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How Ideas Travel in Time and Space: Digital Transformation of Danish Municipalities

PhD dissertation

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Sammendrag

I flere lande verden over er man i gang med at digitalisere det offentlige serviceudbud. Mange steder er denne digitaliseringsproces lovbestemt. Der mangler viden om, hvordan omfattende, tvungne forandringsinitiativer spredes mellem de involverede aktører, og hvordan disse initiativer materialiserer sig som ny praksis i organisationer. Denne afhandling redegør for et forskningsprojekt, der havde til formål at klarlægge et sådant pålagt digitaliseringsinitiativ – et casestudie om kommunal digitalisering i Danmark. Analysen af studiets data viser, at aktører i organisationerne spiller en stor rolle i fortolkningen og forståelsen af forandringen. Undersøgelsen bidrager til den eksisterende viden om, hvordan idéer spredes og materialiser sig, men giver også et detaljeret billede af, hvordan offentlige organisationer reagerer på tvungen digitalisering.

Emneområde for dette Ph.D.-projekt er, hvordan aktører gennem handling formede og virkeliggjorde idéerne i Den Fælleskommunale Digitaliseringsstrategi 2011-2015 i implementeringsprocessen i det danske kommunale landskab.

Med baggrund i translationsstrømmen i den skandinaviske institutionalisme ønskede jeg at undersøge processen i hvilken et eksternt digitaliseringspåbud styres i den organisation, der skal gennemføre ændringen.

Den empiriske ramme for dette studie er de fællesoffentlige digitaliseringsinitiativer, der har til formål at digitalisere de offentlige serviceydelser. Et af initiativerne, Den Fælleskommunale Digitaliseringsstrategi, sigter mod at fremskynde indførelsen af digitale løsninger i den kommunale sektor. Formålet med Den Fælleskommunale Digitaliseringsstrategi er at effektivisere den offentlige service og derved mindske de offentlige udgifter, men også at højne kvaliteten af den offentlige service ved at udnytte de tilgængelige teknologiske muligheder. Implementeringen af Den Fælleskommunale Digitaliseringsstrategi understøttes af et netværk af heterogene aktører: de 98 danske kommuner, Kommunernes Landsforening og forskellige kommunale institutioner som skoler, biblioteker, sportsfaciliteter mv. Andre aktører i netværket er it-leverandører og KOMBIT A/S. KOMBIT's rolle er at facilitere gennemførelsen af strategien ved at identificere og definere kravene til de kommunale forretningsprocesser, der er omfattet af digitaliseringsinitiativet, samt at gennemføre anskaffelsesprocessen for visse af digitaliseringsinitiativerne.

Ofte ved it-drevne forandringer er den organisation, der skal gennemføre ændringer, selv initiativtager til forandringen baseret på en evaluering af økonomiske eller strategiske fordele; processen fra idé til ny praksis kan være et resultat af en forholdsvis enkel forhandling mellem den organisation, der ønsker at igangsætte projektet, og en eller flere IT-leverandører; hvorefter initiativet gennemføres. Når staten er initiativtager, som fx til digitaliseringsstrategierne, ses initiativet til projektet som værende udefrakommende, så på grund af påvirkningen på den enkelte kommune fra de mange forskellige interessenter i

netværket, ses processen med at digitalisere de kommunale services ikke som almindelige, it-drevne forandringer i organisationen.

De fleste studier om udbredelse af nye tiltag undersøger, enten hvilke faktorer der påvirker potentielle brugeres villighed til at indføre en innovation, eller hvordan man kan forudsige eller øge raten for indførelse af et nyt tiltag blandt potentielle brugere (Barrett, Heracleous, & Walsham, 2013; Fichman, 2004; Rogers, 2003; Swanson, 1994; Tornatzky, Fleischer, & Chakrabarti, 1990; Williams, Dwivedi, Lal, & Schwarz, 2009). Som det fremgår af litteraturstudiet om spredning og indførelse af it-baserede tiltag i kapitel 2.1.1, er de faktorer, der tilsammen danner holdninger om indførelse, samt de beslutninger og den faktiske adfærd i forbindelse med indførelse af nye tiltag, stort set ikke undersøgt. Gennem årene er denne opfattelse blevet underbygget af flere forskere, der arbejder med spredning af innovationer, dvs. i DIGIT Pre-ICIS-workshoppens paneldiskussion ledet af Grover, Rai og Tan (2013) og af Rodón, Pastor, Sesé og Christiaanse (2008), Seligman (2006) og Damsgaard og Lyytinen (2001). På det seneste er undersøgelser af organisatoriske forandringsprocesser blevet efterspurgt (Holt & den Hond, 2013; Suddaby, Hardy, & Huy, 2011).

Denne undersøgelses teoretiske værdi er dobbelt. For det første: Ved at undersøge hvordan idéen om kommunal digitalisering spredes, ønsker jeg at udvide travel of ideas- perspektivet, der primært har beskæftiget sig med spredning af frivillige initiativer. For det andet: De fleste studier, der har beskæftiget sig med eksternt initieret forandring, fokuserer på organisationen, der initierer forandringen (Mola, Rossignoli, Fernandez, & Carugati, 2010; Senyucel, 2008; Stalk, Evans, & Shulman, 1992). Formålet med denne undersøgelse er at analysere, hvordan en organisation, der har fået pålagt en forandring, reagerer på det udefrakommende forandringsinitiativ; på den måde tilføjes viden om ”modtagende” organisationer til litteraturen.

Når en idé, fx en idé i en strategi, spredes til andre organisationer, udsættes den for begrebsmæssig fortolkning; dermed ændres den oprindelige idé. Idéer, der spredes, fortolkes løbende, mens de spredes, og de udvikler sig forskelligt i forskellige miljøer (Czarniawska & Joerges, 1996; Sahlin & Wedlin, 2008). Digitaliseringen af kommunerne sker på baggrund af et pålæg fra staten og er en centraliseret idé; en analyse af digitaliseringsidéen i kommunerne, som er uafhængige enheder med hver deres særpræg, vil kunne føre til meget forskellige fortolkningsprocesser, hvilket fører til forskellige udtryk af den oprindelige digitaliseringsidé. Denne undersøgelses praktiske relevans er udvikling af en bedre forståelse af, hvordan handlinger, der udføres af aktører i det netværk, der omgiver digitaliseringsidéen, fortolker den oprindelige idé om digitalisering, så den passer ind i den kontekst, den skal implementeres i.

Med det mål at bidrage til forståelsen af den kontekst-afhængige fortolkning af idéer og at dække manglen i litteraturen forsøger dette studie at besvare følgende forskningsspørgsmål:

Hvordan bevæger idéerne fra Den Fælleskommunale Digitaliseringsstrategi 2010-2015 sig gennem handlinger og aktører i det kommunale landskab?

For at besvare forskningsspørgsmålet gennemførte jeg et kvalitativt studie om, hvordan et af digitaliseringsinitiativerne i Den Fælleskommunale Digitaliseringsstrategi, nemlig Byg & Miljø, fortolkes i det kommunale landskab. Data blev indsamlet via semistrukturerede interviews med nøgleaktører i det netværk af organisationer, der understøtter kommunernes digitaliseringsproces; formålet var at skabe viden om motivation, førstehåndsopfattelser og implementeringsprocessen. Ydermere blev sekundære kilder, fx digitaliseringsstrategier, handlingsplaner, fremdriftsrapporter såvel som data om faktiske it-projekter i de enkelte kommuner og deres samarbejdspartnere, brugt for at afdække formålene med og udviklingen af digitaliseringsstrategierne samt forløbet af implementeringsprocessen.

Resultaterne bekræfter antagelsen om, at fortolkningen af Den Fælleskommunale Digitaliseringsstrategi varierer fra kommune til kommune, og at dette formentlig skyldes de kontekstuelle forskelle, som strategien mødes af i kommunerne. Resultaterne viser også, at Den Fælleskommunale Digitaliseringsstrategi øger antallet af it-projekter i kommunerne, hvilket bidrager til en øget kompleksitet af deres it-projektporteføljer. Kommunerne siger, at denne kompleksitet er vanskelig for dem at håndtere, fordi de mangler ressourcer såvel som kompetencerne til at gennemføre projekterne. For at imødegå den øgede kompleksitet, indfører nogle kommuner portefølje- og projektstyringsværktøjer, men fordi it-medarbejdernes fokus indtil for nylig har været på drift snarere end udvikling og forandringsprojekter, vanskeliggør den manglede projektviden implementering af disse værktøjer. Bekymring om kommunernes implementering af de digitale tiltag er blevet luftet. Grunden er, at der skæres i forvaltningernes budgetter, før ændringerne har fået lov at bundfælde sig; endvidere nævnes vanskeligheder med at realisere de forventede effektivitetsforbedringer.

Studiet viste, at idéen om kommunal digitalisering ændrede sig fra fortolkningen på nationalt plan i Digitaliseringsstrategien til Den Fælleskommunale Digitaliseringsstrategi på fælleskommunalt niveau og videre til kommunerne på organisationsniveau. Efter at idéen var landet i kommunerne, blev den materialiseret og fortolket til nye praksisser gennem re-embedding, hvor idéen tilpasses de nye omgivelser, og derefter indskrives gennem nye procedurer og regler i den aktuelle kontekst.

På trods af den analytiske adskillelse af spredning af idéer blandt organisationer og materialisering af idéer i organisationer, så bevæger idéer sig samtidigt i begge planer og påvirker hinanden i sammenflettede tovejs dynamikker.

Summary

Governments across the world are urging public sector organizations to digitalize public service. However, we know little about the process in which mandated, large-scale change initiatives are circulated between actors and materialized as new practices within organizations. This dissertation reports on a research study seeking to provide clarification on this matter - a case study of Danish municipal digitalization. Analysis of the data suggests that actors from the organizational field play a large role in interpreting and understanding the change initiative. The study adds to the extant knowledge on circulating and materializing mandated ideas, but also provides a rich picture of how public sector organizations react to a mandated digitalization idea.

The area of concern in this PhD-project is how ideas from the Danish Common Municipal Digitalization Strategy 2010-2015 was shaped and structured through actions and actors in the Danish municipal landscape as the strategy was implemented.

Drawing upon the translation stream in Scandinavian institutionalism I will be investigating the process through which an externally imposed initiative to digitalize is managed in the organizational field implementing the change.

The empirical setting for this study is the Danish eGovernment initiatives transforming the public sector to make public service delivery more digital. One of the initiatives, the Common Municipal Digitalization Strategy is aiming to accelerate the adoption of digital solutions in the municipal sector. The objective of the Common Municipal Digitalization Strategy is both to make the public service more efficient and thereby decreasing public spending but also to deliver a higher quality public service by utilizing the available technological opportunities (Common Municipal Digitalization Strategy 2010 – 2015, 2010). The implementation of the Common Municipal Digitalization Strategy is supported by a wide network consisting of heterogeneous actors; the 98 individual Danish municipalities, the Local Government Denmark, and different local authority organizations such as public schools, public libraries, public sports facilities etc. Other actors in the network are IT vendors, and KOMBIT A/S. KOMBIT is engaged to help implement the strategy by identifying and specifying the requirements for the business processes that are covered in the digitalization initiative, and carrying out the acquisition process for some of the digitalization initiatives.

In traditional IT-driven organizational changes the adopting organization itself is often the originator of the initiative to technology adoption based on a positive evaluation of the economic or strategic benefits, and the adoption process can be a relatively simple negotiation between the adopting organization and one or more IT vendors, after which the initiative is to be implemented. With a government initiated digitalization strategy the initiative to technology adoption originates outside the adopting organization, and because of the impact of the many different stakeholders in the network on the single municipality, as

described above, the adoption process cannot be considered at the same level of traditional IT-driven organizational change.

Most literature on Diffusion of Innovations is investigating either which factors are impacting the willingness of potential adopters to adopt an innovation or how to predict or increase the adoption rate among the potential adopters (Barrett et al., 2013; Fichman, 2004; Rogers, 2003; Swanson, 1994; Tornatzky et al., 1990; Williams et al., 2009). However, as shown in the literature study on diffusion and adoption of IT-based innovation in section 2.1.1 Diffusion of IT-based innovation, the processes by which these factors work together in forming attitudes toward adoption, or decisions and actual behavior regarding adoption remains largely unexplored. This finding has been supported by several researchers working with Diffusion of Innovationa over the years, i.e. in the 2013 DIGIT Pre-ICIS workshop panel discussion lead by Grover, Rai and Tan (2013) and by Rodón, Pastor, Sesé, and Christiaanse (2008), Seligman (2006), and Damsgaard and Lyytinen (2001) and also recently studies investigating organizational change processes have been called for (Holt & den Hond, 2013; Suddaby et al., 2011).

The theoretical relevance of this study is threefold. First: By investigating the mandated idea of digitalization I want to add a broader perspective to the literature on travel of ideas which has mainly been occupied with circulation of voluntary ideas. Secondly: The majority of studies in externally initiated change have focused on the organization initiating the change (Mola et al., 2010; Senyucel, 2008; Stalk et al., 1992). This study is analyzing how actions performed in the adopting organization are shaping the initial idea to match the context thereby shifting focus to the adopting organization. Lastly: This study adds a multi-level perspective to the current literature by analyzing how an idea is materialized at organizational level as well as how an idea is circulated between actors at organizational field level.

As an idea, for instance an idea expressed in a strategy, is spread to different organizations it is subject to contextual translation, and therefore the original idea will not remain unchanged; diffused ideas are translated throughout their circulation, and they evolve differently in different settings (Czarniawska & Joerges, 1996; Sahlin & Wedlin, 2008). The digitalization of the Danish municipalities is a state mandated and centralized idea, and it is believed that analyzing the implementation of the digitalization idea in Danish municipalities, which are independent organizations with quite different contexts, will allow for very different contextual translation processes and thereby lead to different manifestations of the original idea of digitalization. The practical relevance of this study will be to develop a better understanding of how actions performed in the network of actors surrounding the digitalization idea are translating the initial idea of digitalization to match the context in which it will have to be implemented.

In order to contribute to the understanding of the contextual translation of ideas, and to the gap in the literature this study adresses the following research question:

How do ideas from the Danish Common Municipal Digitalization Strategy 2010-2015 travel through actions, and actors in the Danish Municipal landscape?

To answer the research question a qualitative study of how one of the digitalization initiatives from the Municipal Digitalization Strategy 2010-2015, Byg & Miljø, is translated in the Danish Municipal landscape will be conducted. The data will be collected through semi-structured interviews with key actors in the network of organizations supporting the digitalization process of the Danish municipalities to establish knowledge about motivation, initial perception and the implementation process. Also secondary sources such as the digitalization strategies, Action Plans, and progress reports as well as data about actual IT projects in each municipality and their partnering collaborators will be used to establish knowledge about the objectives and the development over time of the digitalization strategies as well as of how the implementation process is progressing.

The findings are confirming the assumption that the translation of the Common Municipal Digitalization Strategy differs from municipality to municipality, and that this is probably caused by the contextual differences that the strategy encounters in the different municipalities. The findings also show that the Common Municipal Digitalization Strategy is increasing the number of IT implementation projects in the municipalities, thereby increasing the complexity in the municipalities' IT project portfolio. It is expressed that this complexity is hard to handle for the municipalities, because the municipalities lack resources as well as project work competencies to accomplish the projects. To handle this increased complexity, some municipalities are implementing portfolio and project management tools, but because the IT employees up until recently have been focusing on operations rather than development and change projects, the lacking project knowledge makes this implementation troublesome. Concern about the municipalities' ability to implement the digital changes because budgets are being cut before changes have been institutionalized has also been raised as well as difficulties with realizing the expected efficiency gains.

The idea of municipal digitalization traveled as it was translated from eGovernment Strategy at the national level to Common Municipal Digitalization Strategy at the common municipal level and to individual municipal digitalization strategies at organizational level.

After landing in a municipality, the idea of municipal digitalization was actively translated into new local practices through actions within the organization of re-embedding; addition of meaning to the circulated idea in the new setting, and inscribing; establishing new procedures or rules in a new setting.

However, despite the analytical separation of circulation of ideas *between* organizations and materializing ideas *within* an organization, ideas travel concurrently impacting each other through intertwined two-way dynamics.

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1 Introduction

The topic of interest in this PhD-project is to show how ideas from the Danish Common Municipal Digitalization Strategy 2010-2015 are shaped and mediated through actions and actors in the Danish municipal landscape as a strategy of digitalization is implemented. The purpose is to examine how the understanding of the mandated digitalization strategies evolves over time while the strategies are circulated between and materialized within the actors in the municipal landscape.

Across the world governments are urging or demanding that public service should be digitalized (Andersen, Beck, Wigand, Bjørn-Andersen, & Brousseau, 2004; Beynon-Davies & Williams, 2003). This extensive movement suggests that such widespread new idea is worthy of investigation and conceptualization. Insight into the process is necessary, through which the idea of digitalization is shaped, interpreted and understood when circulated in the public sector so that the relevant expertise; e.g. politicians, public servants and IT vendors are able to influence the process.

The Oxford English Dictionary is defining the term 'digitalize' as being a later form of 'digitize'(Oxford English Dictionary, 2014a). The term 'digitize' is defined as a verb with the meaning: "*To convert (analog data, esp. in later use images, video, and text) to digital form, typically for storage or processing by a computer; to represent in digital form*"(Oxford English Dictionary, 2014b). The literature in information systems has been using the two terms more or less synonymously for some time, but recently the two terms seem to be applied to two different meanings:

> *"Digitalization goes beyond a mere technical process of encoding diverse types of analog information in digital format and involves organizing new socio-technical structures with digitized artifacts* (Yoo, Lyytinen, Boland, & Berente, 2010, p. 6).

In practice the term digitalization is used to describe "*the application of digital resources to business processes with the aim of creating value and revenue*" (McDonald, 2012). 'Digitization', on the other hand, is used for the mere technical process of converting analog data into a digital form (Greenstein, Lerner, & Stern, 2013). In this dissertation I will use the term 'digitalization' to explicate that the converting process in question is to apply digital resources to business processes with the aim of creating value and revenue.

To digitalize public service is clearly not a task which can be accomplished by an individual or an organization single-handedly. This is why the unit of analysis in this study is both at an organizational, a sectoral or a community level, thereby serving the purpose of generating cognitive explanations of the phenomena through a study beyond the organizational level (Powell & DiMaggio, 1991). In this study the focus is on mandated municipal digitalization, however the general principles and theoretical framework developed are considered to be relevant in any large-scale, mandated digitalization process.

The case study is outlined below, thereby allowing for the following more detailed presentation of the study's purpose, research question, and contributions.

1.1 Mandated digitalization of public service

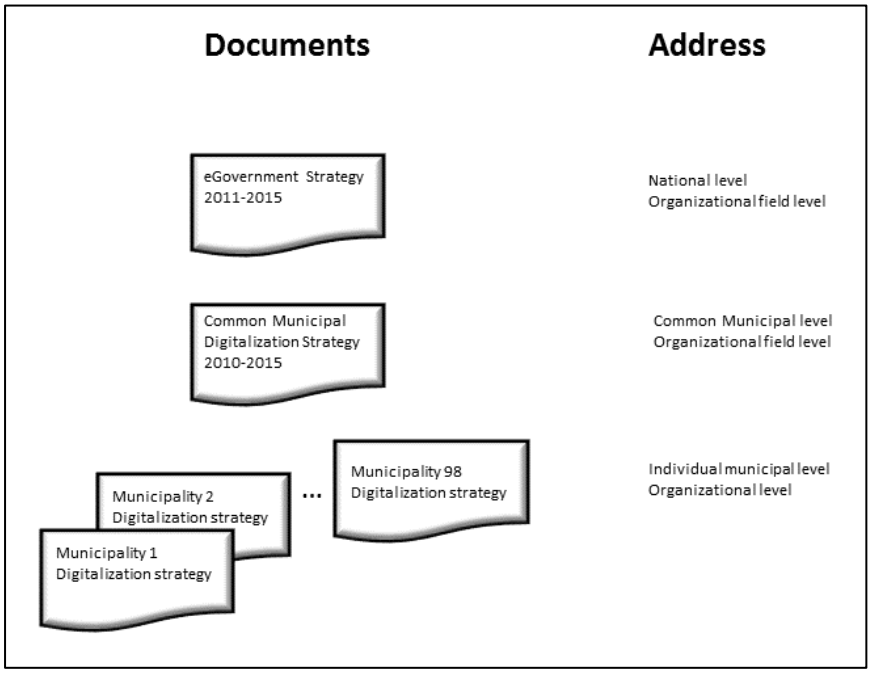
The overall empirical topic for this study is how ideas from digitalization strategies in the public sector are shaped and mediated as they are circulated between and materialized within actors in the public sector.

The empirical setting is found in the Danish eGovernment initiatives transforming the Danish public sector to make public service delivery more digital. One of the initiatives, the Common Municipal Digitalization Strategy, is aiming to accelerate the adoption of digital solutions in the municipal sector. The objective of the Common Municipal Digitalization Strategy is both to make the public service more efficient, thereby decreasing public spending, but also to deliver an improved quality of public service by utilizing the available technological opportunities (Common Municipal Digitalization Strategy 2010 – 2015). The Common Municipal Digitalization Strategy is a continuation of the digital agenda brought forward in the Danish eGovernment Strategy. The eGovernment Strategy 2011-2015 is initiated by the Danish Agency for Digitisation acting on behalf of the Danish government, and the actual content of the strategy has been negotiated in a consensus-based process between the Danish Agency for Digitisation, the Danish Regions, and Local Government Denmark (LGDK), an interest group and member authority representing the Danish municipalities. The eGovernment Strategy 2011-2015 is the fourth version of the strategy.

However, strategic digitalization initiatives targeted at the municipal level are found in the *Common Municipal Digitalization Strategy*. The Common Municipal Digitalization Strategy is advanced to a more detailed level with respect to the municipal level than the eGovernment Strategy and is excluding the digitalization initiatives at state and regional levels. In 2010 the Common Municipal Digitalization Strategy 2010-2015 was negotiated between LGDK and selected municipalities, representing the remaining Danish municipalities.

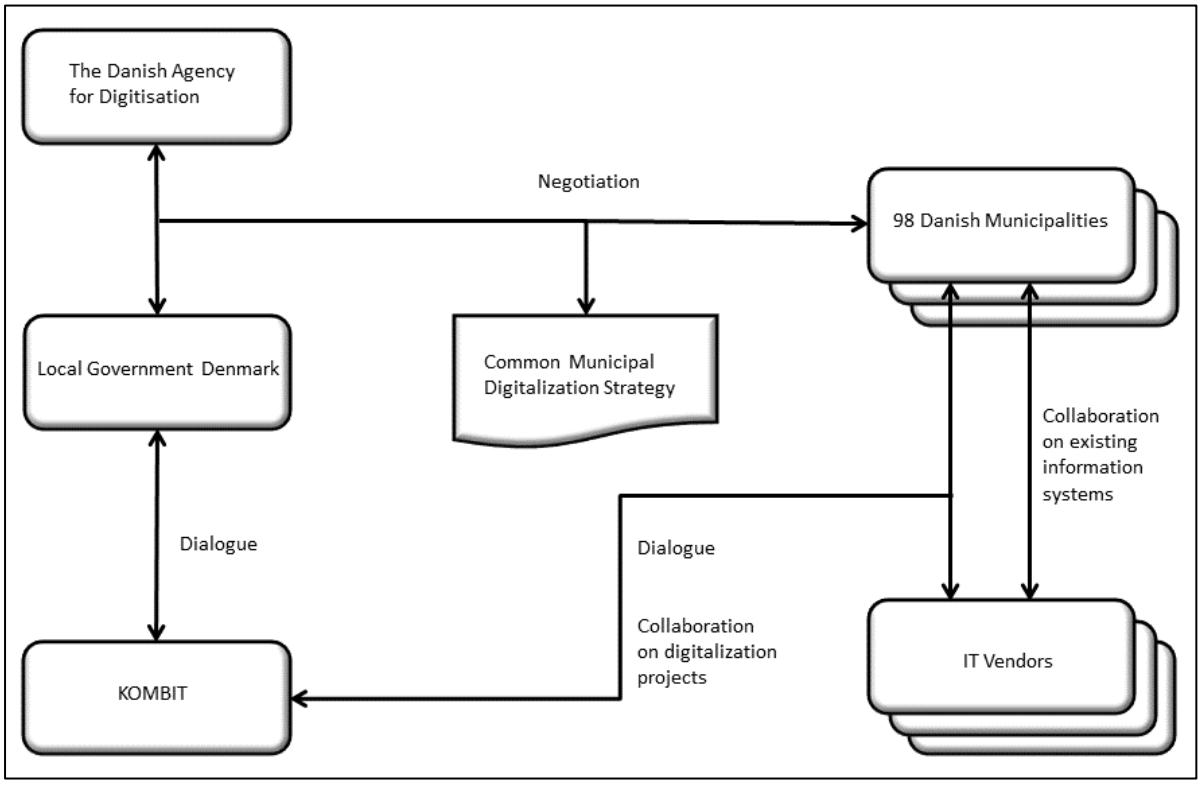
The ideas from the Common Municipal Digitalization Strategy are transformed to an individual municipal level in the IT strategies or digitalization strategies, developed by the individual municipalities. Finally, the individual municipalities are implementing the digitalization ideas as technology solutions. An overview of the digitalization strategies is depicted with their respective focus areas in *Figure 1 Overview of the digitalization strategies*.

Figure 1 Overview of the digitalization strategies



The implementation of the Common Municipal Digitalization Strategy is supported by the organizational field of municipal digitalization. An organizational field is a collection of organizations that on a general level constitute a recognized area of institutional life: suppliers, consumers, regulatory agencies, and organizations producing similar services or products (DiMaggio & Powell, 1983) . The core actors of the organizational field of municipal digitalization comprise a wide network consisting of heterogeneous actors shown in *Figure 2* the Danish Agency for Digitisation, Local Government Denmark, the 98 individual Danish municipalities, including different local authority organizations such as public schools, public libraries, public sports facilities etc.

Figure 2 Core actors in municipal digitalization



Other actors in the network are IT vendors, and KOMBIT A/S.

KOMBIT is fully owned by Local Government Denmark and was established in 2009 to help the municipalities implement the Common Municipal Digitalization Strategy. For some of the acquisition processes called for in the Common Municipal Digitalization Strategy, KOMBIT is pooling the buying power of the individual municipalities; thereby enabling negotiation between IT vendors and KOMBIT, acting as one very large buyer instead of 98 independent municipalities having to negotiate individually with IT vendors. KOMBIT is engaged to identify and specify the requirements for the business processes that are covered in the digitalization initiatives. KOMBIT also carries out acquisition processes, including prequalifications, and furthermore KOMBIT, evaluate tenders and negotiate contracts on behalf of the municipalities that have volunteered to use the solution acquired by KOMBIT (Thematizing interview 3, KOMBIT; 17:25). The other municipalities are left to find their own means of implementing the same specific initiatives of the Common Municipal Digitalization Strategy. For the monopoly solutions, the IT vendor, KMD A/S, has been the sole provider of. The innovation decision is authoritative, that is, all municipalities must conform to the systems decision made by KOMBIT. For other solutions, the municipalities are free to choose the solution provided by KOMBIT or to find another solution, hence the innovation decision is optional (Rogers, 2003). Finally, KOMBIT manages some of the projects in which the new digital solutions are developed and implemented in the municipalities.

1.2 Purpose and research question

Regarding traditional IT-driven organizational changes, the adopting organization itself is often the initiator of a technology adoption based on a positive evaluation of the economic or strategic benefits. The adoption process can be a relatively simple negotiation between the adopting organization and one or more IT vendors, and finally the initiative is implemented. With a government-initiated digitalization strategy, the initiative to technology adoption originates outside the adopting organization. Having an external initiative and the impact of the many different stakeholders in the network of the single municipality, as described above, the adoption process cannot be considered at the same level as for traditional IT-driven organizational changes.

The many different stakeholders involved in municipal digitalization each bring their own interpretations of digitalization into the process, thereby constantly adding new understanding to the idea of digitalization. This creates a need for establishing an understanding of how the actors impact the idea of municipal digitalization as it circulates between them.

Since the digitalization strategy is initiated and mandated by the government, the decision to implement the technology is already taken and not up for arguments or negotiations, whether an acknowledged need exists in the adopting organizations. Lack of involvement in the decision process leads to the expectation that the municipalities, which are to implement the digitalization strategy, take less interest in the accompanying technology. This creates a need for understanding how the idea of digitalization is materialized in practice in the adopting organizations.

Most literature on diffusion and adoption of IT-based innovations is either investigating what factors are impacting the willingness of the potential adopters to adopt an innovation or how to predict or increase the adoption rate among the potential adopters (Barrett et al., 2013; Fichman, 2004; Rogers, 2003; Swanson, 1994; Tornatzky et al., 1990; Williams et al., 2009). However, as shown in the literature study on diffusion and adoption of IT-based innovation in section *2.1.1 Diffusion of IT-based innovation*, the processes – by which these factors work together in forming attitudes towards the adoption, decisions and actual behavior regarding the adoption – remain largely unexplored. This finding has been supported by several studies, investigating IT-initiated organizational change over the years, i.e. in the 2013 DIGIT Pre-ICIS workshop panel discussion lead by Grover, Rai and Tan (2013) and by Carugati, Fernández, Mola, and Rossignoli (2018), Holt and den Hond (2013), Suddaby et al (2011), Rodón, Pastor, Sesé, and Christiaanse (2008), Yildiz (2007), Seligman (2006), and Damsgaard and Lyytinen (2001).

Originally, the research on diffusion and adoption of IT-based innovation regarded any contextual adaptation of the diffused innovation as a mistake. Innovations was thought of as a means for improvement, and it was believed that any adaptation of an innovation was caused by the adopter's lack of knowledge on how to use the innovation, and that adaptation would lead to a lower degree of improvement than implementation of an innovation similar to the original innovation. Later this perspective was softened by introducing the concept of re-

invention defined as "*the degree to which an innovation is changed or modified by a user in the process of its adoption and implementation*" (Rogers, 2003, p. 180). The contextual adaptation, leading to re-invention, was even accepted as a factor leading to a higher degree of diffusion. Unfortunately, focusing on the rate of adopters changing the innovation, re-invention is overlooking *why* the adopter engages in local adaptation and *how* the change process unfolds.

However, the translation stream in Scandinavian institutionalism offers a process-based perspective, open for contextual adaptation of the circulating idea. The translation perspective was introduced by Latour as an alternative to the Diffusion of Innovations Theory (Mica, 2013). Latour used the translation perspective to argue how an idea moves in a chain of active members shaping and changing it along the way (Latour, 1986).

When an idea is spread to different organizations it is subject to contextual translation, and therefore the original idea will not remain unchanged. Diffused ideas are translated throughout their circulation, and they evolve differently in different settings (Czarniawska & Joerges, 1996; Sahlin & Wedlin, 2008), even mandated ideas can be translated in various ways (Powell, Gammal, & Simard, 2005). Digitalization of the Danish municipalities is a centralized, state-mandated idea, and it is believed that an analysis of the implementation in Danish municipalities, which are independent organizations with quite different contexts, will show very different manifestations of the original idea. As "*loosely coupled organizations are more likely to vary internally*" (DiMaggio & Powell, 1983, p. 155), the constitutional right of Danish municipalities to manage their own affairs independently under state supervision (The Danish parliament, 2013) is believed to make the circulation of the idea subject to less control than if an organization implemented a strategy in different divisions of its own organization. To frame this process theoretically I will combine the translation perspective (Røvik, 2016) and the theory of traveling ideas (Czarniawska & Joerges, 1996) in order to investigate how the idea of digitalization of the Danish municipalities is shaped and reshaped by the actors and actions it encounters while traveling through the Danish Municipal landscape. As such, this is an explanatory study seeking to provide: "*…explanation of how, why, and when things happened… This explanation will usually be intended to promote greater understanding or insights by others into the phenomena of interest*" (Gregor, 2006, p. 619), but the study will not seek to predict events with any precision, by discovering or claiming relationships among phenomena that show causal reasoning; nor will this study seek to prescribe how something can be accomplished in practice by specifying a method or structure.

The theoretical relevance of this study is threefold. First: The majority of studies on translation involve organizations that voluntarily translate ideas (Morris & Lancaster, 2006; Nielsen, Mathiassen, & Newell, 2014; Sahlin-Andersson, 1996; Sevón, 1996). This study develops a better understanding of how actions, performed in the adopting organization, are shaping the initial idea of mandated digitalization to match the context in which it is to be implemented. In this part of the study, concepts from the translation perspective will be used to establish knowledge on how the mandated idea of municipal digitalization is shaped and mediated through interpretation and translation while the idea is materialized as practice

within the individual municipalities. Secondly: The majority of studies in externally initiated change focus on the organization initiating the change (Mola et al., 2010; Senyucel, 2008; Stalk et al., 1992). The purpose of this study is to apply a multi-level perspective, analyzing not only how the idea materializes as new practices at organizational level as described above, but also what actors are involved in the process of circulating the idea of municipal digitalization. In this part of the study, the organizational field of municipal digitalization is identified. Lastly: By investigating how the translation process unfolds in the network of actors surrounding the mandated municipal digitalization idea, I want to add a broader perspective to the literature on Scandinavian institutionalism which has mainly been occupied with ideas circulated voluntarily. In this part of the study, concepts from Scandinavian institutionalism are used to establish knowledge on how the idea of mandated digitalization is circulated between the actors in the municipal landscape.

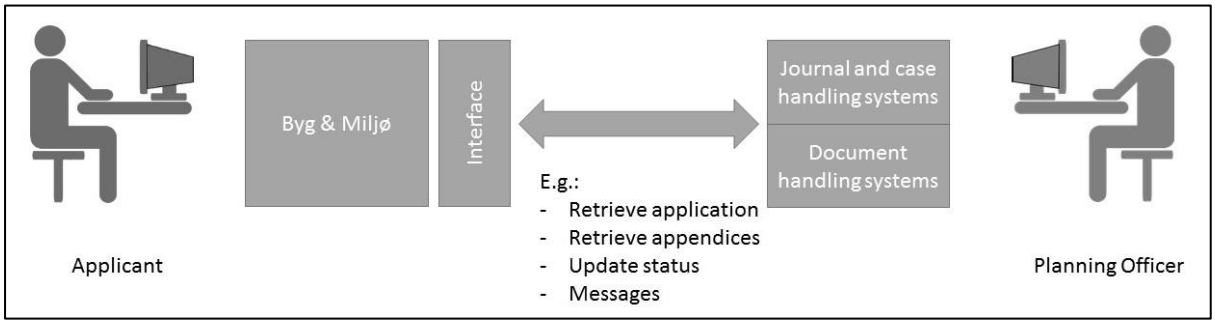
To study actions performed within organizations, to translate an idea into practice, and actions performed in an organizational field, to circulate an idea between actors, unfold the translation process of the digitalization idea . This leads to the following research question:

How do ideas from the Danish Common Municipal Digitalization Strategy 2010-2015 travel through actions and actors in the Danish Municipal landscape?

To answer the research question, a qualitative study has been conducted as to how one of the digitalization initiatives from the Municipal Digitalization Strategy 2010-2015 is implemented in the Danish Municipal landscape as the digital solution, Byg & Miljø.

Byg & Miljø is a web based self-service application system, covering the process through which citizens and organizations apply for planning permissions and environmental approvals. Before implementing Byg & Miljø, the planning application process was in most municipalities initiated by filling in a pdf application form, and even if this was done electronically, the application data had to be keyed into the case handling systems upon arrival in the municipalities. Byg & Miljø was initiated as a response to the political pressure on the municipalities to increase the speed, lower the costs, and standardize the planning case handling (KOMBIT, 2013). The intended architecture for integrating Byg & Miljø into the local governmental IT architecture is shown in *Figure 3 Integration of Byg & Miljø*. The applicant enters planning applications into the user interface of Byg & Miljø. Through an integration interface, the data are then transferred to the journal and document handling systems of the municipality concerned. During the case handling, the Planning Officer interacts with the case and document handling systems from which status updates and messages are sent to Byg & Miljø. Here the applicant can access them.

Figure 3 Integration of Byg & Miljø



Adapted from KOMBIT (2013)

The study has been designed as a case study comprising heterogeneous core actors from the organizational field, supporting the implementation of the Common Municipal Digitalization Strategy, such as the Danish Agency for Digitisation, LGDK, KOMBIT and six municipalities – all selected on the basis of theoretical replication: small, medium-sized and large, one each with respectively advanced and timely digitalization process.

The primary data have been collected through semi-structured interviews with the core actors to establish knowledge about motivation, initial perception, and how the circulation process unfolds. Multiple and similar interviews have been conducted within each of the six municipalities. Furthermore, secondary sources have been used, digitalization strategies and progress reports, as well as data about actual IT projects in each municipality and their partnering collaborators, such as project charters and training material. All this has been used to establish knowledge about the objectives and the development over time of the digitalization strategies and about how the implementation process is progressing.

The data have been analyzed by initially establishing knowledge about what actors are involved in the process of circulating the idea of municipal digitalization. The result of this analysis is the identification of the organizational field of municipal digitalization.

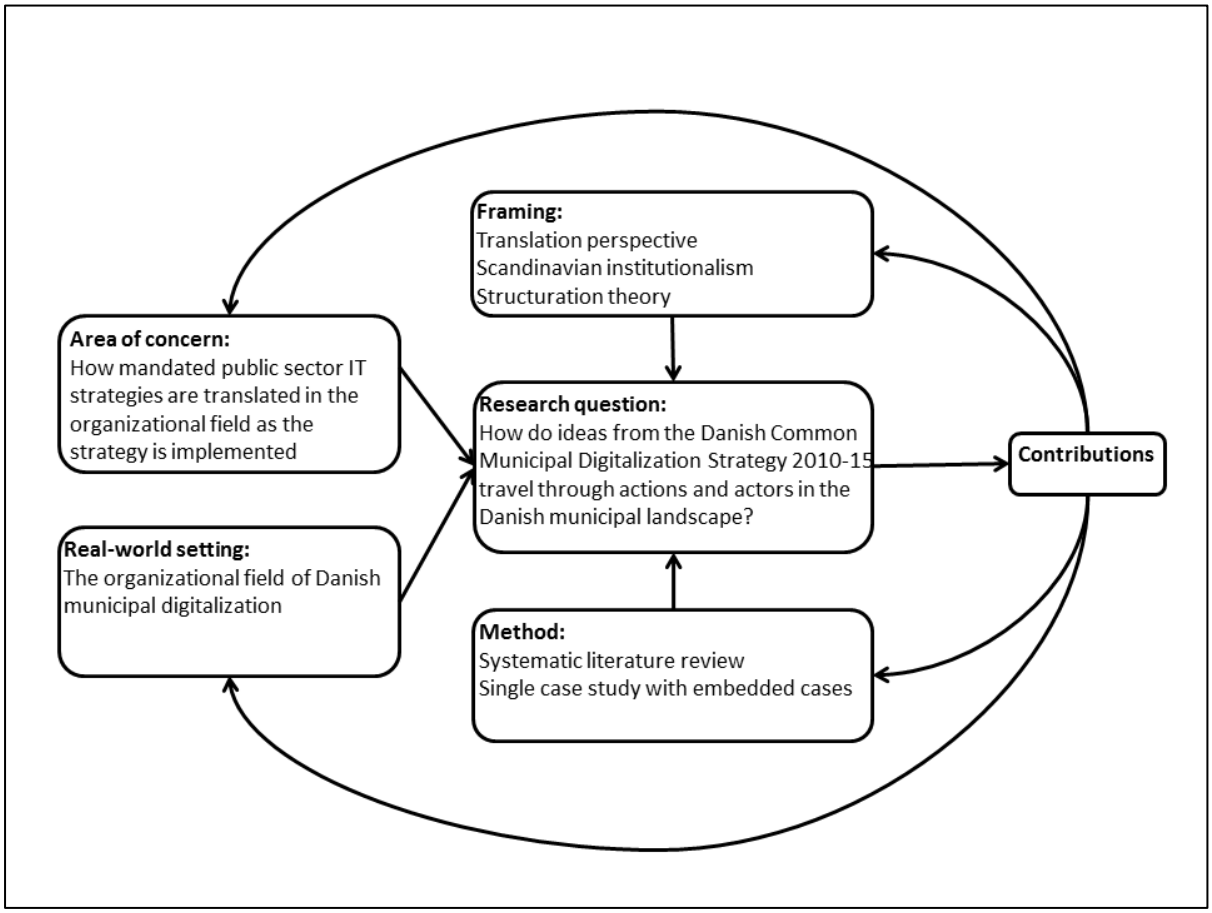
Afterwards, the circulation of the idea of digitalization among the actors in the organizational field has been followed by identifying the objectives of the eGovernment Strategy 2011-2015, the Danish digitalization strategy at national level. The digitalization idea has then been followed to the municipal level by identifying the objectives in the Common Municipal Digitalization Strategy 2010-2015. Lastly, the idea has been followed into the individual municipal level where the objectives of the individual municipal digitalization strategies have been identified. The result of this analysis is a description of how the idea of mandated municipal digitalization is shaped and mediated when it is circulated in the organizational field of municipal digitalization.

The analysis is concluded with a study at the organizational level, identifying how the adopting organizations shape the initial idea of mandated digitalization to match the contexts in which it has to be implemented. The result of this analysis is a description of how the idea of mandated digitalization is materialized as new practices in the adopting organizations.

To support the alignment between different parts of the dissertation, this study is inspired by the style composition framework suggested by Mathiassen, Chiasson, and Germonprez (2012) which builds upon a literature study within the IS discipline as well as upon Checkland's conceptual model of organized use of rational thought (Checkland, 1985). Although the style composition framework has been developed within another research paradigm, the framework is published with a call for future research to apply the style composition framework in other forms of engaged scholarship. Answering this call, the style composition framework is applied to this qualitative case study involving employees from various organizational functions and different organizations in the organizational field of municipal digitalization. Thereby a commitment to practice is shared with engaged scholarship by including "*different perspectives of key stakeholders (researchers, users, clients, sponsors, and practitioners) in studying complex problems*" (Mathiassen et al., 2012, p. 361; Van de Ven, 2007, p. 9).

The following concepts have been adopted from the style composition framework: the *area of concern*, reflecting "*the researchers' interest in some body of knowledge within the literature*"; a *real-world setting;* an empirical setting representative of and potentially providing new insights to the chosen area of concern; a *conceptual framing* which is used to interpret data from the real world setting; a *method of investigation;* and *contributions*, which can be added to the area of concern, the real-world setting, the conceptual framing, or/and to the method as shown in *Figure 4 Style composition of study at hand*. The conceptual framing can either be related to "*concepts found in the literature about the area of concern*" or "*related to general concepts that are used to inform the study independent of the area of concern*" (Mathiassen et al., 2012).

Figure 4 Style composition of study at hand



Adapted from Mathiassen, Chiasson, and Germonprez (2012).

The *area of concern* under investigation has previously been established, namely how *mandated public sector IT strategies are translated in the organizational field as the strategy is implemented*. As already argued, the area of concern is a large change program initiated by the Danish government, transforming the Danish public sector to make public service delivery more digital. The *real-world setting* chosen for conducting the study is the organizational field of Danish municipal digitalization.

The *methods of investigation* used to conduct this interpretive inductive study are: a systematic literature review conducted to develop a better understanding of how the diffusion process of IT-based innovation unfolds – and a single case study of the Danish municipal digitalization with embedded cases conducted to show how patterns of behavior and understanding emerge and change over time. These methods are described in detail in chapter *4 Research Design*.

The conceptual framing related to concepts found in the literature about the area of concern is found in the translation perspective used in the Scandinavian institutionalism to explain contextual adaptation of organizational ideas that are circulated between organizations and materialized in practice within organizations (Czarniawska & Joerges, 1996; Czarniawska & Sevón, 1996; Røvik, 2016).

The conceptual framing related to general concepts used to inform this study – independent of the area of concern of the study – can be found in structuration theory. This theory offers an explanation on how *cultural change* evolves in societies *across time and space* through interaction between *human agency*, which is trying to bring about change and a conservative impulse or rule, and *structure*, which is trying to preserve the existing order. Another concept used with structuration theory is the *unintended consequences*, which are derived from the purposive actions performed by agents (Giddens, 1984). Using structuration theory to provide general concepts to inform this study – independent of the area of concern – I argue, that *the Common Municipal Digitalization Strategy* can be seen as a materialization of *human agency* trying to create a *cultural change*, namely *digitalization*, across *time* (*2010-2015*) and *space* (*the 98 Danish municipalities*). However, the *existing organizational routines and processes already being performed in the municipalities* can be seen as *structure* trying to preserve the existing order. Analyses of the data follow the interaction between human agency and structure, and show if any unintended consequences are present. The *contributions* are added to the area of concern, the real-world setting, and the conceptual framing.

1.3 Dissertation structure

Chapter 1 Introduction: This chapter contains an introduction to the research project. The motivation for the research project is presented together with an outline of the case study. Finally research gaps are identified leading to the research question: "*How do ideas from the Danish Common Municipal Digitalization Strategy 2010-2015 travel through actions and actors in the Danish Municipal landscape?*" Then the research method is outlined and the analysis is presented. Lastly, the style composition framework is used to support the alignment between different parts of the dissertation.

Chapter 2 Theoretical Background: This chapter provides a review of the extant literature, informing research on how a mandated public digitalization strategy is transformed from idea to practice as the strategy is circulated among actors in the municipal landscape and implemented as technology in the municipalities. The chapter examines different streams of research in order to choose the most promising theories and perspectives for analyzing the empirical data.

Chapter 3 Theoretical Framing: This chapter introduces and argues for the chosen theoretical framework in order to structure and support the subsequent data collection and analysis. First, the perspective of traveling ideas is described, followed by a discussion why thee traveling ideas perspective is appropriate for studying digitalization of the Danish Municipalities. Secondly, the constructs and dynamics of the travel of ideas perspective and the translation perspective are described. Then follows an outline as to how the traveling ideas perspective has been used and with what outcome. The chapter is concluded by formation of a framework for analyzing how ideas from the Danish digitalization strategies travel in the Danish Municipal landscape and how the concepts and dynamics of traveling ideas and translation are used as a framework in this dissertation.

Chapter 4 Research Design: This chapter presents the research design and the connection between the ontological, epistemological, theoretical and methodological perspectives which are applied to expound the collected data, and thus shed light on the central research question, guiding the dissertation. First the philosophical assumptions, guiding the research and the choice of research method, are discussed. Then follows a discussion on the research method, the data collection technique, the data analysis approach and finally, the research method is evaluated for use in this dissertation.

Chapter 5 Organizational Field of Danish Municipal Digitalization: This chapter presents the first part of the analysis by providing an empirical investigation of the structuration of the organizational field of the Danish Municipal landscape. The chapter starts by a brief presentation of the fundamental organization of the Danish public authorities and continues with an outline of a chronology and the construction of the Danish eGovernment initiatives leading to the Danish Common Municipal Digitalization Strategy 2010-2015 upon which the main analysis builds. Then the translators involved in the interpretation and understanding of the mandated digitalization idea are identified, and finally the question is answered how the organizational field of digitalization of the Danish municipalities is structured.

Chapter 6 Ideas of Municipal Digitalization Traveling between Settings: This chapter presents the second part of the analysis. Here the question is answered how actions performed in the adopting organization shape the initial idea of mandated digitalization when it is materialized in practice and finally the question is answered how the idea of mandated digitalization is shaped and mediated while circulating in the organizational field of municipal digitalization.

Chapter 7 Ideas of Municipal Digitalization Traveling within a Setting: This chapter presents the third part of the analysis. Here the question of how the idea of municipal digitalization is materialized from object to practice is answered by applying the travel of ideas perspective and the translation rules to the empirical data.

Chapter 8 Discussion: This chapter presents the synthesized findings by pointing out and elaborating on the contributions by contrasting them with the extant theory, also the theoretical and practical contributions of the study are presented.

Chapter 9 Conclusion: This chapter presents the conclusions of the research project as well as a discussion on generalizability and limitations of the study, and suggests topics for future research.

2 Theoretical Background

The purpose of this chapter is to choose the most promising theories and perspectives for analyzing the empirical data. The chapter provides a review of the extant literature informing research on how a mandated public digitalization strategy is transformed from idea to practice as the strategy is circulated among actors in the municipal landscape and implemented as new technology in the municipalities. First a discussion of a theoretical framing is provided after which the literature is reviewed.

The structuration theory, which is used as a conceptual framing related to general concepts that inform the study independently of the area of concern, is an overarching grand theory acknowledged as one of the most influential theoretical platforms in the field of IS research as well as in other organizational and sociological research fields (Avgerou, 2000; Jones & Karsten, 2008). The structuration theory is regarded as a theory with the power to "*bridging a gap*" between the conflicting paradigmatic perspectives: the interpretivist paradigm with its subjectivist view, and the functionalist paradigm with its objectivist view (Gioia & Pitre, 1990, p. 592). As the structuration theory is a meta-theory at a high level of abstraction and "*do not supply concepts useful for the actual prosecution of research*" (Giddens, 1990, p. 312) it is found appropriate to use the concepts from structuration theory more as sensitizing devises and apply a lower level theory informed by structuration theory , but offering less abstract, more analytically operational concepts. Using structuration theory as a meta-theory permits purposively exploring a "*transition zone theory that might consistently accommodate lower-level theories (mid-range) based on different ontological assumptions*" (Pozzebon, Mackrell, & Nielsen, 2014, p. 234). Bridging the gap between paradigms is needed as the digitalization strategy is mandated and thereby a structural property imposing a strong constraint on the municipalities' opportunities to 'do otherwise'. Still, the municipalities can socially construct a reality in which they subjectively perceive a large degree of contextual freedom for implementing the strategy, thereby challenging the determinism of the digitalization strategy.

The following sections will provide reviews of the extant literature of promising lower level theories informed by structuration theory and within the areas informing research on how a mandated public digitalization strategy is transformed from idea to technology as the strategy is circulated among actors in the municipal landscape and implemented as technology in the municipalities.

The literature in sociology on how ideas are circulated among and shaped by actors is divided into two theoretical perspectives: translation and diffusion. Realizing that these theories are not considered to share ontological assumptions, they have both been reviewed in chapter 2 and 3 respectively in order to find concepts useful for explaining how the idea of digitalization is circulated among actors in the municipal landscape. In chapter 2 research on Diffusion of Innovations will be reviewed for concepts which could be used to inform the study on how the idea of digitalization is circulated among actors in the municipal landscape. In chapter 3 research on translation will be reviewed for concepts which could be used to

inform the study on how the idea of digitalization changes and evolves as it moves between actors.

2.1 Diffusion of Innovations theory

This dissertation examines how the idea of digitalization is circulated through actions and actors in the Danish municipal landscape and materialized as new practices. When studying dissemination of something new, for instance an idea circulating between actors, the Diffusion of Innovations Theory is hard to get around. The Diffusion of Innovations Theory defines diffusion as "*the process in which an innovation is communicated through certain channels over time among the members of a social system*" (Rogers, 2003, p. 5), thereby emphasizing the significance of the concepts of innovation, communication channels, as well as the process within a social context.

The diffusion perspective seeks to explain how and at what rate an innovation is communicated over time among the members of a social system. Everett M. Rogers' developed the Diffusion of Innovations Theory (Rogers, 1962), and in the fifth edition of this seminal work, *innovation* is defined: "*an idea, practice, or object that is perceived as new by an individual or other unit of adoption*" (Rogers, 2003, p. 12). As the term *innovation* also applies to political programs and policies: "*An innovation is simply a program or policy that is new to the states adopting it…*" (Walker, 1971, p. 355) the Diffusion of Innovation Theory is found to be an appropriate lens for researching how a public digitalization strategy is spread among the members in the organizational field implementing it. Despite the Diffusion of Innovations' functionalist assumptions, its concepts are found to "*mesh well with the earlier framing of technology provided by structuration theory*" (Pozzebon et al., 2014, p. 235).

However, seemingly most literature informed by Diffusion of Innovations has investigated either which factors impact the potential adopters' willingness to adopt an innovation or how to predict or increase the adoption rate among potential adopters (Rogers, 2003; Tornatzky et al., 1990; Williams et al., 2009), whereas the process through which these factors work together in forming attitudes toward adoption, decision-making and actual behavior regarding adoption remains largely unexplored (Damsgaard & Lyytinen, 2001; Rodón et al., 2008; Seligman, 2006).

In the third edition of "Diffusion of Innovations", Rogers (2003, p. 180) added the concept of *re-invention* defined as "*the degree to which an innovation is changed or modified by a user in the process of adoption and implementation*". Re-invention was added to apply some theoretical nuance to the understanding of the process outcome of adoption and implementation, at the same time shifting the perception of adopters from passive acceptors of an innovation to active modifiers of a new idea. Re-invention was intended to explain the diffusion scholars' observations, namely that some new ideas would change and evolve as they moved from one adopter to another; however, observations revealed that not all innovations were adopted as an exact copy or imitation of previous practice, which was how

the diffusion theory was originally understood. Rogers concludes that some innovations are subject to more re-invention than others arguing that the degree of re-invention is determined by 1) the nature of the innovation: Is it flexible? allowing adopters to change the innovation to fit their unique purpose or not; and Is it complex? motivating adopters to simplify or even misunderstand the innovation; and 2) the adopters' knowledge about the innovation, where limited knowledge leads to a larger degree of re-invention, because the innovation will be used as the adopter thinks appropriate – and not as the innovation was first intended (Rogers, 2003). Summing up the Diffusion of Innovations' perspective on re-invention: Re-invention can be measured as the degree of user modification of the original innovation in the process of adoption and implementation. Re-invention is determined by either the nature of the innovation or the adopters' knowledge about it where a flexible or complex innovation as well as users' limited knowledge can lead to a higher degree of re-invention (Rogers, 2003).

Besides determining the degree of re-invention defined as a measure of how many of the constituent elements of an innovation are different from its core version, research in re-invention has primarily established the common understanding that re-invention during adoption of an innovation leads to a faster rate of adoption as well as to a higher degree of institutionalization of an innovation (Rogers, 2003). Rogers' re-invention is appropriate for investigating how many adopters change an innovation to fit their unique purpose, but it does not offer a suitable theoretical framework for examining how the process of re-invention unfolds; this is why the literature on diffusion of IT-based innovations is reviewed for concepts capable of informing the study on how the idea of digitalization is circulated between actors in the municipal landscape.

2.1.1 Diffusion of IT-based innovation

As already touched upon, very little diffusion research is process research, but "*variance-type investigation determining covariance (or correlations) among a set of variables, but not their time order*" (Rogers, 2003, p. 196). Diffusion studies mainly build on what has become known as the S-curve, which shows the cumulative number of adoptions over time. Hence, the majority of diffusion studies has investigated which factors can promote or inhibit the adoption rate or how the speed of adoption can be increased. In this way, the majority of diffusion studies seek to identify normative concepts or models prescribing how to maximize the adoption rate or speed of diffusion, which also implies that the majority of diffusion studies take the perspective of the innovation-promoting part of the social system. The study at hand, however, investigates how the circulation of an idea unfolds within a social system, and consequently, normative concepts or models are inadequate for informing the study at hand. Instead, concepts on how ideas are circulated between actors and concepts on how an idea changes and evolves as it moves in the social system, would be advantageous.

As already argued, diffusion was originally thought of as producing exact copies or imitations of previous use, but over time diffusion scholars found that not all innovations were adopted as exact copies or imitations of previous use. These findings of local adaptation lead to the acknowledgment of re-invention, a concept explaining how some new ideas change and

evolve as they move from one adopter to another (Rogers, 1971). Re-invention focuses on the rate of adopters changing the innovation; the concept thereby disregards or overlooks why the adopter engages in local adaptation through *agency*, how the change *process* unfolds, and which actors are involved in the *network* performing the re-invention. In the following section local adaptation through agency, the change process and the network involved in re-invention will be addressed.

2.1.1.1 Agency

Agency can be defined as the capacity to act; agency is associated with an agent's actions, freedom to choose, free will, and the opportunity to act in order to change structure, which, on the other hand, is trying to preserve the existing order (Giddens, 1984). Agency can be seen as initiatives and actions performed with the purpose of changing the existing structure, or as initiatives and actions resulting in local adaptation of an innovation. The source of local adaptation of an innovation can be contextual or knowledge based and is partly determined by the nature of the innovation – a flexible, complex innovation can lead to a larger degree of local adaptation because flexibility allows for adaptation and complexity motivates to simplification or even misunderstanding of the innovation (Rogers, 2003; Røvik, 2016).

The Diffusion of Innovations Theory is developed primarily from cases characterized by voluntary adoption of the innovation. However, the Diffusion of Innovations Theory recognizes that a more complex decision outline exists: *optional innovation-decisions* are made when individuals can choose to adopt or reject an innovation independent of the choice of other members of the social system; *collective innovation-decisions* are made when consensus among the members of a social system decides whether to adopt or reject an innovation; when the decision is made, all units in the system usually must conform, and *authority innovation-decisions* are made when relatively few individuals possessing power, high social status or technical expertise in a social system can choose to adopt or reject an innovation on behalf of the other members of the social system (Rogers, 2003). The speed of adoption is found to be higher when the adoption is mandated (Tolbert & Zucker, 1983). The Common Municipal Digitalization Strategy process is a many-faceted case, because some municipalities, acting on behalf of the other municipalities, were involved in the formulation of the strategy. Some municipalities characterize the innovation decision as collective, because they were directly involved, whereas the municipalities that were not directly involved, characterize the innovation decision as authoritative.

2.1.1.2 Process

Diffusion of Innovations offers the innovation-decision process as a model to describe the process that potential adopters pass through, starting when initial knowledge of an innovation is gained to the decision to adopt or reject is made and confirmed. The innovation-decision process comprises the following five stages: knowledge, persuasion, decision, implementation, and confirmation: essentially the model describes how, through a series of actions and choices over time, potential adopters reduce the uncertainty introduced by an innovation (Rogers, 2003). Initially the potential adopters are seen as being in a state of ignorance of the innovation. At this stage, the innovation-decision process model supports the choice of communication channels with a view to raising the potential adopters' awareness of

an innovation thereby transferring potential adopters to the knowledge stage. From the knowledge stage, potential adopters actively seek information about the potential consequences of adopting the innovation in order to form an attitude toward the innovation's attributes in the persuasion stage. In the persuasion stage, the innovation-decision model suggests that an adequate level of how-to knowledge is a fundamental variable for entering the next stage in which the adoption decision is made.

Where the innovation-adoption process model appears to be valuable for planning what information potential adopters should be exposed to, when and by whom, it leaves some doubt as to whether stages are the best way to describe the process. First of all, the adoption decision, which is modeled as the third stage, could be made a lot earlier, for instance, if the potential adopters are exposed to the innovation but never bother to seek more information to form a qualified decision, but simply forget about the innovation afterwards. In this case, the adoption decision might effectively be made already at the knowledge or persuasion stage, but not as a part of a decision process, it was simply forgotten.

The process model is developed for optional innovation decisions made by individuals but is also found to be generalizable for optional innovation decisions made by organizations (Rogers, 2003). However, the case at hand, mandated digitalization, does not fit well with the five stages, as the decision is made outside the implementing organization.

2.1.1.3 Network

As already shown in *Figure 2 Core actors in municipal digitalization*, the organizational field of municipal digitalization consists of various, heterogeneous actors. These actors are part of a network connecting organizational decision-makers (executives, board members) through professional and business associations and interlocking memberships. It is within this network that the idea of municipal digitalization is circulated and mediated. The structure and impact of the network is determined in chapter *5 Organizational Field of Danish Municipal Digitalization*.

2.1.1.4 Process studies in diffusion of IT-based innovation

In order to develop a theoretical framework, the extant literature was reviewed for promising candidates, suitable for examining how the diffusion process of IT-based innovation unfolds. The purpose of the review was to synthesize the existing body of knowledge by identifying central themes, models and the predominant approach in order to obtain knowledge on what is already known about the diffusion process – and which knowledge might be missing. To determine the predominant approach, the studies were classified as either factor or process studies. Van de Ven and Poole (2005) categorized studies focusing on identifying factors or independent variables causing changes in a dependent variable as variance approach studies, and even if the variance approach offers good explanations of change driven by deterministic causation it might overlook other critical aspects of change. Studies that, on the other hand, focus on how a sequence of events unfolds to produce a given outcome are categorized as process approach studies.

The method used for finding and reviewing the literature on diffusion of IT-based innovation is described in detail in section *4.2.1 Literature review method* and *4.3.1 Literature review analysis.*

Applying and combining relevant search terms and conducting bibliographic searches in the Business Source Complete and Scopus databases produced a search result of 133 papers from IS journals and top business journals relevant for IS researchers. The 133 papers were analyzed to identify the central theme, which models or theories were used, and if the process or variance approach was predominant. The analysis of the 133 papers is summarized in *Appendix A: Analysis of Diffusion and Adoption of IT-Based Innovation.* The analysis showed that of the these 133 papers, 99 papers were variance studies, 15 were process studies, 2 papers conducted both a variance and a process study, and the remaining 15 papers took another approach, which could be characterized neither as variance nor process. This clearly leads to the first finding, namely that process approach studies are under-represented in the body of knowledge on diffusion and adoption of IT-Based innovation, and this finding is supported in the process studies (Nevo, Nevo, & Pinsonneault, 2016). Rogers' preoccupation with *the degree of re-invention,* i.e. if and how much the innovation was changed during implementation when compared to the original innovation, has inspired the numerous variance studies done on re-invention. However, the study at hand is not informed by variables causing change, but rather how the change itself evolves. Therefore, only the 15 papers categorized as process studies and the 2 papers conducting both variance and process studies, in all 17 papers, will be analyzed in the following.

On a general level, the 17 studies that were categorized as conducting process studies in the analysis of the search result, seek to establish knowledge on the inner workings of the re-invention process, for example about sub-processes, types and outcome of re-invention, defined as changing the innovation or using the innovation to pursue new goals (Nevo et al., 2016). The papers were analyzed in depth determining the definition of diffusion process used, which aspect of diffusion was applied, which argument, which evidence and which claims the paper puts forward, in order to evaluate the adequacy of the papers for this study. The analysis is described below and summarized in *Appendix B: Analysis of Process Studies*.

Rogers' perspective, in which re-invention is measured as any adaptation of the original innovation, contains no hint as to whether the re-invention was done intentionally or unintentionally, e.g. as a result of high complexity in the innovation causing the user to simplify or misunderstand it, or as a result of the users' limited knowledge leading to unintended use. This somewhat contrasts other conceptualizations of re-invention, e.g. the one offered by Nevo et al., in which the users' intention to set new goals and envision alternative use of the innovation is key. By adding users' intentional agency, re-invention can be conceptually refined to include only the changes made by the users of the innovation in order to pursue new goals, thereby distinguishing *active re-innovation* from the *reactive adaptation* made by users of the innovation in order to change it to pursue existing goals or maintain past practices (Nevo et al., 2016).

Public sector IT strategies are not transformed into practice by pure coincidence or serendipity; this only happens if users envision concrete use of the idea. Hence, active re-innovation requires a vision of whether change of practice for the better is needed. Swanson and Ramiller (1997) propose an organizing vision as a sense-making instrument created and employed by the network of heterogeneous actors with various material interests in the IS innovation to reduce the uncertainty associated with an emergent IS innovation. The organizing vision helps to promulgate the IS innovation in the network of actors by facilitating three aspects of the innovation process: 1) interpretation: developing a common social narrative about the emergent IS innovation by explaining and reiterating the innovation's purpose and nature; 2) legitimization: necessitates the IS innovation in the business by linking the purpose and nature of the innovation to current issues of importance to the business; and 3) mobilization: supporting the material realization of the innovation through a dynamic function of activating, motivating, and structuring the entrepreneurial and market forces (Swanson & Ramiller, 1997). Purpose and nature of the idea of digitalization were promulgated in the public sector as the eGovernment Strategies, interpreted for use in the municipal sector in the Common Municipal Digitalization Strategy and at the individual municipal level in the municipalities' IT or digitalization strategies. Purpose and nature of the ideas of digitalization were linked to efficiency and an increased public service level in order to legitimize the idea, and the material realization of the digitalization idea was mobilized by mandating go-live dates for the various digitalization initiatives.

Public sector IT strategies do not transform into practice overnight but over time as the users manage to change the existing practices to support the new goals. Hence, active re-innovation requires time in addition to vision to be realized. Looking at the adoption process in the population of potential adopters, Fichman and Kemerer define and demonstrate the existence of assimilation gaps, which can be defined as the gap between acquired and deployed IT. An assimilation gap occurs when an organization chooses to acquire IT but defers deployment it within the following 12 months. Assimilation gaps are shown to vary with an estimated median time to deploy from 3 years for relational databases to 4.5 years for 4th Generation Languages, and non-determinable, but likely considerably longer, for Computer Aided Software Engineering tools. Fichman and Kemerer suggest diffusion scholars use deployment, either instead of or in addition to acquisition, to provide more precise diffusion studies, especially when the diffused innovation creates positive network externalities among adopters – because an acquired but non-deployed IT will not add to network externalities (Fichman & Kemerer, 1999). This also means that studying circulation of ideas cannot be done as a snapshot where the field is visited at one point in time after which the research process continues in the lab. Here it takes time to show how the idea is transformed as practices and implemented as technology in the municipalities.

Noting that some technologies, such as BPR, JIT, TQM, ERP and CRM, spread rapidly despite having characteristics pointing towards slow diffusion; e.g. complexity, incompatibility with current practices, not being easily observable and trialable, and altering existing organizational practices, Newell, Swan and Galliers (2000) study diffusion from a knowledge integration perspective in order to explain the adoption behavior diverging from

the Diffusion of Innovations Theory. Using knowledge flows throughout an industry, instead of the innovation's characteristics to explain diffusion is very helpful when wanting to understand the spread of ideas underpinning technologies. A new model is presented showing how suppliers 'package' or commodify, complex ideas, subsequently the idea can be driven either directly to the users or through interaction in professional associations at organizational field level. The model also captures the users pulling the idea, and when acquired, how the idea at the organizational level has to be 'unpacked' in a process of negotiation and sense making through implementation and use; in this process the idea is changed to create value through fit in the specific setting.

Analyzing how an innovation, in this case the Internet, diffused in one case, comprising a supplier, a customer, and a subcontractor, Baskerville and Pries-Heje (2001) studied the boundaries of three models: the interactive model, the linked-chain model and the emergent model. Each theory revealed complementary knowledge about the empirical setting, and each of the three models left important aspects of the case unexplained and poorly illuminated, but "*the incomplete nature of each model only surfaced when another model was applied*" (Baskerville & Pries-Heje, 2001, p. 201). It was found that the interactive model describes how people change in relation to Diffusion of Innovations, the linked-chain model describes how technology evolves in relation to Diffusion of Innovations, and the emergent model describes organizational evolution in relation to Diffusion of Innovations (Baskerville & Pries-Heje, 2001). The models studied explain how an innovation impacts people, technology, and organizations respectively.

Mathiassen, Andersson and Hanson (2003) argue that diffusion of technology in large software organizations is a complex change process that is difficult and challenging to manage: in many cases it leads to unsatisfactory results. In order to facilitate the change process related to technology diffusion, method and technique units in large software organizations are encouraged to develop a role as service provider, complementing their existing role as technology supplier.

Departing from the classical perception of innovation, which tends "*to take the innovation as something given and stable*" (Ramiller & Swanson, 2003, p. 14), the organizing vision is revisited with the purpose of examining career patterns in organizing visions, or in other words: how information systems executives respond to the emergence of an organizing vision as it develops within the broader corporate community over time (Ramiller & Swanson, 2003). Four dimensions of how executives respond to an organizing vision are found: 1) Interpretability – Does the innovation make sense?; 2) Plausibility – Is what the innovation promises realistic?; 3) Importance – Does the innovation provide business benefit? Is the innovation practically acceptable? Does the innovation attract market interest?; and 4) Discontinuity – To what extent does the innovation provide conceptual change and implementation challenge? The findings of the study include that innovations with perceived importance have an ascending career, and that innovations perceived to be relatively uninterpretable may nonetheless have an ascending career, whereas interpretable innovations may have a descending career. The career patterns are helpful in informing about a community's perceptions of an innovation.

Following how the organizing vision of application services provisioning (ASP) emerges from within the IS practitioner community, reputational effects are found to be important in developing IS innovations. A process of complex and sometimes contradictory interpretation in the organizational field of the targeted SMEs together with confusion about specific content and potential benefits as well as lack of large organizations acting as role models for adoption in SMEs, lead to reluctance to adopt ASP. The organizing vision for ASP was found to be underdeveloped during its ascending career, thereby leading to a descending career characterized by lack of diffusion and institutionalization, only to be re-packaged and revived in the form of Web Services (Currie, 2004).

Following the emergence of the organizing vision for professional services automation (PSA), the actors in the organizational field are found to be key to the mobilization and legitimation of an organizing vision. Also the likelihood of a successful launch of an IT innovation is increased if institutional entrepreneurs mobilize actors by developing a focused organizational community; furthermore the organizing vision can be legitimized by developing a coherent organizing vision with incorporated success stories for the innovation (Wang & Swanson, 2007). The study provides an interesting framework: actors in the organizational field/community are elaborated upon, together with activities forming a coherent organizing vision with success stories.

Elbanna (2008) argues that enterprise resource planning systems (ERP) are not fixed and unchangeable in their diffusion from producers to adopters as suggested by Rogers' diffusion model. Therefore, traditional Diffusion of Innovations models cannot adequately explain the diverse results achieved by organizations' adoption of ERP. Instead, the Actor Network Theory translation model (ANT) is applied to investigate the circulation of ERP. Elbanna's study finds that implementation projects, when handled by various parties, are presented with either positive or negative modalities causing drift of system objectives, drift in project scope, drift in system's vision, drift of project orientation, and drift of system's configuration. Drift is introduced to extend the explanation of the diverse result in ERP implementation. Actors handling implementation contribute to the realization of the projects through their modalities. Actors disputing a project during implementation will cause it to come to a standstill; new energy is needed to push it in some direction; either the same as originally planned or along a different one, representing the various sources of drift (Elbanna, 2008). The study investigates the circulation of a 'token' and the resulting drift as a translation process within the organization, but not in the interorganizational network surrounding the innovation.

Following a complex innovation in the form of a public program with the aim to diffuse IT into SMEs, the Systems of Innovation perspective is applied to contribute to a deeper understanding of the adoption outcome; this is done by including systemic issues in the adoption process. A theoretical model is proposed to explain public program intervention in SMEs comprising adoption factors (SME, decision-maker, e-business, environment), program context (goals, evaluation, resources, power, alienation), adoption process (agenda setting, matching, redefining, restructuring, clarifying, routinizing, infusion), assistance process (selection, design, delivery, connection, follow-up), and the systemic connections

between the elements (Vega, Chiasson, & Brown, 2008). The study builds on a case of voluntary adoption of an e-business service program for SMSs.

Conducting a bibliographic study applying management fashion theory, Baskerville and Myers (2009) demonstrate how IS research and practitioner literature is characterized by waves of interest in certain hot topics with upswings occurring within a three to five-year-period. After peaking, some waves collapse while others linger on for some time. The rise-and-peak pattern between IS research and practitioner literature suggests that academia participate in this trend-setting, however, somewhat belated. This finding gives rise to the recommendation that IS researchers should be involved more directly at the start of the trend-setting process, i.e. through action research, design science, or practice research.

Foster and Heeks (2013) claim that scaling is not about separating pilot from scale-up, innovation from scaling, lead firm from agents, technology from system and context, but that a more systemic perspective is needed. To remedy this, a model of scaling ICT innovation for emerging markets is proposed comprising: 1) Processes: re-invention and adaptation instead of the dualistic perspective of innovation or diffusion; 2) Roles and relations: co-creation between lead firm and local stakeholders, partnerships and networks; 3) The nature of innovation; new or modified artefacts, and/or innovation of processes, new business practices. Organizational structure; radically different strategies and business models are required to serve the bottom-of-the-pyramid (BoP) where only incremental adaptation is required to serve the middle-of-the-pyramid (MoP), learning-oriented model or growth-oriented model, transition from MoP to BoP, but shifts may be rejected by other actors in the ‘innofusion network’. Scaling as such can be seen as going through five phases: Pilot (focus on ICT support), incremental rollout (using a network of existing partners and incremental change), aggressive growth (growing ‘innofusion network’, increasing loci of innovation creating strategic drift), standardization (re-establishing control in the drifting ‘innofusion network’), functional expansion (change of strategy by adding services and integrating into wider financial networks). However, application of the model to a real-world case reduces the model to the first four steps and with two loops (Foster & Heeks, 2013). Foster and Heeks (2013) developed an interesting process model of diffusion. Diffusion (or scaling) is seen from the lead company's perspective. The adoption of the innovation is voluntary

Building on structuration theory Pozzebon, Mackrell, and Nielsen (2014) adopt and operationalize a pluralist, multiparadigmatic theoretical approach with the purpose of facilitating a plausible interpretation of complex IS social phenomena. The findings are that 1) ‘compatibility' with stakeholder objectives increase the ability to cope with an imperative; and 2) use of technology empowers women involved in day-to-day farm practices by allowing accurate financial and production records based on which strategic farm decisions can be made. The paper shows how structuration theory can be used as meta-theory to bridge the paradigmatic gap between positivist and anti-positivist, constructivist epistemology; in this case Diffusion of Innovations Theory and gender theory in a single case study involving the Australian cotton industry.

By means of a longitudinal analysis of personal health record (PHR) discourse collected in the U.S. healthcare sector throughout a decade, Davidson, Østerlund, and Flaherty (2015) uncover how the community discourse not only reflects but creates drift and shift in the organizing vision career trajectory for PHRs. The study confirms Ramiller and Swanson's concept of how an interorganizational community of stakeholders creates and employs an organizing vision in the process of diffusing an innovation (1997). The findings also show that when organizing visions span the practices of various actors, such as individual users, organizations and field-level actors, the organizing vision needs to be theorized and interpreted in various ways mapping the different needs to be compelling to each type of actor (Davidson et al., 2015). The organizing vision career is studied in the organizational field of the innovation, but the adoption of the innovation is voluntary.

Adoption and implementation of technological innovation are shown to be contingent on the exercised regulatory, normative, and cultural/cognitive pressure in different countries as well as on stakeholders' deployment of legitimation strategies (Hsu, Lin, & Wang, 2015).

Burgess and Paguio (2016) employ the innovation-decision process from Rogers' (2003) Diffusion of Innovations as a lens for the analysis of adoption of ICT in Australian home-based businesses (HBB). The findings show that ICT use differs between individual ICT applications and varies with the context of particular HBB. Adoption of ICT applications was not found to be consistent in the participating organizations, and "*not all ICT applications with high penetration were considered to be "very useful" by participants*" (Burgess & Paguio, 2016, p. 294).

Building on time-situated self-agency Nevo et al. (2016) present a model of IT reinvention in five sub-processes focusing on users' actions based on interaction between goals, technological capabilities, and envisioned scenarios. Creating a nuanced understanding of how users' reinvention process unfolds in the post-adoption stage of IT implementation, the IT reinvention model, however, does not include impact from actors other than users; and as the model is limited to the post-adoption stage of IT implementation, it excludes any changes made during the time between the initial creation of the innovation and an organization's acceptance of the innovation for implementation.

Seligman (2006) also finds that: "*Several adoption models view adoption as a linear, decision-focused progression through stages such as knowledge acquisition, problem framing, decision, implementation and confirmation e.g. Mintzberg et al. (1976), Simon (1977) and Rogers (1995)*". Such linear, decision-focused progression is not an applicable model for the study at hand, as the decision to implement new technology is taken up front by the government mandating the digitalization initiatives. The adopters are not given the option to decide whether to digitalize or not, but are merely left to decide how to implement digitalization.

The extant diffusion of innovation process literature was found to mainly study voluntary technology adoption; however, the study at hand examines circulation of a mandated digitalization strategy. Furthermore, the extant literature focuses on either organizations as

the unit of analysis, or on the organizational field level in which the idea or innovation is circulated. The findings are summarized in *Table 1 Summary of process studies in diffusion of IT-based innovation* below.

Table 1 Summary of process studies in diffusion of IT-based innovation

	Diffusion		**Unit of analysis**	
	Voluntary	*Mandatory*	*Organizational field level*	*Organizational level*
Swanson & Ramiller, 1997	x		x	
Fichman & Kemerer, 1999	x			x
Newell, Swan and Galliers, 2000	x		x	
Baskerville and Pries-Heje, 2001			x	
Mathiassen, Andersson, & Hanson, 2003		x		x
Ramiller & Swanson, 2003			x	
Currie, 2004	x		x	
Wang & Swanson, 2007	x		x	
Elbanna, 2008				x
Vega, Chiasson, & Brown, 2008	x			x
Baskerville and Myers, 2009			x	
Foster and Heeks, 2013	x			x
Pozzebon, Mackrell, and Nielsen 2014		x		x
Davidson, Østerlund, and Flaherty, 2015	x		x	
Hsu, Lin, & Wang, 2015				x
Burgess and Paguio, 2016	x			x
Nevo, Nevo, & Pinsonneault, 2016				x

Although the first perspective, Diffusion of Innovations Theory, is valuable when forming an initial understanding of the circulation of ideas in an organizational field, this approach is not sufficient to explain how the idea changes and how it evolves as it moves between the actors, and how it transforms from idea to practice.

2.2 The translation perspective

The other perspective, the translation perspective, was initiated by Latour (1986) as a critique of the diffusion model (Mica, 2013). Latour used the translation perspective to argue for how a token or an idea moves in a chain of active members shaping and changing it along the way. The translation perspective was later picked up by the Scandinavian Institutionalism stream of organization research and used to explain the circulation of organizational ideas

and practices (Czarniawska & Joerges, 1996; Czarniawska & Sevón, 1996). When used to explain the travel of ideas, translation is a relevant perspective because when an idea is spread to different organizations, it is subject to contextual translation; therefore the original idea will not remain unchanged. Diffused ideas are translated throughout their circulation, and they evolve differently in different settings (Czarniawska & Joerges, 1996; Sahlin & Wedlin, 2008). One of the notable differences in the diffusion perspective and the translation perspective is how changes are perceived: In the diffusion perspective, changes in the original idea are seen as distortions, which must be prevented, while in the translation perspective changes in the original idea are perceived as enrichments that increase the usefulness of the original idea in each new context (Czarniawska, 2009). As argued by Mica (2013) Rogers' concept of reinvention actually softens this apparent dichotomy somewhat. When the aim is to examine the various actions that transport ideas through an adoption process, the translation perspective is useful, because it allows us to see how the original idea is actively reinterpreted and contextualized to ease the implementation and use of the idea. The translation perspective adds more nuance to the understanding of the process which Rogers labelled reinvention, and it could be seen as a prerequisite for continuation of the adoption process.

As the translation literature forms the conceptual framework for the thesis, the review of the translation literature refers to concepts that are only introduced in the theoretical framing in chapter 3. Therefore, the review is incorporated in chapter 3.

3 Theoretical Framing

The purpose of this chapter is to introduce and argue for my choice of theoretical framework in order to structure and support the subsequent data collection and analysis.

This first section of this chapter will describe the traveling ideas perspective, discuss how this perspective is different from related theories and perspectives, and argue why traveling ideas are an appropriate perspective for studying the digitalization of Danish municipalities. The second section will describe the constructs and dynamics of the travel of ideas perspective. The third section describes the translation perspective. Then follows a section outlining the earlier use of the traveling ideas perspective and the translation perspective and what was the outcome. The chapter will be concluded by forming a framework for analyzing how ideas from the Danish digitalization strategies are traveling in the Danish municipal landscape and how the concepts and dynamics of traveling ideas and translation will be used as a framework in this dissertation.

3.1 The travel of ideas perspective

The travel of ideas perspective deals with how organizational ideas are modified or translated as they travel in time and space (Czarniawska & Sevón, 1996; Morris & Lancaster, 2006; Nielsen et al., 2014; Powell et al., 2005; Sahlin-Andersson & Engwall, 2002; Wæraas & Nielsen, 2016). Within organization and management research this perspective originates from Czarniawska and Sevón's collection of works on how to look at organizational change in a way that both embraces the unintended consequences that the Theory of Planned Change does not explain, while at the same time accepting that change can be more than a passive reaction to a changing environment, which opposes the perspective of the evolutionary change theory (Czarniawska & Sevón, 1996).

Other possible perspectives on analyzing the circulation of organizational ideas are the Diffusion of Innovation Theory (Rogers, 2003) as an example of the Theory of Planned Change (Lewin, 1947), and coercive and normative isomorphism from American institutionalism (DiMaggio & Powell, 1983) as an example of the Evolutionary Change Theory (March, 1994). The Diffusion of Innovation Theory prescribes diffusion at face value, because an innovation is regarded as something which, when adopted, will reward the adopter with a more effective or efficient way of working, and changes in the innovation (re-invention) are seen partly as a mistake resulting from the adopter's lack of knowledge about the innovation (Rogers, 2003). In contrast, the travel of ideas perspective adds context to the equation and sees changes in the idea, or changes in the use of the idea, as a confirmation of the idea being actively materialized as practice in a new setting, as this requires adaptation of the idea to the local context. Applying the travel of ideas perspective when the same idea is adopted throughout numerous time/spaces, we do not expect to see similar materializations. On the contrary, the necessary contextual adaptation will create heterogeneous materializations of the idea. This perspective is again in contrast to the more or less passive

adaptation to changes in the environment as explained by coercive and normative isomorphism in American institutionalism; here we see that organizations initiate change which leads to increased similarity in an organizational field. This is done by adapting themselves to mandated regulations introduced by the state, or optionally adapting themselves to increasing and similar professionalization of the organizational field (DiMaggio & Powell, 1983; Powell & DiMaggio, 1991):

> *"…organizations which lack well-defined technologies will import institutionalized rules and practices. Meyer and Rowan posit a loose coupling between legitimated external practices and internal organizational behavior. From an ecologist's point of view, loosely coupled organizations are more likely to vary internally. In contrast, we expect substantive internal changes in tandem with more ceremonial practices, thus greater homogeneity and less variation and change"* (Meyer & Rowan, 1977 as cited in DiMaggio & Powell, 1983, p. 155).

As such, the traveling ideas perspective, which embraces contextual variations thereby expecting greater heterogeneity in an organizational field, can be seen as a middle ground between the Theory of Planned Change and American institutionalism. Hence, the travel of ideas perspective builds on the notion that ideas are neither diffused at face value nor gradually evolved through more or less passive adaptation to changes in the environment; instead it builds on the notion that ideas are being actively translated by contextual adaptation when organizations and actors take up the idea.

As the idea of digitalization is not prêt à porter for organizations to take up, but requires substantial contextual tailoring and adaptation in order to work in practice, the ability to encompass active, contextual adaptation of the original idea makes the travel of ideas perspective the most promising for the analysis of how ideas from the Danish digitalization strategies are traveling in the Danish municipal landscape.

3.2 Concepts and dynamics of the travel of ideas perspective

The central concepts of the travel of ideas perspective and the dynamics between them are described in the following sections.

3.2.1 Concepts of the travel of ideas perspective

The central concepts of the travel of ideas perspective include the traveling *idea; translation:* leading to contextual adaptation of the idea; *inscribing:* which is how maintenance of adherence to the new behavior is sought; *translators*: the actors actively translating and inscribing ideas; and *translation levels*: translation *within* organizations at organizational level, or translation *between* organizations at organizational field level. These concepts are described further below.

3.2.1.1 Idea

Idea comes from Greek "to see", and Mitchell (1987) defines it as a mental image. The concept of *idea* is used here to denote a mental image created in a local time and space of how to change objects or practices for the better in another local time and space. Mental images cannot be shared or circulated as such, so in order to become known for others to see, ideas in the form of mental images need to be materialized: that is, "*turned into objects or actions*", such as documents, pictures, sounds or prototypes (Czarniawska & Joerges, 1996, p. 20). These objects can then be seen and interpreted by others, but they can only be understood subjectively in relation to what we already know:

> *"People reading the same texts see in them different ideas, depending, partly, on what they expect to see, and partly on what they are able to notice in terms of categories accessible to them. This explains why unfamiliar ideas take such a long time and so many repetitions to be observed. It also illustrates, in accordance with the postulates of hermeneutics, the initial requirement of translation: we cannot translate what is wholly unrecognizable"* (Czarniawska & Joerges, 1996, p. 27).

In this study, the idea of how to change practices for the better is the idea of digitalizing public service delivery, and this idea is materialized in the digitalization strategies as purpose and expected outcome of the digitalization process.

3.2.1.2 Translation: disembedding and re-embedding

Translation can be seen as a "*complex process of negotiation during which meanings, claims and interests change and gain ground"* (Wæraas & Nielsen, 2016, p. 15). *Translation* takes place when an idea is circulated in time or space, and is subjectively understood in relation to the contexts in which the idea lands. Translation of an idea can be seen as materializing an idea from mental image to object and eventually as new practices, that is, translation *within* an organization. However, translation of an idea can also be seen as an idea originating in one organization and being extended to and imitated by other organizations, that is, translation *between* organizations.

As argued above, an idea must be materialized, e.g. as an object, before it can be circulated from one local time and space to another. *Setting* is understood here as a concept carrying a reference to both time and space. Analog to the river in Heraclitus' saying: "*You cannot step twice into the same rivers; for fresh waters are ever flowing in upon you*", time will inevitably change a space, which is why *settings* will be used as an alternative concept to cover the somewhat less idiomatic 'local time-spaces' used by Giddens (1991), Latour (1986), and Czarniawska and Joerges (1996).

Underlying the concept of translation is the perspective that materializing an idea into an object is bound to change the idea. Please recall, that an idea is a mental image and that mental images are rooted in subjective comprehension. The subjective part of a mental image cannot be separated or identified; actually, the subjective part might not even be recognizable as distinct or important to the idea bearer. Hence, the subjective part of the mental image cannot be transferred into an object materializing the idea. Therefore materializing a mental

image as an object will strip it from its contextual ties, that is, the idea is 'disembedded' from local grounding. When the idea is extended from one setting to another, it will be interpreted by others, and understood subjectively in relation to what they already know. Adding these contextual ties to the new setting will re-embed the idea (Czarniawska, 2009; Czarniawska & Joerges, 1996; Giddens, 1991).

> *"…ideas are images which become known in the form of pictures or sounds… They can then be materialized (turned into objects or actions) in many ways: pictures can be painted or written (like in stage-setting), sounds can be recorded or written down (like in a musical score) and so on and so forth. Their materialization causes change: unknown objects appear, known objects change their appearance, practices become transformed"* (Czarniawska & Joerges, 1996, p. 20).

When an idea lands in a new setting, time- and space-bounded features from the new setting are added, thereby 're-embedding' the idea into local grounding in the new setting. By shifting perspective from the setting which the idea has left to the setting in which the idea has arrived taking into account the specific context of the new setting, re-embedding adds meaning to the circulated idea in the new setting. Re-embedding comprises:

> *"…the translation from an abstract representation of a desired practice in a source context to a concrete practice embedded in formal structures, cultures, routines and individual skills in a recipient context"* (Røvik, 2016, p. 295).

As such, re-embedding corresponds to the 'unpacking' actions done by users when implementing complex ideas that have been 'packaged' by suppliers (Newell et al., 2000); the 'drift' of system objectives, project scope, system's vision, project orientation, and system's configuration observed when ERP are diffused from producers to adopters (Elbanna, 2008); and the drift and shifts seen the organizing vision for Personal Health Record when it is theorized and interpreted in various ways mapping the different needs of each type of actor (Davidson et al., 2015). In other words, re-embedding can be seen as the actual organizational implementation of an idea.

Hence, translation is understood as a process of disembedding and re-embedding: contextual ties from the original idea are removed in order to increase the fit of the idea to other settings. Subsequently, contextual ties from the new setting are added to the idea in order to increase fit and recognizability of the idea in the new setting.

In this study translation of the idea of digitalizing public service delivery is perceived as taking place both *between* organizations, when the various actors translate the digitalization strategies at different levels: national, common municipal and individual municipal level, and also *within* organizations, when the digitalization idea is materialized as new technology and new practices in each municipality.

Translation is elaborated further in section *3.2.2 Dynamics of the travel of ideas perspective*.

3.2.1.3 Inscribing

Inscribing occurs within a setting when translation of the original idea results in new procedures or rules in a new setting, thereby ending one iteration of the circulation, possibly sparking a new idea consequently setting off another iteration of the circulation:

> *"ideas…landing in various localities becoming "re-embedded", materialized in actions, and – when judged successful – becoming institutions, only to occasion anew the generation of ideas"* (Czarniawska & Joerges, 1996, p. 23).

In this study, *inscribing* is expected to be seen as new procedures or rules in the municipalities materializing the idea of digitalization into new practices.

3.2.1.4 Translators

Ideas do not travel or come to life by their own force. Actors are needed for ideas to be materialized as new practices and to be extended from one setting to another (Nielsen et al., 2014; Sahlin & Wedlin, 2008). Translators are the actors performing the actual dynamics of materialization from idea to practice within a given setting, or circulating ideas between different settings.

> *"Command moves as a result from the actions of a chain of agents each of whom translates it in accordance with his/her own projects"* (Latour, 1986, p. 264).

According to Ramiller and Wang (2009), we still lack knowledge as to how IT ideas and associated material objects unfold and coevolve in the network of actors with diverse interests interacting around the idea. This view is supported by Mica (2013), who calls for a thorough unpacking of the actual mechanisms of the disembedding/re-embedding process. This research project will offer a contribution by examining how the idea of digitalizing the Danish municipalities traveled as the *Common Municipal Digitalization Strategy 2010-2015* was implemented.

In this study, the translators, i.e. actors who contribute to circulation and materialization of the digitalization idea, include politicians at various levels, interest organizations, municipal employees, IT vendors, and researchers.

3.2.1.5 Translation levels: organizational level and organizational field level

As described above, ideas can be translated at the organizational level, that is, *within* an organization, as the idea is materialized from a mental image to an object and eventually as a new practice. Ideas can also be translated at the organizational field level, that is, *between* interrelated, heterogeneous actors as the idea is circulated between them. As seen in *Table 1* the literature on diffusion of IT-based innovation is addressing either the organizational level or the organizational field level thereby possibly overlooking dynamics between the two.

As already defined, an organizational field is a group of organizations that on a general level constitute a recognized area of institutional life: suppliers, consumers, regulatory agencies, and organizations supplying similar services or products, and:

> *"…when using the organizational field as unit of analysis our attention is directed not simply to competing firms…, or to networks of organizations that actually interact…, but to the totality of relevant actors. In doing this, the field idea comprehends the importance of both connectedness… and structural equivalence… The structure of an organizational field cannot be determined a priori but must be defined on the basis of empirical investigation. Fields only exist to the extent that they are institutionally defined. The process of institutional definition, or "structuration," consists of four parts: an increase in the extent of interaction among organizations in the field; the emergence of sharply defined interorganizational structures of domination and patterns of coalition; an increase in the information load with which organizations in a field must contend; and the development of a mutual awareness among participants in a set of organizations that they are involved in a common enterprise"* (DiMaggio & Powell, 1983, p. 148).

Hence, using the organizational field as level of analysis requires an empirical investigation of the institutional definition or structuration of the organizational field of the Danish municipal landscape. This investigation is done in chapter *5 Organizational Field of Danish Municipal Digitalization*, and will also uncover which translators are involved in interpretation and understanding of the mandated digitalization idea.

Now, equipped with the constitutive concepts for the travel of ideas perspective: idea, translation, inscribing, translators, and different levels of translation, we can turn to the dynamics between the concepts.

3.2.2 Dynamics of the travel of ideas perspective

In the following section, the dynamics between the concepts described above will be outlined. The translation process is depicted in *Figure 5 Traveling ideas*.

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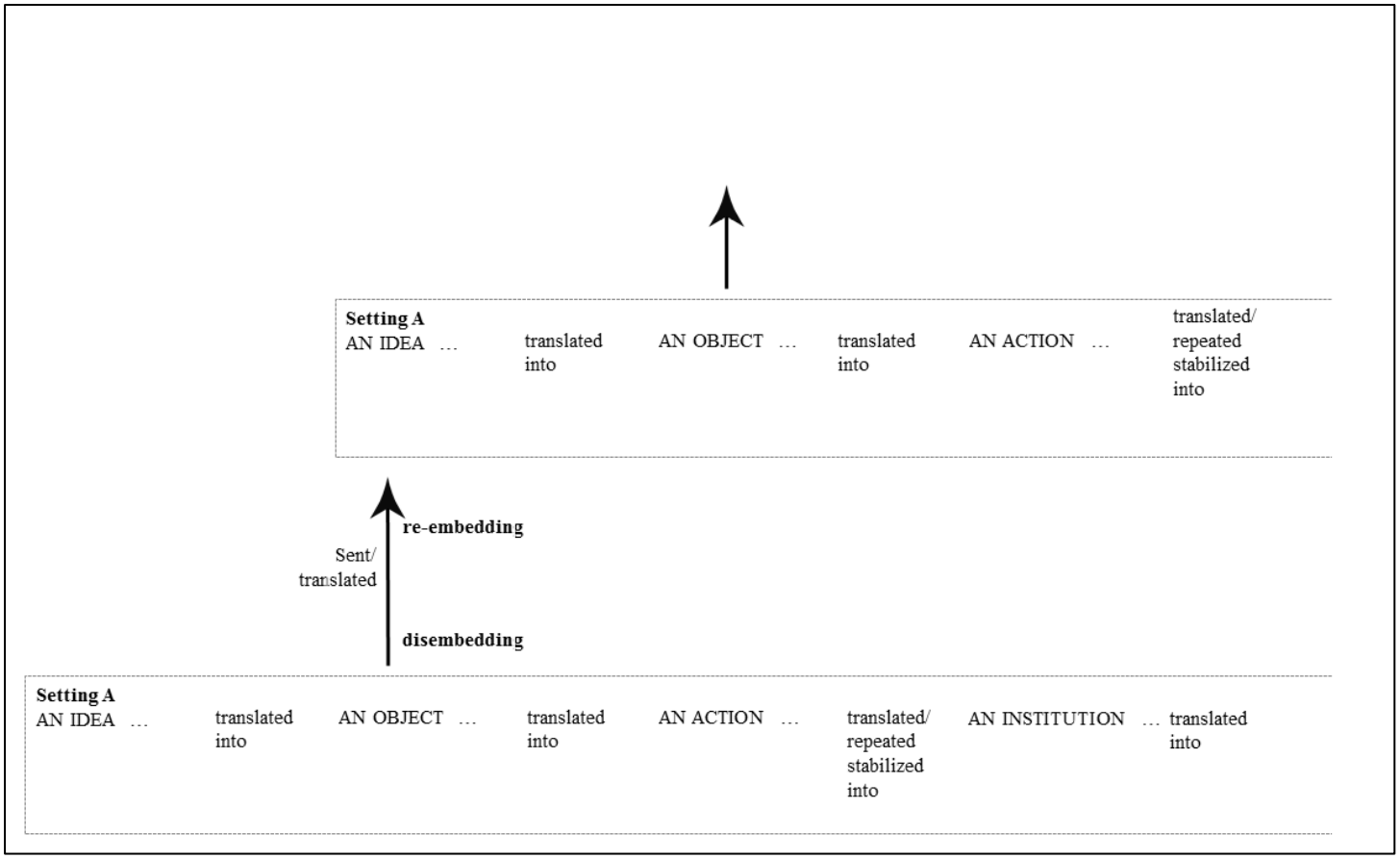
Figure 5 Traveling ideas



Adapted from Czarniawska and Joerges (1996, p. 26)

At the horizontal plane, an idea is created in setting A. The idea acquires substance as it is translated and materialized into an object, which is then turned into an action which – if successful and therefore repeated – is stabilized in an institution. The institution will then spur new ideas which again will be materialized and so on. This translation process happens at the organizational level in setting A, and is elaborated below in *3.2.2.1 Translation within a setting*.

Another type of translation process happens at the vertical plane when the objectified idea is sent or translated from setting A into an idea in setting B; this is elaborated below in section *3.2.2.2 Translation between settings*. In setting B at the horizontal plane, materialization of the idea into an object, that is, translation within a setting as described above, will enable the idea to circulate to yet another setting as shown by the arrow going from the objectified idea in setting A to an idea in setting B.

Joerges (as cited in Czarniawska & Joerges, 1996) emphasizes that the translation process is circular or iterative: ideas are turned into objects then objects spur new ideas, transferred from their time and place of origin and materialized again elsewhere as also outlined both at the vertical and horizontal planes of *Figure 5*.

As seen here, a setting can be the various actors between which an idea is circulated: setting A or setting B, but a setting can also be the states through which an idea is being materialized within an organization: mental image, object, action, or institution.

In this study, the idea of digitalization travels as it is sent or translated from object to idea *between* settings carried by the digitalization strategies, which are formulated by various actors at different levels: the eGovernment Strategy, the Common Municipal Digitalization Strategy, and the individual municipal digitalization strategies. In *Figure 5 Traveling ideas* this corresponds to the vertical arrow sending or translating an object from setting A to an idea in setting B. After landing in setting B, the digitalization strategy is actively translated into new practices in setting B, so the idea of digitalization materializes itself as new practices of how to handle planning applications *within* the municipalities. This corresponds to the horizontal arrow in *Figure 5 Traveling ideas* translating an idea into practice within setting B.

3.2.2.1 Translation within a setting

Translation within a setting occurs when an idea is materialized as an object, and again when the object is implemented in action as a new practice. Translation within a setting from a mental image to a materialized object, and eventually new practices, entails a transformation that will give rise to changes to the original idea. The original idea, the mental image, parts from its subjective, contextual ties when expressed as an object. Likewise, the way chosen to represent the original idea will add new subjective, contextual ties to the objectified idea. In other words, on the journey from idea to object, the idea becomes disembedded from the local grounding, and the idea is re-embedded when expressed as an object. Similarly, the idea becomes disembedded and re-embedded when the object is translated into an action.

In this study the idea of digitalization traveling within settings is materialized first as an object in the individual municipal digitalization strategy and then implemented through the municipalities' digitalization projects establishing the foundation for new practices by providing new technical and organizational structures to digitalize work practices. This translation process is analyzed in chapter *7 Ideas of Municipal Digitalization Traveling within a Setting*.

3.2.2.2 Translation between settings

Translation also takes place between settings when a materialized object is extended as an objectified idea from one local setting to a mental image in another local setting. On the journey from one setting to another the idea is disembedded from the local grounding in setting A, that is; contextual ties to setting A are removed to increase the fit of the idea to other settings. When the idea is circulated to other settings the idea is re-embedded; contextual ties to the receiving setting are added to increase the idea's fit and recognizability in the new setting (Czarniawska, 2009, p. 42).

In this study the idea of digitalization traveling between settings is materialized first as an object in the eGovernment Strategy 2011-2015, which lays down the frame for the future IT use in the Danish public sector. Then the idea is circulated to the general municipal level and materialized as an object in the Common Municipal Digitalization Strategy 2010-2015. Lastly the idea of municipal digitalization is circulated to the individual municipalities where it is materialized as an object in their digitalization strategies or digitalization projects, which are then materialized as actions leading to new practices. This translation process is analyzed in chapter *6 Ideas of Municipal Digitalization Traveling between Settings*.

3.2.2.3 Editing

Some translation scholars have offered the alternative concept of 'editing'. This is defined as the effort made to adapt the meaning of the circulated idea to fit into the context of the new setting by excluding any remaining time- and space-bounded features from the original setting and adding time- and space-bounded features from the new setting:

> *"Circulation of certain prototypes can be described as a continuous editing process in which, in each new setting, a history of earlier experiences is reformulated in the light of present circumstances and visions of the future. Meanings ascribed to and derived from prototypes are edited contingent upon changing situational and institutional circumstances and constraints. After all, it is easier to change exemplary stories than the circumstances under which a prototype is to be realized. By using the term editing we are emphasizing that the models are told and retold in various situations and told differently in each situation*" (Sahlin-Andersson, 1996).

Czarniawska describes editing as "*a political action; happens within the same language, but addresses different interests and viewpoints*" (2009, p. 42). The process of editing is rarely observable, but the result can be observed in the edited object. Sahlin-Andersson has illustrated this using the example of editing rules for publications where the editing itself is implicit in how the idea is materialized, that is, in the writing process, but the result of the

editing process is observable in the wording of the article: "*The editing rules for a publication evolve in specific contexts. They are often implicit and not subject to choices or discussions. And they can often be deduced only indirectly – from the way the published article is written*" (Sahlin-Andersson, 1996). Writing the article materializes the idea into an object, but even when materialized as an article the idea will be subjectively interpreted and understood as it will be read in different ways by different people or in different ways by the same person at different points in time (Czarniawska & Joerges, 1996). As mentioned earlier, texts are read in various ways partly because people see what they expect to see, and partly because people are only able to detect concepts that they already know at that point of time.

Seemingly, when analyzing circulation of ideas between settings or materializing ideas within settings, there is no difference between the concepts of editing and translation. This study will comply with the interpretation that translation: "*implies dis-embedding templates from their local context in order to travel to other institutional settings, where re-embedding efforts are necessary to translate the global idea into practices*" (Kirkpatrick, Bullinger, Lega, & Dent, 2013, p. 49). In the following the term translation will be preferred over editing.

3.2.3 Summing up concepts and dynamics of the travel of ideas perspective

The traveling ideas model in *Figure 5* is a somewhat abstract depiction purely outlining how translation changes the state of an idea, either within a setting, e.g., from the state of idea to object and so on, or between settings from the state of object in setting A to idea in setting B. The traveling ideas model entirely ignores how states are changed, and which translators perform the actual dynamics of translation within a given setting or between different settings. In addition, the potential outcome of the translations within various settings is disregarded: Is the idea translated into an exact copy of the original idea, or has the translation process made the idea subject to change?

In this study the idea traveling *between* settings is translated as it is materialized into the digitalization strategies at different levels: the eGovernment Strategy, the Common Municipal Digitalization Strategy, and the individual municipal digitalization strategies, according to which heterogeneous actors actively translate the strategies into new practices *within* their respective settings.

3.3 Previous use of the traveling ideas perspective

Originally the traveling of ideas perspective was developed to create an understanding of how management ideas and practices are circulated (Czarniawska & Joerges, 1996). The travel of ideas perspective has been used to analyze ideas traveling both at the organizational level and the organizational field level as well as in the private and public sectors.

At the organizational level, the travel of ideas perspective is used to describe how a transformation happened during some organizations' optional imitation of other successful organizations (Sevón, 1996). In the study, the travel of ideas perspective was used to analyze

the objectification of an idea within an organization. Sevón (1996) theorized on how an idea about a desired change in organizational identity can be described as a process of imitation which begins with identification and results in transformation. The first step of the imitation process is self-identification, which is done by matching oneself against reference groups with similar traits (What am I like?), then a desired identity or outcome is used to define a potential for action or movement in order to obtain a closer likeliness to the identity of the desired reference group (What would I like to be?). To enhance the interpretation of the desired identity, it may be described using an analogy or a model from the physical world (What kind of situation is this?). Underlying the imitation process is an assumption of causal reasoning mapping a set of transition rules from a known domain into a new domain (What is appropriate for me in this situation?).

Sahlin-Andersson (1996) used the travel of ideas perspective to analyze circulation of the customer concept into public sector organizations as a translation process. In this study, the travel of ideas perspective was used to analyze the translation of an idea from one setting to other heterogeneous settings in the public sector organizational field. The study shows how prototypes seen as successful were formulated and reformulated by a number of involved editors – or translators – as the customer concept circulated in the organizational field.

Morris and Lancaster (2006) examined institutionalization of a fashion with the case study on how the idea of LEAN Management was translated while it traveled from the broad policy level through the organizational field of the construction industry into workplace practices at the organizational level. The study confirmed that translation took place when the idea traveled from the manufacturing industry, where LEAN Management has its origin to the construction industry, because the two organizational fields differ. Furthermore, translation took place when the idea was materialized at organizational level, partly depending on the resources available for the actor initiating the change and partly because interests were manipulated by inventing new goals.

Introducing the travel of ideas perspective to the field of Information Systems, Nielsen et al. (2014) studied IT institutionalization in the organizational field of the Danish homecare sector. The theoretical concepts used in the study are 1) theorization – defined as how actors in an organizational field form understandings about the opportunities afforded by new technology and legitimize it, and 2) translation – defined as how actors in an organizational field engage and transform ideas about IT as they seek to implement and use it. The travel of ideas perspective was used to analyze how ideas about mobile IT use emerged and became translated into various local arrangements, even though the IT technology appeared to be similar on the face of it. The study showed how ideas of mobile IT were institutionalized through recursive intertwining of theorization and translation practices, indicating that theorizing is an ongoing dynamic process both influencing and being influenced by the translation practices performed by heterogeneous actors in the organizational field.

Summarizing the findings of the above studies, contextual translation resulting in heterogeneous outcomes is found to be predominant when studying the phenomenon of circulating ideas. As a result, the translation perspective is chosen over American

institutionalism for this study on how mandated ideas from the Danish digitalization strategies are translated while traveling in the Danish municipal landscape.

Table 2 Summary of studies in the travel of ideas perspective

	Diffusion		**Unit of analysis**	
	Voluntary	*Mandatory*	*Organizational field level*	*Organizational level*
Sevón, 1996	x			x
Sahlin-Andersson, 1996	x			x
Morris and Lancaster, 2006	x		x	x
Charniawska, 2009	x		x	x
Kirkpatrick, Bullinger, Lega, & Dent 2013		x	x	
Nielsen, Mathiassen, & Newell, 2014	x		x	x

As seen in *Table 2* summarizing the studies, the reviewed literature focuses primarily on ideas that are circulated voluntarily. A key contribution of this study is to create a better understanding of how translation processes shape mandated ideas that are force-circulated in an organizational field.

3.4 The translation perspective

As seen above, the travel of ideas perspective is closely related to the translation perspective, which is presented as the Scandinavian institutionalists' alternative to the two dichotomous perspectives on organizational change: on the one hand, planned change, which is associated with strategic choice, decision-making and organization development, and, on the other, evolutionary change, which is associated with contingency theory, population ecology and institutional theory (Czarniawska & Joerges, 1996; Røvik, 2016). As presented in section *3.2.1.2 Translation: disembedding and re-embedding*, Wæraas and Nielsen (2016, p. 15) conceptualized translation as "*a complex process of negotiation during which meanings, claims, and interests change and gain ground*". In this study, *translation* will be perceived as the process in which an idea is interpreted and understood when it is materialized in action or extended between settings and the term *outcome* will be used to denote the result of the translation process.

In organizational studies, use of the translation perspective has increased dramatically since 1990 but has only recently started to infuse the field of Information Systems (Wæraas & Nielsen, 2016). As noted by Røvik (2016) the travel of ideas perspective introducing translation to organization theory is inspired by Callon's work on translation (1986), Latour's work on translation (1986), and Gidden's work on disembedding (1991), among others. According to Nielsen, Mathiassen and Newell (2014) translation was introduced to social science by Serres in 1982 where translation was defined as "*the process of making*

connections, of forging a passage between two domains, or simply as establishing communication" (Serres, 1982 as cited in Brown, 2002, p. 5). Based on J.M.W. Turner's paintings and the theoretical thermodynamic cycle as put forward by Nicolas Léonard Sadi Carnot (Brown, 2002; Serres, Harari, & Bell, 1982), Serres uses translation to discuss – among other things – how culture and science are related and enrich each other. He argues that the outcome of translation will inevitably be a modification or transformation of the traveling object, or in Serres' words: the signal:

> *"In order for there to be any kind of relationship between sender and receiver, some form of noise or interference, that is, an injection of difference, is required. This comes about by the very opening up of a passage, which inevitably exposes the signal to noise, and thus also to potential transformation"* (Serres, 1982 as cited in Brown, 2002, p. 8).

With his example on how power is exerted, Latour extends the view on translation to comprise *one sender* of an order and *many receivers*, or to *a chain of actors* continuously shaping and changing the traveling object to fit their own goals as it is moved. Latour views translation as being in the hands of people, each of whom "*letting the token drop, or modifying it, or deflecting it, or betraying it, or adding to it, or appropriating it*". As a result, the faithful transmission of an idea by a large number of people becomes the rare case which requires explanation (Latour, 1986, p. 267). Latour (as cited in Czarniawska & Joerges, 1996) describes the consequential modification or transformation of the traveling object, the order or token, as "*displacement, drift, invention, mediation, creation of a new link that did not exist before and modifies in part the two agents*". This is equivalent to translation consisting of disembedding and re-embedding as used in this thesis.

Giddens (1991) addresses, what he calls, time-space distanciation by introducing the concept of disembedding; he describes how social systems when separated from one time-space become displaced or lifted out of their local grounding: an idea becomes disembedded from local grounding in order to be distributed between different local time-spaces. Likewise materializing an idea into an object will disembed and re-embed the idea as previously described. Giddens has offered two disembedding mechanisms which enable the circulation of an idea by removing social relations from their context: the first is symbolic tokens which are media of interchange which can be passed around regardless of the specific characteristics of the individuals or groups handling them; the second is the establishment of expert systems, which are systems of technical accomplishment or professional expertise that organize large areas of the material and social environments in which we live (Giddens, 1991).

In this study the digitalization strategies at different levels: national, common municipal, and individual municipal levels can be seen as Giddens' symbolic tokens, which are circulated between individuals and groups to present the idea without regard to the specific characteristics of the organizations or organizational groups that must adhere to the digitalization idea.

As seen above, translations occur everywhere: from Serres' analysis of the culture-science translation of the steam engine, over Latour's chain of actors continuously shaping and changing a claim or an order as it is moved to fit their own goals, to an organization's objectification of an idea and the circulation of management ideas in organizational fields.

What we see in each of these cases is the translation of an idea from a mental picture to an object, which is then translated into practices and institutions within a setting as well as translation of an object from one setting to an idea in another setting which again is objectified, performed, implemented or executed and – if successful – institutionalized. We also see that the idea changes while it is translated from mental picture to practice in one setting, and from an object in one setting to an idea in another setting in order to acquire an optimal fit in the new setting.

Recently elements of an instrumental translation theory "*that is, a theory of how translations can be performed to achieve desired ends*" (Røvik, 2016, p. 291) were outlined from the context of knowledge transfer:

> *"The instrumental theory is founded on two main arguments. The first is that knowledge transfers between organizations are rule-based translation processes. The second is that the way in which translators use various translation rules and perform translations may be decisive for outcomes of knowledge-transfer processes"* (Røvik, 2016, p. 290).

Røvik's instrumental translation theory takes the perspective of translators being the most important influences not only in causing translations, but also key to the outcome of translations. At the hearth of translation lies the assumption that the outcome of translation is partly determined by the context into which the translated object is circulated. This can be seen as a contradiction to suggesting that translation rules can be decisive for outcomes of the translation process. However,

> *"…'instrumental' refers to the development and use of knowledge about how to conduct translations of practices and ideas to achieve various organizational ends in knowledge transfers. 'Instrumental' must not be confused with 'normative', i.e. judgements about what should be the desired ends in knowledge transfers (the 'what' questions). From an instrumental perspective, the appropriateness of a translation depends on whether the desired ends are achieved (the 'how' questions). Thus, 'instrumental' involves translators using their translation competence in accordance with a means–end logic"* (Røvik, 2016, p. 299).

The knowledge-based perspective on translation shares many similarities with Scandinavian institutionalism. Knowledge transfer is the process of transferring a knowledge construct from a source practice to a recipient. This is analogous to this study on the process of transferring the idea of digitalization between the source of the central government and the recipient municipalities. The knowledge practice is the conceptual counterpart to the circulating object in Scandinavian institutionalism (Wæraas & Nielsen, 2016, p. 12), and like

knowledge transfer, mandated digitalization is driven by a means-end logic to create certain desired practices with the purpose of achieving a specific result. It is therefore argued that even though the instrumental translation theory was developed for knowledge transfer, it is considered to be useful as a lens for studying the circulation of the idea of municipal digitalization.

In the following sections, the translation theory is briefly described and evaluated for use in the context of traveling ideas.

3.4.1 Concepts of the translation theory

Røvik uses the term *decontextualization* to denote *disembedding* of knowledge constructs from local context in order to travel to other recipients and the term *contextualization* to denote the *re-embedding* actions necessary to translate the knowledge construct into a new practice. However, the terms disembedding and re-embedding will be used in this thesis.

Translatability of the desired practice is concerning the decontextualization (or disembedding) phase, "*that is, the extent to which a particular practice can be translated to an abstract representation without excluding the elements required for how it functions in the source context*" (Røvik, 2016, p. 294).

Transformability of the transferred knowledge (or idea) determining translators' degree of freedom to interpret, change and make their own version of the idea concerns the contextualization (or re-embedding) phase, "*which is translating an abstract representation into concrete materialized practices in a recipient context*" (Røvik, 2016, p. 294).

The instrumental translation theory covers translation between source and recipient, which corresponds to the circulation of an idea between settings. However, the translation theory does not provide constructs applicable for studying translation within a setting, which is why the travel of ideas perspective is used to complete the picture of how an idea is circulated between settings at the organizational field level, and materialized as practice within an organization at the organizational level.

3.4.2 Dynamics of the translation theory

Røvik's theoretical framework outlines a typology of translation modes (the reproducing, the modifying and the radical modes), four translation rules (copying, addition, omission and alteration), and identifies three conditional variables (translatability of the source practice, the transformability of the transferred knowledge, and the similarity between source and recipient units) – and discusses the appropriateness of each translation rule in relation to these variables (Røvik, 2016). The dynamics are described in the following and summarized in *Table 3 Variables and dynamics of translation theory*.

The dynamics between the constructs are outlined below:

Translatability of the source practice is determined by 1) Explicitness of the source practice, so that a high degree of explicitness results in a high degree of translatability, whereas a high degree of tacitness results in a low degree of translatability. 2) Complexity, where high complexity in the source practice results in a low translatability. Complexity is low if the source practice is a clear-cut application, whereas a high degree of context-specific human skills in the source practice result in a high degree of complexity. 3) Embeddedness where a high degree of embeddedness results in a low degree of translatability. Embeddedness describes the extent to which the knowledge and capabilities that constitute a desired practice are anchored in its intra- and/or interorganizational contexts. Embeddedness is low if the desired practice is embedded in one organization or department; however, if the desired practice is dispersed in networks crisscrossing organizational and national borders, embeddedness is high. If a source practice has high translatability, it is possible for the recipient to replicate or copy the source practice directly, whereas low translatability requires addition, omission or alteration, because the source practice cannot be transferred directly to the recipient.

Transformability of the knowledge construct is determined by translators' degree of freedom to interpret, change and make their own version of the construct. This is a function of 1) The technological component, where a high degree of dependency of a technological component results in a low degree of transformability, because the technological component limits the possibility to transform the knowledge construct. 2) Regulation of the transfer process where a high degree of regulation, e.g. if the knowledge construct is legislation or a management order, results in low transformability, because the freedom to transform the knowledge construct is low. If a knowledge construct has a low degree of transformability, there is only little or no opportunity to change it, and the knowledge construct must be replicated or copied directly. A medium degree of transformability in the knowledge construct will open an opportunity for modification (addition or omission), whereas a high degree of transformability can make way for a radical alteration in translation of the knowledge construct from source practice to recipient.

The relation between recipient and source can be characterized as having a certain degree of similarity, where a high similarity raises the probability for a direct copy of the knowledge construct will work in the recipient, and a medium similarity requires addition or omission, e.g. to accommodate contextual conditions, and a low degree of similarity requires alteration. However, as the idea of digitalization is not traveling between homogeneous sources and recipients all of which are materializing the idea into practice, the context in this study is somewhat different. In this study the source in setting A is the Danish central government, in which the idea is not materialized into practice, but circulated between other heterogeneous actors (setting B), such as KL, KOMBIT, and IT vendors, actively modifying the idea, but not materializing it into practice, before it reaches setting C where the original idea is finally materialized into practice in the recipient sources of the municipalities. Therefore, the degree of similarity between source and recipient units is disregarded in this study.

The variables and dynamics of the translation theory are summarized in *Table 3* below.

Table 3 Variables and dynamics of translation theory

Conditional variables	Determined by/dynamics
Translatability of the source practice: • High translatability enables the recipient to replicate or copy the source practice directly • Low translatability necessitates addition, omission or alteration, because the source practice cannot be transferred directly to the recipient	Explicitness of the source practice: • High degree of explicitness => high degree of translatability
	Complexity of the source practice: Low if the source practice is a clear-cut application. High if there is a high degree of context-specific human skills in the source practice • High complexity in the source practice => low translatability
	Embeddedness in organizational context: Low if the desired practice is embedded in one organization or department High if the desired practice is dispersed in networks that crisscross organizational and national borders • High degree of embeddedness => low degree of translatability
Transformability of the transferred knowledge: • A low degree of transformability causes only little or no opportunity to change it, and the knowledge construct must be replicated or copied directly. • A medium degree of transformability in the knowledge construct will open an opportunity for modification (addition or omission) • A high degree of transformability can make way for a radical alteration in translation of the knowledge construct from source practice to recipient.	Dependency of a technological component • High degree of dependency of a technological component => low degree of transformability, because the technological component limits the possibility to transform the knowledge construct
	Regulation of the transfer process • High degree of regulation (legislation or an order from the headquarters) => low transformability, because the freedom to transform the knowledge construct is low.
The degree of similarity between source and recipient units • A high similarity raises the probability for a direct copy of the knowledge construct will work in the recipient • A medium similarity necessitates addition or omission, e.g. to accommodate contextual conditions • A low degree of similarity requires alteration.	Disregarded in this study as the idea of digitalization is not traveling between settings all of which are materializing the idea into practice

Adapted from Røvik (2016).

3.5 Translation of traveling ideas

A number of advantageous differences seem to appear when comparing the translation perspective with the diffusion model introduced by Rogers: When using translation as a metaphor for organizational change, attention is called to the more desirable richness of interpretations associated with translation, while using diffusion as a metaphor limits the understanding of organizational change because the concept of diffusion "*suggest a physical process subject to the laws of physics, and … provokes a further train of physical metaphors, like 'saturation' or 'resistance*'" (Czarniawska & Sevón, 1996, p. 6). In order to create planned change, the diffusion model entails that the originating source unleashes an initial force from which the diffusing object accumulates inertia to be dispersed among the

recipients, who are believed to reduce inertia by resisting change. The diffusion model is then able to explain the outcome of the planned change either by the strength of the initial force or the strength of the resisting recipients. Therefore, if a planned change is perceived to have an unsuccessful outcome, the diffusion model offers two possible explanations: either the initial force was not strong enough to create successful diffusion, or the recipients' resistance against the diffused object was too strong for the object to diffuse. The travel of ideas perspective, on the other hand, sees power as something that is created in the circulation of an object when the recipients are actively translating and interpreting the idea to enrich its use in each specific context, thereby possibly spurring new ideas. In the diffusion model, power is seen as something which is needed to spread an idea to more or less passive recipients, but in the travel of ideas perspective, power is seen as something which results from circulating an idea to active translators interpreting and adapting the idea (Latour, 1986; Røvik, 2016).

As seen here, also the notion of actors is perceived differently: in the diffusion model, actors are seen as more or less passive recipients of an object, which they are anticipated to resist, where actors in the travel of ideas perspective are seen as active translators, interpreting and adapting the object in order to find the best contextual fit. The notion of passive or resisting recipients somewhat contrasts the current picture of organizations, which are constantly, and at an increasing speed, taking up new ideas and actively translating them in order to prosper or survive.

As noted by Røvik:

> *"the virtually unlimited and unpredictable directions and outcomes of the interpretations that local actors make when responding to circulating ideas, and the underlying 'everywhere different' argument, make it unnecessary, perhaps even impossible for researchers to compare large samples of translation processes to reveal their rules, regularities and outcomes"* (Røvik, 2016, p. 293).

As a consequence, we lack studies that theorize and develop empirically-based predictions on how translation processes most likely unfold and about how various conditions impact their probable outcomes.

This study will seek to answer this call by focusing on how mandated ideas from the Danish digitalization strategies are translated while traveling in the Danish municipal landscape.

3.6 A model for analyzing translation of a traveling mandated idea

As already outlined, translation has been used as a prolific approach to studying how private and public sector organizations voluntarily implement circulating ideas (Czarniawska & Joerges, 1996, p. 17; Morris & Lancaster, 2006; Nielsen et al., 2014; Sahlin-Andersson, 1996; Sevón, 1996).

This dissertation will examine how the mandated idea of digitalizing Danish municipalities traveled in time and space as the *Common Municipal Digitalization Strategy 2010-2015* was

implemented. I will combine Czarniawska and Joerges's theory of how ideas travel (1996) with Røvik's translation rules (2016) to form a framework for investigating the translation of the idea of digitalization in Danish municipalities. Below in *Table 4 Theoretical framework and research questions* I have stated the central concepts of translation and how I will make use of them in my investigation.

Combining the perspectives of travel of ideas and translation enables the study of how an idea is interpreted and understood in the process where the idea is moving between heterogeneous actors in an organizational field as well as in the process where the idea is materialized in practice within individual organizations.

First, I will identify the actors involved in circulating the idea of digitalization by studying which actors, organization members, policy makers, and professional bodies, are involved in actively modifying the idea of digitalization, thereby outlining the different organizational settings from *Figure 5*. The outcome will form the foundation for analyzing the structuration of the organizational field of municipal digitalization.

Secondly, in order to develop a better understanding of how translation actions shape the initial idea of digitalization to match the context in which it has to be implemented, I will investigate how the idea is circulated between organizations, that is, which translation rules (copying, addition, omission, and alteration) are applied when the mandated digitalization idea travels between actors from setting A to setting B in the organizational field. This will be done by following how the eGovernment strategy at the national level is disembedded and re-embedded as the Common Municipal Digitalization Strategy at the common municipal level, which in turn is disembedded and re-embedded in each municipality's digitalization strategy.

Lastly, by analyzing which changes are introduced to translate the idea from object to practice, I will investigate how the idea is translated within organizations. This will be done by analyzing which actions are performed to contextually re-embed the idea of digitalization in an organization. How will the idea materialize as new or different procedures or practices in the individual municipalities? Is the idea inscribed in a way leading to convergence or divergence between the homogeneous organizations? Which unplanned changes are caused in different local settings? How do the unplanned changes affect the outcome of the planned change?

Below in *Table 4 Theoretical framework and research questions,* the central concepts of translation and how I will make use of them in my investigation are summarized.

Table 4 Theoretical framework and research questions

Theoretical concepts	Use of concept in this dissertation	Research issues	Sources
Idea	The idea to digitalize the municipal service delivery. This idea is materialized in the digitalization strategies as purpose and expected outcome of the digitalization process	How are mandated ideas interpreted and understood as they are circulated between organizations and materialized as new practices within organizations?	(Mitchell, 1987) (Czarniawska & Joerges, 1996)
Translators	The actors involved in the process of circulating the idea at organizational field level	Identifying the organizational field of the idea of digitalization in the Danish municipalities	(DiMaggio & Powell, 1983)
Circulation of ideas Translation at organizational field level/between setting	Investigating what translation rules are applied when the mandated digitalization idea is circulated between actors in the organizational field	**Organizational field level** Develop a better understanding of how translation actions are shaping the initial idea of digitalization to circulate it in an organizational field How is the idea of mandated digitalization circulated between actors in the municipal landscape? How does the translation process unfold in the network of actors surrounding the mandated municipal digitalization ideas?	(Wæraas & Nielsen, 2016) (Czarniawska & Joerges, 1996) (Røvik, 2016) (Czarniawska, 2009)
Materialization of ideas Translation at organizational level/within a setting	Investigating what translation rules are applied when the mandated digitalization idea is materialized within heterogeneous organizations	**Organizational level** Develop a better understanding of how translation actions are shaping the initial idea of digitalization to match the context in which it has to be implemented How is the initial mandated idea translated and understood as it is materialized as practice within the individual municipalities? How are actions performed in the adopting organization shaping the initial idea to match the context in which it will have to be implemented?	(Wæraas & Nielsen, 2016) (Czarniawska & Joerges, 1996) (Røvik, 2016) (Czarniawska, 2009)
Inscribing	When circulation of the original idea results in new procedures or rules in a new setting, thereby ending one iteration of the circulation, possibly sparking a new idea and thereby starting another iteration of the circulation	Proof that the translation was completed with success	(Czarniawska & Joerges, 1996) (Giddens, 1991)

Summing up, translation happens as an idea is materialized as an object and again as the objectified idea is implemented as action in new practices *within a setting*. Translation also

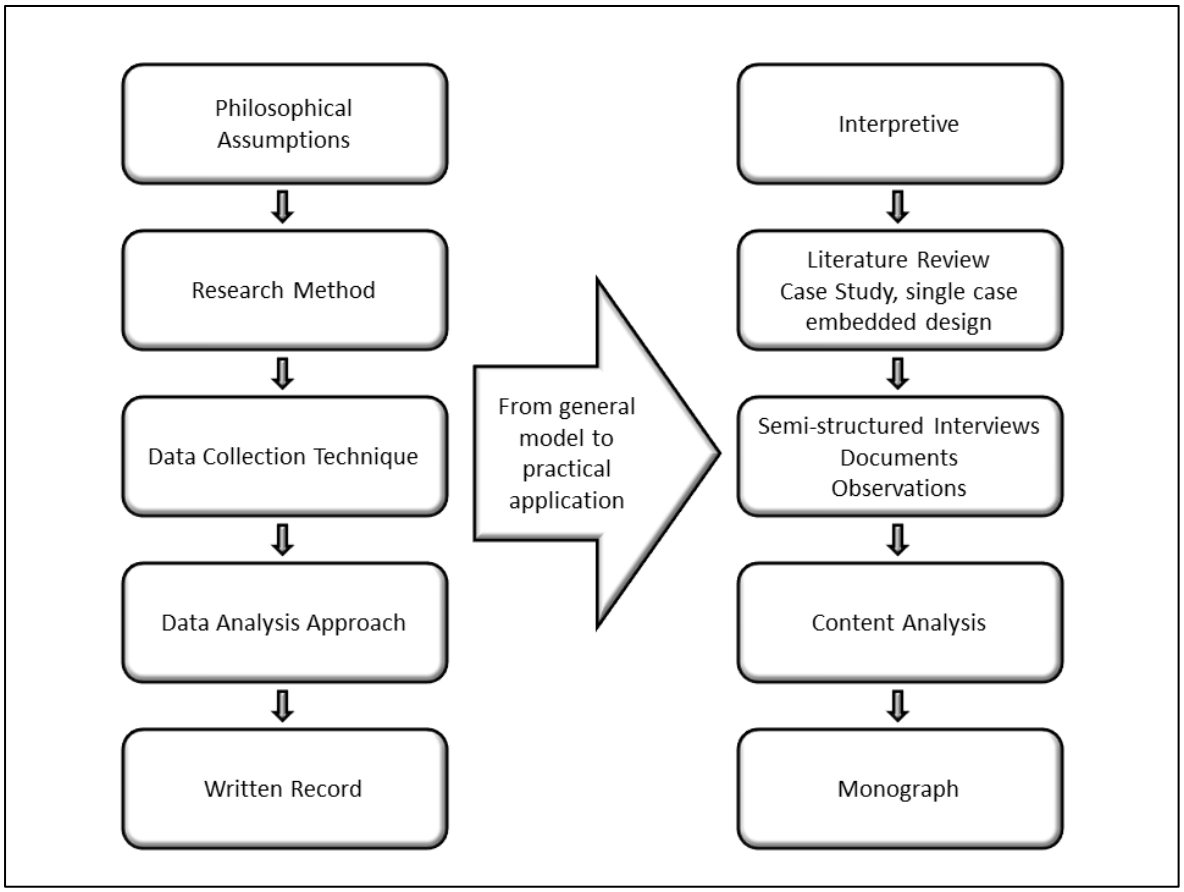
happens as the idea is circulated *between settings*. Regardless of whether translation happens within a setting or between settings, translation entails a transformation that will involve changes to the original idea. Translation implies that the idea is disembedded: that is, local time and space-bounded features are removed from the idea in order to increase the fit of the idea to other settings, and when the idea is materialized as an object or lands in a new setting, it is re-embedded: that is, local time and space-bounded features are added to increase the fit of the idea to the current time and space.

Drawing on the above conceptualization of translation, this study will examine how the mandated idea to digitalize Danish municipalities traveled in time and space as the *Common Municipal Digitalization Strategy 2010-2015* was implemented. The analysis is structured in three parts: first, the organizational field of municipal digitalization is analyzed, second, the idea is analyzed while it is circulated between actors, and third, the idea is analyzed while it is materialized as action.

4 Research Design

The purpose of this chapter is to argue for the choice of an appropriate plan for researching the PhD project at hand. The chapter presents the research design and the connection between the ontological, epistemological, theoretical and methodological perspectives which will be applied to make sense of the collected data, and thus shed light on the central research question guiding the dissertation: "*How do ideas from the Danish Common Municipal Digitalization Strategy 2010-2015 travel through actions and actors in the Danish municipal landscape?*" The chapter is structured according to Myers' (2013) model for qualitative research design as shown in *Figure 6 Research design*.

Figure 6 Research design



Adapted from Myers (2013).

The chapter is structured as follows. First the basic philosophical assumptions guiding the research and the choice of research method are discussed. Then the appropriate research method is discussed, followed by an outline of the applied data collection techniques and a presentation of the analysis strategy. Finally, the research method is evaluated for use in this thesis.

4.1 Philosophical assumptions

The aim of this research is to understand *how the ideas from the Danish Common Municipal Digitalization Strategy 2010-2015 travel through actions and actors in the Danish municipal landscape*. *Idea* as conceptualized in the research question cannot be seen as consisting of objective entities with a reality external to social actors. By nature, ideas are tacit: invisible and not easily expressible, highly personal and hard to formalize, making them difficult to communicate or share with others. Tacit knowledge can be segmented into the technical dimension: skills or crafts captured in the term "know-how", and the cognitive dimension: mental models, beliefs, and perceptions reflecting "*our image of reality (what is) and our vision for the future (what ought to be)*" (Nonaka & Takeuchi, 1995, p. 8). It is argued that the ideas from the digitalization strategies are founded in the cognitive dimension of tacit knowledge, because they form mental models, beliefs and perceptions about how digitalization will impact public service delivery. As argued here, an idea is born in the mind of somebody and can be shared with others if explicitly expressed in words or drawings. The process of expressing and sharing an idea is very much subjective to the background and the experience of the individuals involved (Czarniawska & Joerges, 1996; Nonaka & Takeuchi, 1995; Sahlin & Wedlin, 2008), and as such an idea is a social construction built from social actors' perceptions. This basic ontological standpoint is in line with social constructionism (Bryman & Bell, 2011; Orlikowski & Baroudi, 1991): multiple social realities are formed as beliefs and perceptions about how digitalization will impact public service delivery.

Danish municipalities are contextually different with respect to, for instance, hard facts such as number of citizens, financial standing and geography, but also with respect to soft measures such as how the citizens' needs and expectations of public service delivery are distributed between the various municipal subject areas. These contextual differences call for a more nuanced understanding of how municipal digitalization is seen in the perspectives fostered in each unique surrounding. A more nuanced understanding is sought by examining the phenomena of municipal digitalization through the meanings that the actors from each unique surrounding assign to them.

> *"IS research can be classified as interpretive if it is assumed that our knowledge of reality is gained only through social constructions such as language, consciousness, shared meanings, documents, tools and other artefacts"* (Klein & Myers, 1999, p. 69)

Taking social constructionism as my ontological point of departure, this dissertation has interpretation as its paradigmatic stance.

> *"Interpretive studies assume that people create and associate their own subjective and intersubjective meanings as they interact with the world around them. Interpretive researchers thus attempt to understand phenomena through accessing the meanings that participants assign to them."* (Orlikowski & Baroudi, 1991, p. 5)

Having this paradigmatic stance, I acknowledge that employees in one municipality construct their own reality and knowledge within their specific social setting and that this will be

different from the reality constructed by employees in other municipalities with other social settings (Orlikowski & Baroudi, 1991). When accessing a socially constructed reality, predefined variables are not suitable for capturing and understanding the phenomena being studied, as predefined variables may hold different meanings for the informants and for the researcher. Therefore the unique beliefs and perceptions of how digitalization will impact public service delivery can only be captured by letting the actors from each unique surrounding express their subjective meanings, e.g. through answering open-ended questions about their beliefs and perceptions. Through analysis and interpretation of these meanings, constructs and theory transcending the data will be formed.

> *"Following on the ontological belief that reality is socially constructed, the interpretive researcher avoids imposing externally defined categories on a phenomenon. Instead of the researcher coming to the field with a well-defined set of constructs and instruments with which to measure the social reality, the interpretive researcher attempts to derive his or her constructs from the field by in-depth examination of and exposure to the phenomenon of interest. The categories and themes that emerge out of this approach are intended to closely couple those relevant to the study's participants"* (Orlikowski & Baroudi, 1991, p. 14).

Commitment to the interpretivist paradigm allows for the choice of research method in the following section.

4.2 Research method

The choice of research method depends on the question at hand, and the above commitment to social constructionism with regard to ontology affects the epistemological stance towards the anti-positivistic approach (Burrell & Morgan, 1979). In this study, empirical data form the basis of a new theory based on patterns in the data. This implies that my research approach will be an inductive process leading from data to theory guiding my choice of research strategy to methods such as case studies, documentary research, grounded theory or action research, among other things. Through *"first-hand knowledge of the subject of research"* focus will be on creating *"an understanding of how human beings create, interpret, and modify the world in which they exist"* taking into account *"context and uniqueness"* (Burrell & Morgan, 1979).

The research method will be described in the following sections outlining first the method used to review the extant literature, followed by the case study method.

4.2.1 Literature review method

The following sections outline the methods used to review the extant literature within the areas informing research on how a mandated public digitalization strategy is transformed

from idea to technology as it is circulated among actors from the municipal landscape and implemented in the municipalities.

4.2.1.1 Review of diffusion of IT-based innovation

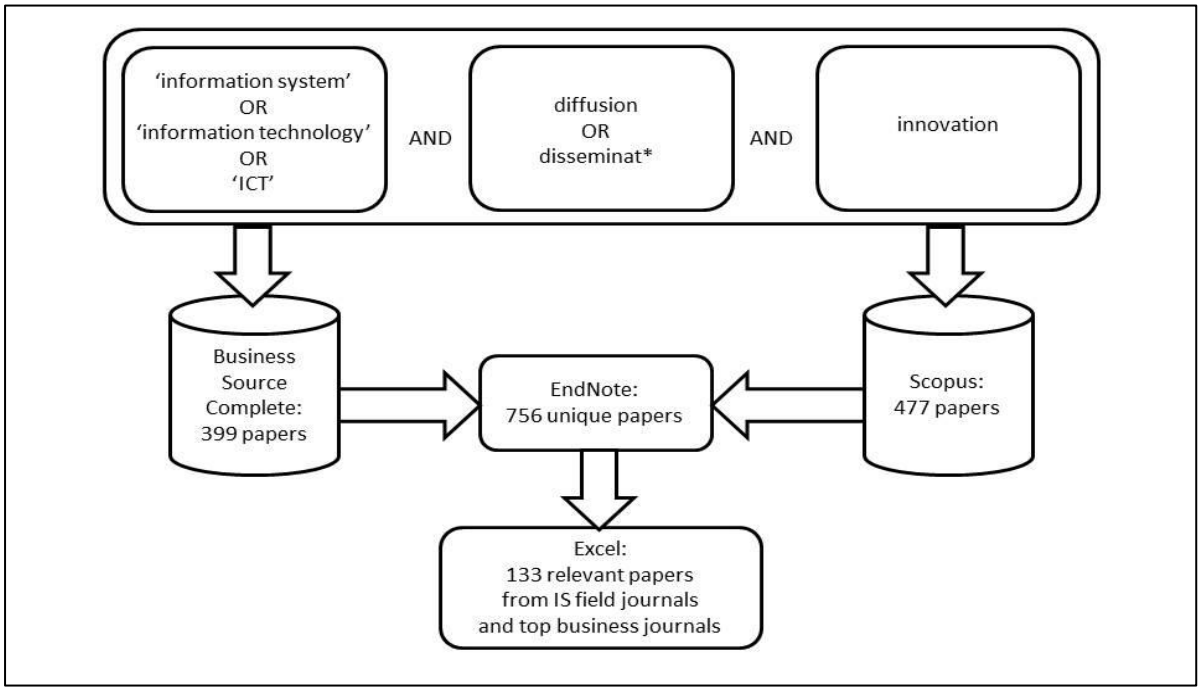
A literature review on diffusion of IT-based innovation was conducted in order to inform the research on how the idea of digitalization is circulated among the actors in the municipal landscape. The method is described in the following.

To find papers containing the subjects relevant for this review, a facet search combining relevant search terms was designed. The facets were constructed using different terms for the concepts 'diffusion', 'IT', and 'innovation' to accommodate the fact that different journal databases use different terminology. Combining the different terms for 'diffusion' in one facet with different terms for 'IT' in another facet, and 'innovation' in the third facet produces a search result containing papers that touch on the three core aspects of this review.

Webster and Watson (2002) recommend starting with the leading journals when doing a literature review as the major contributions are likely to be found here. In the IS field the Senior Scholars Consortium of the Association for Information Systems (AIS) have identified the eight top journals (AIS, 2016b). As these eight journals appear in either one or both of the Business Source Complete and Scopus databases, bibliographic searches were conducted in them both. Bibliographic searches in both Business Source Complete and Scopus produce not only results from the eight top journals but also a large number of other journals in the IS field, which are available in these databases, e.g. multidisciplinary outlets and specialty areas omitted by the basket of eight (Brandt, 2014). In all, more than 2000 peer-reviewed journals are covered in the searches. IS journals are identified as journals in the '67 Information Systems' category in the Danish Bibliometric Research Indicator (The Danish Ministry of Research and Higher Education, 2016). As this review is intended for the IS audience, papers published in the business journals ranked in top 50 by AIS' Journal Ranking Page (AIS, 2016a) are included in the literature review, whereas papers from non-IS journals are excluded. The business journals included are: Management Science, Decision Science, Harvard Business Review, Sloan Management Review, Academy of Management Journal, Organization Science, Administrative Science Quarterly, California Management Review, and Operations Research. The use of specific search terms means that papers from the high-ranking business journals that are off topic with respect to this particular literature review are disregarded. Only peer-reviewed content in English is searched.

The bibliometric search in Business Source Complete yielded 399 papers and 477 papers in Scopus. Merging the two results in EndNote, discarding duplicates, narrowed the result to 756 unique papers. Discarding papers published in journals that were neither IS field journals nor top business journals, papers consisting of less than five pages as well as papers focusing, for instance, on whether historiography of IS is important to the understanding of IS, and how to redesign IS core classes, left me with 133 relevant IS field or top business papers. The search design and results are shown in *Figure 7 Search design and results*.

Figure 7 Search design and results



For these 133 resulting papers, the central theme, models and predominant approach of the papers were identified by reading the abstract to determine the relevance for the literature review topic: diffusion of IT-based innovation. These different categories were identified and registered in Excel for future reference during the analysis, which is shown in *Appendix A: Analysis of Diffusion and Adoption of IT-Based Innovation*. The result of the analysis can be found in section *2.1.1 Diffusion of IT-based innovation*.

4.2.2 Case study method

To answer the research question "*How do ideas from the Danish Common Municipal Digitalization Strategy 2010-2015 travel through actions and actors in the Danish municipal landscape?*" requires an understanding of the dynamics within the different social settings in the Danish municipal landscape. A case study will be used since it is a method well suited for exploring and explaining phenomena that cannot be separated from their context. When exploring a unique complex social phenomenon in its completeness, a case study can be used to obtain a rich picture with many kinds of insight (Yin, 2014).

To develop an empirical theory showing how patterns of behavior and understanding emerge and change over time, a single longitudinal case study analyzing interviews, documents and observations will be used (Kvale & Brinkmann, 2009; Van de Ven & Poole, 1988). The case study will be carried out as single-case embedded design with multiple levels of analysis: the single case comprises the digitalization of planning applications and the multiple units of analysis are the municipalities, the governmental and private organizations involved in the digitalization (Yin, 2014). The multiple units of analysis serve to confirm, disconfirm or clarify the inferences drawn earlier in the analysis, and as such the multiple units of analysis

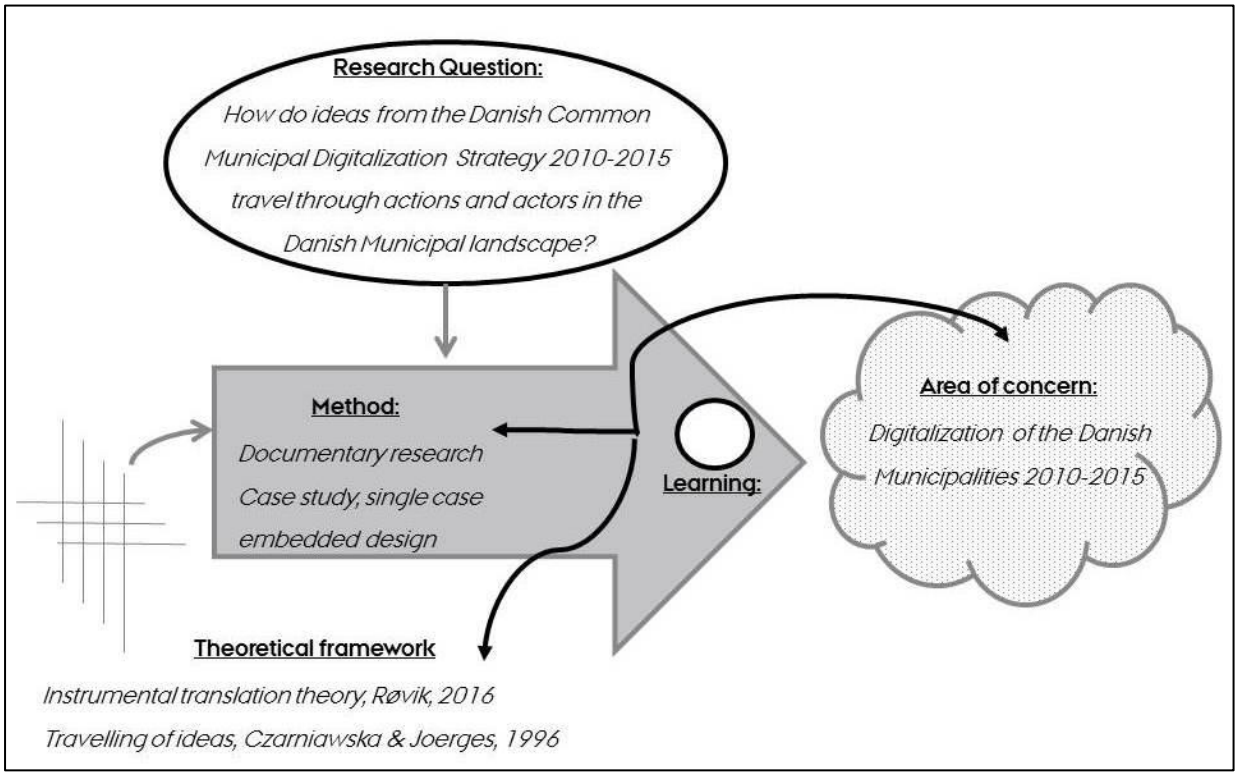
are used to strengthen the conceptual findings, not to strengthen the representativeness of findings (Miles & Huberman, 1994). The study does not seek to establish statistical generalizability to a population, but analytic generalization is used to propose a theoretical framework that might be useful in other similar situations (Yin, 2012). As such, the findings of the study are expected to add to the explanation of the translation process in other cases of mandated digitalization. As the aim of this study is to understand and explain rather than identify causal patterns and regularities, this is a theory-building exploratory research project (Eisenhardt, 1989).

Firstly, to understand how the idea of digitalization evolves during its translation from the strategic and national level to the tactical and individual municipal level, an analysis of the purpose and aim of the digitalization strategies produced at different levels will be used.

Secondly, knowledge about how people in the field perceive their reality, and how they construct meaning about the adoption process, is established through semi-structured interviews with actors in the organizational field in order to understand 1) how the Danish Common Municipal Digitalization Strategy 2010-2015 is diffused and translated through adoption of technology in the Danish municipal landscape, 2) how the strategy manifests itself in new practices being introduced to the municipalities, and 3) how the strategy allows for multiple subjective interpretations.

Figure 8 shows how the research process was organized by drawing upon Checkland's (1985) conceptual model of organized use of rational thought, using a process or a method to apply a theoretical framework in an organized way to a particular area of application.

Figure 8 Conceptual model of the research process



Adapted from Checkland (1985)

Figure 8 shows how I apply Røvik's (2016) instrumental translation theory and Czarniawska and Joerges' (1996) theory of traveling ideas to offer an understanding as to why the central idea of municipal digitalization is changed and shaped as it travels through the various actions and actors in the municipal landscape. The research question will be answered by conducting a case study with a single case study, digitalization of the Danish municipalities, with embedded cases at the field level.

The result of examining how ideas are formed through actions and actors will add a learning outcome to the original area of concern, digitalization of Danish municipalities 2010-2015. Checkland (1985) suggests that this organized use of rational thought may also add learning to the method as well as the theoretical framework.

To answer the research question "*How do ideas from the Danish Common Municipal Digitalization Strategy 2010-2015 travel through actions and actors in the Danish municipal Landscape*" requires an understanding of how the idea of digitalization evolves, diffuses, and is formed by actions, actors and technology. When searching for such a clarification of the causes underlying a given problem and its consequences, it is appropriate to select cases purposefully, chosen to reveal the greatest possible amount of information (Flyvbjerg, 2006). Besides, the deliberate, purposeful selection of cases increases the generalizability of case studies. When carefully choosing cases with maximum variation instead of using a representative case or a random sample, the data collection will reveal a large amount of information (Flyvbjerg, 2006; Kvale & Brinkmann, 2009).

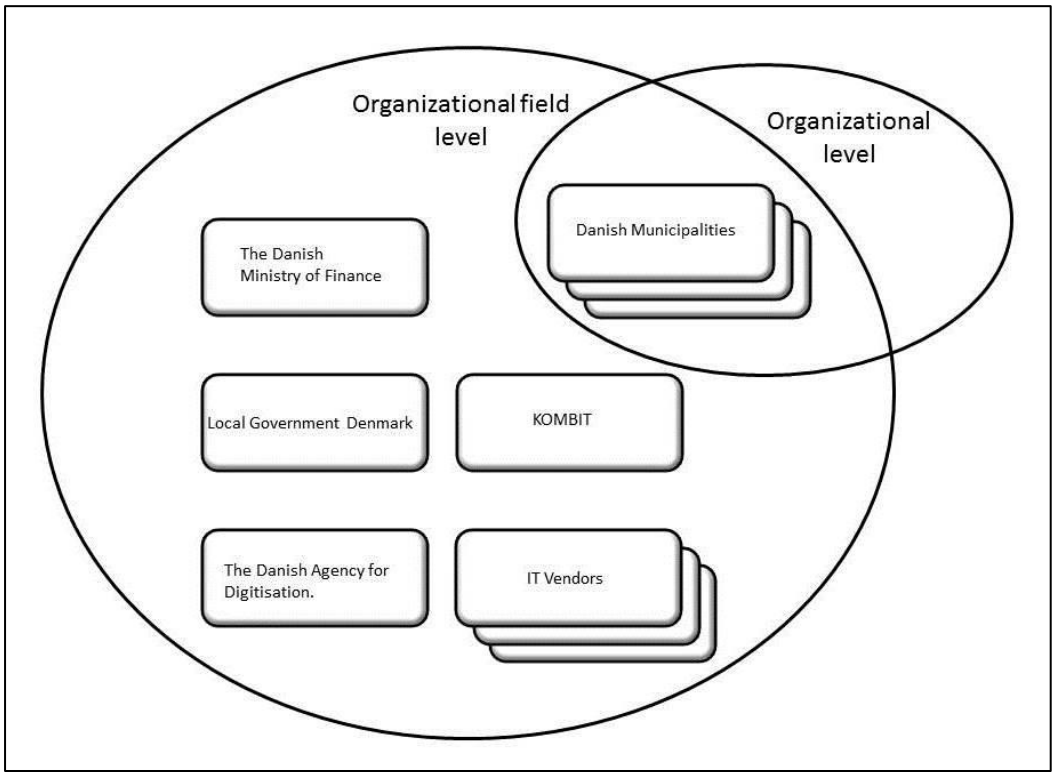
4.2.2.1 Selection of cases

The starting point for the selection of the embedded cases in the research project is the actors in the organizational field of digitalization.

Informants for data collection at the organizational field level were selected using maximum variation. Here the purpose was to understand the interpretations of the digitalization idea from various actors in the Danish municipal landscape. In practice this means that heterogeneous actors were selected from the organizational field of the Danish municipal landscape; e.g. the Danish Agency for Digitisation, LGDK, KOMBIT, different municipalities, and IT vendors.

The selection of cases for the case study at the organizational level was also done using maximum variation to maximize the utility of information from the cases seelcted. However, the variation used in this part of the project takes another form, because what is interesting to produce knowledge about here is the significance of various circumstances for the digitalization process. In order to produce an understanding of how interpretations of the eGovernment strategy has led to the enactment of different practices, municipalities have been chosen from various categories depending on size and with a different perception of their own ability to implement the eGovernment strategy. The structure of the embedded cases for the organizational field level and the organizational level analyses is shown in *Figure 9* .

Figure 9 Structure of singe case embedded design case study



The digitalization process is anticipated to be relatively more demanding for small municipalities because fewer employees must carry through the digitalization effort; hence the size of the municipality is expected to have an impact on the ability to undertake the digitalization initiatives. For this reason the municipalities were first categorized as either small (< 20,000 citizens), medium-sized (20,001-99,999 citizens) or large (>= 100,000 citizens). To be able to identify important common patterns that cut across variations, a theoretical replication strategy of maximum variation is used (Kvale & Brinkmann, 2009). Hence a municipality which had chosen to advance the digitalization process and a municipality which had chosen to postpone their digitalization process were selected from each of the three size categories. The date for launching the digital solution, Byg & Miljø, on the municipality website was used to divide the potential cases in "Advanced" or "Timely" with respect to the digitalization process. *Table 5 Selection of municipalities* lists the size category and launch date for each of the municipalities. Some municipalities went live with the Byg & Miljø solution before they launched the solution on the municipality website. By enabling the case handling of a limited number of planning applications received from the new solution without having to discontinue the functioning work processes, this tended to be done as a proof of technology (PoT) to test real world usability. Before launching Byg & Miljø on the municipality website, access to Byg & Miljø could be gained through the national website www.bygogmiljoe.dk, where a part of the planning application process is to choose the cadastral concerned, which then triggers allocation of the proper case handling municipality. As the individual municipal case handling system is a contextual factor potentially impacting the implementation of the Byg & Miljø solution, this is stated in the table along with the individual municipality IT or digitalization strategy. Other data recorded in the table with their respective reference include journal system used, approximate number of applications handled per year, and the name and timespan for the municipalities' digitalization strategy.

Table 5 Selection of municipalities

	Advanced digitalization process	**Timely digitalization process**
Small municipality	• Go-live: April 2014 (Business Manager, small-advanced 52:31) • Journal system: SBSYS (Business Manager, small-advanced 20:56) • 300-400 planning applications/year (Business Manager, small-advanced 36:13; Planning Officer 55:31) • Service and Channel Strategy 2012-2015	• Go-live: December 2014 (Planning Officer, small-timely 20:10) • Journal system: KMD Struktura byggesag (Planning Officer, small-timely 11:34) • 500-600 planning applications/year (Planning Officer, small-timely 16:32) • Digitalization Strategy 2011-2015
Medium-sized municipality	• Go-live: June 2014 (Business Manager, medium-advanced 26:40) • Journal system: SBSYS (Business Manager, medium-advanced 28:52) • 1200-1500 planning applications/year (Business Manager, medium-advanced 28:52) • Digitalization Strategy 2013-2017	• Go-live: PoT March 2014, but full go-live not until December 2014 (Digitalization Specialist, medium-timely 7:12) • Journal system: SBSYS (Digitalization Specialist, medium-timely 11:27) • 800-900 planning applications/year (Digitalization Specialist, medium-timely 1:19:25) • Digitalization Strategy 2009-12
Large municipality	• Go-live: February 2014 (Business Manager, large-advanced 46:46) • Journal system: GeoEnviron (Business Manager, large-advanced 53:50) • Approximately 3000 planning applications/year (IT Manager, large-advanced 49:51) • Digitalization Strategy 2012-2015 • Observation of Byg & Miljø, large-advanced	• Go-live: PoT April 2014, but full go-live not expected before December 2014 (Project Manager Byg & Miljø and System Administrator BSS, large-timely 16:20) • Geograf BSS (Project Manager Byg & Miljø and System Administrator BSS, large-timely 29:10; IT Manager, large-timely 21:20) • Approximately 4000 planning applications/year (Project Manager Byg & Miljø and System Administrator BSS, large-timely 18:07)

After categorizing the municipalities as small, medium-sized or large with either an advanced or a timely digitalization process, access to informants from each of the relevant categories of municipalities was requested. Typically the request was addressed either by telephone or e-mail to the Head of Department in charge of the municipality's planning applications. In the event that up to three requests to participate in the research project were unsuccessful, another municipality in the same category was contacted. The same process was used concerning the IT vendors, the Danish Agency for Digitisation, LGDK, and KOMBIT.

The data collection started in June 2013 and ended in September 2015. *Table 6 Field level data* and *Table 7 Secondary data* present an overview of the collected data. As seen in *Table 6*, I conducted 23 interviews with 30 respondents as some interviews contained more than one respondents, I carried out one non-participant observation, and participated in two conferences. As seen in *Table 7*, seven strategies are analyzed.

Table 6 Field level data

Primary data Purpose: To understand interpretations from different actors in the Danish municipal landscape. To describe the translation process in different municipalities.	
Source/respondent	
Pilot municipality • Planning Officer • Digitalization Consultant • IT Manager • Business Manager	
The Danish Agency for Digitisation • 1 interview, 1 informant	
KOMBIT • 3 interviews, 3 informants	
LGDK • 2 interviews, 2 informants	
IT vendor 1 • 1 interview, 1 informant	
Small-advanced: three interviews • Planning Officer • Digitalization Consultant • Business Manager	
Small-timely: three interviewed, two interviews • Planning Officer • IT & Process Consultant • Business Manager	
Medium-advanced: three interviews • Planning Officer • IT Manager • Business Manager	
Medium-timely, three interviewed, one interview • Planning Officer • IT Manager • Business Manager	
Large-advanced, four interviewed, one interview, one observation • Business Manager, • Chief Digitalization Consultant,	

• Business Architect • IT Manager, Enterprise • Observation of administrative employee, Byggesag, using Byg & Miljø	
Large-timely: two interviews • Project Manager Byg & Miljø and System Administrator BSS • IT Manager	
Non-participant Observation	
Demonstration of Byg & Miljø (Observation of Byg & Miljø, large-advanced)	
Conference	**Organized by**
"Municipality KOMBIT days" (Kommunernes KOMBIT-dage), a conference for the municipalities	KOMBIT
Public Digitalization 2015 (Offentlig Digitalisering 2015), a practioners conference	DANSK IT, an interest group for IT professionals

Table 7 Secondary data

Secondary data – documents **Purpose:** To establish knowledge about how the idea of digitalization evolved between the common public, common municipal, and individual municipal levels	
Document	**Publisher**
eGovernment Strategy 2011-2015	The Danish Agency for Digitisation
Common Municipal Digitalization Strategy 2010-2015	Local Government Denmark (LGDK)
IT Strategy 2010-2014	Pilot municipality
Digitalization Strategy 2011-2015	Small-timely
Digitalization Strategy 2013-2017	Medium-advanced
Digitalization Strategy 2009-2012	Medium-timely
IT Strategy 2010-2014	Large-advanced

4.2.2.2 Semi-structured interviews

To obtain knowledge about the interpretations of the implementation process, primary data were collected through semi-structured interviews with key actors in the network of organizations supporting the Danish municipalities' digitalization process, as shown in *Figure 9* . Three semi-structured interviews were conducted in KOMBIT at different management levels, two were conducted in LGDK at different management levels, and one in the Danish Agency for Digitisation. Semi-structured interviews with one IT vendor were also conducted. Within the six categories of municipalities listed in *Table 5 Selection of municipalities*, similar semi-structured interviews were conducted to obtain knowledge about how the key stakeholders in the municipalities perceive the digitalization strategy and how it is implemented. For each of the six municipalities, the decision-maker in the IT area (referred to as IT Manager), the decision-maker for the subject area (referred to as Business Manager) and a Planning Officer in the subject area were interviewed.

Kvale's seven phases of an interview enquiry was used to structure the interview part of the data collection (Kvale & Brinkmann, 2009, p. 110):

4.2.2.2.1 Thematizing

The research project was initiated with a number of thematizing interviews conducted in order to confirm the relevance and clarify the purpose of the research project. The thematizing interviews made it possible to form an initial understanding of the subject matter to be investigated and if the research project was indeed worth undertaking (Kvale & Brinkmann, 2009).

4.2.2.2.2 Designing

The purpose with the design phase was to develop an overview of the entire investigation and plan the design of the study before starting to interview. In this phase various employees in the pilot municipality were interviewed to fine tune the interview guide and settle for the right roles in the municipality. After interviewing four different types of employees I decided to aim for a Business Manager in the planning case area, an IT Manager and a Planning Officer to obtain data from three different perspectives. Concurrently I sought and gained access to the municipalities with the right characteristics, small-timely, small-advanced, medium-timely and so on.

4.2.2.2.3 Interviewing

Each interview lasted between 45 and 180 minutes. Most interviews were conducted with one person, but if the contact person in the organization for some reason suggested the interview be conducted with more than one person at a time, this was accepted. 17 of the interviews were conducted in person at the field site, and due to travel activity and research stay abroad the remaining six interviews were conducted by telephone.

The interviews were based on interview guides: one for each role reflecting the three different perspectives in the municipalities. When interviewing the other organizations in the organizational field of municipal digitalization the interview guide was carefully customized to the specific role and organization to obtain as much relevant information as possible.

4.2.2.2.4 Transcribing.

All interviews were tape-recorded, and transcribed. Five interviews were transcribed by me, whereas the remaining interviews were transcribed by a student worker.

4.2.2.2.5 Analyzing.

Before the analytical coding each interview was listened and read simultaneously, in order to correct any misunderstandings. This way of working was very motivating, because reading a transcription while simultaneously listening to the recording just before coding the interview tuned the mind for coding, and provided an overview of what was to be expected from the coding process.

4.2.2.2.6 Verifying.

The informants were offered to read and verify a transcription of their interview, however, only five informants did actually accept, read and comment on their transcription.

4.2.2.2.7 Reporting.

Several informants requested confidentially before agreeing to participate in the research project; therefore all informants and organization were ensured confidentially in the form of

anonymity where applicable. For organizations where only one of their kind is present in the organizational field, e.g., The Danish Agency for Digitisation, LGDK, and KOMBIT, confidentiality in the form of anonymity was promised to the informants but not to the organization. With anonymous informants, the source of each statement is only known to the researcher. This brings about the problem of the researcher interpreting statements without the participants having the opportunity to comment on the interpretation (Kvale & Brinkmann, 2009). I sought to reduce this problem by offering the informants the opportunity to review the interview transcripts, as mentioned above, as well as sending each informant the finished research report, thereby committing to vouch for the results presented.

4.2.2.3 Participant observation

Participant observation was carried out to gain insight into the general topic of municipal digitalization; one day of participant observation at "The Municipality KOMBIT days", a conference for municipalities organized by KOMBIT, and two days of participant observation at "Offentlig Digitalisering 2015", a practitioners' conference about public sector digitalization organized by DANSK IT.

4.2.2.4 Non-participant observation

Non-participant observation was carried out to gain insight into how Byg & Miljø can be implemented in the planning case handling process; the administrative employee who is preparing the planning cases for the planning officers gave me a demonstration in the large-advanced muninicipality.

4.2.2.5 Documents

Secondary data were also collected; e.g. the Danish eGovernment strategies 2001-2004, 2004-2006, 2007-2010, and 2011-2015, the Common Municipal Digitalization Strategy 2010-2015, LGDK Action Plan, Overview of Benefits and Mid-term Evaluation from LGDK, news digest sent out by e-mails from the Danish Digitization Agency, LGDK and KOMBIT.

Digitalization strategy documents from the Danish national government, Local Government Denmark, and Danish municipalities as well as data about actual IT projects in each municipality and their collaborators were collected to obtain knowledge as to how the ideas of digitalization evolved between the common public, common municipal, and individual municipal levels as well as between the strategic level and the tactical level.

4.3 Analysis strategy

4.3.1 Literature review analysis

The analysis of the 133 papers found to be relevant for the review on diffusion of IT-based innovation was started by listing the author, title, publication year, journal, and volume in Excel, as shown in *Appendix A: Analysis of Diffusion and Adoption of IT-Based Innovation*. Then the papers were studied in detail, identifying the central theme or key idea of the paper as well as the theories or models used. To determine the predominant approach, the papers

were deductively categorized using descriptive codes: 1) *variance approach*: assigned to studies focusing on identifying factors or independent variables causing changes in a dependent variable, and 2) *process approach*: assigned to studies focusing on how a sequence of events unfolds to produce a given outcome (Van de Ven & Poole, 2005). The process studies were then scrutinized in order to uncover what is already known about how the diffusion process unfolds, which knowledge might be missing, and to identify concepts which could be used to inform the study on how the idea of digitalization is circulated among actors in the municipal landscape. The result of the analysis can be found in section *2.1.1 Diffusion of IT-based innovation*.

4.3.2 Case study analysis

To understand how the idea of digitalization evolves during its translation from the strategic and national level to the tactical and individual municipal level, it is necessary to establish an understanding of the purpose of eGovernment Strategy 2011-2015 and the Common Municipal Digitalization Strategy 2010-2015, as well as the LGDK's Action Plan 2011-2015, and how these three documents are interpreted and inscribed in the individual municipalities' IT or digitalization strategies. To establish this understanding, a content analysis of the documents will be carried about the aim being to describe and make inferences about the characteristics of communications (Holsti, 1969).

The data were analyzed starting with the eG*overnment Strategy 2011-2015:* the Danish digitalization strategy at the national level. Then, the *Common Municipal Digitalization Strategy*, which advances the national level strategy to more detail with respect to the municipal level and excludes the digitalization initiatives at the national and regional levels. Still at the municipal level, but now translated into the tactical level, we find the *Local Government Denmark Action Plan,* which is translated into each individual municipality at the strategic level in the digitalization strategies developed by the individual municipalities.

The digitalization strategies were coded and analyzed using computer-assisted qualitative data analysis software, QSR NVivo 10. NVivo provides tools that keep track of codes and relationships between codes by allowing the user to create open codes, a priori codes and code structures with sub-codes as well as relationships between codes. A grounded theory coding approach was used taking segments of data portraying meanings and actions and using the segments as analytic handles to interpret which theoretical categories the segments might indicate the existence of (Charmaz, 2014; Myers, 2013).

To interpret the data collected, the strategies and the interview transcripts were coded in a number of steps. The first step consisted of attribute coding and open coding. With attribute coding the document at hand was indexed with factual information, such as organization and interview persons concerning interview transcripts, and organization and year concerning strategies. The open coding comprised analysis and categorization of the raw textual data. When doing exploratory theory-building research, Myers (2013) recommend that qualitative data analysis start with a bottom-up approach, where the concepts will emerge from the detailed analysis of the data collected. Working inductively, a coding frame was developed

based on the initial coding where as many themes as possible were coded in parts of the material. The initial coding was done line-by-line, asking theory-generating questions such as: 1) What is the issue here? Which phenomenon is being addressed? 2) How? Which aspects of the phenomenon are addressed? 3) When? How long? Where? How much? 4) Why? Which reasons are given or may be deduced? (Myers, 2013). Asking these questions, the eGovernment Strategy 2011-2015 produced open codes sticking to the data such as "All relevant company-targeted communication is fully digital by the end of 2012", "Optimisation of resources spent on managing rules and demands from the public sector", "The digital channels will become a natural first choice" (eGovernment Strategy 2011-2015). Three a priori codes, Ideas, Actions, and Actors which are categories embedded in the research question, were used as sensitizing concepts (Patton, 2002). Joerges (as cited in Czarniawska & Joerges, 1996) views an idea as mental images materialized to become known for others to see. In the collected data, the idea of digitalization is materialized as objectives, which can be grouped in cost savings, increased service level, redistribution of resources, and development of active citizenship and support for the democracy. Hence, the a priori code *Ideas* was identified as the digitalization objectives expressed in the data. The a priori code *Actions* was identified as translation actions performed to translate an idea into practice within a setting or to circulate an idea between settings. The a priori code *Actors* was used to identify the organizations, groups, and individuals involved in the implementation of the Common Municipal Digitalization Strategy and the role they played. The coding scheme is shown in *Appendix C: Code Book*.

Continuous comparison and contrasting the open codes for similarities and differences, while coding more material, openly settled the issues which were more important. Then to shed light on the most important issues in the digitalization strategies and moving other issues to the background, the focused codes were developed from the open codes (David & Sutton, 2004). The focused codes were developed by linking and reducing the lower level themes coded as open codes to a core set of themes forming more abstract high level codes, consolidating the lower level themes as sub-codes. An example of this is shown in *Table 8 From open codes to focused codes*: The open code "Optimisation of resources spent on managing rules and demands from the public sector" is interpreted as an "Objective" of the eGovernment Strategy; "Objective" forms a focused code with the condensed meaning "Why is the digitalization strategy initiated?" expressing the ends toward which the digitalization process efforts are directed. This meaning was condensed and specified in the analytical memo "emerging themes" while coding, comparing, and contrasting the open codes (see *Appendix D: Emerging Themes, from Initial Coding to Focused Codes*). Other open codes pointing toward the focused code "Objective" are "Efficiency and reaping economic benefits", "Use IT to innovate and improve the welfare society" and "Free resources from case handling to public welfare". The focused code "Objective" denotes the desired outcomes or benefits of the digitalization process, whereas "Criteria for success" are indicators designed to measure in the short run if the outcomes or benefits are achieved in the long run, e.g. "All relevant company-targeted communication is fully digital by the end of 2012" and "The digital channels will become a natural first choice". Other examples of this focusing process are the open codes "Smartphone access to electronic mailbox and self-service" and

"Reuse of solutions and data" collected in the focused code "Deliverables", denoting what must be produced to enable the objectives to be achieved, e.g. the digital initiatives or solutions.

Table 8 From open codes to focused codes

Open codes	Focused codes	Definition of focused code
• Better utilization of resources spent on administering rules and demands from the public sector • Efficiency and reaping economic benefits • Use IT to innovate and improve the welfare society • Free resources from case handling to public welfare	Objective	Why is the digitalization strategy initiated? The ends toward which the digitalization process efforts are directed
• All relevant communication is fully electronic for companies by the end of 2012 • The digital channels are to become a natural first choice • More online self-service solutions will become mandatory	Success criteria	Indicators designed to measure in the short run if the objectives are to be achieved in the long run
• Access to electronic mailbox and self-service through smartphone • Reuse of solutions and data • Borger.dk will be the access point for digital self-service • By 2014 citizens will have a digital mail box where they will receive mail from public authorities • Important information on security, design, user-friendliness, language, accessibility and reuse of data will be collected in a set of guidelines and released in 2012 • Help will be available at local service centers for citizens who need help in getting started with the new digital self-service solutions	Deliverables	How the objective is to be achieved, i.e. the digital initiatives or solutions that has to be delivered in order to be able to achieve the digitalization objectives in the end

Then the focused codes were applied to all the material, in this case all the strategies and semi-structured interviews, while continued comparison between the focused codes formed the axial coding, holding the relations between the focused codes. The last step was the theoretical coding showing how the focused codes and their interrelation can build a new theory (Charmaz, 2014).

Charmaz's (2014) advice about letting the initial codes show action was very hard to follow. The reason might be that data here are strategic documents that are designed to point in a direction rather than showing the way. I also noted that my codes covered all of the data more or less; every word seemed to be significant. That could also be explained by the nature of the strategy documents. As described in section *1.1 Mandated digitalization of public service*, the strategies were negotiated and worked through a number of times in different work groups to ensure that every sentence is meaningful and significant, hence earning its way to coding.

4.4 Evaluation of research method

As this research project follows an interpretive approach, the case study evaluation proposed by Yin is not applied as he "*adopts an implicitly positivist stance in describing case study research*" (Walsham, 1995). Instead, this research project has applied the evaluation principles for interpretive research in information systems as outlined by Klein and Myers (1999, p. 72). The seven principles are discussed below:

1) The fundamental principle of the hermeneutic circle: "*…all human understanding is achieved by iterating between considering the independent meaning of parts and the whole that they form*" (Klein & Myers, 1999, p. 72). This principle is upheld by iterating between the unique meanings expressed in the semi-structured interviews and digitalization strategies, and the analysis and interpretation of these meanings thereby forming a version of events described by constructs and theory transcending the data.

> *"Interpretive researchers are attempting the difficult task of accessing other people's interpretations, filtering them through their own conceptual apparatus, and feeding a version of events back to others, including in some cases both their interviewees and other audiences."* (Walsham, 1995, p. 77)

2) The principle of contextualization "*requires critical reflection of the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerged*" (Klein & Myers, 1999, p. 72). This principle is upheld by presenting the social and historical background of the research setting, as interpreted by the researcher, in chapter *5 Organizational Field of Danish Municipal Digitalization*. Here the organization of the Danish public authorities is presented together with a chronology of the Danish digitalization initiatives. This is done to enable the intended audience to see how the idea of municipal digitalization traveled in the municipal landscape.

3) The principle of interaction between researchers and the subject "*requires critical reflection on how the research materials (or "data") were socially constructed through the interaction between the researchers and participants*" (Klein & Myers, 1999, p. 72). The researcher collected data partly through semi-structured interviews thereby allowing the participants to express their unique meaning and interpretations and partly through secondary data in the form of digitalization strategies. The semi-structured interviews were collected with participants filling various functions, e.g., Planning Officer, Business Manager, and IT

Manager, in order to access meanings and interpretations from different levels in the organizations.

4) The principle of abstraction and generalization "*requires relating the ideographic details revealed by the data interpretation through the application of principles one and two to theoretical, general concepts"* (Klein & Myers, 1999, p. 72). Using the principle of the hermeneutic circle and the principle of contextualization, the unique meanings and interpretations encountered in the data collection were analyzed to form abstract constructs and relations between constructs, both of which are argued to be theoretically generalizable. A detailed codebook was developed in order to ensure consistency when labelling the constructs.

5) The principle of dialogical reasoning "*requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings ("the story which the data tell") with subsequent cycles of revision"* (Klein & Myers, 1999, p. 72). This thesis is an exploratory study based on the interpretive approach, and access to the participants' reality is gained through social constructions such as language and documents. The findings emerged through an open-minded analysis of the collected data, i.a. using inductive coding where data lead to concepts and themes, and no hypothesis expecting certain findings was underlying the study. However, sensitivity revealed some contradictions between the actual findings and the theories applied.

6) The principle of multiple interpretations "*requires sensitivity to interpretations among the participants as are typically expressed in multiple narratives or stories of the same sequence of events under study*" (Klein & Myers, 1999, p. 72). In order to avoid misinterpreting the data collected during the interview, each participant was offered the opportunity to review the transcribed interview.

7) The principle of suspicion "*requires sensitivity to possible "biases" and systematic "distortions" in the narratives collected from the participants*" (Klein & Myers, 1999, p. 72). In order to avoid bias in the collected data, the selection of participating municipalities was dispersed geographically, between municipalities of varying sizes as well as with advanced and timely digitalization process. The verbatim from interviews was cross-checked with field notes and other documentary materials in order to avoid researcher bias.

4.5 Summing up research design

In this chapter I have argued for the choice of an appropriate research design for the PhD project at hand. I have discussed the philosophical assumptions underlying this study. The research method for knowledge production through literature review and case study has been laid out. The data collection and analyses were presented before the research method was evaluated.

5 Organizational Field of Danish Municipal Digitalization

The purpose of this chapter is to answer the question how to structure the organizational field of the digitalization of the Danish municipalities. The chapter starts by briefly presenting the fundamental organization of the Danish public authorities, and continues by outlining a chronology of the digitalization initiatives leading to the Common Municipal Digitalization Strategy 2010-2015 upon which the main analysis builds. Last follows an analysis of the structuration of the organizational field of municipal digitalization.

5.1 Organization of the Danish public authorities

The Danish public authorities are decentralized in a three-part structure: the state, five regions and 98 municipalities. The governing principle is subsidiarity: "*what can be dealt with on a local basis is dealt with on a local basis*" (Local Government Denmark, 2017a) and as promulgated in the Danish constitution, the Danish municipalities are granted the right to manage their own affairs independently under state supervision (The Danish parliament, 2013).

The main responsibilities for the state are to define the framework conditions for the public sector and to handle the tasks where coherence across the country is needed: e.g. the overall public economy, taxes, the police, the defense, and the legal system. The tasks handled by the regions are, among others, the Danish health care system and public transport. The municipalities handle the tasks associated with the citizens and companies within their respective local, geographical boundaries: i.e. child care and primary school, elderly care, social service, local planning, industrial development and protection of the local environment (Local Government Denmark, 2017a).

The municipalities are led by city councils, which are democratically elected every fourth year. The city councils are responsible for the municipal tasks, which are handled by local committees formed by the city council. Each municipality has their own local committees, but is typically structured on the basis of a variety of municipal tasks such as social services, technique and environment, finance, and education and culture. The local committees are serviced by a permanent administration of civil servants, which is divided into functional administrative departments, such as a social and health services department, a technical department, a finance department, and an education and culture department. The permanent administration is led by a chief executive, and each administrative department is headed by a director (Local Government Denmark, 2017c).

Servicing the same tasks and having a seemingly common organization structure, the 98 municipalities are still very heterogeneous. The municipalities vary in size from almost 600,000 citizens living in the Copenhagen Municipality to around 10,000 citizens living in the small municipalities. A few islands, Læsø, Fanø, Samsø and Ærø, are even smaller with only a few thousand citizens each (Statistics Denmark, 2017). The municipalities also vary in

degree of urbanization with urban municipalities in one end and rural municipalities in the other end of the spectrum. Other factors distinguishing the municipalities are geographical size, economy, number of employees, composition of citizen with respect to age, income etc., and the composition of the industries based in the municipalities. The many dissimilarities between the municipalities lead to the expectation that the municipalities might also differ in their public service needs and therefore also in the potential gains which could be accomplished by increased digitalization in each municipality.

The Danish municipalities are characterized by an organization form with a strong focus on day-to-day operations, and many municipalities have not been able to develop project competencies, neither in the IT department nor in the administrative departments.

> *"The municipalities are focusing heavily on operation. We must deliver the proper service to the citizens. The implication of this is that our maturity in project development and project management is quite low"* (IT Manager, medium-advanced; 41:10).

Though employing a work force highly educated, trained and experienced in servicing citizens and companies within their respective specialized professional areas, the municipalities generally lack competencies and skills to implement the digitalization initiatives mandated by the Common Municipal Digitalization Strategy. To cope with the resultant digitalization projects, considerable training and professional development of the current municipal employees must be expected.

5.2 Chronology of the Danish digitalization initiatives

The empirical setting for this study is found in the Danish eGovernment initiatives transforming the public sector by making public service delivery more digital. The idea to digitalize the Danish public sector dates back to 1983, where the Danish Ministry of Finance presented a modernization program to the Danish Parliament (Greve, 2012). The modernization program pointed out five means for modernizing the public sector: decentralization, market response, increased public service delivery, HR development, and increased use of new technology (Government Modernization Program, 1983). Following the publication of the modernization program, a number of reports from various temporary state groups and task forces kept digitalization of public service delivery at the political agenda until 2001, where the digitalization initiatives were consolidated in a cooperation between the municipalities, the regions, and the state developing the eGovernment strategies (Danish Agency for Digitisation, 2017).

Development of the eGovernment strategies is initiated by the Danish Agency for Digitisation acting on behalf of the Danish government, and the actual content of the strategies has been negotiated in a consensus-based process between the Danish Agency for Digitisation, the Danish Regions, and Local Government Denmark (LGDK), an interest group and member authority of the Danish municipalities. Untill today, six eGovernment

strategies have been published: "*2001-2004 Toward Digital Administration*", "*2004-2006 Strategy for Digital Administration*", "*2007-2010 Toward Better Digital Service, Increased Efficiency and a Stronger Collaboration*", "*2011-2015 The Digital Path to Future Welfare*", and in May 2016: "*2016-2020 A Stronger and more Secure Digital Society*" (Danish Agency for Digitisation, 2017). This study is based on the municipal implementation efforts derived from *the eGovernment Strategy 2011-2015*.

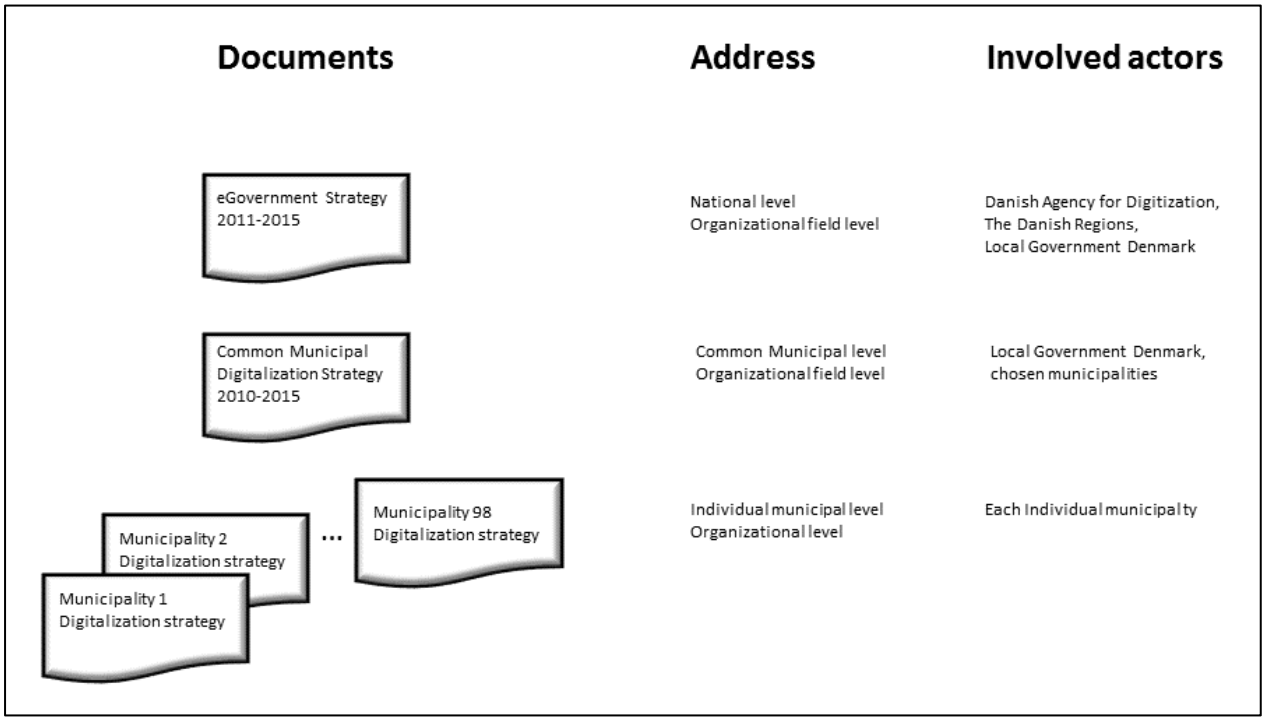
The eGovernment Strategy 2011-2015 is divided into three main tracks. Each track covers various areas and targets different groups: 1) no more printed forms or letters, targeted citizens and companies, 2) new digital welfare, targeted primary and lower secondary schools, elderly care and the health care system, and 3) digital solutions for closer collaboration, targeted the public authorities (eGovernment Strategy 2011-2015). The eGovernment Strategy is formulated at national level covering the central government, the regions, and the municipalities.

Concrete strategic digitalization initiatives targeted at the municipal level are, however, found in the *Common Municipal Digitalization Strategy*. The Common Municipal Digitalization Strategy is more advanced and detailed with respect to the municipal level than the eGovernment Strategy, and is excluding the digitalization initiatives at state and regional levels (Thematizing interview 4, the Danish Agency for Digitization; File2: 02:50). In 2010 the Common Municipal Digitalization Strategy 2010-2015 was negotiated in a consensus-based process between LGDK and chosen municipalities representing the remaining Danish municipalities. As mentioned above, the Common Municipal Digitalization Strategy is a continuation of the digital agenda brought forward in the eGovernment strategies. Paradoxically, the eGovernment Strategy 2011-2015, forming the frame for the Common Municipal digitalization Strategy 2010-2015, was in this case published *after* the Common Municipal strategy. This was due to a longer negotiation period for the regional and state initiatives. The municipal part of the eGovernment Strategy initiatives was agreed upon earlier, and with an overlap between the stakeholders negotiating the eGovernment Strategy as well as the Common Municipal strategy, it was possible to advance the Common Municipal Digitalization Strategy 2010-2015.

The objective of the Common Municipal Digitalization Strategy 2010-2015 is both to make the public service more efficient and thereby decrease public spending, but also to deliver a high-quality public service by utilizing the available technological opportunities (The Common Municipal Digitalization Strategy 2010 – 2015).

In order for the Common Municipal Digitalization Strategy to be implemented in practice, the initiatives herein are interpreted at an individual municipal level in the IT or digitalization strategies developed by the individual municipalities. An overview of this three-part strategy structure is depicted in *Figure 10 Actors involved in development of the digitalization strategies* showing the strategies, which level they address, and which actors are involved in the decision processes.

Figure 10 Actors involved in development of the digitalization strategies



The eGovernment Strategy, addressing numerous organizations in the state, the regions, and the municipalities, is argued to cover the organizational field of public digitalization at national level. Likewise, the Common Municipal Digitalization Strategy, addressing the 98 municipalities, is argued to cover the organizational field of municipal digitalization at the common municipal level, while the individual municipal IT or digitalization strategies, each addressing a single municipality, is argued to cover the individual organizational level.

Driven as it is by the state, the intention of the national level digitalization initiative, the eGovernment Strategy, is to define the framework conditions for the public sector in a way so that coherence across the country is secured. Therefore the eGovernment Strategy is meant as an agent guiding the content of the underlying Common Municipal Digitalization Strategy. Likewise the intention of the Common Municipal Digitalization Strategy is to guide the content of the individual municipal digitalization strategies. However, Local Government Denmark, participating in the negotiations on both the eGovernment Strategy and the Common Municipal Digitalization Strategy, is able to impact the content of the eGovernment Strategy so it converges with the line negotiated for the Common Municipal Digitalization Strategy. Likewise, the municipalities chosen for the negotiation of the Common Municipal Digitalization Strategy are able to impact the content, so that it converges with their own individual needs and digitalization strategies. Hence, the negotiation of the digitalization strategies is seen as an intertwined process leading to two-way dynamics between the strategies.

The focus of this thesis is municipal digitalization. In order to determine the structuration of the organizational field of municipal digitalization, the following analysis will concentrate on the Common Municipal Digitalization Strategy with its focus on the municipal level, rather

than the eGovernment Strategy with its focus on the national level or the individual municipal IT or digitalization strategies with their focus on the organizational level.

5.3 Structuration of the organizational field of municipal digitalization

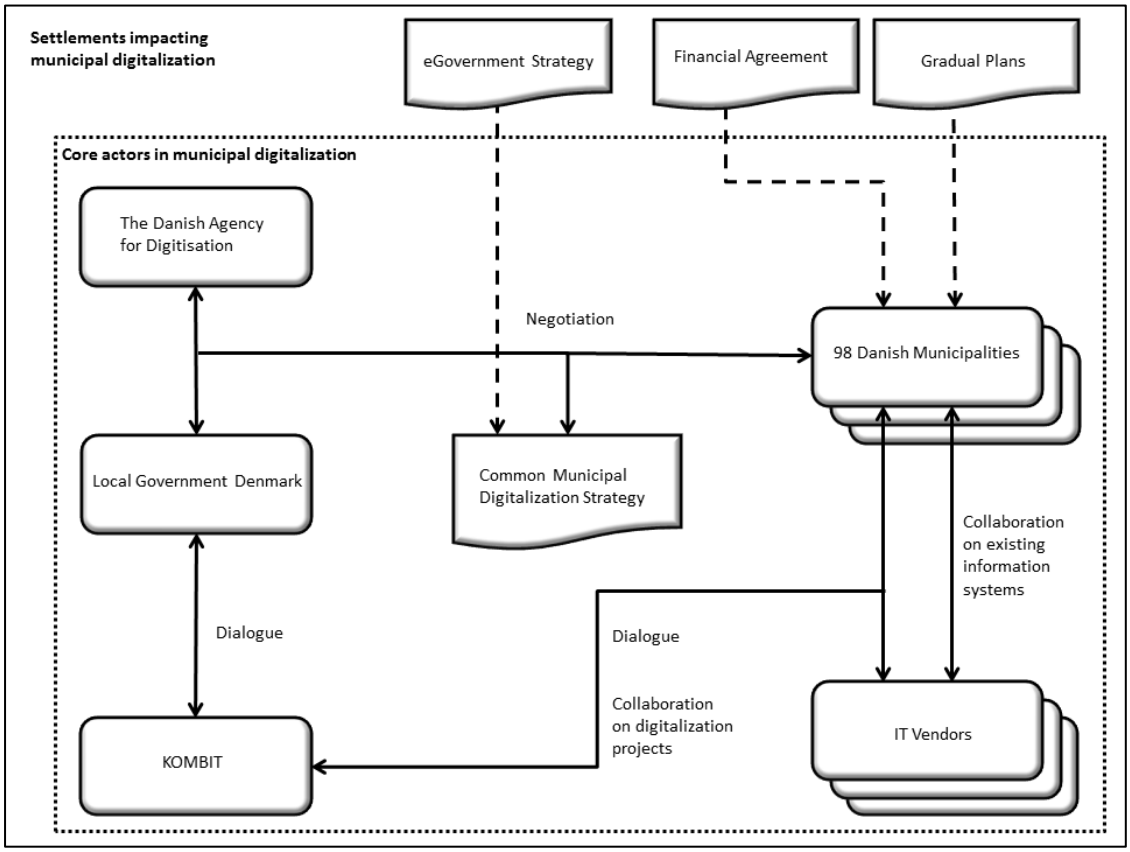
Ideas are not turned into action by documents, regardless how well written and timely they may be. Implementation of the digitalization strategies requires actors actively interpreting and materializing the initiatives herein. Clearly, the implementation of the Common Municipal Digitalization Strategy covering 98 individual municipalities cannot be accomplished by one organization alone, but involves close cooperation between numerous, heterogeneous actors playing various parts during the implementation process.

Because the idea of municipal digitalization has to be circulated between numerous actors in order to travel from originator to implementor, the analysis needs to be extended from organizational level to organizational field level. An organizational field is formed by: 1) increased interaction among organizations, 2) emergence of interorganizational structures, 3) an increase in the information load, and 4) "*the development of a mutual awareness among participants in a set of organizations that they are involved in a common enterprise*" (DiMaggio & Powell, 1983, p. 148). The following section determines the structuration of the organizational field by analyzing the events comprised in the formation of an organizational field: increased interaction, interorganizational structures, increased information load, and awareness that the implementation of the municipal digitalization strategy is a common enterprise.

As analyzed in the following sections, the implementation of the Common Municipal Digitalization Strategy is supported by a wide network consisting of heterogeneous actors. These actors are shown in *Figure 11 Organizational field of municipal digitalization* which is extending *Figure 2 Core actors in municipal digitalization*.

Elsewhere, it has been suggested that no man is an island; the same goes for organizational fields. A distinction has been made between impacting settlements and actors directly involved in the formulation and implementation of the Common Municipal Digitalization Strategy. The actors directly involved, as demarcated with the dotted line below, are referred to as the core actors of municipal digitalization. Some actors inside the core organizational field of municipal digitalization, e. g. the Danish Agency for Digitisation and Local Government Denmark, are also involved in negotiating the settlements outside the core organizational field of municipal digitalization. To avoid unnecessary clutter, arrows indicating these relationships are omitted as they are not within the focus of this thesis.

Figure 11 Organizational field of municipal digitalization



In the analysis below, the semi-structured interviews has been used to determine the structuration of the municipal field.

5.3.1 Increased information load

The eGovernment Strategy is argued to be outside the core organizational field of municipal digitalization as the eGovernment Strategy covers the state and regional digitalization initiatives in addition to the municipal digitalization initiatives. However, the eGovernment Strategy still has a profound impact on the Common Municipal Digitalization Strategy by defining its frames and objectives. Please recall that the eGovernment Strategy 2011-2015 was negotiated and formulated in parallel with the Common Municipal Digitalization Strategy 2010-2015.

Outside the core organizational field of municipal digitalization - but still impacting the municipalities by establishing a framework for the municipal economy - is the municipal part of the financial agreement, which is negotiated annually by the Ministry of Finance, and Local Government Denmark representing the municipalities' interests. The Danish Agency for Digitization contributes to the negotiations with respect to the digitalization initiatives (Thematizing interview 4, the Danish Agency for Digitization; File2: 6:00). The financial agreement is defined to be outside the core organizational field of municipal digitalization

because the financial agreement regulates the economic frames for the whole local government area, including the regions, and also concerns initiatives not related to digitalization.

The Gradual Plans are yet another piece of information in the big puzzle of digitalization strategies and plans. Part of the negotiation of the financial agreement is to agree upon the Gradual Plans stating the transition dates for mandatory digital self-service (see *Appendix E: The Gradual Plans*). Gradual Plans 1 and 2 were agreed upon in the financial agreement for 2013, and Gradual Plans 3 and 4 were agreed upon in the financial agreement for 2014 (Local Government Denmark, 2017b). The Gradual Plans comprise mandatory transition dates for self-service digitalization initiatives from the eGovernment Strategy as well as from the Common Municipal Digitalization Strategy. As such, the Gradual Plans are impacting the municipalities by mandating when specific digitalization initiatives must be completed by the municipalities. However, including state and regional digitalization initiatives as they are, the Gradual Plans are argued to be outside the core organizational field of municipal digitalization.

As seen above, the core organizational field of municipal digitalization is not an autonomous group of actors. The organizational field is impacted and guided by settlements from the outside resulting in an increased information load.

In order to be able to monitor and adjust to the progress made in the municipalities, Local Government Denmark has chosen to translate the Common Municipal Strategy into an Action Plan with very concrete initiatives for the municipalities to implement (Enterprise & Business Architect, large-advanced;1:26:20):

> *"The [Common Municipal Digitalization] strategy is a way to express which way we would like the municipalities to go. The [Action] Plan is a way to express how to do it. And the [Action] Plan is the exact reason why we have been able to change what we have changed"* (Thematizing interview 4, Local Government Denmark; 11:13).

The result is that the Common Municipal Digitalization Strategy fades into the background, because the Action Plan is the actionable and tangible translation of the same information, which as is seen increases the information load.

In the municipalities some dissatisfaction is expressed with the limited ability to self-determination by settlements from outside the municipality:

> *"Regardless the size of your municipality the resources are tight. And as a consequence, the digitalization strategies and the Gradual Plans will have a direct impact of how you prioritize. But I actually think that the ones who know our business, the ones who know our objectives, would be the ones with the best basis for prioritizing [the digitalization initiatives]. When somebody else is prioritizing – or obstructing – it might not be where we are getting the most of*

> *our effort. We could have had another pace in mind for our handling of planning cases"* (Digitalization Manager, pilot municipality; 25:32).

The many strategies and plans are perceived as somewhat confusing:

> *"The IT Department is also supporting all the other initiatives [from the digitalization strategies] directed at the other administrative units. It is a flood, a tsunami… I completely understand their challenges. It is an art to create interplay between all the initiatives."* (Business Manager, medium-advanced; 1:07:17).

No matter if the increased information load is from outside or within the core organizational field, it is perceived to be too much:

> *"This is an overview of all the ongoing strategies impacting us. We have the Common Municipal Digitalization Strategy, the Gradual Plans, which is just a way to have something carried out within a given time. Then there is welfare technology from the eGovernment Strategy… The regions are also involved in the welfare strategies… We have tons of strategies..."* (Enterprise & Business Architect, large-advanced; 1:27:16).

An increased information load from outside the core organizational field of municipal digitalization has been found, and the impact is not perceived as contributing to meeting the municipalities' goals.

5.3.2 Increased interaction

As argued above, the Common Municipal Digitalization Strategy is negotiated within the scope of the financial agreement and the eGovernment Strategy. Actors negotiating the Common Municipal Digitalization Strategy are the Danish Agency for Digitisation, representing the Ministry of Finance, as well as Local Government Denmark and selected municipalities representing the remaining municipalities (Thematizing interview 3, KOMBIT; 4:14; Thematizing interview 7, Local Government Denmark; 21:45).

As already clarified in section *1.1 Mandated digitalization of public service*, KOMBIT is helping the municipalities implement the strategy by identifying and specifying the requirements for the business processes that are covered in the digitalization initiatives, carrying out the acquisition process and managing the resultant development and implementation projects. When KOMBIT starts a new acquisition and development project, a broadcast is sent out to the municipalities to recruit members for steering committees, advisory boards, user groups or what the current collaboration need might be (Thematizing interview 3, KOMBIT; 24:07). Later, the municipalities are invited to review the requirements specification and tender documents, before they are finalized and put to tender. In order to fulfil the many roles, KOMBIT is in constant dialogue and collaboration with the municipalities and IT vendors about the digitalization initiatives, which provides KOMBIT

with a specialized knowledge about municipal needs and technical possibilities, thereby being able to provide qualified input to the financial agreements:

> *"Working closely with the municipalities and the IT vendors, KOMBIT gains knowledge from the municipalities about what is needed, and from the IT vendors about what is technically feasible. This knowledge is used in dialogue with Local Government Denmark about what municipal work processes with advantage could form part of the next financial agreement"* (Thematizing interview 3, KOMBIT; 4:24).

As clarified above, KOMBIT is in constant dialogue with the IT vendors and municipalities about the existing solutions and solutions under development. This interaction also provides an opportunity to discuss the possibilities for future solutions with the IT vendors, such as how the ongoing technical development enables new technically feasible solutions and fulfils the municipalities' needs.

A number of the municipalities also seek increased interaction as they have now realized that they themselves are the ones with the right basis for delivering input to the negotiation of the digitalization strategies:

> *"[…in order to impact the next strategy] we have initiated interaction with Local Government Denmark. We aim to impact the next Common Municipal Digitalization Strategy by delivering our input about what we believe is important. We might as well contribute to developing the right strategy instead of grumbling about it with the benefit of hindsight – which was just about what happened with the first Gradual Plan"* (Digitalization Manager, pilot municipality; 33:12).

> *"We would never have gotten this far without the state mandating the digitalization. We have progressed on digitalization even if the solutions provided by the state are not very well adapted to our municipal world, and just barely pass when evaluated for the technological and artistic expression. To ensure that the next Common Municipal Digitalization Strategy is more feasible, we need to be more prepared and to involve ourselves more actively in the process"* (Enterprise & Business Architect, large-advanced; 1:23:59).

> *"…we are very active impacting the work through the steering committee in LGDK or participating in the projects with KOMBIT. Also our chief executive officer is represented in the portfolio group in KOMBIT. This is our way to try to impact the process and make sure that the initiatives are possible to implement in the municipalities."* (IT Manager, medium-advanced; 10:59).

As seen above, increasing the interaction with other actors is used as a means to increase the fit of the digitalization initiatives.

Even within the individual municipalities, increased interaction is sought in order to have top management prioritizing the digitalization initiatives across otherwise autonomous administrative units in order to keep the activity at a manageable level:

> *"The purpose of the operational forum is to be able to discuss prioritization of digitalization initiatives. We are a large municipality with five administrative units basically following our own course. But now we have realized the need to prioritize across administrative units, because SO much is happening, and it is difficult for the management to see what is going on, and what is on the way. It is necessary to engage top management in prioritizing, because it is impossible to keep up with it all"* (Enterprise & Business Architect, large-advanced; 18:57).

Hence, interaction is found to be increased due to negotiations, both during the tender process between the 98 municipalities, the Danish Agency for Digitisation, Local Government Denmark, KOMBIT, and the IT vendors and within the municipalities.

5.3.3 Interorganizational structures

In order to establish common recommendations for architecture requirements, including the IT architecture principles and standards, Local Government Denmark is founding the Council of IT Architecture with municipal representatives (the Common Municipal Digitalization Strategy 2010-2015, p. 16).

When KOMBIT starts a new acquisition and development project, an interorganizational structure is created in the form of an advisory group consisting of 8-10 municipalities, following the project in order to root the decisions in municipal practice. The advisory group acts as a sparring partner by participating in work meetings and workshops with the IT provider, and it is the responsibility of the advisory group to evaluate and approve the deliverables from the IT vendor (Thematizing interview 3, KOMBIT; 18:50).

Another interorganizational structure, in the form of a steering committee, is created for each development project when it is put into operation. The steering committees consist of a number of municipal members, members from KOMBIT and sometimes members from Local Government Denmark. The responsibility of the steering committeesis to optimize the solutions to the needs of the municipalities, citizens or companies.

Other interorganizational structures in the form of strategy groups or user groups, prioritizing maintenance and ongoing developments are not uncommon, depending on the complexity and size of the solution (KOMBIT, 2017a, 2017b; 2017c; Thematizing interview 3, KOMBIT; 24:07).

As seen above the municipal digitalization strategy has created various interorganizatioal structures.

5.3.4 Awareness that municipal digitalization is a common enterprise

With respect to the fourth characteristic: awareness that the implementation of the municipal digitalization strategy is a common enterprise, the empirical evidence is less clear:

> *"I would have appreciated some help to the municipalities with communicating [about Byg & Miljø to our customers]. But apparently the municipalities are responsible for communicating to the citizens that they need to use this from December 1st. So many municipalities have to reinvent the wheel… And when it is not working, we will be the scapegoats"* (Business Manager, pilot municipality; 29:30).

> *"The municipalities are mandated to implement the solutions from the state for the citizens, and when the solutions are not good enough, the citizens are wondering what is going on in the municipalities."* (Enterprise & Business Architect, large-advanced; 1:23:59).

No empirical evidence is found for any awareness that the implementation of the municipal digitalization strategy is a common enterprise. Actually the municipalities express a feeling of being left alone when it comes to informing and training the end users of the digitalization initiatives, and being the ones taking the blame from the citizens and companies for faulty systems.

5.4 Summing up structuration of the organizational field

The above analysis has outlined the structuration of the organizational field of municipal digitalization.

As seen, the implementation of the Common Municipal Digitalization Strategy involves circulation of the idea between numerous, heterogeneous actors in the organizational field of municipal digitalization before the idea can be materialized as actions in the municipalities.

In order to establish an understanding how the idea is circulated between actors, the core organizational field of municipal digitalization was first found to include the 98 municipalities, the Danish Agency for Digitisation, Local Government Denmark, KOMBIT, and IT vendors.

The events forming an organizational field were then analyzed in order to determine the structuration of the organizational field: increased interaction, interorganizational structures, increased information load, and awareness that the implementation of the municipal digitalization strategy is a common enterprise.

The core organizational field of municipal digitalization was found to be impacted and guided by settlements from the outside, resulting in an increased information load. Within the core organizational field, the Common Municipal Digitalization Strategy was found to be translated into the more actionable and tangible Action Plan, also increasing the information

load. The municipalities expressed that the increased information load was not perceived as contributing to meeting the municipalities' goals.

Increased interaction with other actors in the organizational field was found to be used as a means of increasing the fit of the digitalization initiatives. Increased interaction within the municipalities was found to be used as a means of managing the increased project activity in the municipalities.

Various interorganizatioal structures were found to be established; some in order to agree on common recommendations for IT architecture, others to guide the acquisition, development, and maintenance of the digitalization initiatives.

However, no empirical evidence was found for any awareness that the implementation of the municipal digitalization strategy is a common enterprise.

6 Ideas of Municipal Digitalization Traveling between Settings

The purpose of this chapter is to analyze the collected data from the perspective of how the idea of municipal digitalization travels between settings. By applying the translation rules and travel of ideas perspective to the empirical data, the chapter investigates how the idea of municipal digitalization is expressed at different levels; national level, common municipal level and individual municipal level, and how the idea is circulated between the levels.

6.1 Translation perspective analysis

In the following section, the Common Municipal Digitalization Strategy will be analyzed to determine which translation rules it makes sense to apply for the recipient actors.

6.1.1 Translatability of the digitalization idea

As outlined in *chapter 3 Theoretical Framing*, translatability is concerning the disembedding actions, and the translatability of an idea is high if 1) the explicitness of the idea is high; 2) the complexity of the idea is low; and 3) the embeddedness of the idea is low. High translatability of an idea enables a recipient to replicate or copy the source practice directly, whereas low translatability requires addition, omission or alteration, because the traveling object cannot be transferred directly to the recipient (Røvik, 2016).

6.1.1.1 Explicitness of the digitalization idea

The Common Municipal Digitalization Strategy comprises a cross-functional strategy with common goals for municipal digitalization and four subject area strategies, one being Technical and Environmental Services. The cross-functional common goals for municipal digitalization are 1) to strengthen digital management by putting digitalization and IT investments on the strategic agenda, 2) to create a competitive municipal IT market by formulating common requirements for IT architecture, standardized solutions and a coordinated effort regarding tenders, and 3) to offer digital municipality services by digitalizing communication with citizens and companies in all subject areas (Common Municipal Digitalization Strategy 2010-2015). The overall vision for Technical and Environmental Services is to "*create increased self-service and public involvement by designing efficient, standardized administration processes and deploying new advanced technology*" (Common Municipal Digitalization Strategy 2010-2015, p. 50). The digital status for the planning area is assessed as:

> *"Handling of planning cases is one of the largest subareas in the technical administrations and there are many considerations on how this area can be made more efficient by using digital solutions. Six municipalities are at the moment carrying out a pilot project aiming to establish possibilities for both the digital*

> *application and how to support the actual case handling better. Many municipalities are in the process of scanning their paper based archives in order to ease the access to information, both for citizens and Planning Officers. At the same time the planning area is characterized by many different vendors of planning case handling systems and a substantial need for integration between journal system, electronic case and document handling system and other information systems"* (Common Municipal Digitalization Strategy 2010-2015, p. 52).

The main strategic focus areas for Technical and Environmental Services are 1) establishment of self-service solutions toward external relations with the goal of 80 municipalities having implemented digital application in 2015 and 70% of the applicants using digital application; 2) redesign of administration processes in the internal organization by digitalizing sub-areas and cross-functional cooperation in order to increase efficiency; and 3) efficient data management by modeling and standardizing data in municipalities (Common Municipal Digitalization Strategy 2010-2015).

Apparently, the above Common Municipal Digitalization Strategy guidelines failed to guide the municipalities in their digitalization efforts, and a need was acknowledged to translate the strategy into a more explicit version: the Action Plan. Now the Common Municipal Digitalization Strategy is seen as showing the direction, whereas the Action Plan is more explicit on what to do, and when:

> *"The [Common Municipal Digitalization] strategy is a way to express which way we would like the municipalities to go. The [Action] plan is a way to express how to do it. And the plan is the very reason why we have been able to change what we have changed"* (Thematizing interview 4, Local Government Denmark; 11:13).

Summing up explicitness, the Common Municipal Digitalization Strategy was found to be too implicit to guide the municipalities, and therefore the idea was translated into a more explicit form: the Action Plan.

6.1.1.2 Complexity of the digitalization idea

Please recall, that low complexity of an idea results in high translatability, and that complexity is low if the idea is a clear-cut application, whereas a high degree of context-specific human skills in the idea results in a high degree of complexity (Røvik, 2016).

The idea of municipal digitalization is objectified in three official documents: the Common Municipal Digitalization Strategy stating the overall vision for digital municipal service; the Action Plan stating specific projects to implement the strategy; and the Gradual Plan listing which dates when the digital solutions become mandatory (Thematizing interview 4, Local Government Denmark; 8:06; 12:48; Thematizing interview 7, Local Government Denmark; 28:58).

The municipalities struggle to respond to the Common Municipal Digitalization Strategy, the Action Plan, and the Gradual Plan (Thematizing interview 6, KOMBIT; 52:54; 56:34). Confusion about how to unravel and understand the demands from the different strategies and plan is expressed like this:

> *"Sometimes it can be hard to dig out the right strategy. Who has decided what? Is it the Digital Mail Act, or is it the Common Municipal Digitalization Strategy?"* (Project Manager Byg & Miljø and System Administrator BSS, large-timely; 8:10)

Concern about the ability to deliver the outcomes planned is also expressed:

> *"Tomorrow we have a meeting with management where we are gathering the strategies and trying to determine how they relate to each other, and the timing we are facing. Afterwards we have to inform our top management about what we have to implement, even if it is not concrete at the moment how we can do it. Later, when the initiatives become more concrete, we will need to prioritize, because it is impossible to achieve everything in the plans"* (Enterprise & Business Architect, large-advanced; 1:32:27).

In some cases the municipalities even refrain from further contextual translation of the common digitalization strategies:

> *"I've heard a municipal IT manager say: "We do not make our own digitalization strategies and Action Plans anymore. What we get from LGDK, KOMBIT and the government is more than enough to fill our pipeline"* (Thematizing interview 6, KOMBIT; 52:54).

Summing up complexity, the idea of digitalization by far resemble a clear-cut application. Quite to the contrary, the complexity is high because of the different strategies and plans, and because the strategies and plans require a high degree of context-specific human skills to become concrete initiatives that the municipalities are able to implement.

6.1.1.3 Embeddedness of the digitalization idea

Please recall, that embeddedness describes the extent to which the knowledge and capabilities that constitute a desired practice are anchored in its intra- and/or interorganizational contexts. Embeddedness is low if the desired practice is embedded in one organization or department, but if the desired practice is dispersed in networks that crisscross organizational and national borders, embeddedness is high. A low degree of embeddedness results in a high degree of translatability. (Røvik, 2016).

To digitalize the planning applications necessitates change of practice in one department, namely within Technical and Environmental Services, which suggests a low embeddedness. However, reaping the rewards from digitalizing the planning application requires integration with the internal case handling system, which suggests a somewhat higher degree of embeddedness.

Focusing on Byg & Miljø's digitalization initiative, embeddedness is argued to be fairly high leading to a medium translatability.

6.1.1.4 Summing up translatability

If an idea has high translatability it is possible for the recipient to replicate or copy the source practice directly, whereas low translatability requires addition, omission or alteration, because the source practice cannot be transferred directly to the recipient (Røvik, 2016).

Found in this case was a low explicitness, a high complexity and a fairly high embeddedness, all of which are suggesting a low to medium translatability, thereby indicating that the idea cannot be transferred directly to the recipients, and some addition, omission or alteration is expected in the disembedding actions.

6.1.2 Transformability of the digitalization idea

As outlined in *chapter 3 Theoretical Framing* transformability is concerning the re-embedding actions, and the transformability is determined by the degree of freedom that translators have to interpret, change and make their own version of the construct, which is a function of 1) The technological component, where a high degree of dependency of a technological component results in a low degree of transformability, because the technological component limits the possibility to transform the knowledge construct, and 2) Regulation of the transfer process, where a high degree of regulation, e.g. if the knowledge construct is legislation or an order from the headquarters, results in a low transformability, because the freedom to transform the knowledge construct is low (Røvik, 2016).

6.1.2.1 Dependency of a technological component

In the case of this study, there is a high degree of dependency of a technological component because the idea is rooted in offering a digital channel for planning applications. This results in a low degree of transformability, because the technological component limits the possibility to transform the knowledge construct.

6.1.2.2 Regulation of the transfer process

The degree of regulation of the idea is found to be high, mandated by government as it is. This results in a low degree of transformability, because the freedom to transform the idea is low.

6.1.2.3 Summing up transformability of the idea

Please recall, that if an idea has a low transformability, there is only little or no opportunity to change it, and the idea must be replicated or copied directly, whereas a medium degree of transformability will open an opportunity for modification in the form of addition or omission. Lastly, a high degree of transformability can make way for a radical alteration when translating the idea from originator to implementor (Røvik, 2016).

However, with a high degree of dependency of a technological component and a high degree of regulation of the transfer process, the overall translatability of the idea is assessed to be

low, thereby offering only little opportunity to change the idea resulting in a direct copy or replication in the re-embedding actions.

6.1.3 Summing up the expected use of translation rules

As argued above, on the one hand, a low to medium translatability was found, thereby indicating that the idea cannot be transferred directly to the recipients, and therefore some addition, omission or alteration is expected in the disembedding actions. On the other hand, a low translatability of the idea was found indicating that there is only little opportunity to change the idea, and therefore the translation is expected to result in a direct copy or replication in the re-embedding actions.

6.2 Travel of ideas analysis

In cases where an idea travels without being mandated by an originator, the natural starting point of the analysis might be how the idea travels within a setting. This is because an idea, before the idea can function as a source of inspiration for other organizations, needs to be materialized as an object in order to travel to other settings (Czarniawska & Joerges, 1996). Often, before other organizations are willing to take up an idea, the idea even needs to be materialized as an action and repeated to become an institution and thereby prove its worth.

However, in the case of municipal digitalization the actors initiating the change, the Danish Agency for Digitisation, the Danish Regions, and Local Government Denmark, are actually only materializing the idea as an object, namely the eGovernment Strategy at national level. The idea of municipal digitalization is then sent to the common municipal level. Here the idea is materialized again – this time by Local Government Denmark and selected municipalities representing the remaining Danish municipalities – as an object, namely the Common Municipal Digitalization Strategy.

The actors initiating the change, e.g. the Agency for Digitisation, the Danish Regions, and Local Government Denmark, are not materializing the idea of municipal digitalization as an action themselves. The idea of municipal digitalization is only materialized as an action within the municipalities. Hence, the idea of municipal digitalization can only be materialized as an action when it has been circulated from the actors initiating the change to the municipalities implementing the change, which is why the natural starting point for the analysis in this case will be the travel of the idea between settings.

As the eGovernment Strategy is forming the frame for the Common Municipal Digitalization Strategy, the eGovernment Strategy is chosen as the initial idea even though the Common Municipal Digitalization Strategy was published before the eGovernment Strategy. Likewise, the Common Municipal Digitalization Strategy is forming the frame for the individual municipalities' digitalization strategies, even though one of the municipalities has published its digitalization idea well before the Common Municipal Digitalization Strategy.

In the following sections an analysis will be conducted as to how the idea of municipal digitalization travels between settings.

6.2.1 The means by which ideas travel

Within social constructionism, words can be seen as tools for constructing reality. Labels, telling us what things are i.e. by classifying them, are verbal tools, which can be used to build shared meaning between different actors. It is labels that carry change (Czarniawska-Joerges & Joerges, 1990). Use of labels in change processes can help to produce the desired change and overcome resistance to change by telling people what the changes are about, or by classifying change, thereby enabling association with something recognizable. So, when looking for the means that ideas travel by, labels might pose the answer.

As explained in *4.2.2 Case study method*, one of the most prominent emergent themes found in the data during the initial round of open coding were objectives. As argued, objectives are expressing the purpose or the desired effects accomplished by municipal digitalization. By expressing what the strategies are trying to achieve, the objectives of the strategies can be seen as labels carrying the change that the municipal digitalization aspire to produce. Please recall that ideas are mental images, created in a local time and space, showing how to change objects or practices for the better in another local time and space (Czarniawska & Joerges, 1996). Hence, expressing the objectives of municipal digitalization is seen as a way to materialize the idea of municipal digitalization, and therefore objectives are seen as the means by which the idea of municipal digitalization travels.

The following analysis will compare the objectives expressed in the digitalization strategies at organizational field level, namely the eGovernment Strategy at national level and the Common Municipal Digitalization Strategy at common municipal level. Subsequently, the ideas expressed at organizational field level will be compared to the objectives expressed in the individual municipalities' IT or digitalization strategies at organizational level.

6.3 Municipal digitalization at national level

The analysis starts by examining how the central idea of municipal digitalization is materialized as an object in the e*Government Strategy 2011-2015:* the Danish digitalization strategy at the national level forming the frame for the Common Municipal Digitalization Strategy as argued in section *5.2 Chronology of the Danish digitalization initiatives*.

The eGovernment Strategy is formulated at national level covering the central government, the regions and the municipalities as well as their respective correspondence with citizens and private sector organizations. The focus of the eGovernment Strategy is to make explicit at national level how IT can play a role in modernizing the public sector. Although the eGovernment Strategy comprises the idea of digitalization at regional, state and municipal levels, the focus of this study is on municipal digitalization.

As already stated, the eGovernment Strategy is initiated by the Danish Agency for Digitisation acting on behalf of the Danish government, and the actual content of the strategy has been negotiated in a consensus-based process between the Danish Agency for Digitisation, the Danish Regions, and Local Government Denmark representing the municipalities. Timewise, this study is focusing at the eGovernment Strategy 2011-2015, which is the fourth version of the eGovernment Strategy.

The eGovernment Strategy 2011-2015 is divided into three tracks expressing the main ideas for digitalizing the Danish public sector: 1) no more printed forms or letters, 2) new digital welfare, and 3) digital solutions for closer collaboration. Byg & Miljø, which is the concrete case of digitalization initiative that this study builds upon, lies within track 1 "no more printed forms or letters" targeted citizens and companies, which is why the analysis is limited to track 1 in the following.

6.3.1 Cost savings through efficient public service

The overarching objective for track 1 "No more printed forms or letters" is to produce cost savings both in terms of more efficient work processes, but also by decreasing expenses to postage:

> *"Many public sector authorities can save resources by using channels that ensure the most cost-effective service for citizens and companies. For example, it costs up to 30 times more to inform of a change of address in person than to do it online. Furthermore, authorities can save a large proportion of the DKK 800m currently spent on postage by using the Digital Post solution"* (eGovernment Strategy 2011-2015, p. 5).

Track 1 is further detailed in two focus areas aiming at citizens and companies respectively. The two focus areas are analyzed individually below.

6.3.2 Increased service level for the citizens

In Focus Area 1: Effective Digital Communication with Citizens it is stated that another objective of the digitalization process is to increase the service level for the citizens and that the means to achieve the goal is to mandate the use of digital communication between the public sector and the citizens:

> *"Danes do not want to waste their valuable time on paperwork at their municipal office"* (eGovernment Strategy 2011-2015, p. 3).

> *"By 2015, it will be mandatory for citizens to use digital solutions to communicate in writing with the public sector. Once printed forms and letters have been phased out, all citizens will have to use online self-service. As of 2014, all citizens will have their own digital mail box (Digital Post) for correspondence from the public sector"* (eGovernment Strategy 2011-2015, p. 5).

Previous experience from other sectors is offered as reassurance for an unproblematic transformation from analog to digital interchange of information between the public sector and the citizens:

> *"The experiences of the Danish Tax and Customs Administration, online banks and libraries speak for themselves: citizens will serve themselves online if it is simple, user-friendly and makes their lives easier"* (eGovernment Strategy 2011-2015, p. 14).

However, it could be questioned if the citizens will perceive repeated routine transactions, like bank and library services, to be at a comparable level with more seldom or even isolated transactions like e.g. public school enrolment and application for planning permissions.

6.3.3 Growth and competitive advantages for the private sector

In Focus Area 2: Paving the Way for Business Growth the desired objectives for the private sector companies is expressed to be growth and competitive advantages, and the means to get there is to mandate digital communication with and reporting to the public sector. Also in this case previous experience is used to reassure an unproblematic digital transformation:

> *"For companies, all relevant communications will be in digital form by the end of 2012. This means that companies will be making all their reports digitally to public authorities"* (eGovernment Strategy 2011-2015, p. 5)

> *"The digitalization of the public sector also helps private companies to grow. This is one of the reasons why well-known digital solutions, such as NemKonto (easy account) and NemID[1](easy ID) were developed in collaboration with the business community. Innovative interaction between the public and private sectors may create synergies that give Danish companies a competitive advantage in global markets"* (eGovernment Strategy 2011-2015, p. 4)

It is not made explicit how digital communication is going to help the private sector to create growth and competitive advantage.

6.3.4 Summing up municipal digitalization at national level

The central idea of the eGovernment Strategy's track 1, "No more printed forms and letters", is that mandated use of the available technological opportunities makes the public service more efficient, thereby decreasing public spending, delivering an improved quality of public service to citizens and allowing companies to grow and achieve global competitive advantage. The choice of these three labels, "Cost savings through efficient public service", "Increased service level for the citizens", and "Growth and competitive advantages for the

[1] NemKonto is an ordinary bank account which is used by the Danish public sector when issuing payments to the citizens and companies: tax returns, child subsidies, and so on. NemID is a common authentication service used by the Danish public sector, banks and other private sector companies.

private sector" is in line with the use of labels as suggested by Czarniawska-Joerges and Joerges (1990): "*The label gave the meaning to the whole of the reform; by labeling it … a setting of positive attitudes was created, furthermore impeding likely criticisms*".

Analyzing the eGovernment Strategy reveals that numerous actors such as the government, municipalities, regions, the public sector, private organizations, and citizens are involved in circulating the idea of public digitalization. This finding is confirming the relevance of the organizational field of municipal digitalization as analysed in chapter *5 Organizational Field of Danish Municipal Digitalization*.

No evidence of disembedding, that is, removing contextual ties from the idea of municipal digitalization, was found when analysing the eGovernment Strategy. However, since the actors initiating the change are only materializing the idea of municipal digitalization as an object, the objectified idea, the eGovernment Strategy, is free to address the organizations that have to change directly. Thereby contextual ties need not be removed in order to increase the fit of the idea to other settings. Actually, the purpose of the eGovernment Strategy is to pass on the idea of public digitalization between different settings, so it is argued that the idea is objectified without contextual ties. As such, the eGovernment Strategy can be regarded as a symbolic token, a media of interchange, which can be passed around between individuals and groups without regard to their specific characteristics (Giddens, 1991).

No evidence of re-embedding, that is, adding time- and space-bounded features from the new setting, of the idea of municipal digitalization was found either. This is not surprising, as re-embedding occurs when an idea lands in a new setting. As already argued the purpose of the eGovernment Strategy is not to land the idea in one setting, but to pass on the idea between different settings.

6.4 Municipal digitalization at common municipal level

After establishing an understanding of how the idea of municipal digitalization is expressed at national level in the eGovernment Strategy 2011-2015, the idea is followed into the common municipal level. Here the *Common Municipal Digitalization Strategy 2010-2015* is advancing the national level strategy in more detail with respect to the municipal level and leaving out initiatives at state and regional levels. Please recall that the Common Municipal Digitalization Strategy 2010-2015 was published in 2010, before the eGovernment Strategy 2011-2015. However, the eGovernment Strategy is forming the frame for the Common Municipal Digitalization Strategy, and with an overlap in the stakeholders negotiating the eGovernment Strategy and the Common Municipal Strategy, it was possible to advance the publication of the Common Municipal Digitalization Strategy 2010-2015.

6.4.1 Efficient public service and improved, digital service delivery

The motivation for the Common Municipal Digitalization Strategy is stated clearly. The municipalities are facing a common challenge to cut spending and increase the service level:

> *"Nearly all areas are under pressure to solve their tasks with increased service level, while at the same time using fewer resources. Especially prominent are the demands to make processes more efficient and deliver more service for the same or fewer resources"*(Common Municipal Digitalization Strategy 2010 – 2015, p. 4).

Digitalization is put forward as the answer to that challenge:

> *"Digitalization has the potential to create the necessary economic latitude in such a way that a high level of service and welfare – as expected by the citizens – can be maintained and developed."* (Common Municipal Digitalization Strategy 2010 – 2015, pp. 4-5).

Two strategic objectives are stated in the Common Municipal Digitalization Strategy for municipal digitalization:

> ***"First of all****, it must create (economic) latitude for the municipalities through efficiency improvements.* ***Secondly****, it must develop the municipal service delivery, so that the municipalities continue to set the agenda for an attractive municipal sector – attractive for citizens, companies, and employees"* (Common Municipal Digitalization Strategy 2010 – 2015, p. 12).

These objectives are convergent with the objectives from the eGovernment Strategy as outlined above: to make the public service more efficient and thereby decrease public spending, while at the same time to deliver an improved quality of public service to citizens and companies.

The objectives of efficiency improvements and improved municipal service delivery are further detailed:

> *"Through efficiency improvements in the service delivery, Municipal digitalization is to contribute with DKK 2b each year from 2015 and onwards"* (Common Municipal Digitalization Strategy 2010 – 2015, p. 12).

> *"The municipal sector is to develop digital service delivery, so that citizens and companies can easily access a high quality of public service. In 2015 digitalization should have spread to all core tasks"* (Common Municipal Digitalization Strategy 2010 – 2015, p. 13).

However, disclaimers are also issued: large initial investments are a prerequisite for efficiency improvements through digitalization - the target of saving two billion DKK/year is *strategic*, which means that at present it is the best estimate - the municipalities have already invested in digitalization, and it is also important to harvest the benefits by utilizing these investments (Common Municipal Digitalization Strategy 2010 – 2015).

6.4.2 General focus areas

The Common Municipal Digitalization Strategy is sectionalized to address four different areas of digitalization: Employment, Social & Health Care, Technique & Environment, and Culture & Children. However, before going into details with the digitalization strategy for Technique & Environment, which is where Byg & Miljø is handled, three general focus areas are outlined:

1) Digital management. First, the municipal management level is engaged by drawing attention to the fact that the strategy will break with the former tradition for IT investments being developed to meet local needs and requirements. On the contrary, it is pointed out that accepting standardization will be needed in the future. The municipal financial committee and executive committee are urged to become more involved in the implementation of the strategy by being engaged in common municipal standardized solutions, by committing themselves to investing in IT, and by being actively involved in deciding how to reap the rewards from the investments.

> *"Management of digitalization in each individual municipality should be seen at the same level as financial management, HR management and other management disciplines"* (Common Municipal Digitalization Strategy 2010 – 2015, p. 14).

2) A competitive municipal IT market. Secondly, it is emphasized that a competitive market for IT solutions must be built and maintained. This entails the use of open standards, development of modularized solutions and reuse of data to increase system interoperability and enable the replacement of one IT vendor with another.

> *"Efficient management of IT architecture, maximizing the use of open standards, may push IT vendors to interconnect their solutions in order to save time for citizens and municipal employees … Local Government Denmark is founding the Council of IT Architecture with municipal representatives. The tasks are to establish common recommendations for architectural requirements… including the IT architecture principles and standards"* (Common Municipal Digitalization Strategy 2010 – 2015, p. 16).

Here, the Council of IT Architecture, one of the interorganizational structures, confirming the organizational field of municipal digitalization is created. This council consists of municipal representatives with the task to establish recommendations for IT architectural requirements with respect to interoperability, reuse of functionality, adaptation to future legislation, replacement of IT vendors, and operating stability.

3) Digital citizen service. Third, it is emphasized that the strategy is seeking to direct the citizens' enquiries to the digital channels by limiting access to the other possible channels, for as many tasks as possible, with the purpose to cut back on resources:

> *"If possible, communication must be digital: The digital channel should become the citizens' preferred channel … the municipalities should consider to make the*

> *digital channel the only channel"* (Common Municipal Digitalization Strategy 2010 – 2015, p. 19).
>
> *"As a rule, all tasks can be digitalized: The digital channel should be engineered in order to cut back on resources by having direct integration to the underlying journal and case handling systems"* (Common Municipal Digitalization Strategy 2010 – 2015, pp. 19-20).
>
> *"Wherever possible, the citizens must serve themselves: the goal is that 30% of all enquiries from citizens are digital in 2012 rising to 50% in 2015. The goal should be seen in connection with the price of handling cases. This may range from 5DKK per digital enquiry, if the self-service solution is integrated to the underlying journal or case handling system, to 100-120 DKK per personal or written enquiry, including emails"* (Common Municipal Digitalization Strategy 2010 – 2015, p. 20).

Limiting the number of service channels, integrating the digital communication with back office systems and setting clear goals for increasing the utilization of the digital channels are seen as ways to ensure reaping the expected rewards of the digitalization efforts.

The above three general focus areas: an engaged digital management, an established competitive municipal IT market and an increased digital citizen service point towards mending existing and predictable ruptures in municipal digitalization. The municipal management is urged to become more involved in the required IT investments by contributing to securing standardized solutions and reaping of the rewards. This will lead to optimization of the IT investments whereby the risk of sub-optimizing will be mitigated by centralizing the decision power and the responsibility to follow up on IT investments. The focus on building and maintaining a competitive municipal IT market by developing common municipal IT architecture requirements follows the sale of KMD, and is seen as an attempt to decrease silo architecture, possibly causing loss of data discipline and duplication of digitalization efforts. Pushing for an increase in the utility rate of the digital channels, e.g. by closing the traditional channels, is seen as a help to secure that the expected efficiency goals are met.

The general focus areas demonstrate a thorough understanding of the current and upcoming challenges for the municipalities, and by confronting impediments for making the strategy work in practice, these focus areas are argued to be re-embedding actions added to the idea of municipal digitalization in order to increase the fit and recognizability of the idea at the common municipal level (Czarniawska, 2009).

6.4.3 Digitalization strategy for the technical and environmental area

As mentioned earlier, the Common Municipal Digitalization Strategy is sectionalized to address four different areas of digitalization. The following section presents a summary and

an analysis of the digitalization strategy for the technical and environmental area, which is the subject area strategy relevant for this study.

The subject area strategy for the technical and environmental area identifies and sets the goals for the digital areas on which the municipalities are to focus in 2010-2015. The strategy is structured as follows: task description, vision for future digitalization, assessment of the current status for digitalization, and foundation of the strategic focus areas for the digital development 2010-2015.

The digitalization strategy for the technical and environmental area is estimated to contribute 200 million DKK, corresponding to 10% of the general financial effect goal in 2015 at two billion DKK (Common Municipal Digitalization Strategy 2010 – 2015, p. 49).

> *"The technical and environmental area is broadly defined and comprises e.g. the planning area. The area covers many, relatively small subject areas, each anchored in their own set of competences. Each subject area is governed by different sets of rules, ministries and agencies"* (Common Municipal Digitalization Strategy 2010 – 2015, p. 49).

The vision for Technical and Environmental Services is to: "*create increased self-service and public involvement by designing efficient standardized administration processes and deployment of new, advanced technology*" (Common Municipal Digitalization Strategy 2010 – 2015, p. 50).

The digital status of the technical and environmental area is generally assessed to be an area where a large interest for digitalization is found, and many municipalities have already build experience with the digital solutions. However, challenges exist in the form of locally defined data standards, and small subject areas with limited or no economic potential.

Specifically for the planning case area goes:

> *"Handling of planning cases is one of the largest subareas in the technical administrations, and there are many considerations on how this area can be more efficient by utilizing digital solutions. Six municipalities are at the moment carrying out a pilot project aiming to establish possibilities for both the digital application and how to support the actual case handling better. Many municipalities are in the process of scanning their paper based archives in order to ease the access to information, both for citizens and planning officers. At the same time the planning area is characterized by many different vendors of planning case handling systems, and there is a substantial need for integration between journal systems, electronic case and document handling systems and other information systems"* (Common Municipal Digitalization Strategy 2010 – 2015, p. 52).

The main strategic focus areas across the technical and environmental area are identified as 1) establishing self-service solutions towards the external relations with the goal of 80 municipalities having implemented digital applications in 2015 and 70% of the applicants

having used the digital application, 2) redesign of administration processes in the internal organization by digitalizing sub-areas and cross-functional cooperation in order to increase efficiency, and 3) efficient data management (which is emphasized to be the foundation for the administration) by modelling and standardizing data in the municipalities (Common Municipal Digitalization Strategy 2010 – 2015).

By pointing out the three specific tasks and goals – having implemented digital application in 2015 with a 70% utilization rate, redesign of internal administration processes, and efficient data management – the idea is being formulated as a symbolic token which can be passed around to individuals and groups without regard to their specific characteristics (Giddens, 1991).

In the digitalization strategy for the technical and environmental area, a thorough knowledge of the area is also demonstrated. The area is described as being diverse with numerous small subject areas governed by different rules and regulations. The interest for digital solutions in the area is noted to be high, but locally defined data standards, silo systems, and subject areas with limited or no economic potential are identified as posing challenges for the digitalization process. By demonstrating a thorough knowledge of the area, the idea can be presented with a higher fit and recognizability and thereby enabeling re-embedding it in the intended settings.

6.4.4 Summing up the common municipal level

The objectives of the Common Municipal Digitalization Strategy are: to create economic latitude for the municipalities through efficiency improvements and to deliver attractive municipal service. These objectives are convergent with the objectives from the eGovernment Strategy as outlined above, namely to create cost savings through efficient public service and to deliver an improved quality of public service for citizens. Hence, the Common Municipal Digitalization Strategy is translating the eGovernment Strategy at national level into the common municipal level by repeating the objectives - efficiency improvements and increased service level. This is identified as an instance of the translation rule, copying (Røvik, 2016). However, the objective from the eGovernment Strategy, to facilitate growth and competitive advantage for the companies, is not found to be addressed. This is identified as an instance of the translation rule, omission (Røvik, 2016).

The above findings support the suggestion that the idea of municipal digitalization travels through the expressed objectives of the idea. The Common Municipal Digitalization Strategy objectives are, however, more specific and detailed than the objectives of the eGovernment Strategy. In the Common Municipal Digitalization Strategy concrete goals for municipal digitalization are defined; efficiency improvements should contribute two billion DKK each year from 2015 and onwards, and by 2015 digitalization should have spread to all core tasks. This is identified as an instance of the translation rule, addition (Røvik, 2016).

Three specific tasks and goals have been formulated: having implemented digital application in 2015 in 80 municipalities with a 70% utilization rate, redesign of internal administration processes, including efficient data management, transforms the idea into a symbolic token

which can be passed around between the municipalities' technical and environmental areas without regard to their specific characteristics (Giddens, 1991). When using symbolic tokens, actions to disembed the idea from local practice are not needed, as the symbolic token is created without ties to the local practice.

In the Common Municipal Digitalization Strategy, re-embedding actions are identified in the thorough understanding of the municipalities' challenges, demonstrated in the general focus areas as well as in the specific tasks and goals of the digitalization strategy for the technical and environmental area. The three focus areas - engaged digital management, building a competitive municipal IT market, and increased digital citizen service - are argued to be re-embedding actions as they are added to increase fit and recognizability of the idea in the new settings by confronting impediments for making the strategy work in practice. The demonstration of a thorough knowledge of the area: pointing out the technical and environmental area's locally defined data standards; silo systems; and small subject areas with limited or no economic presents the idea with a higher fit and recognizability and thereby enabling re-embedding it in the intended settings (Czarniawska, 2009, p. 42).

The timing of the publication of the strategies makes it unclear if the Common Municipal Digitalization Strategy is copying the eGovernment Strategy or if it is the other way around. However, as the two strategies were negotiated during the same period of time and with overlapping negotiating actors, it is likely that the strategies evolved concurrently in a two-way communication process with Local Government Denmark carrying the municipalities' needs and limitations into the negotiations, thereby impacting the eGovernment Strategy at national level.

6.5 Municipal digitalization at individual municipality level

In the following section the idea of municipal digitalization will be followed digging into the individual municipalities' IT or digitalization strategies. Not all municipalities have made an explicit digitalization strategy. The large-timely municipality and the small-advanced municipality are not guided by an explicit digitalization strategy for the relevant period of time. The other municipalities' digitalization strategies are analyzed below.

6.5.1 Large advanced municipality, Digitalization Strategy 2012-2015

The large municipality with an advanced digitalization process has made the idea of municipal digitalization explicit in their Digitalization Strategy 2012-2015, which was published after the Common Municipal Digitalization Strategy 2010-2015 and the eGovernment Strategy 2011-2015.

6.5.1.1 More effective municipal service and strengthened quality of core output

The idea of municipal digitalization is expressed by an overarching vision to create profit: "*through a more binding cooperation and increased emphasis on innovation*" and "*increased*

holistic thinking across the municipality's administrative units" (Digitalization Strategy 2012-2015, large-advanced, p. 1).

The municipality puts digitalization forward as a means to answer the challenge of producing more with the same resources or produce the same with fewer resources:

> *"…we are facing a new reality. A reality where we have a common, social challenge meaning that we are to produce more with the same resources or produce the same with fewer resources. Digitalization is one of the means to get there"* (Digitalization Strategy 2012-2015, large-advanced, p. 4).

This is repeating the wording of the motivation for municipal digitalization from the Common Municipal Digitalization Strategy, which is also addressing "*the demands to make processes more efficient and deliver more service for the same or fewer resources"* (Common Municipal Digitalization Strategy 2010-2015, p. 4). This is seen as instances of the translation rule, copying (Røvik, 2016).

6.5.1.2 Cross-functional objectives

Six cross-functional objectives areas are defined: 1) to deliver more effective municipal services, 2) to strengthen the quality of core output, 3) to involve the citizens and increase transparency, 4) to increase integration of work processes, 5) to strengthen the employees', the managers' and the stakeholders' ability to innovate, and 6) to develop professional and service-oriented competences (Digitalization Strategy 2012-2015, large-advanced, p. 6).

To express the objectives of more efficient municipal service and an improved quality of municipal service is repeating the objectives of the Common Municipal Digitalization Strategy. However, new objectives are also expressed: transparency, innovation ability, and service-oriented competences. This is seen as instances of the translation rules, copying and addition (Røvik, 2016).

6.5.2 Medium advanced municipality, Digitalization Strategy 2013-2015

The medium-advanced municipality has made the idea of municipal digitalization explicit in its Digitalization Strategy 2013-2015, which was published after the Common Municipal Digitalization Strategy 2010-2015, and the eGovernment Strategy 2011-2015.

6.5.2.1 Increased efficiency and quality

In its digitalization strategy, the medium-advanced municipality expresses the idea of digitalization as the objectives to increase efficiency and quality (Digitalization Strategy 2013-2017, medium-advanced p. 3). These objectives are recognized as a repetition of the objectives from the Common Municipal Digitalization Strategy of efficient public service, to decrease public spending and to improve the quality service to citizens and companies. This is seen as instances of the translation rule, copying (Røvik, 2016).

6.5.2.2 Focus areas

The idea of municipal digitalization is further detailed in four focus areas guiding the development:

> *"1) Citizens and companies find self-service and information search at the home page to be easily accessible. 2) Employees find that the journal and case handling systems provide an optimal work flow. 3) IT supports the communication and knowledge sharing between colleagues. 4) Focus is on lowering the digital inequality between the citizens"* (Digitalization Strategy 2013-2017, medium-advanced p. 4).

The first three focus areas are convergent with the already known objectives of increased service level and efficient work processes, but the fourth focus area, to lower the digital inequality between the citizens, is not seen in the previous strategies. Here the translation rules, copying and addition, are argued to be used (Røvik, 2016).

The municipality is committing itself to the central idea of the eGovernment Strategy, namely that the mandated use of the available technological opportunities will make the public service more efficient by stating the goal to utilize the potential in the externally driven technological development and the available technological opportunities (Digitalization Strategy 2013-2017, medium-advanced p. 4).

The municipality also defines various roles and responsibilities for IT governance and thereby follows the Common Municipal Digitalization Strategy's suggestion to increase focus on digital management. The Steering Committee for Digital Administration is appointed to support the Executive Committee with the responsibilities of linking the top management, the decentralized IT planning administration and the central IT planning and operation administration. Other responsibilities are strategic planning of IT, to gather work teams, projects and programs, and to secure the coordination of digitalization across the municipality (Digitalization Strategy 2013-2017, medium-advanced pp. 5-6). The role of and the appointment of super users and system owners for all current systems are defined (Digitalization Strategy 2013-2017, medium-advanced pp. 9-10). This is another example of the increased interaction within the municipalities as already identified in section *5.3.2 Increased interaction*.

6.5.3 Medium timely municipality, Digitalization Strategy 2009-2012

The medium-sized municipality with a timely digitalization process has made the idea of municipal digitalization explicit in its Digitalization Strategy 2009-2012, which was published before the Common Municipal Digitalization Strategy 2010-2015 and the eGovernment Strategy 2011-2015.

6.5.3.1 Increased service level and improved production of core output

In its digitalization strategy, the medium-timely municipality expresses the idea of digitalization as objectives aiming to increase the service level and to support improved

production of the core output: "*The municipality targets its digitalization initiatives to benefit citizens and companies by providing better and faster service and to benefit employees by supporting improved production of core output*" (Digitalization Strategy 2009-2012, medium-timely, p. 2). These objectives resemble the objectives from the eGovernment Strategy, i.e. cost savings through efficient work processes and fewer expenses to postage, increased service level as well as the objectives from the Common Municipal Digitalization Strategy of efficient public service decreasing public spending and improving service quality. However, the digitalization strategy of the medium-timely municipality was published *before* the two other strategies. Seemingly, the objectives from earlier, local digitalization strategies are able to impact the formulation of the objectives in the later common digitalization strategies. This suggests that translation between the strategies, from national level over common municipal level to individual municipal level, is not a one-way process, but a two-way dynamics, which is enabled and supported by the increased interaction between actors, and the interorganizational structures established in the organizational field of municipal digitalization.

6.5.3.2 More efficient business processes

Other objectives expressed by the medium-timely municipality are the aim to make business processes more efficient by eliminating manual activities, reuse data, and integrate processes (Digitalization Strategy 2009-2012, medium-timely, p. 3; p. 5) and to: "…*utilize digitalization to become a more attractive workplace, where digitalization helps the employees to carry out their core tasks better*" (Digitalization Strategy 2009-2012, medium-timely; p. 3). To become a more attractive workplace corresponds to the Common Municipal Digitalization Strategy's objective of becoming an attractive municipal sector – for citizens, companies, and employees. Again we see the data suggesting that the objectives from the earlier, local digitalization strategies are travelling into the later common digitalization strategies.

6.5.3.3 Reuse of data and integration of processes

This claim is also supported by the statement: "*Data entered once must be reused and made available in different systems. Employees must experience efficiency improvement where manual work processes are eliminated by forms being fully digitalized*" (Digitalization Strategy 2009-2012, medium-timely; p. 5). This corresponds to the Common Municipal Digitalization Strategy urging to reuse data in order to increase system interoperability, also corresponding to track 1 from the eGovernment Strategy, 'No more printed forms or letters'.

Finally, supporting the claim is one of the focus areas corresponding to the Common Municipal Digitalization Strategy's general focus area, Digital Management:

> *"**Increased focus on digital management**… which means: 1) the manager putting digitalization at the agenda… 2) the manager challenging existing work processes… 3) the manager setting goals and frames for the digitalization projects…4) the manager monitoring the projects in order to realize the goals… 5) the manager involving himself in and sometimes leading the way for the*

digitalization projects..." (Digitalization Strategy 2009-2012, medium-timely; pp. 6-7).

Still in correspondence with the Common Municipal Digitalization Strategy's suggestion to increase the focus on digital management, and like the medium-advanced municipality does in its Digitalization Strategy 2013-15, the medium-timely municipality defines various roles and responsibilities for IT governance: the Executive Committee is assigned the responsibility to realize the digitalization strategy - the Steering Committee for Digitalization is appointed to support the Executive Committee with the day-to-day realization of the digitalization strategy and coordination across the municipality - the IT department is given the right to challenge the organization to put IT at the agenda - all initiatives contributing to the accomplishment of the digitalization strategy (Digitalization Strategy 2019-2012, medium-timely p. 12).

Røvik's translation rules are not studied in this digitalization strategy, as it is published before the Common Municipal Digitalization Strategy, so a literal translation word for word from the Common Municipal Digitalization Strategy 2010-2015 to the Digitalization Strategy 2019-2021 was not expected.

6.5.4 Small timely municipality, Digitalization Strategy 2011-2015

The small-timely municipality has made the idea of municipal digitalization explicit in its Digitalization Strategy 2011-2015. It was published after the Common Municipal Digitalization Strategy 2010-2015 and within the same period of time as the eGovernment Strategy 2011-2015.

6.5.4.1 Increased efficiency, effective solutions for citizens and improved service delivery

In its digitalization strategy, the small-timely municipality expresses the idea of digitalization as objectives aiming to "*increase efficiency in case handling and provide effective solutions for our citizens*" and to "*use digitalization to develop and improve service delivery*" (Digitalization Strategy 2011-2015, small-timely; p. 5, p.6). These objectives resemble the objectives from the eGovernment Strategy: cost savings through efficient work processes and increased service level as well as the objectives from the Common Municipal Digitalization Strategy of efficient public service decreasing public spending and improving service quality. Another objective resembling the wording of the general focus area, Digital Citizen Service, is: "*we want the citizens to use welfare technology [and] the digital self-service solutions*" (Digitalization Strategy 2011-2015, small-timely p. 7). Here the translation rule, copying, is used (Røvik, 2016).

6.5.4.2 Develop active citizenship and support democracy

However, it is also stated that the objective is to use digitalization to "*develop active citizenship and support democracy*" (Digitalization Strategy 2011-2015, small-timely p. 4). This is an instance of translation, where the translation rule addition is used (Røvik, 2016).

6.5.4.3 Integration of digital solutions across the organization

Another objective is expressed to integrate digital solutions across the organization:

> *"We aim to establish cross-functional integration of digital solutions cross-functionally in order to re-use data in different solutions where applicable. Cross-functional integration gives us a possibility to plan efficiently, through interconnected and resilient work processes"* (Digitalization Strategy 2011-2015, small-timely p. 6).

Cross-functional integration of digital solutions is actually advancing the suggestion from the general focus area, Digital Citizen Service in the Common Municipal Digitalization Strategy. The suggestion from the general focus area is to establish direct integration to the underlying journal and case handling systems (Common Municipal Digitalization Strategy 2010 – 2015, pp. 19-20). This is an instance of translation, where the translation rule, alteration, is used (Røvik, 2016).

6.5.4.4 Increased focus at digital management

By developing its Digitalization Strategy in a process involving a wide range of actors in the municipality, it is argued that the small-timely municipality follows the suggestion of the Common Municipal Digitalization Strategy to increase the focus at digital management:

> *"The Digitalization Strategy is a result of three workshops involving the Executive Committee, the Steering Committee for Digitalization, and representatives from the administrative units and the institutions. The starting point has been the general municipal strategy together with the Common Municipal Digitalization Strategy 2010-2015. After the approval, workshops have been held with the administrative units to determine which initiatives will secure the success of the Digitalization Strategy"* (Digitalization Strategy 2011-2015, small-timely p. 3).

Furthermore, in the small-timely municipality various roles and responsibilities are defined to ensure IT governance (Digitalization Strategy 2011-2015, small-timely p.7). This is found to be instances of the translation rule, copying and addition (Røvik, 2016).

Clearly, the objectives and suggestions from the Common Municipal Digitalization Strategy have been translated into the small-timely municipality's Digitalization Strategy through copying, but it is also possible to find evidence for addition and alteration.

6.5.5 Summing up the individual municipal level

Not all municipalities have made a digitalization strategy, but all the municipalities, which did make one, are expressing objectives convergent to the objectives from the Common Municipal Digitalization Strategy - efficient public service decreasing public spending and improving quality service to citizens and companies. This is found to be instances of the translation rule, copying (Røvik, 2016). Some municipalities are expressing completely new objectives, like involving the citizens and increasing transparency, lower the digital inequality between the citizens, and develop active citizenship and support democracy. This is found to be instances of the translation rule, addition (Røvik, 2016). One municipality

changes an objective from establishing direct integration to the underlying journal and case handling systems to integrating digital solutions across the organization. This is found to be instances of the translation rule, alteration (Røvik, 2016). Use of the translation rule, omission, was not found.

When a municipality chooses to add to or alter an idea under translation, the underlying reason is assumed to be a desire to increase the fit of the idea, thereby reembedding the idea in the new setting.

6.6 Municipal digitalization traveling between settings

Confirming the findings of Czarniawska-Joerges & Joerges that the control of change processes are facilitated by producing labels and injecting them into organizations, the digitalization strategies at different levels expressed convergent objectives (1990).

Convergence was found in the objectives between the digitalization strategies at national level and the common municipal level. The objectives in the eGovernment Strategy are, as earlier stated, to make the public service more efficient and thereby to decrease public spending. It is, however, also to deliver an improved quality of public service to citizens and give companies the opportunity to grow and achieve global competitive advantages by mandated use of the available technological opportunities. The objectives in the Common Municipal Digitalization Strategy are, as earlier stated, to create economic latitude for the municipalities through efficiency improvements, and further to develop the municipal service delivery in order for the municipalities to continuously set the agenda for a municipal sector, attractive to citizens, companies, and employees.

Convergent objectives indicate that the idea of municipal digitalization travel through the objectives, expressing the purpose of the idea, which can also be seen as a way of expressing how to change practices for the better in another setting.

No evidence for disembedding was found in any of the digitalization strategies. As earlier argued, the eGovernment Strategy and the Common Municipal Digitalization Strategy are both formulated as symbolic tokens to be passed to the municipalities without regard to their specific characteristics (Giddens, 1991). It is argued that when producing symbolic tokens, actions to disembed the idea from local practice are not needed, as the symbolic token is created without ties to the local practice.

However, when the idea is translated from common municipal level to individual municipal level, re-embedding actions were found. Re-embedding actions were found adding to the idea of municipal digitalization in order to increase the fit and recognizability of the idea in the intended settings; the individual municipalities. The re-embedding actions are demonstrating a thorough understanding of the current and upcoming challenges for the municipalities, and focus areas confronting the impediments for making the strategy work in practice. Re-embedding actions were also found when the municipalities choose what translation rule to employ. When translating the objectives of the Common Municipal Digitalization Strategy,

the municipalities choose to copy, add to or alter the objectives in order to increase fit and recognizability in the intended settings. No evidence of omission was found. This might be a result of the mandated nature of the digitalization strategies at the organizational field level. When a strategy is mandated, omission is clearly not an appropriate translation rule to choose, which is in line with the instrumental translation theory stating that a high regulation of the transfer process results in a low transformability of the traveling object, thereby leaving little or no opportunity to change the traveling object (Røvik, 2016).

One local digitalization strategy produced well before the Common Municipal Digitalization Strategy expressed objectives convergent to the later strategies thereby revealing that translation between the strategies from national level over common municipal level to individual municipal level, is not a one-way process, but a two-way dynamics, enabled and supported by the increased interaction between actors, and the interorganizational structures established in the organizational field of municipal digitalization.

The results are summarized in *Table 9 Translation of the idea of municipal digitalization between settings* below:

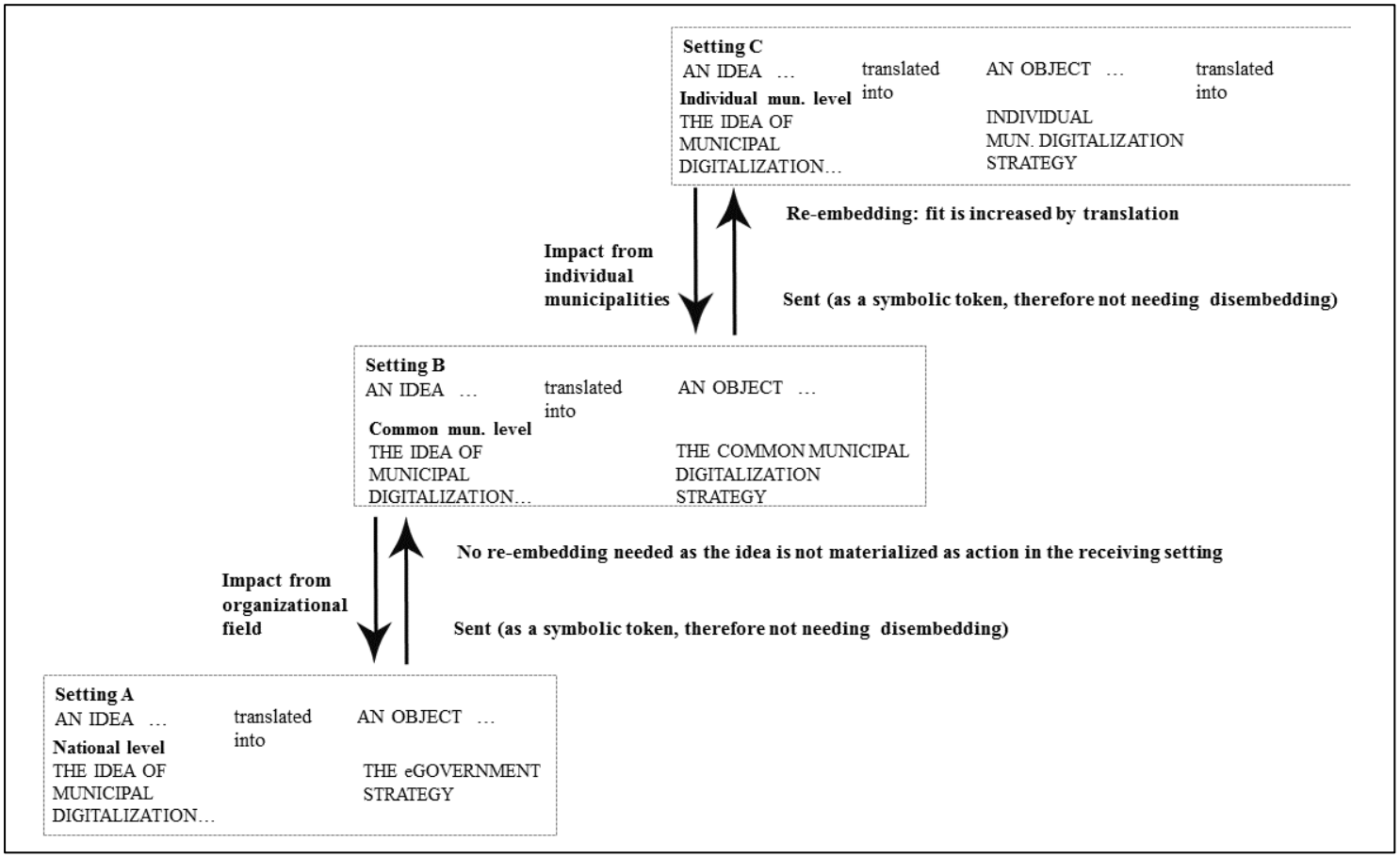
Table 9 Translation of the idea of municipal digitalization between settings

	Objectives	Translation rule	Disembedding/re-rembedding
eGovernment Strategy 2011-2015	• Cost savings through efficient public service • Increased service levels for the citizens • Growth and competitive advantage for the private sector	-	• The eGovernment Strategy is a symbolic token to be passed around between settings without regard to their specific characteristics => no disembedding • No evidence of re-embedding
The Common Municipal Digitalization Strategy 2010-2015	• Efficient public service decreasing public spending • Improved digital service delivery to citizens and companies	Copying Omission Addition	• The Common Municipal Digitalization Strategy is a symbolic token => no disembedding • Re-embedding, increases the fit and recognizability of the idea in the new settings by demonstrating a thorough understanding of the current and upcoming challenges
Large advanced municipality, Digitalization Strategy 2012-2015	• Deliver more effective municipal services • Strengthen the quality of core output • Involve the citizens and increase transparency • Increase integration of work processes • Strengthen the employees', managers' and stakeholders' ability to innovate • Develop professional and service oriented competencies	Copying Addition	• Symbolic token translated => No disembedding • Re-embedding: increases the fit and recognizability of the idea in the new settings by translating (copying and adding to) the idea of municipal digitalization
Medium advanced municipality, Digitalization Strategy 2013-2015	• To increase efficiency and quality • Self-service is found to be easily accessible • The journal and case handling are found to provide an optimal work flow • IT is found to support communication and knowledge sharing between colleagues • The digital inequality between the citizens is being lowered	Copying Addition	• Symbolic token translated => No disembedding • Re-embedding: increases the fit and recognizability of the idea in the new settings by translating (copying, and adding to) the idea of municipal digitalization
Medium timely municipality, Digitalization Strategy 2009-2012	• increase the service level • support improved production of core output • make business processes more efficient by eliminating manual activities, reuse of data, and integration of processes • utilize digitalization to become a more attractive workplace	Copying	• Symbolic token translated => No disembedding • Re-embedding: increases the fit and recognizability of the idea in the new settings by translating (copying) the idea of municipal digitalization
Small timely municipality, Digitalization Strategy 2011-2015	• increase efficiency in case handling and provide effective solutions for the citizens • use digitalization to develop and improve service delivery • develop active citizenship and support democracy • to integrate digital solutions across the organization • to increase the focus at digital management	Copying Addition Alteration	• Symbolic token translated => No disembedding • Re-embedding: increases the fit and recognizability of the idea in the new settings by translating (copying, adding to, and altering) the idea of municipal digitalization

The findings are incorporated in *Figure 12* below. 1) The original idea is materialized as an object, but not necessarily materialized as an action, before it is circulated to another setting. This gives rise to the closed-ended translation processes in the horizontal plane in setting A and setting B. 2) Translation is not a one-way process, but intertwined and dynamic as shown

with the arrows from setting B to setting A, and from setting C to setting B, depicting the impact from the receiving settings to the sending settings, and complementing to original arrows only showing the impact from the sending setting (setting A) to the receiving setting (setting B). 3) No disembedding actions can be observed when circulating symbolic tokens. 4) When an idea lands in a setting where the idea is to be materialized as an object only, no re-embedding actions can be observed.

Figure 12 Translation between settings



Adapted from Czarniawska and Joerges (Czarniawska & Joerges, 1996, p. 26).

Figure 12 reveals some notable differences compared to the original in *Figure 5 Traveling ideas*, as shown in section *3.2.2 Dynamics of the travel of ideas perspective*.

First, the initiating idea is materialized as an object before it is circulated to another setting, but in this case of mandated digitalization, the idea will not be materialized as a practice before it lands in the individual municipal setting. This is shown as the close-ended translation processes at the national level (setting A) and at the common municipal level (setting B). In the original work, the translation processes in the horizontal plane are open-ended in order to illustrate the continuous nature of the travel of the idea.

Secondly, translation is not observed to be a one-way process, but an intertwined process leading to a two-way dynamics. This is illustrated in *Figure 12* by complementing the original arrow, showing how the idea is sent from national level to common municipal level, with a new arrow from common municipal level to national level, showing the impact exercised on the eGovernment Strategy from the organizational field of municipal digitalization. Likewise, an arrow is added from individual municipal level (setting C) to common municipal level, showing the impact exercised on the Common Municipal Digitalization Strategy from the individual municipalities.

Furthermore, when circulating symbolic tokens, no disembedding actions can be observed as noted at the arrow passing the idea from national level to common municipal level and at the arrow passing the idea from common municipal level to individual municipal level.

Lastly, when an idea lands in a setting where the idea is to be materialized as an object only, no re-embedding actions can be observed as noted at the arrow passing the idea from national level to common municipal level.

7 Ideas of Municipal Digitalization Traveling within a Setting

The purpose of this chapter is to analyze the collected data from the perspective of how the idea of municipal digitalization travels within a setting. By applying the travel of ideas perspective and the translation rules to the empirical data, the chapter investigates how the idea of municipal digitalization is materialized from object to practice.

The collected data have been analyzed through interviews and non-participant observation conducted at the municipal level and the digitalization strategies developed by the individual municipalities.

7.1 Individual municipal level analysis

Having established an understanding of how the idea of municipal digitalization travels between settings, the next step is to examine how the idea is interpreted and inscribed at the individual municipality level using semi-structured interviews and digitalization strategies as well as other secondary data and non-participant observation.

The six municipalities are analyzed below. The sections start with a short case description after which the analysis follow.

7.1.1 Large municipality with advanced digitalization process

The large-advanced municipality is using the journal system GeoEnviron (Business Manager, large-advanced 53:50), handles approximately 3000 planning applications/year (IT Manager, large-advanced 49:51) and went live with Byg & Miljø February 1st 2014 (Business Manager, large-advanced 46:46). The municipality has made the idea of municipal digitalization explicit in their Digitalization Strategy 2012-2015, which was published after the Common Municipal Digitalization Strategy 2010-2015 and the eGovernment Strategy 2011-2015.

Already before it was required by the eGovernment Strategy, the large-advanced municipality had digitalized the planning application process and applied LEAN principles to the planning case handling process. As a result cost savings had been realized and the service level increased to a level where Byg & Miljø's standard features could not compare (IT Manager, large-advanced 9:50; Chief Digitalization Consultant, large-advanced 10:33). Therefore Byg & Miljø was originally disregarded. However, peers and LGDK exerted informal pressure on the Director of the Technical Administration: "*At a meeting in LGDK with peers from other municipalities, the Director of the Technical Administration was asked why the large-advanced municipality had not chosen Byg & Miljø*" (IT Manager, large-advanced 11:41). Pressure was also exerted internally on the Business Manager by the Mayor's Administrative Unit: "…*at the same time there was pressure from the Mayor's Administrative Unit to explain why Byg & Miljø had not been chosen*" (IT Manager, large-advanced 13:09). Even

though the business case had already been realized, and couldn't be realized again, it was eventually decided to implement Byg & Miljø:

> *"Normally, we do not start a project if there is no business case, but here we could see a large volume of other municipalities implementing Byg & Miljø, thereby indicating a bright future for the solution. So I believe that the future perspective was also a part of the decision to implement Byg & Miljø"* (Chief Digitalization Consultant, large-advanced 13:48).

7.1.1.1 Idea

Cost savings: The idea of digitalization is, among others, expressed by objectives to create profit and deliver more effective municipal services (Digitalization Strategy 2012-2015, large-advanced, p. 1; p. 6).

Increased service level: Another objective mentioned in the digitalization strategy is to strengthen the core output quality (Digitalization Strategy 2012-2015, large-advanced, p. 6). However, as discussed earlier, the large-advanced municipality had already digitalized the planning application process, and LEAN principles had been applied to the planning case handling process, thereby increasing the service level. One of the elements of the LEAN principles was having the reception desk screen all planning applications for lack of information or documents. Only full planning applications were forwarded to the Planning Officers, the rest were returned immediately to the applicant notifying them about the missing information (IT Manager, large-advanced 9:50; Chief Digitalization Consultant, large-advanced, 1:13:50). With Byg & Miljø all planning applications go straight to the Planning Officers, who handle the applications one by one in sequence; the applicants are thus no longer notified instantly about any lacking information. The Business Manager is concerned that Byg & Miljø's standard features do not provide applicants with the information that they would have liked, and that applicants are experiencing the change as a decrease in service, consequently diverging from the objective to strengthen the core output quality (Business Manager, large-advanced 1:14:14; Chief Digitalization Consultant, large-advanced 1:16:43).

Other ideas of digitalization are expressed by objectives including holistic thinking across the municipality's administrative units (Digitalization Strategy 2012-2015, large-advanced, p. 1) to involve the citizens and increase transparency, increase integration in work processes, and strengthen employees', managers' and stakeholders' ability to innovate (Digitalization Strategy 2012-2015, large-advanced, p. 6). Digitalization is not only thought of as a means to achieve objectives: "*Digitalization is an end in itself. Digitalization, done correctly, creates efficiency; so to digitalize is an end in itself*" (Digitalization Strategy 2012-2015, large-advanced, p. 7).

As argued in section *6.5.1*, the expressed ideas are seen as examples of the translation rules copying and addition when translating the idea of municipal digitalization into an object: the municipality's Digitalization Strategy 2010-2015 (Czarniawska & Joerges, 1996; Røvik, 2016). When materializing the strategy into an action, at first the strategy is followed by

applying LEAN principles to the planning case handling process, and thereby realizing cost savings and increasing the service level. However, later compliance with Byg & Miljø was chosen, thereby substituting the idea as expressed in the strategy for coercive and normative pressure (DiMaggio & Powell, 1983);. In the end, compliance interrupted the already realized objectives about cost savings and increased service level from the large-advanced municipality's digitalization strategy.

7.1.1.2 Translation

Which actor carries the idea into the organization? As discussed earlier, already before it was required by the eGovernment Strategy, the large-advanced municipality had implemented a well-functioning digitalized planning application process with digital mail to and from applicants integrated into the planning case handling system. Therefore, in the spring of 2012, the large-advanced did not see the need for spending money on implementing Byg & Miljø, as the business case was already realized. Hence, they chose to turn down KOMBIT's original invitation (Chief Digitalization Consultant, large-advanced 8:09). However, because other organizations tend to institutionalize the decisions of large or otherwise legitimizing organizations (Currie, 2004; Swanson & Ramiller, 1997), the Director for the Technical Administration and the Mayor's Administrative Unit asked the Chief Digitalization Consultant and the Business Manager to reconsider their decision. By then 60 municipalities had decided to implement Byg & Miljø, and if the large-advanced municipality would not implement Byg & Miljø, it could encourage reluctant municipalities to back out of Byg & Miljø too. The pressure from the Director and LGDK finally convinced the Business Manager to give up on her well-functioning solution and implement Byg & Miljø (IT Manager, large-advanced 8:09; Enterprise & Business Architect, large-advanced 10:40). This is somewhat in contrast to one of the focus areas in the municipal's digitalization strategy:

> *"A digitization project must focus on reaping rewards. A business case must be made following established methods before, under and after project implementation. ...We need a clear-cut prioritization between projects"*
> (Digitalization Strategy 2012-2015, large-advanced p. 9).

Detached from current practices: KOMBIT's business case for Byg & Miljø was not realistic at all for the large-advanced municipality, because the efficiency improvement calculated for Byg & Miljø had already been realized through applying LEAN principles and implementing the digitalized planning application process (IT Manager, large-advanced 9:50). On the one hand, the large-advanced municipality experienced the eGovernment Strategy self-service solutions as detached from current practices, because the municipality would have to refine the solutions when they land in the municipality to make them work in practice as originally planned, but on the other hand, the need for mandated digitalization is accepted: "*Otherwise we would just keep on passing pdf files around*" (Enterprise & Business Architect, large-advanced 1:22:47). However, the mandated digitalization comes with a cost for the large-advanced municipality:

> *"We would never have gotten this far without the government mandating digitalization. We have progressed on digitalization even if the solutions provided by the government are poorly adapted to our municipal world, and just barely pass when evaluated for the technological and artistic expression. We, as a municipality, are mandated to implement the government solutions for the citizens, and when the solutions are not good enough, the citizens are wondering what is going on in the municipalities. To ensure that the next Common Municipal Digitalization Strategy is more feasible, we need to be more prepared and to involve ourselves more actively in the process"* (Enterprise & Business Architect, large-advanced 1:23:59).

Applicants prefer personal contact (Chief digitalization Consultant, large-advanced 1:16:43), and therefore they experience the self-service solutions from the eGovernment Strategy as detached from their current practices.

Re-embedding: Putting the idea into action was learning-by-doing for the large-advanced, because the municipality was among the first to go live with Byg & Miljø. Byg & Miljø came without instructions, and despite the employees attending courses prior to go live, applicants were posing questions that no one in the municipality could answer; so the first weeks of operation proved a bit of a struggle (Chief Digitalization Consultant, large-advanced 1:00:16).

Re-embedding actions were made in order to materialize Byg & Miljø in action. 1) Two employees, one each from the environment office and the planning office, were appointed to act as fireballs for the solution. Their role was to maintain the attention and commit the involved employees and managers in implementing Byg & Miljø by participating in external work groups, specifying requirements, and forming and making sense of the system in the organization (Chief Digitalization Consultant, large-advanced 43:17; 45:00). 2) It was not easy for the Planning Officers to surrender to the digital mindset, and for a long time a pdf-file was expressed as the needed output from Byg & Miljø, because a pdf-file made perfect sense in the world of Planning Officers. The digital mindset only emerged when other groups of employees joined the project focus groups and realized that data from Byg & Miljø could be used for maintaining and updating their own case handling systems (IT Manager, large-advanced 45:49). This integration of data contributes to achieving the objective from the digitalization strategy to include holistic thinking across the municipality's administrative units (Digitalization Strategy 2012-2015, large-advanced, p. 1).

Ideas into action: The municipal digitalization strategy provides an easily recognizable image for putting the idea of digitalization into action: *something old*: exploit the existing systems portfolio; *something new*: digitalize and create change; *something borrowed*: use the common solutions – and contribute to their development; and *something blue*: radical innovation (Digitalization Strategy 2012-2015, large-advanced p. 12 ff.). This image is elaborated into actionable detail in the digitalization strategy– only a brief overview is presented here.

Ideas onto actions: As discussed earlier, already before it was required by the eGovernment Strategy, the large-advanced municipality had implemented a well-functioning digitalized planning application process with digital mail to and from applicants integrated into the planning case handling system (IT Manager, large-advanced 9:50; Chief Digitalization Consultant, large-advanced 10:33). The idea of digitalizing the planning application process was really an example of putting ideas onto actions; the idea was already realized, and using the idea was only giving a name to something, which had already been done (Czarniawska & Joerges, 1996).

7.1.1.3 Inscribing

Which media or material? Byg & Miljø was not integrated into the planning case handling system, because the planning case handling system will be replaced in the near future. As a result the planning applications submitted to Byg & Miljø online must be downloaded and moved manually into the planning case handling system, GeoEnviron. When downloading a submitted application, two files and a folder are created, the planning application and a conflict report, and a folder with the documents attached to the application. These files must then be moved manually into the planning case handling system. The present workflow is cumbersome and expensive in comparison to the former solution, where additional documents and new inquiries from the digital mail system automatically got placed in the right case folder when the planning case initially had been created based on civil registration number or company registration number. Because only an address is needed to submit a planning application to Byg & Miljø online, there is no help to decide the placement of new documents or inquiries in an existing application (Observation of Byg & Miljø, large-advanced). This is a temporary solution, which will be discontinued when the new planning case system and the integration to Byg & Miljø has been implemented. With the temporary solution, Byg & Miljø has not changed the planning case handling process.

Enforced inscription: As for the enforced inscription of digitalization, the large-advanced is not certain whether the other channels are going to be closed in order to make acceptance of planning applications more efficient:

> *"After December 1st we are required to reject applications that are not digital. But until now we have had a high degree of service, where we have handled everything, no matter how unstructured the inquiry or application. There is a need for a political decision about what degree of service we are going to offer after December 1st, because on the one hand, planning applications are correlated with development and economic growth, but on the other hand, there are costs related to maintaining a high level of service with respect to open channels and experienced service level"* (Chief Digitalization Consultant, large-advanced 1:10:56).

7.1.1.4 Unintended consequences

Decrease in service level: As already discussed, rejecting applications that are not digital will be experienced as a decreased service level by the applicants (Chief Digitalization Consultant, large-advanced 1:10:56).

Increase in handling time: Furthermore, the large-advanced municipality had digitalized the planning application process and applied LEAN principles planning case handling process. One of the elements of the LEAN principles was having the reception desk review all planning applications for lack of information or documents. Full planning applications were forwarded to the Planning Officers, the rest were returned immediately to the applicants notifying them about the missing information (IT Manager, large-advanced 9:50; Chief Digitalization Consultant, large-advanced,). With Byg & Miljø all planning applications are sent straight to the Planning Officers, who handle the applications one by one in sequence, so the applicants are no longer notified instantly about any lacking information, thereby increasing the handling time for incomplete applications (Chief Digitalization Consultant, large-advanced 1:13:50).

Introduction of new structures: In order to address the increased project portfolio complexity, new structures in the form of a strategic and an operational forum was introduced with the purpose of prioritizing and coordinating the digitalization initiatives across the administrative units (Enterprise & Business Architect, large-advanced 18:13).

Postponement of ongoing business development plans: As discussed earlier, the large-advanced had already digitalized the planning application process before it was mandated by the eGovernment Strategy and thereby realized the Byg & Miljø business case (IT Manager, large-advanced 9:50). However, the large-advanced chose to implement Byg & Miljø despite being unable to re-realize the business case. This decision will postpone the business development plans:

> *"…now we have to provide funding each year for the Byg & Miljø operating costs, and this is going to have consequences for other things we might have done otherwise, no doubt about that"* (Chief Digitalization Consultant, large-advanced 16:01).

7.1.1.5 Technology

For the data collected in the large-advanced municipality, only a couple of insignificant descriptions of inapt activities in the work flow earned their way into the technology code.

7.1.1.6 Economic potential

As already discussed no economic potential was expected from implementing Byg & Miljø because the large-advanced had already digitalized the planning application process before it was mandated by the eGovernment Strategy thereby realizing the Byg & Miljø business case (IT Manager, large-advanced 9:50).

7.1.1.7 Success criteria

Only references to very high-level success criteria like "Citizens must have access to their own records and to the administrative process" and "Being a company in xx municipality must be uncomplicated" were found in the data material from the large-advanced municipality (Digitalization Strategy 2012-2015, large-advanced, p. 4).

7.1.1.8 Funding

The Mayor's Administrative Unit allocated a pool of financial resources to help fund the digitalization initiatives in the various administrative units. Byg & Miljø is partly funded by this pool and partly self-financed by reducing the planning office by one employee, who was dismissed before Byg & Miljø was implemented. Because Byg & Miljø came with no efficiency gains and actually even hampered some activities in the planning case handling process, tasks were redistributed and workarounds implemented in the planning office, but still the remaining Planning Officers must work at the double to keep on top of things (Business Manager, large-advanced & IT Manager, large-advanced 1:37:25).

7.1.1.9 Challenges

Balancing core output with digitalization projects: As already discussed, Byg & Miljø is partly funded by reducing the planning office by one employee. As the employee was dismissed before Byg & Miljø was implemented, there has been even less time in the planning office to implement Byg & Miljø. So instead of focusing on how to make the best use of Byg & Miljø, the remaining Planning Officers work at the double to maintain the same level of core output (Business Manager, large-advanced & IT Manager, large-advanced 1:37:25).

> *"There is no time or energy to catch one's breath and think about what could be done differently, where can we fine-tune? When we do not have time and resources to see the changes through, we cannot reap the rewards"* (Chief Digitalization Consultant, large-advanced 1:40:02).

Increased complexity in project portfolio: The administrative units prioritize their own initiatives, and because of the increased activity due to the eGovernment Strategy, the Common Municipal Digitalization Strategy, and making KMD's monopoly solutions subject to competition, the need for coordination across the administrative units is growing. This led to the revival of a centralized priority list and priority process for management to keep track of what is ongoing and what is in the pipeline as well as a strategic and an operational forum to prioritize and coordinate across the administrative units: "*We have to engage top management in prioritizing, because it is impossible to keep track of it all*" (Enterprise & Business Architect, large-advanced 18:57; 1:32:27).

Reaping the rewards: As already discussed, reaping the rewards expected from Byg & Miljø in the KOMBIT business case was not at all realistic for the large-advanced municipality because efficiency improvement had already been realized through applying LEAN principles and implementing the digitalized planning application process (IT Manager, large-advanced 9:50). The expected rewards from the business cases are calculated from the data collected during the annual 'weeks of counting'[2] where all inquiries to the municipalities' different channels are counted. However, the Danish Agency for Digitisation's estimates for the unified municipalities cost savings are also used in the calculation (Chief Digitalization Consultant, large-advanced 1:43:50; IT Manager, large-advanced 1:44:33). Using a

[2] The recurring, annual 'weeks of counting' are initiated by LGDK in order to document what channels are used for the municipalities' communication with citizens, companies and other public organizations.

centralized estimate at the unified municipalities cost savings to calculate the expected rewards for each individual municipality makes the business case unrealistic and detaches it from reality:

> *"The business case for the precursor of Byg & Miljø suggested we would be able to cut 10 Planning Officers, but at that time we were only 11 Planning Officers. It just didn't add up"* (IT Manager, large-advanced 1:42:38).

Reaping the rewards is experienced as being even more difficult because of the many concurrent digitalization projects:

> *"It would be better to focus on one subject area at a time and deal with it in depth instead of scratching the surface of 50 or 60 subject areas like we have done for the last couple of eGovernment Strategies"* (Enterprise & Business Architect, large-advanced 1:47:33).

Loss of expected efficiency gain: Originally, the idea was to provide functionality for planning case handling with an expert system providing checklists and guiding the Planning Officers toward the correct legislation, but at the time of data collection, Byg & Miljø did not offered this:

> *"Getting help for planning case handling sounded very intriguing, but still it is not realized. I don't know if it has been scrapped altogether. At any rate, it is not at all what I had expected it to be"* (Business Manager, large-advanced 25:35).

7.1.2 Large municipality with timely digitalization process

The large-timely municipality is using the journal system Geograf Byggesag (Geograf BSS) (Project Manager Byg & Miljø and System Administrator BSS, large-timely 29:10; IT Manager, large-timely 21:20), handles approximately 4000 planning applications/year (Project Manager Byg & Miljø and System Administrator BSS, large-timely 18:07) and was (at the time of the data collection) expected to go live with Byg & Miljø December 1st 2014 (Project Manager Byg & Miljø and System Administrator BSS, large-timely 16:20).

The large-timely municipality was not guided by an explicit digitalization strategy for the relevant period of time.

7.1.2.1 Idea

Cost savings: The large-timely municipality expects cost savings in the form of reduced time to receive and handle planning applications. It is expected that time will be saved from the automatic creation of planning cases in the journal system and some time is expected to be saved with Byg & Miljø verifying that the required documents are enclosed (IT Manager, large-timely 21:20; 30:54). These expectations are supported by the Byg & Miljø Project Manager:

> *"There business case for Byg & Miljø is good – or actually, we didn't calculate the business case, but I am positive that the business case is fairly good due to*

> *some automatic creation. Today, despite our guidelines, usually there is something missing when we receive a planning application. Byg & Miljø will verify that the required documents for the specific type of application are enclosed. Furthermore, today we generate planning cases in our journal system manually… The integration between Byg & Miljø and our journal system will save us some time because we can feed planning applications directly into planning cases in the journal system"* (Project Manager Byg & Miljø and System Administrator BSS, large-timely 12:24).

Some timesaving is expected when giving applicants access to check for themselves the progress of their application: "…*and possibly save us some phone calls informing applicants the progress of their application*" (Project Manager Byg & Miljø and System Administrator BSS, large-timely 41:16).

No references are found to objectives, purpose or goal for Byg & Miljø or for the rest of the planning case area in the Digital Handling of the Planning Case Area project charter (project charter, large-timely), and the objective to provide a higher level of service is not expressed by any source in the large-timely municipality.

The digitalization idea materialized as objects in the project charter and by the informants in the interviews are seen as examples of the translation rule copying as cost saving and timesaving is expected, and the translation rule omission because an expected increase in the service level is not explicitly expressed (Czarniawska & Joerges, 1996; Røvik, 2016).

7.1.2.2 Translation

The large-timely municipality clearly supports the mandated digitalization process:

> *"Our municipality is **really** different from the others; how we are organized, how we do things, what kind of service we think is right… That makes it quite difficult to cooperate by choice. I support that this is enforced on us. If the municipalities had to agree on a good solution, it would take a long time"* (Project Manager Byg & Miljø and System Administrator BSS, large-timely 32:47).

From 2008 to 2011 the large-timely participated in a Byg & Miljø pilot project, but due to lack of resources, the municipality did not take part in the formulation of the requirements for Byg & Miljø (IT Manager, large-timely 48:02).

Ideas into actions: To become able to act upon the idea in the large-timely, a project charter with specific images of action was compiled. The scope of the project charter was formulated to cover digital handling of the planning case area, and not just digital handling of the planning application. To guide and follow the progress of the project, phases and milestones were stated in the project charter, for instance:

> *"mid-November to mid-December: 'Functional requirements for integration to BSS', mid-January: 'Plan for implementation of Byg & Miljø', mid-March: 'Installation and test of integration in Geograf BSS environment'"* (project charter, large-timely p. 3).

The project was framed to begin in the fourth quarter of 2013 and end in the first quarter of 2014 (project charter, large-timely p. 2). However, the project had not been closed during the time of data collection in the fourth quarter of 2014. As already mentioned, the project charter does not mention any objectives, purpose or goal for the digital handling of the planning case area.

Ideas onto actions: The project charter was written in November 2013, but since it states that the project was launched already in 2010 with the implementation of the new building and housing register (BBR), the project charter is giving a name to something already being done; it is putting ideas onto actions (project charter, large-timely p. 1).

Re-embedding: The importance of re-embedding the idea of digitalization and materializing it into new practices by means of Byg & Miljø is emphasized by the municipality involving two project managers in the project: a technical project manager from the IT Department is responsible for the operational implementation, and a business project manager from the Planning Department is responsible for the internal and external use of Byg & Miljø (Project Manager Byg & Miljø and System Administrator BSS, large-timely 5:28).

7.1.2.3 Inscribing

Strength of inscription: One of the project activities mentioned in the project charter is the technical integration between the planning case handling system and the digital planning application. By integrating the two solutions, the municipality's internal use of Byg & Miljø will be enhanced because there is no way to evade it. Therefore the integration is seen as an attempt to create a strong inscription of Byg & Miljø. The technical integration between Byg & Miljø and Geograf BSS was solved by the two IT vendors providing the two solutions (Project Manager Byg & Miljø and System Administrator BSS, large-timely 38:22). Another attempt to give Byg & Miljø a strong inscription is seen in the municipality's project charter stating that: "*KOMBIT is developing a common municipal platform for the digital planning application. The solution will become mandatory for all municipalities during 2015*" (project charter, large-timely p. 1). However, the solution developed by KOMBIT, Byg & Miljø, is not mandatory; only the provision of a channel for filing digital planning applications is mandatory.

Enforced inscription: At the time of the data collection, decision as to whether other application channels besides Byg & Miljø would remain open after December 1st 2014 had not been made (Project Manager Byg & Miljø and System Administrator BSS, large-timely 16:20). Nor was it decided whether the implementation would have an impact on the internal case handling processes (Project Manager Byg & Miljø and System Administrator BSS, large-timely 20:40). Both decisions were postponed for the future Manager of the Planning Department to take.

7.1.2.4 Unintended consequences

Postponement of ongoing business development plans: The large-timely municipality only expresses one unintended consequence which is the postponement of ongoing business developments due to lack of time. The large-timely has a rather large pile of unhandled planning applications, and the newly appointed Systems Administrator would have liked to

discuss the planning case handling work processes with other municipalities in order to learn from their experience – e.g. what could be done to reduce case handling time. However, the municipality is busy keeping the official deadlines for accepting digital planning applications by December 1st 2014 and implementing a time-recording system for billing fees according to time spent on planning applications by January 1st 2015, therefore they have not had the time to establish contact and knowledge exchange (Project Manager Byg & Miljø and System Administrator BSS, large-timely 34:39). Even when Byg & Miljø is fully implemented and integrated into Geograf BSS the handling of planning cases is not fully digitalized. A large planning case archive remains, where only about half of the documents have been scanned and stored digitally. Every digital case that is closed in Geograf BSS is added to the physical, hard-copy archive because no integration from Geograf BSS to the electronic archive has been implemented due to the increased complexity of the project portfolio, leaving the department with more projects than it can handle (Project Manager Byg & Miljø and System Administrator BSS, large-timely 11:27).

7.1.2.5 Technology

As already discussed, the full implementation and integration of Byg & Miljø into Geograf BSS will not totally digitalize the handling of planning cases. Only about half of the documents have been scanned and stored digitally in the planning case archive, the other half is physical. Every digital case that is closed in Geograf BSS is added to the physical, hard-copy archive because integration from Geograf BSS to the electronic archive has not been implemented due to lack of time (Project Manager Byg & Miljø and System Administrator BSS, large-timely 11:27).

Protecting internal work processes: Choosing to fully integrate Byg & Miljø into the internal case handling processes, thereby not only accepting digital planning applications but also replying to applicants digitally, is not just a matter of what the technology allows for or what applicants expect. The employees are vulnerable because of the changes they have experienced during the last year in terms of moving to new offices, new managers and an organizational restructuring. So in order to protect the internal case handling work processes thereby maintaining a number of stable reference points for the employees, Byg & Miljø might be integrated a little less than is actually possible (Project Manager Byg & Miljø and System Administrator BSS, large-timely 26:54).

7.1.2.6 Economic potential

The economic potential for digitalizing the handling of planning cases is quite large because it is an area where a lot of traditional mail is sent out. The two electronic mail systems preferred in the large-timely, Digital Mail and Doc2Mail, cannot handle attachments larger than A4 format, but most construction plans are A3 or larger. So for public consultation of neighbors or other parties involved, old-fashioned letters are printed, collected, packaged, postmarked and sent, which is rather costly both in terms of work hours and postage (Project Manager Byg & Miljø and System Administrator BSS, large-timely 9:20). However, reaching this economic potential is due to technology supporting the internal case handling processes and not in any way facilitated by digitalizing planning applications.

As already discussed, digitalizing planning applications along with the internal handling of planning cases is strongly believed to reduce costs, but the collected data do not reveal any concrete expectations (IT Manager, large-timely 21:20; 30:54; Project Manager Byg & Miljø and System Administrator BSS, large-timely 12:24; 41:16).

7.1.2.7 Success criteria

Only purely operational success criteria are recorded in the project charter, for example: *"Byg & Miljø go-live April 1st"* (Project charter, large-timely p. 4), and no other expressed success criteria are found in the data collected.

7.1.2.8 Funding

Self-financing: The Planning Department funds Byg & Miljø as well as the other central, national systems with functionality supporting Planning Department operations (IT Manager, large-timely 1:08:00).

7.1.2.9 Challenges

Increased complexity in project portfolio: As already discussed, planning case documents can be stored digitally in the archive, but the integration between Geograf BSS and the archive has not yet been developed due to increased project portfolio complexity, leaving the department with more projects than it can manage (Project Manager Byg & Miljø and System Administrator BSS, large-timely 11:27).

Fed up with change: The large-timely has witnessed rough publicity in the local newspapers because of up to 12 months of handling times for certain planning cases. The work processes have been changed, the organizational structure has been changed, the department manager has been replaced, and new employees have been added along with external consultants. All these changes have sent the department through a rough patch, so facing even more changes is a huge challenge because of the unhandled cases still piling up (Project Manager Byg & Miljø and System Administrator BSS, large-timely 23:49).

7.1.3 Medium-sized municipality with advanced digitalization process

The medium-advanced municipality is using the journal system SBSYS (Business Manager, medium-advanced 28:52), handles approximately 1200-1500 planning applications/year (Business Manager, medium-advanced 28:52) and went live with Byg & Miljø June 2014 (Business Manager, medium-advanced 26:40). The has made the idea of municipal digitalization explicit in its Digitalization Strategy 2013-2015, which was published after the Common Municipal Digitalization Strategy 2010-2015, and the eGovernment Strategy 2011-2015.

7.1.3.1 Idea

Cost savings and increased service level: In the medium-advanced municipality the Business Manager, the IT Manager as well as the digital strategy express the digitalization idea as being a question of cost savings through increased efficiency as well as increased service level through transparency. This offers the citizens a free choice between standing in line at the town hall and managing municipal affairs in the comfort of their own home whenever

convenient (Business Manager, medium-advanced 37:22; IT Manager, medium-advanced 4:37; Digitalization Strategy 2013-2017, medium-advanced p. 3).

As argued in section *6.5.2*, the expressed ideas are seen as examples of the translation rules copying and addition when translating the idea of municipal digitalization into an object: the municipality's Digitalization Strategy 2013-2015 (Czarniawska & Joerges, 1996; Røvik, 2016).

7.1.3.2 Translation

Detached from current practices: In the medium-advanced municipality, the translation from national level to common municipal level is perceived as the eGovernment Strategy idea of using less paper, digitalization, better service and better public welfare being materialized in the Common Municipal Strategy as concrete cost savings of DKK 2b through efficiency improvement and better service through municipal collaboration (IT Manager, medium-advanced 4:37). The idea is seen as becoming detached from current practices when it is objectified as a generalized IT solution, trying to serve the needs of 98 municipalities not all taking part in the requirements specification. As expressed by the IT Manager:

> *"The IT solution will probably cover 60-70% of the municipalities' needs, leaving about 30% particular needs uncovered for the individual municipalities to handle after the implementation"* (IT Manager, medium-advanced 46:10).

Along with KL and KOMBIT, the municipality originally took part in starting up the development process in 2010. The municipality, however, opted out because a lack of understanding of the complexity in the planning case handling made the municipality loose interest in the idea: The original idea was to provide a sort of a vending machine system where a planning application would result in the instant issuing of a planning permission – if building regulations were met. But case handling must also consider any district planning, which may be very complex, as it can be extended over time and may include various local levels. The original idea was therefore seen as completely detached from the reality of handling planning applications. Eventually, the scope was narrowed from full case handling to a simple receipt of planning applications for further handling in the Planning Office. This, however, would reduce the potential efficiency gain (Planning Officer, medium-advanced 46:42; Business Manager, medium-advanced 48:32).

Ideas into actions: The translation process of implementing Common Municipal Strategy projects and goals into local projects and goals was delegated to the IT Manager in the medium-advanced municipality:

> *"I try to gather the projects from the Common Municipal Digitalization Strategy and direct them into the different administrative units, ensuring they are formulated as tangible projects, being manned with the right competencies, and that the projects actually achieve the goals they are intended to achieve at national level"* (IT Manager, medium-advanced 1:18).

The municipality was not involved in the formulation of either the eGovernment Strategy or the Common Municipal Digitalization Strategy. Therefore, for this municipality, the translation process did not start until the strategies at the national and the common municipal levels were published. At that point in time, the municipality worked actively in various fora with the concrete tenders or projects thereby impacting the translation process to adapt the idea to the local context (IT Manager, medium-advanced 10:59; 22:50).

Ideas onto actions: The Business Manager expressed very clearly that the digitalization process also put ideas onto actions:

> *"I think that many municipalities have already worked with digitalization by choice because they could see a purpose and a rationale. So it is not like we didn't work with digitalization ten years ago, of course we did."* (Business Manager, medium-advanced 1:10).

However, the Business Manager also appreciates how the digitalization strategies set the process into a larger framework, offering the municipalities both standardization and national support.

Despite the fact that not the solution, but only the date for offering municipality customers a self-service solution for planning applications was mandatory, the municipality chose to go with the solution offered by KOMBIT; Byg & Miljø. The Business Manager assessed that, timewise, participation in the development process would be too costly and thereby damage the other activities in the Planning Office due to a higher than average complexity in the problem area (Business Manager, medium-advanced 17:09).

Difficult to adapt the idea when resources are removed: The Business Manager expressed how the translation process is becoming more difficult because the employees know that the purpose of the idea to make the case handling process more efficient thereby jeopardizing their own jobs:

> *"…adapting the idea to the organization is not becoming any easier when the theoretical, expected time savings of, say, two minutes per planning application are reaped almost before the new solution has been implemented and tested – and before the solution is actually working. It is hard for the employees to keep up a positive attitude, when they know that the new solution will cost a chair or two"* (Business Manager, medium-advanced 19:13).

Reaping the rewards before the solution is working leaves no time to fine-tune and institutionalize the required change.

7.1.3.3 Inscribing

Enforced inscription: The target to find savings of DKK 30-40m is one way of pushing the municipalities to materialize the ideas into action (IT Manager, medium-advanced 14:08). However, despite the pressure it is still difficult for the municipality to actually reap the rewards. The business processes tend not to be defined nor is process performance measured before the new technology is implemented, so when the expected efficiency is not gained, it

is difficult to use post-implementation performance measurements to investigate why (IT Manager, medium-advanced 8:39). Furthermore, some of the expected efficiency gains are out of proportion, which adds to the difficulty of reaping the rewards; in one case, a permanent gain of DKK 200,000 per year permanently was expected, but reality showed that the efficiency gain was only DKK 4,000 per year for five years. Sometimes, the business case is the result of political negotiation, where the target is to find a sum of money rather than actual, calculated possible gains; but still the municipalities are forced to find the resources elsewhere, because the budgets are cut with the expected gains (IT Manager, medium-advanced 50:10). Another way of pushing municipalities to materialize the ideas into action is legislation about deadlines set for completion of the digital solutions (IT Manager, medium-advanced 33:40).

Strength of inscription: To protect the Planning Officers from any impact from Byg & Miljø, Byg & Miljø will be inscribed with full integration to the planning case handling system:

> *"… when I realized how the municipal part of Byg & Miljø would be working, I was determined to avoid working with it. So we are going to adjust our SBSYS and fully integrate Byg & Miljø into SBSYS, so we don't have to see Byg & Miljø anymore. It will disappear"* (Planning Officer, medium-advanced 56:55).

7.1.3.4 Unintended consequences

The medium-sized, advanced municipality has experienced a number of unintended consequences in various areas: citizens needing professional help to apply for planning permissions, decrease in service level, increase in handling time, postponement of ongoing business development due to uncertainty, and workload reshuffling.

Citizens need professional help to apply for permissions: Since most citizens only build a house or a car port once or twice in their lifetime, they are not likely to gain the confidence that comes with sufficient routine in using the system. Many citizens will probably ask their advisor, architect or engineer to take care of the planning application. This may result in increased quality in the applications, because advisors will gain more experience with the system (Business Manager, medium-advanced 21:00).

Decrease in service level: Abolishing pdf forms for digital planning applications entailed a decrease in service level, because the Planning Officers no longer meet with the applicants, thus preventing them from assisting citizens or companies to scan hardcopies of drawings, if they are not able to do it themselves (Planning Officer, medium-advanced 1:12:06).

Increase in handling time: After abolishing the pdf forms for planning applications by November 1st 2014, all applications are now received through Byg & Miljø, but unfortunately the quality of the applications has decreased, and as a consequence, more time must be spent handling the applications (Planning Officer, medium-advanced 4:59, 15:08, 38:54; Business Manager, medium-advanced 1:45:44). When budgets are cut based on expected gains that are not realistic, the municipality has to lower its service level to meet the budget. Application handling time has already increased from 3-4 weeks to 10-12 weeks (Planning Officer, medium-advanced 43:02). Lowering the service level with respect to handling time will lead

to political discussions about which service level is fair, and if the political expectations for the service level remain high, it will eventually exhaust the organization (IT Manager, medium-advanced 51:55). If the politicians insist on cutting the budget, the handling time for planning applications will increase. The politicians will then have to agree on whether that is fair weighed against the savings (Business Manager, medium-advanced 1:19:04).

Postponement of ongoing business development plans: When the scheme for digitalizing planning applications was announced, the ongoing business development came to a standstill. For some time it was unclear whether the area was going to be centralized or stay with the municipalities, so until recently, when the plans for the Byg & Miljø-solution became known, all business process management was halted in order not to waste the energy invested (Business Manager, medium-advanced 52:15).

Reshuffling workload: One of the implications of paperless planning applications is that a number of tasks are transferred from administrative employees to Planning Officers, e.g. recording the planning permissions in the building and housing register, BBR, and giving drawings the seal of approval (Planning Officer, medium-advanced 7:49). This, of course, partly explains why the application handling time has increased (Planning Officer, medium-advanced 39:26). Eventually more Planning Officers and less administrative employees will be needed (Planning Officer, medium-advanced 19:43). The increased use of IT also means that one Planning Officer currently uses at least 50% of his time being superuser, helping his colleagues instead of handling planning applications (Business Manager, medium-advanced 1:03:30; Planning Officer, medium-advanced 1:15:47).

7.1.3.5 Technology

The owner of Byg & Miljø is the Planning Department. The IT Department used to own the large KMD systems, but lately they were transferred to the administrative units – including the costs:

> *"We would prefer a central management where the systems and their costs are administered as a whole instead of the different administrative units* furthering their own special interests*"* (Business Manager, medium-advanced 1:01:33).

Missing quality assurance: There is no quality assurance of the files attached to planning applications causing increased use of Planning Officers' time and increased handling time.

> *"It might be a picture of Donald Duck instead of a site plan, but the system has accepted it as a site plan – and we have to spend time to go back to the applicant and ask for a site plan"* (Planning Officer, medium-advanced 11:36).

The integration from Byg & Miljø to the case handling system is working close to perfect:

> *"We have been working with the interfaces so the different types of planning applications from Byg & Miljø are mapped into our SBSYS forms and created as the right type of planning application. If no type is chosen, I go through the applications once a day and map each of them to the right form. That's as easy as pie, and it doesn't take more than five minutes, but the tidying-up afterwards is*

> *time-consuming compared to what it used to be"* (Planning Officer, medium-advanced 13:31).

The login for Byg & Miljø is NemID. The other general municipal solutions use e-Boks[3], but e-Boks does not work for planning applications, because e-Boks can only take A4 format and drawings are typically a lot bigger. Applicants must enter an e-mail address in Byg & Miljø thereby directing correspondence from the municipality to the proper recipient. In the time of the pdf forms it sometimes happened that an applicant's e-mail-address in the pdf form became obsolete during the application process. Now it is the applicant's own responsibility to keep the contact information updated (Planning Officer, medium-advanced 55:11).

Protecting internal work processes: As already discussed, there is a strong motivation to protect the case handling work processes from any impact from Byg & Miljø:

> *"The citizen part of Byg & Miljø is great, really great. But the municipal part is equally bad, and when I realized how the municipal part of Byg & Miljø would be working, I was determined to avoid working with it. So we will adjust our SBSYS and fully integrate Byg & Miljø into SBSYS, so we don't have to see Byg & Miljø anymore. It will disappear"* (Planning Officer, medium-advanced 56:55).

7.1.3.6 Economic potential

Higher quality applications: The economic potential hoped for in the medium-advanced is to receive applications in a higher quality, thereby providing a smoother work process for the Planning Officers:

> *"The potential we see in Byg & Miljø is to get applications in the right quality and sequence, and to document our communication with citizens. To us the real scoop is the planning application module in SBSYS and the managing it offers to our work processes"* (Business Manager, medium-advanced 28:52).

However, numerous add-ons necessary to make the solution work in practice were not known when the business case was written, making it harder to reap the expected rewards:

> *"I have kind of lost track of the economic picture. I try to stay in control, but first I need to buy some programs, and then some OCR-recognition, which was not known when the business case was written, and then Adobe licenses for all the Planning Officers, and extra monitors, and smartboards for the very large drawings for the hospital. But we didn't know anything about this 18 months ago"* (Business Manager, medium-advanced 1:38:02).

Best practice and standardized work processes: The medium-advanced municipality thinks there would be an even larger economic potential if planning case handling work processes were standardized across municipalities in a common system building on best practice:

[3] e-Boks is an online digital mailbox to which all digital mail from the public sector as well as some private sector companies is sent. Citizens and companies are obliged to check e-Boks regularly.

> *"Even if all of the 98 municipalities have some unique activities in the planning application process, it is still the same legal framework which is being administered. I think that we coudl have made our electronic case and document handling system on a national level, covering the whole planning application process. Why on earth do we develop and buy 117 different systems, from spreadsheets to advanced systems?"* (Business Manager, medium-advanced 1:52:12).

7.1.3.7 Success criteria

The eGovernment Strategy's criterion for success states that from 2015 80% of all correspondence to and from citizens will be digital (eGov Strategy 2011-2015, p. 14). By August 2014 this success criterion was not readily adopted by the medium-advanced municipality:

> *"The government's criterion for success is that 80% of the planning applications are managed through Byg & Miljø, but we are satisfied with 20% the first year. In ten years or so we could have another talk, but 80% won't just happen overnight. It takes a lot better communication to get there."* (Business Manager, medium-advanced 1:12:50).

However, four months later, in December 2014, the other channels for filing planning applications had been closed, and Byg & Miljø is now the only way to submit a planning application:

> *"We closed [the other channels] by November 1st. Or actually, if a citizen shows up here, elderly or for some other reason unsure about IT, and if the planning project is not too large, then we might scan it at our photocopier. I see no reason why we should make it* unnecessarily difficult. *But as for the success criterion of 80%...I think we will pass 90%. We need to be accessible to the citizens and let them submit an application if it is not too difficult. We need the citizens to think of the municipality as collaborative"* (Planning Officer, medium-advanced 1:12:06).

7.1.3.8 Funding

Gains earned are plowed back: The digitalization strategy clearly states that any gains earned on digitalization should be plowed back into the administrative unit, accomplishing the gain:

> *"It is important … to ensure that we use IT to make [our work] more efficient. If there is a gain, a large part of this must be plowed back… Generally we will see an investment the first years and a gain later. The administrative unit is expected to self-finance the investment or apply the common development pool for the sum…which should be returned"* (Digitalization Strategy 2013-2017, medium-advanced p. 16).

Self-financing: The Planning Department is funding the system:

> *"The Planning Department knows how to improve the systems, so we support the principle about us being the owner, but when it comes to the cost savings, it*

> *didn't materialize. Only the cost did..."* (Business Manager, medium-advanced 1:01:33).

7.1.3.9 Challenges

It is hard for the users to use the digital solutions: The citizens are unlikely to gain confidence in using the system, because most of them only apply for a planning permission once or twice during their lifetime (Business Manager, medium-advanced 21:00). Companies are not equipped to use Byg & Miljø. They can easily see the point, but only the accountant or bookkeeper has the electronic signature, necessary for entering Byg & Miljø, so the planning employees cannot submit a planning application (Business Manager, medium-advanced 1:39:07).

Loss of expected efficiency gain: The Planning Officer expressed how some of the original idea, with respect to the expected efficiency gain, crumbled even before the system was developed. Originally, the idea was to reject receipt of planning applications if some of the required attachments, i.e. site plan or calculations etc., were missing. But before the system was developed the Parliamentary Ombudsman decided that a municipality cannot refuse to receive a planning application, hence the quality control with respect to required attachments was removed from the system (Planning Officer, medium-advanced 7:11).

Reaping the rewards: The Planning Department has footed the bill for Byg & Miljø, but no cost savings has materialized (Business Manager, medium-advanced 1:01:33). However, cost savings from Byg & Miljø were actually not expected:

> *"Originally we made a business case for Byg & Miljø, but the calculations we made showed us that the digitalization of our internal processes should be given the credit for any savings, not Byg & Miljø. So we changed the business case to cover the digitalization of the planning application area instead of just the receipt of planning applications"* (Business Manager, medium-advanced 1:24:12).

As discussed under Economic Potential at the time of writing the business case, it was difficult to foresee the environment needed to implement Byg & Miljø, and various items in the environment, i.e. OCR-recognition, Adobe licenses, extra monitors and smartboards had to be acquired, which hampered reaping any rewards even more (Business Manager, medium-advanced 1:38:02). As already discussed under Unintended Consequences, quality of the applications has decreased with the implementation of Byg & Miljø, and as a result handling time has increased, which is another reason why it is difficult to reap any rewards (Planning Officer, medium-advanced 4:59, 15:08, 38:54, 1:05:34; Business Manager, medium-advanced 1:45:44). As already discussed under Inscribing, some of the expected efficiency gains are out of proportion which adds to the difficulty of reaping the rewards; in one case a permanent annual gain of DKK 200,000 was anticipated, but reality showed that the efficiency gain was only DKK 4,000 per year for five years. Sometimes the business case is the result of political negotiation, where the target is to find a sum of money rather than actual, calculated possible gains; but still the municipalities are forced to find the resources elsewhere, because budgets are cut with the expected gains (IT Manager, medium-advanced 50:10).

Increased complexity in project portfolio: The IT Department is considered to be badly affected by the many digitalization strategy initiatives: "*The IT Department also supports all the other initiatives… directed at the other administrative units. It is a flood, a tsunami… I completely understand their challenges. It is tricky to create the interplay between all these initiatives*". Because of the increased demand from the administrative units for attention from the IT Department, the original internal deadline for going-live with Byg & Miljø, April 1st , was lost or forgotten and therefore not met: "*It is definitely an advantage having an IT-savvy employee in the department. The IT Department has contributed very little resources. I completely understand what they are up against. They have three other administrative units in fierce competition seeking attention, and mistakes happen…*" (Business Manager, medium-advanced 1:04:41).

7.1.4 Medium-sized municipality with timely digitalization process

The medium-timely municipality is using the journal system SBSYS (Digitalization Specialist, medium-timely 11:27), handles approximately 800-900 planning applications/year (Digitalization Specialist, medium-timely 1:19:25) and has been running Byg & Miljø as Proof-of-Technology since March 31st 2014, but did not go-live fully before December 1st 2014 (Digitalization Specialist, medium-timely 7:12). The Digitalization Strategy 2009-2012 guiding the medium-timely municipality in the period relevant for this study, was published before the Common Municipal Digitalization Strategy 2010-2015 and the eGovernment Strategy 2011-2015.

7.1.4.1 Idea

Cost savings and increased service level: In its digitalization strategy the medium-timely expresses the idea of digitalization as aiming to increase the service level and support production of core output:

> *"The municipality targets its digitalization initiatives to benefit citizens and companies by providing better and faster service and to benefit employees by supporting improved production of core output"* (Digitalization Strategy 2009-2012, medium-timely, p. 2).

Furthermore, the digitalization strategy expresses the idea of digitalization as aiming to make business processes more efficient by eliminating manual activities, reuse of data, and process integration (Digitalization Strategy 2009-2012, medium-timely, p. 3; p. 5).

In the medium-timely municipality, it is seen as crucial to be able to realize the idea of digitalization, in order to live up to the citizens' expectations but also because of the tight resources resulting from budgets cuts:

> *"We must exploit digital solutions to get closer to the citizens, to work smarter, and to increase the quality of our services. To digitalize is a prerequisite for the ongoing services we are obliged to deliver to our citizens. After all, digitalization is a question of our survival"* (Business & IT Manager, medium-timely 1:40:21).

However, when looking at the guidance provided for applicants, the service goals are not met. Actually, compared to the pfd form which was the channel for planning applications until December 1st 2014, Byg & Miljø decreases the service level for submitting planning applications and it introduces a number of problems for applicants. Some of the challenges that applicants encounter include understanding if they are submitting a draft or a proper application, how to add documents to an existing application, and keeping a sense of perspective instead of getting lost in the details. Applicants did not experience those kinds of problems with the pdf form (Digitalization Specialist, medium-timely 9:10, 14:33; 16:50 1:31:09; 1:43:11).

The objectives expressed in the medium-timely Digitalization Strategy 2009-2012 have seemingly been able to influence the objectives in the later common digitalization strategies. Therefore, it was suggested in section *6.5.3* that the translation of the digitalization idea from national level over common municipal level to individual level should not be seen as a one-way process, but a two-way dynamics.

7.1.4.2 Translation

Which actor carries the idea into the organization? LGDK and KOMBIT started informing the medium-timely about digitalizing of the planning applications in 2013 (Digitalization Specialist, medium-timely 6:15).

Detached from current practices: The medium-timely participated in a municipal network meeting in March 2014 where Byg & Miljø was demonstrated leading up to the first possible go-live date, but already at that time the system did not live up to expectations. The possibility to submit an insufficient application had detached the functionality of the system from current practice:

> *"We heard from the pilot municipalities that the system would prevent applicants from submitting insufficient applications, just like the former pdf form, which did not allow you to submit an application before the mandatory information was provided. However, somewhere in the making, the Parliamentary Ombudsman decided that municipalities cannot refuse receiving planning applications. So now you can login with NemID, write nothing at all, tick the box "Yes, I confirm that to my knowledge, the submitted information is sufficient", and then we receive the application. But we can't see what the applicant would like to do, and there are no drawings. Then we need to get in touch with the applicants to tell them about the information we need. This is time consuming…"* (Digitalization Specialist, medium-timely 7:12; 9:10; 16:50).

Ideas into actions: Digitalization is an area with a strong managerial focus in the medium-timely municipality, and consequently, there was no doubt that the planning application would be digitalized. Initially the planning office realized that they had a complex task on their hands, consisting of both integrating Byg & Miljø to the planning case system and implementing a time recording system for billing fees. So in order to formulate the proper scope, uncover where support was needed, and maintain managerial focus, a project description to digitalize the planning case area was written and prioritized in accordance with

the common project model and portfolio management model referred to in the digitalization strategy (Business & IT Manager, medium-timely 24:43; Digitalization Strategy 2009-2012, medium-timely p. 8). The project was then approved in the group of managers and subsequently launched:

> *"Meetings have been held regularly to follow-up on progress, and we have had to adjust the course of action because neither implementing Byg & Miljø nor the time-recording system went on as quickly or painlessly, as we had thought"* (Business & IT Manager, medium-timely 32:21).

Difficult to adapt the idea when resources are removed: It is difficult to adapt the idea to the organization because the recourses needed to change the business processes are fully employed for operating the business processes:

> *"It is a challenge to facilitate change because change requires resources and we are already busy coping with everyday tasks. It takes some managerial focus to prioritize which tasks to delay in order to channel the resources into creating the change that will improve our performance in the long run"* (Business & IT Manager, medium-timely 1:42:10).

Re-embedding: In order to materialize the idea of digital planning applications into action, the medium-timely is determined that all planning applications should be submitted through Byg & Miljø. To ensure this, applicants that get stuck in the application process, are either guided by telephone or can show up at the reception desk, where a digitalization specialist or a Planning Officer will assist them (Planning Officer, medium-timely 19:16; Digitalization Specialist, medium-timely 1:21:02). The original idea in the digitalization strategy was to use digitalization to "*provide better and faster service and to benefit employees by supporting improved production of core output*" (Digitalization Strategy 2009-2012, medium-timely, p. 5). The idea has traveled to implementation in the medium-timely, but somewhere on the way, focus shifted from cost savings and increased service level to making things work:

> *"For us with our fingers in the pie, I don't think [creating cost savings or increased service level] have had our attention. Now that the decision has been made, we focus at getting the best out of it. Making things work…"* (Digitalization Specialist, medium-timely 1:38:08).

7.1.4.3 Inscribing

Which media or material? The integration from Byg & Miljø to the planning case handling system SBSYS was still under way during the time of data collection. The intention is that Byg & Miljø will eventually be fully integrated into SBSYS, so planning applications submitted to Byg & Miljø will be generated seamlessly in SBSYS for the Planning Officers to start case handling. For the municipality to invoice time spent, a time-recording system has been integrated in SBSYS and in the ERP system (Planning Officer, medium-timely 33:18; Digitalization Specialist, medium-timely 34:16; 1:22:45). The integration of the four internal systems involved in planning case handling is to secure strong inscription of digitalization.

7.1.4.4 Unintended consequences

Exhausting the organization over time: When budgets are cut before the expected savings are realized, the medium-timely reacts by finding savings somewhere else:

> *"We have been challenged, more than once, by having our budgets cut before the calculated savings could be realized. When this happen we need to reprioritize to make things fit"* (Business & IT Manager, medium-timely 1:36:39).

Increase in handling time: As already discussed, it is possible for applicants to submit an incomplete planning application through Byg & Miljø. If a planning application is incomplete, the Planning Officers needs to contact the applicants to obtain the missing information: this increases handling time (Digitalization Specialist, medium-timely; 7:12; 9:10; 1:29:25). Handling time is also increased by the time spent on helping applicants through the application process, either by phone or at the reception desk (Planning Officer, medium-timely 19:16; Digitalization Specialist, medium-timely 1:16:05; 1:21:02).

Increased technological vulnerability: When more IT vendors are involved in providing systems and integrations between systems the medium-timely has experienced that the business processes become more vulnerable, because the IT vendors are reluctant to accept a problem as theirs. So when problems occur, it is not just about calling one IT vendor, it is about convincing one of the IT vendors to take responsibility for the problem:

> *"We had the IT department fixing a small, known problem in SBSYS, and the next day nothing worked: no integration between Byg & Miljø and SBSYS, no cases in SBSYS, no time management system, and no Navision. For two weeks I was constantly on the phone trying to make somebody deal with the problems. But because there were four IT vendors involved, they just kept passing the buck. They even asked me what I thought the problem was. We need the IT vendors to take a joint responsibility and work together instead of insisting that nothing is wrong with their specific part of the whole, that is a huge problem for me"* (Digitalization Specialist, medium-timely 34:36).

7.1.4.5 Technology

Protecting internal work processes: Because the applications submitted through Byg & Miljø are downloaded and imported to SBSYS by the digitalization specialist, most of the planning case handling process is the same as before implementing Byg & Miljø as seen from the Planning Officers' side of the table. If there is a need to contact an applicant, however, the Planning Officer must use Byg & Miljø to send the letters that are created in SBSYS (Planning Officer, medium-timely 1:26:05).

Missing quality assurance: As already discussed, the lack of quality assurance allows applicants to submit insufficient applications; this has decreased the service level with respect to handling time and detached the functionality of the system from current practice (Digitalization Specialist, medium-timely 16:50; 1:29:25).

Prioritize ease of use for applicants: The medium-advanced municipality's top priority is applicant user-friendliness, because resources will be released if the applicants are able to apply without the municipality assisting them (Digitalization Specialist, medium-timely 54:12; 1:35:29; Business & IT Manager, medium-timely 54:56).

7.1.4.6 Economic potential

Best practice and standardized work processes: The medium-timely municipality is very supportive toward common standardized digital municipal solutions. Experience from a general digital solution which was implemented three years ago shows that even when there are quite a few teething troubles, eventually they are solved. When 98 municipalities are pushing to get a well-functioning system, the IT vendors will tend to solve the problems faster than if only a couple of municipalities are using the system and experiencing the problems (Business & IT Manager, medium-timely 52:17).

7.1.4.7 Success criteria

No predefined success criteria: No explicit success criteria regarding the implementation of Byg & Miljø in the medium-timely municipality have been predefined. There is a tendency to believe, however, that expectations ought to be stated more clearly in the business case and that follow-up on the expressed expectations should be more systematic (Business & IT Manager, medium-timely 1:12:08).

7.1.4.8 Funding

Self-financing: In the medium-timely municipality the administrative units prioritize and fund the majority of the digitalization projects: "*Typically the administrative units fund their own digitalization projects. Only the very large digitalization projects are jointly funded*" (Business & IT Manager, medium-timely 1:09:27; Digitalization Strategy 2009-2012, medium-timely, p. 12).

Calculations on the expected rewards from LGDK are used as input for prioritizing:

> *"The calculations from LGDK on the expected rewards are included in the considerations on which projects to advance, but I have to admit that, compared to LGDK's expectations, the rewards have a lag of at least a couple of years"* (Business & IT Manager, medium-timely 1:09:27).

7.1.4.9 Challenges

Balancing core output with digitalization projects: As already discussed, balancing core output with the digitalization projects is difficult, because it takes resources to adapt the idea to the organization and change the business processes, but the organization is already fully engaged in operating the business processes (Business & IT Manager, medium-timely 1:42:10; 1:58:41; Digitalization Specialist, medium-timely 2:02:11).

Increased complexity in project portfolio: The eGovernment Strategies has introduced several concurrent digitalization projects thereby increasing the project portfolio complexity. The medium-timely municipality has dealt with this by rooting the overall focus in the steering committee for digitalization and the operational focus in the working group for digitalization,

and by involving employees from the administrative units in the digitalization projects, rather than just employees from the IT department (Business & IT Manager, medium-timely 1:58:41).

It is hard for the users to use the digital solutions: Using Byg & Miljø is a challenge for many of the applicants, because user-friendliness is low, the application flow is not intuitive and guidance is limited (Digitalization Specialist, medium-timely 14:33; 49:12; 1:31:07). A complex set of rules and regulations as well as infrequent use only add to the difficulties experienced by applicants:

> *"Many of the users only submit a planning application once in their life, and the majority is not aware of the rural land use regulation or the areas designated to protection of the natural environment. It is easier for applicants to submit an insufficient application than to acquaint themselves with the rules before being able to submit a sufficient application"* (Planning Officer, medium-timey 12:28; Digitalization Specialist, medium-timely 14:33).

Reaping the rewards: As already discussed, the missing quality assurance of applications submitted through Byg & Miljø allows applicants to submit insufficient applications. Handling insufficient applications has increased handling time and has thereby challenged the possibility of reaping any rewards (Digitalization Specialist, medium-timely 16:50; 1:29:25; Planning Officer, medium-timely 19:16). Patience was expressed even if, at the time of data collection, it seemed impossible to reap any rewards from implementing Byg & Miljø:

> *"When things have settled and are working more like we would like them to, we will scrutinize the business process to see whether it can be optimized, either here or in the other administrative units. In a couple of years, we will probably be able to reap some rewards anyhow"* (Business & IT Manager, medium-timely 1:33:40).

Loss of expected efficiency gain: As already mentioned, applicants can submit insufficient applications which has increased handling times, and thus the expected efficiency gain has vanished (Digitalization Specialist, medium-timely 7:12; 14:33; 16:50; 1:29:25).

7.1.5 Small municipality with advanced digitalization process

The small-advanced municipality is using the journal system SBSYS (Business Manager, small-advanced 20:56), handles approximately 300-400 planning applications/year (Business Manager, small-advanced 36:13; Planning Officer 55:31) and went live with Byg & Miljø April 2014 (Business Manager, small-advanced 52:31).

The small-advanced municipality was not guided by an explicit digitalization strategy for the relevant period of time. Instead, a Service and Channel Strategy 2012-2015 forming a plan for how the municipality can communicate in the most efficient way with its business partners was published.

7.1.5.1 Idea

Cost savings: The small-advanced municipality's Service and Channel Strategy states that digitalization of the Danish municipalities is expected to generate cost savings of DKK 2b from 2015. However, this figure has not been calculated for the municipality (Service and Channel Strategy 2012-2015, p. 4).

Loss of expected efficiency gain: With efficiency gain as an objective, it puzzles the small-advanced why it is optional for applicants to provide most of the application information. At least 90% of the applications suffer from a shortage of information so severe that the municipality must send the applicant a letter to request the lacking information. The planning case cannot be handled without the required material. Before Byg & Miljø was implemented, the percentage of inadequate applications was around 40% (Planning Officer, small-advanced 1:02:44). The small-advanced calls for a clearer division of responsibility:

> *"We need a clear distinction between what applicants must provide in order for us, as a public authority, to be able to handle the application. And if the applicants find it too difficult, they will have to hire an advisor to provide the required information. Otherwise we will have to do it, and that would certainly not increase our efficiency"* (Business Manager, small-advanced 47:04).

They also mention that a larger efficiency gain would have been possible, if the planning application legal framework had been simplified before the development of Byg & Miljø:

> *"Now there is only a 1:1 digitalization of how the planning application works today. The system ought to have been able to support the complete flow of planning applications, i.e. the consultations of neighbors or other involved parties. When you are working with a digital map, you know who the neighbors are, and it would be a piece of cake to choose and add them as participants in a legal hearing process"* (Business Manager, small-advanced 26:16; 1:06:27).

Increased service level: In the small-advanced an improved communication with the applicant, i.e. the system functionality allowing applicants to look up the status of their application, is expressed as an increase in the service level (Business Manager, small-advanced 26:16; 47:04; 1:00:49; Digitalization Consultant, small-advanced 35:33). Furthermore, providing a round-the-clock access to digital service is mentioned as an increase of the service level for digitally capable citizens (Service and Channel Strategy 2012-2015, small-advanced p.3).

Redistribution: The small-advanced had planned to lower resource consumption for tasks where self-service is appropriate, and to redistribute the saved resources to tasks that are more complicated and require face-to-face communication (Service and Channel Strategy 2012-2015, small-advanced p.5). This redistribution plan can be seen as a contradiction to the objective of generating cost savings for DKK 2b.

The digitalization idea materialized as objects in the Service and Channel Strategy and by the informants in the interviews are seen as examples of the translation rule copying as cost

saving and increased service level is expected in line with the digitalization strategies at national level and common municipal level (Czarniawska & Joerges, 1996; Røvik, 2016).

7.1.5.2 Translation

Detached from current practices: As already discussed under *Idea*, the idea is detached from current practices by allowing applicants to submit incomplete applications, which prevents realization of the expected efficiency gains (Business Manager, small-advanced 26:16; Planning Officer 1:05:22). This is supported by the Digitalization Consultant, who agrees that the LGDK Action Plan defines the tasks ahead, but also states that the tasks tend to be hard to solve with the relatively more limited resources that are accessible in a small municipality: "*Sometimes it's fine, and sometimes it's not, because some of the solutions are hard to implement for a small municipality*" (Digitalization Consultant, small-advanced 17:36; 1:01:22).

Ideas into actions: For the small-advanced municipality, the process of putting the idea into action was grounded in 2013 with a number of meetings between the Business Manager, a couple of employees from the Planning Department as well as the Environment Department, and also an employee from the IT Department:

> *"The purpose was to detect what we had to prepare for when Byg & Miljø was implemented. That was when we realized that we had to handle the integration ourselves. Up to that point I had imagined that the applications would just jump directly into our planning case handling system, but, of course they can't…"* (Planning Officer, small-advanced 1:40).

Re-embedding: After implementing Byg & Miljø some of the functionality was perceived as bugs, i.e. lacking identification of conflicts between a planning application and the various bits of legislations and district plans. The work-around for this bug was to have the Planning Officers scan for conflicts manually, which somewhat detached Byg & Miljø from the current planning case handling. In order to re-embed Byg & Miljø, these bugs had to be resolved, and the Planning Officer used his professional network DaByFo (Forum of Danish Building Authorities) to consolidate and prioritize which bugs should be fixed first (Planning Officer, small-advanced 17:17). The Digitalization Consultant found personal contact and support very helpful when re-embeding digitalization initiatives:

> *"At first some of my colleagues were quite hesitant to replace the traditional letters with digital mail. They didn't see the point, and they were actually quite negative. Then we had two meetings, and I told them afterwards that they could call me whenever needed. This is one of the advantages of being a small municipality. We are close and know each other. They have called me a couple of times, and we solved their problems together. Now they have grown so fond of digital mail that they call me and ask for a digital solution when once in a blue moon they need to send a traditional letter"* (Digitalization Consultant, small-advanced 39:43).

Besides personal contact and support, the Digitalization Consultant has, in a former employment, experienced that involvement through local digitalization work groups increases sense of ownership as well as satisfaction with digitalization initiatives (Digitalization Consultant, small-advanced 56:15).

7.1.5.3 Inscribing

Strength of inscription: In the small-advanced municipality, there is political support for closing the alternative channels and actively rejecting analog applications in order to prevent circumvention of Byg & Miljø, which strengthens the inscription of the solution (Business Manager, small-advanced 54:12; Planning Officer, small-advanced 5:20).

7.1.5.4 Unintended consequences

Citizens need professional help to apply for planning permissions: As already discussed under *Loss of expected efficiency gain*, at least 90% of the applications are submitted with so wanting information that the municipality is compelled to request the applicant the lacking information. It is impossible to start the planning case handling with the material at hand. The share of inadequate applications before Byg & Miljø was implemented was around 40% (Planning Officer, small-advanced 1:02:44). Furthermore, also as already discussed under *Loss of expected efficiency gain*, the small-advanced municipality calls for a more distinct division of the responsibility between what applicants have to provide in order for the municipality to be obliged and able to handle application:

> *"…And if it is too difficult for the applicants, they will have to hire an advisor to provide the required information. Otherwise we will have to do it, and that would certainly not increase our efficiency"* (Business Manager, small-advanced 47:04).

Decrease in service level: In some cases, applicants tick a wrong box by accident, e.g. the box stating that the building plan does not require a building permit. This triggers a receipt from Byg & Miljø stating that the building plan can go ahead – and in fine print: "If you have ticked the right boxes". Until now, the small-advanced municipality has been able to identify these applications and stop the applicants, thereby avoiding setting building plans - that are violating building regulations in motion. It is perceived as a decrease in the service level for applicants to first have a go and then having to wait for proper planning case handling (Planning Officer, small-advanced 58:25).

Increase in handling time: As already discussed, at least 90% of the applications received through Byg & Miljø are inadequate for case handling. In some cases an advisor or developer is applying on behalf of the client, but the required power of attorney is missing; in other cases even information about what the applicant is planning to build or tear down is missing, and yet, in other cases an applicant has scanned the back of drawings so the attached drawings are blank. These types of application errors did not occur before implementing Byg & Miljø. When a planning case handling cannot be started due to deficient data material, the municipality must send the applicant a letter requesting the lacking information, which increases handling time both in calendar days and in time spent for the Planning Officers (Planning Officer, small-advanced 11:32; 27:59; 51:05; 1:02:44). Each year, the Danish Ministry of Transport and Building collects data and publishes a statement about planning

case handling time in each of the Danish municipalities (Danish Transport & Construction Agency, 2015). The Planning Officer expects that the increase in calendar days will have a negative impact on the Ministry' handling time statement (Planning Officer, small-advanced 53:07).

Introduction of new structures: Digitalization of planning applications is a task for which the small-advanced municipality perceives itself to be too small to handle, so – among many other things – this has led to some consideration whether the municipality should become a larger unit by merging with one of its neighbor municipalities (Business Manager, small-advanced 2:59).

Restructuring of the organization: Making digitalization initiatives a success requires project competencies in the organization. The municipality has not developed project competencies internally because their focus has been on case handling and providing service to citizens. As the small-advanced municipality has no digitalization support department with project competencies or resources, the Planning Officers must implement Byg & Miljø themselves with support from the IT department, which has no project savvy staff staff either, only staff with IT-operational competencies (Business Manager, small-advanced 1:16:25; Digitalization Consultant, small-advanced 59:59). Vacant positions should be filled with candidates with project competencies, or project competencies within the organization should be utilized across functions (Business Manager, small-advanced 1:16:25).

7.1.5.5 Technology

For the data collected in the small-advanced municipality, only a couple of non-essential bug descriptions earned their way into the technology code.

7.1.5.6 Economic potential

No references to "Economic potential" were found in the data material from the small-advanced municipality.

7.1.5.7 Success criteria

The small-advanced municipality did not formulate any explicit success criteria before implementing Byg & Miljø: "*But we did expect to ease communication and to set up a guided application process with a strong pull for the required data. We were quite frustrated when we realized that this was not the case at all*" (Business Manager, small-advanced 1:04:27).

7.1.5.8 Funding

If the administrative units in the small-advanced municipality cannot finance the digital solutions that have to be acquired, the Forum for Digitalization has funds that administrative units can apply for. If funds are allocated, pay off is expected over the coming years with savings corresponding to the business case (Business Manager, small-timely 19:05; IT & Process Consultant, small-timely 7:18).

7.1.5.9 Challenges

Balancing core output with digitalization projects: It is difficult for the small-advanced municipality to accomplish both core output and systems implementation, and as already discussed under Unintended consequences, digitalization of planning applications is therefore

a task which the small-advanced municipality perceives itself to be too small to handle (Business Manager, small-advanced 2:59).

> *"I can't fathom how Byg & Miljø can help realize the expected efficiency gains. I think Byg & Miljø has dragged along a lot of additional tasks, and implementing it has placed severe strain on our small organization. It has taken us lots of time, and how do you create commitment when we are already neck-deep in planning cases? It isn't easy to prioritize spending time implementing Byg & Miljø when there is a heavy workload already"* (Business Manager, small-advanced 1:10:27).

Size matters: As already discussed, the small-advanced municipality does not have the project skills required to accomplish the digitalization initiatives. Large municipalities usually have internal service departments deal with digitalization projects, but in the small-advanced municipality all employees focus on operations and providing service to citizens (Business Manager, small-advanced 1:16:25; Digitalization Consultant, small-advanced 59:59):

> *"We suffered from the start, being delayed with the case handling, so it was hard to create sufficient commitment to Byg & Miljø. Here it was just yet another task to solve, but this would probably be completely different in a municipality with more muscles. I think that size matters and that our size is our real challenge"* (Business Manager, small-advanced 1:14:55).

Furthermore, as already mentioned under Translation, the Digitalization Consultant agrees that digitalization tasks are harder to solve with the relatively fewer resources accessible in a small municipality (Digitalization Consultant, small-advanced 17:36; 1:01:22).

Increased complexity in project portfolio: The digitalization initiatives trigger simultaneous demand for the insufficient resources and IT qualifications: "*We lack a total overview of what is going on digitalization-wise in the municipality. We need an overview to balance the need for IT qualifications with the available resources*" (Digitalization Consultant, small-advanced 58:22).

It is hard for the users to use the digital solutions: As discussed under *Unintended Consequences*, applications have a lot more shortcomings than before Byg & Miljø was implemented; this leads to the conclusion that the digital solutions are harder to use for applicants (Planning Officer, small-advanced 11:32; 27:59; 51:05; 1:02:44).

Reaping the rewards: As discussed earlier, allowing applicants to submit incomplete applications prevents the realization of the expected efficiency gains (Business Manager, small-advanced 26:16; Planning Officer 1:05:22).

7.1.6 Small municipality with timely digitalization process

The small-timely municipality is using the journal system KMD Struktura byggesag (Planning Officer, small-timely 11:34), handles approximately 500-600 planning applications/year (Planning Officer, small-timely 16:32) and went live with Byg & Miljø

December 1st 2014 (Planning Officer, small-timely 20:10). The municipality has made the idea of municipal digitalization explicit in its Digitalization Strategy 2011-2015. It was published after the Common Municipal Digitalization Strategy 2010-2015 and within the same period of time as the eGovernment Strategy 2011-2015.

7.1.6.1 Idea

Cost savings: In their Digitalization Strategy, the small-timely municipality expresses the idea as the use of digitalization to "*increase efficiency in case handling and provide effective solutions for our citizens*" (Digitalization Strategy 2011-2015, small-timely p. 5). In the small-timely municipality, cost savings are expected as a result of the automatic generation of planning cases in the journal system (IT & Process Consultant, small-timely 8:35). Besides, cost savings are expected from increased application quality, meaning that Planning Officers no longer need to get back to applicants to get the right documents, and from the possibility for applicants being able to follow the progress of their application (Planning Officer, small-timely 10:19; IT & Process Consultant, small-timely 32:23; 1:14:39).

Increased service level: As is also expressed by the small-timely municipality, the original idea is that Byg & Miljø handles the simple applications, so that an applicant would actually get a building permit or a rejection immediately after filing an application (Planning Officer, small-timely 10:19). However, the actual implementation of Byg & Miljø is somewhat less useful. Some case handling has been implemented, namely identification of conflicts between the application and the legislations and district plans. If a conflict is identified the application must be stopped to avoid that building plan violating regulations. However, in the current version of Byg & Miljø, when conflicts between the planning application and regulations appear, these are not identified, so the Planning Officers have to continue to search for conflicts manually (Planning Officer, small-timely 28:10). This, however, is perceived somewhat differently by the IT & Process Consultant, who recalls the idea as merely being a question of standardized applications as well as increasing the service level for applicants, e.g. by Byg & Miljø providing a portal for applicants to check the status of their application (IT & Process Consultant, small-timely 32:23).

Develop active citizenship and support democracy: The small-timely municipality has extended the range of the idea to comprise the use of digitalization to "*develop active citizenship and support democracy*" (Digitalization Strategy 2011-2015, small-timely p. 4).

7.1.6.2 Translation

Detached from current practices: The idea of mandated digitalization of planning applications does not take local considerations into account. The small-timely municipality's planning case handling lags behind, and because the work load has not allowed any slack there has been some resistance to change, because the required change has been perceived as an extra burden (Planning Officer, small-timely 10:19).

Which actor carries the idea into the organization? The idea about the digitalization of planning applications became known in the small-timely municipality at the 2010 annual meeting in DaByFo, the network of Planning Officers (Planning Officer, small-timely 54:23). Both professional networks and LGDK are referred to as being actors that carry the idea into

the organization (Planning Officer, small-timely 54:23, IT & Process Consultant, small-timely 1:51:08, Business Manager, small-timely 9:40). As expressed by the IT & Process Consultant "*... it is the initiatives from LGDK that dictate the project portfolio*" (IT & Process Consultant, small-timely 1:26:12). Other actors carrying the idea of digitalization are the Danish Agency for Digitisation and KOMBIT (IT & Process Consultant, small-timely 1:53:45). Internally, the IT & Process Consultant was the focal point of information (Business Manager, small-timely 9:40).

Ideas into actions: For the small-timely municipality, the process of putting the idea into action was grounded in the Digitalization Strategy, a thorough development process involving a wide range of actors in the municipality:

> *"The Digitalization Strategy is a result of three workshops involving the Executive Committee, the Steering Committee for Digitalization, and administrative units and the institution representatives. The starting point was the general municipal strategy together with the Common Municipal Digitalization Strategy 2010-2015. Workshops were held with the administrative units to determine which initiatives will secure the success of the Digitalization Strategy"* (Digitalization Strategy 2011-2015, small-timely p. 3).

The formal responsibility for implementing the Digitalization Strategy in the small-timely municipality lies with the Steering Committee for Digitalization, which started by having meetings every month, but later they decided to meet only every two months (Digitalization Strategy 2011-2015, small-timely p. 3; IT & Process Consultant, small-timely 1:39:55). Adaptation of the idea into the organization was initiated with a course for the Planning Officers early in the spring of 2014 (Planning Officer, small-timely 56:55).

Ideas onto actions: With the first Gradual Plans from LGDK, the small-timely municipality was ahead of plans, and the mandated digitalization effort had already been implemented voluntarily at an earlier point in time:

> *"KOMBIT had a bit of a laugh when they heard that we had fallen behind in the mandated digitalization. We use to have things completed before the deadlines were even fixed, because we chose to digitalize before it was mandated, but when more and more solutions are mandated, we get behind, because there are too many requirements to live up to"* (IT & Process Consultant, small-timely 57:49).

The focus on developing an inclusive and comprehensive digitalization strategy might have brought the small-timely municipality ahead of the first Gradual Plans from LGDK.

Re-embedding: As a compliance initiative, the IT & Process Consultant check mail in the mailroom to see if, potentially digital mail is sent by snail mail. If so, the sender is contacted to find out whether re-implementation of the digital solution is needed (Planning Officer, small-timely 13:41; IT & Process Consultant, small-timely 1:18:49).

7.1.6.3 Inscribing

Strength of inscription: To protect the Planning Officers from any impact from the digitalization of planning applications, Byg & Miljø will be inscribed with a full integration to the planning case handling system:

> *"Full integration will allow applications to be transferred automatically to the case handling system … we can still work as usual, writing standard letters and so on, having everything transferred automatically to Byg & Miljø. So the employees won't need to work in Byg & Miljø for applicants to be able to check how their application is progressing"* (Planning Officer, small-timely 11:34).

Enforced inscription: The small-timely municipality is well aware that Byg & Miljø is not mandated, only the provision of a digital channel for planning applications is:

> *"This was not a mandated solution. We could develop our own solution, but because we are such a small municipality, we go with a lot of the common municipal solutions, even if we are free to provide our own solution"* (IT & Process Consultant, small-timely 33:22; Business Manager, small-timely 5:50).

Enforcement of digitalization with mandated deadlines and a strong management focus is perceived to be necessary because of the workload that will otherwise take up the available working hours (Planning Officer, small-timely 1:03:33).

7.1.6.4 Unintended consequences

Decrease in service level: The Business Manager in the small-timely municipality, left the organization in June 2014, and her responsibilities were delegated among the employees in the Planning Department. The responsibility for implementing Byg & Miljø was given to the Planning Officer, but it did not receive the required attention as the Planning Officer was preoccupied with handling the pile of planning cases, of which a large number were delayed; also the employees in the Planning Department were already quite satisfied with the existing planning case handling systems and work processes. Byg & Miljø is seen as a step backwards for the service level with respect to e-mail communication with applicants (Planning Officer, small-timely 3:03). Also for personal communication with the applicants, Byg & Miljø is seen as a step backwards in service level. The citizens of the small-timely municipality are used to calling or visiting the town hall when they need to sort things out with the municipal employees. The digital planning applications eliminate this service (Planning Officer, small-timely 46:44).

Increase in handling time: Until Byg & Miljø is fully integrated in the municipality's case handling system; case handling time will see an increase because whenever a change is made in the case handling system, the status of the planning case must be updated in Byg & Miljø (Planning Officer & IT & Process Consultant, small-timely 12:34). Also in the small-timely municipality, Byg & Miljø has introduced a decrease in the application quality, and as a consequence more time is needed for handling the applications (Planning Officer, small-timely 27:17). Besides, as already discussed under *Idea*, Byg & Miljø is not able to identify some of all the conflicts between an application and legislation and district plans so the

Planning Officers have to continue to search for conflicts manually (Planning Officer, small-timely 27:17; 28:10).

7.1.6.5 Technology

In their digitalization strategy, the small-timely municipality expresses the value of integrating digital solutions across the organization:

> *"We aim to integrate digital solutions cross functionally in order to re-use data in different solutions where applicable. Cross functional integration gives us the possibility to plan efficiently, through interconnected and resilient work processes"* (Digitalization Strategy 2011-2015, small-timely p. 6).

Integration between Byg & Miljø and the case handling system is also valued by the Planning Officer and IT & Process Consultant (Planning Officer, small-timely 11:34; IT & Process Consultant, small-timely 21:00).

Protecting internal work processes: As already discussed under Inscribing

7.1.6.6 Economic potential

LGDK is the driver for the small-timely municipality's expectations for the economic potential of Byg & Miljø:

> *"LGDK has negotiated the Financial Agreement and calculated the business case, and when the economic potential is known in the municipality's departments, it is always impossible to reap the rewards. But in this municipality we do not present the Executive Committee with a figure to be removed from one department. We look at what is possible"* (IT & Process Consultant, small-timely 1:14:39).

According to the business case from LGDK, the economic potential is rather large and should be reached on the grounds of self-service and applications of an improved quality. Whatever could be gained from integrating Byg & Miljø and the planning case handling system is – according to LGDK – extra (IT & Process Consultant, small-timely 1:16:16).

7.1.6.7 Success criteria

No predefined success criteria: There are no explicit, predefined success criteria regarding the implementation of Byg & Miljø in the small-timely, but citizens using Byg & Miljø are perceived as being above average IT experienced, and this perception leads to expect that more than 90% of the planning applications will use the digital channel. In general, 80% is expected to use a digital channel (Planning Officer, small-timely 1:43:10; IT & Process Consultant, small-timely 1:43:27). The gradual expectations for the citizens' use of digital channels are also expressed in the Digitalization Strategy: "*...we are aware of which target groups use the digital solutions, and how they are used...*" (Digitalization Strategy 2011-2015, small-timely p. 4).

7.1.6.8 Funding

In the small-timely municipality the Steering Committee for Digitalization has funds that administrative units can apply for when they need to acquire digital solutions. There are no standardized forms for application, but the Steering Committee for Digitalization looks for a promising business case in economic terms as well as for service improvements (Business Manager, small-timely 19:05; IT & Process Consultant, small-timely 1:40:52).

7.1.6.9 Challenges

Balancing core output with digitalization projects: Due to lack of time and resources, the small-timely municipality did not participate in defining the requirements for Byg & Miljø:

> *"…we really do not have either the time or the resources to participate in defining requirements for joint solutions. We need to trust that it is the same task we are all solving, even if the 98 municipalities are different"* (IT & Process Consultant, small-timely 36:33).

Also lack of time and resources delay the system implementation, because priority is given to the piles of planning applications and producing core output (Business Manager, small-timely 1:29; Planning Officer, small-timely 2:01:24).

Size matters: Implementing Byg & Miljø affects the small-timely municipality proportionally more than the large municipalities; as the implementation effort is more or less independent of the size of the municipality, the proportion of the resources needed is larger when there are only a few Planning Officers to accomplish the task compared to a municipality with 14 or 50 Planning Officers. To dedicate for example one Planning Officer 100% to implementing Byg & Miljø is completely unrealistic for the small-timely, yet this is done in the large municipalities (Planning Officer, small-timely 2:13:18).

Lack of leadership focus delays the start of system use: One of the reasons given for not advancing system use is that changing a well-functioning system and work processes is not an easy matter when there are piles of overdue planning applications. Another reason given is that it was a challenge to maintain focus with a lack of leadership driving the change:

> *"… it is also about leadership focus. Our Business Manager was the driving force behind all new initiatives. She knew our pipeline was stuffed, but she was persistent. When she left, and the Director left, and then the rest of the Executive Committee left, we could only manage to serve the citizens"* (Planning Officer, small-timely 1:01:45; 1:03:33).

Increased complexity in project portfolio: In the last couple of years, there have been so many mandated projects with respect to self-service and digital communication with the citizens that the small-timely municipality has not had any resources to support any internally initiated projects, like LEAN projects, or to standardize work processes (IT & Process Consultant, small-timely 1:20:26; 1:33:26).

7.2 Summary of municipalitity analysis

While analyzing the different levels of the municipal landscape, empirical patterns emerged from the coded material. To build theory, a synthesis of the empirical patterns into categories has been developed. The category 'motivation for compliance' is presented below. The analysis of the individual municipalities' idea is synthesized in *Table 10 Synthesized municipal idea* below. The analysis is summarized in more detail in *Appendix F: Individual Level Municipality, Summarized Analysis.*

When analyzing the motivation for implementing Byg & Miljø, the municipalities replicate the ideas of cost savings and increased service level as shown in *Table 10 Synthesized municipal idea;* their motivation, however, for compliance differs:

The large-advanced municipality (LA) had already realized the business case due to a prior LEAN and digitalization process. Despite the fact that the objectives of cost savings and an increased service level had already been realized earlier the large-advanced municipality decided to comply and implement Byg & Miljø after coercive and normative pressure. Compliance, however, interrupted the already realized cost savings and increased service level.

The large-timely municipality (LT) complied on grounds of expected cost savings. At the time of data collection, experience with Byg & Miljø was limited to Proof-of-Technology-like usage, and even though cost savings were expected, no calculations had been made.

The medium-advanced municipality (MA) complied on grounds of cost savings through increased efficiency and of increased service level through transparency.

The medium-timely (MT) complied on grounds of tight resources and in order to live up to citizens' expectations. It is seen as crucial to be able to realize the idea of digitalization, in order to live up to citizens' expectations, but also because of the tight resources resulting from budgets being cut.

The small-advanced municipality (SA) complied on grounds of increased efficiency and improved communication with citizens, but experiencing that increased efficiency was hindered by applicants optional data provision. The small-advanced suggests that simplification of the legal framework before system development would have enabled a larger efficiency gain.

The small-timely municipality (ST) complied on grounds of expected efficiency gains and increased service level.

Table 10 Synthesized municipal idea

Idea	LA	LT	MA	MT	SA	ST
Cost savings	Create profit and deliver more effective municipal services	Cost savings	Cost savings are expected through increased efficiency	Support production of core output and make business processes more efficient by eliminating manual activities, reuse of data, and integration of processes	On a national basis municipal digitalization is expected to generate cost savings of DKK 2b from 2015. However, this figure has not been calculated for the municipality	Cost savings are expected through 1) automatic generation of planning cases; 2) increased application quality, and 3) giving applicants access to check the status of their application
Increased service level	Strengthen quality of core output	-	Increased service level is expected through transparency	Increase the service level	Improved communication, i.e. system functionality allowing applicants to check the status of their application Offering 24-hour access to digital service	Immediate building permit or rejection for simple applications
Other proprietary ideas expressed	Holistic thinking across administrative units Increase integration of work processes and ability to innovate Digitalization is an end in itself	-	-	-	Plan to lower resource consumption for tasks where self-service is appropriate and redistribute the saved resources to more complicated tasks which require face-to-face communication	Has extended the range of the idea to comprise the use of digitalization to "develop active citizenship and support democracy"

Furthermore, some municipalities express other proprietary ideas, thereby adding to the original idea of municipal digitalization.

The individual municipalities' codes are synthesized in *Appendix G: Individual Level Municipality, Synthesized Analysis.*

7.3 Cross-case analysis of idea traveling within a setting

The following section will present a cross-case analysis at organizational level of how the idea of municipal digitalization travels within a setting. This analysis corresponds to the horizontal plane in *Figure 5 Traveling ideas*, where an idea is created in a setting. The idea then acquires substance as it is 1) translated and 2) materialized into an object, which is then turned into an 3) action which – if successful and therefore repeated – is stabilized in an institution. The institution will then spur new ideas which again will be materialized and so on (Czarniawska & Joerges, 1996). The analysis is carried out below and summarized in *Table 11 Idea of municipal digitalization traveling within a setting*.

In the large-advanced municipality the idea of digitalization is materialized by using the translation rule copying for the objectives cost savings and increased service level. The translation rule addition is used for the other three materialized ideas. As the large-advanced municipality had already achieved the cost savings and the increased service level with their own digital planning application system, the actions observed are that the objectives realized with the LEAN process are interrupted, because the municipality decides to comply with the coercive and normative pressure to implement Byg & Miljø. At the same time it can be observed, that the municipality is putting ideas onto actions, because the planning applications were already digitalized. The inscription used to institutionalize the actions is weak: the current case handling system is to be replaced in the near future, which is why, the integration between Byg & Miljø and the case handling system is not established.

In the large-timely municipality the idea of digitalization is materialized by using the translation rule copying for the objective cost savings, however, also the translation rule omission is used as the objective of increased service level is completely missing in the data. In order to turn ideas into action, the large-timely municipality compiled a project charter with specific images of action to become able to act upon the idea. As the project had already started in 2010, before the project charter was written in 2013, the large-timely municipality was also putting ideas onto action; giving a name to something already being done (Czarniawska & Joerges, 1996). In order to make it impossible to evade Byg & Miljø full integration between Byg & Miljø and the case handling system, resulting in a strong inscription, is used to institutionalize the actions.

In the medium-advanced municipality the translation rule copying is used for the objectives cost savings and increased service level for materializing the idea of digitalization. In order to turn the idea into action, the medium-advanced municipality ensures the projects are tangible and manned with the right competencies before the projects are directed into the different administrative units. The medium-advanced municipality sees the digitalization strategies as putting ideas onto action, because the municipality was working with digitalization ten years ago as the purpose and rationale for digitalization was clear already then. As the budgets are being cut by the calculated savings, the municipality has to realize the savings, which is seen as enforced inscription. Also to institutionalize the actions, a strong inscription is established by fully integrating Byg & Miljø with the case handling system, in order to protect the Planning officers from impact on their work processes of Byg & Miljø.

In the medium-timely municipality the translation rule copying is used for the objectives cost savings and increased service level for materializing the idea of digitalization. In order to formulate the proper scope, uncover support needs, and maintain managerial focus, a project description to digitalize the planning case area was written thereby putting ideas into action. To institutionalize the actions, a strong inscription is established to fully integrate Byg & Miljø with the case handling system.

In the small-advanced municipality the translation rule copying is used for the objectives cost savings and increased service level for materializing the idea of digitalization. However, the municipality is also using the translation rule alteration, because the redistribution plan where the saved resources for tasks that are digitalized to more complicated tasks requiring face-to-face communication can be seen as contradicting the objective of generating cost savings. Putting the ideas into action was initiated with a number of meetings between business and IT established to detect what would have to be prepared when implementing Byg & Miljø. To institutionalize the actions, a strong inscription is established by closing the alternative channels and actively rejecting analog applications.

In the small-timely municipality the translation rule copying is used for the objectives cost savings and increased service level for materializing the idea of digitalization. However, the municipality is also using the translation rule addition for the objective to use digitalization to develop active citizenship and support democracy. Putting the digitalization idea into action was initiated with the development of the Digitalization Strategy 2011-2015, a process involving a wide range of actors in the municipality. The small-timely was at first ahead of the gradual plan, so it is argued that the municipality is putting ideas onto actions. Full integration between Byg & Miljø and case handling system in order to protect the planning officers establishes a strong inscription of Byg & Miljø. However, the small-timely also sees the inscription as enforced, at the municipality must go with the common solutions because of its limited size.

Table 11 Idea of municipal digitalization traveling within a setting

	1) Translation rule used for materializing the idea as an object (Røvik, 2016)	**2) Materialized idea (Czarniawska & Joerges, 1996)**	**3) Actions (Czarniawska & Joerges, 1996)**	**4) Inscription (Czarniawska & Joerges, 1996)**
Large-advanced	Copying Addition	Cost savings Increased service level Holistic thinking across administrative units Increase integration in work processes and ability to innovate Digitalization is an end in itself	Interruption of objectives already realized with the LEAN process Compliance to coercive and normative pressure Ideas onto action: the planning applications were already digitalized	Weak inscription because case handling system is to be replaced in near future
Large-timely	Copying Omission	Cost savings	Ideas into actions: to become able to act upon the idea, project charter with specific images of action was compiled Ideas onto actions: the project was already started in 2010, before the project charter was written in 2013	Strong inscription that makes it impossible to evade Byg & Miljø through integration to the case handling system
Medium-advanced	Copying	Cost savings Increased service level	Ideas into action: to become able to act upon the digitalization idea, it is formulated as tangible projects Ideas onto actions: already working with digitalization projects ten years ago	Enforced inscription: forced to realize the calculated savings, due to budgets are being cut Strong inscription to protect planning officers from any impact from Byg & Miljø
Medium-timely	Copying	Cost savings Increased service level	Ideas into actions: project description to digitalize the planning case area	Strong inscription with the intention to fully integrate Byg & Miljø with case handling system
Small-advanced	Copying Alteration	Cost savings Increased service level Redistribution of the saved resources to more complicated tasks	Ideas into action: meetings to detect what needs to be prepared when implementing Byg & Miljø	Strong inscription because of political support for closing the alternative channels and actively rejecting analog applications
Small timely	Copying Addition	Cost savings Increased service level Develop active citizenship and support democracy	Ideas into actions: development of the Digitalization Strategy Ideas onto actions: were at first ahead of the gradual plans	Strong inscription: full integration between Byg & Miljø and case handling system to protect planning officers Enforced inscription: must go with the common solutions because of limited size.

8 Discussion

This study aimed to provide insight into how ideas are translated as they circulate between actors and are being materialized as new practices within organizations. In this chapter, the results of the study are synthesized and contrasted with the extant theory, and the theoretical and practical contributions of the study are presented.

8.1 Travel of the idea of municipal digitalization

In this study, the idea of municipal digitalization traveled as it was translated from object to idea *between* settings being carried by the digitalization strategies, which were formulated by various actors at different levels: the eGovernment Strategy at organizational field level, the Common Municipal Digitalization Strategy at organizational field level, and the individual municipal digitalization strategies at organizational level. As a result of these translation actions, the idea of municipal digitalization was circulated *between* the actors in the organizational field of municipal digitalization. This is similar to the vertical arrows in *Figure 5 Traveling ideas* sending or translating an object in setting A to an idea in setting B, which is then objectified and sent or translated to another setting and so on.

After landing in a municipal setting, the idea of municipal digitalization was translated into new local practices through actions of re-embedding and inscribing as shown in chapter *7 Ideas of Municipal Digitalization Traveling within a Setting*. As a result of these actions, the idea of digitalization was materialized as new practices of how to handle planning applications *within* the municipalities. This is similar to the horizontal arrow in *Figure 5 Traveling ideas*, translating an idea into practice within setting B.

By analyzing how the idea of mandated municipal digitalization was circulated in the organizational field of municipal digitalization, this section offers an answer to how a mandated idea is shaped and mediated while circulating between settings.

The idea of municipal digitalization is born at national level and objectified in the eGovernment Strategy. The idea leaves the originator and travels twice between settings; first from the eGovernment Strategy to the Common Municipal Digitalization Strategy, and then from the Common Municipal Digitalization Strategy, before it reaches the organizations, mandated to implement the idea; namely the municipalities. Due to overlap between the negotiating actors, the idea is born at national level and travels simultaneously to the common municipal level, where it is objectified in the Common Municipal Digitalization Strategy. Finally, the idea travels to the individual municipal level, where it is objectified in the digitalization strategies or project proposals of the individual municipalities. Please recall, that in some instances the idea of municipal digitalization was already objectified in the individual municipal digitalization strategies, which were written before the eGovernment Strategy 2011-2015 and the Common Municipal Digitalization Strategy 2010-2015. In the following sections the traveling between these settings will be synthesized.

As stated above, the idea of municipal digitalization is born and objectified at national level in the eGovernment Strategy, defining the framework conditions for the public sector digitalization in order to secure coherence across the country.

The findings of how municipal digitalization is traveling from national to common municipal level are shown in *Figure 12 Translation between settings* and summarized below.

The analysis of the eGovernment Strategy showed no evidence of disembedding, as no traces of removal of contextual ties from the idea of municipal digitalization were found. This finding is contrasting previous translation studies pointing to disembedding actions, like: "*plants that are to be moved to another place are taken from the bed where they were growing, and then, cleaned of most of the soil in which they sat*" (Czarniawska, 2009, p. 93). However, the lack of disembedding actions was posed to be a consequence of the specific case structure of the study; a mandated digitalization initiative where the originators are mandating other organizations to materialize an idea as new practices, but the originators are only materializing the idea as an object; the eGovernment Strategy. When the idea of municipal digitalization is not materialized as an action within the actors initiating the change, the objectification of the idea, the eGovernment Strategy, is free to directly address the organizations that have to change. With the idea being objectified without contextual ties to the originating actor, the fit of the idea to other settings does not need to be increased in order for it to travel, and it was therefore suggested to regard the eGovernment Strategy as a symbolic token – a media of interchange which can be passed around without regard to the specific characteristics of individuals or groups (Giddens, 1991). Regarding the eGovernment Strategy as a symbolic token with the purpose to pass on the idea between different settings, it was not surprising either that no evidence was found of re-embedding when the idea of municipal digitalization traveled from the eGovernment Strategy at national level to the Common Municipal Digitalization Strategy. Please recall, that re-embedding occurs when an idea lands in a new setting (Czarniawska, 2009; Kirkpatrick et al., 2013; Røvik, 2016), and that the idea of municipal digitalization is only materialized as action when it lands at individual municipal level.

The specific case structure of the study, a mandated digitalization initiative with the originators being different from the implementors, resulted in some extensions to the original travel of ideas perspective as listed below.

First, when the originator is not implementing the idea, but only objectifying it for implementation elsewhere, the translation at the horizontal plane within setting A, in this case at the national level, becomes a closed-ended translation process as opposed to the open-ended translation processes put forth by Czarniawska & Joerges (1996). This is because the idea is only objectified as a symbolic token, the eGovernment Strategy, before it is sent to setting B, the common municipal level.

Secondly, since the idea is objectified as a symbolic token to be passed around without regard to the specific characteristics of other settings, the objectified idea can be sent without being disembedded as also captured in *Figure 12 Translation between settings.* This finding is

confirming the notion of symbolic tokens being disembedding mechanisms which enable the circulation of an idea by removing social relations from their context (Giddens, 1991). In this study the digitalization strategies at different levels: national, common municipal, and individual municipal levels can be seen as Giddens' symbolic tokens, which are circulated between individuals and groups to present the idea without regard to the specific characteristics of the organizations or organizational groups that must adhere to the digitalization idea.

Third, as argued in section *5.2 Chronology of the Danish digitalization initiatives*, the eGovernment Strategy is meant as an agent guiding the content of the Common Municipal Digitalization Strategy, because the intention of the eGovernment Strategy is to define the framework conditions for digitalizing the public sector. However, because Local Government Denmark is participating in the negotiations on both the eGovernment Strategy and the Common Municipal Digitalization Strategy it is able to impact the content of the eGovernment Strategy, so that the eGovernment Strategy converges with the line negotiated with the municipalities for the Common Municipal Digitalization Strategy. In this case, where the Common Municipal Digitalization Strategy and the eGovernment Strategy are being negotiated simultaneously, and the Common Municipal Digitalization Strategy are being finalized and published before the eGovernment Strategy, this propensity is probably even stronger. Hence, the translation of the digitalization strategies between settings is seen as an intertwined process, leading to a two-way dynamics. This is depicted in *Figure 12 Translation between settings* by complementing the original arrow, showing how the idea is sent from setting A to setting B, with a new arrow from setting B to setting A, showing the impact exercised on the eGovernment Strategy from the organizational field of municipal digitalization. Confirming the intertwined translation process between organizational field level and organizational level found by Nielsen, Mathiassen and Newell (2014), and the overlapping or reciprocal translation process found by Morris and Lancaster (Morris & Lancaster, 2006), the study at hand is also extending the travel of ideas perspective, which points at translation being a one-way dynamics (Czarniawska, 2009, p. 95, figure 7.2).

As stated above, the idea of municipal digitalization travels to the common municipal level, where it is objectified, simultaneously with the eGovernment Strategy, in the Common Municipal Digitalization Strategy, which is advanced to more detail with respect to the municipal level than the eGovernment Strategy, and is excluding the digitalization initiatives at state and regional levels. The Common Municipal Digitalization Strategy is translating the eGovernment Strategy by repeating the objectives: efficiency improvements and increased service level. However, the objective to facilitate growth and competitive advantage for the companies is not found to be addressed, and the objectives of the Common Municipal Digitalization Strategy' are more specific and detailed than the objectives of the eGovernment Strategy. This is identified as an instance of the translation rules, copying, omission and addition (Røvik, 2016).

The analysis of the Common Municipal Digitalization Strategy shows that a thorough understanding of the current and upcoming challenges for the municipalities is demonstrated in the form of the three general focus areas, confronting possible anticipatable impediments

for making the strategy work in practice: 1) digital management committing top management to active involvement in the digitalization initiatives, 2) a competitive municipal IT market focusing on creating interoperable, modularized solutions which can be maintained and operated by different IT vendors, and 3) digital citizen service, limiting the non-digital channels in order to compel municipal employees and citizens to utilize the digital channels, thereby securing that the efficiency goals are met. These focus areas are argued to be re-embedding actions, as they increase fit and recognizability of the idea in the new settings. The same thorough knowledge is demonstrated in the digitalization strategy for the technical and environmental area, and as a result the idea of municipal digitalization is presented with a higher fit and recognizability, and it is thereby re-embedded in the intended settings. Evidence of disembedding was found in the effort to create a symbolic token by pointing out three specific tasks and goals: 1) having implemented digital application in 2015 with a 70% utilization rate, 2) redesign of internal administration processes, and 3) efficient data management. The re-embedding found in this travel between settings confirm the extant literature accounting for actions of re-embedding (Czarniawska, 2009), re-contextualization (Røvik, 2016) or editing (Sahlin-Andersson, 1996) when ideas or knowledge concepts are traveling between source and recipient.

Other results are confirming the previous finding of a close-ended translation process that extends the original travel of ideas perspective. The idea of municipal digitalization is not being implemented at the common municipal level either, but only objectified for implementation in the municipalities. The idea is only objectified as a symbolic token, the Common Municipal Digitalization Strategy, before it is sent to setting C, the individual municipal level, confirming the close-ended translation process, as discussed above.

Furthermore, when examining the translation of the digitalization strategies between common municipal level and individual municipal level, is again found an intertwined process leading to a two-way dynamics. This is created by the impact found to be exercised by individual municipalities on the Common Municipal Digitalization Strategy, thus converging with their own individual needs and digitalization strategies. The impact is depicted in *Figure 12 Translation between settings* by complementing the original arrow, showing how the idea is sent from setting B to setting C, with a new arrow from setting C to setting B showing the impact exercised on the Common Municipal Digitalization Strategy from the individual municipalities involved in negotiating it. This finding is adding to the original travel of the ideas perspective by showing that the translation between settings is not necessarily a one-way dynamics, but an intertwined process going from setting A to setting B as well as from setting B to setting A.

8.2 Contributions to theory

The three lenses used in this study: the organizational field level, the travel of ideas perspective, and the instrumental translation theory, proved to be valuable in untangling the large amount of empirical data. However, as suggested in chapter *4 Research Design*, this

organized use of rational thought may also add learning to the theoretical framework. The learning resulting from applying the three analytical lenses is presented below.

8.2.1 Contributions to the concept of organizational field

In order to determine the structuration of the organizational field of municipal digitalization, the four events forming an organizational field were examined; increased interaction, interorganizational structures, increased information load, and awareness that the implementation of the municipal digitalization strategy is a common enterprise (DiMaggio & Powell, 1983).

The core organizational field of municipal digitalization was found to be impacted by the eGovernment Strategy, the financial agreements, the Gradual Plans comprising mandatory transition dates for self-service digitalization initiatives, and the LGDK Action Plan with very concrete digitalization initiatives for the municipalities to implement, which is argued to represent an increased information load.

Furthermore, the municipalities are invited to participate in different interorganizational groups, i.e. steering committees, advisory board, and user groups, all supporting the digitalization initiatives put to tender by KOMBIT. KOMBIT is in constant dialogue with the IT vendors and municipalities about the existing solutions and solutions under development. This gives KOMBIT a specialized knowledge about municipal needs and technical possibilities, thereby being able to provide qualified input to the financial agreements which are negotiated annually by the Ministry of Finance, Local Government Denmark, and The Danish Agency for Digitization with respect to the digitalization initiatives. The municipalities believe they are the best qualified for delivering input to the negotiation of the digitalization strategies, which is why the municipalities themselves are seeking interaction with the steering committee in Local Government Denmark through and the portfolio group in KOMBIT in order to become involved in formulating the next Common Municipal Digitalization Strategy. Increasing the interaction with other actors is used as a means to increase the fit of the digitalization initiatives. Hence, both interorganizational structures and increased information load was detected.

However, no awareness that the implementation of the municipal digitalization strategy is a common enterprise could be found. Quite contrarily, the municipalities felt left alone when it comes to informing and training the end users of the digitalization initiatives, and being the ones taking the blame from the citizens and companies for faulty systems.

Despite the missing awareness of a common enterprise, I will still argue that the 98 municipalities, The Danish Agency for Digitisation, Local Government Denmark, KOMBIT, and IT vendors are forming the core organizational field of municipal digitalization. The missing awareness of a common enterprise could arise from the specific case structure of the study – a digitalization initiative with the originators being different from the implementors, where the originators, unlike the implementors, are not informing and training the end users,

or being blamed for faulty information systems. In such a case, it is quite likely that the implementors feel left alone.

8.2.2 Contributions to the travel of ideas perspective

As argued in the review about the use of the travel of ideas perspective, most studies are applying the perspective on voluntary circulation of ideas. This study has applied the travel of ideas perspective to a mandated idea. This application lead to three contributions to the original travel of ideas perspective: 1) when the originating actors are not implementing the idea themselves, a close-ended horizontal translation process can be observed, as shown in *Figure 12 Translation between settings*. This closed-ended translation process is s contrasting the open-ended translation process described in the original work, shown in *Figure 5 Traveling ideas*. This finding is seen as a contribution to the travel of ideas perspective, adding to the ability to explain the circulation of mandated ideas, specifically ideas or IT-led transformations mandated by originators not implementing the idea themselves (Carugati et al., 2018); 2) when symbolic tokens are used to pass on ideas between settings, the need for disembedding actions was found to fade, because the idea is objectified in a form, where it can readily be circulated between different settings. Hence, disembedding actions are unnecessary when translating symbolic tokens. This finding is seen as a contribution to the travel of ideas perspective, extending the ability to explain the circulation of symbolic tokens; 3) when an idea is circulated between settings, but not materialized in the receiving setting, the need for re-embedding was found to be non-existent, because the idea is not landing in the receiving setting. As this situation is believed to be predominant in case of mandated ideas, this finding is seen as a contribution to the travel of ideas perspective, adding to the ability to explain the circulation of mandated ideas; 4) as impact was observed both from setting A to setting B and so on, but also from setting C to setting B, and from setting B to setting A, translation between settings is argued to be an intertwined process leading to a two-way dynamics, thereby extending the travel of ideas perspective, which has seen translation between settings as a one-way process.

8.2.3 Contributions to the instrumental translation theory

The instrumental translation theory has been developed for knowledge transfer (Røvik, 2016), but in this study the suggested translation rules have been applied in a new context, namely circulation of a mandated idea. The study at hand was able to verify the applicability of the translation rules in the new context. On the one hand, the translatability of the circulating ideas was argued to be low, thereby leading to disembedding actions in the form of addition, omission and alteration as expected. On the other hand, the transformability of the transferred knowledge was argued to be low, thereby leading to re-embedding actions in the form of direct copying. These findings are confirming the instrumental translation theory. However, it was also found that when an idea is not materialized into practice within all the settings, that it is circulated between, the third construct in the instrumental translation theory – the degree of similarity between the source and recipient units can be disregarded. A high

degree of similarity between source and recipient suggests that a direct copy of the idea from the source will work in the recipient unit, whereas a low degree of similarity necessitates addition, omission or alteration in order for the circulating idea to work in the recipient unit. However, when the idea is not materialized within the sources, the construct has no relevance. As this situation is believed to be predominant in cases of mandated ideas, this finding is seen as a contribution to the instrumental translation theory extending the ability to explain the circulation of mandated ideas.

8.3 Implications for practice

The empirical findings suggested that the Common Municipal Digitalization Strategy is increasing the number of IT implementation projects in the municipalities, thereby increasing the complexity in the municipalities' IT project portfolio. This increased complexity is hard to handle for the municipalities, because the municipalities lack resources as well as project work competencies to accomplish the projects. To handle this increased complexity, some municipalities are implementing portfolio and project management tools, but because the IT and case handling employees up until recently have been focusing on operations rather than development and change projects, the lacking project knowledge makes the implementation troublesome. Concern about the municipalities' ability to implement the digital changes because budgets are being cut before changes have been institutionalized has also been raised as well as difficulties with realizing the expected efficiency gains.

9 Conclusion

In the following chapter the conclusions of this research project are summed up, generalizability and limitations of the study are discussed, and topics for future research are suggested.

This research project has been guided by the research question:

"How do ideas from the Danish Common Municipal Digitalization Strategy 2010-2015 travel through actions, and actors in the Danish Municipal landscape?"

To answer this research question, a case study has been conducted in the organizational field of municipal digitalization. Data has been collected through semi-structured interviews, documents, for example as digitalization strategies, and observations.

Analysis of the collected data show that the idea of municipal digitalization traveled as it was translated from eGovernment Strategy at the national level to Common Municipal Digitalization Strategy at the common municipal level and to individual municipal digitalization strategies at organizational level. After landing in a municipality, the idea of municipal digitalization was actively translated into new local practices through actions within the organization of re-embedding; addition of meaning to the circulated idea in the new setting, and inscribing; establishing new procedures or rules in a new setting. However, despite the analytical separation of circulation of ideas between organizations and materializing ideas within an organization, the two translation processes were found to happen concurrently, and thereby impacting each other through an intertwined two-way dynamics.

The findings are confirming the assumption that the translation of the Common Municipal Digitalization Strategy differs from municipality to municipality, and that this is most likely caused by the contextual differences that the strategy encounters in the different municipalities.

The findings also show that the Common Municipal Digitalization Strategy is increasing the number of IT implementation projects in the municipalities, thereby increasing the complexity in the municipalities' IT project portfolio. It is expressed that this complexity is hard to handle for the municipalities, because the municipalities lack resources as well as project work competencies to accomplish the projects. To handle this increased complexity, some municipalities are implementing portfolio and project management tools, but because the IT employees up until recently have been focusing on operations rather than development and change projects, the lacking project knowledge makes this implementation troublesome. Concern about the municipalities' ability to implement the digital changes because budgets are being cut before changes have been institutionalized has also been raised as well as difficulties with realizing the expected efficiency gains.

9.1 Generalizability

As discussed in *chapter 4 Research Design* this qualitative, interpretive study does not seek to establish statistical generalizability to a population. However, analytic generalization is used to propose a theoretical framework that might be useful in other similar situations (Yin, 2012). As this study is conducted as a single case study with embedded cases, similar situations are to be found at two levels; 1) cases of mandated digitalization in other countries, or of IT-led transformation in the private sector as presented in Carugati, Fernández, Mola and Rossignoli (2018), and 2) cases similar to the embedded cases, that is, the Danish municipalities. The findings of the study is therefore expected to be able to add to the explanation of the translation process in other cases of mandated digitalization.

The embedded cases were selected purposefully in order to reveal the greatest possible amount of information. This purposeful selection is in addition increasing the generalizability of case studies (Flyvbjerg, 2006). Using the principle of the hermeneutic circle and the principle of contextualization, the unique meanings and interpretations encountered in the data collection were analyzed to form abstract constructs and relations between constructs, both of which are argued to be theoretically generalizable (Klein & Myers, 1999).

9.2 Limitations and suggestions for future research

When uncovering ground, new unknowns may appear, and even though this study, as argued above, addresses a number of questions on circulation and materialization of mandated ideas, it also reveals new unknowns. The most important are listed in the following sections.

9.2.1 Two-way dynamics in translation between settings

The study at hand is a case study of mandated digitalization of the Danish municipalities. One of the findings in this study suggested that the translation process between settings is intertwined, leading to a two-way dynamics. Similar results have been found in a recent study of IT institutionalization within Danish home care (Nielsen et al., 2014). However, the earlier, seminal works of travel of ideas has seen translation as a one-way dynamics from sender to receiver. A future research agenda could be set out to examine if the two-way dynamics is a stable pattern, and if not, in what kind of contexts it appears. Is the two-way dynamics associated with mandated ideas only? A way to study this could be to revisit a case of voluntary circulation of ideas to see if the two-way dynamics can be confirmed here.

9.2.2 Perspectives from other contexts or actors

The choice of doing a single case study may limit the generalizability of the research. The findings from this study may not appear in other contexts, and other findings might result, if applying the translation and travel of ideas perspectives to other types of organizations or case structures. Other patterns could emerge and thereby nuancing the findings of this study,

if examining a case in the private sector, or if examining a case of mandated practices. Letting the study travel into another context, it would be interesting to see, if the findings are confirmed or translated

A clear limitation to this study is the lack of data collection in the involved IT vendor. Unfortunately, the IT vendor delivering Byg & Miljø could not spare any time for an interview, and even if I have interviewed another municipal IT vendor, the study would have been able to benefit from the perspective of the involved IT vendor. Insights could have been gained into the underlying motivation for abolishing the initial objective of: *"how to support the actual case handling better"* (Common Municipal Digitalization Strategy 2010 – 2015, p. 52); system functionality that a number of the municipal informants expected to be the real source for creating cost savings through efficient public service (Project Manager Byg & Miljø and System Administrator BSS, large-timely 32:47; IT & Process Consultant, small-timely 57:49).

9.2.3 Additional collection of data

The data collection for this study began in May 2013, almost a year before the first municipalities went live with Byg & Miljø, and the last interview was collected in August 2015. Unfortunately, none of the municipalities had stabilized the operation, or integrated Byg & Miljø to the planning case handling systems during the almost two and a half year period of data collection. The six municipalities were receiving planning applications through Byg & Miljø, however, when received; the planning applications were transferred into the planning case handling systems through various temporary, manual work processes. This pattern was an impediment for the expected in-depth study of how ideas are materialized as action within settings. As such, this remains a subject for future research.

9.3 Concluding remarks

I will end as I began, by saying that across the world governments are urging or demanding that public service should be digitalized. By answering the research question "*How do ideas from the Danish Common Municipal Digitalization Strategy 2010-2015 travel through actions, and actors in the Danish Municipal landscape?*" this study has brought insight into the process through which the idea of mandated digitalization is translated and shaped when circulated in the Danish municipal landscape. The translation perspective and the travel of ideas perspective were used to analyze the qualitative data collected in the empirical setting found in the Danish eGovernment initiatives transforming the Danish public sector to make public service delivery more digital.

The results show that the idea of digitalization is translated through disembedding mechanisms and re-embedding actions while the idea is circulated *between* the actors in the organizational field of municipal digitalization. After landing in a municipal setting, the idea

of municipal digitalization was then materialized as new practices of how to handle planning applications *within* the municipalities through actions of re-embedding and inscribing.

The results suggest that actors from the organizational field of municipal digitalization play a large role in interpreting and understanding the change initiative. The study contributes to theory by adding to the extant knowledge on circulating and materializing mandated ideas, and providing a rich picture of how public sector organizations react to a mandated digitalization.

The empirical conclusions are that the Common Municipal Digitalization Strategy is increasing the number of IT implementation projects in the municipalities, thereby increasing the complexity in the municipalities' IT project portfolio. This increased complexity is hard to handle for the municipalities, because the municipalities lack resources as well as project work competencies to accomplish the projects. To handle this increased complexity, some municipalities are implementing portfolio and project management tools, but because the IT and case handling employees up until recently have been focusing on operations rather than development and change projects, the lacking project knowledge makes the implementation troublesome. Widespread concern was raised about the municipalities' ability to implement the digital changes because budgets are being cut before changes have been institutionalized, as well as the difficulties with realizing the expected efficiency gains.

It is my hope that the rich picture provided with this study will provide politicians, public servants and IT vendors involved in the mandated public digitalization initiatives with a more holistic view of the translation process they are undertaking in their daily work.

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Appendix A: Analysis of Diffusion and Adoption of IT-Based Innovation

	Author	Title	Year	Journal	Volume	Central theme (Key idea)	Model/theory	Predominant approach
1	Nevo, Nevo & Pinsonneault	A Temporally Situated Self-Agency Theory of Information Technology Reinvention	2015	MIS Quarterly	40(1)	How users reinvent IT.	Agency: Time-embedded agency-based model, focus on actors' relationships to IT	Process approach
2	Burgess & Paguio	Examining ICT application adoption in Australian home-based businesses	2016	Journal of Enterprise Information Management	29(2)	Diffusion of innovations in home bases business	Rogers' innovation-decision process	Process approach
3	Safari, Safari & Hasanzadeh	The adoption of software-as-a-service (SaaS): ranking the determinants	2015	Journal of Enterprise Information Management	28(3)	Adoption of SaaS	TOE framework & DOI theory	Variance approach
4	Martins, Oliveira & Thomas	Assessing Organizational Adoption of Information Systems Outsourcing	2015	Journal of Organizational Computing and Electronic Commerce	25(4)	Determinants of IS outsourcing (ISO) adoption	TOE framework	Variance approach
5	Kung, Cegielski and Kung	An integrated environmental perspective on software as a service adoption in manufacturing and retail firms	2015	Journal of Information Technology	30(4)	Influence of a firm's environmental factors on its intention to adopt SaaS	Institutionalism (environmental pressures as mimetic, coercive and normative pressures)	Variance approach
6	Hsu, Lin, & Wang	A legitimacy challenge of a cross-cultural interorganizational information system	2015	European Journal of Information Systems	24(3)	Social and institutional influences on the adoption of IOS	Institutional and organizational legitimacy theory	Process approach
7	Davidson, Østerlund, & Flaherty	Drift and shift in the organizing vision career for personal health records: An investigation of innovation discourse dynamics	2015	Information and Organization	25(4)	How innovation community members interpreted and acted on PHR innovation concepts	Organizing vision theory	Process approach
8	Bresciani & Eppler	Extending TAM to Information Visualization: A Framework for Evaluation	2015	Electronic Journal of Information Systems Evaluation	18(1)	Factors driving adoption of information visualization techniques	TAM & DoI	Variance approach
9	Pozzebon, Mackrell, & Nielsen	Structuration bridging diffusion of innovations and gender relations theories: a case of paradigmatic pluralism in IS research	2014	Information Systems Journal	24(3)	Adoption of a pluralist, multi-paradigmatic theoretical framework for conducting and publishing IS research	Structuration theory, DoI and gender relations	Both process and variance approach

10	Pollock & Hyysalo	The Business of Being a User: The Role of the Reference Actor in Shaping Packaged Enterprise System Acquisition and Development	2014	MIS Quarterly	38(2)	Extends 'user' to account for a role that some clients play in the diffusion of packaged ES	Social actor role (Lamb and Kling 2003)	Variance approach
11	Hazen, Kung, Cegielski, & Jones-Farmer	Performance expectancy and use of enterprise architecture: training as an intervention	2014	Journal of Enterprise Information Management	27(2)	How performance expectancy (PE) and training affect the degree to which organizations use EA	Covariance-based structural equation modeling	Variance approach
12	Fichman, Dos Santos, & Zheng	Digital Innovation as a Fundamental and Powerful Concept in the IS Curriculum	2014	MIS Quarterly	38(2)	Presenting a vision for a redesigned IS core class	Teaching cases	-
13	Manolopoulos, Sofotassios, Spirakis, & Stamatiou	A Framework for Protecting Voters' Privacy In Electronic Voting Procedures	2013	Journal of Cases on Information Technology	15(2)	Obstacles for citizens to participate in electronic voting procedures	A trust-centered engineering approach for building general security critical systems	Variance approach
14	Lancelot Miltgen, Popovič, & Oliveira	Determinants of end-user acceptance of biometrics: Integrating the "Big 3" of technology acceptance with privacy context	2013	Decision Support Systems	56	Individual acceptance of biometric identification techniques	TAM, DoI & UTAUT	Variance approach
15	Foster & Heeks	Innovation and scaling of ICT for the bottom-of-the-pyramid	2013	Journal of Information Technology	28(4)	Scaling of ICT to bottom-of-the-pyramid (BoP) markets	Pilot vs. scale-up. Actors vs. networks. Rogers' innovation vs diffusion. Orlikowski and Iacono's 'tool view' vs. 'ensemble view'.	Process approach
16	Cegielski, Bourrie, & Hazen	Evaluating Adoption of Emerging IT for Corporate IT Strategy: Developing a Model Using a Qualitative Method	2013	Information Systems Management	30(3)	Adoption of Emerging IT in IT Strategies	Rogers' innovation-decision process	Variance approach
17	Barrett, Heracleous, & Walsham	A Rhetorical Approach to IT Diffusion: Reconceptualizing the Ideology-Framing Relationship in Computerization Movements	2013	MIS Quarterly	37(1)	Rhetoric as an alternative paradigm for examining IT diffusion	A rhetorical approach that theorizes the interrelationship between framing (pathos, logos, & ethos) and ideology (goals and means, deep structure)	-
18	Alshamaila, Papagiannidis, & Feng	Cloud computing adoption by SMEs in the north east of England: A multi-perspective framework	2013	Journal of Enterprise Information Management	26(3)	SME's adoption of cloud services	TOE framework	Variance approach
19	Ajjan, Kumar, &	Understanding Differences Between Adopters and Nonadopters of IT Project	2013	International Journal of Information Technology	12(6)	Adoption of IT Project Portfolio	TOE framework	Variance

	Subramaniam	Portfolio Management		& Decision Making		Management		approach
20	Yujong	End User Adoption of Enterprise Systems in Eastern and Western Cultures	2012	Journal of Organizational & End User Computing	24(4)	Comparing Eastern and Western end users' adoption issues to cross-cultural perspectives	Innovation diffusion theory, the self-determinant theory, and Hofstede's cultural dimensions	Variance approach
21	Wilson, & Doz	10 rules for managing global innovation	2012	Harvard Business Review	90(10)	Managing innovation projects dispersed across many sites around the world.	Best practice	Variance approach
22	Twinomurinzi, Phahlamohlaka, & Byrne	The small group subtlety of using ICT for participatory governance: A South African experience	2012	Government Information Quarterly	29(2)	Adoption of participative governance in communities	DoI	Variance approach
23	Henderson, Sheetz, & Trinkle	The determinants of interorganizational and internal in-house adoption of XBRL: A structural equation model	2012	International Journal of Accounting Information Systems	13(2)	Adoption of XBRL internal and interorganizational	TOE framework	Variance approach
24	Carter, Thatcher, Chudoba, & Mareit	Post-Acceptance Intentions and Behaviors: An Empirical Investigation of IT Use and Innovation	2012	Journal of Organizational & End User Computing	24(1)	Post-acceptance IT diffusion outcomes	TAM	Variance approach
25	Aubert, Schroeder, & Grimaudo	IT as enabler of sustainable farming: An empirical analysis of farmers' adoption decision of precision agriculture technology	2012	Decision Support Systems	54(1)	Farmers' adoption decision of precision agriculture technology	TAM & DoI	Variance approach
26	Vaidya, & Hyde	IOIS assimilation: An empirical evaluation in light of the diffusion of innovation theory	2011	International Journal of Business Information Systems	7(3)	Public e-procurement assimilation in the context of the public sector.	DoI	Variance approach
27	Shareef, Kumar, Kumar, & Dwivedi	e-Government Adoption Model (GAM): Differing service maturity levels	2011	Government Information Quarterly	28(1)	Discovery of the critical factors that enable citizens to adopt e-Government (e-Gov) at different stages of service maturity	technology adoption model (TAM), diffusion of innovation theory (DOI), and theory of planned behavior (TPB)	Variance approach
28	Oliveira & Martins	Literature Review of IT Adoption Models at Firm Level	2011	Electronic Journal of Information Systems Evaluation	14(1)	Comparison of IT adoption models at the individual level, and at the firm level	DoI og TOE	Variance approach
29	Nemutanzhela & Iyamu	A Framework for Enhancing the Information Systems Innovation: Using Competitive Intelligence	2011	Electronic Journal of Information Systems Evaluation	14(2)	Impact of Competitive Intelligence (CI) on IS innovation products and services in orgs.	Innovation-decision process from DoI	Variance approach

30	Hester	A comparative analysis of the usage and infusion of wiki and non-wiki-based knowledge management systems	2011	Information Technology and Management	12(4)	Adoption and diffusion of web 2.0 technologies	Extension to DoI og TAM	Variance approach
31	Dutton	The politics of next generation research: Democratizing research-centred computational networks	2011	Journal of Information Technology	26(2)	Conceptualize social & technological choices shaping the next generation of research technology	Research infrastructures; Research-centred Computation Networks	Variance approach
32	Brown & Thompson	Priorities, policies and practice of e-government in a developing country context: ICT infrastructure and diffusion in Jamaica	2011	European Journal of Information Systems	20(3)	Use of infrastructure building and government intervention to aid diffusion of ICT	–	Variance approach
33	Bose & Luo	Integrative framework for assessing firms' potential to undertake Green IT initiatives via virtualization	2011	The Journal of Strategic Information Systems	20(1)	Assessment of a firm's readiness to go green via IT-enabled virtualization	TOE, process-virtualization, and DoI	Variance approach
34	Xin, Venkatesh, Kar Yan, & Se-Joon	Model of Migration and Use of Platforms: Role of Hierarchy, Current Generation, and Complementarities in Consumer Settings	2010	Management Science	56(8)	Explain consumers' reactions to the newest generation of an ICT platform	TAM + the construct of complementarity from macrolevel research on platform leadership, network effects, and innovation ecosystems	Variance approach
35	Luo, Gurung & Shim	Understanding the Determinants of User Acceptance of Enterprise Instant Messaging	2010	Journal of Organizational Computing and Electronic Commerce	20(2)	Understand the factors that are important for the adoption of enterprise IM	IT adoption models together with theories on motivation, innovation diffusion, and critical mass	Variance approach
36	Wang	Chasing the Hottest IT: Effects of Information Technology Fashion on Organizations	2010	MIS Quarterly	34(1)	Organizational impacts of the fashion phenomenon in IT	DoI, economic–rationalistic perspective, institutional perspective,	Variance approach
37	Swanson, E. Burton	Consultancies and Capabilities in Innovating with IT	2010	Journal of Strategic Information Systems	19(1)	How consultants' capabilities contribute to the client and to the broader support of the innovation	–	-
38	Chang & Hung	Critical Factors of ERP Adoption for Small- and Medium- Sized Enterprises: An Empirical Study	2010	Journal of Global Information Management	18(3)	ERP Adoption for Small- and Medium- Sized Enterprises	–	Variance approach
39	Rajagopalan, Hillison, Calantone, &	Diffusion of information and communication technologies: A takeoff analysis	2010	International Journal of Business Information Systems	5(4)	ICT takeoff in high-, medium- and low-income countries	–	Variance approach

	Sambamurthy							
40	Pinto & Ferreira	Technological dissemination in the portuguese payments System: An empirical analysis to the region of Santarém	2010	International Journal of Human Capital and Information Technology Professionals	1(4)	Technological dissemination for banking purposes in Portugal	–	Variance approach
41	Olivas-Luján & Florkowski	Does IT governance matter in e-HRM?	2010	International Journal of Business Information Systems	5(2)	HR-IT governance impact on usage of e-HRM	DoI	Variance approach
42	Land	The use of history in IS research: An opportunity missed	2010	Journal of Information Technology	25(4)	Is the historiography of IS important to understand IS and its evolution through time	–	–
43	Lai, Liu, Lai, & Wang	What influences ERP beliefs — Logical evaluation or imitation?	2010	Decision Support Systems	50(1)	Comparing logical evaluation with imitative forces	DoI & imitation models	Variance approach
44	Ding, Levin, Stephan, & Winkler	The impact of information technology on academic scientists' productivity and collaboration patterns	2010	Management Science	56(9)	Impact of IT on productivity and collaboration patterns in academia.	–	Variance approach
45	Chen, Mocker, Preston, & Teubner	IS strategy: Reconceptualization, measurement, and implications	2010	MIS Quarterly	34(2)	Typology of IS Strategy	–	–
46	Cavusoglu, Hu, Li & Ma	Information Technology Diffusion with Influentials, Imitators, and Opponents	2010	Journal of Management Information Systems	27(2)	How IT innovations opposition affects the diffusion process	–	Variance approach
47	-	Using web 2.0 to create innovative E-learning environments	2010	Information Technology Management	23(1-2), 14	Creating innovative E-learning environments with web 2.0	–	–
48	Williams, Dwivedi, Lal & Schwarz	Contemporary trends and issues in IT adoption and diffusion research	2009	Journal of Information Technology	24(1)	Literature review in order to ascertain the current 'state of play'	Literature review	–
49	Sharma	Receptivity of India's SMEs to IS adoption	2009	Enterprise Information Systems	3(1)	Factors affecting IS diffusion in SMEs	DoI	Variance approach
50	Rouibah, Kamel Hamdy, Hosni	Factors Affecting ICT Usage and Satisfaction: Perspective from Instant Messaging in Kuwait	2009	Journal of Global Information Management	17(2)	Factors affecting IM usage and user satisfaction	Theory of flow, DoI, TAM	Variance approach

51	Raus, Flügge, & Boutellier	Electronic customs innovation: An improvement of governmental infrastructures	2009	Government Information Quarterly	26(2)	Diffusion and adoption of e-government standards and in particular of standardized e-customs solutions	DoI	Variance approach
52	Mackrell, Kerr, & von Hellens	A qualitative case study of the adoption and use of an agricultural decision support system in the Australian cotton industry: The socio-technical view	2009	Decision Support Systems	47(2)	Adoption and use of an agricultural DSS	Innovation-decision model by Rogers and the technology-in-practice model by Orlikowski	Variance approach
53	Yan & Assimakopoulos	The small-world and scale-free structure of an internet technological community	2009	International Journal of Information Technology & Management	8(1)	Structure of the questioning and replying network in an internet technical community, CSDN (China SW Development Net)	Network topology models, 'small-world' and 'scale-free' networks	Variance approach
54	Constantiou Papazafeiropoulou & Dwivedi	The diffusion of IP telephony and vendors' commercialisation strategies	2009	Journal of Information Technology	24(1)	Diffusion of IP telephony in Denmark	The theory of disruptive innovation	Variance approach
55	Eid	Extending TAM and IDT to predict the adoption of the Internet for B-to-B marketing activities: An empirical study of UK companies	2009	International Journal of e-Business Research	5(4)	Usage of the Internet for B-to-B marketing activities	TAM & DoI	Variance approach
56	Baskerville & Myers	Fashion Waves in Information Systems Research and Practice	2009	MIS Quarterly	33(4)	Fashions in IS research and practice	Abrahamson's management fashion theory	Process approach
57	Vega, Chiasson & Brown	Extending the research agenda on diffusion: the case of public program interventions for the adoption of e-business systems in SMEs	2008	Journal of Information Technology	23(2)	How contexts around public program interventions explain form and influence on e-business adoption processes	Systems of innovation (DoI factors and process)	Both process and variance approach
58	Prasad	Complexities in user satisfaction issues during organisational diffusion of in-house developed new technology tools: the case of an Indian IT company	2008	International Journal of Information Technology & Management	7(3)	User satisfaction during organisational diffusion of new technology tools	Diffusion of innovations and technology adoption life cycle	Variance approach
59	Melville & Ramirez	Information technology innovation diffusion: an information requirements paradigm	2008	Information Systems Journal	18(3)	We extend the literature by focusing on information requirements as a driver of IT innovation adoption and diffusion	Information requirements: process complexity, clock speed and supply chain complexity	Variance approach
60	Lorence	Outsourcing Services in Partial Digital Environments: Assessing Management	2008	Journal of Computer	48(3)	How institutional forces influence the degree of	–	Variance

		Preferences Where Paper is King		Information Systems		outsourcing adoption in healthcare org.		approach
61	Elbanna	Strategic systems implementation: diffusion through drift	2008	Journal of Information Technology	23(2)	Drift in adoption of ERP systems	Actor Network Theory & the drift model (Ciborra, 2000)	Process approach
62	Chang, Yin, & Chou	Diffusion of enterprise resource planning systems in Taiwan: Influence sources and the Y2K effect	2008	International Journal of Enterprise Information Systems	4(1)	Can Y2K rectifications be be viewed as a critical point in ERP adoption?	DoI	Variance approach
63	Bajwa, Lewis, Pervan, Lai, Munkvold & Schwabe	Factors in the Global Assimilation of Collaborative IT: An Exploratory Investigation in Five Regions	2008	Journal of Management Information Systems	25(1)	Global assimilation of collaborative information technologies (CITs).	DoI	Variance approach
64	White, Daniel, Ward & Wilson	The adoption of consortium B2B e-marketplaces: An exploratory study	2007	Journal of Strategic Information Systems	16(1)	Factors influencing the adoption of consortium-owned B2B e-marketplaces.	DoI	Variance approach
65	Wang & Burton Swanson	Launching professional services automation: Institutional entrepreneurship for IT innovations	2007	Information & Organization	17(2)	How are institutional factors, that impact diffusion of IT innovations, shaped?	Understanding institution-building - new	Process approach
66	Wainwright & Waring	The application and adaptation of a DoI framework for IS research in NHS general medical practice	2007	Journal of Information Technology	22(1)	Diffusion of IS innovations in healthcare organizations	DoI	Variance approach
67	Cho, Mathiassen & Robey	Dialectics of resilience: a multi-level analysis of a telehealth innovation	2007	Journal of Information Technology	22(1)	Dialectical analysis of contradictions in diffusion of a telehealth innovation within a network of collaborating hospitals	Dialectical analysis	–
68	Smith	Exploring advergaming and its online advertising implications	2007	International Journal of Business Information Systems	2(3)	Adoption of advergaming in marketing strategies.	DoI	Variance approach
69	Karimi, Somers & Bhattacherjee	The Impact of ERP Implementation on Business Process Outcomes: A Factor-Based Study	2007	Journal of Management Information Systems	24(1)	Why do some firms benefit more from ERP implementation than others?	DoI	Variance approach
70	Jungsoo, Seung Kyoon & Sanders	Impact of International IT Transfer on National Productivity	2007	Information Systems Research	18(1)	Influence on the productivity in an economy of IT investment.	Econometric method	Variance approach

71	Georgantzas & Kalsamakas	Disruptive Innovation Strategy Effects on Hard-Disk Maker Population: A System Dynamics Study	2007	Information Resources Management Journal	20(2)	System dynamics of disruptive innovation strategy environment	System dynamics (SD) modeling method	Variance approach
72	Costello & Donnellan	The diffusion of WOZ: expanding the topology of IS innovations	2007	Journal of Information Technology	22(1)	Examination of WOZs in relation to the changing business landscape, the technology and innovation literature, and the population of likely adopters	DoI, classification	–
73	Yi, Fiedler & Park	Understanding the Role of Individual Innovativeness in the Acceptance of IT-Based Innovations: Comparative Analyses of Models and Measures	2006	Decision Sciences	37(3)	Individual char. that has an effect on the acceptance decisions for the successful implementation of IS	**Moderator model** (moderator of the effects of characteristics have on future use intention) and **direct determinant model** (direct determinant of the innovation characteristics)	Variance approach
74	Karahanna, Agarwal & Angst	Reconceptualizing compatibility beliefs in technology acceptance research	2006	MIS Quarterly	30(4)	A more comprehensive conceptual definition that disaggregates the content of compatibility into four distinct and separable constructs	TAM	Variance approach
75	Jeyaraj, Rottman & Lacity	A review of the predictors, linkages, and biases in IT innovation adoption research	2006	Journal of Information Technology	21(1)	Predictors, linkages, and biases in individual and organizational IT adoption.	Literature review	Variance approach
76	Câmara, Fonseca, Monteiro & Onsrud	Networks of innovation and the establishment of a spatial data infrastructure in Brazil	2006	Information Technology for Development	12(4)	How GIS technology was introduced in a transitional economy (Brazil).	DoI + actor network theory	Variance approach
77	Tung & Rieck	Adoption of electronic government services among business organizations in Singapore	2005	Journal of Strategic Information Systems	14(4)	Factors influencing adoption of e-Gov services	DoI + network externalities, social influence, and barriers to adoption.	Variance approach
78	Pries-Heje, Baskerville & Hansen	Strategy models for enabling offshore outsourcing	2005	Information Technology for Development	11(1)	Development of strategies for diffusion of short-cycle-time (agile) SW development.	The Kline model of innovation diffusion and the Greiner model of evolution and growth of organizations	Variance approach
79	Pease & Rowe	Diffusion of Innovation - The Adoption of Electronic Commerce by Small and Medium Enterprises (SMES)- A Comparative Analysis	2005	Australasian Journal of Information Systems	13(1)	Issues that influence the diffusion of innovation as it relates to the adoption of e-commerce by SMEs	DoI	Variance approach

80	McMaster & Wastell	Diffusion - Or delusion? Challenging an IS research tradition	2005	Information Technology and People	18(4)	Seeks to critique the notion of diffusionism	–	–
81	Ilie, Van Slyke, Green & Hao	Gender Differences in Perceptions and Use of Communication Technologies: A Diffusion of Innovation Approach	2005	Information Resources Management Journal	18(3)	Gender differences in the perceived innov. characteristics on communication tech. use intentions	TAM	Variance approach
82	Konana & Balasubramanian	The Social-Economic-Psychological model of technology adoption and usage: An application to online investing	2005	Decision Support Systems	39(3)	Social, economic, and psychological perspectives on technology adoption and use.	TAM, TRA, TPB => Social Economic-Psychological (SEP) Model of technology adoption and usage	Variance approach
83	Cooper & Wolfe	Information processing model of IT adaptation: An intraorganizational diffusion perspective	2005	Data Base for Advances in Information Systems	36(1)	Information processing theory as a lens to examine the adaptation (design, development, and installation) process	Information Processing Theory	Variance approach
84	Beck Wigand & König	Integration of e-commerce by SMEs in the manufacturing sector: A data envelopment analysis approach	2005	Journal of Global Information Management	13(3)	E-commerce adoption, usage and impact among SMEs.	Data envelopment analysis (DEA)	Variance approach
85	Bajwa, Lewis, Pervan & Lai	The adoption and use of collaboration information technologies: international comparisons	2005	Journal of Information Technology	20(2)	Adoption and use of collaborative IT options across regions	DoI	Variance approach
86	Ahuja & Thatcher	Moving Beyond Intentions and Toward the Theory of Trying: Effects of Work Environment and Gender on Post-Adoption IT Use	2005	MIS Quarterly	29(3)	Influence of the work environment and gender on trying to innovate with IT	The theory of trying	Variance approach
87	Oh, Kim & Yoneyama	Networked path towards technology innovation: The case of Taiwan semiconductor manufacturing company	2004	International Journal of Information Technology and Management	3(1)	Flexible networks can be efficient in responding to rapidly changing consumer demands, developing new technologies, and disseminating information regarding commercialisation.	–	Variance approach
88	Fichman, Robert G.	Going Beyond the Dominant Paradigm for IT Innovation Research: Emerging Concepts and Methods	2004	Journal of the Association for Information Systems	5(8)	The study of IT innovation itself	Literature review	–
89	Dutton, Gillett, McKnight & Peltu	Bridging broadband Internet divides: reconfiguring access to enhance	2004	Journal of Information Technology	19(1)	How reconfiguring nternet acces change communicative power and thereby impact outcomes of	Literature review	–

		communicative power				ICT innovation		
90	Dunn & Salazar	Knowledge-based competitive advantage in the internet age: Discovering emerging business strategies	2004	International Journal of Information Technology and Management	3(2-4)	How KM is making a differential strategic contribution to selected organisations	–	–
91	Currie, Wendy L.	The organizing vision of application service provision: a process-oriented analysis	2004	Information & Organization	14(4)	The processes by which IS innovations become institutionalized	neo-institutional theory + organizing vision	Process approach
92	Chen, He & Tong	Innovation business process reengineering based on workflow technology: A type of e-innovation	2004	International Journal of Information Technology and Management	3(1)	How BPR can be used in reengineering of e-innovation.	–	–
93	Venkatesh, Morris, Davis & Davis	User Acceptance of Information Technology: Toward a Unified View	2003	MIS Quarterly	27(3)	Development of Unified Theory of Acceptance and Use of Technology (UTAUT)	Theory of reasoned action, TAM, the motivational model, TPB, a model combining TAM and TPB, the model of PC utilization, DoI, and the social cognitive theory.	Variance approach
94	Ramiller & Swanson	Organizing Visions for IT and the IS Executive Response	2003	Journal of Management Information Systems	20(1)	How IS executives respond to organizing visions for IT, grand ideas for applying IT,	Organizing vision theory	Process approach
95	Oh, Ahn & Kim	Adoption of broadband Internet in Korea: The role of experience in building attitudes	2003	Journal of Information Technology	18(4)	Individual-level factors affecting the adoption of broadband access	TAM, TPB og DoI	Variance approach
96	Mustonen-Ollila & Lyytinen	Why organizations adopt IS process innovations: a longitudinal study using Diffusion of Innovation theory	2003	Information Systems Journal	13(3)	Factors affecting IS process innovation adoption decisions	DoI	Variance approach
97	Mathiassen, Andersson & Hanson	Service provision in a software technology unit	2003	Journal of Information Technology	18(3)	Diffusion of new technologies for SW development and standardization across SW projects and departments.	Episodes and their events are analysed	Process approach
98	Lyytinen & Rose	Disruptive IS innovation: the case of internet computing	2003	Information Systems Journal	13(4)	How disruptive IS innovation (like the internet) influence the future trajectory of the adoption and use of ICT in organizational contexts and make the trajectory deviate from its expected course.	Organizing vision theory + radical innovation	–

99	Hardgrave, Davis & Riemenschneider	Investigating Determinants of Software Developers' Intentions to Follow Methodologies	2003	Journal of Management Information Systems	20(1)	Determinants of SW Developers' Intentions to Follow Methodologies	Theories of intention formation and DoI	Variance approach
100	Choudrie, Papazafeiropoulou & Lee	A web of stakeholders and strategies: A case of broadband diffusion in South Korea	2003	Journal of Information Technology	18(4)	How the strategies pursued by a government acting as the key stakeholder affected the diffusion of a new technology.	DoI + stakeholder theory	–
101	Bradford & Florin	Examining the role of innovation diffusion factors on the implementation success of ERP systems	2003	International Journal of Accounting Information Systems	4(3)	How innovation diffusion factors impact the implementation success of ERP systems	DoI + Information Systems Success	Variance approach
102	Al-Gahtani	Computer technology adoption in Saudi Arabia: Correlates of perceived innovation attributes	2003	Information Technology for Development	10(1)	How perceived attributes of computer technology influence its rate of adoption in the workplace.	DoI	Variance approach
103	Purvis, Sambamurthy & Zmud	The Assimilation of Knowledge Platforms in Organizations: An Empirical Investigation	2001	Organization Science	12(2)	What forces influence the assimilation of knowledge platforms in organization?	TOE, DoI, TAM	Variance approach
104	Pries-Heje & Baskerville	A multiple-theory analysis of a diffusion of IT case	2001	Information Systems Journal	11(3)	Multiple-theory analysis of a diffusion of information technology case	The interactive model + the linked-chain model + the emergent model	Process approach
105	Fichman	The Role of Aggregation in the Measurement of IT-Related Organizational Innovation	2001	MIS Quarterly	25(4)	How to measure the extent of org innovation with IT	–	Variance approach
106	Ravichandran	Swiftness and Intensity of Administrative Innovation Adoption: An Empirical Study of TQM in Information Systems	2000	Decision Sciences	31(3)	Adoption of an administrative innovation TQM	TOE	Variance approach
107	Newell, Swan & Galliers	A knowledge-focused perspective on the diffusion and adoption of complex IT: the BPR example	2000	Information Systems Journal	10(3)	Explain diffusion & adoption of an IT-based innovation as well as the ideas and knowledge underpinning the technology	New model developed	Process approach
108	Ramamurthy, Premkumar & Crum	Organizational and Interorganizational Determinants of EDI Diffusion and Organizational Performance	2000	Journal of Organizational Computing & Electronic Commerce	9(4)	Factors influencing the extent to which EDI is diffused and used and the level of subsequent benefits.	New model developed: a multidimensional measure for EDI diffusion to capture both external integration and internal integration	Variance approach

109	Karahanna, Straub & Chervany	IT Adoption Across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs	1999	MIS Quarterly	23(2)	Individuals' pre- & post-adoption beliefs and attitudes' impact on benefits of adopted IT	DoI + attitude theories	Variance approach
110	Fichman & Kemerer	The Illusory Diffusion of Innovation: An Examination of Assimilation Gaps	1999	Information Systems Research	10(3)	assimilation gap concept = (gap between acquired and deployed IT)	New model developed: A general operational measure derived from the difference between the cumulative acquisition and deployment patterns	Process approach
111	Parthasarathy & Bhattacherjee	Understanding Post-Adoption Behavior in the Context of Online Services	1998	Information Systems Research	9(4)	Post-adoption behavior (continued adoption versus discontinuance) within the context of online service use	DoI	Variance approach
112	Newell, Swan & Robertson	A cross-national comparison of the adoption of BPR: Fashion-setting networks?	1998	Journal of Strategic Information Systems	7(4)	Understanding how the concept BPR has been diffused across European firms	–	Variance approach
113	Baskerville & Pries-Heje	Information Technology Diffusion: Building Positive Barriers	1998	European Journal of Information Systems	7(1)	Positive barriers to the diffusion of an IT innovation (security, privacy...).	DoI	Variance approach
114	Swanson & Ramiller	The Organizing Vision in Information Systems Innovation	1997	Organization Science	8(5)	An institutional view of how new tech. for IS comes to be applied and diffused among org.	New model developed: Organizing vision	Process approach
115	Qing, Saunders & Gebelt	Research Report: Diffusion of Information Systems Outsourcing: A Reevaluation of Influence Sources	1997	Information Systems Research	8(3)	Adoption of IS outsourcing	Internal influence, external influence, and two mixed influence models	Variance approach
116	Fichman & Kemerer	The Assimilation of Software Process Innovations: An Organizational Learning Perspective	1997	Management Science	43(10)	Software process innovations (SPIs) in the presence of knowledge barriers	–	Variance approach
117	Agarwal, R., & Prasad	The Role of Innovation Characteristics and Perceived Voluntariness in the Acceptance of Information Technologies	1997	Decision Sciences	28(3), 557-582	How individual's perceptions can explain and predict acceptance behavior.	–	Variance approach
118	Tam, K. Y.	Dynamic Price Elasticity and the Diffusion of Mainframe Computing	1996	Journal of Management Information Systems	13(2)	How price changes impact adoption decisions	A parsimonious diffusion model that integrates both diffusion and pricing effects is developed.	Variance approach
119	Rai & Patnayakuni	A Structural Model for CASE Adoption	1996	Journal of Management	13(2)	CASE adoption behavior	New model developed	Variance

		Behavior		Information Systems				approach
120	Venkatraman, Loh & Koh	The Adoption of Corporate Governance Mechanisms: A Test of Competing Diffusion Models	1994	Management Science	40(4)	Adoption of corporate governance mechanishms: joint venture and M-form organizational structure	New model developed + resource-based theory	Variance approach
121	Straub, Detmar W.	The Effect of Culture on IT Diffusion: E-Mail and FAX in Japan and the U.S	1994	Information Systems Research	5(1)	Impact of culture on diffusion of technological innovation	Hofstede's work on culture and social presence/information richness theory	Variance approach
122	Quintas, Paul	A product-process model of innovation in software development	1994	Journal of Information Technology	9(1)	Which characteristics of SW drives change in SW development?	New model developed	Variance approach
123	Premkumar, Ramamurthy & Nilakanta	Implementation of EDI: An Innovation Diffusion Perspective	1994	Journal of Management Information Systems	11(2)	Relationship between innovation characteristics and diffusion of EDI in organizations.	Innovation theory	Variance approach
124	Cats-Baril & Jelassi	The French Videotex System Minitel: A Successful Implementation of a National Information Technology Infrastructure	1994	MIS Quarterly	18(1)	The impact of a national IT infrastructure on the competitive advantage of the country and companies.	–	Variance approach
125	Swanson, E. Burton	Information Systems Innovation Among Organizations	1994	Management Science	40(9)	IS innovation and its role in organizational innovation in general	New model developed	Variance approach
126	Mansfield, Edwin	The Diffusion of Flexible Manufacturing Systems in Japan, Europe and the United States	1993	Management Science	39(2)	The rate of diffusion of flexible manufacturing systems.	Diffusion rate	–
127	Loh & Venkatraman	Diffusion of information technology outsourcing: influence sources and the Kodak effect	1992	Information Systems Research	3(4)	The sources of influence in the adoption of IT outsourcing	Diffusion modeling	Variance approach
128	Gurbaxani, V.	The demand for information technology capital An empirical analysis	1992	Decision Support Systems	8(5)	The demand for IT capital at both the aggregate economy level and the industry sector level	–	Variance approach
129	Moore & Benbasat	Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation	1991	Information Systems Research	2(3)	The initial adoption and eventual diffusion of IT innovations within organizations	New instrument developed	Variance approach

130	Nilakanta & Scamell	The Effect of Information Sources and Communication Channels on the diffusion of Innovation in a Data Base Development Environment	1990	Management Science	36(1)	The process of DoI in the context of DB system development	–	Variance approach
131	Gurbaxani & Mendelson	An Integrative Model of Information Systems Spending Growth	1990	Information Systems Research	1(1)	The diffusion of technological innovation and the effect of price on the demand for computing	New model developed	Variance approach
132	Cooper & Zmud	IT Implementation Research: A Technological Diffusion Approach	1990	Management Science	36(2)	The interaction of managerial tasks with the IT and the resulting effect on the adoption and infusion of that technology.	–	Variance approach
133	Brancheau & Wetherbe	The Adoption of Spreadsheet Software: Testing Innovation Diffusion Theory in the Context of End-User Computing	1990	Information Systems Research	1(2)	The social forces which affect the introduction and diffusion process within organizations.	–	Variance approach

Appendix B: Analysis of Process Studies

Analysis of process studies							
		Definition of diffusion (process)	**Aspect**	**Argument**	**Evidence**	**Claims**	**Adequacy**
1	Nevo, S., Nevo, D., & Pinsonneault, A. (2016). A Temporally Situated Self-Agency Theory of Information Technology Reinvention. MIS Quarterly, 40(1), 157-A158.		How the users' re-invention process unfolds in the post-adoption stage of IT implementation.	Building on time-situated self-agency a model is developed of IT re-invention in five sub processes focusing on the users' actions based on interactions between goals, technological capabilities, and envisioned scenarios.			Building a nuanced understanding of how the users' re-invention process unfolds in the post-adoption stage of IT implementation, however, the IT re-invention model does not include impact from actors other than the users, and as the model is limited to the post-adoption stage of IT implementation.
2	Burgess, S., & Paguio, R. (2016). Examining ICT application adoption in Australian home-based businesses. Journal of Enterprise Information Management, 29(2), 276-299.	The innovation-decision process: Knowledge, persuasion, decision, implementation, and confirmation (Rogers, 2003).	Employing the innovation-decision process from Rogers' (2003) Diffusion of Innovations as a lens for the analysis of adoption of ICT in Australian home-based businesses.	"The experience of adoption of ICT applications across all stages of adoption was not consistent in the participating organisations.", and "not all ICT applications with high penetration were considered to be "very useful" by participants" p. 294. "The most common reason given for non-adoption of the technology was that there was no	Case study on the use of information and communications technologies (ICT) in Australian home-based businesses (HBB). The study comprised 30 business operators in the Western region	ICT use differs between individual ICT applications and varies with the context of particular HBB. ICT application adoption in HBB participants is not uniform, with adoption of	None…

				perceived need to adopt the application" p. 295.	of Melbourne.	applications such as e-mail differing from adoption of newer applications, such as social networking.	
6	Hsu, C., Lin, Y.-T., & Wang, T. (2015). A legitimacy challenge of a cross-cultural interorganizational information system. European Journal of Information Systems, 24(3), 278-294.	Not defined	Institutional and organizational legitimacy theory	Adoption and implementation of technological innovation is contingent upon its alignment with three institutional pillars in different countries and the deployment of legitimation strategies by stakeholders. Adoption rates were higher in Europe than in Taiwan. Regulatory pressure was high in Europe (Basel II and resolution on asset management), but not in Taiwan. Normative values was high in Europe (conferences, publications, professional associations), but not so high in Taiwan. Cultural/cognitive compliance was high in Europe (wholesale asset management culture and market's familiarity with the SWIFT system) but not so high in Taiwan (retail investors culture and unfamiliarity with the SWIFT system). Also rental fees and labour costs were higher in Europe than in Taiwan.	The adoption and diffusion of a cross-cultural Interorganizational Information System (IOS), which is used to streamline the processing of financial transactions between European investment fund companies and Taiwanese banks.	Implementation of a cross-cultural IOS is a dynamic process involving the recognition, understanding, and management of the regulative, normative, and cognitive challenges arising in two different institutional settings.	?
7	Davidson, E. J., Østerlund, C. S., & Flaherty, M. G. (2015). Drift and shift in the organizing vision career for personal health records: An investigation of innovation discourse dynamics. Information & Organization, 25(4), 191-	Not defined	Career dynamics for organizing visions and their implication for innovation diffusion.	The community discourse not only reflects, but creates drift and shift in the organizing vision career trajectory for personal health records (PHR). Organizing vision concepts used to analyze PHR discourse: innovation community stakeholders, societal/business problems that IT innovation	Longitudinal analysis of personal health record (PHR) discourse collected in the U.S. healthcare sector through a decade.	The study confirms how an interorganizational community of stakeholders creates and employs an organizing vision in the process of diffusing an	The organizing vision career is studied in the organizational field of the innovation, but the adoption of the innovation is

	221.			addresses, institutional arrangements related to the innovation, core technologies implicated in innovation, and community reception of the organizing vision and innovation.		innovation. The findings also show that when organizing visions span the practices of various actors, such as individual users, organizations and field-level actors, the organizing vision needs to be theorized and interpreted in various ways mapping the different needs to be compelling to each type of actor	voluntary.
9	Pozzebon, M., Mackrell, D., & Nielsen, S. (2014). Structuration bridging diffusion of innovations and gender relations theories: a case of paradigmatic pluralism in IS research. Information Systems Journal, 24(3), 229-248.	Using the factor 'compatibility' with the stakeholders' objectives to study how farmers cope with the imperative CottonLOGIC DSS.	How can structuration theory be used as meta-theory to bridge the paradigmatic gap between positivist and anti-positivist, constructivist epistemology; in this case Diffusion of Innovation theory and gender theory?	Compatibility' with the stakeholders' objectives increase ability to cope with an imperative. Use of technology is empowering the women involved in day-to-day farm practices by keeping accurate financial and production records as a basis upon which many strategic farm decisions are made.	A single case study involving the Australian cotton industry	Actually the RQs are: 1) What are the threats and promises of adopting a multiparadigmatic theoretical approach? 2) How can multiparadigmatic theoretical pluralism be operationalized to make possible a plausible interpretation of complex IS social phenomena in a single case study?	Factor analysis and gender theory does not contribute to my study.
15	Foster, C., & Heeks, R. (2013). Innovation and scaling of ICT for the bottom-of-the-pyramid. Journal of Information Technology, 28(4), 296-315.	P. 297: "it is arguable that 'scaling' and 'diffusion' are closely related, if not synonymous ... scaling is a particular type of diffusion in which a new	Scaling (diffusion) of ICT for the bottom-of-the-pyramid (BoP)	It is not about separating pilot from scale-up (processes), innovation from scaling (processes), lead firm from agents (roles and relations), technology from system and context (the nature of the innovation). A more systemic perspective is needed. Scaling can	A model of scaling ICT innovation for emerging markets is developed through conducting a bibliographic study. The model is then assessed by applying	Proposed model of scaling ICT innovation for emering markets: Processes; re-invention, adaptation. Roles and relations; co-creation	Interesting process model of diffusion! Diffusion (or scaling) is seen from the lead company's perspective. The

		technology that has been piloted subsequently reaches a large and differentiated user group over a multi-year period"		be observed to follow five phases: Pilot (ICT support), incremental rollout (using a network of existing partners and incremental change), aggressive growth (growing innofusion network, increasing loci og innovation, strategic drift), stanardization (re-establishing control in the drifting innofusion network), functional expansion (change of strategy by adding services and integrating into wider financial networks). However, application of the model to a real-world case, reduces it to the first four steps and with two loops.	it to a real-world case study.	btw. lead firm and local stakeholderes, partnerships and networks. The nature of innovation; new or modified artefacts, and/or innovation of processes = new business practices. Organizational structure; radically different strategies and business models are required to serve the BoP where only incremental adaptation is required in order to serve the MoP, learning-oriented model or growth-oriented model, transistion from MoP to BoP, but shifts may be rejected by other actors in the innofusion network.	adoption of the innovation is voluntary
56	Baskerville, R. L., & Myers, M. D. (2009). Fashion Waves in Information Systems Research and Practice. MIS Quarterly, 33(4), 647-662.	Diffusion life cycle p. 649: "is represented by the actual application of the technique across organizations".	The diffusion life cycle is not used or applied, but merely mentioned as contransting the discourse life cycle: "represented in published articles, speeches, company documents, and vendor literature about the technique"	IS research and practitioner literature is characterized by waves of interest in certain fashionable topics with rapid upswings ocurring within the space of between three to five years. After peaking some waves decline sharply while others linger on for some time.	Bibliographic research using article counts as a common proxy for tracing the popularity of four IS concepts over time: office automation, computer-aided software engineering, business process reengineering, and e-commerce.	The rise-and-peak pattern between IS research and practitioner literature suggest that academia participates in the fasion-setting process, however somewhat late. This finding gives rise to the recommendation that IS researchers should participate more directly at the start of the fashion-	Not useful.

						setting process, i.e. through action research, design science, or practice research.	
57	Vega, A., Chiasson, M., & Brown, D. (2008). Extending the research agenda on diffusion: the case of public program interventions for the adoption of e-business systems in SMEs. Journal of Information Technology, 23(2), 109-117.	The 'process in which an innovation is communicated through certain channels over time among the members of a social system' (Rogers,2003) . "... the diffusion of complex innovations involves various contextual influences and a range of participants around the adopter, in the production, diffusion, and infusion of innovations.", p. 110.	Context is a cascading set of effects arising from various participants and innovations surrounding the production and diffusion of a focal innovation.	In complex innovations, such as implementation of a public program with the aim to diffuse IT into SMEs, the systems of innovation perspective contribute to a deeper understanding of the adoption outcome by including systemic issues, such as factors of adoption (SME, decision-taker, e-business, environmental), program context (goals, evaluation, resources, power, alienation), adoption process (agenda-setting, matching, redefining, restructuring, clarifying, routinizing, infusion)and assistance process (selection, design, delivery, connection, follow-up).	Case study in SME adoptors and program employees in the implementation of a public program 'SMEserve' providing coaching and mentoring to SMEs through e-learning and face-to-face techniques. Unit of analysis: individual policy interventions in adoption processes. Key elements ocurring across time exposed with process research (Mohr, 1982; Newman & Robey 1992)	Many public programs fail to effectively deliver interventions because program contexts restrict program personnel's ability to completely assess and respond to the range of adopter needs.	Voluntary adoption of e-business service program for SMSs does not match my mandated adoption of the digitalization idea.
61	Elbanna, A. R. A. E. (2008). Strategic systems implementation: diffusion through drift. Journal of Information Technology, 23(2), 89-96.	P. 90: 'The translation model at the heart of ANT is concerned with investigating the circulation of a 'token'… This model regards the spread in time and space of any token as being in the hands of people, each of which may act in many different ways ... adding to, or appropriating the token (Latour, 1991)". "A	Actor-Network Theory (ANT) analysis of 'moving the token' and modality. The study provides a framework to conceptualize drift in integrated horizontal systems that are supposed to span the whole organization. The framework helps explain why implementing the same packaged ERP system achieve different	Diffusion of ERP is not fixed and unchangeable in their diffuse from producers to adopters as suggested by Rogers (1995). Therefore traditional DoI models are not sufficient to explain the diverse results achieved by adoption of ERP in organizations. When implementation projects are handled by different parties they are presented with either a positive or negative modality. Drift of system objectives, drift in project scope, drift in system's vision, drift	A case study of ERP implementation at multinational 'Drinco' in the food and beverage sector from August 2000 to March 2001. Each team translated the project objectives to suit their local interests, thereby leading to a considerable drift from the project's	Actors handling implementation contribute to realization of the projects through their modalities. When projects are disputed they come to a stand still from which new energy is needed to be pushed into a direction; either the same as originally planned or along a	The drift (or idea translation) is studied within the organization, not in the organizational field of the idea.

		faithful transmission of a token is a rarity ... There is no intrinsic inertia in the token".	results despite expecting a rather straightforward and predictable trajectory.	of project orientation, and drift of system's configuration are introduced to extend the explanation of the diverse result in the implementation of ERP.	initial goal.	different route, representing the various sources of drift.	
65	Wang, P., & Swanson, E. B. (2007). Launching professional services automation: Institutional entrepreneurship for information technology innovations. Information & Organization, 17(2), 59-88.	Diffusion not defined, but p. 60: "an IT innovation … is an information technology new to the adopting organizations or individuals" (Daft, 1978; Swanson, 1994).	How are institutional factors (which are shaping DoI) shaped themselves? The actors in the organizational field are key to the mobilization and legitimation of an organizing vision for a successful launch.	An IT innovation is likely to be launched successfully to the extent that institutional entrepreneurs mobilize by developing a focused organizational community and legitimize by developing a coherent organizing vision with incorporated success stories for the innovation.	Case study of PSA (Professional Services Automation) launch.	Opportunities perceived affect mobilization (recruiting participants, stimulating their motivation and marshalling their reseources p. 65) and legitimation (the process of obtaining legitimacy p. 65) which affects the likelyhood of launch success, which then again affects opportunities perceived.	Interesting framework for analysis; actors in organizational field/community are spelled out, together with activities forming a coherent organizing vision with success stories. Could be followed?
91	Currie, W. L. (2004). The organizing vision of application service provision: a process-oriented analysis. Information & Organization, 14(4), 237-267.	Organizing vision, p. 238: "a focal community idea for the appliation of information technology in organizations" (Swanson & Ramiller, 1997, p. 460).	Institutionalization: A process-oriented analysis of how an IS innovation (ASP) came to be adopted and diffused across organizations.	P. 242 Interpretation of an emerging IS innovation is not readily understood within and outside the IS practitioner community. Confusion about specific content and potential benefits, and lack of large organizations acting as role models for adopting ASP lead to reluctancy with SME's to adopt.	Longitudinal study of how an organizing vision ascended around ASP in the community of SME's, and then declined, only to be re-packaged and revived in the form of Web Services.	Reputational effects are important in developing IS innovations. An underdeveloped organizing vision leads to less diffusion and institutionalization.	Very much so, but describes an adoption process for a voluntary innovation.

94	Ramiller, N. C., & Swanson, E. B. (2003). Organizing Visions for Information Technology and the Information Systems Executive Response. Journal of Management Information Systems, 20(1), 13-50.	Organizing vision, p. 14: "a focal community idea for the application of information technology in organizations".	Career patterns in organizing visions. The innovation's construction and promulgation within the broader corporate community.	Interpretability (meaning), plausibility (realistic), importance (business benefit, practical acceptance, and market interest), and dicontinuity (conceptual change and implementation challenge) are four dimensions of how executives respond to an organizing vision.	Field interview of 36 practitioners (managers, consultants, executives, vendors and editors of IS journals) followed-up by a survey sample of 1475, of which 10,4 percent were returned in a usable format.	Perceived importance leads to ascending career. Relative uninterpretability may nonetheless have an ascending career. Interpretable innovations may have a descending career.	The career patterns are more helpful to inform about the perception of an innovation in an community, than to understand how innovations are constructed and promulgated.
97	Mathiassen, L., Andersson, I., & Hanson, K. (2003). Service provision in a software technology unit. Journal of Information Technology, 18(3), 195-209.	P. 196: "the process by which an innovation is communicated throuh certain channels over time among the members of a social system" (Rogers, 1995).	Technology diffusion through service provision by a technology unit.	Diffusion of technology in large software organizations is a complex change process that is difficult and challenging to manage and in many cases, it leads to unsatisfactory results (p. 196). Using Weinberg's change model introducing a foreign element in old status quo, causing chaos, until transforming idea develops a new status quo.	Collaborative practice research in three episodes; a diffusion project, a workshop discussing challenges and opportunities in SW technology diffusion, and development of new service supporting diffusion projects.	In order to facilitate the change process related to technology diffusion methods- and techniques units in large software organizations are encouraged to develop a role as service provider, complementing their existing role as technology supplier.	No conceptualizing of the diffusion process.
104	Baskerville, R., & Pries-Heje, J. (2001). A multiple-theory analysis of a diffusion of information technology case. Information Systems Journal, 11(3), 181-212.	P. 181: Innovation is an idea, practice or objecct that is perceived as new. Diffusion of innovation is the process by which an innovation is communicated through certain channels, over time, among the members of a social system (Rogers, 1983).	Limits and boundaries of the interactive model, the linked-chain model and the emergent model.	Each of the three models leave important aspects of the case unexplained and poorly illuminated, but "the incomplete nature of each model only surfaced when another model was applied" (Baskerville & Pries-Heje, 2001, p. 201). The interactive model describes how people change in relation to DoI. The linked-chain model describes how technology evolves in relation to DoI.The emergent model describes organizational evolution in relation to DoI.	Analyzing one case (supplier, customer, subcontractor) through each of the three models.	P. 189: Each theory revealed complementary, not contradictory knowledge about the empirical setting.	The models studied are explaining how an innovation is impacting people, technology, or organizations, whereas the focus of my study is how an idea is socially constructed while moving between and within

							organizations.
107	Newell, S., Swan, J. A., & Galliers, R. D. (2000). A knowledge-focused perspective on the diffusion and adoption of complex information technologies: the BPR example. Information Systems Journal, 10(3), 239-259.	P. 242: Innovation, episodes of Agenda formulation, Selection, Implementation, Usage.	Presents DoI as a knowledge integration problem. Knowledge-focused perspective on: Spread of ideas underpinning technology such as BPR, JIT, TQM, ERP or CRM.	Some technologies spread rapidly despite having characteristics pointing towads a slow diffusion (complexity, incompatibility with current practices, not easily observable or trialable, and altering existing organizational practices). Looking at knowledge flows instead of characteristics change the understanding, because knowledge needed is widely distributed and has to be integrated within the user firm through a process of negotioation and sensemaking.	Former research + BPR example.	New model showing supplier 'packaging' of complex idea, supplier push in professional associations + directly to user as well as user pull from professional associations, and user unpackaging.	Super adequate! Spread of idea, macro + micro behavior, appropriation of complex idea, process...
110	Fichman, R. G., & Kemerer, C. F. (1999). The Illusory Diffusion of Innovation: An Examination of Assimilation Gaps. Information Systems Research, 10(3), 255.	Rogers' 1995, p. 258 "Diffusion is a process whereby an innovation spreads across a population of potential adopters over time".	Diffusion measured at acquisision or at deployment	When adoption is measured at acquisition instead of deployment, diffusion is overestimated, potentially leading to erroneous judgements about 1) the robustness of the diffusion process, 2) the forces driving diffusion, and 3) the pervasive adoption is inevitable.	Empirical survey: 1500 managers of which 679 responded about when RDB, 4GL, and CASE was acquired and deployed.	Use time of deployment instead of, or in addition to, time of acquisistion when adoption is measured to study diffusion.	No process explained, just measuring diffusion at two different points of time; acquisition and deployment.

114	Swanson, E. B., & Ramiller, N. C. (1997). The Organizing Vision in Information Systems Innovation. Organization Science, 8(5), 458-474.	Organizing vision, p. 460: "a focal community idea for the appliation of information technology in organizations".	An organizing vision of an innovation is created and employed by the interorganizational community in which the innovation is diffused.	The organizing vision helps to promulgate the IS innovation in the network of actors by facilitating three aspects of the innovation process: 1) interpretation: developing a common social account about the emergent IS innovation by explaining and reiterating the innovation's purpose and nature, 2) legitimation: necessitates the IS innovation in the concerns of the business by linking the purpose and nature of the innovation to current issues of importance to the business, and 3) mobilization: supporting the material realization of the innovation through a dynamic function of activating, motivating, and structuring the entrepreneurial and market forces.	Essay?	P. 459: "Institutional processes play a crucial role in reducing the perceived uncertainty surrounding the innovation, and are making local 'rationality', or informed choice, possible."	Interpretation = translation? Legitimation = objectives? Mobilization = network of actors?

Appendix C: Code Book

Label	Idea
Definition	Mental images
Use in this dissertation	A mental image created in a local time and space of how to change objects or practices for the better in another local time and space (Czarniawska & Joerges, 1996, p. 20) To digitalize the public service delivery, and this idea is materialized in the digitalization strategies as purpose and expected outcome of the digitalization process
Sub codes	• Cost savings • Increased service level • Other proprietary ideas expressed
Examples	"*The eGov Strategy talks about less paper, digitalization, better service and better public welfare, but the Common Municipal Digitalization Strategy talks about concrete cost savings of DKK 2b through efficiency improvement and better service through municipal collaboration*" (IT Manager, medium-advanced 4:37)
Notes	How is the idea objectified? Objectives expressed in the strategies at different level
References	(Mitchell, 1987) (Czarniawska & Joerges, 1996, p. 20) Joerges (as cited in Czarniawska & Joerges, 1996)

Label	Translatioon
Definition	A complex process of negotiation during which meanings, claims and interests change and gain ground (Wæraas & Nielsen, 2016, p. 15)
Use in this dissertation	When the idea is materialized into an object or when the materialized object is extended as an idea from one local time/space to another Translation of the idea to digitalize the public service delivery takes place both between organizations with the digitalization strategies at national level, common municipal level and individual municipal level, and also when the digitalization idea is materialized as new technology and new practices within each municipality. Materializing the idea of digitalization into strategy documents expressing the aim, e.g. to digitalize forms and letters. "*Circulation of certain prototypes can be described as a continuous editing process in which, in each new setting, a history of earlier experiences is reformulated in the light of present circumstances and visions of the future. Meanings ascribed to and derived from prototypes are edited contingent upon changing situational and institutional circumstances and constraints. After all, it is easier to change exemplary stories than the circumstances under which a prototype is to be realized. By using the term editing we are emphasizing that the models are told and retold in various situations and told differently in each situation*." (Sahlin-Andersson, 1996)
Sub codes	• Disembedding (see below) • Re-embedding (see below)
Examples	See below
Notes	The translation processes comprises disembedding and re-embedding activities
References	(Czarniawska, 2009, p. 42 & 46) Latour (as cited in Czarniawska & Joerges, 1996) (Giddens, 1991)

Label	**Disembedding/re-embedding**
Definition	Social systems separated from one time-space will become displaced or lifted out of their local grounding (Giddens, 1991)
Use in this dissertation	Disembedding: • The idea is 'disembedded' from local grounding, when it is stripped from its contextual ties. When the idea is circulated, it will be interpreted by others, and understood subjectively in relation to what they already know. Adding these contextual ties to the new setting will re-embed the idea in local grounding (Czarniawska, 2009; Czarniawska & Joerges, 1996; Giddens, 1991). Re-embedding: • Effort done to adapt the meaning of the circulated idea to fit into the context of the new setting by excluding any remaining time- and space-bounded features from the original setting and adding time- and space-bounded features from the new setting
Sub codes	Sub codes to translation (see above)
Examples	
Notes	
References	

Label	Inscribing
Definition	”*ideas…landing in various localities becoming “re-embedded”, materialized in actions, and – when judged successful – becoming institutions, only to occasion anew the generation of ideas*” (Czarniawska & Joerges, 1996, p. 23) Proof that the translation was completed with success.
Use in this dissertation	When circulation of the original idea results in new procedures or rules in a new setting, thereby ending one iteration of the circulation, possibly sparking a new idea and thereby starting another iteration of the circulation
Sub codes	• Which viewpoint – who is behind? • Which media or material? • Strength of inscription – is related to media/material • Enforced inscription
Examples	Which media or material? • Implementation of new IS • Implementation of new rules • Implementation of new procedures for IT project prioritization and project management in the individual municipalities • Integration to internal IS Strength of inscription – is related to media/material • Enforced inscription • budgets are being cut with expected efficiency gains to inscribe • legislated deadlines for digitalization of forms and letters
Notes	
References	(Czarniawska, 2009, p. 42) (Giddens, 1991)

Label	Unintended consequences
Definition	Changes that were not expected to happen as a consequence of adopting the idea
Use in this dissertation	
Sub codes	• Citizens need professional help to apply for planning permissions • Decrease in service level • Exhausting the organization over time • Increase in handling time • Increased technological vulnerability • Introduction of new structures • Postponement of ongoing business development plans • Reshuffling workload • Restructuring of the organization
Examples	Exhausting the organization over time • Budget cuts while maintaining a high service level means that the organization will become exhausted over time (IT Manager, medium-advanced 51:55)
Notes	
References	(Czarniawska, 2009, p. 46) (Giddens, 1984)

Label	Actions
Definition	Translation actions performed to translate an idea into practice within a setting or circulate an idea between settings
Use in this dissertation	
Sub codes	Translation Disembedding Re-embedding Inscribing
Examples	See translation, disembedding, re-embedding, inscribing
Notes	
References	

Label	Actors
Definition	The organizations and individuals which were involved in the implementation of the Common Municipal Digitalization Strategy
Use in this dissertation	Citizens, The Municipal Council of Digitalization (Det kommunale Digitaliseringsråd) Council of IT Architecture (It-arkitekturråd) LGDK KOMBIT The municipalities The municipalities' customers IT providers Private sector organizations The government The steering committee for interpublic collaboration.
Sub codes	
Examples	
Notes	
References	

Label	Technology
Definition	
Use in this dissertation	Used to capture the actors' expressed attitudes, expectations or perceptions of the technology used to implement of the Common Municipal Digitalization Strategy
Sub codes	
Examples	"IT development and operations has been mingled for years", "Investment in technology is becoming continuously more important in the transformation of the local government sector", Dokumentboks (Digital Document Safe), NemID, FLIS, "…the main challenge is that the municipalities' IT has been developed as silos…"
Notes	
References	

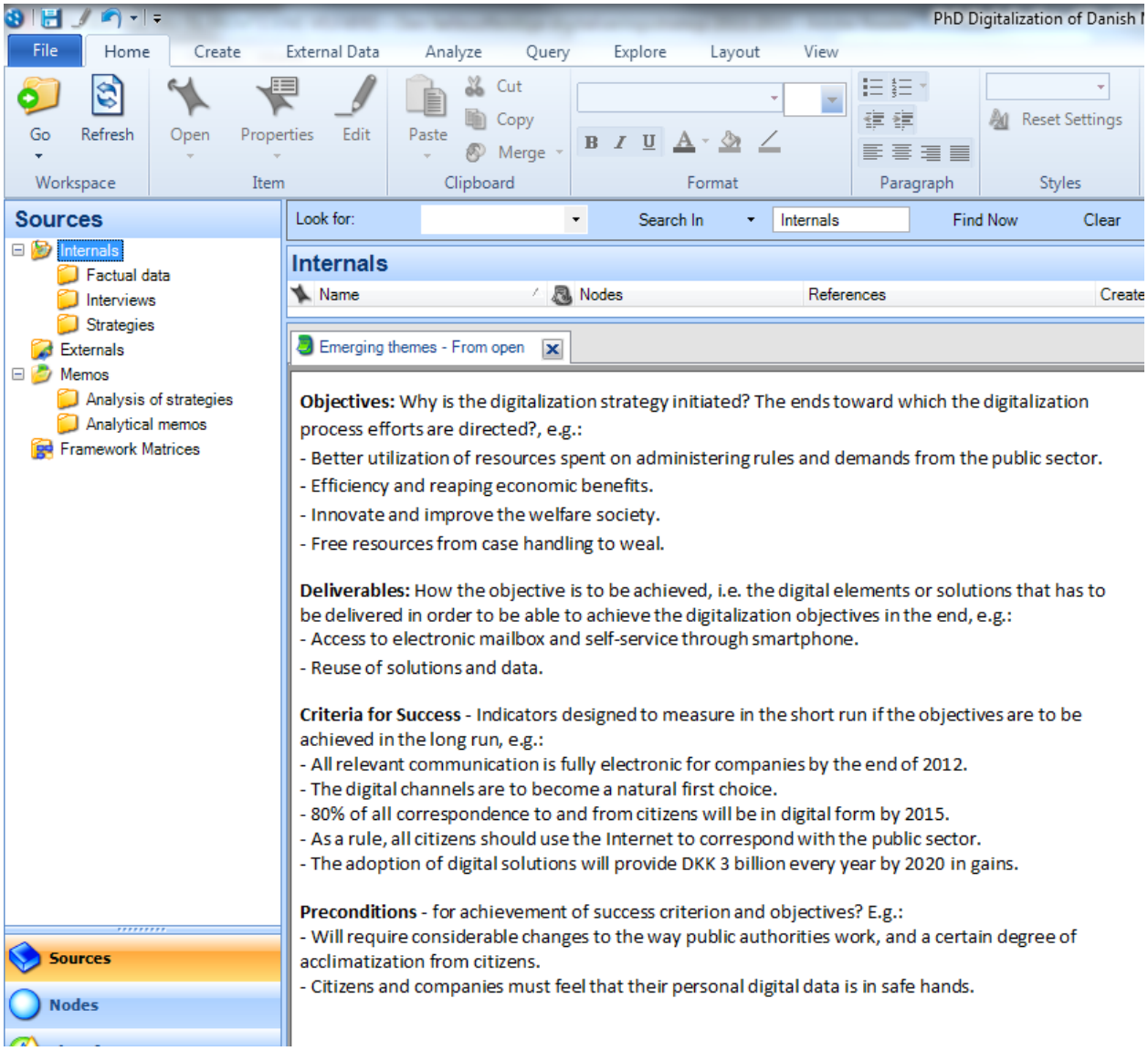
Initial a priori codes and emerging focused codes

	Code	Description	Examples – subcodes
A priori code	Idea	Identified as the digitalization objectives expressed in the data. Why is the digitalization strategy initiated? The ends toward which the digitalization process efforts are directed	"Better utilization of resources spent on administering rules and demands from the public sector", "Efficiency and reaping economic benefits", "Use IT to innovate and improve the welfare society", "Free resources from case handling to public welfare"
A priori code	Actions	Translation actions performed to translate an idea into practice within a setting or circulate an idea between settings	Translation Disembedding Re-embedding Inscribing
A priori code	Actors	Identify the organizations and individuals which were involved in the implementation of the idea of municipal digitalization and the role they played	Citizens, the Municipal Council of Digitalization (Det kommunale Digitaliseringsråd), Council of IT Architecture (It-arkitekturråd), LGDK, KOMBIT, the municipalities, the municipalities' customers, IT providers, private sector organizations, the government, the regions, the state, the steering committee for interpublic collaboration (Styregruppen for tværoffentligt samarbejde), Udbetaling Danmark.
Focused code	Technology	Capture the actors' expressed attitudes, expectations or perceptions of the technology used to implement of the Common Municipal Digitalization Strategy	"IT development and operations has been mingled for years", "Investment in technology is becoming continuously more important in the transformation of the municipal sector", Dokumentboks (Digital Document Safe), NemID, FLIS, "…the main challenge is that the municipalities' IT has been developed as silos…"
Focused code	Challenges	Known challenges with the existing digital solutions	"It is hard for the users to find and use the digital solutions", "IT silos", "The digital solutions have not caught on with the end users"
Focused code	Success criteria	Indicators designed to measure in the short run if the objectives are to be achieved in the long run	"All relevant communication is fully electronic for companies by the end of 2012", "The digital channels are to become a natural first choice", "More online self-service solutions will become mandatory"
Focused code	Funding	How is the development of IT solutions funded?	"Common funding: There are four models for funding: 1) collective funding, e.g. through the annual Financial Agreement where the necessary funds are set aside in the block grants and are earmarked for specific common municipal solutions so all municipalities take part in the

			funding of the development. 2) Investments based on KOMBIT's equity where the development is funded by KOMBIT in return for the municipalities commit themselves to purchase the solution. 3) By (partly) external funding from funds, foundations and the like. 4) By direct funding from the individual municipality.", "Neither a common municipal organizing nor a common municipal funding are new phenomena in the world of digitalization. Based on agreements in the financial negotiations common solutions like Dokumentboks, Nem Refusion, NemID and NemLog-in has been developed. The solutions have been developed and funded jointly and provided to the municipalities"

Appendix D: Emerging Themes, from Initial Coding to Focused Codes

Please find below a screen dump from NVivo showing a memo with examples of focused codes emerging while coding, comparing and contrasting the open codes.



Appendix E: The Gradual Plans

Bølgeplan for overgang til obligatorisk digital selvbetjening på kommunale områder

	Bølge 1 December 2012	Bølge 2 December 2013	Bølge 3 Ultimo 2014	Bølge 4 Ultimo 2015
STATUS	Aftalt og lovgivet	Aftalt og lovgivet	Aftalt og lovgivet	Aftalt – lovgivning under udarbejdelse
OMRÅDER I FOKUS	**Borgerservice, dagtilbud**	**Borgerservice**	**Borgerservice og teknik- og miljø**	**Social, beskæftigelse, teknik- og miljø**
SERVICE-OMRÅDER	1. Ansøgning om flytning 2. Ansøgning om sundhedskort 3. Ansøgning om EU-sygesikringskort 4. Ansøgning om optagelse i dagtilbud 5. Ansøgning om optagelse i SFO 6. Ansøgning om skoleindskrivning	1. Ansøgning om begravelseshjælp 2. Ansøgning om økonomisk friplads til dagtilbud 3. Ansøgning om hjælpemidler (forventeligt kropsbårne) 4. Anmelde udrejse 5. Ansøgning om navne- og adressebeskyttelse 6. Anmeldelse af rotter 7. Ansøgning til lån til betaling af ejendomsskat 8. Udlån/udleje af lokaler *) og ejendomme 9. Valg af læge 10. Anmelde vielse 11. Pas 12. Duplikatkørekort	1. Affaldshåndtering fra borgere 2. Affaldshåndtering fra virksomheder 3. Anmeldelse om byggearbejde 4. Ansøgning om byggetilladelse 5. Ansøgning om lån til beboerindskud 6. Registrering i CPR (bopælsattester og folkeregistermeddelelser) 7. Serviceydelser på vej og trafikområdet (ansøgning om 'råden over vej') 8. Anmeldelse om opgravnings- og ledningsarbejder 9. Logiværtserklæringer 10. Ansøgning om betalingslicenser og afgifter i forbindelse med parkering.	1. Personligt tillæg 2. Sygedagpenge 3. Helbredstillæg 4. Udvidet helbredstillæg Der er yderligere aftalt, at kontanthjælp, uddannelseshjælp, enkeltydelser og ejendomsregistrering (BBR) skal omfattes når systemunderstøttelsen er tilvejebragt. Det forventes endeligt aftalt i ØA16. Opdateret 20. juni 2014

Appendix F: Individual Level Municipality, Summarized Analysis

Individual municipal level	**Large-advanced** ***Idea*** *Cost savings:* Create profit, deliver more effective service *Increased service level:* Strengthen quality of core output *Other objectives*: Contribute to holistic thinking across the municipality's administrative units, involve the citizens and increase transparency, increase integration in work processes and strengthen the employees', managers' and stakeholders' ability to innovate, digitalization is an end in itself. As the municipality had already digitalized the planning application process and applied LEAN principles to the planning case handling process, the cost savings had already been realized and the service level increased to a level where the standard features from Byg & Miljø could not compare. However, compliance was chosen after coercive and normative pressure. In the end compliance has interrupted the already realized objectives about cost savings and increased service level from the large-advanced municipality's digitalization strategy. ***Translation*** *Which actor carries the idea into the organization*? LGDK and the Mayor's Administrative Unit *Detached from current practices:* The solutions from the eGovernment Strategy are often detached from current practices and need to be re-embedded after implementation by the municipality in order for the solutions to work in practice as originally planned. *Ideas into actions*: *Something old*: exploit the existing portfolio of systems, *something new*: digitalize and create change, *something borrowed*: use the common solutions – and contribute to their development, and *something blue*: *Ideas onto actions*: The idea of a digital planning application process was already realized. *Difficult to adapt the idea when resources are removed*: Learning-by-doing because Byg & Miljø came without instructions for use and the applicants were posing questions that no one in the municipality could answer despite the employees attending courses in advance. *Re-embedding*: The submitted applications must be downloaded and moved manually into the planning case handling system, which is cumbersome and expensive in comparison to the former solution. Holistic thinking across the municipality's administrative units was secured when groups of cross-administrative employees joined the project focus groups and realized that data from Byg & Miljø could be used for maintaining and updating their own case handling systems. ***Inscribing*** *Which media or material*? Byg & Miljø has not been integrated into the planning case handling system, because the planning case handling system is going to be replaced in the near future. *Enforced inscription*: As planning applications are correlated with development and economic growth, is not certain whether the other channels are going to be closed in order to make acceptance of planning applications more efficient. ***Unintended consequences*** *Decrease in service level*: If the municipality decides to reject applications that are not digital. *Increase in handling time*: The applicants are no longer instantly notified about the lack of information in incomplete applications. *Postponement of ongoing business development plans*: The funding provided each year for the Byg & Miljø operating costs is going to have consequences for other things that would have been done. ***Economic Potential*** No economic potential was expected with implementing Byg & Miljø because the large-advanced had already digitalized the planning application process and thereby realized the business. ***Success criteria*** No predefined success criteria. ***Funding*** Byg & Miljø is partly funded by a pool of money from Mayor's Administrative Unit allocated to help fund the digitalization initiatives in the different administrative units and partly self-financed by reducing the planning office with one employee. ***Challenges*** *Balancing core output with digitalization projects*: Byg & Miljø has not lead to efficiency gains but is partly funded by reducing the planning office with one employee leaving the remaining Planning Officers to work at the double to maintain the same level of core output. *Increased complexity in project portfolio*: The increased activity results is a growing need for coordination across the administrative units which has lead to the revival of a centralized priority list and priority process in order for the management to keep oversight of what is ongoing and what is in the pipeline

	Reaping the rewards: Reaping the rewards for Byg & Miljø as expected in the business case from KOMBIT was not at all realistic for the large-advanced municipality because the efficiency improvement had already been realized but also because the calculation of expected rewards from a centralized estimate at the unified municipalities cost savings is making the business case unrealistic and detaching it from reality *Loss of expected efficiency gain*: The original idea was to provide functionality for planning case handling with an expert system, providing checklists and guiding the Planning Officers to the proper legislation, but at the time of data collection this was not offered by Byg & Miljø.
	Large-timely *Idea* *Cost savings*: In the large-timely municipality, cost savings in the form of reduced time to receive and handle the planning applications are expected with automatic creation of planning cases in the journal system, with Byg & Miljø, verifying that the required documents are enclosed, and with offering the applicants a possibility to check for themselves where their application is in the process. *Increased service level*: The idea to provide a higher level of service is not expressed by any source in the large-timely municipality *Translation* In the large-timely municipality there is a clear support for a mandated digitalization process *Ideas into actions:* To become able to act upon the idea in the large-timely, a project charter with specific images of action was written. The scope of the project charter was formulated to cover digital handling of the planning case area, and not just digital handling of the planning application. *Ideas onto actions:* The project charter was written in November 2013, but since it states that the project was started already in 2010, the project charter is putting ideas onto actions by giving a name to something already being done. *Re-embedding / Enforced inscription*: Having both a technical project manager responsible for the operational implementation, and a business project manager responsible for the internal and external use of Byg & Miljø is seen as emphasizing the importance for the municipality to re-embed the idea of digitalization and materialize it into action by means of Byg & Miljø. However, at the time of the data collection it was not decided whether other application channels besides Byg & Miljø would remain open after December 1st 2014, thereby making it possible to sidestep the strong inscription a digital-channel-only decision would provide. *Inscribing* *Strength of inscription:* The integration between the planning case handling system and Byg & Miljø is seen as an attempt to create a strong inscription, because afterwards there is no way to evade the use of Byg & Miljø. Another attempt to give Byg & Miljø a strong inscription is seen in the municipality's project charter the digital planning application solution will become mandatory for all municipalities. Actually, only the provision of a channel for filing digital planning applications is mandatory. *Re-embedding / Enforced inscription*: Having both a technical project manager responsible for the operational implementation, and a business project manager responsible for the internal and external use of Byg & Miljø is seen as emphasizing the importance for the municipality to re-embed the idea of digitalization and materialize it into action by means of Byg & Miljø. However, at the time of the data collection it was not decided whether other application channels besides Byg & Miljø would remain open after December 1st 2014, thereby making it possible to sidestep the strong inscription a digital-channel-only decision would provide. *Unintended consequences* *Postponement of ongoing business development plans*: As the municipality is busy keeping the legal deadlines for accepting the digital planning applications and implementing a time recording system for billing fees according to time spent on planning applications, there has been no time to establish contacts and to meet and exchange knowledge about planning case handling work processes with other municipalities in order to learn from their experience. Every digital case that is closed in Geograf BSS is added to the physical, hard-copy archive because no integration from Geograf BSS to the electronic archive has been implemented due to the increased complexity in the project portfolio, leaving the department with more projects than it can cope with. *Technology* *Protecting internal work processes*: In order to protect the internal case handling work processes and thereby keep a number of stable reference points for the employees, Byg & Miljø might be integrated less to the internal case handling process than it is actually possible. *Economic potential* *Best practice and standardized work processes*: There are no concrete expectations, but just a strong conviction that to digitalize the planning applications along with the internal handling of planning cases will create cost savings.

	### *Success criteria* *No predefined success criteria*: No success criteria have been found in the collected data, except from the purely operational success criteria are recorded in the project charter. ### *Funding* *Self-financing*: The Planning Department is funding Byg & Miljø as well as the other central, national systems with functionality supporting the operations in the Planning Department ### *Challenges* *Fed up with change*: In the preceding year a lot of initiatives have been launched to shorten the very long handling times in the large-timely. Facing even more changes is a huge challenge for the employees because of the unhandled cases still piling up. *Increased complexity in project portfolio*: As already discussed, it is possible to store the planning case documents digitally in the archive, but the integration between Geograf BSS and the archive has not yet been developed due to increased complexity in the project portfolio, leaving the department with more projects than it can cope with.
	Medium-advanced ### *Idea* *Cost savings and increased service level*: The digitalization idea is expressed as being a question of cost savings through increased efficiency, and increased service level through transparency. ### *Translation* *Detached from current practices:* The idea from the eGovernment Strategy of less use of paper, digitalization, better service and better public welfare is seen to become detached from current practices when it is objectified as a generalized IT solution, trying to serve the needs of 98 municipalities, typically covering 60-70% of the municipalities' needs, leaving about 30% particular needs uncovered for the individual municipalities to handle after the implementation. Also lack of understanding of the complexity in the planning case handling was seen to detach the solution from current practices already during the development process. *Ideas into actions*: Adapting the Common Municipal Strategy projects and goals into local projects and goals has been delegated to the IT Manager, who is gathering the projects from the Common Municipal Digitalization Strategy and directing them into the different administrative units, ensuring they are being formulated as tangible projects, being manned with the right competencies, and that the projects actually achieve the goals they are intended to achieve at national level. When the strategies at the national and the common municipal levels have been published, the municipality works actively in different fora with the concrete tenders or projects and thereby impacts the translation process in order to adapt the idea to the local context *Ideas onto actions*: As the municipality was already digitalizing ten years ago, the digitalization process has been putting ideas onto actions. Still it is appreciated that the digitalization strategies are putting the process into a lager frame, offering the municipalities both some standardization and national support *Difficult to adapt the idea when resources are removed*: The translation process of adapting the idea to the organization is difficult because the theoretical, expected time savings are reaped almost before the new solution has been implemented and tested – and before the solution is actually working, which doesn't leave time to fine-tune and institutionalize the required change. ### *Inscribing* *Strength of inscription*: To protect the Planning Officers from any impact from Byg & Miljø, it will be strongly inscribed with a full integration to the planning case handling system, so Byg & Miljø will be completely invisible when seen from the Planning Officers point of view. *Enforced inscription*: The expected savings are one way of forcing the municipalities to materialize the ideas into action. However, despite the pressure it is difficult for the municipality to actually reap the rewards, because the business processes are not defined nor is process performance measured before the new technology is implemented, so when the expected efficiency is not gained, it is difficult to use post-implementation performance measurements to investigate why. Furthermore some of the expected efficiency gains are out of proportion, sometimes because the business case is the result of a political negotiation, where the target is to find an amount of money more than actual, calculated possible gain, which adds to the difficulty of reaping the rewards. Another say of forcing the municipalities to materialize the ideas into action is the legislation about deadlines when the digital solutions are to be ready. ### *Unintended consequences* *Decrease in service level*: Abolishing the pdf-forms for digital planning applications has entailed a decrease in the service level, because the Planning Officers no longer physically meet with the applicants. *Increase in handling time*: After abolishing the pdf-forms for planning applications, all applications are

	received through Byg & Miljø, but unfortunately the quality of the applications has decreased, and as a consequence of this, more time needs to be spent handling the applications. *Postponement of ongoing business development plans*: Business process management was halted in order not to waste the invested energy until it was decided whether the area was going to be centralized or stay with the municipalities *Citizens need professional help to apply for planning permissions*: Most citizens are not likely to gain the confidence that comes with sufficient routine in using the system, and many of them will probably ask their advisor, architect or engineer to take care of the planning application. But then again, this may result in increased quality in the applications, because the advisors will gain more experience with the system *Reshuffling workload*: The digital planning applications have moved a number of tasks from the administrative employees to the Planning Officers, and this partly explains why the application handling time has increased. *Technology* The IT Department used to own the large systems from KMD, but lately the systems and their cost have been transferred to the administrative units. This is not seen as an improvement because it makes the different administrative units further their own special interests. *Missing quality assurance:* There is no quality assurance of the files attached to the planning application. *Protecting internal work processes*: As discussed under Inscribing there is a strong motivation to protect the case handling work processes from any impact from Byg & Miljø. *Economic potential* *Best practice and standardized work processes*: The medium-advanced municipality thinks there would be an even larger economic potential if the planning case handling work processes were standardized across the municipalities in a common system building on best practice. *Success criteria* In comparison to the state's criterion for success to have 80% of the planning applications through Byg & Miljø, the medium-advanced municipality's predefined success criteria was getting 20% through after the first year, but six months after go-live the other channels for filing planning applications were closed, and more than 90% of the planning applications were submittet through Byg & Miljø. *Funding* *Gains earned are plowed back*: The municipality's digitalization strategy clearly states that any gains earned on digitalization should be plowed back to the administrative unit, which accomplished the gain. *Self-financing*: The Planning Department is funding the system. *Challenges* *Increased complexity in project portfolio*: The IT Department is considered to be badly affected by the many initiatives in the digitalization strategies. *It is hard for the users to find and use the digital solutions*: The citizens are not likely to gain confidence in using the system, because most of them only apply for a planning permission once or twice during their. The companies are not ready to use Byg & Miljø because only the accountant or bookkeeper has the electronic signature, which is necessary for entering Byg & Miljø, so the planning employees are not able to submit a planning application *Reaping the rewards*: The Planning Department has paid the bill for Byg & Miljø, but it has not been possible to materialize any cost savings. *Loss of expected efficiency gain*: Some of the original idea, with respect to the expected efficiency gain, was lost even before the system was developed because it was decided that a municipality must not refuse to receive a planning application, hence the original idea of quality control with respect to required attachments was removed from the system.
	Medium-timely *Idea* *Cost savings and increased service level*: In their digitalization strategy the medium-timely expresses the idea of digitalization as aiming to increase the service level and support production of core output: "*The municipality targets its digitalization initiatives to benefit citizens and companies by providing better and faster service and to benefit employees by supporting improved production of core output*". But also the digitalization strategy expresses the idea of digitalization as aiming to make business processes more efficient by eliminating manual activities, reuse of data, and integration of processes. In the medium-timely municipality it is seen as crucial to be able to realize the idea of digitalization, both in order to live up to the expectations from the citizens, but also because of the tight resources resulting from the budgets being cut: "*There is a strong need for us to exploit the digital solutions to get closer to the citizens, to work smarter, and to deliver services in increased quality. To digitalize is a prerequisite for the ongoing services we are obliged to deliver to our citizens. Actually, when all comes to all digitalization is a question of our survival*".

	However, when looking at the guidance provided for the applicants, the service goals are not met. Actually, compared to the pfd-form which was the channel for planning applications until December 1st 2014, Byg & Miljø is decreasing the service level for submitting planning application and introducing a number of problems for the applicants. Some of the applicants' problems are to understand if they are submitting a draft or a proper application, to add documents to an existing application, and to keep a sense of perspective instead of getting lost in the details. The applicants did not experience that kind of problems with the pdf-form. *Translation* *Which actor carries the idea into the organization*? LGDK and KOMBIT started informing the medium-timely about digitalizing of the planning applications in 2013. *Detached from current practices*: The medium-timely participated in a municipal network meeting in March 2014 where Byg & Miljø was demonstrated just before the first possible go-live date, but already then the system did not live up to the expectations. The ability to submit an insufficient application had detached the functionality of the system from current practice: "*We have heard from the pilot municipalities that the system would prevent the applicants from submitting insufficient applications, just like the former pdf-form, where you could not submit an application before the mandatory information was provided. However, somewhere in the making, the Parliamentary Ombudsman had decided that municipalities can't deny receiving planning applications. So now you can login with nem-id, write nothing at all, tick the box "Yes, I confirm that to my knowledge the submitted information is sufficient", and then we receive the application. But we can't see what the applicant would like to do, and there are no drawings. Then we need to get in contact with the applicants reminding them about the needed information. This is time consuming…*". *Ideas into actions*: Digitalization is an area with a strong managerial focus in the medium-timely municipality, and consequently, there was no doubt that the planning application was going to be digitalized. Initially the planning office realized that they had a complex task on their hands, consisting of both integrating Byg & Miljø to the planning case system and implementing a time recording system for billing fees according to time. So in order to formulate the proper scope, make visible where support was needed, and maintain managerial focus, a project description to digitalize the planning case area was written and prioritized in accordance with the common project model and portfolio management model referred to in the digitalization strategy. The project was then approved in the group of managers and subsequent started. "*Regularly meetings have been held to follow-up on progress, and we have had to adjust the course of action because neither implementing Byg & Miljø nor the time recording system went on as quick or painless, as we had thought*". *Difficult to adapt the idea when resources are removed*: It is difficult to adapt the idea into the organization because the recourses needed to change the business processes are fully engaged in operating the business processes: "*It is a challenge to facilitate change because change require resources and we are already busy coping with everyday tasks. It takes some managerial focus to prioritize which tasks are to be delayed in order to channel the resources into creating the change that will better our performance in the long run*". *Re-embedding*: In order to materialize the idea of digital planning applications into action, the medium-timely is determined to have all planning applications submitted through Byg & Miljø. To ensure this, applicants that do get stuck in the application process, are either guided by telephone or invited to show up at the reception desk, where they will receive help to submit a digital planning application from the digitalization specialist or from one of the Planning Officers. The original idea from the digitalization strategy was to use digitalization to "*provide better and faster service and to benefit employees by supporting improved production of core output*". The idea has traveled to implementation in the medium-timely, but somewhere on the way, focus has been shifted from cost savings and increased service level to getting things to work: "*For us that are working with it, I don't think [creating cost savings or increased service level] has had our focus. Now that the decision has been taken, we have focused at getting the best out of it. Making things work…*". *Inscribing* *Which media or material*? The integration from Byg & Miljø to the planning case handling system SBSYS was still under way during the time of data collection. The intention over time is that Byg & Miljø will be fully integrated into SBSYS, so planning applications submitted to Byg & Miljø will be created seamlessly in SBSYS for the Planning Officers to start the case handling. In order for the municipality to be able to bill fees according to time spent, a time recording system has been integrated to SBSYS and to the ERP-system. The integration of the four internal systems involved in planning case handling is to secure a strong inscription of digitalization. *Unintended consequences* *Exhausting the organization over time*: When the budgets are cut before the expected savings are realized, the medium-timely reacts by finding the savings somewhere else: "*We have been challenged, more than once, by having our budgets cut before the calculated savings could be realized. When this happen we need to reprioritize to make things fit together*". *Increase in handling time*: As already discussed, it is possible for the applicants to submit an insufficient planning application through Byg & Miljø. When planning applications are insufficient, it is necessary for

	the municipality to get in contact with the applicants reminding them about the needed information, thereby increasing handling time. Handling time is also increased by the time spent on helping applicants through the application process, either by phone or at the reception desk. *Increased technological vulnerability*: The medium-timely has experienced that when more IT vendors are involved in providing systems and integrations between systems, the business processes becomes more vulnerable, because the IT vendors are not very keen on accepting a problem as belonging in their department. So when problems occur it is not just about calling one IT vendor, it is about convincing one of the IT vendors to take some responsibility for the problem: "*We had the IT department fixing a small, known problem in SBSYS, and the next day nothing worked: no integration between Byg & Miljø and SBSYS, no cases in SBSYS, no time management system, and no Navision. For two weeks I was constantly on the phone trying to make somebody act on the problems. But because there were four IT vendors involved, they just kept pushing the problem on to the next. They even asked me what I thought the problem was. We need the IT vendors to take a common responsibility and act together instead of just insisting that nothing is wrong with their specific part of the whole, that is a huge problem for me*". *Technology* *Protecting internal work processes*: Because the applications submitted through Byg & Miljø are downloaded and imported to SBSYS by the digitalization specialist, most of the planning case handling process is the same as before implementing Byg & Miljø. If there is a need to contact the applicants, however, the Planning Officer must use Byg & Miljø to send the letters, that has been created in SBSYS. *Missing quality assurance*: As already discussed the missing quality assurance allows applicants to submit insufficient applications which has decreased the service level with respect to handling time and disembedded the functionality of the system from practice. *Prioritize ease of use for applicants*: In the medium-advanced municipality top priority is the ease of use for applicants, because it will release resources if the applicants are able to apply without help from the municipality. *Economic potential* *Best practice and standardized work processes*: The medium-timely municipality is very supportive toward common, standardized digital municipal solutions. Experience from a common digital solution that was implemented three years ago shows that even when there are quite a few initial teething troubles, eventually they are solved. There is an expectation of when 98 municipalities are pushing to get a well-functioning system, the IT vendors are prone to solve the problems faster than if only a couple of municipalities are using the system and experiencing the problems. *Success criteria* *No predefined success criteria*: There are no explicit, predefined success criteria regarding the implementation for Byg & Miljø in the medium-timely. There is a perception that expectations ought to be expressed more clearly in the business case and that there ought to be a more systematic follow-up on the expressed expectations. *Funding* *Self-financing*: In the medium-timely municipality the administrative units are prioritizing and financing the majority of the digitalization projects: "*Typically the administrative units are funding their own digitalization projects. Only the very large digitalization projects are jointly funded*". The calculations on the expected rewards from LGDK are used as input for prioritizing: "*The calculations from LGDK on the expected rewards are included in the considerations on which projects to advance, but I have to admit that, compared to the expectations from LGDK, the rewards are delayed at least a couple of years*". *Challenges* *Balancing core output with digitalization projects*: As already discussed balancing core output with the digitalization projects is difficult, because resources are needed to adapt the idea into the organization and change the business processes, but are already fully engaged in operating the business processes. *Increased complexity in project portfolio*: The eGovernment Strategies has introduced several concurrent digitalization projects and thereby increased the complexity in the project portfolio. In the medium-timely municipality this has been dealt with by having rooted the overall focus in the steering committee for digitalization and the operational focus in the working group for digitalization, and having engaged employees from the administrative units in the digitalization projects, instead of just employees from the IT department. *It is hard for the users to use the digital solutions*: Using Byg & Miljø is a challenge for many of the applicants, because user-friendliness is low, the application flow is not intuitive and there is only little guidance. A complex set of rules and regulations as well as infrequent use only adds to the difficulties experienced by applicants: "*Many of the users are only submitting a planning application once in their life, and the majority is not aware of the rural land use regulation or the different areas designated to protection of the natural environment. It is easier for the applicants to submit an insufficient application than to acquaint themselves with the rules before being able to submit a sufficient application*".

	Reaping the rewards: As already discussed the missing quality assurance of applications submitted through Byg & Miljø allows the applicants to submit insufficient applications. Handling the insufficient applications has increased the handling time and has thereby challenged the possibility of reaping the rewards. Patience was expressed even if it, at the moment of data collection, seemed impossible to reap any rewards from implementing Byg & Miljø: "*When things have settled and are working a little more as we would like them to, we will have a look at the business process to see whether it can be optimized, either here or in the rest of the administrative unit. In a couple of years we will probably be able to see reap that some rewards anyhow*". *Loss of expected efficiency gain*: As already discussed the ability for the applicants to submit insufficient applications has increased the handling time and thereby the expected efficiency gain has disappeared.
	Small-advanced *Idea* *Cost savings*: In the small-advanced municipality's Service and Channel Strategy there is a reference to the expectation that on a national basis digitalization in the Danish municipalities will generate cost savings of DKK 2b from 2015, however this figure has not been calculated for the municipality. *Loss of expected efficiency gain*: With efficiency gain as an objective it is a puzzle to the small-advanced why it is optional for the applicants to provide most of the application information. At least 90% of the applications suffer from a shortage of information so severe that they require a letter to be written to the applicant asking for the lacking information. It is impossible to start the planning case handling without the required material. Before Byg & Miljø was implemented, the percentage of inadequate applications was around 40%. The small-advanced calls for a more clear division of the responsibility: "*We need a clear distinction between what the applicants have to provide in order for us, as a public authority, to be able to handle the application. And if it is too difficult for the applicants, they will have to engage an advisor to provide the required information. Otherwise we will have to do it, and that would certainly not increase our efficiency*". It is also mentioned that a larger efficiency gain would have been possible, if the planning application legal framework had been simplified before the development of Byg & Miljø: "*Now there has only been a 1:1 digitalization of how the planning application works today. It should have been possible to let the system support the complete flow of planning applications, i.e. the legal hearings of the neighbors or other involved parties. When you are already working with a digital map, you know who the neighbors are, and you could easily choose and add them as participants in a legal hearing process*". *Increased service level*: In the small-advanced an improved communication with the applicant, i.e. the system functionality allowing applicants to look up the status of their application, is expressed as an increase in the service level. Furthermore, the ability to provide a 24-hour access to digital service is mentioned as an increase of the service level for the digitally capable citizens. *Redistribution*: The small-advanced has planned to lower resource consumption for tasks where self-service is appropriate and redistribute the saved resources to tasks that are more complicated and require face-to-face communication. This redistribution plan can be seen as a contradiction to the objective of generating cost savings for DKK 2b. *Translation* *Detached from current practices:* As already discussed under *Idea*, the idea is being disembedded from local grounding by allowing the applicants to submit inadequate applications, which prevents realization of the expected efficiency gains. Disembedding at the organizational level is also expressed by the Digitalization Consultant, who agrees that the LGDK Action Plan defines the tasks ahead, but also states that the tasks are sometimes hard to solve with the relatively fewer resources that are accessible in a small municipality: "*Sometimes it's fine, and sometimes not, because some of the solutions are not easy to implement for a small municipality*". *Ideas into actions*: For the small-advanced municipality, the process of putting the idea into action was grounded in 2013 with a series of meetings between the Business Manager, a couple of employees from the Planning Department as well as the Environment Department, and an employee from the IT Department: "*The purpose was to find out what we had to be prepared for when Byg & Miljø was implemented. That was when we realized that we had to take care of the integration ourselves. Up until then I had imagined that the applications would just jump directly into our planning case handling system, but of course they can't…*". *Re-embedding, materializing into action*: After implementing Byg & Miljø in the small-advanced municipality some of the functionality was perceived as bugs, i.e. lacking identification of conflicts between a planning application and the different legislations and local plans. The work-around for this bug was to have the Planning Officers to search for conflicts manually, which was somewhat detaching Byg & Miljø from the planning case handling. In order to re-embed Byg & Miljø, these bugs must be resolved, and the Planning Officer will use his professional network DABYFO (Forum of Danish Building Authorities) to consolidate and prioritize which bugs should be fixed first. The Digitalization Consultant has found personal contact and support very helpful in order to re-embed digitalization initiatives: "*At first a couple of my colleagues were quite hesitant to replace the traditional letters with digital mail. They couldn't see the point, and they were actually really negative. Then we had two joint meetings, and I told them afterwards that they could call me whenever needed. This is one of the advantages of being a small municipality. We are close and know each other. I think they called a couple of times, and we solved their problems together.*

	By now they have grown so fond of digital mail that they call me and ask for a digital solution if they once in a while have to send a traditional letter". Besides personal contact and support, the Digitalization Consultant has, in a former employment, experienced that involvement through local digitalization work groups increases the sense of ownership as well as the satisfaction with the digitalization initiatives. *Inscribing* *Strength of inscription*: In the small-advanced municipality there is political support to close the other channels and actively reject analog applications in order to prevent evasion from Byg & Miljø thereby strengthening the inscription of the solution. *Unintended consequences* *Citizens need professional help to apply for planning permissions*: With efficiency gain as an objective, it is a puzzle to the small-advanced why it is optional for the applicants to provide most of the application information. At least 90% of the applications suffer from a shortage of information so severe that they require a letter to be written to the applicant asking for the lacking information. It is impossible to start the planning case handling with the material available. The percentage of inadequate applications before Byg & Miljø was implemented was around 40%. Furthermore, as already discussed under *Loss of expected efficiency gain*, the small-advanced municipality calls for a more clear division of the responsibility between what the applicants have to provide in order for the municipality to be obliged and able to handle the application: "*...And if it is too difficult for the applicants, they will have to engage an advisor to provide the required information. Otherwise we will have to do it, and that would certainly not increase our efficiency*". *Decrease in service level:* In some cases the applicants have by accident ticked a wrong box, i.e. the box stating that the building plan does not require a building permit. This results in a receipt from Byg & Miljø stating that the building plan can be started – and in fine print: "If you have ticked the right boxes". Until now the small-advanced municipality has been able to identify these applications and stop the applicants, thereby avoiding commencement of building plans that go against the building regulations. It is perceived as a decrease in the service level for the applicants to first have a go and then have to wait for proper planning case handling. *Increase in handling time*: As already discussed, at least 90% of the applications received through Byg & Miljø are inadequate for case handling. In some cases an advisor or developer is applying on behalf of the owner, but the required letter of attorney is missing, in other cases even the information about what the applicant is planning to build or tear down is missing, and yet in other cases the applicants have been scanning the back of the drawings so the attached drawings are blank. These types of application errors were not seen before implementing Byg & Miljø. When it is impossible to start the planning case handling with the available data material, a letter must be written to the applicant asking for the lacking information, thereby increasing the handling time both in calendar days and in time spent for the Planning Officers. Each year The Danish Ministry of Transport and Building collects data and publishes a statement about planning case handling time in each of the Danish municipalities. The Planning Officer expects that the increase in calendar days will have a negative impact on the handling time statement from the Danish Ministry of Transport and Building. *Introduction of new structures*: Digitalization of planning applications is a job for which the small-advanced municipality perceives itself to be too small, so – among many other things – this has led to some consideration whether the municipality should become a larger unit by joining one of its neighbor municipalities. *Restructuring of the organization*: To accomplish the digitalization initiatives there is a need for project competencies in the organization. Project competencies have not been developed internally because focus has been on case handling and servicing the citizens. As the small-advanced municipality has no digitalization support department with project competencies or resources, the Planning Officers must implement Byg & Miljø themselves with support from the IT department, which has no project competent staff either, only staff with IT-operational competencies. Vacant positions ought to be filled with candidates possessing project competencies, or project competencies already within the organization should be utilized across functions. *Technology* For the data collected in the small-advanced municipality, only a couple of non-essential bug descriptions earned its way into the technology code. *Economic potential* No references to "Economic potential" have been found in the data material from the small-advanced municipality. *Success criteria* In the small-advanced municipality no explicit success criteria were formulated before implementing Byg & Miljø: "*But we did expect to ease the communication and to get a guided process for the applicants with a strong pull for the required data. We were quite frustrated when we realized that this was not at all the case*".

	### *Funding* If the administrative units in the small-advanced municipality cannot finance the digital solutions that have to be acquired, the Forum for Digitalization has funds that the administrative units can apply for. If funds are allocated, pay off is expected over the coming years with savings corresponding to the business case. ### *Challenges* *Balancing core output with digitalization projects*: It is difficult for the small-advanced municipality to accomplish both core output and systems implementation, and as already discussed under Unintended Consequences, digitalization of planning applications is therefore a job for which the small-advanced municipality perceives itself to be too small. "*I have a hard time seeing how Byg & Miljø can help realize the expected efficiency gains. I think Byg & Miljø has brought a lot of additional tasks, and it has been hard on our small organization to implement it. We have used a lot of time, and how do you create commitment when we are already neck-deep in planning cases? It isn't easy to prioritize spending time implementing Byg & Miljø when there is a heavy workload already*". *Size matters*: As already discussed under Unintended Consequences, the small-advanced municipality does not possess the project competencies required to accomplish the digitalization initiatives. It is common for large municipalities to dedicate internal service departments to deal with digitalization projects, but in the small-advanced municipality all employees focus on servicing the citizens and operations. "*We suffered from the start, being delayed with the case handling, so it was hard to create sufficient commitment to Byg & Miljø. Here it was just yet another task to solve, but this would probably be completely different in a municipality with more muscles. I think that size matters and that our size is our real challenge*". As already discussed under Translation, the Digitalization Consultant agrees that the digitalization tasks are harder to solve with the relatively fewer resources accessible in a small municipality. *Increased complexity in project portfolio*: The digitalization initiatives result in simultaneous demand for the insufficient resources and IT competencies: "*We lack a total overview of what is going on digitalization-wise in the municipality. We need an overview in order to balance the need for IT competencies with the available resources*". *It is hard for the users to use the digital solutions*: As already discussed under *Unintended Consequences*, the applicants make many more severe mistakes with their applications than before implementing Byg & Miljø, this leads to the conclusion that it is harder for the users to use the digital. *Reaping the rewards*: As discussed earlier, allowing the applicants to submit inadequate applications prevents the realization of the expected efficiency gains.
	Small-timely ***Idea*** *Cost savings:* In their Digitalization Strategy, the small-timely municipality expresses the idea as the use of digitalization to "increase efficiency in case handling and provide effective solutions for our citizens". In the small-timely municipality, cost savings are expected as a result from the automatic creation of planning cases in the journal system. Besides, cost savings are expected resulting from increased quality in the applications, meaning that Planning Officers no longer need to get back to the applicants to get the right documents, and resulting from the possibility for the applicants to check for themselves where in the process their application is. *Increased service level:* As is also expressed by the medium-advanced municipality, the original idea is that Byg & Miljø is able to handle the simple applications, so that the applicant would actually get a building permit or a rejection immediately after filing the application. However, the actual implementation of Byg & Miljø is somewhat less helpful. Some case handling has been implemented, namely the identification of conflicts between the application and the different legislations and local plans. If a conflict is identified the application must be stopped in order that the building plan does not violate the regulations. But in the current version of Byg & Miljø, when conflicts between the planning application and the regulations appear, these are not identified, so the Planning Officers have to continue to search for conflicts manually. This, however, is perceived somewhat differently by the IT & Process Consultant, who recalls the idea as merely being a question of getting standardized applications as well as increasing the service level for the applicants, e.g. by Byg & Miljø providing a portal for the applicants to look up the status of their application. *Develop active citizenship and support democracy:* The small-timely municipality has extended the range of the idea to comprise the use of digitalization to "develop active citizenship and support democracy". ***Translation*** *Detached from current practices*: The idea of mandated digitalization of the planning applications is not taking into account the local conditions. The small-timely municipality is quite far behind with the planning case handling, and because the work load has not left any slack there has been some resistance to change. *Which actor carries the idea into the organization?* The idea about the digitalization of planning applications became known in the small-timely municipality at the 2010 annual meeting in DaByFo, the network of Planning Officers. Both professional networks and LGDK are referred to as being actors carrying the idea into the organization. As expressed by the IT & Process Consultant "… it is the initiatives from LGDK that dictate the project portfolio". Other actors carrying the idea of digitalization are the Danish Agency for Digitisation and KOMBIT. Internally, the IT & Process Consultant has been the focal point of

	information. *Ideas into actions:* For the small-timely municipality, the process of putting the idea into action was grounded in the Digitalization Strategy, a thorough development process involving a wide range of actors in the municipality: "The Digitalization Strategy is a result of three workshops involving the Executive Committee, the Steering Committee for Digitalization, and representatives from the administrative units and the institutions. The starting point has been the general municipal strategy together with the Common Municipal Digitalization Strategy 2010-2015. After the approval workshops have been held with the administrative units to determine which initiatives will secure the success of the Digitalization Strategy". The formal responsibility for implementing the Digitalization Strategy in the small-timely municipality lies with the Steering Committee for Digitalization which originally held monthly meetings, but later decided to meet only every second month. The adaptation of the idea into the organization was initiated with a course for the Planning Officers in the early spring of 2014. *Ideas onto actions:* With the first Gradual Plans from LGDK, the small-timely municipality was ahead of plans, and the mandated digitalization effort had already been implemented by free choice at an earlier point in time: "KOMBIT had a bit of a laugh when they heard that we had fallen behind the mandated digitalization. Usually we have been ready before the deadlines were even fixed, because we choose to digitalize beforehand, but when more and more solutions are mandated we get behind, because there are too many requirements for us to live up to. The focus at developing an inclusive and comprehensive digitalization strategy might have brought the small-timely municipality ahead of the first Gradual Plans from LGDK. *Re-embedding:* As a compliance initiative the IT & Process Consultant is regularly checking post in the mail room to see if potentially digital mail is sent by physical mail. If so, the sender is contacted to see if re-implementation of the digital solution is needed. ***Inscribing*** *Strength of inscription:* To protect the Planning Officers from any impact from the digitalization of planning applications, Byg & Miljø will be strongly inscribed with a full integration to the planning case handling system: "With the full integration, the applications will be transferred automatically to the case handling system … we can still work as we have always done, writing standard letters and so on, having it automatically transferred to Byg & Miljø. So there will be no need for the employees to work in Byg & Miljø in order that the applicants can see how the application is progressing". *Enforced inscription:* The small-timely municipality is well aware that Byg & Miljø is not mandated, only the provision of a digital channel for planning applications is: "Remember that this was not a mandated solution. We could develop our own solution, but because we are such a small municipality we go with a lot of the common municipal solutions, even if we are free to provide our own solution". Enforcement of digitalization with mandated deadlines and a strong management focus is perceived to be necessary because of the work load that will otherwise use the available working hours. ***Unintended consequences*** *Decrease in service level:* In the small-timely municipality, the Business Manager left the organization in June 2014, and her responsibilities were then delegated between the employees in the Planning Department. The responsibility for implementing Byg & Miljø was given to the Planning Officer, but it did not receive the required attention as the Planning Officer was preoccupied with handling the pile of planning cases, of which a large number were delayed, but also because the employees in the Planning Department were already quite satisfied with the existing planning case handling systems and work processes. Byg & Miljø is seen as a step backwards for the service level with respect to e-mail communication with the applicants. Also for the personal communication with the applicants, Byg & Miljø is seen as a step backwards in service level. The citizens of the small-timely municipality are used to calling or visiting the town hall when they need to have a dialogue with the municipal employees. The digital planning applications remove this service. *Increase in handling time:* Until Byg & Miljø is fully integrated to the municipality's case handling system, there will be an increase in the case handling time because the status of the planning case will have to be updated in Byg & Miljø whenever it is changed in the case handling system. Also in the small-timely municipality, Byg & Miljø has introduced a decrease in the quality of the applications, and as a consequence more time is needed for handling the applications. Besides, as already discussed under Idea, Byg & Miljø is not able to identify some of the conflicts between an application and the different legislation and local plans so the Planning Officers have to continue to search for conflicts manually ***Technology*** *Byg & Miljø:* In their digitalization strategy, the small-timely municipality expresses the value of integrating digital solutions across the organization: "We aim to integrate digital solutions cross functionally in order to re-use data in different solutions where applicable. Cross functional integration gives us a possibility to plan efficiently, through interconnected and resilient work processes". Integration between Byg & Miljø and the case handling system is also valued by the Planning Officer and IT & Process Consultant. *Protecting internal work processes:* As already discussed under Inscribing *Economic potential:* LGDK is the driver for the small-timely municipality's expectations for the economic potential with Byg & Miljø: "LGDK has negotiated the Financial Agreement and calculated the business case, and when the economic potential is known in the municipality's departments, it is always impossible to reap the rewards. But in this municipality we do not present the Executive committee with a figure to be removed from one department. We look at what is possible". According to the business case from LGDK,

	the economic potential is rather large and should be reached on the grounds of self service and applications of better quality. Whatever could be gained from integrating Byg & Miljø and the planning case handling system is – according to LGDK – on top of that. ***Success criteria*** No predefined success criteria: There are no explicit, predefined success criteria regarding the implementation for Byg & Miljø in the small-timely, but there is a perception that the citizens using Byg & Miljø are above average digitally literate, and this perception leads to an expectation that more than 90% of the planning applications will be using the digital channel. In general the expectation is that 80% will be using a digital channel. The gradual expectations for the citizens' use of digital channels are also expressed in the Digitalization Strategy: "…we are aware of which target group is using the digital solutions, and how they are used…". ***Funding*** In the small-timely municipality the Steering Committee for Digitalization has funds that the administrative units can apply for when digital solutions have to be acquired. There are no standardized forms for application, but the Steering Committee for Digitalization looks for a promising business case in economic terms as well as for service improvements (Business Manager, small-timely 19:05; IT & Process Consultant, small-timely 1:40:52). ***Challenges*** *Balancing core output with digitalization projects:* Due to lack of time and resources the small-timely municipality did not participate in defining the requirements for Byg & Miljø. "…we do not really have the time or the resources to participate in defining requirements for the common solutions. We need to trust that it is the same task we are all solving, even if the 98 municipalities are different". Lack of time and resources are also delaying the system implementation, because priority is given to the piles of planning applications and producing core output. *Size matters*: Implementing Byg & Miljø is affecting the small-timely municipality proportionally more than the large municipalities, because as the implementation effort is more or less independent of the size of the municipality, the proportion of the resources needed is larger when there are only a few Planning Officers to accomplish the task compared to a municipality with 14 or 50 Planning Officers. To dedicate for example one Planning Officer 100% to implementing Byg & Miljø is completely unrealistic for the small-timely, yet this is done in the large municipalities. *Lack of leadership focus delays the start of system use:* One of the reasons given for not advancing system use is that it is not easy to change a well-functioning system and work processes when there are piles of planning applications that are already delayed. Another reason given is that it was a challenge to maintain focus with a lack of leadership driving the change: "… it is also about leadership focus. Our Business Manager was the driving force behind all new initiatives. She knew our pipeline was stuffed, but she was persistent. When she left, and the Director left, and then the rest of the Executive committee left, we could only manage to serve the citizens". *Increased complexity in project portfolio:* In the last couple of years there have been so many mandated projects with respect to self-service and digital communication with the citizens that the small-timely municipality has not had any resources to support any internally initiated projects, like LEAN projects, or to standardize work processes. No references to "Fed up with change", "It is hard for the users to use the digital solutions", and "Reaping the rewards" has been found in the data material from the small-timely .

Appendix G: Individual Level Municipality, Synthesized Analysis

		LA	LT	MA	MT	SA	ST
Idea	*Cost savings*	Create profit and deliver more effective municipal services (Digitalization Strategy 2012-2015, large-advanced, p. 6).	Cost savings are expected, but no calculations have been made (IT Manager, large-timely 21:20; 30:54; Project Manager Byg & Miljø and System Administrator BSS, large-timely 12:24).	Cost savings are expected through increased efficiency (Business Manager, medium-advanced 37:22; IT Manager, medium-advanced 4:37; Digitalization Strategy 2013-2017, medium-advanced p. 3)	Support production of core output and make business processes more efficient by eliminating manual activities, reuse of data, and integration of processes (Digitalization Strategy 2009-2012, medium-timely, p. 2; p. 3; p. 5)	On a national basis digitalization in the Danish municipalities are expected to generate cost savings of DKK 2b from 2015. However, this figure has not been calculated for the municipality (Service and Channel Strategy 2012-2015, p. 4).	1) automatic creation of planning cases; 2) increased quality in the applications, and 3) possibility for the applicants to check status of the application for themselves (Planning Officer, small-timely 10:19; IT & Process Consultant, small-timely 32:23; 1:14:39)
	Increased service level	Strengthen quality of core output (Digitalization Strategy 2012-2015, large-advanced, p. 6).	-	Increased service level is expected through transparency (Business Manager, medium-advanced 37:22; IT Manager, medium-advanced 4:37; Digitalization Strategy 2013-2017, medium-advanced p. 3)	Increase the service level (Digitalization Strategy 2009-2012, medium-timely, p. 2)	Improved communication, i.e. the system functionality allowing applicants to look up the status of their application (Business Manager, small-advanced 26:16; 47:04; 1:00:49; Digitalization Consultant, small-advanced 35:33). Ability to provide a 24-hour access to digital service (Service and Channel Strategy 2012-2015, small-advanced p.3)	Immediate building permit or rejection for simple applications (Planning Officer, small-timely 10:19)

		LA	LT	MA	MT	SA	ST
	Other proprietary ideas expressed	Holistic thinking across administrative units (Digitalization Strategy 2012-2015, large-advanced, p. 1). Increase integration in work processes and ability to innovate (Digitalization Strategy 2012-2015, large-advanced, p. 6). Digitalization is an end in itself (Digitalization Strategy 2012-2015, large-advanced, p. 1, 6, and 7).	-	-	-	The small-advanced has planned to lower resource consumption for tasks where self-service is appropriate and redistribute the saved resources to tasks that are more complicated and require face-to-face communication (Service and Channel Strategy 2012-2015, small-advanced p.5).	The small-timely municipality has extended the range of the idea to comprise the use of digitalization to "develop active citizenship and support democracy" (Digitalization Strategy 2011-2015, small-timely p. 4)
Translation		The mandated digitalization is accepted and actively supported as it speeds up the process, but the solutions are experienced as being detached from current practices (Enterprise & Business Architect, large-advanced 1:23:59).	There is a clear support for the mandated digitalization process (Project Manager Byg & Miljø and System Administrator BSS, large-timely 32:47).	The municipality took part in starting up the development process with KL and KOMBIT in 2010, but opted out because the idea was being detached from current practices by a lack of understanding of the complexity in the planning case handling (Planning	-	The municipality accepts that the LGDK Action Plan defines the tasks ahead, but is also stating that the tasks are sometimes hard to solve with the relatively fewer resources that are accessible in a small municipality (Digitalization	-

		LA	LT	MA	MT	SA	ST
				Officer, medium-advanced 46:42; Business Manager, medium-advanced 48:32).		Consultant, small-advanced 17:36; 1:01:22).	
	Detached from current practice	Solutions from eGovernment Strategy must be refined after implementation (Enterprise & Business Architect, large-advanced 1:22:47) Applicants prefer personal contact (Chief digitalization Consultant, large-advanced 1:16:43)	-	The idea is seen to become detached from current practices when it is objectified as a generalized IT solution, trying to serve the needs of 98 municipalities (IT Manager, medium-advanced 46:10)	The ability to submit insufficient applications had detached the functionality of the system from current practice (Digitalization Specialist, medium-timely 7:12; 9:10; 16:50)	The idea is being detached from current practices by allowing the applicants to submit inadequate applications, which prevents realization of the expected efficiency gains (Business Manager, small-advanced 26:16; Planning Officer 1:05:22).	Resistance to change due to lacking slack in workload (Planning Officer, small-timely 10:19)
	When the idea becomes known in the organization	-	Took part in pilot project from 2008-2011 (IT Manager, large-timely 48:02).	-	In 2013 (Digitalization Specialist, medium-timely 6:15)	-	In 2010 at the annual meeting in DaByFo, the network of Planning Officers (Planning Officer, small-timely 54:23)
	Which actor carries the idea into the organization?	The Mayor's Administrative Unit and LGDK through the Director for the Technical Administration (IT Manager, large-advanced 8:09; Enterprise & Business Architect, large-advanced 10:40).	-	-	LGDK and KOMBIT (Digitalization Specialist, medium-timely 6:15)	-	The idea is carried into the organization by professional networks and LGDK (Planning Officer, small-timely 54:23, IT & Process Consultant, small-timely 1:51:08, Business Manager, small-timely 9:40).
Translation continued		Being among the first municipalities to go live with Byg & Miljø the process of	-	-	-	-	-

		LA	LT	MA	MT	SA	ST
		reinstalling the idea into action was learning-by-doing (Chief Digitalization Consultant, large-advanced 1:00:16)					
	Difficult to adapt the idea when resources are removed	-	-	The process of adapting the idea to the organization is difficult because the theoretical, expected time savings are reaped almost before the new solution has been implemented and tested – and before the solution is actually working, which doesn't leave time to fine-tune and institutionalize the required change (Business Manager, medium-advanced 19:13).	The recourses needed to change the business processes are fully engaged in operating the business processes (Business & IT Manager, medium-timely 1:42:10)	-	
	Ideas into actions	Something old: exploit the existing portfolio of systems, something new: digitalize and create change, something borrowed: use the common solutions – and contribute to their development, and something blue: radical innovation (Digitalization Strategy 2012-2015, large-advanced p. 12 ff)	A project charter covering digital handling of the planning case area with specific images of action, different phases, and milestones was written to bring ideas into action in the large-timely, but no objective, purpose or goal area is mentioned in the project charter (project charter, large-timely p. 2, p. 3).	Implementing the Common Municipal Strategy projects and goals into local projects and goals has been delegated to the IT Manager, gathering the projects from the Common Municipal Digitalization Strategy and directing them into the different administrative units, ensuring they are being formulated as tangible projects, being manned with	A project description to digitalize the planning case area was written to formulate the proper scope, make visible where support was needed, and maintain managerial focus and subsequently prioritized in accordance with the common project model and portfolio management model (Business & IT Manager, medium-	The process of putting the idea into action was grounded in 2013 with a series of meetings between the Business Manager, a couple of employees from the Planning Department as well as the Environment Department, and an employee from the IT Department with the purpose to find out what had to be prepared for the implementation of	The process of putting the idea into action was grounded in the Digitalization Strategy, a thorough development process involving a wide range of actors in the municipality. The formal responsibility for implementing the Digitalization Strategy in the small-timely municipality lies

		LA	LT	MA	MT	SA	ST
				the right competencies, and that the projects actually achieve the goals they are intended to achieve at national level (IT Manager, medium-advanced 1:18).	timely 24:43; Digitalization Strategy 2009-2012, medium-timely p. 8)	Byg & Miljø (Planning Officer, small-advanced 1:40).	with the Steering Committee for Digitalization (Digitalization Strategy 2011-2015, small-timely p. 3). The adaption of the idea into the organization was initiated with a course for the Planning Officers in the early spring of 2014 (Planning Officer, small-timely 56:55)
	Ideas onto actions	For the large-advanced municipality the idea of a digital planning application process was already realized, so the implementation of Byg & Miljø was very much putting ideas onto actions (IT Manager, large-advanced 9:50; Chief Digitalization Consultant, large-advanced 10:33)	The project charter was written in November 2013, but since it states that the project was started already in 2010, the project charter is putting ideas onto actions by giving a name to something already being done (project charter, large-timely p. 1).	As the municipality was already digitalizing ten years ago, the digitalization process has been putting ideas onto actions (Business Manager, medium-advanced 1:10).	-	-	With the first Gradual Plans from LGDK, the small-timely municipality was ahead of plans, and the mandated digitalization effort had already been implemented by free choice at an earlier point in time (IT & Process Consultant, small-timely 57:49). The focus at developing an inclusive and comprehensive digitalization strategy might have brought the small-timely municipality ahead of the first Gradual Plans from LGDK.
Inscribing	*Which viewpoint*	-	-	-	-	-	
	Which media or	Temporarily manual	An integration	To protect the	The integration from	-	To protect the

		LA	LT	MA	MT	SA	ST
	material	handling of application files is needed. Byg & Miljø has not been integrated into the planning case handling system, because the planning case handling system is going to be replaced in the near future. (Observation of Byg & Miljø, large-advanced).	between the planning case handling system and Byg & Miljø was being developed at the time of data collection (Project Manager Byg & Miljø and System Administrator BSS, large-timely 38:22).	Planning Officers from any impact from Byg & Miljø, it will be strongly inscribed with a full integration to the planning case handling system, so Byg & Miljø will be completely invisible when seen from the Planning Officers point of view (Planning Officer, medium-advanced 56:55).	Byg & Miljø to the planning case handling system was still under way during the time of data collection. The intention over time is that Byg & Miljø will be fully integrated into SBSYS, so planning applications submitted to Byg & Miljø will be created seamlessly in SBSYS for the Planning Officers to start the case handling (Planning Officer, medium-timely 33:18; Digitalization Specialist, medium-timely 34:16; 1:22:45)		Planning Officers from any impact from the digitalization of planning applications, Byg & Miljø will be strongly inscribed with a full integration to the planning case handling system (Planning Officer, small-timely 11:34).
	Strength of inscription	At least temporarily weak	The integration is seen as an attempt to create a strong inscription, because afterwards there is no way to evade the use of Byg & Miljø. Another attempt to give Byg & Miljø a strong inscription is seen in the municipality's project charter stating that the digital planning application solution will become mandatory for all municipalities. Actually, only the provision of a channel	The integration is seen as an attempt to create a strong inscription.	The integration is seen as an attempt to create a strong inscription.	In the small-advanced municipality there is political support to close the other channels and actively reject analog applications in order to prevent evasion from Byg & Miljø thereby strengthening the inscription of the solution (Business Manager, small-advanced 54:12; Planning Officer, small-advanced 5:20).	Full integration is seen as an attemmpt to create a strong inscription.

		LA	LT	MA	MT	SA	ST
			for submitting digital planning applications is mandatory.				
	Re-embedding	In order to materialize Byg & Miljø in action two fireballs were appointed to maintain the attention and commit the involved employees and managers in implementing Byg & Miljø (Chief Digitalization Consultant, large-advanced 43:17; 45:00). The objective from the digitalization strategy to include holistic thinking across the municipality's administrative units was secured when groups of cross-administrative employees joined the project focus groups and realized that data from Byg & Miljø could be used for maintaining and updating their own case handling systems (IT Manager, large-advanced 45:49; Digitalization Strategy 2012-2015, large-advanced, p. 1)	Having both a technical project manager responsible for the operational implementation, and a business project manager responsible for the internal and external use of Byg & Miljø is seen as emphasizing the importance for the municipality to re-embed the idea of digitalization and materialize it into action by means of Byg & Miljø (Project Manager Byg & Miljø and System Administrator BSS, large-timely 5:28).	-	The medium-timely is determined to have all planning applications submitted through Byg & Miljø. To ensure this, applicants that do get stuck in the application process, are either guided by telephone or invited to show up at the reception desk, where they will receive help to submit a digital planning application (Planning Officer, medium-timely 19:16; Digitalization Specialist, medium-timely 1:21:02). The original idea from the digitalization strategy was to use digitalization to "provide better and faster service and to benefit employees by supporting improved production of core output" (Digitalization Strategy 2009-2012, medium-timely, p. 5). However in the process of materializing the idea as action, focus has shifted so the	Re-embedding digitalization initiatives is eased by personal contact and support in the organization (Digitalization Consultant, small-advanced 39:43). In order to re-embed Byg & Miljø, the IT vendor needs to consolidate prioritize, and resolve the initial bugs and teething troubles (Planning Officer, small-advanced 17:17).	As a compliance initiative the IT & Process Consultant is regularly checking post in the mail room to see if potentially digital mail is sent by physical mail. If so, the sender is contacted to see if re-implementation of the digital solution is needed (Planning Officer, small-timely 13:41; IT & Process Consultant, small-timely 1:18:49)

		LA	LT	MA	MT	SA	ST
					employees are now preoccupied with getting things to work (Digitalization Specialist, medium-timely 1:38:08)		
	Enforced inscription	As planning applications are correlated with development and economic growth, is not certain whether the other channels are going to be closed in order to make acceptance of planning applications more efficient. It is a political decision to balance development and economic growth with costs related to maintaining a high level of service with respect to open channels and experienced service level (Chief Digitalization Consultant, large-advanced 1:10:56)	At the time of the data collection it was not decided whether other application channels besides Byg & Miljø would remain open after December 1st 2014, thereby making it possible to sidestep the strong inscription a digital-channel-only decision would provide (Project Manager Byg & Miljø and System Administrator BSS, large-timely 16:20).	The expected savings are one way of forcing the municipalities to materialize the ideas into action (IT Manager, medium-advanced 14:08). However, despite the pressure it is still difficult for the municipality to actually reap the rewards. Another way of pushing the municipalities to materialize the ideas into action is the legislation about deadlines when the digital solutions are to be ready (IT Manager, medium-advanced 33:40).	-	-	The small-timely municipality is well aware that Byg & Miljø is not mandated, only the provision of a digital channel for planning applications is, but the enforcement of digitalization with mandated deadlines and a strong management focus is perceived to be necessary because of the work load that will otherwise use the available working hours (Planning Officer, small-timely 1:03:33)
	Implementering inkl. sammenhænge til interne systemer	Temporarily no integration, because planning case handling system will be replaced	Integration under development	Full integration will be developed	Full integration will be developed	-	Full integration will be developed
Unintended consequences	*Citizens need professional help to apply for planning permissions*	-	-	Most citizens are not likely to gain the confidence that comes with sufficient routine in using the system.	-	It is too difficult for the applicants to provide the information required. At least 90% of the	-

		LA	LT	MA	MT	SA	ST
				Many citizens will probably ask their advisor, architect or engineer to take care of the planning application. (Business Manager, medium-advanced 21:00).		applications suffer from a shortage of information. The percentage of inadequate applications before Byg & Miljø was implemented was around 40%. (Planning Officer, small-advanced 1:02:44; Business Manager, small-advanced 47:04)	
	Decrease in service level	Rejecting applications that are not digital will be experienced as a decreased service level by the applicants (Chief Digitalization Consultant, large-advanced 1:10:56)	-	Abolishing the pdf-forms for digital planning applications has decreased the service level, because the Planning Officers no longer physically meet with the applicants and are thereby not able to help the citizens or companies without means to scan hardcopies of drawings (Planning Officer, medium-advanced 1:12:06)	-	Ticking the box stating that the building plan does not require a building permit results in a receipt from Byg & Miljø stating that the building plan can be started – which of course is not true on the grounds of ticking a box. It is perceived as a decrease in the service level for the applicants to first have a go and then have to wait for proper planning case handling (Planning Officer, small-advanced 58:25).	Byg & Miljø is seen as a step backwards for the service level with respect to e-mail communication with the applicants (Planning Officer, small-timely 3:03), as well as for the personal communication, because the citizens of the small-timely municipality are used to calling or visiting the town hall when they need to have a dialogue with the municipal employees. (Planning Officer, small-timely 46:44)
	Exhausting the organization over time	-	-	-	When the budgets are cut before the expected savings are realized, the medium-timely reacts by finding the savings	-	-

		LA	LT	MA	MT	SA	ST
					somewhere else, thereby exhausting the organization over time (Business & IT Manager, medium-timely 1:36:39)		
	Increase in handling time	Preliminary application examination has been removed, thereby increasing the handling time for the incomplete applications (Chief Digitalization Consultant, large-advanced 1:13:50)	-	The quality of the applications has decreased, and as a consequence of this, more time needs to be spent handling the applications (Planning Officer, medium-advanced 4:59, 15:08, 38:54; Business Manager, medium-advanced 1:45:44).	The digital planning applications are less sufficient, and requires contact with the applicants reminding them about the needed information, thereby increasing handling time (Digitalization Specialist, medium-timely; 7:12; 9:10; 1:29:25). Time must be spent on helping applicants through the application process, either by phone or at the reception desk (Planning Officer, medium-timely 19:16; Digitalization Specialist, medium-timely 1:16:05; 1:21:02).	At least 90% of the applications received through Byg & Miljø are inadequate for case handling. In those cases a letter must be written to the applicant asking for the lacking information, thereby increasing the handling time both in calendar days and in time spent for the Planning Officers (Planning Officer, small-advanced 11:32; 27:59; 51:05; 1:02:44).	Until Byg & Miljø is fully integrated to the municipality's case handling system, there will be an increase in the case handling time because the status of the planning case will have to be updated in Byg & Miljø whenever it is changed in the case handling system (Planning Officer & IT & Process Consultant, small-timely 12:34). Also Byg & Miljø has introduced a decrease in the quality of the applications, and as a consequence more time is needed for handling the applications (Planning Officer, small-timely 27:17).
	Increased technological vulnerability	-	-	-	The business processes have become more vulnerable because more IT vendors are involved in providing systems and	-	

		LA	LT	MA	MT	SA	ST
					integrations between systems, and when breakdowns occur, the IT vendors pass the problem on instead of taking a common responsibility for solving the problem (Digitalization Specialist, medium-timely 34:36).		
	Introduction of new structures	In order to address the increased complexity in the project portfolio, new structures in the form of a strategic and an operational forum with the purpose prioritize and coordinate the digitalization initiatives across the administrative units has been introduced (Enterprise & Business Architect, large-advanced 18:13)	-	-	-	Digitalization of planning applications is a job for which the small-advanced municipality perceives itself to be too small, so – among many other things – this has led to some consideration whether the municipality should become a larger unit by joining one of its neighbor municipalities (Business Manager, small-advanced 2:59).	
	Postponement of ongoing business development plans	Byg & Miljø was implemented despite the inability to realize the business case. This has resulted in lack of funding, which is going to have consequences for other business development plans (Chief Digitalization Consultant, large-advanced 16:01)	Ongoing business development is being postponed because the municipality is busy keeping the legal deadlines for for accepting digital planning applications and implementing a time recording system for billing fees according to time spent (Project Manager Byg & Miljø	When the plan for digitalizing the planning applications was announced, the ongoing business development came to a standstill until it was clear that the area was going to stay with the municipalities (Business Manager, medium-advanced 52:15).	-	-	

		LA	LT	MA	MT	SA	ST
			and System Administrator BSS, large-timely 11:27)				
	Reshuffling workload	-	-	A number of tasks have been moved from the administrative employees to the Planning Officers, and Eventually there will be a need for more Planning Officers and less administrative employees (Planning Officer, medium-advanced 19:43). Increased use of IT also means that one Planning Officer currently uses at least 50% of his time as superuser instead of handling planning applications (Business Manager, medium-advanced 1:03:30; Planning Officer, medium-advanced 1:15:47).	-	-	
	Restructuring of the organization	-	-	-	-	To accomplish the digitalization initiatives there is a need for project competencies in the organization. (Business Manager, small-advanced 1:16:25; Digitalization Consultant, small-advanced 59:59). Vacant positions	

		LA	LT	MA	MT	SA	ST
						ought to be filled with candidates possessing project competencies, or project competencies already within the organization should be utilized across functions (Business Manager, small-advanced 1:16:25).	
Technology	*Missing qulity assurance*	-		x			
	Planning case handling will not become fully digital						
	Prioritize ease of use for applicants						
	Protecting internal work processes	-	x	x			x
Economic potential	*Best practice and standardized work processes*		x	x			
	Byggeansøgnings processen						
	Digital selvbetjening						
	Teknik og Miljø						
Success criteria	*No predefined success criteria*	x	x			x	x
	Predefined success criteria			x			
Funding	*Gains earned are plowed back*			x			
	Self-financing			x			
	The Steering Committee for Digitalization is funding Byg &					x	x

		LA	**LT**	**MA**	**MT**	**SA**	**ST**
	Miljø						
	Other means of funding	x					
Challenges	*Balancing core output with digitalization projects*	x				x	x
	Fed up with change		x				
	Growth and development vs. digitalization						
	Increased complexity in project portfolio	x	x	x		x	x
	It is hard for the users to find and use the digital solutions			x		x	
	IT Silos						
	Lack of leadership focus delays the start of system use						x
	Loss of expected efficiency gain	x		x		x	
	Reaping the rewards	x		x			
	Size matters					x	x
	Teething troubles						
	The digital solutions have not caught on with the end users						

Appendix H: Synthesized codes

Idea

Cost savings

Reduced time to receive and handle the planning applications

- Automatic creation of planning cases in the journal system (large-timely), digitalization (medium-advanced), (IT & Process Consultant, small-timely 8:35)
- Byg & Miljø verification that the required documents are enclosed (large-timely), better quality applications (Planning Officer, small-timely 10:19)
- Offering applicants a possibility to check for themselves where in the process their application is (large-timely), (Planning Officer, small-timely 10:19)
- "*increase efficiency in case handling and provide effective solutions for our citizens*" (Digitalization Strategy 2011-2015, small-timely p. 5)
- Use Digitalization to gain efficiency improvements (medium-advanced)
- Reference to the expectation that digitalization in the Danish municipalities on a national basis will generate cost savings for DKK 2b from 2015 (Service and Channel Strategy 2012-2015, p. 4).

Increased service level:

- Transparency (Business Manager, medium-advanced 37:22)
- A free choice between standing in a line at the town hall or manage municipal affairs from the comfort of their own home at whatever time suitable (Business Manager, medium-advanced 37:22); (Service and Channel Strategy 2012-2015, small-advanced p.3)
- Municipal collaboration (IT Manager, medium-advanced 4:37)
- improved communication with the applicant, i.e.: A portal for the applicants to look up the status of the application (IT & Process Consultant, small-timely 32:23); the system functionality allowing applicants to look up the status of their application, is expressed as an increase in the service level (Business Manager, small-advanced 26:16; 47:04; 1:00:49; Digitalization Consultant, small-advanced 35:33)
- provide 24 hour access to digital service is mentioned as an increase of the service level for the digitally capable citizens (Service and Channel Strategy 2012-2015, small-advanced p.3).

Develop active citizenship and support democracy

- *"develop active citizenship and support democracy"* (Digitalization Strategy 2011-2015, small-timely p. 4)

Redistribution of resources:

The small-advanced has planned to lower resource consumption for tasks where self-service is appropriate and redistribute the saved resources to tasks that are more complicated and require face-to-face communication (Service and Channel Strategy 2012-2015, small-advanced p.5). This redistribution plan will probably contradict the objective of generating cost savings for DKK 2b from 2015 on a national basis.

Translation

Materializing the idea of digitalization into strategy documents expressing the aim, e.g. to digitalize forms and letters. Adaption of the idea into the organization.

Detached from current practices

- Support for a mandated digitalization process. The municipalities are different to cooperate and agree on by own choice (large-timely)
- The developed IT solution will probably cover 60-70% of the municipalities' needs leaving about 30% particular needs uncovered for the individual municipalities to handle after implementation (IT Manager, medium-advanced 46:10).
- The idea was being detached from current practices by a lack of understanding of the complexity in the case handling of planning applications (Planning Officer, medium-advanced 46:42; Business Manager, medium-advanced 48:32)
- Workload leaves no slack => resistance to change (Planning Officer, small-timely 10:19).
- The idea is being detached from current practices by allowing the applicants to submit inadequate applications, which prevents realization of the expected efficiency gains (Business Manager, small-advanced 26:16; Planning Officer 1:05:22).
- Detachment from current, local practices - the tasks are sometimes hard to solve with the relatively fewer resources that are accessible in a small municipality: "*Sometimes it's fine, and sometimes not, because some of the solutions are not easy to implement for a small municipality*" (Digitalization Consultant, small-advanced 17:36; 1:01:22).

Which actor carries the idea into the organization?

- Participation in pilot project 2008-2011, but no participation in the formulation of requirements for Byg & Miljø because of lack of resources (large-timely).
- Took part in starting up the development process with KL and KOMBIT in 2010, but opted out because the idea was being detached from current practices by a lack of understanding of the complexity in the case handling of planning applications (Planning Officer, medium-advanced 46:42; Business Manager, medium-advanced 48:32)

The idea about the digitalization of planning applications became known in the small-timely municipality at the 2010 annual meeting in DaByFo, the network of Planning Officers (Planning Officer small-timely 54:23).

(small-advanced?)

Both professional networks and LGDK are referred to as being actors that carried the idea into the organization (Planning Officer, small-timely 54:23, IT & Process Consultant, small-timely 1:51:08, Business Manager, small-timely 9:40). As expressed by the IT & Process Consultant "*... it is the initiatives from LGDK that dictates the project portfolio*" (IT &

Process Consultant, small-timely 1:26:12). Other actors whose invitations regarding digitalization are considered are the Danish Agency for Digitisation and KOMBIT (IT & Process Consultant, small-timely 1:53:45).

Re-embedding

- Two project managers allocated to ensure operational implementation and internal as well as external use of Byg & Miljø (Project Leader Byg & Miljø and System Administrator BSS, large-timely 5:28)
- Fixing the bugs, which are detaching the solution from current practices, will help re-embed Byg & Miljø in the planning case handling.
    - After implementing Byg & Miljø in the small-advanced municipality some of the functionality is perceived as bugs, i.e. the lacking identification of conflicts between a planning application and the different legislations and local plans. The work-around for this bug is to have the Planning Officers search for conflicts manually, which is somewhat detaching Byg & Miljø from the current planning case handling. In order to re-embed Byg & Miljø these bugs must be resolved, and the Planning Officer will use his professional network DaByFo to consolidate and prioritize which bugs should be fixed first (Planning Officer, small-advanced 17:17)
- Personal contact and support
    - The Digitalization Consultant has found personal contact and support very helpful in order to re-embed digitalization initiatives: "*At first a couple of my colleagues were somewhat hesitant about replacing the traditional letters with digital mail. They couldn't see the point, and they were actually quite negative. Then we had two joint meetings, and I told them afterwards, that they could call me whenever needed. This is one of the advantages of being a small municipality. We are close and know each other. I think they called a couple of times, and we solved the problems together. By now they have grown so fond of digital mail that they call me and ask for a digital solution if they once in a while have to send a traditional letter*" (Digitalization Consultant, small-advanced 39:43).
- Involvement through local digitalization work groups increases sense of ownership and satisfaction with digitalization initiatives.
    - Besides personal contact and support the Digitalization Consultant has experienced that involvement through local digitalization work groups increases the sense of ownership of and the satisfaction with digitalization initiatives (Digitalization Consultant, small-advanced 56:15).

Ideas into actions

- Project charter (for digital handling of planning case area) with specific images of action, phases and milestones (large timely)
- The translation process of adapting the Common Municipal Strategy projects and goals into local projects and goals has been delegated to an employee in the medium-sized municipality with advanced digitalization process: "*I seek to gather the projects from the Common Municipal Digitalization Strategy and direct them into the different administrative units, ensuring they are being formulated as tangible projects, being manned with the right competencies and that they actually achieve the goals they are intended at national level*" (IT Manager, medium-advanced 1:18)
- For the small-timely municipality the process of putting the idea into action was grounded in the Digitalization Strategy, a thorough development process involving a wide range of actors in the municipality (Digitalization Strategy 2011-2015, small-timely p. 3)
- For the small-advanced municipality the process of putting the idea into action was grounded in 2013 with a series of meetings between the Business Manager, a couple of employees from the Planning Department as well as the Environment Department, and an employee from the IT Department: "*The purpose was to find out what we had to be prepared for when Byg & Miljø was implemented. That was when we realized that we had to take care of the integration ourselves. Up until then I had imagined that the applications would just jump directly into our planning case handling system, but of course they can't…*" (Planning Officer, small-advanced 1:40).

Ideas onto actions

- Project charter written in November 2013, but herein is stated that the project began in 2010 with implementation of the new central register for buildings and housing (BBR) (large-timely)
- *"many municipalities already have been working with digitalization by free choice because they could see a purpose and a rationale. So it is not like we didn't work with digitalization ten years ago, of course we did.*" (Business Manager, medium-advanced 1:10)
- With the first Gradual Plans the small-timely municipality were ahead of plans and the mandated digitalization effort had already been implemented by free choice at an earlier point in time "*KOMBIT had a bit of a laugh when they heard that we had fallen behind the mandated digitalization. Usually we have been ready before the deadlines was even fixed, because we chose to digitalize beforehand, but when more and more solutions are mandated we get behind, because there are too many requirements for us to live up to*" (IT & Process Consultant, small-timely 57:49).

Difficult to adapt the idea when resources are removed:

The Business Manager expresses how the translation process of adapting the idea to the organization is not becoming any easier when the theoretical, expected time savings of say 2 minutes per planning application are reaped almost before the new solution has been implemented and tested – and before the solution is actually working. It is hard for the employees to keep up the positive attitude, when they know that the new solution will cost a chair or two (Business Manager, medium-advanced 19:13).

Inscribing

Ideas landing in various localities, becoming ”re-embedded”, materialized in new practices. Proof that the translation actions were completed with success.

Which media or material?

-

Strength of inscription – is related to media/material

Strong inscription

- Integration between the planning case handling system and Byg & Miljø is enhancing internal use of Byg & Miljø because it cannot be evaded (Project charter, large-timely p. 1)
- Project charter stating “*…the solution will be mandatory for all municipalities…*” (large-timey)
- Closing other channels preventing evasion
  - Not decided at time of data collection, awaiting future Planning Department Manager (large-timely)
  - Political support to close the other channels and actively rejecting analog applications to prevent evasion from Byg & Miljø thereby strengthening the inscription of the solution (Business Manager, small-advanced 54:12; Planning Officer, small-advanced 5:20)
- Impacting internal case handling processes
  - Not decided at time of data collection, awaiting future Planning Department Manager (large-timely)
  - To protect the Planning Officers from any impact from Byg & Miljø it will be strongly inscribed with a full integration to the planning case handling system “*…it will disappear*” (Planning Officer, medium-advanced 56:55)
  - To protect the Planning Officers from any impact from Byg & Miljø it will be strongly inscribed with a full integration to the planning case handling system: “*…So there will be no need for the employees to work in Byg & Miljø for the applicants to see how the application is progressing*” (Planning Officer, small-timely 11:34).
  - As a compliance initiative the IT & Process Consultant is regularly checking post in the mail room to see if potentially digital letters are sent with physical mail. If so, the sender is contacted to see if re-implementation of the digital solution is needed (Planning Officer, small-timely 13:41; IT & Process Consultant, small-timely 1:18:49)

Enforced inscription

The target to find savings for DKK 30-40m is one way of pushing the municipalities to materialize the ideas as action (IT Manager, medium-advanced 14:08)

The planning department budget is cut with the expected gains which sometimes are out of proportion, either because the underlying estimates are too rough or because the numbers are the result of a political negotiation (IT Manager, medium-advanced 50:10).

Legislation about deadlines for when the digital solutions are to be ready (IT Manager, medium-advanced 33:40).

The small-timely municipality is well aware that Byg & Miljø is not mandated, only to provide a digital channel for planning applications is: "*Remember that this was not a mandated solution. We could develop our own solution, but because we are such a small municipality we go with a lot of the common municipal solutions even if we are free to provide our own solution*" (IT & Process Consultant, small-timely 33:22).

Enforcement of digitalization with mandated deadlines and a strong management focus is perceived to be necessary because of the work load that will otherwise use the available working hours (Planning Officer, small-timely 1:03:33).

Unintended consequences

Changes that were not expected to happen as a consequence of adopting the idea.

Decrease in service level

When the budgets are cut with expected gains that are not realistic the municipality has to lower the service level to meet the budget (Planning Officer, medium-advanced 43:02).

Planning Officers are no longer able to help citizens or companies without means to scan hardcopies of drawings (Planning Officer, medium-advanced 1:12:06).

Byg & Miljø was seen as a step backwards for the service level with respect to communication with the applicants (Planning Officer, small-timely 3:03)

The citizens of the small-timely are used to calling or visiting the town hall when needed to have a dialogue with the municipal employees. The digital planning applications remove this service (Planning Officer, small-timely 46:44)

In some cases the applicants have by accident ticked a wrong box, i.e. the box stating that the building plan does not require a building permit. This result in a receipt from Byg & Miljø stating that the building plan can be started. It is perceived as a decrease in the service level for the applicants to first have a go and then have to wait for proper planning case handling (Planning Officer, small-advanced 58:25)

Increase in handling time

- The quality of the applications received through Byg & Miljø is has decreased from the previous channels and as a consequence more time needs to be spent handling the applications (Planning Officer, medium-advanced 4:59, 15:08, 38:54; Business Manager, medium-advanced 1:45:44). Also in the small-timely municipality Byg & Miljø has introduced a decrease in the quality of the applications and as a consequence more time needs to be spent handling the applications (Planning Officer, small-timely 27:17). When it is impossible to start the planning case handling with the available data material a letter must be written to the applicant asking for the lacking information, thereby increasing the handling time both in calendar days and in time spent for the Planning Officers (Planning Officer, small-advanced 11:32; 27:59; 1:02:44).
- The status of the planning case will have to be updated in Byg & Miljø whenever it is changed in the case handling system (Planning Officer & IT & Process Consultant, small-timely 12:34).
- Byg & Miljø is not able to identify some of the conflicts between an application and the different legislations and local plans so the Planning Officers have to continue to search for conflicts manually (Planning Officer, small-timely 27:17; 28:10)

- Each year The Danish Ministry of Transport and Building collects data and publishes a statement about planning case handling time in each of the Danish municipalities (Danish Transport & Construction Agency, 2015). The Planning Officer expects that the increase in calendar days will have a negative impact on the handling time statement (Planning Officer, small-advanced 53:07).

Citizens need professional help to apply for planning permissions:

Citizens are not likely to gain the confidence that comes with sufficient routine in using the system. Many citizens will probably ask their advisor; architect or engineer to take care of the planning application (Business Manager, medium-advanced 21:00).

The percentage of inadequate applications before Byg & Miljø was around 40% (Planning Officer, small-advanced 1:02:44). The small-advanced calls for a more clear division of the responsibility between the applicants and the municipality: "*We need a clear distinction between what the applicants have to provide in order for us, as a public authority, to be able to handle the application. And if it is too difficult for the applicants, they will have to engage an advisor to provide the required information. Otherwise we will have to do it, and that would certainly not increase our efficiency*" (Business Manager, small-advanced 47:04).

Postponement of ongoing business development plans

- Pile of unhandled planning applications implies a need to learn from other municipalities' experiences with handling the planning cases, but keeping the legal deadlines for accepting digital planning applications and implementing a time recording system for billing fees according to time spent keeps the municipal so busy that ongoing business development has been postponed (large-timely).
- For some time it was not clear whether the area was going to be centralized or stay with the municipalities, so until recently where the plans for the Byg & Miljø-solution became known, all business process management was halted in order not to waste the invested energy (Business Manager, medium-advanced 52:15).

Reshuffling workload

- A number of tasks are moved from the administrative employees to the Planning Officers, e.g. registering the planning permission in the central register for buildings and housing BBR and marking drawings with the seal of approval system (Planning Officer, medium-advanced 7:49). Eventually there will be a need for more Planning Officers and less administrative employees (Planning Officer, medium-advanced 19:43).
- The increased use of IT also means that one Planning Officer currently uses at least 50% of his time as superuser, helping his colleagues instead of handling planning applications

(Business Manager, medium-advanced 1:03:30; Planning Officer, medium-advanced 1:15:47).

Exhausting the organization over time

Budget cuts while maintaining a high service level means that the organization will become exhausted over time (IT Manager, medium-advanced 51:55)

Restructuring of the organization

To accomplish the digitalization initiatives there is a need for project competencies in the organization (Business Manager, small-advanced 1:16:25; Digitalization Consultant, small-advanced 59:59). Vacant positions ought to be filled with candidates possessing project competencies, or project competencies already within the organization should be utilized across functions (Business Manager, small-advanced 1:16:25).

Introduction of new structures

Digitalization of planning applications is a job for which the small-advanced municipality perceives itself to be too small, so – among many other things – this has led to some consideration whether the municipality should become a larger unit by joining one of its neighbor municipalities (Business Manager, small-advanced 2:59).

Technology

Used to capture the actors' expressed attitudes, expectations or perceptions of the technology used to implement of the Common Municipal Digitalization Strategy.

Planning case handling will not become fully digital with integrating Byg & Miljø to the municipality's planning case handling system

- Case archive is not fully scanned and stored digitally (large-timely)
- No integration from planning case handling system (BSS) to electronic archive (large-timely)
- Digital answer to the applicants is not implemented (at first) to protect the employees from more changes than absolutely necessary (large-timely)
- In their digitalization strategy the small-timely municipality expresses the value of integrating digital solutions across the organization (Digitalization Strategy 2011-2015, small-timely p. 6). Integration between Byg & Miljø and the case handling system is also valued by the Planning Officer and IT & Process Consultant (Planning Officer, small-timely 11:34; IT & Process Consultant, small-timely 21:00)

Protecting internal work processes:

- The choice to fully integrate Byg & Miljø in the internal case handling processes, and thereby not only accepting planning applications but also answering the applicants digitally, is not just about what the technology allows for or what the applicants expect. The employees are vulnerable because of the changes they have been going through during the last year in terms of movement to new offices, new managers and an organizational restructure. So in order to protect the internal case handling work processes and thereby keep a number of stable reference points for the employees, Byg & Miljø might be integrated a little less than it is actually possible (Project Leader Byg & Miljø and System Administrator BSS, large-timely 26:54).
- There is a strong motivation to protect the case handling work processes from any impact from Byg & Miljø: "…when I realized how the municipal part of Byg & Miljø would be working I was determined to avoid working with it. So we will adjust our SBSYS and fully integrate Byg & Miljø into SBSYS, so we don't have to see Byg & Miljø anymore. It will disappear" (Planning Officer, medium-advanced 56:55)
- the Planning Officers are protected from any impact from Byg & Miljø by fully integrating it to the planning case handling system (Planning Officer, small-timely 11:34).

Missing quality assurance

- There is no quality assurance of the files attached to the planning application (Planning Officer, medium-advanced 11:36).

For the data collected in the small-advanced and the large-advanced municipalities only a couple of insignificant bug descriptions and inapt activities in the work flow earned its way into the technology code.

Economic potential

There is a large economic potential for digitalizing the planning case area, because a lot of traditional mail is being sent out for the legal consultations of the neighbors among others. But these rewards cannot be reaped by implementing Byg & Miljø because

- Byg & Miljø does not handle the legal consultations of the neighbors or other involved parties (Project Leader Byg & Miljø and System Administrator BSS, large-timely 9:20)
- The electronic mail systems cannot handle the construction plans are usually in format A3 (large-timely)
- Strong conviction that that digitalizing the planning applications along with the internal handling of planning cases will create cost savings, but no concrete expectations (large-timely).

Higher quality applications: (Business Manager, medium-advanced 28:52)

Document communications with citizens (Business Manager, medium-advanced 28:52)

Missing economic overview: There is a need for programs, OCR-recognition, adobe licenses for all the Planning Officers, extra monitors and smartboards which was not known when the business case was written (Business Manager, medium-advanced 1:38:02).

LGDK is the driver for the small-timely municipality's expectations toward the economic potential with Byg & Miljø: *"LGDK has negotiated the Financial Agreement and calculated the business case, and when the economic potential is known in the municipality's departments, it is always impossible to reap the rewards. But in this municipality we do not present the Executive committee for a figure to be removed from one department. We look at what is possible"* (IT & Process Consultant, small-timely 1:14:39).

Whatever could be gained from integrating Byg & Miljø and the planning case handling system is – according to LGDK – on top of that (IT & Process Consultant, small-timely 1:16:16)

Best practice and standardized work processes:

- The medium-advanced municipality thinks there would be an even larger economic potential if the work processes were standardized across the municipalities in a common system building on best practice: "*Even if all of the 98 municipalities have some unique activities in the planning application process, it is still the same legal framework which is being administered. I think that we could as well have made our electronic case and document handling system national covering the whole planning application process. Why on Earth do we develop and buy 117 different systems, from spreadsheets to advanced systems?*" (Business Manager, medium-advanced 1:52:12)

No references to “Economic potential” have been found in the data material from the small-advanced.

Success criteria

No predefined success criteria

Purely operational criteria *"Byg & Miljø go-live April 1st"* (large-timely)

We are satisfied with 20% the first year. In ten years or so we could have another talk, but 80% won't just happen from day to day (Business Manager, medium-advanced 1:12:50). But the other channels were closed in December 2014, so the Byg & Miljø-applications will surpass 90% (Planning Officer, medium-advanced 1:12:06).

There are no explicit success criteria regarding the implementation for Byg & Miljø in the small-timely, but there is a perception that the citizens using Byg & Miljø are digitally literate above average, and this perception leads to an expectation that more than 90% of the planning applications will be using the digital channel. In general the expectation is that 80% will be using a digital channel (Planning Officer, small-timely 1:43:10; IT & Process Consultant, small-timely 1:43:27). The gradual expectations for the citizens' use of digital channels are also expressed in the Digitalization Strategy: "*…we are aware of which target group is using the digital solutions, and how they are used…*" (Digitalization Strategy 2011-2015, small-timely p.4).

In the small-advanced municipality no explicit success criteria were formulated before implementing Byg & Miljø: "*But we did expect to ease the communication, and expected to get a guided process for the applicants with a strong pull for the required data. We were quite frustrated when we realized that this was not at all the case*" (Business Manager, small-advanced 1:04:27).

Funding

Self-financing

- (large-timely);
- (Business Manager, medium-advanced 1:01:33)

Gains earned are plowed back

- (Digitalization Strategy 2013-2017, medium-advanced p. 16)

The Steering Committee for Digitalization is funding Byg & Miljø

In the small-timely municipality the Steering Committee for Digitalization has funds that the administrative units can apply for when digital solutions have to be acquired. There are no standardized forms for application, but the Steering Committee for Digitalization looks for a promising business case in economic terms as well as for service improvements (Business Manager, small-timely 19:05; IT & Process Consultant, small-timely 1:40:52).

If the administrative units in the small-advanced municipality can't finance the digital solutions that have to be acquired the Forum for Digitalization has funds that the administrative units can apply for. If funds are allocated pay down is expected over the coming years with what corresponds to the business case (Business Manager, small-timely 19:05; IT & Process Consultant, small-timely 7:18).

Challenges

Balancing core output with digitalization projects:

Due to lack of time and resources the small-timely municipality did not participate in defining the requirements for Byg & Miljø. *"…we do not really have the time or the resources to participate in defining requirements for the common solutions. We need to rely on that it is the same task we are all solving, even if the 98 municialities are different"* (IT & Process Consultant, small-timely 36:33). Lack of time and resources is also delaying the system implementation because priority is given to the piles of planning applications and producing core output (Business Manager, small-timely 1:29; Planning Officer, small-timely 2:01:24). Implementing Byg & Miljø is affecting the small-timely municipality proportionally more than the larger municipalities because as the implementation effort is more or less independent of the size of the municipality the proportion of the resources needed is larger when there are only a few Planning Officers to accomplish the task compared to a municipality with 14 or 50 Planning Officers. Dedicating for example one Planning Officer 100% to implementing Byg & Miljø is completely unrealistic for the small-timely, yet this is done in the larger municipalities (Planning Officer, small-timely 2:13:18). It is difficult for the small-advanced municipality to accomplish both core output and systems implementation, and as already discussed under Unintended Consequences, digitalization of planning applications is therefore a job for which the small-advanced municipality perceives itself to be too small (Business Manager, small-advanced 2:59).

Size matters:

- As already discussed under Unintended Consequences the small-advanced municipality does not possess the project competencies required to accomplish the digitalization initiatives. It is common for larger municipalities to dedicate internal service departments to deal with digitalization projects, but in the small-advanced municipality the focus for all employees is on servicing the citizens and operations (Business Manager, small-advanced 1:16:25; Digitalization Consultant, small-advanced 59:59). "*We suffered from the start, being delayed with the case handling, so it was hard to create sufficient commitment to Byg & Miljø here. It was just yet another task to solve, but this would probably be completely different in a municipality with more muscles. I think that size matters, and that our size is our real challenge*" (Business Manager, small-advanced 1:14:55)
- Implementing Byg & Miljø is affecting the small-timely municipality proportionally more than the larger municipalities because as the implementation effort is more or less independent of the size of the municipality the proportion of the resources needed is larger when there are only a few Planning Officers to accomplish the task compared to a municipality with 14 or 50 Planning Officers. Dedicating for example one Planning Officer 100% to implementing Byg & Miljø is completely unrealistic for the small-

timely, yet this is done in the larger municipalities (Planning Officer, small-timely 2:13:18).

Lack of leadership focus delays the start of system use:

One of the reasons given for not advancing system use is that it is not easy to change a well-functioning system and work processes when there are piles of planning applications that are already delayed. Another reason giving is that there was a lack of leadership focus driving the change: "*… it is also about leadership focus. Our Business Manager was the driving force behind all new initiatives. She knew our pipeline was stuffed, but she was persistent. When she left, and afterwards the Director left and then the rest of the Executive committee, we could only manage to serve the citizens*" (Planning Officer, small-timely 1:01:45; 1:03:33).

Increased complexity in project portfolio:

- The integration between Geograf BSS and the archive has not yet been developed due to increased complexity in the project portfolio leaving the department with more projects that it can go through with (large-timely)
- Original internal deadline for go-live with Byg & Miljø was not met: *"The IT Department is also supporting all the other initiatives… directed at the other administrative units. It is a flood, a tsunami… I completely understand their challenges"* (Business Manager, medium-advanced 1:04:41)
- In the last couple of years there has been so many mandated projects that the small-timely municipality has not had any resources to support any internally initiated projects like LEAN projects or standardizing work processes (IT & Process Consultant, small-timely 1:20:26)
- The digitalization initiatives results in simultaneous demand for the sparse resources and IT competencies: "*We lack the total overview over what is going on digitalization-wise in the municipality. We need the overview to manage the resources and the need for IT competencies*" (Digitalization Consultant, small-advanced 58:22)

Fed up with change:

Rough publicity in the local newspapers because of very long case handling time, change of work processes, organizational structure, change of department manager, new employees and external consultants (large-timely)

No references to "Fed up with change" have been found in the data material from the small-timely.

It is hard for the users to use the digital solutions:

- The citizens are not likely to gain confidence in using the system, because most of them only apply for a planning permission once or twice during their lifetime (Business Manager, medium-advanced 21:00).
- The companies are not ready to use Byg & Miljø. They can easily see the perspective, but only the accountant or bookkeeper has the electronic signature, which is necessary to enter Byg & Miljø, so the planning employees are not able to submit a planning application (Business Manager, medium-advanced 1:39:07).
- The applicants makes many more severe mistakes with their applications than before implementing Byg & Miljø, so it must be harder for the users to use the digital solution (Planning Officer, small-advanced 11:32; 27:59; 51:05; 1:02:44)

No references to "It is hard for the users to use the digital solutions" have been found in the data material from the small-timely.

Reaping the rewards:

- The Planning Department has paid the bill for Byg & Miljø, but it has not been possible to materialize any cost savings (Business Manager, medium-advanced 1:01:33).This was actually not expected either, only digitalization of internal processes were expected to result in savings, so the business case was changed to cover digitalizing of the planning application area instead of just the receipt of planning applications (Business Manager, medium-advanced 1:24:12).
- At the time of writing the business case it was difficult to foresee which environment was needed to implement Byg & Miljø, and different elements in the environment, i.e. OCR-recognition, Adobe licenses, extra monitors and smartboards had to be acquired, which made it even more difficult to reap any rewards. (Business Manager, medium-advanced 1:38:02)
- The quality of the applications has decreased with the implementation of Byg & Miljø, and as a result the handling time has increased, which is another reason for why it is difficult to reap the rewards (Planning Officer, medium-advanced 4:59, 15:08, 38:54, 1:05:34; Business Manager, medium-advanced 1:45:44)
- Some of the expected efficiency gains are out of proportion which adds to the difficulty of reaping the rewards (IT Manager, medium-advanced 50:10)
- As discussed earlier allowing the applicants to submit inadequate applications prevents realization of the expected efficiency gains (Business Manager, small-advanced 26:16; Planning Officer 1:05:22).

No references to "Reaping the rewards" have been found in the data material from the small-timely.

Loss of expected efficiency gain

- Originally the idea was to refuse reception of the planning applications if some of the required attachments, i.e. site plan and calculations etc., were missing. But before the system was developed the Parliamentary Ombudsman decided that a municipality must not refuse to receive a planning application, hence the quality control with respect to required attachments was removed from the system, hence losing the efficiency gain expected because of better quality applications (Planning Officer, medium-advanced 7:11).
- Conflicts between the planning application and the regulations are not identified, so the Planning Officers have to continue to search for conflicts manually (Planning Officer, small-timely 28:10).
- …it is a puzzle to the small-advanced why it is optional for the applicants to provide most of the application information. At least 90% of the applications suffer from a shortage of information so severe that they require a letter to be written to the applicant asking for the lacking information. It is impossible to start the planning case handling without the required material… (Planning Officer, small-advanced 1:02:44; Business Manager, small-advanced 47:04)
- … a larger efficiency gain would have been possible if the planning application legal framework had been simplified before the development of Byg & Miljø… (Business Manager, small-advanced 26:16, 1:06:27).

Journal system, go-live date, no of applications

Journal system:

- Large-timely: Geograf BSS (Project Leader Byg & Miljø and System Administrator BSS, large-timely 29:10; IT Manager, large-timely 21:20)
- Medium-advanced: SBSYS (Business Manager, medium-advanced 28:52)
- Small-advanced: SBSYS (Business Manager, small-advanced 20:56)
- Small-timely: KMD Struktura Byggesag (Planning Officer, small-timely 11:34)

Go-live date:

- Large-timely: PoT April 2014, but full go-live not expected before December 1st 2014 (Project Leader Byg & Miljø and System Administrator BSS, large-timely 16:20)
- Medium-Advanced: June 2014 (Business Manager, medium-advanced 26:40)
- Small-Advanced: April 2014 (Business Manager, small-advanced 52:31)
- Small-timely: 1/12 2014 (Planning Officer, small-timely 20:10)

Number of planning applications:

- Large-timely: approximately 4000 planning applications/year (Project Leader Byg & Miljø and System Administrator BSS, large-timely 18:07)
- Medium-Advanced: 1200-1500 planning applications/year (Business Manager, medium-advanced 28:52)
- Small-Advanced: 300-400 planning applications/year (Business Manager, small-advanced 36:13; Planning Officer 55:31)
- Small-timely: 500-600 planning applications/year (Planning Officer, small-timely 16:32)