Master's thesis

NTNU
Norwegian University of Science and Technology
Faculty of Information Technology and Electrical Engineering
Department of Computer Science

Vegard Svesengen

Co-creating with employees in the public sector

A case study from Norwegian Labor and Welfare administration

Master's thesis in Computer Science
Supervisor: Babak A. Farshchian
June 2022

NTNU
Kunnskap for en bedre verden

Vegard Svesengen

Co-creating with employees in the public sector

A case study from Norwegian Labor and Welfare administration

Master's thesis in Computer Science
Supervisor: Babak A. Farshchian
June 2022

Norwegian University of Science and Technology
Faculty of Information Technology and Electrical Engineering
Department of Computer Science

NTNU
Norwegian University of
Science and Technology

Abstract

We have seen an increase in public sector organizations creating new and improving their digital solutions, to have better services for their citizens. In addition, digital platforms have seen increased interest in the public sector, because of their success in the private sector. This study aims to improve the understanding of public sector platforms and how organizations can co-create value with their users. To do this, we have conducted a case study of NAV and its development and implementation processes. This was done by interviewing employees, both on the development side and the user side. We held ten interviews, two with informants from development teams and eight with informants from NAV's local offices.

We discovered that insight work, pilot tests, open days, and user requests were important methods used to involve the users. They span three different development phases: discovery, initial roll-out, and post roll-out phases. We also identified vital roles, methods, and challenges in the implementation process. This research contributes to the understanding of co-creation in the public sector by providing a conceptual framework based on previous research and discussing it in relation to the findings of the case study.

Sammendrag

Vi har sett en økning blant organisasjoner i offentlig sektor som lager nye og forbedrer sine digitale løsninger, for å yte bedre service til befolkningen. I tillegg har digitale plattformer fått økt interesse i offentlig sektor, på grunn av suksessen i privat sektor. Denne studien har som mål å bedre forståelsen av plattformer i offentlig sektor og hvordan organisasjonene kan samskape verdi med brukerne sine. For å gjøre dette, har vi gjennomført en case-studie av NAV og deres utvikling- og innføringsprosesser. Dette ble gjort ved å intervjue ansatte, både på utviklings- og brukersiden. Vi hadde ti intervjuer, med to informanter fra utviklingsteam og med åtte informanter fra NAVs lokale kontorer.

Vi fant ut at innsiktsarbeid, pilottester, åpne dager og brukerforespørsler var viktige metoder som ble brukt for å involvere brukere. Disse metodene ble brukt i tre ulike faser av utviklingen: innsiktsfasen, tidlig utrullingsfase og etter-utrullingfase. Vi identifiserte også nøkkelroller, metoder og utfordringer i innføringsarbeidet. Denne forskningen bidrar til forståelsen av samskapning i den offentlige sektoren, ved å tilføre et konseptuelt rammeverk basert på tidligere forskning, og diskuterer dette i sammenheng med funn fra case-studien.

Preface

This paper is a master thesis written as part of my final assessment for a Master's degree in computer science at the Norwegian University of Science and Technology (NTNU). This concludes my five years at NTNU and 18 years of education.

I want to thank my supervisor, Associate Professor Babak A. Farshchian, at the Department of Computer Science at the Norwegian University of Science and Technology (NTNU), for his help with the thesis. I learned a lot about conducting quality research from him and he helped me a lot throughout the process. I would also like to thank all interview participants from NAV, as the project would not have been possible without them. In addition, Unni Garnes and Parastoo Mohagheghi from NAV deserve a thank you for their help with recruiting informants.

Vegard Svesengen
Trondheim, 14th June 2022

Contents

List of Figures

List of Tables

Abbreviations

BR - Boundary resource(s)

DE - Domain Expert

DSF - Det Sentrale Folketrygdsystemet

IC - Implementation coordinator

IT - Information Technology

NAV - Norwegian Labor and Welfare administration

NSD - Norwegian Center of Research Data

PAF - Platform Appraisal Framework

PEOU - Perceived Ease Of Use

PO - Product Owner

PSDL - Public Service-Dominant Logic

TAM - Technology Acceptance Model

1 Introduction

In the introduction, we present the motivation for the master thesis. We also discuss which objectives and goals we have for the project with the research questions presented. We also provide a scope of the thesis which describes how the thesis is structured.

1.1 Motivation

The European Commission has created a strategy for the current decade, called the "Digital decade", which promotes transforming digital technology in Europe in the coming decade. The goal of this strategy is to focus on strengthening the digital services across Europe for the future (Commision, 2021). In addition, the Norwegian government has also created a digital strategy for the public sector in Norway. This strategy is called "one digital public sector" (Regjeringen, 2019). The aim is to make public sector organizations more efficient and give a better experience for the citizens when interacting with the public sector. With these clear strategies promoting a digital transformation of the public sector, it is important to conduct research that can help the public sector reach these goals.

Digital platforms have become increasingly popular. Both in research and as a way to structure an organization. For example, some of the world's most valuable companies, like Apple, Alphabet, and Amazon, has platform strategies as core components of their success (Fortune500, 2022). Digital platforms can be defined as "a set of digital resources, including services and content, that enable value-creating interactions between external producers and consumers" (Constantinides et al., 2018). As digital platforms have seen success in the private sector, some research have theorized about platformization of governments (O'Reilly, 2011; Millard, 2018). Some governments have also actively started to use platform strategies when digitally transforming the government (Margetts and Naumann, 2017; Brown et al., 2017; Cordella and Paletti, 2019).

However, the public sector must consider other factors when using platforms to create value. Typically, private sector companies measure their value in customers and profits. In comparison, a public sector organization needs to have the citizens as its main priority. One way to do this that has been presented in research, is co-creation of value. Co-creation of value in the public sector is "a set of processes and activities that are applied across departments and organizations, radically changing the way public sector organizations organize and deliver service" (Vestues, Mikalsen et al., 2021). A co-creation process consists of multiple elements. The development process; which consider the time from when you are trying to find new products to develop, until it is developed. The implementation of a product is also important when considering the co-creation process. The co-creation process also uses boundary resources. Boundary resources are defined as "software tools and regulations facilitating the arms' length relationships between the involved parties" (de Reuver et al., 2018). However, the research in this area is still limited, and there are more avenues to research.

In this project, we want to contribute to research around co-creating value for the stakeholders surrounding public sector organizations using empirical methods. With Norway's new digital strategy and a preliminary project from the autumn of 2021, by the author of this thesis, as a foundation, we created some objectives and goals for the master thesis. These are presented in the next section.

1.2 Objectives and goals

To find the objectives and goals for the master thesis, we had to consider multiple elements. First, we wanted to find a relevant area of the literature to study. We also wanted to do an empirical study which meant we needed to find a relevant case in the world. Therefore we spent some time trying to find a case that was relevant for our research, but also relevant for the organization we decided to have as our case. So through a literature review conducted in a pre-thesis project, which was the foundation of the author's understanding of the literature and discussions with potentially relevant cases, we ended up with the following research questions:

RQ 1: How are the users involved in creation of boundary resources on an internal platform in public sector organizations in Norway?

RQ 2: How does the development process affect the users implementation and use of new boundary resources?

1.3 Context for the case

The research in this project is focused around public sector organizations and use the case study approach. There are multiple public organizations that could be interesting cases, but this project conducts a case study on NAV(Norwegian Labor and Welfare administration). NAV was selected because it is one of Norway's largest public organizations, and has a large in-house development department. NAV also develop digital solutions for different user groups; citizens, businesses, and their own workers, like counselors. We selected the workers as our primary user group, as they use many IT systems, which are developed in-house, in their work day. The workers are important for NAV to deliver services to the citizens. Therefore, it will be interesting to research the development and implementation of these systems, which are crucial for NAV's service delivery. NAV is also interesting because they have many systems that they consider 'legacy systems'. Legacy systems are based on old and outdated technology. A major goal for NAV is to be less reliable on these systems, as they are expensive to keep up with. Consequently, they focus a lot of their development on creating new solutions to replace these legacy systems, which is interesting for our research.

1.4 Thesis organization

This thesis has seven sections, including this introduction. In the second section, we present the background work and our conceptual framework for the study. In section three and four, we present our research process and present the selected unit of analysis with a case description. In section five and six we present the findings of the case study and discuss these in relation to the background work and our conceptual framework. The thesis is finished by section seven, which includes conclusions and further work.

2 Background

In this section we present background theory and related work which lay the foundation for the project. The background theory has been developed since a preliminary literature review in the autumn of 2021 and has constantly evolved throughout the master project as we have gained more data and insight. We start the background with a view on digital platforms and different perspectives on them in the literature. Then we move to literature which focus on digital platforms in the public sector, before discussing platform boundary resources. We also presents the concepts agile governments, value co-creation and boundary spanning, and the literature corresponding to these concepts.

Some of the subsections have been either inspired by or are modified versions of sections from a literature review, conducted before the master project, in the autumn of 2021 (Svesengen, 2021). The relevant sections include: 2.1, 2.1.1, 2.1.2, 2.1.3, 2.2, 2.3.

2.1 Digital platforms

When looking into the literature surrounding digital platforms, you quickly realize it is a complex subject with different viewpoints of what a digital platform actually is. The main thing most research seems to agree on is that platforms typically consist of a core, which is in the control of a platform owner, and a periphery, which consist of a multitude of different stakeholders who complements the core. This view is also brought forward by de Reuver et al. in their article about the future research agenda of the digital platform (de Reuver et al., 2018). In this section about digital platforms, we will present the three main viewpoints we found in the literature. Firstly, we will look at digital platforms from a technical view. Secondly, we will look into digital platforms as a market. Lastly, we will look at literature which propose digital platforms as a organizational structure, rather than just a technology platform.

2.1.1 Technical view

When studying digital platforms from a technical perspective, it is typically defined as "an extensible codebase to which complementary third-party modules can be added." (de Reuver et al., 2018). The more technical viewpoints focuses more on the core as a codebase which can be added to by third parties and focuses more on innovation in the technology. This has sparked a subcategory within the digital platform field called innovation platforms (Cusumano et al., 2019). Innovation platforms are viewed as a platform where the platform core acts as a source for outside development by third parties (Bonina et al., 2021). Common examples used when studying innovation platforms are Apple's iOS and Google's android platforms, which invites for development from outside the respective cores, to complement the platforms.

2.1.2 Market view

The market view within digital platform research focuses mostly on how the platform can create value and facilitate interaction between users. This is reflected by Constantinides et al., who defines digital platforms as "a set of digital resources, including services and content, that enable value-creating interactions between external producers and consumers" (Constantinides et al., 2018). Some research also suggest that digital platforms are multi-sided markets and their goal is to bring together different groups, like buyers and sellers (Tiwana, 2013; de Reuver et al., 2018). Another sub-category of platforms which is consistent with the market view, is the definition of transaction platforms. Transaction platforms purpose is to facilitate for matching different user groups together (Bonina et al., 2021). Uber and Amazon marketplace are common examples for transaction platforms. Uber is also commonly referred to as a digital labor platform, which is a platform which aims to connect to different user groups and provide an exchange of service between the two (Choudary, 2018). In the case of Uber, the platform connects drivers with passengers.

2.1.3 Digital platforms as organization structure

Where we so far has looked at digital platforms from a technical or market view, there is a third section of the literature which is common, digital platforms as an organization structure. The process of an organization transitioning into a platform organization is typically referred to as a platformization process. Platformization can be defined as "a process where IT silo solutions are gradually transformed to a platform-oriented digital infrastructure" (Bygstad and Hanseth, 2019). Later research has extended this definition to include organizational changes as well as infrastructural changes (Vestues and Knut, 2019).

Furthermore, Gawer introduced in 2014, a integrative framework for platforms, where she conceptualizes platforms as organizations (Gawer, 2014). She propose three types of evolutions of platforms as an organizational structure; internal, supply-chain and industry platforms. Internal platforms are platforms within one firm or company and therefore has a closed interface. Such a platform is only susceptible for innovation within the firm itself, because of its closed nature. Such platforms are often governed by the managerial hierarchy within the firm as well. The supply-chain platforms are more open, however not entirely. It is restricted to the buyers and suppliers across the 'chain'. As it is somewhat open it has more avenues for innovation, but it is still restricted by its buyers and suppliers. This type of organization is usually governed by contractual relationships between the agents (ibid). The industry platform organization represent the most open, but even here there can be varying degrees of openness. Openness is often referred to as "the easing of restrictions on the use, development and commercialization of a technology"(Boudreau, 2010). The constitutive agents of such platform is its platform owner and its complementors. The governance of a industry platform is usually driven by its owner (Gawer, 2014).

This lead Gawer to a new conceptualization of platforms as an organization: "Technological platforms can be usefully seen as evolving organizations or meta-organizations that:

- federate and coordinate constitutive agents who can innovate and compete
- create value by generating and harnessing economies of scope in supply or/and demand
- entail a technological architecture that is modular and composed of a core and a periphery"

(ibid).

Moreover, the platformization of an organization can be seen as a two step process of decoupling and recoupling. In the decoupling, the organization should aim to dismantle legacy systems and restructure the technical infrastructure. The recoupling process should change how the organization develop new systems, based on the new technical infrastructure from the decoupling process (Vestues and Knut, 2019). Although the recoupling process depends on how you have 'decoupled', these processes will usually go in parallel as the decoupling can take a long time (ibid).

2.2 Digital platforms in the public sector

As we have already seen, digital platforms have been extensively studied throughout the years, and are often viewed in a technical, market or organization perspective. However, there has also been research done suggesting that public and governmental organizations should move towards a platformization of their organizations (O'Reilly, 2011; Millard, 2018). The idea of such a platformization would allow governments to become more open, increase innovation, share information more widely and become more transparent (O'Reilly, 2011; Millard, 2018). These are all elements which would increase public value. Public value is a term used to describe citizens and businesses expectation towards governments public service delivery. To maximize the public value an organization can deliver upon, it needs to provide efficient service, be transparent and trustworthy (Twizeyimana and Andersson, 2019).

With an increase in research in this field, there have been multiple governments around the world adopting a platform approach to their digital transformation. These governments have been subject

to case studies, to see the effect a platformization have on these governments (Brown et al., 2017; Margetts and Naumann, 2017; Cordella and Paletti, 2019; Styrin et al., 2021). Brown et al. studied different U.K. initiatives in relation to their newly developed Platform Appraisal Framework(PAF) (Brown et al., 2017). Their aim was to create a framework which could be used to develop strategies and audit platform initiatives in governments (ibid). In Italy and Russia, they have looked at how the governments platform strategies can affect public value (Cordella and Paletti, 2019; Styrin et al., 2021).

There has also been discussion in the field of government platforms what actually constitutes a platform. As we have already seen with digital platforms in general, the definitions varies. The aforementioned PAF for example, was developed by Brown et al. as a way to clarify platforms in the government context (Brown et al., 2017). Thompson and Venters suggest that a lot of research on digital platforms in governments might be more correctly placed as technology projects and not actual platforms (Thompson and Venters, 2021). To strengthen this view, they propose a typology for categorization of different genres within government platforms. The goal of this typology is to help researchers place their studies in a more specific genre than 'government platforms', such that the readers easier can know what type of platform or project a study revolves around (ibid). The typology has three main catergories, each with two subcategories as seen in Figure 1 (ibid).

Table 1
Summary of the typology

Government as Platform Builder:
Definition 1) Platform from Government: A government led integration project harnessing cloud-based services to build a platform and drive engagement with the platform within other organisations. **Definition 2) Government led Platform:** Government undertakes architectural work to identify common capabilities, but remains open to a mix of possible delivery models.
Government as Platform Catalyst & Arbitrator:
Definition 3) Market led Government Platform: Government outsources risk of building platform marketplace to the market. Periodically opened to generative innovation through regular re-tendering. **Definition 4) Government Standardised Platform:** Government creates an ecosystem in an open way, promoting others to harness standardised capabilities.
Government as Decentralised Partner:
Definition 5) Government as Data Source Platform: Government assumes role of platform providing data in an open fashion to a marketplace. Government assumes little / no risk. Platform is open in access and usage. **Definition 6) Government Platform Ecosystem:** The market creates a government ecosystem with the benefits accrued across the ecosystem, promoting the harnessing of standardised capabilities. This is a purely open play, with benefit accrued by all.

Figure 1: Thompson and Venters typology of different government platform types

2.2.1 Challenges in platformization of governments

As we have already seen earlier when discussing platformization of organizations, it is not a simple and short process. It is usually long and complex, and different organizations will face different challenges (Bygstad and Hanseth, 2019; Vestues and Knut, 2019). Especially legacy systems is a difficult challenge to overcome (Vestues and Knut, 2019). Research also show that legacy systems is a barrier to integration of e-government approaches in general, not just plaformization (Lam, 2005). This is because they are usually old and based on outdated technology, but still essential to the organizations function (ibid). Since they are essential, there have to be put in substantial resources to keep them some what up to date and they hinder the opportunity to restructure the organization (Alexandrova et al., 2015). Which is an important step if you want a platformization of an organization (Vestues and Knut, 2019).

There has also been identified challenges in other countries platformization efforts. In Italy, they have seen that a platform model does not guarantee positive effects on public value (Cordella and Paletti, 2019). They highlight the need for a good orchestration of the platforms configuration,

in relation to the public agencies (ibid). If this is badly orchestrated, it can potentially constrain public value creation (ibid). The study of platform adoption in Russia highlights the importance of collaboration across organizations for the most effective platformization. They found that Russia, as a highly centralized country already, could become even more centralized with the implementation of government as a platform and as a consequence hinder local innovation (Styrin et al., 2021). Also, regions in Russia with already fairly advanced digital solutions locally, have been reluctant to adopt the new nation-wide platformization efforts. Which could negatively impact the whole process (ibid).

2.3 Platform Boundary resources

Platform boundary resources has been viewed as one of the platform owners main tools to govern their platform. Platform governance refers to "who makes what decisions on a platform" (Tiwana et al., 2010). For example, in Gawer's conceptualization of platforms as organizations, the internal platform typically has a governance model decided by the managerial hierarchy in the organization. Whilst an ecosystem usually will have a governance model driven by its owner (Gawer, 2014).

Traditionally, these boundary resources have been tools the owner of a platform have designed, such that a third party can use this boundary resource and help innovate on the platform (Ghazawneh and Henfridsson, 2013). This was conceptualized by Ghazawneh and Henfridsson in their boundary resource model, which can be seen in Figure 2. As can be seen in the model, they introduce the concepts of securing and resourcing. Securing is when the platform owner secure their platform from potential threats, and resourcing is the process of a platforms scope and diversity being enhanced (ibid). Resourcing can also happen without the platform owner's knowledge, this is referred to as self-resourcing. This usually would happen when a third party developer develops their own boundary resources because the given boundary resources are limited (ibid).

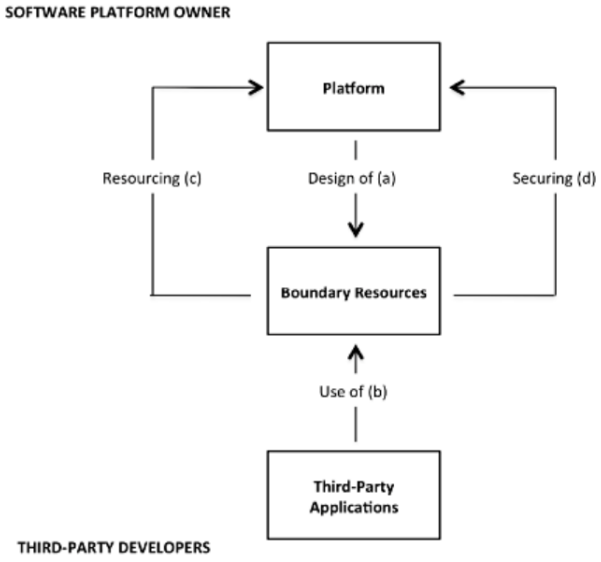


Figure 2: Ghazawneh and Henfridsson's boundary resource model

The boundary resource model has been important in a lot of boundary resource research, and has been the base of multiple different models. For example, the "onion skin model", which places boundary resources in three different type categories: Application, Development and Social boundary resources (Bianco et al., 2014). A boundary resource can be classified in multiple categories (ibid). This new model and Yoo et al. open the door for boundary resources being classified in other contexts than purely technical (Yoo et al., 2010; Bianco et al., 2014). Boundary resources has

primarily been seen as technical tools, such as APIs, but these studies also suggested a more social view on boundary resources. This extends boundary resources to be able to facilitate between other stakeholders, such as between a user and the platform owner, not just third party developers (Bianco et al., 2014).

More recently, there have been studies exploring boundary resources beyond the view of third party developers. For example, Mohagheghzadeh and Svahn found that even though this relation is important, it is equally important to "recognize existing organizational resources within the organization. Platform boundary resources are shaped, not only by external forces but also in a continuous negotiation with internal firm resources" (Mohagheghzadeh and Svahn, 2016). Another study presents an updated version of the boundary resource model, based on digital labor platforms, which accounts for boundary resources beyond the relationship between owner and third parties (Farshchian and Thomassen, 2019). This model can be viewed in Figure 3. Boundary resource 1(BR1) and BR2 are boundary resources which the platform owner provide to workers and consumers to facilitate between the two (ibid). BR3 is used to describe a relationship between workers and consumers, for example through a rating system where workers can rate consumers or the other way round (ibid). BR4 and BR5 describes resources that the groups usually creates themselves to exchange information internally, for example through a forum (ibid).

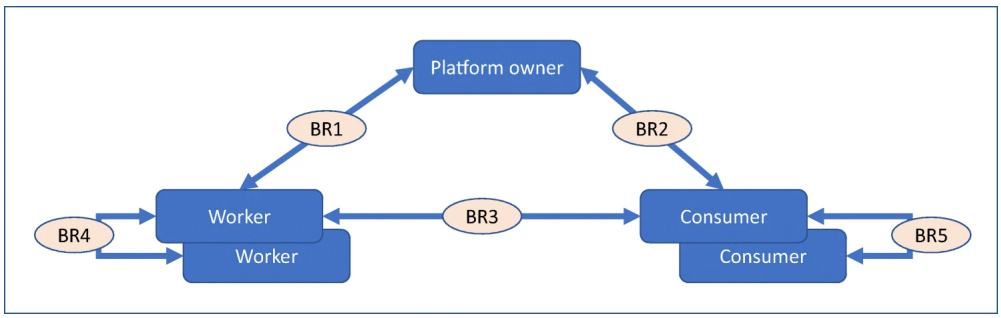


Figure 3: Farschian and Thomassen's boundary resource model, based on digital labor platforms

2.4 Agile governments

Agile methods haven been used in system development for quite some time. "The Agile Manifesto", which states the 12 principles of agile software development was released in 2001 and are still referred to today when talking about agile development (*Agile Manifesto* 2001). Some of the most important principles in agile development is to value individuals and interactions, working software, customer collaboration and responding to change (ibid). However, when talking about agile governments, we do not just talk about governments adopting agile software development techniques. Even though agile governments are inspired by it, it refers to "responding to changing public needs in an efficient way" (Mergel, Ganapati et al., 2021). Agile governments also include areas such as agile project management, agile acquisitions and agile evaluation (Mergel, Gong et al., 2018).

Furthermore, some research have been done around governments adopting agile software development methods and techniques, while the rest of the organisation has not (Dittrich et al., 2005; Mergel, Gong et al., 2018; Ghimire et al., 2020; Mergel, Ganapati et al., 2021). A key challenge this research have in common is the need for cultural change in the organization. As a key principle in agile development is to collaborate with multiple stakeholders, such as management, other teams, customers or citizens in the government context, the typical bureaucratic line a lot of organizations use will not fit well with an agile approach (Mergel, Ganapati et al., 2021). Therefore, an agile government needs a new form of leadership, allowing teams further down in the hierarchical domain of the organization to make decisions, which can affect the whole organization (ibid). We have also seen examples of public sector organizations adopting an agile approach, such as U.S. digital service, U.K.'s Government Digital Service and the Canadian Digital Service (ibid).

As we presented earlier when talking about digital platforms in the public sector(subsection 2.2),

public value was mentioned as a main goal of public service delivery. How can an agile government achieve public value? As mentioned, for an organization to maximize it's public value output it strives towards efficient services, transparency and trustworthiness (Twizeyimana and Andersson, 2019). One commonly discussed advantage of the agile approach is the adaptability, which means you can continuously change and improve the efficiency of your services (Mergel, Ganapati et al., 2021). Agile methods also urges the collaboration with customers, which in the governmental context is the citizens and businesses (*Agile Manifesto* 2001). This is likely to increase transparency and trustworthiness with the public (Twizeyimana and Andersson, 2019).

2.5 Value co-creation in the public sector

The concept of co-creating value was brought forward by Prahalad and Ramaswamy, when they claimed that in the future customers would want to "interact and co-create value, not just with one firm but with whole communities of professionals, service providers, and other consumers" (Prahalad and Ramaswamy, 2004). Since then, the concept of value co-creation has been studied extensively. The idea behind value co-creation is that the supplier and consumers of a service have to cooperate to create and define the value a certain service provides (R. F. Lusch and Nambisan, 2015). Value co-creation has also been studied with the perspective of public sector organizations, in which value co-creation is seen as: "a set of processes and activities that are applied across departments and organizations, radically changing the way public sector organizations organize and deliver service" (Vestues, Mikalsen et al., 2021). To further examine the co-creation of value, we delve deeper into the concepts of service-dominant logic, user participation and involvement, and adoption of IT, from a public sector perspective.

2.5.1 Service-dominant logic

Service-dominant logic is a branch of research which moves away from goods-dominant logic, which is the view that goods is the main factor in exchange between a supplier and a consumer, where service is one specific type of goods (Vargo and R. Lusch, 2006). Service-dominant logic focuses on services as the main factor in exchange, where service is describes as "application of skills and knowledge" which can be provided to others (ibid). In service-dominant logic the goods are seen as an aid for the service process (R. F. Lusch and Nambisan, 2015).

We also have Public service-dominant logic(PSDL), which emphasize the importance of public service delivery in value co-creation between citizens and public sector organizations. Early in the development, PSDL had clear links to how Lusch and Vargo presented service-dominant logic. However, as the field evolved within public management literature, these links have become less clear (Osborne, 2018). This is because of clear differences in goals and motives of public and private sector organizations (ibid). Where the private sector focuses on retention of customers and they usually know who their customers are, the public sector needs to consider how it best can provide service suited to every citizens needs as any citizen could potentially be a user (ibid). PSDL also claims that it is the citizens/service user who makes the choice to use the value proposition from the public sector organization. Consequentially, the public sector organizations role is to facilitate this (ibid).

Digital platforms have been proposed as a valuable asset to promote a service-dominant logic in the public sector organizations (Vestues, Mikalsen et al., 2021). This is because of a platforms ability to connect different stakeholders. The digital platform can enable teams to develop independent of each other, it provides feedback from citizens, which enables co-creation potential and can also increase efficiency and resource effectiveness (R. F. Lusch and Nambisan, 2015; Vestues, Mikalsen et al., 2021).

2.5.2 User participation and involvement

To help understand how value can be co-created, it can be useful to look at user participation and involvement research. These two terms is often used interchangeably in research. However, Barki and Hartwick did define the two concepts as distinct in 1989. User participation is "a set of behaviors or activities performed by users in the system development process). User involvement is "a subjective psychological state reflecting the importance and personal relevance of a system to the user." (Barki and Hartwick, 1989). When studying user participation and involvement, studies often wants to see if there is a correlation between involvement of users and the success of a system (Bano and Zowghi, 2013; Abelein and Paech, 2015). Most research conclude with that user participation and involvement has a positive effect on the satisfaction and use of a system (Harris and Weistroffer, 2009; Abelein and Paech, 2015). However, it is also shown to be a very complex topic to correctly measure and study (Abelein and Paech, 2015). User involvement has also been used as a term when studying users involvement in implementation of a new technology, after its creation (Fleron et al., 2012).

There are multiple things to consider when involving users in development. Bano et al. propose to ask these questions before involving users: Why, who, when, how and how much to involve users (Bano, Zowghi and da Rimini, 2017)? Considering why you want to involve users is important, even though it might seem obvious. Some of the things to consider can be the goals, objectives and benefits you think the project will get from involving users. Who is perhaps the most important and difficult question, as which users participate will shape the results drastically. The user groups relevant for a system might also be complex and difficult to find the correct combination of users (ibid). When to involve the users is also important. A lot of research consider the participation of users as mostly a design-phase thing or in a testing-phase when the process is almost complete. There has also been claims that earlier involvement has shown more benefit than later involvement (ibid). However, the value co-creation literature consider co-creation as a constant process throughout a project, and an important part of the service-dominant logic paradigm is the constant feedback between citizens and public service organizations (Osborne, 2018; Vestues, Mikalsen et al., 2021). How to involve is also important, as just involving users for the sake of involving users usually will not give the desired result (Bano, Zowghi and da Rimini, 2017).

The last factor to consider in involvement is how much to involve the users (ibid). Ives and Olsen has defined different levels of involvement from users in a project (Ives and Olson, 1984). There are six levels:

1. "No involvement: users are unwilling or not invited to participate
2. Symbolic involvement: user input is requested but ignored
3. Involvement by advice: advice is solicited through interviews or questionnaires
4. Involvement by weak control: users have sign-off responsibility at each stage of the system development process
5. Involvement by doing: a user is a design team member, or is the official liaison with the information systems development group
6. Involvement by strong control: users may pay directly for new development out of their own budgets, or the user's overall organizational performance evaluation depends on the outcome of the development effort"

(ibid).

2.5.3 Adoption of Information technology(IT)

When considering value co-creation, part of the value is decided by if the service is used or accepted by the user. This has been studied in technology adoption research. A common framework used

to understand adoption of technology, such as IT, is the technology acceptance model (TAM) (Gangwar et al., 2014). TAM's main measures of system use is perceived usefulness and perceived ease of use(PEOU) (ibid). Perceived usefulness is defined as "the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context," and PEOU refers to "the degree to which the prospective user expects the target system to be free of effort" (Davis, 1989).

The adoption of IT has also been studied in the government context, where they looked at government employees, as their adoption is considered a crucial factor for a successful IT implementation in the public sector (Ben Rehouma and Hofmann, 2018). They found the following seven characteristics important in government employees' IT adoption: Technological, individual, managerial, organizational, trust, environmental and demographic (ibid), where every characteristic has multiple decisive factors. For example, the technological factors consider similar factors as we mentioned above as perceived usefulness. The individual factors consider each individuals skill. The managerial, organizational, environmental factors consider the hierarchy, culture and social environment of the organization. Whilst the demographic factors consider the age, gender and education of individuals (ibid).

2.6 Boundary spanning

Boundary spanning has been studied in the literature for decades. Boundary spanning occurs in organizations when individuals move across boundaries to collaborate or coordinate with external sources (Aldrich and Herker, 1977; Tushman, 1977). Even though it sounds simple, it is far from it. How you move across boundaries can be a complex issue, as not all boundaries are the same and they might require different approaches (Carlile, 2004). Sometimes boundary spanning can simply be a transfer of knowledge across a boundary. However, sometimes it requires something more, like translating or a transformation of knowledge, dependent on the complexity (ibid). To further understand boundary spanning, we will look at the individual as a boundary spanner and boundary objects.

2.6.1 Individual boundary spanners

Boundary spanning in an organization is often performed by individuals, and research have found that often it is in managerial positions (Aldrich and Herker, 1977; Levina and Vaast, 2005). However, Levina and Vaast find that although managerial positions often have boundary spanning expectations tied to the role, these individuals does not always participate in boundary spanning (Levina and Vaast, 2005). Therefore, they propose a distinction between nominated boundary spanners and boundary spanners-in-practice. The nominated boundary spanner is defined as individuals that "were assigned by the empowered agents in a field to perform certain roles in spanning boundaries of diverse fields" (ibid). The boundary spanner-in-practice is an individual that "with or without nomination, engage in spanning(navigating and negotiating) boundaries of diverse fields" (ibid). So although some people may have a boundary spanning role, they are not necessarily using it to span boundaries.

2.6.2 Boundary objects

Boundary objects has traditionally been defined as "both inhabit several intersecting worlds and satisfy the informational requirements of each of them...[They are] both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual site use" (Star and Griesemer, 1989). Levina and Vaast expands on this by saying "This concept is useful in understanding how IT based artifacts can support the development of boundary spanning competence" (Levina and Vaast, 2005). They also claim that boundary objects needs a clear distinction between designated boundary objects and boundary objects-in-use. Designated boundary objects are "artifacts that, due to their design and properties,

were named as valuable in spanning boundaries of diverse fields" (ibid). Whilst, boundary objects-in-use are "artifacts that, with or without designation, are not only usefully incorporated in the practices of diverse fields, but also acquire a common identity in joint practices" (ibid). This distinction is important, because not all boundary objects are actually used, some remain unused or used so little they do not help in boundary spanning activity. Also, a lot of artifacts can be a boundary object, some common examples would include prototypes and sketches (ibid).

2.7 Summary of background literature and conceptual framework

The goal of this section is to summarize key concepts discussed in the aforementioned sections. The background literature presented was found and conceptualized through a literature review. This literature review presented different perspectives on digital platforms. Although we found some research on digital platforms in the public sector, it is still gaps in the literature on this subject. We also explored boundary resources, where most research focuses on private sector, whilst little has been done in terms of public sector. We also discussed agile governments and value co-creation in public sector, which identifies a new way for governments to work with its stakeholders. However, there is still more research needed on governments implementing agile working methods and how this affect the employees work. We also looked into Boundary spanning and how individuals and objects is heavily involved in this. We believe this shows that our research questions and objectives in this project are relevant focus areas.

Figure 4 shows a conceptualization of a public organization in a platform context, where the internal platform is highlighted. The arrows signifies that the relation between the stakeholders should be a collaboration between the two, as was derived from our background about value co-creation. BR stands for the concept boundary resources, discussed in section 2.3.

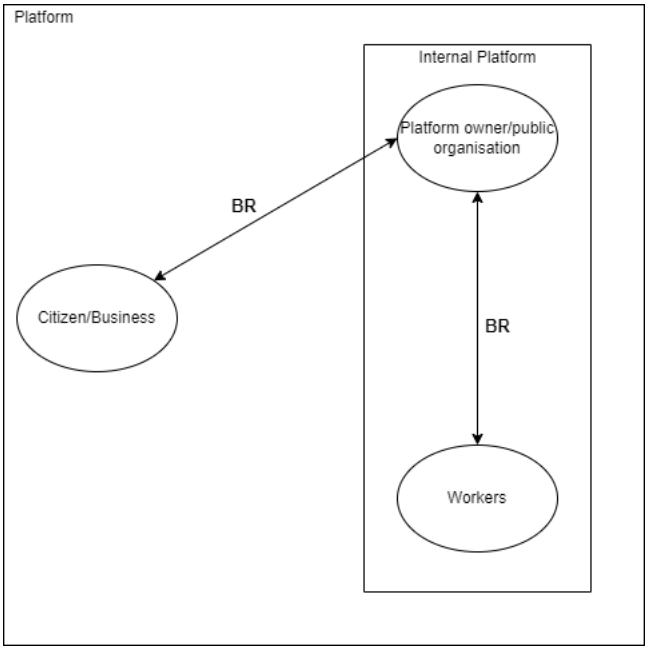


Figure 4: Conceptualization of public organizations in a platform context

Furthermore, we have created a conceptual framework for our study. The goal of the conceptual framework is to show how the concepts we discussed are connected. The framework can be seen in Figure 5. As the figure shows, value co-creation is proposed as a key component of the creation of boundary resources between stakeholders on the internal platform. Value co-creation is supported by sub-concepts; agile development, user involvement and adoption of IT. We also conceptualize that boundary spanning activity is an important facilitator for value co-creation on the platform.

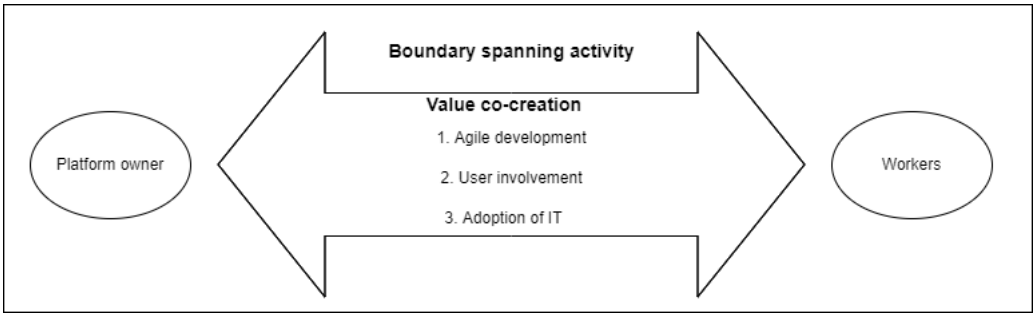


Figure 5: Conceptual framework of the key concepts from the background literature

3 Research method

In this section, we will describe the research methods. First, we talk about the research process before discussing the case study method. Then, we also describe our data generation methods and how we analyzed the collected data.

The research in this thesis falls under the paradigm of interpretivism. In interpretivism, we do not try to prove a hypothesis, but we "try to identify, explore and explain factors in a social setting" (Oates, 2006). Research that can have multiple subjective realities, like our research, usually falls under this paradigm (ibid). Furthermore, research within this paradigm aims to be trustworthy, confirmable, dependable, credible, and transferable (ibid).

3.1 Process

The research process in this master project was planned and then conducted based on a book on information systems research by Briony Oates (Oates, 2006). In Figure 6, we have provided an overview of our process adapted from the book.

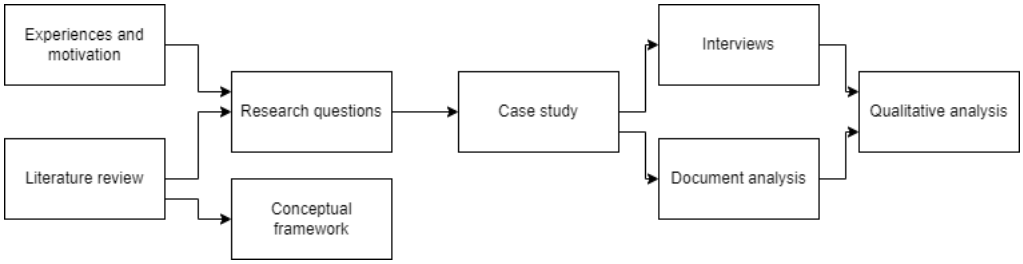


Figure 6: Research prosess of the master project adapted from (Oates, 2006)

The initiation of a project usually comes from an initial idea, supplemented by experiences, motivation, and study of previous work concerning the idea. By studying the literature in a pre-master project in the autumn of 2021, we identified some interesting research areas. As we continued to study the literature in the master project, and some initial discussions about potential relevant cases, we found our initial research questions. As we gained more understanding of the literature through the project, we revisited the research questions multiple times.

As we decided to do a case study, an important part of the process was finding and defining a relevant case. As we wanted to focus on the public sector, NAV was identified as an interesting case. There were a couple of reasons for this. First of all, NAV is going through a strategy change in their development, where more of the development has been moved 'in-house', and digitization has been an increasing focus area for the organization (NAV, 2022b; NAV, 2013c; NAV, 2022a). The thesis supervisor had previously worked with people from NAV, which also gave us a more accessible point of contact. As we had a limited time frame, the less time we could spend on recruitment, the better. Furthermore, as the time frame was limited, we also had to focus on certain parts of the organization. As we wanted to look at user involvement, we identified the different user groups and selected one. We selected the workers at the local offices, as we already had some contacts within the local offices in our county. We also wanted the perspective of development teams. We managed to recruit two informants from the product area of health. A more detailed description of the case is provided in section 4. The case study approach was chosen as it is suited to deal with complex situations and helps study our conceptual framework in a real-life setting (Oates, 2006). The data generation methods we used as part of the case study were interviews and document review. These are described in the coming sections.

3.2 Data generation

In this part of the process, we describe the data generation methods used in the project. These were interviews and document reviews. We also talk about privacy and ethical concerns when generating data.

3.2.1 Privacy and ethical concerns

Before generating any data, we had to consider the privacy of potential informants and ethical concerns regarding where to store such data. Before starting, we had to submit and get clearance from the Norwegian center of Research Data (NSD). We had to submit an interview guide, explaining what kind of data we intended to collect, and a informational document which described why we wanted to research and how we would manage our data. All informants had to sign and consent to the terms of the document before we interviewed them.

After generating the data, it was stored in NTNU's NICE database, which is optimized for this kind of storage of data and is approved by the NSD. All data that was handled outside of the database, for example, in the analysis stage, was made anonymous. All informants had the opportunity to withdraw their consent. The interview guide and participation document can be found in the appendix.

3.2.2 Interviews

The interviews in this project were semi-structured interviews. Semi-structured interviews consist of prepared topics and questions, but the interviewer can change the order and optimize the questions for the interviewee. The advantage of this style of interview is that it promotes a more natural conversation between the participants. But it also keeps the focus on relevant topics. A semi-structured interview aims to give the interviewee the ability to speak more freely on topics, and the natural conversation flow aims to 'open up' the subjects (Oates, 2006). The interview guide in Appendix A shows the topics in our interviews. As we had two different groups of interviewees, we had to tailor the questions to the subjects.

On top of the interview guide, we also had a three-step process. All the interviews were started by general questions about the background of the interviewee. This was to identify the subject's experience level. Starting with more straightforward questions to which the interviewees know the answer can also help gain their trust. Consequently they might answer the tougher questions more freely (Oates, 2006). We then moved to questions focused on topics from research question 1, before moving to question 2. Lastly, we summarized some of the points and asked if the interviewees had any supplementary comments or opinions regarding the topics.

3.2.3 Interviewees

Table 1 shows the list of interviewees in this case study. All interviewees are anonymous and have been given a name based on their roles. If multiple people have the same role, they are separated by A, B, C, and so forth. IC(Implementation Coordinator) and Counselors A-G are representatives from local NAV offices. DE(Domain Expert) and PO(Product Owner) are representatives from a product development team at NAV. If a subject has listed multiple positions/roles, the first listed is their main job, the second is a supplementary role. A further description of their position/role, and why these groups are relevant for us, can be found in the case description(section 4).

3.2.4 Document review

We also had documents as part of the data generation. The documents in this project consisted of found documents. Found documents describes documents which already existed prior to the

Name	Position, role	Experience from NAV	Department
IC	Implementation Coordinator	Around 12 years	NAV Trøndelag
Counselor A	Counselor, Change agent	Around 7 years	Health, follow-up people on sick leave
Counselor B	Counselor, Change agent	Around 7 years	Health and Market
Counselor C	Counselor, Change agent	Over 30 years	Market last 6 years
Counselor D	Counselor, Change agent	Around 7 years	Youth coordinator
Counselor E	Counselor, Change agent	Around 22 years	Market
Counselor F	Counselor, Change agent	Around 5 years	Health
Counselor G	Counselor, Change agent	Around 30 years	Market
DE	Domain Expert	Around 9 years	Domain expert in health, at state-level
PO	Product Owner	Around 8 years	Product owner in Product Area Health

Table 1: List of interviewees with positions in NAV and experience

research (Oates, 2006). Most of the documents in the review was obtained online as they were published by the organization themselves. During the interviews, some of the interviewees also shared their screen and showed certain documentation which was used to gain further knowledge of the case. We also used a couple of video recordings of presentations held by NAV employees as documentation.

3.3 Data analysis

The data generation methods in this case study provided us with qualitative data, and as such, we needed an analyzing strategy to deal with such data. The method of analysis is adapted from Oates's book (Oates, 2006).

We started the data analysis by familiarizing ourselves with the data. This meant transcribing the interviews, reading the interviews and documentation, and trying to identify some initial key themes in the data. In the familiarization phase, we split segments into one of three categories; irrelevant, contextual, and directly relevant segments.

In the second phase, we did an inductive coding of the data. Here we categorized the relevant segments found in the first phase based on categories we observed in the data. The idea of doing this is to try and identify categories and themes independent from categories or themes you may expect to be relevant. After the inductive coding, we refined the categories. If categories were too large, we tried to break them down into sub-categories. Smaller categories or categories which occurred rarely were revisited to see if they could be combined with other categories. After doing this in multiple iterations, we identified key categories. These can be seen in the 'Results' section, as our findings are presented in these categories.

In the final stage, we reviewed each category and filtered the data. Subsequently, the findings were reviewed in relation to the background literature and the conceptual framework. This created the grounds for the discussion in the report.

4 Case description

In this section, we will describe the chosen case by providing some background info and context to why this case is relevant for this project. We will also describe important roles and systems specific to the organization, which are important to know before getting into the findings later in the paper.

This case study is centered around the Norwegian public organization, NAV. NAV was chosen because of its in-house development strategy. They also have many different IT systems that provide service to the citizens. The workers at NAV, like counselors, also use many different systems on an internal platform to facilitate their work towards the citizens. They also use agile software development methods when creating new IT solutions, which is an important element in co-creation. This makes NAV interesting as a case for this research. Studying how they involve users in their agile development process and how the implementation of the new IT solutions is affected can help us with our objectives and research questions. Further in this section, we will give some background on NAV and describe the parts of NAV we are studying in this project.

4.1 Case background - NAV

NAV is the Norwegian Labor and Welfare administration, which was established in 2006. Before 2006, the labor and welfare sector was split into two separate organizations, 'A-etat'(Labor) and 'Trygdeetaten'(Welfare). The establishment of NAV in 2006 was a merger of the two into one organization. NAV has around 20000 employees, where 15000 are employed at the state level, while 5000 work in the municipalities around Norway(NAV, 2013a).

NAV operates with certain goals, visions, and values. NAV's main vision is "We give people opportunities". The vision is derived from NAV's three main societal functions(NAV, 2013c):

1. Opportunity for work
2. Opportunity for meaningful activity
3. Opportunity for secure income in regards to legal rights

These values are reflected in NAV's primary goals: to get more people into work and activities, have a functioning job market, and provide good service tailored to each individual's prerequisites and needs(NAV, 2013a).

Brief history of IT and digitalization in NAV

NAV was established in 2006, but there still remain systems that date back further than that. Those systems have existed since before joining the labor administration and welfare administration into NAV. In 1967, the welfare administration launched 'Det sentrale folketrygdsystemet'(DSF). In 1978, 'Infotrygd' was launched, which still is used today and is one of many legacy systems in NAV. In 2001, Arena was launched. This was originally supposed to be a 'complete' case handling system, in the labor administration. Arena is also still used in NAV today, and it is the primary legacy system our informants from the development team are attempting to move systems out of, which is discussed more later. From this point, new systems have been added as well. In 2012 a new effort started to move to an application platform structure. In around 2017, NAV decided to do a significant rework of the structure behind their IT developments (Haukås, 2017; Heen and Jørgensen, 2017). This project is still ongoing today, where one of the primary goals is to move from old legacy systems to newer and more modern technology. This will be discussed further in subsubsection 4.2.1.

4.2 The case

When looking at NAV in this case study, we focus on two different parts and the cooperation between them. An overview of NAV can be found in Figure 7. First, we have NAV at the state level. This is where the decisions are made on how NAV is supposed to run as an organization. We then have NAV IT, an under department at state-level, responsible for developing the digital solutions to accomplish NAV's goals and vision. In the organizational chart, NAV at the state level is shown at the top, as "Arbeids- og velferdsdirektoratet".

The second part is NAV's local offices across Norway in the municipalities. NAV locally are supposed to provide service to the citizens where they live. They can be found in the organizational chart, on the furthest left branch, second from the top, "NAV-kontor". As we can see from the chart, we also have a unit in-between, "NAV Fylke med spesialenheter". This is the county offices. The county office's role is to follow up, coordinate, and support the local offices in the municipalities in their county.

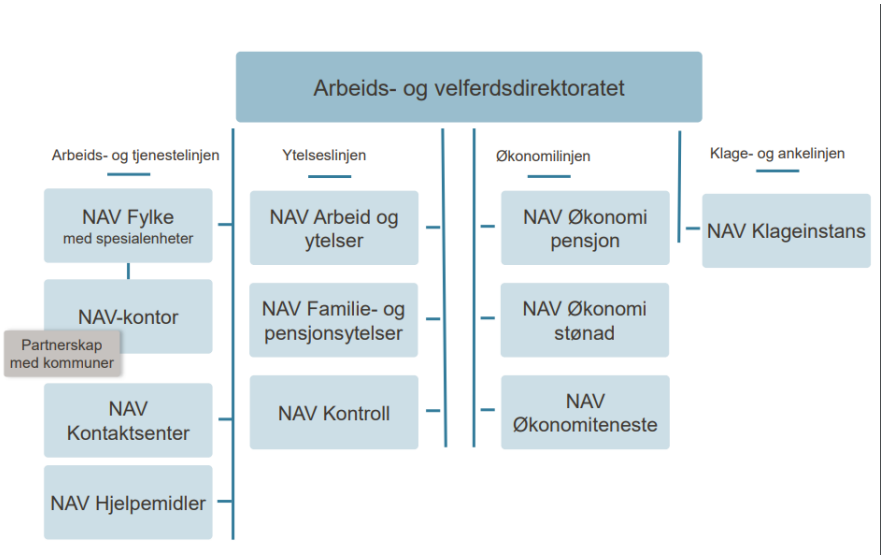


Figure 7: NAV's own organization chart

4.2.1 NAV IT

NAV IT is the department responsible for developing and creating IT solutions for the labor and welfare administration. It consists of 820 employees across eight different product areas (NAV, 2022b). As NAV's annual report from 2021 states: "The product areas are meant to promote interdisciplinary development of services and benefits, in areas which naturally belong together from a user perspective." (NAV, 2022a) The new functionality is provided through two methods, off-the-shelf products where the necessary requirements are met or through creating their own unique solutions (ibid). Some of NAV IT's central goals, which makes them relevant for us, is their desire to: "Increase ownership of our development, continuous delivery and closer contact with our users" (NAV, 2019).

Each of NAV's eight product areas are clustered around a set of organizational problem and focus areas. Within each area, multiple interdisciplinary teams have one focus area each. This is part of NAV IT's team strategy to have autonomous teams and to give their teams a focused view on a specific set of problems instead of overloading them. They also want to avoid too much overlap across teams to reduce dependencies between them. All teams in NAV IT consist of a product owner, developers, and designers. Some teams also have specific roles which are suited to their focus area. These can, for example, be lawyers, domain experts, or data scientists.

NAV IT has three different user groups for their digital services. The first is Norwegian citizens who need help in the welfare or labor sector. The second group is businesses and other organizations.

For example, they might have employees on sick leave and are in contact with NAV. The third user group of NAV IT's solutions is NAV's employees, like counselors and advisors, who help citizens daily at local offices. In this case study, we have chosen to focus on group three. This is because they can provide unique insights into how NAV focuses on user involvement from an internal point of view. Furthermore, as the time frame of the master project is short, it also helps us to focus on recruiting from one of the groups, as recruitment processes in case studies can be difficult and time-consuming (Oates, 2006).

We have also interviewed two employees from NAV, at the state level and the IT department. They work within the product area of health, and their team has counselors from local offices as their user group. They were chosen because they give a unique perspective on the development process, which other informants cannot be expected to do.

4.2.2 NAV's local offices

In NAV's local offices, state-level employees and municipality-level employees work together to find the best solutions for the citizens (NAV, 2013b). At the local offices, NAV's counselors provide service to the local citizens. All local NAV offices cooperate closely with their respective municipality.

In this case study, we interviewed eight employees at five local offices in the county of Trøndelag. The offices vary in size from around 20 employees and small departments to over 200 employees and multiple departments. This diversity of employees from different offices will hopefully provide us with a diverse set of data, which also emulates the rest of the country. The offices across the country also vary a lot in size. The informants primarily worked in two different areas of NAV, either Market or Health. Informants working in 'Market', work with helping people without jobs find them. The informants from 'Health', work with people who might be on sick leave or other health-related subjects, which keeps people out of work.

4.2.3 Cooperation between NAV IT and local offices

This study's unit of analysis will be on the cooperation between NAV IT and local offices, specifically, how they cooperate on development processes and implementation work. We will therefore collect our data from informants on both sides. For a more detailed explanation of how we generated our data, see section 3. See Figure 8 for an overview over the cooperation. In the rest of this section, we will describe the most relevant systems and communication channels used and developed by the two parties.

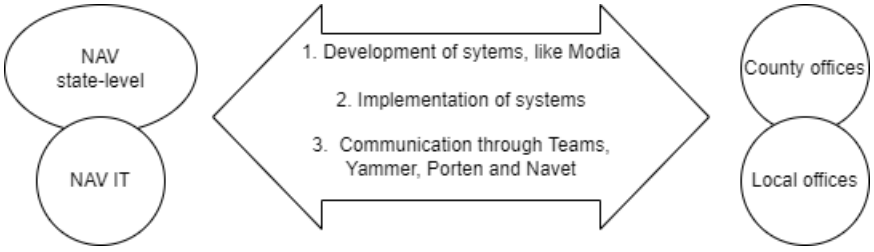


Figure 8: Overview of the cooperation between state-level and local level NAV in the development and implementation context

Modia is one of NAV's newer systems, which is still being developed after release. It is one of the most used systems by counselors at NAV in their work towards citizens. Modia has three main parts: Modia-person overview, where counselors can talk to citizens and send and answer messages. Modia-labor follow-up, where counselors communicate with citizens who receive unemployment benefits and who needs an activity plan. Last is Modia-sick leave follow-up, where counselors help citizens with sick leave or similar health issues that keep them from working. Our informants from NAV IT has their focus area within Modia-sick leave follow-up. Our informants from local offices

also had many primary work tasks in Modia. They also have some tasks in Arena. Arena is one of NAV's legacy systems they are trying to move away from. However, it still has some essential functionality, which means many people still use it at NAV.

Teams is a common communication channel across the organization and between people in the same offices. Yammer is a communication tool that is part of Microsoft's application base. This is used to communicate across organizations. For example, the development team can use Yammer to announce new releases. Porten is a system on the internal network in NAV, where users can send requests regarding errors or feature updates within systems. Navet is NAV's intranet and has information about guidelines, user manuals, and different departments can post news. For example, the development teams can use Navet to announce new updates.

4.3 Summary of important systems and roles

Table 2 shows a summary of systems and roles, which are important to know before reading about the results and findings in the paper.

System/Role	**Description**
Product Area	"The product areas are meant to promote interdisciplinary development of services and benefits, in areas which naturally belong together from a user perspective". NAV currently has 8 product areas.
Product Teams	All product areas have multiple product teams responsible for one of the area's main focuses. Product teams usually have a product owner, developers, and designers and can have domain experts, lawyers, and data scientists.
Arena	Old legacy system from 2001. Made to be a complete case handling system for labor administration, later integrated into NAV.
Modia	New system in NAV, under development and is supposed to replace Arena.Modia has three main parts: Modia-person overview, where counselors can talk to citizens and send and answer messages. Modia-labor follow-up, where counselors communicate with citizens who receive unemployment benefits and who needs an activity plan. Last is Modia-sick leave follow-up, where counselors help citizens with sick leave or similar health issues that keep them from working.
Navet	NAV's intranet containing massive amounts of information regarding the organization. User manuals, guidelines, news etc. can be found on Navet.
Porten	Internal system where users can send feature requests and report errors to development teams
Yammer	A tool that is part of Microsoft's application base. It is used for cross-organizational communications.
Counselor	Helps citizens with cases related to NAV's societal mission in local offices
Domain Expert	Assist the product team with domain expertise to support good digital solutions.
Implementation coordinator	Coordinates implementation of new IT solutions at the county level. They coordinate with state level and a network of change agents in their county. Each county has 1 or 2 implementation coordinators.
Change agents	A role in the local office to facilitate the implementation of new IT solutions to co-workers. Usually, change agents are an additional role that counselors can have in the office. Each office has at least one change agent.

Table 2: Key systems and roles in NAV in this case study

5 Results

In this section we will present the results and findings from the data analysis of interviews and document analysis conducted in this project. For a more detailed description of how this was done, see section 3.

The data analysis in this project identified two main themes, **development** and **implementation**. As such, this section will present the results of these two themes separately. There were also found several sub-themes. These will be discussed more in detail under their relevant sub-section.

5.1 Development

In this part of the results section, we present the data analysis results found under the theme development. As we went further in analyzing the data, we found that the different methods and tools used to involve users in development processes usually occurred in three separate stages of the development cycle. The first stage we identified was the discovery phase. The product team is considered to be in the discovery phase when they are looking for a new product idea or are in the early stages of developing a concrete new product idea. The second stage is what we have called the initial roll-out stage. This stage describes the period from right before a new product is released to the immediate weeks after its release. Finally, we have the post roll-out stage. This describes the period from after the first weeks of the roll-out until the process is considered finished. As NAV's development teams work with agile methods, the products are usually updated continuously in the post roll-out stage. New updates and features added after the product's initial release are considered post roll-out updates. They are not part of a new initial roll-out phase. We have also included a fourth sub-section, which includes the data that describes the development in a general view, independent of the three stages.

5.1.1 Discovery

The discovery phase is where the development teams are looking for new product ideas or are in the early stages of developing a new product. It was described to us by informant PO as:

> "Typically, early in a project, or early in a phase when we are getting a new product or finding a new product, we work very structured with gaining insight(on user behavior). That is what we call the discovery phase on the development side. At this stage, we work specifically with gaining insight." -*PO*

During our interviews, the informants from the development team described multiple methods they used to gain this insight:

> "We have worked with the counselors, which works within our domain, in different ways. We have had weekly interviews with different counselors from all over the country. Our goals have been to find out; how this process works today, what are the biggest issues(with the process today) and what opportunities do you(the counselors) see? That is what we are trying to uncover...We have also had observations, which means counselors share their screens and show us how they work in the current solution. We get them to tell us how they work, and sometimes we just observe them working. These methods can give us different answers. These answers are important(in the insight process), and the combination of them is important...We also have plenty of data. The data, numbers, and statistics are important user insights. Because it says something about the behavior of the counselor. So that is an element that has become increasingly more important. Then our job is to collect all this information and systematically look at the different elements together. So that is how we wish to work with it(insight work). It is always difficult, but this is at least some of the most important mechanisms." -*PO*

The interviews with Counselors D and E, which were involved in the discovery phase, reflected this statement. They described a similar experience with the insight process from a user point of view. These talks discussed their current work process, and they could suggest improvements they wanted. They also found it useful and felt like what they had talked about was reflected in the solutions after release:

> "We see results of the contact(with development teams). We have been listened to, and what we say have been received on the other end and worked with. Everything we say cannot be done or maybe even should not be done. That should be up to the developers, but the fact that we have an opportunity to be heard, I think that has been very good personally." -*Counselor D*

Informant IC described how they help development teams find relevant users for the discovery phase:

> "For example, they have asked me for three co-workers who have worked under one year. Then another three co-workers, who have worked for over three years. To find out; how they work differently, how they find information etc. Then they interviewed them qualitatively...This way, they can get information from people with different experience levels. This is something they do in the early phases of projects." -*IC*

Informant DE was responsible for recruiting counselors for the discovery phase in their development team. They often look for counselors who have been active in sending in user requests for existing solutions, as this usually means they are engaged, interested, and have a lot to bring. On top of that, they will usually try to recruit counselors(users) from different parts of the country. This is to ensure that they have a diverse user group represented and hopefully cover many use cases.

5.1.2 Initial roll-out

The initial roll-out phase describes the period before a product releases and the first weeks after the product has been initially rolled out. In this time frame, we identified two different methods the development teams use to involve users. The two methods were "pilot tests" and a concept they called "open day".

Pilot tests

When a new solution is closing in on being ready for release, the development teams will release it to a few selected offices first. These were referred to as pilot tests. The development team described the process as:

> "After the solution was basically finished, we had five pilot offices testing the solution over almost four months. We started the pilots with informational meetings and talked about our expectations. They had the opportunity to ask us questions, and we held a demo presentation. During the pilot period, we had contact on Teams. We created a channel for each office involved, where they could ask questions, give feedback,and present wishes, and we answered every message we received. I was personally open to direct messages as well, so I got many messages directly to me as well. We also held several meetings during the period" -*DE*

Pilot tests are a common tool used by development teams in NAV when they have larger releases. This helps the team find mistakes and avoid problems before rolling out a solution across the organization. Informant PO describes to us some of the reasons why a pilot involving the counselors(users) are important to them:

> "In a large organization, as NAV is, it is costly to release new code(solutions) to the whole organization. It requires a lot of implementation(in local offices) and a lot of

> work. So at least when we are doing larger projects, it(pilots) helps us answer any questions and solve issues. It helps us know what we have to communicate when we eventually release it to everyone because the pilot gives us an idea of what is easy to understand(for users). It also helps us understand the product we are releasing better. Therefore, I think pilot tests are important...So when we have the opportunity to pilot something, we usually wish to do it because it lowers the risk. If we find mistakes, we get an isolated piece of the solution which usually is easier to fix. So the pilots allow us to do a couple of iterations(agile development technique) and improve the solution before releasing it to everyone." -*PO*

The counselors also mentioned pilot tests as a way they were involved in the development process. Almost everyone was aware of them happening before larger releases, but only Counselors B and C personally had some experience with them. Counselor C highlighted that if they are included in pilot tests, they have the ability to provide valuable insights which might be difficult for the developers to find earlier in the process:

> "The pilot test is very exciting to be a part of. As the users of the final product, we sometimes notice that one team works with some solutions, then other teams work with another, while we counselors usually use most of them. Sometimes I feel like the developers on different teams and projects do not talk to each other or do not understand each other enough. So when we get an opportunity to test a pilot, we can help shine a light on things they have not considered. We can provide insight and experience and show them why their solution might not be the smartest."-*Counselor C*

When selecting offices to try out a solution, the team usually tried to find offices across the country for the same reasons as when finding counselors for insight work. Informant DE also mentioned that the last time they had a pilot, they targeted larger-sized offices because they felt this was the right move for the solution. They have found from previous experience with interviews and meetings with different counselors that each office has slightly different practices when working, so to get the best results possible, they always try to have a diverse selection of offices.

Open day

Another method that was found was the concept of an open day. 'Open day' was a new experiment in NAV by the team our informants were from. As we were told, they were the only team to try this so far. This was reflected from the answers we received by the informants from the local offices, as only two counselors told us they had heard of "open day". It was expected, as the team we interviewed, worked on one specific problem area, and not all the counselors we talked to have their primary work within this area. The idea and execution of the open day concept were described to us by DE:

> "Right after the roll-out, we held 2 "open days" for counselors from the country. We were available for a scheduled time so everyone who uses the relevant parts of Modia could meet us. The first time we were available for the whole day from 9 to 15. Counselors could show up whenever they wanted, ask questions, give us feedback, and discuss things they were worried about or if they felt any changes were needed...The second time we had it, we scheduled half a day." -*DE*

Informant DE also noted that the second "open day" was held because they felt the first time was a huge success. They also got great feedback from it. Furthermore, they were now expecting to use this method more regularly, and they got indications from other development teams that they would start to try it as well.

As mentioned earlier, few of the counselors were aware of this at the interview because of how fresh of a concept it is. However, Counselor F was present at the first open day and described it from the user's point of view:

> "We have recently gotten, in my department, some new and very technical solutions, and here we have had an "open day" with the developers. We could give feedback on what we did not like about the new solution and also talk about what we liked. They also told us about the upcoming priorities and what was coming soon...They set a specific time and had an open Teams room where someone from the development team was at all times. We had the opportunity to come and go as we were pleased. You could also just follow the meeting if you did not have anything to say." -*Counselor F*

Counselor F noted that this is a very good initiative from the development team. As it is typical for large organizations, in Counselor F's experience, new things are released with short notice. So to have an open day shortly after the initial release was helpful, provided valuable insights and gave a good opportunity to give feedback.

It is also worth noting that this was placed under initial roll-out because it so far only has been held right after the release, which is within this phase. However, informant DE said that in the future, this would probably become a more regular practice because of the feedback they received. Therefore, it is likely that the open day concept will also move into the post roll-out stage, but this was not the case at the time of the interviews.

5.1.3 Post roll-out

The post roll-out phase describes the period after the initial roll-out of a product and the continuous development and deployment following this release as part of the agile software development methods used by NAV. The primary method of user involvement in this phase is user requests. The request can be sent in several ways, either through an internal channel called Porten on NAV's intranet, Yammer, or through direct contact between developers and counselors, for example, on Teams. Informant DE described how they handle user requests through Porten, the most common way to receive user requests for their team, on the development side:

> "Every request we receive in Porten ends up with me as a Jira-case(DE is responsible for all requests relevant to the team's problem area). Some people(users/counselors) submit many requests, what they want to change, and what they want in future deployments. They give feedback on what is missing and what could be better. Then, I will usually create a list with the requests I feel are relevant and realistic. Then we have meetings within the team, which we call product talks, to discuss solutions and future development. In these meetings, I present the requests, and the team discusses what we think about them. We discuss every request on my list, and after we have gone through it, I will answer the person who put in the request directly, such that they know how we will handle it." -*DE*

It was also noted from the development team that although they tried their best to give good answers, it can be difficult. For example, they often want to implement something requested by users, but as it conflicts with the team's main goals, the request is put in a backlog. Then it is uncertain when it will be implemented. The team has two main goals within their problem area, which affect their priorities:

> "When we are doing software development, we have two main perspectives which are important. One of the perspectives is the strategy and the objectives we have from the state level in our product area(Product Area Health). In our case, who work with systems for people on sick leave, it is very important for NAV(at state level) that we prioritize getting out of the legacy system we have. We have concrete objectives which tell us to focus on that. Then it is the other perspective. How does what we create work for the people we create it for, which is the bottom-up approach. Our primary user group is the counselors at local offices, right." -*PO*

Because of this, the development team's priority is developing new solutions that help NAV get out of legacy systems. However, it should not affect the user experience. It was also said that if something was requested in multiple instances by multiple people, it is likely to get higher priority as these cases usually indicate major pain points in the solution and are considered important to give the best user experience possible.

From the analysis of the informants in the local offices, it was clear that the user requests are the most common method in which they are involved. This is likely because it is open to anyone, while the methods mentioned above either are new or have selection processes involved to find a specific set of users. All informants mentioned using either Porten or Yammer multiple times for user requests. As most of our informants from the local offices have an additional role, being "change agents", they will often submit user requests on behalf of the office or department they are responsible for:

> "It is my job(as a change agent) to bring user requests from our domain, which we believe will help us work more efficiently. The people who develop the systems have not worked within our subject or domain before. So we are the most experienced to know how to work most efficiently." -*Counselor E*

The counselors also report that they always get responses from someone regarding their submitted requests. However, these responses can vary a lot. It can be confirmation that something is being done right away, that something will be put in a backlog but not prioritized, or that something might not be done at all. The most significant frustration point with the user requests, from the user point of view, is the prioritization process. They report that often they get confirmation that something will be worked on, but no time frame. Then after that, they do not hear anything. This was seen as frustrating because there usually is a reason it was requested in the first place.

Counselor C brought an interesting point about the prioritization process, which sometimes felt a bit rushed:

> "Sometimes they will release some new feature, as they often do with the agile methods. And then, we see this mass hysteria in the office, and many people are unhappy with the change. And then they change something quickly, without it being considered who is behind the hysteria...In my experience, they sometimes make changes rather quickly(if enough people complain) without considering the goal or reason behind it. In my opinion, that is one of the disadvantages(of the current user request system)." -*Counselor C*

Counselor C also wished to try new solutions a bit longer without changing, just because of hysteria. Naturally, a new feature or change will cause some reaction in their experience. Counselor C also added that "I do understand that when it is a lot of reaction to a change, they do it. Part of their goal is to deliver what is being requested, so it is probably not easy to be on the other side(development team) of that".

5.1.4 General view on users involvement in development

This part of the results presents more general views on user involvement in development, independent of the specific phases.

The users play a vital role in the development process we studied and are involved in some form at all stages. They provide important insights into their work process, which is key to the development teams. Informant DE and PO from the development team corroborate this:

> "To be in direct contact with our users, which for us is the counselors, is important. Because we cannot make a solution based on information we have before starting a project. So we aim to be in contact with everyone all the time, and we see that the counselors are very engaged and provide much useful information. Moreover, as the

development team, if we respond to every message and request through Yammer or Porten, I think they(counselors) will feel like we see them and listen to what they say." -*DE*

"We work with them(users) in many ways. In every step of the development, we need the user insights they already have. We have many methods to try and get insight. Because we use agile development methods in NAV, we are responsible for operating and developing the solutions, which means we constantly have feedback loops with our users at all steps. It can be anything from system errors to feature requests on existing systems. We try to have feedback loops going all the time. -*PO*

The users report being generally happy with their involvement in development processes. They have all been involved to some degree and feel it is important. They often see results of contact with development teams. Some of the informants have also pointed out the importance of being involved in multiple steps as they often find that the first iterations of a new system show a lack of experience from developers:

"I think how we(counselors) are involved in development is good enough. It is not supposed to be our main job, but we have good opportunities to report wishes and requests. Moreover, we can see in the deployed systems that our requests have been seen and heard." -*Counselor A*

"And when the developers create a new digital solution, they have perspectives from their backgrounds. At the same time, we users of the systems have different needs and want to make changes that will help the optimal function of a program. So it is important and good for us to be involved." - *Counselor B*

5.2 Implementation

This section will present the results and findings from our second central theme of the analysis. In this paper, we use the implementation term when talking about how the local offices adopt the new systems and products that the product teams have developed. We identified three sub-themes in our analysis, roles, methods, and challenges. The roles section will present findings of a few distinct roles that NAV uses when implementing new solutions. In the second section, we will present findings regarding different methods the local offices use when implementing systems. Lastly, we present findings regarding different challenges in the implementation process in different offices.

5.2.1 Roles

Here we will present important roles that NAV has in place to help the implementation process, we found two roles in our data, implementation coordinators and change agents.

Implementation Coordinator

The implementation coordinator is a position at the county level in NAV. Each county has 1 or 2 implementation coordinators. It is a role that has existed in NAV for a while. Previously this role was heavily involved in implementing new big systems, which was the standard many years ago. These are the systems usually referred to as NAV's legacy systems today. With time, this role has somewhat changed. Development now uses agile methods, and new updates happen continuously compared to previously, when there usually were large finished systems to implement. The implementation coordinator has a team of change agents, which we will go more into in the next section, at each local office in the county which they cooperate with. They also cooperate with NAV at state level, including the development section. Although they hold an important role in implementation in their county, they are not responsible for it. The responsibility of

implementation is with the local NAV leaders and office leaders. Informant IC, which has this role, described it as:

> "Implementation coordinator is the name, and it is 1 or 2 of us in each county. So we are a network, and we have a cooperation team with the directorate(NAV at the state level) and the development section in the directorate. So we have a little bit of insight in how they work, with the product areas and such...I personally do not like the title that much, but in "the old days" when we implemented new systems they were complete at delivery and large systems. These days we have agile development, so the implementation process is completely different. Now you might get notified that a new feature is ready by the notifications in the system and not by a leader. Sometimes a counselor might know before the leaders what functionality has been released. So the dynamic of the implementation process has changed completely, and a lot more rests on each individual to use the new functionality." -*IC*

Also, informant PO from the development team had an interesting insight into the implementation coordinator role and its future. Part of the goal of moving from these old and large systems to newer systems is not only better technology. They want to change how work is done within NAV:

> "I believe that the implementation coordinators, long term, will do the most work in regards to changing processes. A lot of what we are doing by moving from the legacy systems to a new system is obviously to upgrade and have more modern solutions, but we aim to change how our counselors work with people on sick leave(his team's focus area). Furthermore, changing processes like that requires much more than just new products. New products can be an enabler and push toward change. However, implementing change in established work processes requires a lot more. So in the longer term, I think the implementation coordinators will get larger responsibilities with implementing a completely new process..." -*PO*

Change Agents

The change agent role is the second role that was found in the data analysis as important to the implementation process. Each local office has at least one change agent in NAV. The size of an office usually decides how many each office has. For example, some of the larger offices included in this case study has upwards of 200 people in the office. These offices usually have multiple different departments and therefore have at least one change agent per these departments. The role of a change agent is primarily to stay updated on which new functionality is being implemented. Then to facilitate for implementation of this functionality in their office or department. They are not responsible for the implementation in general but are assigned to this role to help the rest of the office. All change agents have another main job, like being a counselor/advisor. The change agent role is only a supplementary role to their main job. All of the change agents we interviewed described the role to us in a very similar way. As an example, this was Counselor E's description:

> "The change agent role is about being updated on what is coming and what has recently come of new things(systems, features..). There is an agile development that continuously provides new systems and programs. So my task is to facilitate and train my co-workers in the office or department on new systems or releases. That is usually what we do." -*Counselor E*

Even though they are not entirely responsible for the implementation process, they play a vital role. As Counselor B described, he has been to offices where he believes the wrong person has been given the role and as a consequence, the office in question ended up far behind in the implementation work:

> "Usually, it works just fine, but in some offices, I find that the right person has not been selected for the role, and then there are issues. I have been to some offices where

they are almost a year behind in terms of new functionality. Knowing how to use the systems. Because the person has not fulfilled the role. Consequently, the weight of learning the new things has been put on each individual." -*Counselor B*

5.2.2 Methods

In this section, we will look at methods used to help the implementation process. We will start by looking into how the users are notified of new functionality, either in existing solutions or new releases. We will then move on to some methods that the development teams have implemented to help facilitate from their side of the platform. Lastly, we will present methods the change agents use in their offices to facilitate the implementation processes there.

Notifications

As development in NAV happens with agile methods, a crucial part of the implementation process is to be notified when something has been added. New releases usually fit into one out of two categories. First, it can be an existing system getting new functionality, which can happen as often as every day in an agile development cycle. On the other hand, it can be a completely new system being released for the first time, which usually would be more complex than daily updates. Therefore, these two instances are notified differently.

When new features are added, there are multiple methods of notifying the users. Some systems have built-in notifications which automatically update when a new release is ready. These notifications usually provide information on what is new and what has changed. They often provide links to the intranet, Navet, where more detailed explanations are written. Sometimes users are notified through Yammer. This works similarly to the method mentioned above. Sometimes there are updated in the intranet news section as well. Lastly, in our case, the county provides weekly newsletters to the change agents with information on what is new this last week. All these types of notifications are up to the users themselves to use, and the change agents need to stay updated on new functionality:

"If it is tiny updates, we(change agents) are usually not notified beforehand for those changes and improvements. So when we open Modia, there is a notification which tells you there is new functionality, and then you have to open it and read for yourself." -*Counselor F*

"We have 'digi hverdag', a newsletter from the county, we(change agents) receive every week. In addition, there are small notifications in the systems in Modia, which notifies you when there is new functionality. There are often news messages on Navet, our intranet. Then it is all about sorting it; what is relevant for my work?" -*Counselor D*

However, when new systems or larger parts of systems are released, there is usually more work with notifying before the release. It will usually be a planned date for the release and provided training and courses beforehand. Before such releases, the change agents will usually get together to plan. How long before can vary, and sometimes the change agents feel like they get too short of a notice in these situations:

"If they release a new program, there will usually be more buzz around it. Usually, we get a release date, specific information about that date, what changes it is, the system's name and so forth. Sometimes we will get together(change agents) before, and maybe we get to see the new program, gather some thoughts around it, and construct a plan for how we can implement it at each office." -*Counselor B*

"When it comes to little bit larger things, we as change agents might get notified a few days before, but not always that long before everyone else. However, with these releases, much information usually comes, so it is important to gather the information and learn quickly." -*Counselor F*

Development team actions

The development teams also try to help with implementation, even though their main focus is developing. They mainly do this by providing tools for the offices to use. For example, they actively promote their solutions, discussing the advantages of new functionality in open communication channels. They have also provided implementation coordinators with data packages that tell them about the rate at which their offices have adopted new technology. For example, by showing how many still use the legacy systems versus the new system Modia to perform a certain task. They have also given the users the option of voluntary adoption of the new functionality, which means they do not immediately remove the function from the legacy system. This step is used to try and get a more natural adoption of the new software:

> "First and foremost, we try to talk a lot about the advantages, which advantages they get from the new solutions. We are also active on Yammer, so if we release a new change, we usually publish it on Yammer to ensure everyone has access to the information...We also have statistics on the use of Modia, which we follow closely. We also have contact with the implementation coordinators on the county level. They also have access to the statistics...We also publish information in Navet. For example, in the last release, we had written multiple articles to aid the implementation when the release would eventually come." -*DE*

> "We have a recent example, where we released a new product for a process done in the older systems previously, so we have moved this process into our new system. In this instance, we have chosen to give the option to users to adopt the new process voluntarily. Every office in Norway is expected to use the new systems, but we do not force people to use them to promote a more natural adoption." -*PO*

Previously, in the development section of our findings, we presented the open day concept, which we placed in the initial roll-out phase, but also a concept that would become relevant in the post roll-out stage when the idea has developed more. The open day can also function as an implementation tool the developing team provides, as it is an open channel for discussion between counselors and developers. 'Open days' has also been used as an opportunity for counselors to ask questions about the use of the system and what benefits they can gain from it. It is not only a feedback channel for the development team to improve the product.

Implementation methods used in offices

The change agent's role is to facilitate implementation in their offices. We found multiple ways they try to do this. The offices also vary a lot in size, and each office usually has unique ways to fit their office the best. Most offices hold meetings each month, or more often, between the change agents in the office to plan a strategy for an upcoming period. This has been to deal with the constant updates that the agile development brings, and this way, the change agents manage to keep up with the new releases:

> "In my office, the change agents meet every three weeks. Here we explore what is coming shortly, see if we find anything new on Navet, if there is any news regarding releases, basically trying to be a step ahead. We also try to evaluate which updates we think will implement smoothly as part of the agile process and what changes might require more attention from us." -*Counselor C*

In a smaller office where there are fewer change agents, this is done a bit different:

> "In my office, I have to make the judgments, how are the digital competence in my office, do we have to implement some measures to change how we work? This will usually depend on the size of the change. Otherwise, we get courses or training programs, with some documents or maybe power points of how a solution will be when it is finished. Then that is my responsibility to present to my office, and I can decide how I want to approach it." -*Counselor B*

A common method is what they call "digital week" or "digital workshops", where the change agents will find specific topics of questions in the office and have a focus on them for a week. This measure is usually used around larger releases of new systems. However, some change agents also have used this if they feel the office has not adopted a previous release well enough after a while. This measure can also help deal with the constant updates from agile development. If they feel the office is becoming overwhelmed with the new changes:

> "We have tried to run what we call "digi workshop" every other week. This is something we do locally in the office. We try to identify what is new and what our co-workers are struggling with beforehand and then have a workshop." -*Counselor D*

> "If we see that we need more of a push on something specific, we will have a digital week in the office. We implemented this a few years ago. So one week every year, we try to give the competence across the office a big push to catch up. Usually, we try to have different workshops so people can find something they need help with. Some may be mandatory, and some are usually voluntary." -*Counselor C*

5.2.3 Challenges

We also identified different challenges the counselors encounter when trying to implement new systems and features, which we present in this section. We found that the size of the offices in question played an important role in what challenges they faced. We also found that agile development and thus the continuous deployment of features gives the change agents challenges in the implementation process. The offices also have varying degrees of digital competence amongst their employees, which is difficult to account for. We also found the transition between older legacy systems and new systems as a stumbling block. We also found that implementation work is time-consuming for the change agents, which has proven challenging. Lastly, we will discuss user manuals and some challenges found with them.

Office specific challenges

When talking to change agents about the implementation process, one central theme is office-related challenges. As each office in NAV has different setups, sizes, and slightly different practices, each office has unique challenges.

Large offices usually struggle with having all employees on the same page. As it is a lot of people and departments, getting everyone to have the same mindset can prove to be difficult. As a byproduct of this, it can be difficult to identify who is struggling, and information has to be generalized for more people instead of focusing on individuals who might have issues:

> "Our(large office) challenge is that we have eight different departments. So to work together and think as one group is difficult. In a smaller office, with one change agent, maybe one or two leaders, it is easier to gather and give everyone the same information. However, when we want to give everyone information, our only possibility are digital channels. To get everyone together at the same time is impossible. It would be easier for us if we had the opportunity to gather everyone in a room and discuss, but that is not feasible for us." -*Counselor C*

> "With around 240 people in the office, I have to give information through Teams if I want to reach everyone. Sometimes we try to have office meetings, but there will always be someone who cannot be there in a larger office" -*Counselor E*

> "I think it is more difficult here(large office) for the department leaders to keep track of who is struggling and who is continuing with old methods because usually, you can continue with older methods, even in new programs. So in those cases, it is difficult to find who is not changing their process as the new programs intend that we do." -*Counselor F*

Smaller offices will normally only have one or two change agents. This places much responsibility on the individual. If this person is not fit for the role or has extended periods away from work, the smaller office's implementation work could be jeopardized. The change agents also have to cover more of the implementation work, where larger offices can specialize their change agents in certain processes:

> "Here(small office), we depend on that the person with the competence is at work. That is a challenge for us at smaller offices...we are more dependent on each individual." -*Counselor D*

> "I have previously worked at a smaller office, and there you usually have multiple roles, while here we have a more specialized role. We have specific tasks, while they are spread thinner across different roles." -*Counselor F*

> "I have been 'on loan' to help train people in new systems in smaller offices. There we saw that people had fallen behind. Where the change agents and office leaders had not been able to keep up with everything, because they had to work more widely and had more responsibilities in their office" -*Counselor C*

Managing a process in an agile environment

Another common challenge found in the interviews was dealing with the agile development process. As things are continuously updated, the change agents have a challenging job of keeping up to speed. Also, other users can struggle to keep up with constant updates and end up working as they did before in the new system and not gaining the benefits it is supposed to provide. There have also been instances where counselors start working in certain ways because of how the system is currently, but as it updates further, they do not use the new features and end up not working as the process is intended to do:

> "We have seen that, for example, with Modia, we have received more information after a while, with information about 'this is how you are supposed to do it'. This means we start an implementation process but have not received all the information. And then the information comes after the fact, and then it can be difficult, in my opinion, to make people change again after they have started using less ideal methods. Then it is not easy to teach them another new method. What is common in NAV now is that we start implementing things before they are finished. It gets built piece by piece by piece. And often that is very useful for us because we can start working with it early but long term it can become an issue because people learn to misuse it before we know how it will work when it is more complete." -*Counselor F*

> "I think many employees would prefer to get a complete system, get training, and now we start using it. " -*Counselor D*

Although the agile process comes with challenges, it is also underlined by multiple informants that they prefer implementing this way compared to a more waterfall-style approach:

> "I think it is better to start with a system and then continue to develop it. Like it has been now with the activity plan. It is much better than when we got large new systems." -*Counselor A*

> "To use an example from when I started in NAV, we had(and still have) a system called Arena, which is a complete case handling system. So if you think about a counselor's role in NAV, you would use Arena's features for everything, which takes a long time to learn. In my experience, learning something like that is a more difficult task. Compared to now with the agile development." -*Counselor B*

Digital competence

As a large organization spanning the whole country, with many employees and offices, NAV has varying degrees of digital competence. This is a challenge the change agents have to deal with daily in their implementation work. With varying degrees of competence, it is difficult to tailor training or courses that fit everyone. As such, people will often end up sticking to older systems and methods or struggling and spending a lot more time on systems than they need to:

> "The competence levels are very different here right now. With that, I mean general digital competence, in terms of using computers, using the internet, and knowing how to 'google'. It is a new way of finding information today compared to before. Also, internally in terms of how to use different systems, phones, and everything. The divide is so big that it is difficult to find good ways to train our employees where we know everyone is getting a benefit from it." -*Counselor D*

Age was also mentioned as a factor in combination with digital competence. Not only because older generations have less experience with computers but also because the older generation working at NAV have often worked there for many years and have created routines and habits from old systems which can be difficult to change. Many employees also do not understand the need to change methods that have worked for a long time:

> "If you have done the same things and handled the same type of cases for 15 years, and then you are suddenly told to do it in a new way, but you are still doing the same thing, that can be frustrating for people...So they usually use a long time to transition to the new ways...What you have to do is to learn how to use the tools. They must understand that it is a tool and then learn it. Many people see that there is a tool but does not understand how to handle the program. Often they are the ones to use the longest time to adopt a new program, after some resistance." -*Counselor B*

Transition phase

Nav is currently in the process of moving out of older legacy systems and into new modern systems. As a part of this process, they are in between multiple systems. The legacy systems still contain essential functionality and cannot be replaced yet. While new systems are being developed and grow in their capabilities with every iteration. This creates an overlap of some functionalities, which provides challenges in the implementation work of the new solutions:

> "The problem is that we are in a transition phase. For example, we have a program called Arena, where you must register 'actions'. So if a person is followed-up by a counselor, and I want to register it, I do so in Arena. Arena is old and outdated. Nevertheless, much of the work surrounding this process also has to be done in Modia, the new modern system. So to do this, I need to learn how to use Arena and Modia, and juggling between two systems can be challenging for people." -*Counselor B*

Counselor D also provided an example of how they have seen people handle two concurrent systems:

> "I can see the way people use the different systems. Even though we have the required search functions in Modia, we still have people opening Arena to search for the person, copying their national id number. They paste it into the other system, Modia. So there might not be enough focus on how we should change the whole work process, rather than just learning the new system." -*Counselor D*

The fact that the transition is in progress means that some people still have most of their tasks in the legacy systems. But in the long term, they will also have to move to the new systems. However, these counselors can be difficult to convince to familiarize themselves with new systems. This can potentially hurt the implementation process in the longer term when they have to change how they work:

"The counselors who have their main tasks and responsibilities in the legacy systems have larger objections towards starting to use the new systems. That is just how it is. They do not need it in their current work process, but at the same time, they should start looking into it because the old systems are being phased out. So that is a difficult balancing act." -*Counselor E*

The challenge the transitional period can create was also acknowledged by informant PO, from the development team, as a factor they try to consider when prioritizing new functionality and helping with the implementation process:

"When you are transitioning from an old system to a new system, and the process of phasing out some stuff and adding in new stuff in the other system, you will end up in a 'split' for a while. You have one half of the system there and the other half somewhere else. We need to have a lot of respect for that. It is not necessarily easy for a counselor to deal with. You can also try to be funny and say, 'we have a million systems in NAV anyway', so maybe it is not that different, but it is something we are concerned about when choosing what to prioritize. Then our job is to analyze how we can prioritize new things into the system that are connected to the existing functionality." -*PO*

Time constraints

All the change agents have this role as a supplement to their main job, which usually is as a counselor or advisor. Also, the most important task for a counselor is to help citizens with their needs, and the system is supposed to supplement that task. Often this work can be very time-consuming and hinder the ability to learn new systems as the citizens need their focus:

"It is very time-consuming. We have many systems in NAV. I got a new task today to fix a little checklist, which is long. The process in question can be very tedious, so it is easy to forget some elements. So one factor contributing to people not using the new systems is that it is a lot to familiarise with and easy to forget some parts. Even I, a change agent who knows the systems, forget stuff from time to time because of the complexity. That is a factor. Our most important job as a counselor is getting people back into work, so we must prioritize that over learning every system perfectly." -*Counselor E*

"I usually say that I am just lazy enough. By that, I mean I try to work as effectively as possible...I try to work smarter. I try to use the benefits from the system, and then I have some spare time...And then I might see a colleague with 'high shoulders'(stressed), and I try to tell them; try to do this instead(in the system). Then they tell me: 'No, I do not have time for that. I am too busy'. Then it is difficult to do implementation work." -*Counselor C*

Regarding time constraints, some change agents mentioned getting the necessary information just before the release. This was highlighted as an issue. As NAV is a large organization with a lot of 'cogwheels' turning, information and knowledge can take a long time to move across boundaries:

"Often, we have little time, which probably goes back to NAV centrally. Maybe they will tell us something is being implemented in two weeks. They think: 'That should be sufficient time', but two weeks is almost nothing. I am usually fully booked with meetings 2-3 weeks in advance. So to find enough time where all my colleagues can meet is almost impossible. I think this is normal in large organizations, with offices all over the country. That the people who decide think it is sufficient time, and then we end up with a time crunch towards the end. First, things have to reach the county leaders. Then each local office gets it, and then the local leaders have to decide how they want to approach it for their office. So it can be a time-consuming process." -*Counselor F*

User manuals

An important tool in an implementation process can be the user manual. In NAV, these are usually a part of NAV's intranet, Navet. In our interviews, multiple informants mentioned that it is a very comprehensive database of information in NAV and that finding the information you are looking for is not trivial. Therefore it can be a bit of a stumbling block. Finding the correct information usually requires that the user know what to look for:

> "Something we are not so good at is finding information. On the intranet for employees to find information about processes. You must look around a lot, even if you search, to find stuff. That is something we can improve on. Finding information but also user manuals on how to use the systems" -*Counselor A*

> "There is a reason people call Navet for 'The ocean'(Havet). For me, who is decent at searching, it is not that challenging, but I see many people who spend much time finding what they are looking for. I think people lose much time from it." -*Counselor D*

> "I prefer to ask colleagues if I wonder about something instead of finding user manuals. Because it is time-consuming finding it on Navet. I probably would not find it at all or spend a lot of time to find it. So I prefer to ask colleagues who know. We know the manuals exist, but I think they are rarely used." -*Counselor F*

There were also some of the informants who felt like the user manuals and Navet provided sufficient information and had not experienced it as a challenge:

> "I think it works well on Navet. Navet has a lot of good information. You have to seek it out yourself sometimes, if you are looking for some older information." -*Counselor C*

5.3 Summary of findings

In Table 3 we present a summary of the main findings in the case study.

Main findings
• We found four different methods where development teams involve the users across three different phases in the development: Insight work in the discovery phase, pilot tests, open days, and user requests
• The users participate at all stages of development in the internal platform at NAV
• Implementation coordinators and change agents play key roles in the implementation process at the local offices
• The agile development process affects the implementation of new systems
• The organization has adopted some agile practices to deal with the continuous development of new systems
• The challenges an office face in an implementation process varies a lot depending on factors like the number of employees and departments
• The implementation process is challenged by time constraints, digital competence, the transition between legacy systems and new modern systems

Table 3: Summary of main findings from the case study

6 Discussion

This section of the thesis will discuss our findings from the case study and relate them to our research questions and background work. We start by discussing the objectives of the research questions before we move on to discussing the findings relevant to each question. We also discuss contributions to the theory, implications of practice, and limitations of the study.

With the research questions, we aim to find out two things. Firstly, how does NAV involve its users in development? We also had to specify this objective as we moved further with our case, as we found they had three different and complex user groups. Therefore, we decided to focus on the user group of the organizations own employees. We did this because a lot of previous research focuses on consumers or citizens instead of the workers.

The second objective is to study how the found development methods affect the systems' implementation. Implementation in this sense considers how the users adopt the new technology into their work. This objective originated from our initial discussions with informants. To find an answer to our second objective, we tried to identify what methods they used in their implementation work and what challenges they had.

6.1 RQ1: How are the users involved in creation of boundary resources on an internal platform in public sector organizations in Norway?

Before we move further into the discussion, we wanted to clarify some important concepts and relate these to our case to bring more precision to the discussion. Digital platforms are an area of research which have struggled with ambiguous definitions (de Reuver et al., 2018). Furthermore, Thompson and Venters have called for research regarding governmental platforms to clarify what kind of platforms the research is discussing (Thompson and Venters, 2021). NAV, in general, fits into the category of 'Government as Platform Builder' when you include the entire NAV platform, which includes all three user groups, citizens, businesses, and the employees. However, in this case, we have focused on the third user group, the employees. Therefore, the specific platform definition we would use for our case is an internal platform. Gawer defines the internal platform as a platform within the firm/company/organization, with a closed interface (Gawer, 2014). Internal platforms are usually governed by the managerial hierarchy, and innovation of the platform needs to come from within the organization (ibid). These are two elements we recognize from our case, as the central leadership in NAV, and the platform owner sets the goals for the platform.

As we are talking about an internal platform, it can be useful to specify how we conceptualize a boundary resource. In our case, the boundary resources are tools the platform owner provides for the workers in NAV to facilitate their ability to communicate with other stakeholders on the platform, like citizens. This is similar to what Farshchian and Thomassen called BR1 in their model (Farshchian and Thomassen, 2019). The boundary resources that were mentioned in the findings are either technical or socio-technical boundary resources, as they are applications and systems on the internal platform which facilitate the worker in their daily tasks.

6.1.1 How to involve users

How you involve and facilitate participation by users in the development process is an important factor to consider (Bano, Zowghi and da Rimini, 2017). Agile development methods advocate for valuing the individuals and interaction and customer collaboration (*Agile Manifesto* 2001). However, in a governmental context you have to slightly change this view, as you have other motives for creating than strictly a customer relationship. And even though agile development methods are based on similar principles, the approach can still be different. In our case, we found that NAV's agile development consists of three distinct and important phases: discovery, initial roll-out, and post roll-out phase. The reason these phases became apparent to us was the fact that in each phase, the development team changed their strategy on how they involved users.

Arguments can also be made for a fourth phase, which is prior to the other three phases. This would be a political phase. This is the process of the government and top leadership of NAV deciding on what NAV's missions are. This could, for example, be what budgets they get, what IT projects should be prioritized, and so forth. This is likely to affect the development phases as it puts certain limitations on development. Even though the development teams have decision rights and are responsible for the team's focus area, there are likely to be certain guidelines from politicians which can have an effect.

6.1.2 Discovery phase

In the discovery phase, the development teams did what we have called insight work. The goal of this phase is to understand the work process of a user combined with how they use currently available systems. To conduct insight work, the development teams mainly used qualitative data collecting methods, like interviews. Early in the phase, interviews will give useful insights into the work process. Later in the phase, when the development team had started development and creating sketches and prototypes, the interviews would be used to get opinions and advice on the work that had been done. The insight work, in the discovery phase, is similar to what the literature refer to as participatory design. Participatory design is about discovering the user's tacit knowledge around the process and using their knowledge when building new systems (Spinuzzi, 2005).

Who to involve is also an important consideration in user participation and involvement (Bano, Zowghi and da Rimini, 2017). In the discovery phase, most users are selected by the development team in NAV. It is obviously not feasible to involve most of the users at this stage, but a poor selection process could affect the insight work. However, in NAV, the development team focused a lot on diversifying their selection base in terms of user experience. As NAV is a large organization, they also focus on selecting users from different areas. This should help identify more issues, as practices at NAV differs from each office.

6.1.3 Initial roll-out phase

When development moves into the initial roll-out stage, the approach to user involvement changes. At this point, the solution or program is considered very close to being ready for release. The most common method we found was conducting pilot tests in selected offices. Up to this point, most user participation has included gaining insight into the work day of the user. The goal in this phase is to let users try the solution and find errors or mistakes in practice. Even though you can gain a lot of insight in the discovery phase, the development team emphasizes that you never fully know how a system works until it is used. The reason for doing pilot tests and not just releasing to everyone, is to identify errors which can hinder the implementation. If the solution is released and a major flaw is found, it can upset the implementation.

As the initial roll-out phase often involves specific offices, the question of whom to involve is also important here. The development team we interviewed had a clear strategy for involving offices from all over Norway. This was to diversify the user base. However, in the example we were presented, they had chosen to primarily involve larger offices, as they felt this would fit better with the solution they wanted to pilot. There could be some potential pitfalls here. As we have seen in the implementation work, there are different challenges dependent on factors such as office size. Therefore, only including larger offices could potentially not uncover faults that affect smaller offices more compared to larger offices. Therefore, involving offices based on more factors than geographic placement might be useful.

6.1.4 Post roll-out phase

When development moves into the third and final phase, post roll-out, NAV changes the approach to involving users again. At this point, the solution is released to everyone and is actively being

used, which removes the questions of whom to involve, as everyone now can involve themselves. In agile development, it is important to listen to the user's needs, and it should be a continuous process (*Agile Manifesto* 2001). The methods implemented in this phase facilitate for this. Primarily, at this point, the involvement and participation of users happen through internal channels, where the user can send requests to the development team. Also, in the co-creation of value and service-dominant logic, it is advocated by research to have a continuous process, which is something we see in our case (Osborne, 2018).

6.1.5 Boundary spanning in development phase

Boundary spanning activities usually take place in organizations when individuals move across boundaries to gain information or collaborate with others (Aldrich and Herker, 1977; Levina and Vaast, 2005). Often organizations have boundary spanning roles by default, but they are not actually performing so-called boundary spanning activity (ibid). For example, in the development phase in NAV, we found the domain expert to be a nominated boundary spanner role. These are roles where part of the idea, by default, is to span boundaries (Levina and Vaast, 2005). However, we would argue that in our case, the domain expert also performed as a boundary spanner-in-practice. What makes a nominated boundary spanner to a boundary spanner-in-practice is actually engaging in spanning activity. In our case, the domain expert's role is to engage with the user group, the workers. This is done by using multiple of the aforementioned methods in the three different phases of development. The domain expert also used boundary objects.

Boundary spanning activity is often aided by using boundary objects (Levina and Vaast, 2005). Boundary objects can be used to "understand how IT-based artifacts can support the development of boundary spanning competence" (ibid). Similar to boundary spanners, objects can be designated or actually in-use. In the development process in NAV there are multiple objects like this, with varying use. The most central objects are the systems that are being developed and implemented. They are the initiators of the boundary spanning activity. The most common objects used for communicating, in our case, are channels that facilitate cross-organizational communication, like Teams, Yammer, and Porten. These are essential for the development team to facilitate value co-creating and user participation in the development process.

6.1.6 When to involve users

When to involve the users in a development process is another important factor (Bano, Zowghi and da Rimini, 2017). Value co-creation and the service-dominant logic promotes the importance of participation by users throughout an entire development process (Osborne, 2018; Vestues, Mikalsen et al., 2021). In NAV, as aforementioned, we divided the development process into three phases, including user participation and involvement. The development team also emphasized in the interviews that this was actively part of their development strategy, to have the users involved in every step.

When looking at our data, it was the later stages of development that facilitated most for co-creation. This was because it is accessible to everyone and can reach a larger base of users. Of course, it is not feasible to involve all users in the early stages, and they are still very important in the co-creation process. The development team was also adamant about the importance of having a constant feedback loop with users, as this is a key principle in agile software development (*Agile Manifesto* 2001). All stages contributed to having such a feedback process, even though the latter stage has the potential to involve more users.

6.2 RQ2: How does the development process affect the users implementation and use of new boundary resources?

The results from the case study indicate that the agile development methods have affected the organization's methods of implementing new boundary resources. In some areas, NAV has adapted their process to better fit the agile development. But there are also parts of the organization which have struggled. Often public organisations adopt agile development methods, whilst not changing other parts of the organisation (Dittrich et al., 2005; Mergel, Gong et al., 2018; Ghimire et al., 2020; Mergel, Ganapati et al., 2021). This can lead to challenges that hinder the benefits of the agile development methods. Further in this section, we will discuss how NAV's local offices have tried to adapt and what challenges arose from it.

6.2.1 Adapting to agile development

The local offices in NAV have implemented methods in their implementation work to adapt to the continuous development. Each office has local leadership, which has the overarching responsibility for implementation. But most of the time, the change agents in the office are the ones tasked with facilitating it. A common strategy from the change agents was to hold meetings, for example, every three weeks, to discuss the progress of implementation work. They discuss what has been done, which areas they might be struggling in, and how they want to approach the coming weeks. These meetings helped them stay updated and respond to a changing environment. Being able to adapt and change the way the organization operates is key if agile development is to succeed (Ghimire et al., 2020; Mergel, Ganapati et al., 2021). Another way we found that the users adapt to the agile environment was through the weekly newsletters from the implementation coordinators in the county. Those are primarily used as a tool for the change agents to stay updated on what is happening.

6.2.2 Boundary spanning in implementation activity

Boundary spanning activity is also an important part of the implementation work. The role of the implementation coordinator and change agent are two key roles we found. As each county has appointed one or two implementation coordinators and each local office has at least one change agent, these roles are by default only nominated boundary spanner roles. However, if the correct person is placed in the role, it will become a boundary spanner-in-practice (Levina and Vaast, 2005). It was not obvious from our data that this always was the case. As Counselor B told us, he had seen offices where the right person had not been selected for the change agent role. As a consequence, the office was almost a year behind on certain functionality. Which is an example of when the nominated boundary spanner did not engage in boundary spanning activities.

6.2.3 Challenges in implementation work

One of the study's most notable findings is that each office we had informants from reported different challenges depending on specifics regarding the office. These challenges were dependent on multiple factors. For example, the office size was reoccurring as a factor. The office demographics were another common factor. This tells us that the challenges on the local side of NAV cannot necessarily be generalized. For example, the informants from larger offices(upwards of 200 employees) reported the only reliable way for them to get everyone the same information were digital channels. While, the smaller offices often could get everyone in the same room, give the information and discuss amongst everyone. However, smaller offices usually have fewer change agents, so they could be spread too thin. In contrast, large offices could have their change agents be more specialized in certain areas and split the responsibility.

Legacy systems have been found to be a barrier to integration of e-government systems in the past (Lam, 2005). The main goal of the development team we interviewed is to replace the part of the legacy system 'Arena', which relates to their focus area. While a general goal for NAV is to have

Arena completely replaced by new modern systems. However, Arena still contains functionality that is essential for NAV. Because of this, NAV is currently in a transitional phase, where they are in between systems. This has provided challenges in the implementation work. Some of the workers will experience having to use both systems to do their work.

The transitional problem is when people struggle with using multiple systems in combination. These factors could potentially decrease the efficiency the new systems are meant to provide. Which again can affect the public value of certain services, as efficient services are considered one of the main factors for organizations when maximizing the public value of a service (Twizeyimana and Andersson, 2019).

Another challenge from the transitional phase is the part of the employees whose main work process remains in the legacy systems. For those employees, the perceived usefulness of the new solution is likely to be low. Perceived usefulness is a common factor in measuring system success and has been shown as an important factor in previous studies of government employees' adoption of IT (Davis, 1989; Ben Rehouma and Hofmann, 2018). Although this might not be a pressing problem at the moment, it will likely become one in the future. This is because they have not familiarized themselves with the new systems.

Implementation work can also be time-consuming. It can be time-consuming for change agents who have added responsibilities on top of their current role as counselors, and it can be challenging for the counselors who need longer time to adjust to the new systems. An important factor in the adoption of IT is each individual's skill (Ben Rehouma and Hofmann, 2018). Someone with lower digital competence and little experience can easily be overwhelmed by new technology. Some change agents reported instances where they have tried to help a co-worker use a system more efficiently but found their proposition being rejected because they did not have time to learn something new. This can also be because some employees do not perceive the new systems as easy to use. Perceived ease of use is also considered an important element of system acceptance (Gangwar et al., 2014).

Another challenge that became apparent regarding time constraints is when things 'get stuck' in the bureaucratic line. Because decisions and messages often have to pass down through the hierarchy, the change agents are often notified late in the process. For example, if they are going to start implementing a new system. First, the county usually gets notice, then the information is passed to the local offices. Then the local leaders get it and have to decide how they want to proceed with their office. Because of this, the change agents have short notice and might struggle to find time for everyone to get together. This is an area where NAV has not adopted the organization to the agile development process. It is crucial for an organization, to get full use of agile development, to adapt to the agile processes (Dittrich et al., 2005; Ghimire et al., 2020; Mergel, Ganapati et al., 2021).

Furthermore, we saw other ways the organization struggled to adapt to the agile development process. There have also been instances where a system starts being implemented, and users start adopting new ways of working. But as the agile development process moves further and the system gets new functionality, the previous working methods are no longer the most efficient. At that point, the change agents have to try and restart the implementation process. Which usually is far from ideal, and the previous work feels like time wasted.

6.3 Contribution to theory

In subsection 2.7 we proposed a framework, shown in Figure 5. This framework aims to describe how value co-creation can be a mode of creation for boundary resources on public sector platforms. We also proposed sub-concepts; agile development, user involvement, and adoption of IT as key components to co-creating value. Furthermore, the framework conceptualizes boundary spanning activity across the inter-organizational boundaries as a facilitator for co-creation. All these elements were identified throughout our case study. For example, we saw how the agile development process could be separated into three distinct stages, in which the user participation and involvement practices changed. We also found that user involvement was identified at all stages of development,

creating a constant feedback loop between the stakeholders, which is important when co-creating value (R. F. Lusch and Nambisan, 2015).

How the user accepts the systems is an important measure when considering co-creation. In our case, we found multiple challenges which affected how the employees adopted the new technology. Some challenges included complex and unique office demographics, parts of the organization that struggled with adapting to the agile development, legacy systems, and the transition into a new modern system.

We also identified two concerns derived from the data, which can threaten value co-creation as presented in the conceptual framework. First, NAV's goals are decided by the top of the organization and the government. Projects that get funding and are prioritized are also decided at the top level. Because of this, the development teams have specific overarching goals to consider when creating new products. One example from the data was when the informants described how they prioritize the user requests. Requests which did not help towards the team's goal, which is to move functionality from within their focus area from legacy systems to new systems, would typically be put in a backlog for the future. This can limit the co-creation aspect of the new system and potentially frustrate the employees, leading to less acceptance of the newer systems.

Another concern raised from considering the overarching goals the development teams have to reach is how involved are the users actually in creation of a new system? Ives and Olson define user involvement into six levels, from no involvement at all to involvement by strong control (Ives and Olson, 1984). From what we found in our data, the employees were rarely involved beyond level 3, involvement by advice. When a user is involved by advice, they are typically consulted through interviews, surveys, or observations (ibid). This means the user has little control over what actually is created but can give the development team some directions. This can limit the co-creation ability of the development process.

We also saw the emergence of a new factor we had not included in our initial framework based on the background literature. In NAV, the change agents get a lot of responsibility. Not just in the implementation work, but often they are the ones who put in user requests from their office. We also found that the development team often selected users in the discovery phase, based on who has previously shown engagement through different channels. We then see that certain people become very involved while others remain uninvolved. The people who often end up being involved are already engaged and interested. The people who then remain uninvolved are people who do not have the most digital competence and are already struggling with new technology. This can lead to a large part of the user base actually not being involved, although the development process involve users throughout. As a consequence, the system's acceptance and use can be damaged.

6.4 Implications of practice

This study demonstrates value co-creation in public sector organizations, in line with other factors, such as agile software development, user involvement, and adoption of IT. We also saw boundary spanning activity as an important enabler for co-creation. Our study primarily provides a view of the internal platform and the cooperation between development teams and other workers in the organization.

We saw that the public sector organization had a clear strategy for agile development and involved their users throughout the process. The users we interviewed were generally happy with their involvement in the development and felt they saw the results of it. We also saw many examples of good implementation work. These are all important for the co-creation process. However, there were some challenges.

The fact that the organization still follows the bureaucratic line means it is not fully adapted to the development and implementation processes. As decisions, like the organization's overarching goals, come from the government, it will have some effect on the processes involved in co-creation. As an example, some informants reported that they would get notice of a new product shortly before release. This had significant implications on how they could plan for implementing it and likely had some effect on the results of the implementation. This is also likely to be the case for

other public sector organizations.

Public sector organizations are typically large and have complex structures. For example, some might be divided into counties, and some might be divided into municipalities and cities. What we saw in our research is that each office has unique features. This makes it difficult to make generalized statements about how an organization should operate in their implementation work. So it is important to be aware of this when considering implementation in the public sector.

We also identified a couple of key roles in the implementation of the systems. Both the implementation coordinator and change agents were important for promoting good practices. For example, informants reported offices where the change agent was not the right person for the job, and as a result, the office was far behind in the implementation. These types of roles are key factors to the success of implementation. However, there were some challenges with how these roles were used in NAV. Multiple of the informants reported that, as it is a supplementary role for the counselors, it did but them under more time pressure. This factor could affect the role in such a way that it does not work as intended.

Even though our research focuses on the public sector, our findings can also be applicable for co-creating IT solutions in the private sector. Although it might have different motives from the public sector, some of the challenges are likely applicable to the private sector.

6.5 Limitations of the study

We identified several limitations with the study. Firstly, we interviewed few people from the development side, and they represented one team out of many in NAV. There is no guarantee that the team we interviewed can give an accurate representation of all development teams in NAV. Also, only half of the local NAV employees we interviewed had this development team's area as their area of work. This means we do not have data from the development side for the other half of the local NAV employees. Since we focused on the internal platform and the systems developed for employees, a lot of development teams were ruled out. This is because their focus areas consider other user groups. However, the data from the half of the employees we did not have the development view of still provided valuable insight into how other development teams involved them.

Using interviews as a data generation method brings some limitations. The interviewees know they are in an interview setting. This might affect how they choose to answer. We did try to combat this by anonymity and reassurance of their privacy and informed participants multiple times before the interviews. However, it is also difficult to measure if this had an effect. Data generated from interviews can also be difficult to regenerate, which means the reliability of the findings depends on our interpretation of the data.

The case we studied is currently in a transitional phase, and the situation is constantly changing and evolving. For example, the method of an "open day" concept we found was very recently introduced by the development team we interviewed. This meant that the data on this topic was somewhat limited but still useful. We were also told about new methods being introduced this autumn, which had been delayed because of the Covid-19 pandemic. Obviously, this could not be included as there was currently no data from it. But when it is introduced, it could add new interesting elements to the findings of this study. This also adds to the previous point on how findings from case studies can be difficult to reproduce and verify.

7 Conclusion

We have conducted a study on co-creation of boundary resources between stakeholders in public sector organizations. We presented a conceptual framework based on studied literature, and examined this framework with a case study of a Norwegian public sector organization. We generated data through interviews and document reviews and examined our findings in regards to our research questions and the conceptual framework.

Regarding the first research question, we found that the public sector organization involved users across three different stages: Discovery, initial roll-out, and post roll-out stage. Across these stages, we found four main methods of doing so. This was through insight work, pilot testing, open days, and user requests. These three stages also stretched across the whole agile development process, which meant that the involvement of users was a constant process during development.

We also saw that agile development did affect implementation work. First, we saw that some local offices adapted to the agile development, for example, through having reoccurring meetings, discussing what was new, what they struggled with, and what they wanted to work on in the coming weeks. Second, we also saw that the agile development created challenges for the implementation work. On top of that, we found other challenges which affected implementation work as well. For example, each office we talked to would have its own unique challenges. We also saw that counselors have a lot of time pressure which makes implementation work challenging. We identified two key boundary spanning roles, in the implementation work; the change agents and the implementation coordinators.

We also had some observations in regards to the conceptual framework. We recognized multiple factors which led to co-creation in the case of NAV. For example, agile development methods and user involvement throughout the process are important factors for co-creation. We also identified some challenges in the adoption of IT, which could affect the co-creation of value. We identified two new concerns about co-creation in the public sector not found in our conceptual framework based on the background literature. First, the typical bureaucratic structure of a public sector can have a negative impact on co-creation. Second, even though there was user involvement throughout the development process, we saw indications of some people being heavily involved compared to others. Then there is a risk of excluding an important part of the user base in the co-creation.

7.1 Future work and research

We have identified multiple avenues for future work and research. First, we only had informants from one of many teams within NAV IT. There are other teams that work within internal systems as well, so studies expanding on the amount of development teams could help expand on this study. There are also a lot of teams in NAV that work with the other user groups. It could also be interesting with studies on co-creation between the development teams and these other groups.

NAV acted as a representation of the Norwegian public sector in this study. Other studies on other organizations in Norway or public sector organizations from comparable countries looking at co-creation could be interesting. This could help generalize, as each organization can provide a different perspective.

We also identified two new concerns regarding co-creation in the public sector based on our conceptual framework from the background literature. These two concerns could be interesting starting points for studies as well. Either looking at how the bureaucratic decisions affect co-creation in public sector in more detail or how the emergence of people who gets heavily involved in the development process, whilst larger parts of the user group are not involved at all. This can help contribute further to research regarding co-creation in the public sector.

References

Abelein, Ulrike and Barbara Paech (1st Feb. 2015). 'Understanding the Influence of User Participation and Involvement on System Success – a Systematic Mapping Study'. In: *Empirical Software Engineering* 20.1, pp. 28–81. ISSN: 1573-7616. DOI: 10.1007/s10664-013-9278-4. URL: https://doi.org/10.1007/s10664-013-9278-4.

Agile Manifesto (2001). URL: https://agilemanifesto.org/ (visited on 23rd May 2022).

Aldrich, Howard and Diane Herker (Apr. 1977). 'Boundary Spanning Roles and Organization Structure'. In: *Academy of Management Review* 2.2, pp. 217–230. ISSN: 0363-7425. DOI: 10.5465/amr.1977.4409044. URL: https://journals.aom.org/doi/10.5465/amr.1977.4409044.

Alexandrova, Assia, Lucia Rapanotti and Ivan Horrocks (May 2015). *The Legacy Problem in Government Agencies — Proceedings of the 16th Annual International Conference on Digital Government Research*. In: *Proceedings of the 16th Annual International Conference on Digital Government Research*, pp. 150–159. URL: https://dl.acm.org/doi/abs/10.1145/2757401.2757406.

Bano, Muneera and Didar Zowghi (14th Apr. 2013). 'User Involvement in Software Development and System Success: A Systematic Literature Review'. In: *Proceedings of the 17th International Conference on Evaluation and Assessment in Software Engineering*. EASE '13. New York, NY, USA: Association for Computing Machinery, pp. 125–130. ISBN: 978-1-4503-1848-8. DOI: 10.1145/2460999.2461017. URL: https://doi.org/10.1145/2460999.2461017.

Bano, Muneera, Didar Zowghi and Francesca da Rimini (1st Oct. 2017). 'User Satisfaction and System Success: An Empirical Exploration of User Involvement in Software Development'. In: *Empirical Software Engineering* 22.5, pp. 2339–2372. ISSN: 1573-7616. DOI: 10.1007/s10664-016-9465-1. URL: https://doi.org/10.1007/s10664-016-9465-1.

Barki, Henri and Jon Hartwick (1989). 'Rethinking the Concept of User Involvement'. In: *MIS Quarterly* 13.1, pp. 53–63. ISSN: 0276-7783. DOI: 10.2307/248700. JSTOR: 248700.

Ben Rehouma, Mariem and Sara Hofmann (30th May 2018). 'Government Employees' Adoption of Information Technology: A Literature Review'. In: pp. 1–10. DOI: 10.1145/3209281.3209311.

Bianco, Vittorio Dal et al. (Apr. 2014). 'The Role of Platform Boundary Resources in Software Ecosystems: A Case Study'. In: *2014 IEEE/IFIP Conference on Software Architecture*. 2014 IEEE/IFIP Conference on Software Architecture, pp. 11–20. DOI: 10.1109/WICSA.2014.41.

Bonina, Carla et al. (2021). 'Digital Platforms for Development: Foundations and Research Agenda'. In: *Information Systems Journal* 31.6, pp. 869–902. ISSN: 1365-2575. DOI: 10.1111/isj.12326. URL: https://onlinelibrary.wiley.com/doi/abs/10.1111/isj.12326.

Boudreau, Kevin (1st Oct. 2010). 'Open Platform Strategies and Innovation: Granting Access vs. Devolving Control'. In: *Management Science* 56.10, pp. 1849–1872. ISSN: 0025-1909. DOI: 10.1287/mnsc.1100.1215. URL: https://pubsonline.informs.org/doi/abs/10.1287/mnsc.1100.1215.

Brown, A. et al. (1st Apr. 2017). 'Appraising the Impact and Role of Platform Models and Government as a Platform (GaaP) in UK Government Public Service Reform: Towards a Platform Assessment Framework (PAF)'. In: *Government Information Quarterly* 34.2, pp. 167–182. ISSN: 0740-624X. DOI: 10.1016/j.giq.2017.03.003. URL: https://www.sciencedirect.com/science/article/pii/S0740624X17301077.

Bygstad, Bendik and Ole Hanseth (2019). 'Transforming Digital Infrastructures through Platformization'. In: *978 1 86137 667 1*. Association for Information Systems. URL: https://www.duo.uio.no/handle/10852/71692 (visited on 1st June 2022).

Carlile, Paul R. (Oct. 2004). 'Transferring, Translating, and Transforming: An Integrative Framework for Managing Knowledge Across Boundaries'. In: *Organization Science* 15.5, pp. 555–568. ISSN: 1047-7039. DOI: 10.1287/orsc.1040.0094. URL: https://pubsonline.informs.org/doi/abs/10.1287/orsc.1040.0094.

Choudary, Sangeet Paul (2018). *The Architecture of Digital Labour Platforms: Policy Recommendations on Platform Design for Worker Well-Being — VOCEDplus, the International Tertiary Education and Research Database*. URL: https://www.voced.edu.au/content/ngv:81841.

Commision, European (2021). *A Europe fit for the digital age*. URL: https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age_en (visited on 10th June 2022).

Constantinides, Panos, Ola Henfridsson and Geoffrey G. Parker (1st June 2018). 'Introduction—Platforms and Infrastructures in the Digital Age'. In: *Information Systems Research* 29.2, pp. 381–400. ISSN: 1047-7047. DOI: 10.1287/isre.2018.0794. URL: https://pubsonline.informs.org/doi/10.1287/isre.2018.0794.

Cordella, Antonio and Andrea Paletti (1st Oct. 2019). 'Government as a Platform, Orchestration, and Public Value Creation: The Italian Case'. In: *Government Information Quarterly* 36.4, p. 101409. ISSN: 0740-624X. DOI: 10.1016/j.giq.2019.101409. URL: https://www.sciencedirect.com/science/article/pii/S0740624X18304234.

Cusumano, Michael A., Annabelle Gawer and David B. Yoffie (2019). *The Business of Platforms: Strategy in the Age of Digital Competition, Innovation, and Power - Book - Faculty & Research - Harvard Business School*. URL: https://www.hbs.edu/faculty/Pages/item.aspx?num=56021.

Davis, Fred D. (1989). 'Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology'. In: *MIS Quarterly* 13.3, pp. 319–340. ISSN: 0276-7783. DOI: 10.2307/249008. JSTOR: 249008.

De Reuver, Mark, Carsten Sørensen and Rahul C. Basole (1st June 2018). 'The Digital Platform: A Research Agenda'. In: *Journal of Information Technology* 33.2, pp. 124–135. ISSN: 0268-3962. DOI: 10.1057/s41265-016-0033-3. URL: https://doi.org/10.1057/s41265-016-0033-3.

Dittrich, Yvonne, Jan Pries-Heje and Kristian Hjort-Madsen (2005). 'How to Make Government Agile to Cope with Organizational Change'. In: *Business Agility and Information Technology Diffusion*. Ed. by Richard L. Baskerville et al. IFIP International Federation for Information Processing. Boston, MA: Springer US, pp. 333–351. ISBN: 978-0-387-25590-3. DOI: 10.1007/0-387-25590-7_21.

Farshchian, Babak A. and Hanne Ekran Thomassen (1st June 2019). 'Co-Creating Platform Governance Models Using Boundary Resources: A Case Study from Dementia Care Services'. In: *Computer Supported Cooperative Work (CSCW)* 28.3, pp. 549–589. ISSN: 1573-7551. DOI: 10.1007/s10606-019-09353-0. URL: https://doi.org/10.1007/s10606-019-09353-0.

Fleron, Benedicte et al. (12th Aug. 2012). 'User Participation in Implementation'. In: *Proceedings of the 12th Participatory Design Conference: Exploratory Papers, Workshop Descriptions, Industry Cases - Volume 2*. PDC '12. New York, NY, USA: Association for Computing Machinery, pp. 61–64. ISBN: 978-1-4503-1296-7. DOI: 10.1145/2348144.2348164. URL: https://doi.org/10.1145/2348144.2348164.

Fortune500 (2022). *Fortune500 list of most valuable companies 2022*. URL: https://fortune.com/fortune500/2022/ (visited on 10th June 2022).

Gangwar, Hemlata, Hema Date and A.D. Raoot (1st Jan. 2014). 'Review on IT Adoption: Insights from Recent Technologies'. In: *Journal of Enterprise Information Management* 27.4, pp. 488–502. ISSN: 1741-0398. DOI: 10.1108/JEIM-08-2012-0047. URL: https://doi.org/10.1108/JEIM-08-2012-0047.

Gawer, Annabelle (1st Sept. 2014). 'Bridging Differing Perspectives on Technological Platforms: Toward an Integrative Framework'. In: *Research Policy* 43.7, pp. 1239–1249. ISSN: 0048-7333. DOI: 10.1016/j.respol.2014.03.006. URL: https://www.sciencedirect.com/science/article/pii/S0048733314000456.

Ghazawneh, Ahmad and Ola Henfridsson (2013). 'Balancing Platform Control and External Contribution in Third-Party Development: The Boundary Resources Model'. In: *Information Systems Journal* 23.2, pp. 173–192. ISSN: 1365-2575. DOI: 10.1111/j.1365-2575.2012.00406.x. URL: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2575.2012.00406.x.

Ghimire, Dipendra, Stuart Charters and Shirley Gibbs (12th Jan. 2020). 'Scaling Agile Software Development Approach in Government Organization in New Zealand'. In: *Proceedings of the 3rd International Conference on Software Engineering and Information Management*. ICSIM '20. New York, NY, USA: Association for Computing Machinery, pp. 100–104. ISBN: 978-1-4503-7690-7. DOI: 10.1145/3378936.3378945. URL: https://doi.org/10.1145/3378936.3378945.

Harris, Mark and Heinz Weistroffer (1st Jan. 2009). 'A New Look at the Relationship between User Involvement in Systems Development and System Success'. In: *Communications of the Association for Information Systems* 24, pp. 739–756. DOI: 10.17705/1CAIS.02442.

Haukås, Nils Norman (2017). *The NAV stack for «non-navers»*. URL: https://vimeo.com/209539468 (visited on 5th June 2022).

Heen, Terje and Truls Jørgensen (2017). *En reise i systemene bak verdens beste velferdsstat*. URL: https://vimeo.com/233628961 (visited on 5th June 2022).

Ives, Blake and Margrethe H. Olson (May 1984). 'User Involvement and MIS Success: A Review of Research'. In: *Management Science* 30.5, pp. 586–603. ISSN: 0025-1909. DOI: 10.1287/mnsc.30.5.586. URL: https://pubsonline.informs.org/doi/abs/10.1287/mnsc.30.5.586.

Lam, Wing (1st Jan. 2005). 'Barriers to E-government Integration'. In: *Journal of Enterprise Information Management* 18.5, pp. 511–530. ISSN: 1741-0398. DOI: 10.1108/17410390510623981. URL: https://doi.org/10.1108/17410390510623981.

Levina, Natalia and Emmanuelle Vaast (2005). 'The Emergence of Boundary Spanning Competence in Practice: Implications for Implementation and Use of Information Systems'. In: *MIS Quarterly* 29.2, pp. 335–363. ISSN: 0276-7783. DOI: 10.2307/25148682. JSTOR: 25148682.

Lusch, Robert F. and Satish Nambisan (2015). 'Service Innovation: A Service-Dominant Logic Perspective'. In: *MIS Quarterly* 39.1, pp. 155–176. ISSN: 0276-7783. JSTOR: 26628345.

Margetts, Helen and Andre Naumann (2017). 'GOVERNMENT AS A PLATFORM: WHAT CAN ESTONIA SHOW THE WORLD?' In: p. 41.

Mergel, Ines, Sukumar Ganapati and Andrew B. Whitford (2021). 'Agile: A New Way of Governing'. In: *Public Administration Review* 81.1, pp. 161–165. DOI: https://doi.org/10.1111/puar.13202. URL: https://onlinelibrary.wiley.com/doi/abs/10.1111/puar.13202.

Mergel, Ines, Yiwei Gong and John Bertot (1st Apr. 2018). 'Agile Government: Systematic Literature Review and Future Research'. In: *Government Information Quarterly*. Agile Government and Adaptive Governance in the Public Sector 35.2, pp. 291–298. ISSN: 0740-624X. DOI: 10.1016/j.giq.2018.04.003. URL: https://www.sciencedirect.com/science/article/pii/S0740624X18302107.

Millard, Jeremy (1st Oct. 2018). 'Open Governance Systems: Doing More with More'. In: *Government Information Quarterly*. Platform Governance for Sustainable Development 35 (4, Supplement), S77–S87. ISSN: 0740-624X. DOI: 10.1016/j.giq.2015.08.003. URL: https://www.sciencedirect.com/science/article/pii/S0740624X15300034.

Mohagheghzadeh, Amir and Fredrik Svahn (15th June 2016). 'TRANSFORMING ORGANIZATIONAL RESOURCE INTO PLATFORM BOUNDARY RESOURCES'. In: *Research Papers*. URL: https://aisel.aisnet.org/ecis2016_rp/9.

NAV (2013a). *Hva er NAV?* URL: https://www.nav.no/no/nav-og-samfunn/om-nav/fakta-om-nav/kva-er-nav (visited on 23rd May 2022).

— (2013b). *Organisering av NAV*. URL: https://www.nav.no/no/nav-og-samfunn/om-nav/fakta-om-nav/organisering-av-nav (visited on 23rd May 2022).

— (2013c). *Visjon og verdier*. URL: https://www.nav.no/no/nav-og-samfunn/om-nav/fakta-om-nav/kva-er-nav/visjon-og-verdier (visited on 23rd May 2022).

— (2019). *Arbeidsområder i NAV*. URL: https://www.nav.no/no/nav-og-samfunn/om-nav/sok-jobb-i-nav/nav-som-arbeidsgiver/arbeidsomrader-i-nav_kap (visited on 10th June 2022).

— (2022a). *NAVs årsrapport 2021*. URL: https://www.nav.no/no/person/innhold-til-person-forside/nyheter/navs-arsrapport-2021 (visited on 23rd May 2022).

NAV (2022b). *Vi utvikler for alle livets faser*. URL: https://www.detsombetyrnoe.no/ (visited on 23rd May 2022).

O'Reilly, Tim (1st Jan. 2011). 'Government as a Platform'. In: *Innovations: Technology, Governance, Globalization* 6.1, pp. 13–40. ISSN: 1558-2477. DOI: 10.1162/INOV_a_00056. URL: https://doi.org/10.1162/INOV_a_00056.

Oates, Briony J. (2006). *Researching Information Systems and Computing*. SAGE publications. ISBN: 978-1-4129-0223-6.

Osborne, Stephen P. (1st Feb. 2018). 'From Public Service-Dominant Logic to Public Service Logic: Are Public Service Organizations Capable of Co-Production and Value Co-Creation?' In: *Public Management Review* 20.2, pp. 225–231. ISSN: 1471-9037. DOI: 10.1080/14719037.2017.1350461. URL: https://doi.org/10.1080/14719037.2017.1350461.

Prahalad, C.K. and Venkat Ramaswamy (1st Jan. 2004). 'Co-creating Unique Value with Customers'. In: *Strategy & Leadership* 32.3, pp. 4–9. ISSN: 1087-8572. DOI: 10.1108/10878570410699249. URL: https://doi.org/10.1108/10878570410699249.

Regjeringen (2019). *Én digital offentlig sektor: Digitaliseringsstrategi for offentlig sektor 2019-2025*. URL: https://www.regjeringen.no/no/tema/statlig-forvaltning/ikt-politikk/digitaliseringsstrategi-for-offentlig-sektor/id2612415/ (visited on 10th June 2022).

Spinuzzi, Clay (1st May 2005). 'The Methodology of Participatory Design'. In: *Technical Communication* 52, pp. 163–174.

Star, Susan Leigh and James R. Griesemer (1st Aug. 1989). 'Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39'. In: *Social Studies of Science* 19.3, pp. 387–420. ISSN: 0306-3127. DOI: 10.1177/030631289019003001. URL: https://doi.org/10.1177/030631289019003001.

Styrin, Evgeny, Karen Mossberger and Andrey Zhulin (17th Sept. 2021). 'Government as a Platform: Intergovernmental Participation for Public Services in the Russian Federation'. In: *Government Information Quarterly*, p. 101627. ISSN: 0740-624X. DOI: 10.1016/j.giq.2021.101627. URL: https://www.sciencedirect.com/science/article/pii/S0740624X21000630.

Svesengen, Vegard (15th Dec. 2021). 'Digital Platforms in the Public Sector: A Literature Review'. In.

Thompson, Mark and Will Venters (1st Oct. 2021). 'Platform, or Technology Project? A Spectrum of Six Strategic 'Plays' from UK Government IT Initiatives and Their Implications for Policy'. In: *Government Information Quarterly* 38.4, p. 101628. ISSN: 0740-624X. DOI: 10.1016/j.giq.2021.101628. URL: https://www.sciencedirect.com/science/article/pii/S0740624X21000642.

Tiwana, Amrit (12th Nov. 2013). *Platform Ecosystems: Aligning Architecture, Governance, and Strategy*. Newnes. 323 pp. ISBN: 978-0-12-408054-6. Google Books: IYDhAAAAQBAJ.

Tiwana, Amrit, Benn Konsynski and Ashley Bush (1st Dec. 2010). 'Research Commentary —Platform Evolution: Coevolution of Platform Architecture, Governance, and Environmental Dynamics'. In: *Information Systems Research* 21, pp. 675–687. DOI: 10.1287/isre.1100.0323.

Tushman, Michael L. (1977). 'Special Boundary Roles in the Innovation Process'. In: *Administrative Science Quarterly* 22.4, pp. 587–605. ISSN: 0001-8392. DOI: 10.2307/2392402. JSTOR: 2392402.

Twizeyimana, Jean Damascene and Annika Andersson (1st Apr. 2019). 'The Public Value of E-Government – A Literature Review'. In: *Government Information Quarterly* 36.2, pp. 167–178. ISSN: 0740-624X. DOI: 10.1016/j.giq.2019.01.001. URL: https://www.sciencedirect.com/science/article/pii/S0740624X1730196X.

Vargo, Stephen and Robert Lusch (1st Jan. 2006). 'Service-Dominant Logic: What It Is, What It Is Not, What It Might Be. The Service Dominant Logic of Marketing: Dialog Debate and Directions'. In: *Journal of the Academy of Marketing Science* 6, pp. 281–288.

Vestues, Kathrine and Rolland Knut (14th Aug. 2019). 'Making Digital Infrastructures More Generative Through Platformization and Platform- Driven Software Development: An Explorative

Case Study'. In: *10th Scandinavian Conference on Information Systems*. URL: https://aisel.aisnet.org/scis2019/4.

Vestues, Kathrine, Marius Mikalsen and Eric Monteiro (5th Jan. 2021). *Using Digital Platforms to Promote a Service-Oriented Logic in Public Sector Organizations: A Case Study*. ISBN: 978-0-9981331-4-0. URL: http://hdl.handle.net/10125/70882.

Yoo, Youngjin, Ola Henfridsson and Kalle Lyytinen (1st Dec. 2010). 'Research Commentary—The New Organizing Logic of Digital Innovation: An Agenda for Information Systems Research'. In: *Information Systems Research* 21.4, pp. 724–735. ISSN: 1047-7047. DOI: 10.1287/isre.1100.0322. URL: https://pubsonline.informs.org/doi/10.1287/isre.1100.0322.

Appendix

A Interview guide

Intervjuguide til personer i offentlig sektor

Forskningsspørsmål	**Tema**	**Retningslinjer**
Hvordan involveres brukere i utvikling av grense ressurser i norsk offentlig sektor?	Utviklingsprosesser	Her vil det stilles spørsmål som har som mål å finne ut hvordan brukere involveres i utviklingsprosesser. Spørsmålene vil variere noe ut ifra rollen til personen i offentlig sektor.
Hvordan påvirker utviklingsprosessene innføringsarbeidet av?	Innføringsarbeid	Her vil det stilles spørsmål om hvordan utviklingen påvirker innføringsarbeid. Det vil også spørres om
Meninger		Her vil det spørres om personlige erfaringer og meninger rundt utvikling og innføring av plattformer i offentlig sektor
Andre		Det kan dukke opp andre oppfølgingsspørsmål som er relevante ut ifra svarene som blir gitt.

B Participation and information form

Vil du delta i forskningsprosjektet

Digitale plattformer i offentlig sektor

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å undersøke digitale plattformer i offentlig sektor. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål
Denne masteroppgaven har som formål å undersøke digitale plattformer i den offentlige sektoren. Dette vil innebære å kartlegge hvordan det jobbes med å utvikle plattformer, på hvilke områder dette skiller seg fra andre typer plattformer og hvordan bruken av ulike digitale systemer og tjenester innføres.

Datagrunnlaget til forskningen er kvalitativ og vil bli samlet inn ved å intervjue ulike representanter fra offentlig sektor i Norge. Det vil være flere personer som blir intervjuet i løpet av prosjektet.

Hvem er ansvarlig for forskningsprosjektet?

Babak A. Farshchian, Førsteamanuensis ved NTNU, Fakultet for informasjonsteknologi og elektronikk, Institutt for datateknologi og informatikk er ansvarlig for prosjektet.

Hvorfor får du spørsmål om å delta?

Vi kontakter deg fordi vi tror du har relevant kunnskap til formålet med prosjektet.

Hva innebærer det for deg å delta?
Hvis du velger å delta i prosjektet, innebærer det at vi vil gjennomføre et eller flere intervju med deg etter avtale. Det vil stilles åpne spørsmål rundt tema som er relevant for formålet til prosjektet. Hvilke temaer som blir stilt spørsmål rundt vil tilpasses hvem vi prater med, men vil handle om utvikling av digital plattform og innføring av nye systemer og teknologi i den offentlige sektor. Vi vil sette av rundt 1 time til intervjuet.

For at vi skal best kunne ivareta informasjonen vil det bli gjort bilde- og lydopptak av intervjuet, og det vil tas noen notater underveis for bedre analyse av intervjuet i ettertid.

Det er frivillig å delta
Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykket tilbake uten å oppgi noen grunn. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Hvis du ønsker å trekke ditt samtykke, kontakt en av de ansvarlige for studiet.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger
Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.

Personene som vil ha tilgang til innsamlet data vil være Babak A. Farshchian (veileder) og Vegard Svesengen (studenter). Ingen fra NAV vil ha tilgang til data. Innsamlet data vil bli lagret i Nice, NTNU sin lagringsplass for sensitive data, hvor alle parter med tilgang har tofaktorautentisering for innlogging. Her vil notater fra intervju, transkribert versjon av intervju og eventuelle lydfiler bli lagret. Dataen blir også kryptert.

Publikasjonen vil kun ha innhold fra intervjuet i form av gjengivelser/sitater, informasjon om hvor intervjuobjekt jobber og hvis relevant, hvilken stilling intervjuobjektet har. For de som har noe kunnskap om case studiet kan det være mulig å identifisere personer basert på sitater.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?
Opplysningene anonymiseres når prosjektet avsluttes/oppgaven er godkjent, noe som etter planen er (15.06.2022). Dataen vil beholdes en liten periode etter prosjektslutt, på grunn av eventuell publisering av arbeidet. Det vil ikke lagres lenger enn til 31.12.2022.

Dine rettigheter
Så lenge du kan identifiseres i datamaterialet, har du rett til:
- innsyn i hvilke personopplysninger som er registrert om deg, og å få utlevert en kopi av opplysningene,
- å få rettet personopplysninger om deg,
- å få slettet personopplysninger om deg, og
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?
Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra NTNU har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?
Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:
- Babak A. Farshchian, [redacted], Førsteamanuensis ved NTNU, Fakultet for informasjonsteknologi og elektroteknikk, Institutt for datateknologi og informatikk
- Vegard Svesengen, [redacted], student ved NTNU, Fakultet for informasjonsteknologi og elektroteknikk, Institutt for datateknologi og informatikk
- Vårt personvernombud: Thomas Helgesen, [redacted], Personvernombud ved NTNU, Direktør Organisasjon.

Hvis du har spørsmål knyttet til NSD sin vurdering av prosjektet, kan du ta kontakt med:
- NSD – Norsk senter for forskningsdata AS på epost (personverntjenester@nsd.no) eller på telefon: 55 58 21 17.

Med vennlig hilsen

Babak A. Farshchian (Forsker/veileder)	Vegard Svesengen (Forsker/student)

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet *Digitale plattformer i offentlig sektor*, og har fått anledning til å stille spørsmål.

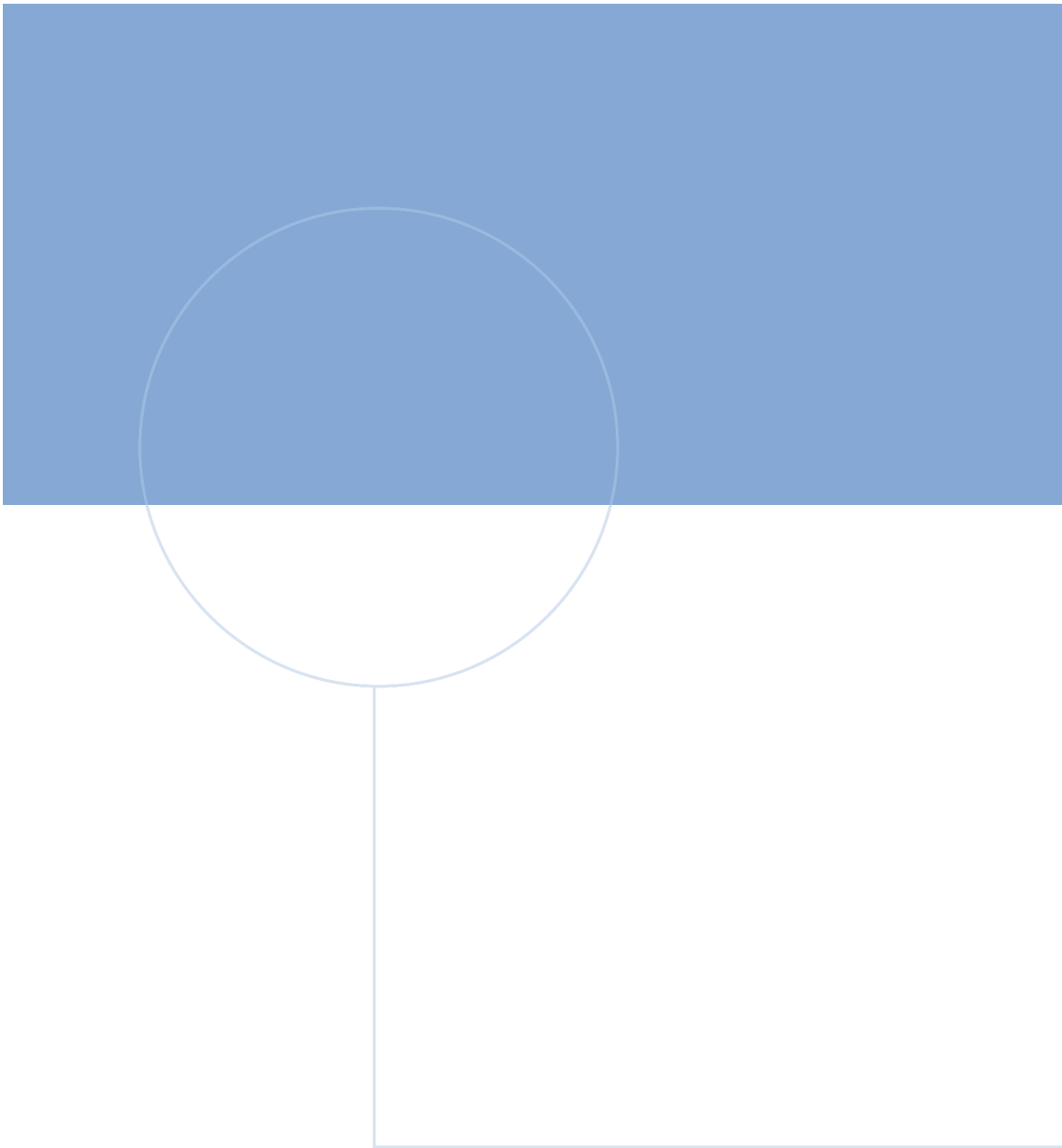
Jeg samtykker til:

☐ å delta i intervjuet
☐ at det blir tatt bilde- og lydopptak av intervjuet

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet

---

(Signert av prosjektdeltaker, dato)



NTNU

Kunnskap for en bedre verden