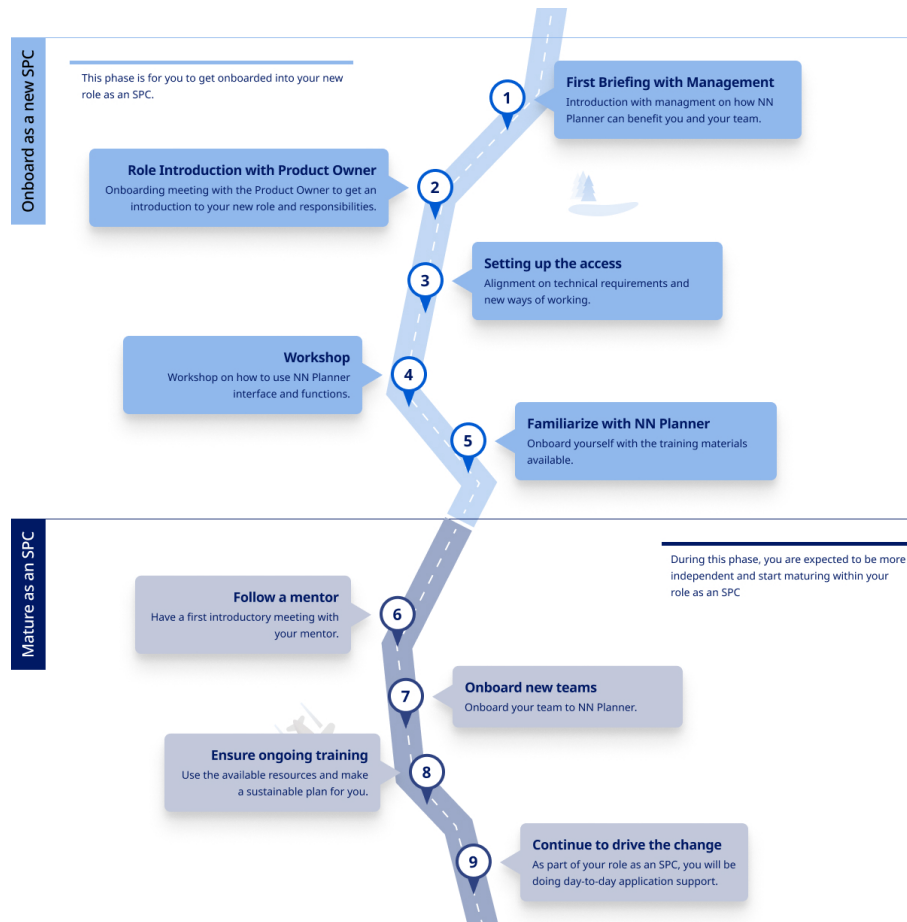
Fig. 20. Prototype: Onboarding Journey to the SPC Role

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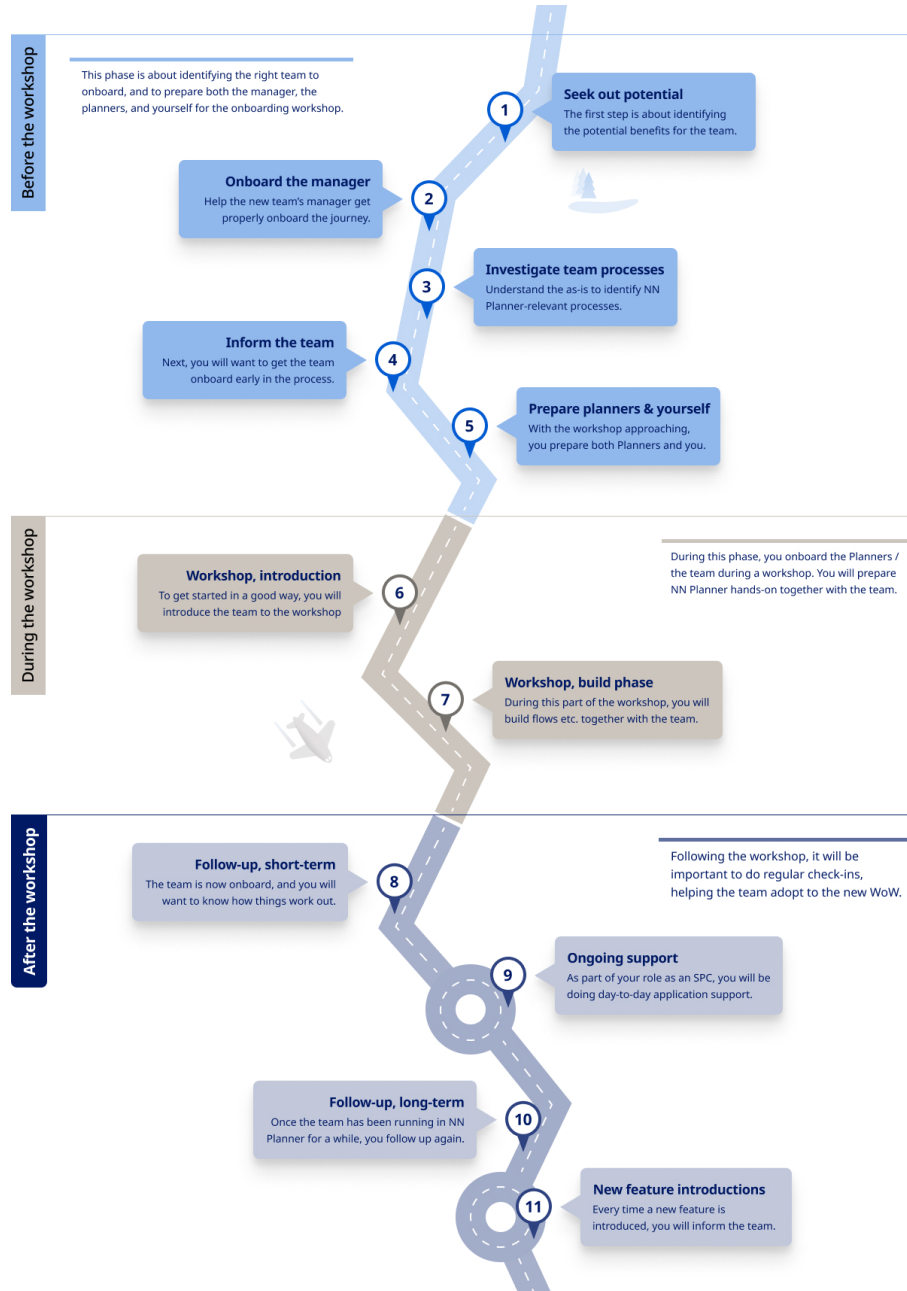
Fig. 21. Prototype: Onboarding Journey of a New Team as an SPC
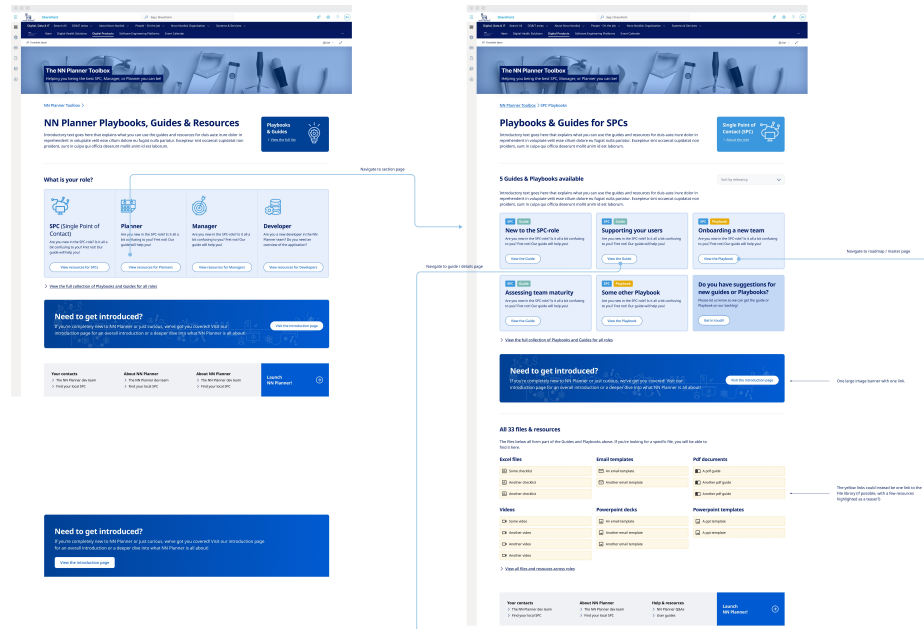
Fig. 22. Prototype First-Iteration: Homepage and SPC Subpage

feedback proved particularly relevant because the homepage serves as a valuable opportunity to communicate the benefits of utilizing the NN Planner, not only to visitors within Novo Nordisk but also to managers. As I previously noted, "it is the responsibility of the NN Planner development team to effectively communicate the long-term benefits of the NN Planner." Keeping this in mind, a new version of the homepage was designed, which can be seen in figure 25, to better address the problem statement.

This new version includes general information about the product, an image of the actual NN Planner interface, and testimonials from users, highlighting the benefits of using the NN Planner tool. In designing the second iteration, the focus was on aligning more closely with the available design elements in Share-Point, which limited our design freedom. Nonetheless, my intention was to create a representation that closely resembles how the homepage will appear in reality.

8 Test

In the realm of design thinking, a testing stage typically follows the prototyping phase, this approach helps designers to learn more about the user and allows us to refine the prototype. According to Preece et al. (2002c), the techniques or methods associated with usability testing are: "user testing in a controlled

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Fig. 23. Prototype First-Iteration: Playbook Guide with Roadmap Details

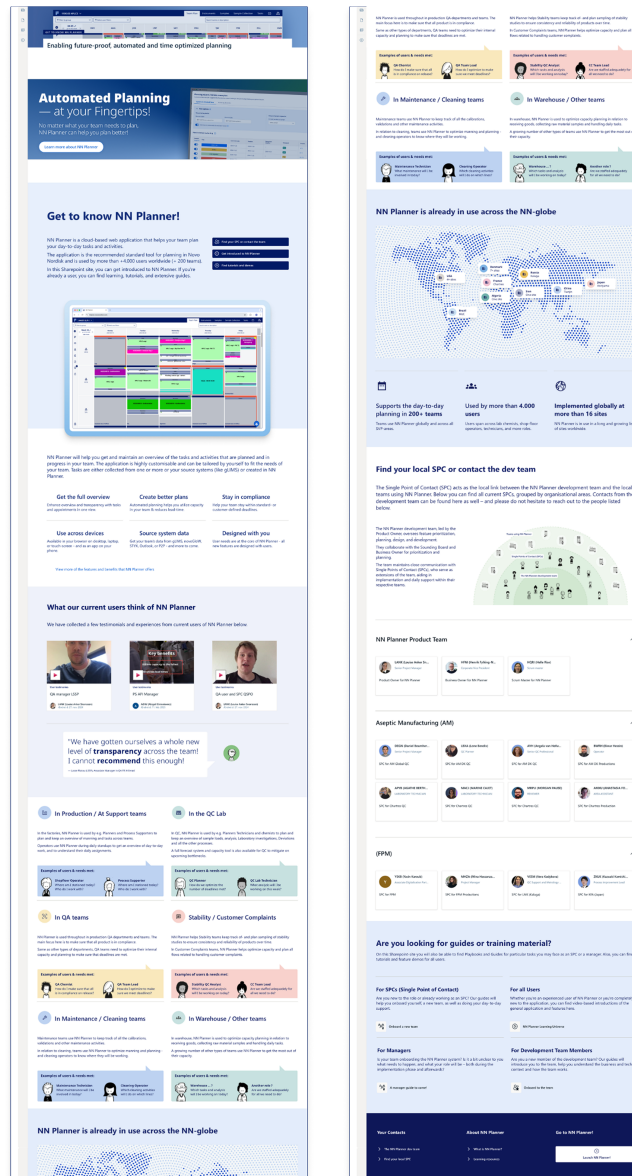**Fig. 24.** Prototype Second Iteration: Playbook Guide with Roadmap Details

Fig. 25. Prototype Second-Iteration: Homepage

Fig. 26. Overview of the Prototype Pages

environment; observation of user activity in the controlled environment and the field; and questionnaires and interviews" (Preece et al., 2002c, p.340).

The main purpose of usability testing is to test if our application is usable by the target audience that we design for and if they can complete the given tasks, which in this case that would be the onboarding of SPCs and their subsecuent teams (Preece, Sharp, & Rogers, 2002e). This phase can affect most of the phases in the Design Thinking process. An example of this is, if the test results require a further understanding of the user, the designer would go back to the empathy phase to acquire more knowledge about the user (Dam & Teo, 2021).

In the context of this project, I opted not to include usability testing within the project's scope, leaving it as part of future work. The rationale for this decision was that the NN Planner development team aimed to launch the SharePoint site as quickly as possible to meet stakeholder requirements and demonstrate progress on the project. Consequently, we did not prioritize conducting thorough testing of the onboarding guides; instead, we focused on making them available to use. The team believed that even though the onboarding guides may require optimization in the future, they were preferable to having none at all.

Nevertheless, I took the opportunity to present the SharePoint solution to SPCs and stakeholders, during which I conducted what Preece et al. (2002c) describes as a "quick and dirty" evaluation (Preece et al., 2002c, p.341). This informal method is used by designers to quickly gather feedback from users to ensure that their ideas align with user needs and preferences. This evaluation can occur at any stage of the design process, prioritizing fast input over detailed docu-

mentation. The process is characterized by its speed, and the insights gained are often descriptive, serving to inform and improve the design. Observing user behavior and informal conversations are valuable, and consultants may also contribute with their expertise. This approach is particularly popular in web design due to its focus on rapid iterations (Preece et al., 2002c; Preece, Sharp, & Rogers, 2002h).

To conduct this evaluation, I presented the new SharePoint portal for NN Planner in a meeting with SPCs and the development team. After a slideshow presentation, I provided a brief demonstration of navigating the new portal. Following the presentation, I distributed a short questionnaire using Microsoft Forms, as shown in figure 27, which included the following questions: 1. How frequently did you use the OLD "Learning & Support Universe" page? 2. How useful do you perceive the new SharePoint portal to be in helping you with your tasks? 3. Is there anything you can think of that would be nice to find in the Sharepoint portal? 4. Do you have any other feedback or suggestions regarding the new SharePoint portal that you would like to share?

The results of the evaluation were promising; the average rating for how often participants used the old SharePoint portal was 3/10, while the new SharePoint portal received an average rating of 8/10. The final two questions were not answered, with most users indicating they needed time to explore the materials and portal independently before providing feedback.

Fig. 27. "Quick and Dirty" Evaluation: Screenshot of the form

Reflecting on the testing stage, I would argue that it was not ideal in theory, considering that the primary goal of testing is to gather feedback on the conceptual prototypes, as well as the underlying ideas and assumptions. The feedback received at this stage cannot be effectively utilized to iterate and enhance the concepts. According to Luchs (2015), it is crucial to recognize that feedback serves not only for validation but also as a mechanism for learning and improvement (Luchs, 2015). Therefore, the lack of sufficient time for thorough testing of the final prototype leaves us uncertain about our ability to adequately address the problem formulation. In my view, this approach is less than ideal. However, I understand the company's decision to release the solution without prior testing of the second design iteration due to time, priorities, and resource constraints. This situation may not be unique and could resonate with many real-world scenarios. Organizations often find it more expedient and cost-effective to release a product or feature and later address any backlash or feedback. This trade-off between time, resources, and the imperative to deliver a product often presents a challenging dilemma for companies striving to balance quality and expediency in product development.

9 Discussion

Reflecting on the journey of this thesis work, I recognize the significance of both reflection-on-action and reflection-in-action, as highlighted by Schön (1983). Throughout the design process, I engage in continuous reflection that not only shapes my understanding but also influences the trajectory of the project. The iterative nature of design thinking proves invaluable, facilitating real-time adjustments as I collaborate with users and stakeholders.

In the following sections, I reflect on the importance of user involvement throughout the design thinking process. Additionally, I address some of the complexities and limitations that may affect the implementation of the design solution, while reflecting on the insights gathered from interviews that reveal critical findings, some of which I address as future work. Finally, the discussion section considers the immediate outcomes of this thesis and lays the groundwork for potential future enhancements that could further improve the onboarding experience.

9.a Reflection on user involvement

Reflecting on user involvement, the comprehensive nature of Design Thinking provided me with the opportunity to conduct thorough research, enabling me to empathize with users early in the design process by understanding their onboarding experiences with NN Planner. I chose the Design Thinking approach for its iterative nature, which allows for continual refinement and revision of our product. However, due to the time constraints of this project, achieving the desired number of iterations has been challenging. Each iteration is comprehensive and requires significant effort, so I focused on the number of iterations that could realistically be accomplished within the thesis project's timeframe.

As previously mentioned, I based the interview questions primarily on the findings from related work (see section 4.b), inquiring about users' onboarding processes while exploring the themes and theoretical models that emerged from the literature review. This approach allowed me to first understand best practices in digital product onboarding within fast-growing companies and then compare them with the onboarding processes of NN Planner. This understanding was valuable as it enabled me to better address some of the issues encountered within NN Planner's onboarding. For example, by creating an information architecture, I aimed to solve the common issue of information overload. Additionally, I investigated the different motivations of each user type during their onboarding to NN Planner, considering these motivations when designing the solution. My goal was to highlight the benefits of using NN Planner from all different users' and stakeholders' points of view.

Other aspects of the current onboarding process are not ideal; for example, there are challenges with the buddy system, which has become a pain point for both newly onboarded SPCs and their assigned mentors (as detailed in "Sub-theme 2: Strengthening the Buddy System," section 5.b). Although I did not address this issue in this project's design solution, these insights—along with others uncovered—are relevant and should be considered in the future, as I will discuss in the following section.

9.b   Future work

According to Kujala (2008), "field studies are qualitative in nature and the goal is to understand the needs of the users in depth, rather than to cover a large sample of users" (Kujala, 2008, p. 462). Taking this into account, choosing to interview Daniel as an SPC and the NN Planner Product Owner has proven very beneficial, as they possess the greatest experience and knowledge regarding the onboarding processes of NN Planner. However, to continue the work on onboarding, I would need to reassess the different stages in Design Thinking. This reassessment is necessary for the goal of making NN Planner's intranet more inclusive for all users and relevant stakeholders.

To further broaden this research, the team could interview and observe various SPCs with different levels of experience. It might be beneficial to include SPCs, Managers and End-users from diverse demographics, departments, and varying levels of seniority or expertise. For example, an SPC who was recently onboarded to NN Planner may have different perspectives than Daniel, who has been working with NN Planner for five years. Moreover, I could identify and review more relevant literature and test the current onboarding solution with new joiners. Conducting interviews in this context would allow us to gain insights on optimizing the existing onboarding materials and creating new ones if necessary, thus refining the current solution by alternating between the testing and prototyping stages. As stated previously in section 5.g, I opted to narrow the final HMW formulation to focus solely on the SPC user type. Nevertheless, the onboarding processes for all types of users are interconnected and relevant.

Therefore, in the future, it would be beneficial to expand this research and follow a similar structure as I did for the SPC user type, but also include others. Ultimately, our aim would be to improve the user experience for all users and relevant stakeholders of NN Planner. Finally, I hope to broaden the prototype solutions for all user types and relevant stakeholders, creating a more robust intranet that benefits not only SPCs but also managers, planners, end-users, and even the NN Planner development team and external visitors.

9.c   Limitations

In this section, I will discuss the challenges and limitations that hinder the implementation of the NN Planner onboarding solution in some real-world scenarios. Although we have successfully structured and documented a step-by-step onboarding journey for both SPCs and their teams, we cannot expect newcomers to adhere to this process rigidly.

During the process of empathizing with users and stakeholders, I realized that we lack crucial information about our users and their onboarding experiences with the NN Planner. As discussed in section 4.b, we know that the NN Planner is utilized across various departments, including Production, QC Laboratories, QA (Quality Assurance teams), Stability, Maintenance, and Warehouses. However, our knowledge extends little beyond this. As outlined in section 2.b.1, this issue likely arises from the company's rapid growth, which has resulted in a large number of users adopting the NN Planner in a very short time. Consequently, we have lost track of the user base. Moreover, interviews with users shed light on the complexity of our user base. For instance, in our interview with Daniel, he revealed that some teams have two SPCs, while others have SPCs who do not perform the functions typically expected of them. The variability within our user base makes the onboarding process non-linear and difficult to replicate across different scenarios, as each team operates in diverse and complex environments. These complexities further suggest that we are facing a wicked problem, which makes it unrealistic to create a perfect onboarding journey. There will not be a singular onboarding experience that can fully accommodate the individual needs and preferences of every newcomer. Therefore, we should be cautious about attempting to standardize processes too aggressively, as doing so might negatively affect the teams. Our goal is not to impose a solution but rather to develop one that meets the needs of our users while collaborating with them to advance Novo Nordisk's objectives as a company.

9.d   Design-Based Research as an alternative to Design Thinking

In exploring alternatives to Design Thinking, I considered using the Design-Based Research (DBR) framework, as introduced by Barab and Squire (2004); Christensen et al. (2012). DBR is designed to improve educational practices through a cycle of iterative design, implementation, and analysis of learning

environments (Barab & Squire, 2004). This section will compare and contrast these two approaches and reflect on how the project might have evolved if DBR had been applied.

Both DBR and Design Thinking share key features; they are process-oriented, iterative, and involve creating tangible designs within complex contexts (Barab & Squire, 2004; Luchs, 2015). Throughout this project, the Design Thinking approach is structured into various stages that guide the designers in their work (Luchs, 2015). Similarly, Christensen et al. (2012) propose breaking down DBR into four phases: Context, Lab, Intervention, and Reflection. Many elements of these phases align with the stages of Design Thinking.

For instance, the context phase of DBR closely parallels the empathize stage of Design Thinking, as both prioritize a deep understanding of the design domain (Christensen et al., 2012). However, a key distinction is that DBR is firmly rooted in domain-specific theories that help interpret empirical data, while the empathize stage in Design Thinking focuses on understanding the problem from a user-research perspective, often through interviews.

Moreover, the context phase of DBR emphasizes problem identification, whereas Design Thinking includes a dedicated define phase that places greater importance on this aspect. In Design Thinking, the ideate phase initiates idea generation based on insights from previous stages. In DBR's lab phase, the first prototype is developed, drawing from the design principles established during the context phase. In contrast, the prototyping process in Design Thinking occurs in the prototype phase and relies on cumulative insights gained from earlier stages.

The intervention phase in DBR and the test phase in Design Thinking are quite similar, as both focus on practically evaluating the prototype to determine what works and what doesn't. However, DBR's final phase—reflection—sets it apart from Design Thinking. This phase aims to generate new theories related to the design process. As Christensen et al. (2012) states, "the purpose of a DBR project is not only to understand what happens in a specific context but also to show the relevance of an intervention in other contexts" (Christensen et al., 2012, p.14). This emphasis on theory generation is less prominent in Design Thinking, which focuses primarily on "identifying and creatively solving problems" (Luchs, 2015, p.4). Consequently, while both approaches involve iterations, DBR is more data-driven and research-oriented, while Design Thinking is flexible and creative, primarily aiming to find optimal solutions for specific problems instead of advancing theoretical frameworks (Christensen et al., 2012; Luchs, 2015).

If I had employed DBR rather than Design Thinking for this project, the process would have been noticeably different. I created three figures (28, 29, 30) to illustrate how the process could have unfolded under the DBR approach. White text indicates elements included in the iteration, gray text shows elements part of the process but excluded from the specific iteration, and pink text highlights elements unique to DBR that were not part of the Design Thinking process.

In the first iteration, the context would be established similarly to how I approached it with Design Thinking (figure 28). The difference when using DBR would be our reliance on domain-specific theory as the foundation for our work. Therefore, I would not conduct interviews to the extent used with Design Thinking. The lab phase of the first iteration would focus on sketching and card sorting for the creation of themes, marking the beginning of prototyping preparations. This would lead to the intervention phase, where I would evaluate the card sorting outcomes and analyze the emerging themes.
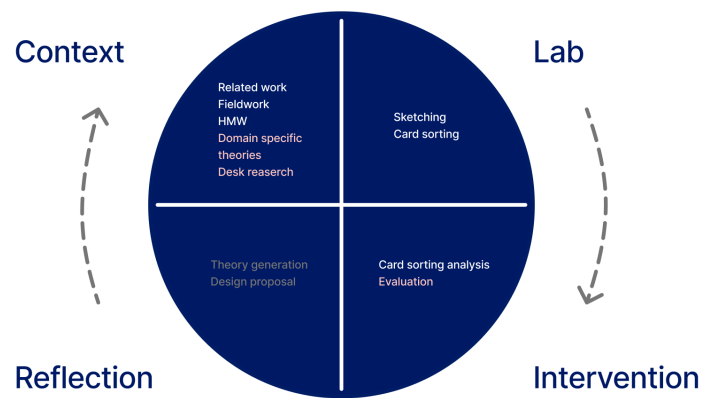

Fig. 28. DBR Research Plan: First Iteration

The second iteration (figure 29) would build upon the previous iteration, with the context phase marked in gray to indicate prior exploration. This phase would emphasize the lab phase, where the information architecture (IA) and solution prototype would be developed. During the intervention phase, I would test both the IA and the prototype, incorporating user involvement for the first time to evaluate the prototype's effectiveness.

The third iteration (figure 30) would largely resemble the second but would focus more on refining the prototype in the lab phase and testing it in the intervention phase. Users would again test the high-fidelity prototype to provide feedback that informs the evaluation process. Additionally, this final iteration
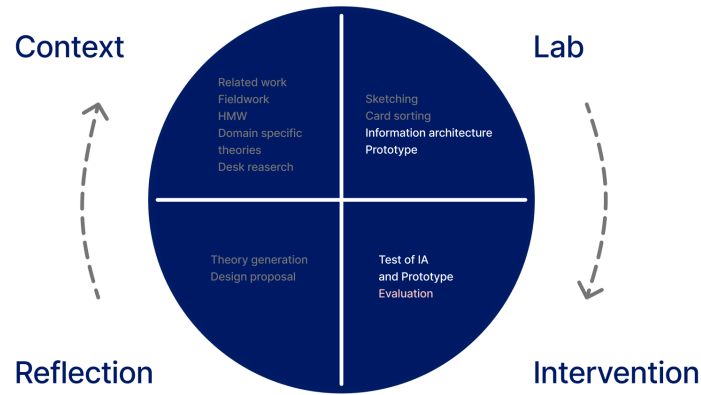
Fig. 29. DBR Research Plan: Second Iteration

would include theory generation and design solutions based on our research and design activities, as well as user interactions.

10   Conclusion

This project applied the Design Thinking approach to address the challenge: How can we design an onboarding process for the NN Planner tool that effectively integrates and empowers new users to incorporate it into their daily workflows at Novo Nordisk?

Designing a good onboarding solution requires thoughtful consideration of various factors and methodologies. To tackle the problem statement, I initially gathered insights into onboarding practices, particularly within digital products in the context of a rapidly growing organization. Through an extensive literature review, I identified essential components that contribute to a positive onboarding experience. Guided by Design Thinking principles and my research questions, I assessed the existing onboarding process for the NN Planner tool. This included empathizing with users through interviews and fieldwork, exploring their organizational context affecting the onboarding processes, and reviewing onboarding materials, conducting user and stakeholder interviews, and engaging in field observations.
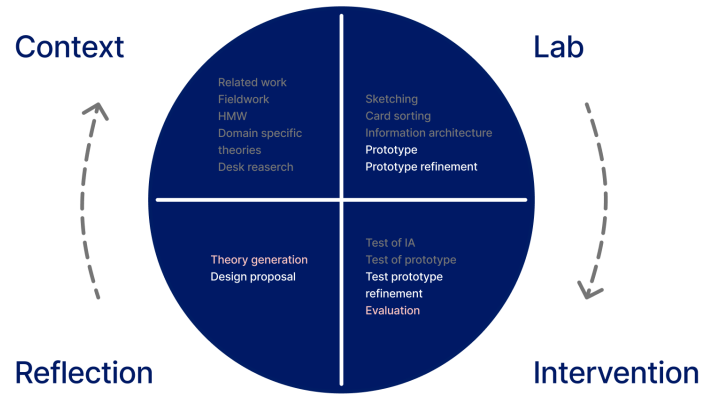
Fig. 30. DBR Research Plan: Third Iteration

The findings underscored several critical factors influencing the onboarding experiences of new users with digital tools, demonstrating that a structured onboarding journey benefits both the organization and its newcomers. With a substantial NN Planner user base of over 5,000 global employees spanning diverse roles and responsibilities, it is vital for users to recognize the tool's value in enhancing their daily tasks. This recognition not only motivates users to shift from familiar ways of working but also paves the way for successful tool adoption. Understanding the motivations, experiences, and behaviors of users and stakeholders is essential for crafting an onboarding experience that genuinely meets their needs.

One notable challenge faced during this process was the insufficient information about our user base. Given the project's scope, I prioritized the onboarding of 'super users,' referred to as SPCs. However, I noted that the onboarding processes are interconnected; if managers are not adequately onboarded, they may not allocate sufficient time for SPCs. Conversely, if SPCs struggle to onboard their teams effectively, they may lack the necessary tools to guide and motivate end-users in utilizing the NN Planner tool.

Before designing a solution for the problem, I identified and structured the different requirements and materials the solution should contain, as well as the context of use. This exploration led to the creation of the initial version of the 'NN Planner Portal,' a centralized resource that provides users, stakeholders, and internal employees at Novo Nordisk with easy access to relevant onboarding materials

and information. The final design solution comprises two distinct onboarding journeys: one tailored for SPCs to acclimate to their roles and another to guide them in onboarding their respective teams. Additionally, we proposed the establishment of an NN Planner intranet designed to offer support and resources for onboarding all users and stakeholders, enabling continuous growth and prompt updates. By fostering a consistent and user-friendly experience within the NN Planner intranet, this initiative aims to facilitate smoother transitions for new employees, equipping them with the essential resources to excel in their roles. Ultimately, this well-structured solution improves navigation and enhances accessibility, promoting a more effective onboarding journey into the tool.

Through the course of this thesis, I have come to appreciate the vital role of reflection in grasping the complexities surrounding user involvement and onboarding processes. This journey has deepened my understanding of the intricate challenges involved in designing solutions tailored to user needs. Moving forward, I am committed to applying these invaluable lessons in future projects, embracing reflection as a continuous practice to enhance both design quality and personal growth.

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