Projects in networks

Implementing communication technology across multiple health care organizations

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Work-in-progress

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Abstract

Despite a steady growth of ICT-related innovation projects in the health care sector, most innovations fail to become part of everyday routines. This paper reports on a relatively successful project within the Norwegian health care sector, the implementation of an inter-organizational electronic messaging system (PLO). Responding to a new national standard on electronic health and care messages, the Hospital and the municipalities within its catchment area took responsibility for being one of the first in Norway to implement PLO. The process included IT suppliers, as the messaging standard had to be integrated with four different electronic medical record systems (EMRs). Our empirical study starts with a large-scale national pilot project including multiple organizational actors, initially coordinated top down from the governmental bodies, and ends with a local implementation project at the Hospital.

We explore how an interaction approach (Håkansson, 1982) might shed light on some of the challenges of inter-organizational project management in the public sector. Our study shows that in a complex setting like health care, where multiple and different actors are involved, influence and are influenced, the process of developing, piloting and implementing a new solution, project management, rather than a plan, requires a conspicuous dose of improvisation to combine national, regional and, most of all, local interests. We discuss the development and implementation of PLO-messages as an example of innovation in a network of projects, and how such a conceptualization, can contribute to blurring the organizational, spatial and temporal boundaries of projects.

Key-words: project, networks, health care, ICT, innovation

BACKGROUND

"No project is an island"
(Engwall, 2003)

Drawing on a project within the Norwegian healthcare sector, the aim of the paper is to explore how an interaction approach (Håkansson, 1982) might shed light on some of the challenges of inter-organizational project management in the public sector.

Research on projects and project management has seen an increase in the last decade (Söderlund, 2004b), and it has been suggested that this is due to dissatisfaction with the existing approaches to project research (Floricel *et al.*, 2014). Our study responds to a recent call for more research on the managerial aspect of projects in health care (Andreassen *et al.*, 2015), and reports on an ICT-project within the sector.

This paper presents the case of PLO-messages[1], developed and implemented through successive projects in the Norwegian health care sector. It is a case of a large national pilot and the subsequent local implementation project at a hospital ('the Hospital') and the 22 municipalities within its catchment area. Responding to a new national standard on electronic health and care messages, as well as several national initiatives for electronic coordination in health care, the Hospital and municipalities took responsibility for being among the first to implement the new standard. The first national development project started in 2003, and the PLO messaging-system was fully implemented at the Hospital in the fall of 2013.

Projects are a method for solving multifaceted problems (Söderlund, 2004a), reducing complexity (Lindkvist *et al.*, 1998) and is the most popular format for developing and implementing new solutions in the public sector. However, despite of the multiple pilots and projects carried out in Norwegian health care, most innovations are never integrated into practice (Meld. St. 9 (2012–2013), 2012). This is a well-known issue in organizational studies (Edmondson *et al.*, 2001) and has been related to a mismatch between the innovation and established practices (Orlikowski, 2000), "not-made-here-syndrome", and even the misunderstanding the innovation itself (Henderson and Clark, 1990). However, it has been pointed out that in health care there are, in addition to technological challenges, also unique security and administrative challenges when implementing innovations (Hanseth and Ciborra, 2007; Greenhalgh *et al.*, 2008). Also, studies such as Sauser, Reilly and Shenhar (2009) contend that the reasons most projects fail are managerial, not technical in nature.

In 2015, the National Audit Office concluded that few of the largest ICT-projects in Norway are able to deliver on the set goals, and that the benefits realized in the projects did not match ex-ante expectations (Riksrevisjonen, 2015). To counter this, it was suggested that public project managers should follow stepwise project guides[2], monitoring the process closely. This resonates with the increasingly criticized traditional project management approach, seeing project management as planned philosophy (Shenhar, 2008), assuming that if the project plan is followed correctly it will lead to project success (Fernandez and Fernandez, 2008).

[1] Elektroniske Pleie- og Omsorgsmeldinger.
[2] i.e. http://prosjektveiviseren.no (Riksrevisjonen, 2015).

Arguing that projects can be planned, and then executed accordingly, suggests there is a dichotomy between projects as ways to manage the innovation process, and the actual innovation process "characterized by no or blurred boundaries, chaos and unexpected events" (Baraldi and Ingemansson, 2013, p. 2). However, like innovation processes, projects rarely follow the trajectory set out by the project plan, as suggested by the traditional approach. Projects often last longer or shorter than expected (Havila and Salmi, 2006), and the outcomes might be unplanned for. Few project reaches their time or budget goals (Sauser *et al.*, 2009), some generate little else than new projects (Brekke *et al.*, 2014), and many fail altogether. Engwall (2002) argues that goals are important to get the project going, even if it is impossible to know what the result from a specific project actually will be. However, diverging from the plan, or even failing, is not always bad as it can facilitate learning (Lindkvist *et al.*, 1998) and illuminate the challenges of existing practice (Andreassen *et al.*, 2015). In line with this, "project success means more than just meeting time and budget goals. It involves additional success dimensions such as business results and preparing for the future" (Sauser *et al.*, 2009, p. 666).

As such, we see how recent work challenges the traditional approaches' rationalistic and linear view on project management. Moving away from 'the project as a tool' approach, "scholars have started to think more widely about projects and project management as a reaction to the classical view, but also as a response to the challenges of carrying out projects in practice" (Svejvig and Andersen, 2015, p. 278). It has been suggested that "a fruitful avenue for project management could be turning away from decision rationality and focusing on what happens in projects and on what practitioners do and say" (Floricel *et al.*, 2014, p. 1092).

The traditional approach has been criticized for ignoring the role of interaction, as such isolating the project in space and time (Engwall, 2003). The rise of the project-based organizations has influenced the view of projects as 'temporary organizational configurations', defined as "a temporary endeavor undertaken to create a unique result based on a specified business case" (Cattani *et al.*, 2011, p. 16) which cease to exist upon the completion of the project. However, even though the organization of the project is temporary, relationships created might outlive the project, i.e. organizations create long-term relationships with suppliers (Gann *et al.*, 2012; Cattani *et al.*, 2011). As such, this approach emphasize interaction, but still (at least partly) isolates the project in time.

Resonating with the call for a 'practice turn' in project management, we believe that an interaction approach (Håkansson, 1982) to project management can shed more light on the inter-organizational relationships and emerging interaction patterns, that can hinder or facilitate project management. Taking an interaction approach, projects can be seen as "…processes of organizing where ends and means are continually redefined in the interactions of actors" (Hellgren and Stjernberg, 1995, p. 378) and outcomes are not certain. This approach suggests "outcomes in business are the result of actions and proposals and responses between counterparts" and "no action by an individual is either isolated or independent" (Ford & Håkansson, 2006, p.252). While public projects are evaluated on achieving specific goals just after completion, in a networked interaction approach value is not created instantly, at least not all of it, but may emerge in the long-term as consequences for the actors that are affected directly or indirectly (Waluszewski, 2011). As such, this also raises the question of if projects are indeed temporary?

METHODOLOGY

This study is part of a larger longitudinal research project investigating change within and across health care organizations when introducing electronic messaging and new mobile solutions. Empirically, the investigation relies mainly on secondary material (analysis of public documents) and qualitative fieldwork methods, in particular, interviewing and observation.

Twenty-four respondents has been interviewed, selected on basis of their involvement in the implementation of PLO. The respondents were mainly users of the PLO-messages at the Hospital and the 22 municipalities, but some were also administrators and suppliers of the system as well as employees of the Directory of Health. In addition to interviews, observation of work at hospital wards and municipal care services, as well as at seminars and meetings was conducted for approximately 30 hours.

Collected data, over a period of approximately 18 months, was analyzed without the use of any specific software in order to grasp the complexity of the processes. Primary data have been collected since the fall of 2013 (when PLO-messages were fully implemented at the Hospital and in its municipalities) and it is still ongoing. The multiple data sources enabled crosschecking through triangulation, and the prolonged engagement of the authors with the actors involved in the project allowed for a thorough appreciation of the context (Lincoln and Guba, 1985). The process of analyzing and interpreting the data is still ongoing.

The next section presents the case, the process of PLO from the development of national standards to the implementation of PLO-messages at the Hospital and the municipals in its catchment area.

PROJECT(S) IN A HEALTH CARE NETWORK:

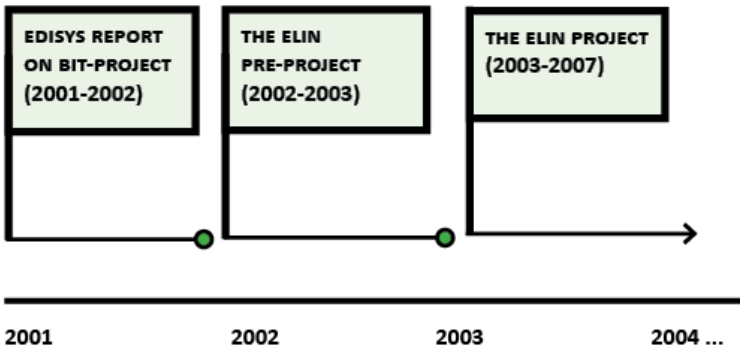
THE PATH TO ELECTRONIC MESSAGING

For years, the Norwegian government have been stressing the importance of digitalizing information and implementing technology, in order to cope with the challenges of the future. Since 1997, the Norwegian government has presented four national ICT strategies - all of them stressing the importance of electronic messaging as means to improve coordination between primary and secondary care (Riksrevisjonen, 2014).

The future will bring elderly and more chronically ill patient groups in need of primary care, and patients will be hospitalized on multiple occasions. As patients move in between the two levels of care, information must follow them. This requires substantial coordination efforts to facilitate continuity of care. However, the sector has instead been characterized by ‘discontinuity of care’ with specialization, differentiation and fragmentation leading to unavailable services, and a lack of consensus, plans and predictability (Hellesø and Fagermoen, 2010; Philipsen and Stevens, 1997).

This paper will present the development and implementation of electronic PLO-messages, through multiple inter-organizational public sector innovation projects in the period 2002-2013. In 2002 most of the communication in the sector was paper-based, and the switch to electronic messaging was projected to be faster, safer, cheaper, and less time consuming for health care personnel.

The ELIN Project (2001-2005)



In 2001, the Norwegian Ministry of Health and Care Services (HOD) commissioned the consultancy EdiSys to design a project for the Innovation Norway program 'Bransjerettet ITprogram' (BIT)[3]. This program was directed at industry actors aiming to implement new solutions in cooperation with suppliers and users. The goal was a common solution for all General Practitioner offices (GPs) covering all the basic needs for communication: a 'package solution' of internet, online handbooks, e-mail and EMR-integrated electronic messaging though a secure server. The solution should allow communication and cooperation with other GP offices and other organizations in the health care sector.

EdiSys created a report for the viability of the project, based on a 2000 survey of GPs, interviews and meetings with suppliers, users and health authorities. The report concluded that there was great potential for the solution, but that the functionalities required would imply substantial changes in existing EMRs – and thus becoming a large public investment.

To anchor the project in the industry, it was suggested that HOD should provide funds but that an industry actor, the Norwegian Medical Association (NMA)[4], should apply to the BIT program and take ownership of the project.

The project was planned using the BIT methodology: a set of contracts were made to regulate the relationship between supplier and the industry. The 'industry' was represented by doctors and other health care professionals. A stage wise plan was created:

1] Preliminary project: Mapping suppliers and functional requirements of solution.
2] Pre-project: Choosing suppliers.
3] Main project: Development, operation, pilots.
4] Further development and optimization.
5] Widespread of industry solutions, support for single-organization implementations.

The ELIN pre-project

As suggested, the NMA started the ELIN pre-project in 2002[5]. The EdiSys report covered the first step and the ELIN project would complete the rest. The pre-project aim was to plan the main project in detail, and develop the specific functions needed in the communication solution.

[3] BIT: «Sector based IT program». http://www.kith.no/upload/1595/ElinRapport.pdf
[4] Official association for Doctors and General Practitioners
[5] http://www.kith.no/upload/6665/Sluttrapport_ELIN_forprosjekt_070203.pdf

An invitation to join the pilot (main project) was extended to relevant suppliers and GPs offices and a total of 24 suppliers and 52 GP offices applied.

Even though the EdiSys report argued for great promise for the 'package solution', the pre-project narrowed the mandate of ELIN down to focusing to electronic communication. However, not only for GPs, but also for other actors in the sector. It was argued in the pre-projects report that this was due to the scope of the project, as well as the financial situation.

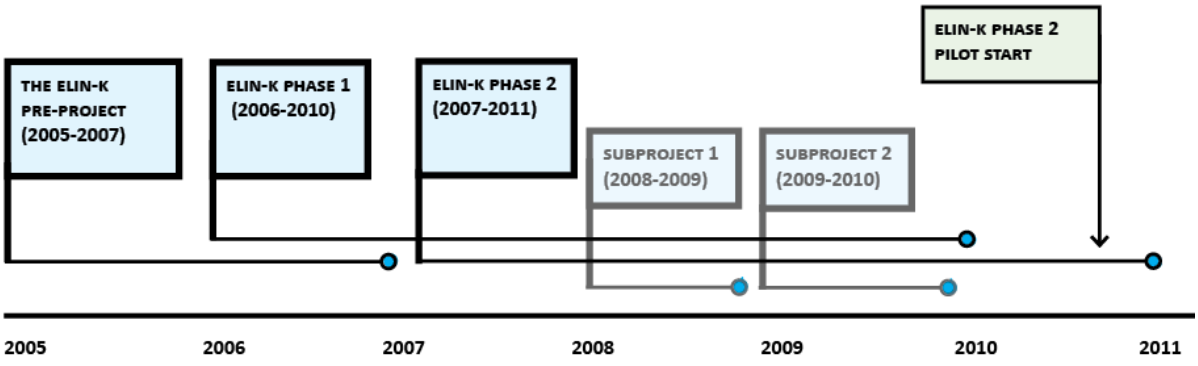
A national authority on ICT in the health care sector (KITH) had already developed standards for medical record document and messages for GPs, on which the solution should be based on. The functions deemed most important were extracted, and others were added. The proposed solution had to be flexible, adjustable to needs and demands of users and suppliers. The result was a substantial list of functional demands.

The ELIN project

This list was the starting point for the ELIN main project, starting in 2003. Contracts were made with four EMR suppliers for GPs, three suppliers of hospital EMR suppliers, and 20 GP offices. The project developed standards and functions that were anchored in the needs of industry users, through the ELIN-methodology: Groups of industry professionals developed the standards in their respective areas, confirmed by the professionals at KITH (Christensen and Grimsmo, 2005). The functions were developed, adjusted or discarded trough iterations including users and the supplier within the project standard for electronic messaging, as well as a national system for testing and approving messaging standards in the health care sector, were thus developed.

While no communication solution was offered by the ELIN-project, the project established a methodology, coordination architecture, and was the starting point of multiple ELIN-projects in the health care sector; this paper will discuss ELIN-k, aimed at implementing electronic messages in the municipalities.

The ELIN-k Project (2005-2011)



Based on the experiences from the ELIN-project and following a recent national strategy (Statlig strategi 2004-2007., 2004), the Norwegian Nurses Association (NSF) in cooperation with the Municipal Sector organization (KS) initiated the 'ELIN-k project' in 2005.

While the functions and solutions for GPs created in the ELIN project was based on existing standards by KITH, no such standards existed for nurses' documentation. Therefore, the project should develop and pilot standardized solutions for electronic messaging between nurses at

specialist care and nurses at municipal health care, as well as general practitioners (GPs)[6]. The solution should replace the current mode of communication between these actors, at the time consisting of paper solutions, fax or phone.

The methodology was adapted to fit the purpose of the project. The pre-project[7] mapped viable suppliers, created a list for functions required for the solution, and templates for nurses' medical record documents. It offered a three-phase plan for the main project:

- Phase one for electronic messaging between municipal health care services and GPs.
- Phase two for electronic messaging between municipal health care services and hospitals.
- Phase three for electronic messaging between municipal health care services and municipal emergency rooms[8].

Within the main project an electronic messaging system was developed, abbreviated PLO. PLO-messages are integrated in each actor's EMR, allowing them to send certain types of information and dialogue messages as part of the patient's electronic medical record. This instrument was designed to improve efficiency in communication and coordination, as well as to aid in documentation.

This paper will focus on Phase 2, which included the PLO-messages sent between municipal health care (i.e. home nursing, nursing homes, the service allocation unit) and hospitals. Phase 2, which lasted from 2007 to April 2011, was a national pilot with four local pilots[9] from all regions of Norway. This phase also included two sub-projects: one that aimed at preparing municipalities to use electronic messaging (sub project 1) and one that aimed to test the national address register used for PLO (sub project 2).

According to the project report, due to a dependence on participation from both suppliers and pilots from both the municipal care services and the hospitals, the development process was delayed until 2008.

The phase 2 pilot included nine messages, divided into three types: logistics, professional and dialogue messages. Logistics messages are informative and cannot be replied to, professional messages are used to send health care information, and dialogue messages are used for requesting information (see Table 1 below).

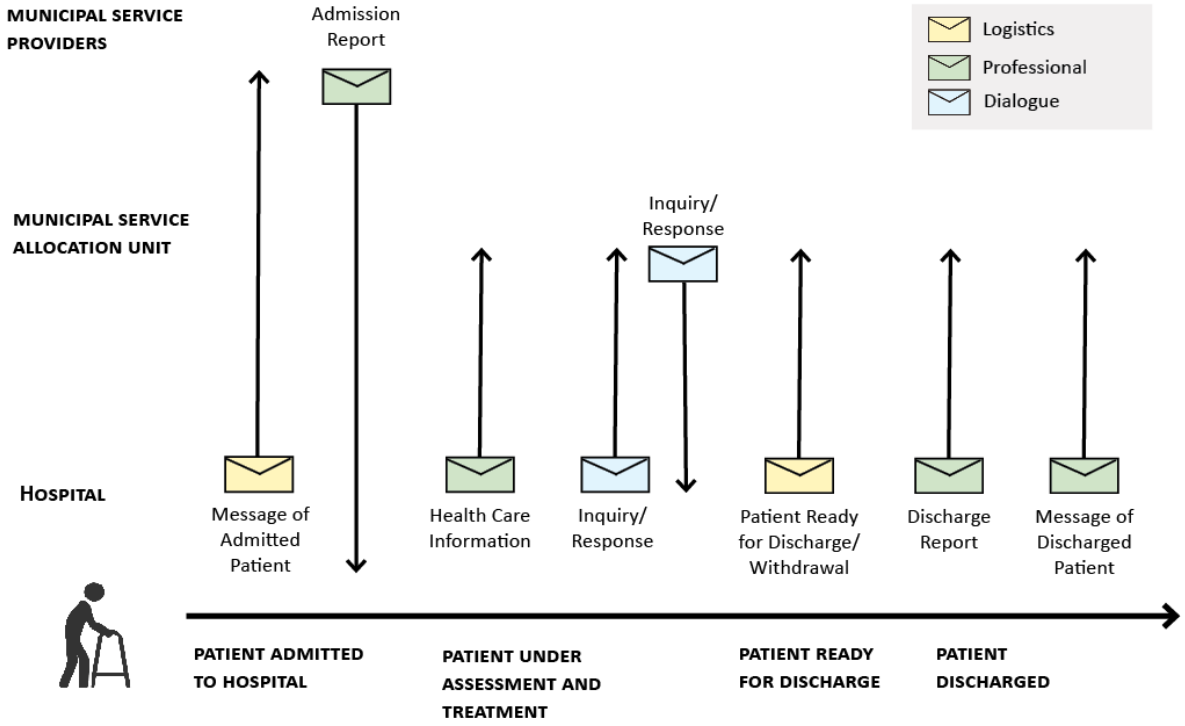
Table 1: PLO-messages, an overview[10]

Type of message	Message name
Logistics	Message of admitted patient Message of patient ready for discharge/Withdrawal of patient ready for discharge Message of discharged patient.
Professional	Admission report Health care information Discharge report.
Dialogue	Inquiry/Response to inquiry.

[6] http://www.kith.no/upload/6313/elin-k_sluttrapport_v1.0.pdf
[7] http://www.kith.no/upload/6313/ELIN-k-forprosjektrapport.pdf
[8] This phase was never started.
[9] The pilots consisted of four hospitals in Norway and six municipalities.
[10] Please note that the names of the messages are the authors' own translations.

The messages are sent between three organizations when a person is admitted to hospital: 1) the current (or future) municipal service provider of that person (i.e. home nursing, nursing homes etc.). 2) The municipal service allocation unit, who decides what municipal health care services a person is entitled to receive. 3) The hospital ward where the person is admitted. PLO should thus facilitate the transition of patients between municipalities and hospitals. In fact, a better flow of information implied that hospitals would get important medical information upon the arrival of a new patient, and for municipalities to be able to offer patients the proper care service upon discharge from hospital (the flow of messages is depicted in fig. 1, below).

Figure 1: The PLO-messaging process in the patient pathway (when the patient is already receiving municipal care).



The Phase 2 project developed and piloted the PLO-messages between hospitals and municipal services. The next section of this paper will describe the process of piloting the messages, from the perspective of one of the pilots. It will also include how the pilot further developed and implemented the messages, after the national pilot ended.

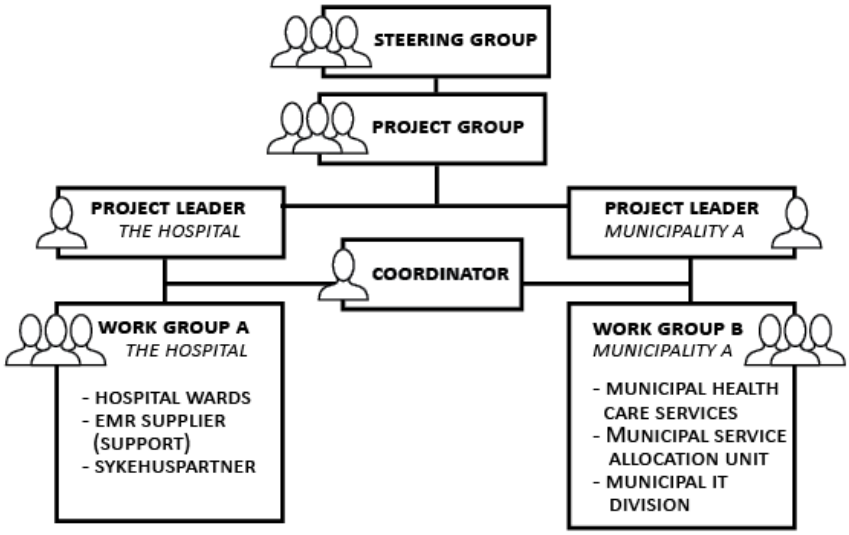
ELIN-k phase 2 at the Hospital and Municipality A (2009-2011)

The Hospital and 'Municipality A' (approximately 50 000 inhabitants) was included in the national ELIN-k phase 2 pilot in 2009. Three wards of the Hospital, one from the surgical, medical and psychiatric division, were chosen to pilot the PLO-messages. In Municipality A, all the municipal health care services participated in the project: the service allocation unit, home care services (practical care, nursing and psychiatric care), and the nursing homes.

The project was organized by a common steering group and a project group (see Fig. 2 below). The most central actor was the coordinator, employed half time at Municipality A and half time at the Coordination Department of the Hospital. The coordinator was responsible for aligning and organizing efforts of both sides, keeping an overview of the organizational and technical

challenges, and monitoring the system after its implementation. The position was founded by the ELIN-k project in the first year and later by the Hospital and Municipality A.

Figure 2: Organization of the pilot at the Hospital and Municipality A



The overarching goal for the phase 2 pilot was to develop, test, adjust, and possibly implement the nine messages in the admittance and discharge processes between the Hospital and Municipality A. In addition, a routine for sending PLO on paper had to be developed for those municipalities yet to shift to electronic communication, to avoid them using the old fax forms when the Hospital went live with PLO. Paper routines were to be adapted as emergency-routines after the full implementation.

Adjusting and piloting the almost-finished messages required close cooperation with the supplier of the EMR systems. Each of the suppliers had to integrate PLO into their systems based on the functional requirements and standards set though the ELIN and ELIN-k projects. The ELIN project had developed a national framework for messaging, and ELIN-k had developed the standard for the PLO-messages.

In addition to national meetings where all suppliers and all pilots shared experiences from the process, the Hospital and Municipality A developed close relationships with the suppliers of their respective EMRs. The local pilot placed a large focus on the development of a thorough 'testing environment', a dummy of the two EMRs where the messages could be tested. Building such an environment offered many technical challenges, but it was also a way of discovering these challenges before the pilot. In the testing environment, they could detect critical errors and make sure the messages were fit for implementation. A 'test case' was developed, and official testing started in February 2010.

All the testing slowed down the process compared to other pilot cases, but at the Hospital, they were convinced it was crucial. In fact, the testing environment has been used fruitfully at later stages of the implementation and it is still in operation today. In the testing phase, the Discharge Report was found to be faulty, and therefore not piloted. The report did not show medicines in a proper way, and as such, the room for error was too big. The Hospital could not risk leaving out crucial prescriptions, or any other confusion regarding medications.

In spite of the testing, the Hospital and Municipality A were the first of the pilots to start the implementation of PLO. This meant that most initial errors for the messages were discovered

in this pilot. The pilot shared experiences with the other pilots, and as such it could influence the development process in a substantial way.

Before the messages could be piloted in the pilot wards, future users had to be instructed on how to use them. The ELIN-k project did not offer any training material such as folders, presentations and posters; as such, this was improvised by the project members. In Municipality A, 120 employees were successfully trained before the pilot started. However, at the Hospital, it proved more difficult to free staff for training. It was hard to involve the staff in activities other than their usual work in the wards, and only 50 of the planned 100 nurses received training. This resulted in the coordinator training the users directly in their wards just before the implementation.

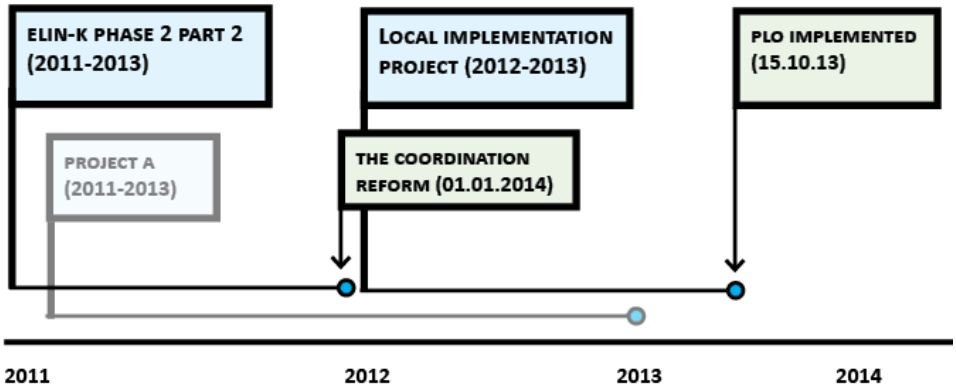
According to the project plan, the pilot should start in September 2010 and last for six weeks. Due to technical difficulties as discovered in the testing environment, the pilot was not started before October. Since dialogue messages were not ready to be piloted until 30 November, the pilot was extended until the middle of December 2010.

PLO-messages between the Hospital and Municipality A were successfully piloted, with the exception of the Discharge Report. Although a set of routines for the use of the messages were developed in the ELIN-k project, the local pilot revealed challenges in practice. Since each patient's case is different, it was not always possible or convenient to follow the routine. This posed a challenge for both the Hospital and Municipality A.

In the early months of 2011, the national ELIN-k project ended along with its pilots. A final project report was published in April 2011. When ELIN-k was completed, Norsk Helsenett[11], an organization owned by the Norwegian Ministry of health and care services, took over the tasks of implementing and monitoring PLO. At this point, however, a number of tasks remained to be completed: paper routines were not piloted due to deficiencies in the Hospital's EMR, and the discharge report was found to be insufficient for its purpose. The Hospital and Municipality A, as a small protest for what they considered as an unfinished pilot, decided not to write the required final report, but prepared a more limited evaluation report. At that point, however, they were left on their own to complete the implementation of the messages.

[11] Norsk Helsenett is a supplier of services, which, in cooperation with the authorities and the parties connected to the health network, aim to enable and facilitate a vast and secure flow of information, which in turn should support "optimized patient trajectories and the most democratic health and social services possible". (Source: www.nhn.no/english/Pages/about.aspx)

ELIN-k Phase 2 part 2 and beyond– Full implementation of PLO (2011-2013)



In the pilot-agreement between the Hospital and Municipality A, the hospital was given the responsibility for implementing the messages for the rest of its wards and municipalities after the ELIN-k. In mid-April 2011, the Hospital was asked by the Norwegian Directorate of Health to be a point of reference for the implementation of the last PLO message that failed to be piloted until that moment: the Discharge Report. However, the Hospital did not get any practical guidance for how to proceed with it and thus they decided to take the matter into their own hands.

The Hospital started to feel the need of increasing the volume of their messaging at the same time that 'Municipality B'[12], expressed interest in starting using electronic communication. A steering group with participants from the Coordination Department at the Hospital, Municipality B and Municipality A was formed to pilot the last PLO, implement routines on paper and implement PLO-messages at the Hospital and three city districts of Municipality B. The project was named 'ELIN-k phase 2 part 2', but, interestingly, it received no further funding from the ELIN-k project and each organization had to cover its own costs.

In this project, the participants worked with suppliers to fix some of the problems encountered in the pilot, and updated the testing environment further. In the spring of 2011, the city districts of Municipality B was running the PLO-system, and communicating with the three pilot wards at the Hospital.

Project A – preparing municipalities for PLO-messaging

In late 2011, the goal of implementing PLO in all municipalities in the Hospital's catchment area was getting closer. However, most of the municipals were not prepared for the change, and there were no functional standardized routines or guidelines for the use of the messages.

At that time the Hospital initiated a second project, 'Project A', which included all municipalities in the catchment area except Municipality A and B. The aim was to raise awareness about electronic messaging for those who were yet to implement PLO. Together the municipalities and the Hospital developed a guide for the use of PLO. The guide worked as an instruction book both for PLO users and for the ICT-departments who would be administrating

[12] Municipality B is a large city, and the Hospital had three of its city districts in its catchment area. These three city districts has approximately 110 000 inhabitants in total.

and monitoring the system. Even though ELIN-k was completed, the Hospital willingly shared this guide with the former pilots and it became the template for similar guides all over Norway.

The Coordination reform

For a time, the implementation process was at a halt. Since the spring of 2011, no additional municipalities or wards at the Hospital implemented PLO-messages. A likely reason is that in 2012, the Coordination Reform came into effect. The Coordination Reform had an overall aim to improve the coordination between municipal and specialist health care services, through reallocating financial resources and responsibility from specialist to primary care services (St.meld. nr. 47 (2008-2009), 2009). The challenge of communication between primary and secondary care was among the priorities of the reform, which focused on the importance of all actors in the sector using EMRs, and exchanging information electronically.

One of the requirements in the Reform was for hospitals and municipalities to sign new legal cooperation agreements before July 1, 2012. The Hospital had been struggling to get the municipalities to commit to implementing PLO, as they were not legally required to do so. However, the Hospital made it clear in these new agreements that all of the municipalities in its catchment area should be communicate with them electronically by the end of 2013. This signed a big change. Now, the municipalities had no choice but to join the implementation.

Finishing the implementation

In the spring of 2012, the Regional Health Authority (RHA) contacted the Hospital. They wanted the Hospital to share their experiences and competencies from the implementation, regionally. The Hospital had superior expertise, due to learning through 'testing environment' for PLO, the development of the guide, and their own choice to extend the pilot. The RHA made a large financial contribution to a local PLO implementation project at the Hospital, which sparked an even larger local investment from the administration at the Hospital.

The implementation project was rooted in the Coordination Department at the Hospital, but in close cooperation with the municipalities. This time all municipalities were involved, and the goal was a full implementation. The Coordination Department deals with internal and external cooperation/coordination issues, and work as broker or consultant in conflicts with or cases concerning municipalities. Sometimes these cases are of a more technical nature, i.e. providing support to users who have difficulties with filling out text fields in PLO-messages, but the department is separate unit from the ICT department.

The coordinator from ELIN-k phase 2 was responsible for monitoring the system and training the staff at both the Hospital and in its municipalities. The project group leader in ELIN-k phase 2, who had been the leader at both the Phase 2 part 2 and Project A, was project leader. At the Hospital, one person from each division was selected as a contact point for the implementation. In the project, the Coordination Department worked closely with both the ICT department, and the users of the system in the implementation. This lead to the development of a 'model for implementation' as described below.

The aim was to start the implementation in October 2012. The largest clinic in the hospital was to go live with PLO first. Initially, the plan was to organize the training of PLO-users in a classroom as a traditional ICT-project. This however, was met with protests from the wards,

who claimed this was not a productive way to learn how to use the new system. They requested to be trained close to where PLO would be actually used, in the wards.

In this new implementation model, one person from each of the 20 different wards in the clinic was paid in full for six weeks to learn the system deeply and act as 'super user' (and not do any of her normal work in the clinic). During week one, the super users at the Hospital attended a 'PLO-school', from 8.30 AM to 3PM each day. They learned about PLO, routines for admittance and discharge of patients, how the EMR works, the Coordination Reform, agreements with municipalities and more. They worked in groups and played out test cases. After one week of full immersion, they created their own material for use in the clinic.

All super users were given a laptop, and in week number two and three the super users trained nurses and nursing assistants at the wards using test cases in a mock-up of the EMR system. The super users had meetings where they shared experiences, and were constantly in touch with the project leader and coordinator. The super users were not supposed to work as nurses during the project period, and were fully paid so that another nurse could take their position. This model worked generally fine, however, the leaders of some wards protested for their colleagues not actively working as nurses in the wards during this period of time (as a solution super users could wore civilian clothes while working, and as such, they could not be asked to perform nursing tasks).

On Monday of the fourth week all wards in the clinic went live with PLO. This meant sending PLO electronically to the three districts of Municipality B and to Municipality A, and the developed paper-based PLO to the others. Super users had checklists for what to control during the day, such as user names, access to the system etc. The project management decided that no municipality should use the old fax-forms after that day. Even though all clinics went live in one day, PLO was implemented successfully.

During the last three weeks, the super users remained in the wards to train and follow up on any situation that might occur. This meant that many of the nurses and nursing assistants on the wards were trained using real patient cases. Even though they had trained using test cases, real patient situations differed, and wards now had to adapt a standardized routine to non-standard cases.

In May 2013, the 28 wards at the next clinic went live using the same model, but in a slightly simpler form. These wards have to manage a lower volume of messages and therefore the super users were employed in the project only 50%. This implementation took five weeks. After this, only the smaller clinics remained. The rest of the clinics went live in the period up to October 2013, and then the implementation was formally complete.

While the Hospital implemented the system clinic by clinic, the municipalities in the catchment area also went live one, two or three at a time. The coordinator traveled around with her laptop, containing the testing environment for PLO, and tested the exchange with each municipality's EMR. Some of the smallest municipalities created collaborations for the implementation and monitoring of the messages, due the low volume of messages and lack of resources.

DISCUSSION AND CONCLUSIONS

This case has focused, as recently suggested, on "what happens in projects and what practitioners do and say" (Floricel *et al.*, 2014, p. 1092). This study shows that in a complex setting like health care, where multiple and different actors are involved, influence and are influenced, the process of developing, piloting and implementing a new solution, project management, rather than a plan, requires a conspicuous dose of improvisation to combine national, regional and, most of all, local interests. In this section, we discuss the development of PLO-messages as an example of innovation in a network of projects. Such a conceptualization, then, contributes to blurring the organizational, spatial and temporal boundaries of projects.

Innovating in/through Networks of Projects

Projects have been characterized as temporary organizational configurations (Cattani *et al.*, 2011; Gann *et al.*, 2012), defined as "a temporary endeavor undertaken to create a unique result based on a specified business case" (Cattani *et al.*, 2011, p. 16). These forms of organizations are dissolved as soon as the project is completed. However, what happens if we study projects as relational/based on interaction, and where complex problems often are unfolding in/through networks of projects?

From the case of PLO, we see that the development and use of PLO evolved in an emerging and interconnected 'network of projects', where one large national project, ELIN, was followed by multiple parallel and successive connected projects. In addition, the new projects were divided into sub-projects and phases. There are multiple links between projects, e.g. the standards that the PLO-messages were built on can be traced all the way back, as can the methodology, and many of the actors. As such, none of the projects can be argued to be strictly limited in time, but rather extending into successive and parallel projects.

Cattani et al (2011) argue that even though the organization of the project is temporary, relationships created might outlive the project, i.e. organizations create long-term relationships with suppliers (Gann, Salter, Dodgson, & Phillips, 2012). However, from an IMP perspective, relationships are likely to influence which actors will join a project in the first place. Typically, investments are in place between the related actors, such as the case with the Hospital and its EMR suppliers. This relationship was strengthened through the pilots, due to a need for close cooperation in the ELIN-k phase 2, and the common 'let down 'from the national pilot. Together they needed to salvage their investments in the new solution through improvisation and cooperation. As such, this emerging network of projects was embedded in an already existing context of networked organizations and actors.

When the ELIN-k project was completed, the responsibility for implementing the messages shifted to a different organization - Norsk Helsenett. This seemingly broke some of the links in the network of projects as well as of actors. The pilot was not completed and the change of responsibility for the implementation of PLO seemingly inhibited the inter-project learning process. The relationship had to be created with the new organization, and the relationship with ELIN-k was lost. This manifested itself in a feeling of being let down and left alone to finish the implementation.

Prior research has suggested that once projects are completed, there is a risk to lose the knowledge accumulated and lessons learned from mistakes, as they are temporary (Brady and

Davies, 2004). It is reasonable to assume that this risk might amplify in case of learning across organizational boundaries where possibly specific routines should be put in place (Bygballe, 2006). However, even after the implementation projects were completed, traces of them still exists. The testing environment is still in use at the Hospital to handle crucial activities like the validation of messages whenever there is an update in the system. This shows that projects have their own life, and do not necessarily end with the formal end-date of project. Indeed, we also argue that these projects can be seen as networked.

Knowledge and learning from the projects were codified and spread to actors through the development of learning materials such as folders and presentations. This was, as Prencipe and Tell (2001) argue, an extension of the articulation of the knowledge. The material is still in use for training. Project A was used as a way to prepare the municipalities for exchanging PLO-messages, as well as a way to codify routines and experiences from the pilot. Project A created a PLO-guide that was used as blueprint in the training for the users in the municipalities upon the implementation. Even though the pilot cases were not obliged to share information with the other pilots after ELIN-k, the Hospital willingly shared its PLO-guide. This guide was the base on which many other pilots based similar guides. As such, the guide facilitated the spread of experiences and routines for using PLO both locally and nationally.

Seeing the project (or projects) as an interactive networked process and tracing created value in the network might dissolve the traditional 'boundaries' of a project all together. Learning and value creating spans the organizational boundaries of a project, and the definition of projects as temporary.

Interaction as improvisation

All the ELIN projects had set goals, the ELIN projects' being the most ambitious. The Edisys report provided great promise and potential of creating a 'package solution' for GPs, however, the deliveries from the project were of a different character. By changing the focus from a communication solution for GPs to developing standards and architecture for communication in the sector in general the value is most likely enhanced. The one project sparked multiple ELIN projects spanning the sector, and eventually, in phase 1 of ELIN-k, even the implementation of a communication solution for GPs.

While all the national projects were planned in detail, and were to follow the mapped out project plan, the need to enroll all actors in a complex process meant delays and unexpected events such as the discharge report not functioning correctly. In addition, when the time for training employees in the hospital arrived, it turned out to be much more difficult than expected.

Time spent on activities not crucial to the project plan, had positive effects on the process. The Hospital and Municipality A were accused of spending too much time building the testing environment. However, this seemingly sparked the funding from the RHA, and cemented the Hospitals relationship with its suppliers.

The local implementation project had little national or regional anchoring and was rather characterized by a certain freedom to decide and act. When the coordination reform came into play in the middle of the extended pilot, the flexibility in the project, mainly due to the lack of official anchoring in any project plan, made the Hospital able to use it to convince the other municipalities to implement PLO.

As such we see that developing and bringing PLO messages into use was a complex process, involving several actors from different organizations, all investing in the project, thereby confirming that the pathway of the project was in some ways determined by the stakeholders

involved (Vaagasar, 2011). In this case, we see a great deal of improvisation as an approach for coping with such complexity and uncertainty. When projects take on a life of their own, it appears crucial that all actors involved, in spite of their different competences and interests, find common solutions.

'Improvisation' has been defined as "the degree to which composition and execution converge in time" (Moorman and Miner, 1998, p. 698) and indicating "a shift away from planning, and a reliance on action" (Leybourne and Kennedy, 2015, p. 5). Improvisation is closely connected to the idea of 'relating' in IMP that has been found to be critical for transforming an innovation into a viable solution (La Rocca and Snehota, 2014). Furthermore, improvisation is also a concept in line with recent studies on interaction behaviors in business relationships (Guercini *et al.*, 2014, 2015). In fact, it has been shown that actors involved in interactions might employ reactive rules such as readiness to improvise and to react to the unexpected, in order to maintain smooth interaction and accomplish their tasks (Guercini *et al.*, 2015). Indeed, it is difficult to imagine how the process could be brought forward without adaptations involving creative solutions (La Rocca *et al*., (Forthcoming)) in the project.

While detailed project plans might not align with the outcomes of the project, they were effective measures for getting funding from public organizations, as well as a way to enroll participants in the projects. While not all goals and visions were reached, they were seemingly, as suggested by Engwall (2002) and Lindkvist, Söderlund and Tell (1998) engines for the initiation and continuation of the project.

However, the argument that successful execution of a project depends on following the project plan correctly (Fernandez and Fernandez, 2008; Shenhar, 2008) does not sound as the most salient ingredient to successful project management. The lessons taken from this case are multiple. In a complex environment, where organizations are inter-dependent and outside factors such as national strategies and reforms are common, it appears that projects need to be flexible and improvising is important. Continuous unexpected events make it impossible (and even risky) to follow a plan developed ex ante.

The case shows that executing the ELIN-k project in the formal stages as planned did in fact harm the development and implementation of PLO-messages. When the ELIN-k project was finished 2011, the messages were not fully developed, piloted or implemented. The pilot actors had to 'finish the job' on their own, and find their own ways to cope. The process of development and implementation resembled more that of an innovation process, where it occasionally takes a life of its own (Sampietro and Villa, 2014) and is characterized by uncertainty and unexpected events (Van de Ven *et al.*, 1999). Changing focus might be more beneficial that reaching the goals initially set and the 'failure' of a project can set the stage for better things.

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