STRENGTHENING THE USE OF ENTERPRISE ARCHITECTURE: AN INSTITUTIONAL WORK PERSPECTIVE

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STRENGTHENING THE USE OF ENTERPRISE ARCHITECTURE: AN INSTITUTIONAL WORK PERSPECTIVE

Research Paper
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Abstract

The organisational adoption and use of Enterprise Architecture (EA) are pursued by enterprises aiming to improve their digital services and overall performance by aligning IT with processes. Nevertheless, despite the increasing interest in EA, it is still not widely used. Prior research provides explanations of institutional elements enabling or inhibiting EA adoption and use but does not provide concrete suggestions on facilitating EA adoption. This paper suggests different types of institutional work that can strengthen the use of EA, addressing central challenges met by EA initiatives. Specifically, the paper presents evidence from a longitudinal case study on the introduction of EA in the hospital sector in Norway. We show how institutional work can mitigate the inherent challenges of EA initiatives and thereby speed-up and strengthen the use of EA in organisations.

Keywords: Enterprise architecture, organisational adoption, Enterprise Architecture use, institutional work, hospital.

1 Introduction

Over the last two decades, organisations have started introducing enterprise architecture (EA) as a systematic way of designing, planning and implementing process and technology changes (Venkatesh et al., 2007, Bradley et al., 2012). The EA approach has become an increasingly important subject in information systems (IS) research; studies on EA adoption, EA management (EAM) and related topics comprise a growing field (Shanks et al., 2018, Dale and Scheepers, 2020, Hylving and Bygstad, 2019). This paper’s main objective is to explore the dynamics of EA introduction in hospitals and contribute towards better understanding the organisational adoption and use of EA. The selection of the hospital sector as the research context allows us to investigate actual EA adoption within complex settings.

Several studies have covered the challenges of EA introduction and use in different settings (Janssen and Hjort-Madsen, 2007, Carota et al., 2010, Valtonen et al., 2011, AlSoufi, 2014, Moreno et al., 2014, Zadeh et al., 2014, Bakar and Selamat, 2016). Nevertheless, there are calls for more research related to addressing the challenges of EA adoption (Dang and Pekkola, 2017). More knowledge is needed on how EAM is integrated into organisations and the factors influencing the evolution of EAM (Rahimi et al., 2017, Rouhani et al., 2019), as well as the dynamic nature of EA (Schilling et al., 2018). Overall, there is a need for further understanding the processes of adoption and use of EA within organisations (Winter, 2016).

The institutionalisation perspective is useful since it seeks to explain the process of embedding novelty within organisations. A new arrangement ‘is said to be institutionalised when it is widely practiced,
largely uncontested, and resistant to change’ (Suddaby and Greenwood, 2009, p. 176). Paying attention to the actors, as well as to their actions and motives can give insights into the formation of new institutions such as EA (Meyer, 2008, Battilana et al., 2009).

To explore the dynamics of institutionalisation within the micro-level of organisations, Lawrence and Suddaby (2006) proposed the concept of institutional work and they describe purposeful activities of actors that aim to affect (preserve or change) institutions. The lens of ‘institutional work’ allows investigating the ongoing reconfigurations at the practitioners’ work activity level (Vassilakopoulou and Marmaras, 2013). By focusing on institutional work, insights can be developed on the effort it takes and the concrete tactics that address challenges. To our knowledge, the lens of institutional work has not been utilised in prior research on the organisational adoption and use of EA.

In response to the calls for further research related to EA adoption and use, we pose the following research question: How does EA institutionalisation unfold and how do different types of institutional work influence the EA institutionalisation process? Addressing this question, we explore the institutional work undertaken in the Norwegian Hospital Sector and its impact on the adoption and use of EA. Hospitals are complex organisations that have grown organically and are characterised by a strong autonomy culture and introducing EA in such contexts is particularly challenging (Brahm, 2017, Hylving and Bygstad, 2019). Presenting an interpretive case study drawing from qualitative interviews and document reviews, this paper’s contribution is a detailed account of the institutional work performed to introduce and use EA in the Norwegian Hospital Sector. Furthermore, we leverage the study’s findings to indicate ways to address the known challenges of introducing EA in such settings (autonomous units, financial issues, lengthy processes, tool support, lack of willingness to change, lack of understanding of EA and visualisation of the value of EA (Ajer and Olsen, 2018)). Therefore, our findings can be useful not only for practitioners of EAM but also for the chief level executives, and can contribute to understanding why EA adoption is a lengthy process.

The rest of the paper is structured as follows: In the next section, we present the study’s theoretical grounding. Subsequently, we describe the research context and explain the research method. After that, we present the case organisation and how the analysis was performed. Then, we discuss the findings and make some concluding remarks.

## 2 Theoretical Foundations

### 2.1 EA Introduction and Use in Organisations

Since the 1990s, EA has been used as a strategy, a method, and a process in large organisations to manage complex ICT landscapes (Ross et al., 2006, Bernard, 2012). The aim of EA to introduce a holistic perspective supporting the organisation as a whole can conflict with solutions that can be optimal for sub-organisations (Jonkers et al., 2006). There is no shared definition of EA, but we see EA as a hierarchical description of an organisation’s business, its processes, the data and applications to support these processes, and the technology to run the solutions. EA can enable organisations to progress from isolated silos to integrated solutions across the organisation, making the ICT landscape efficient, robust, and flexible (Ross et al., 2006).

To support EA initiatives, several frameworks have been developed. The Open Group Architecture Framework (TOGAF) is one of the most popular (Simon et al., 2013, Denert-Stiftungslehrstuhl, 2015). However, the frameworks need adjustment for specific organisations and can be difficult to use and understand. EAM is a common term for all the processes of planning, executing, controlling and maintaining the organisations’ EA (Buckl et al., 2009, Weiß, 2015), and the TOGAF Architecture Development Method is an EA tool for managing these processes.

EA is an encompassing approach, and it is recommended as the approach for achieving goals of coordination and interoperability. Hence, over time, if the EA methods and practices are adopted, they can become an organisation-wide institution. Greenwood et al. (2008, pp. 4-5) describe an institution as ‘more-or-less taken-for-granted repetitive social behaviour that is underpinned by normative
systems and cognitive understandings that give meaning to social exchange and thus enable self-reproducing social order. The actors in the institutional lifecycle can be either organisations, groups of organisations, individuals, or groups of individuals (Battilana et al., 2009).

### 2.2 EA institutionalisation and institutional work

Based on prior research, Mignerat and Rivard (2009) illustrate the process of institutionalisation (see Figure 1). The process describes different stages (levels of adoption) undergone by innovation (e.g., new IS development practices) – innovation, theorisation, diffusion, full institutionalisation and deinstitutionalisation. In the innovation stage, the actual practices are questioned, and there is room for new ideas to emerge. In the case of introducing EA in complex organisations, we know that the EA approach gradually increased in popularity at the end of the previous millennium and became an approach that a large complex organisation had to assess, which exerted a mimetic pressure on other organisations.

When an organisation decides to adopt EA, the innovation step is taken. This is followed by a theorisation stage including activities to legitimise the new structures (Mignerat and Rivard, 2009). For EA, this implies customised education and training of stakeholders, creating new guidelines and requirements, building formal structures for governance and adapting the development and project methodology including new tools. Mignerat and Rivard (2009, p. 371) state, ‘New ideas are aligned with existing norm[s]’; however, the work also changes the existing norm to align with the new idea. In the diffusion stage, structures, now legitimised, are diffused (Mignerat and Rivard, 2009). For EA, this implies that the organisation needs to experience the EA approach as beneficial (e.g., in a project or for a sub-organisation) and extends its use. In the full institutionalisation stage, ‘structures are said to be fully institutionalised when they are considered taken for granted’ (Mignerat and Rivard, 2009, p. 372). In the EA context, this is supposed to enable organisations to increase their maturity and realise their visions. Finally, in the deinstitutionalisation stage, the existing structures are challenged by new ideas and might be replaced with new innovations.

Figure 1. Institutionalisation process for innovations (Mignerat and Rivard 2009, p. 372).

Institutional theory has been employed as a theoretical lens in prior EA studies but to a limited extent. For instance, Hjort Madsen (2007) developed a framework based on DiMaggio and Powell (1983) to analyse EA adoption patterns in 12 US Federal agencies. Aier and Weiss (2012a, 2012b) used Oliver’s (1991, 1992) framework on organisations’ strategic and tactical responses to institutional pressure to analyse factors for achieving an effective EA approach. However, these studies have not systematically explored measures taken to address the challenges of EA adoption and use. Our study aims to fill this gap by providing a detailed account of the measures taken along the ‘EA journey’ for
integration and standardisation across 30 hospitals. In the same vein, the concept of institutional work has been useful to categorize and systematically analyse our empirical data.

Lawrence and Suddaby (2006) observed that overall institutionalisation processes had been extensively researched, but there is a lack of elaboration on the necessary practical work involved in the processes. Based on their review of prior research, especially from DiMaggio (1988) and Oliver (1991, 1992), Lawrence and Suddaby have categorised the types of institutional work that cover the lifecycle of an institution and encompass ‘the sets of practices through which individual and collective actors create, maintain and disrupt the institutions of organizational fields’ (2006, p. 220). The authors outline nine ways of creating an institution, organised into three categories. The first category addresses the activity to obtain a possibility for the institutionalisation process. It is about political work and facilitating the organisation, usually supported by coercive pressure in the form of rules and regulations as enablers for the new institution. The second activity addresses the change in the actors’ belief systems; thus, the activity emphasises normative work. The third category includes the work required to manifest the term of the institution and the positive outcome of the institution; it further implies cognitive work, so that new practices can emerge.

Relatively few institutions have the power to reproduce themselves without maintenance. ‘In general, institutional work aimed at maintaining institutions involves supporting, repairing or recreating the social mechanisms that ensure compliance’ (Lawrence and Suddaby, 2006, p. 230). Disrupting the old institutions is a consequence of the emergence of new ones; for example, when organisations have decided to use a shared repository, it is no longer legitimate to organise the files in other ways. Table 1 presents an overview of the different institutional work activities described by Lawrence and Suddaby (2006).

<table>
<thead>
<tr>
<th>Aim</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Creating a new institution</strong></td>
<td>Advocacy</td>
</tr>
<tr>
<td>Reconstruct rules, property rights and boundaries that define access to material resources</td>
<td>Defining</td>
</tr>
<tr>
<td></td>
<td>Vesting</td>
</tr>
<tr>
<td>Actions in which actors’ belief systems are reconfigured</td>
<td>Constructing identities</td>
</tr>
<tr>
<td></td>
<td>Changing normative associations</td>
</tr>
<tr>
<td></td>
<td>Constructing normative networks</td>
</tr>
<tr>
<td>Actions designed to alter abstract categorisations in which the boundaries of meaning systems are altered</td>
<td>Mimicry</td>
</tr>
<tr>
<td></td>
<td>Theorising</td>
</tr>
<tr>
<td></td>
<td>Education</td>
</tr>
<tr>
<td><strong>Maintaining the new institution</strong></td>
<td>Enabling work</td>
</tr>
<tr>
<td></td>
<td>Policing</td>
</tr>
<tr>
<td></td>
<td>Deterring</td>
</tr>
<tr>
<td>Ensuring adherence to rule systems.</td>
<td>Valourising and demonising</td>
</tr>
<tr>
<td>Reproducing existing norms and belief systems</td>
<td>Mythologizing</td>
</tr>
<tr>
<td></td>
<td>Embedding and routinising</td>
</tr>
<tr>
<td><strong>Disrupting the old institution</strong></td>
<td>Disconnecting sanctions/rewards</td>
</tr>
<tr>
<td>Attacking or undermining the mechanisms that lead members to comply with institutions</td>
<td>Disassociating moral foundation</td>
</tr>
<tr>
<td></td>
<td>Undermining assumptions and beliefs</td>
</tr>
</tbody>
</table>

Table 1. The framework for institutional work by Lawrence and Suddaby (2006).
Central to prior research on institutional change are conflicts between the old and the new institution, and emphasis on very powerful, dedicated actors with sufficient resources to promote and facilitate the change (Suddaby et al., 2015). As an alternative view, institutional work conjectures change occurring ‘incrementally, as the product of relatively minor changes in somewhat routine interactions between professions’ (Suddaby et al., 2015, p. 56).

To our knowledge, the theoretical lens of institutional work has not been used in research addressing EA, although several studies within IS research have employed this lens. For instance, Wang and Burton Swanson (2008) studied how the momentum of early customer relationship management systems introduction can be sustained, and found different forms for institutional work and institutional actors in action sustaining the momentum of a technology. Wahid and Sein (2014) used institutional work to show how institutional actors steer the institutionalisation process of an eProcurement system in Indonesia. Guillemette et al. (2017) reported on the institutional work done in an attempt to transform the mission and profile of the IT function in a Canadian mental health institution. They found that ‘all the categories of institutional work regarding rules, norms, and meaning play complementary roles, and that all appear to be necessary, at different periods during the transformation process’ (Guillemette et al., 2017, p. 359). In a recent study, Sahay et al. used institutional work to analyse the work related to the implementation of a universal health coverage IS in primary healthcare in an Indian state to find the requirements ‘to develop institutions that support the use of new technologies and associated work processes that universal health coverage entails’ (2019, p. 62). They take stock over the actors’ work when institutions are created, maintained and disrupted.

3 Research Site and Method

3.1 Research Site

Norwegian hospitals are organised in four independent enterprises, called regional health authorities (RHAs). Figure 2 illustrates the research site. This study focuses on the South Eastern RHA (SERHA), which serves the largest region with nine hospital health trusts (HTs) and 78,000 employees. In 2018 the annual turnover was 82 billion NOK. SERHA has organised its ICT operations as a trust called ‘Hospital Partner’ (HP). The RHAs are owned by the Ministry of Health and Care Services (MHCS). Each RHA has some authority over the HTs in its region, laws regulate this. For example, the RHA can influence, and to a certain degree, decide what IS the HTs shall use. Investments in ICT are made at both the RHA and the HT level.

Additionally, a separate entity named the National ICT (NICT) was established at the initiative of the MHCS in 2003. In 2014, NICT was reorganised as a separate trust owned by the four RHAs. The NICT’s main work areas are strategic coordination, prioritisation, and consolidation of a common approach to key ICT issues across the regions. One of the goals is to establish an EA strategy (NICT, 2012). The NICT (2011) has recommended TOGAF as the framework for the EA, in line with The Agency for Public Management and eGovernment (Difi) recommendations (DIFI, 2010). From 2019 the NICT was incorporated into the directorate of e-health.

At SERHA, all the HT have their own ICT portfolios. To fulfill the national healthcare vision has SERHA since 2013, an ongoing portfolio program called Digital Renewal. It aims to develop shared regional solutions for important areas within clinical, administrative, and research domains. One of the programs within the portfolio, the Regional Clinical Solution (RCS) program, comprises large projects aiming to consolidate the electronic patient journal system, and implement regional solutions for laboratory, radiology, and multimedia among others. In the annual report for 2018, the Digital Renewal had changed its name to the ICT project portfolio and noted a 2185-MNOK budget for 2018–2021 (SERHA, 2019).
3.2 Research Method

We used a qualitative and interpretive research approach in this case study (Walsham, 1995). Principles from Klein and Myers’ (1999) work were used in the conduction and evaluation of this research to gain an in-depth understanding of the institutional work performed at the research site. The main data collection method consisted of semi-structured interviews. The process of data collection and analysis proceeded iteratively, allowing themes to emerge and then to be examined more deeply as relevant. All interviews were recorded and transcribed after getting consent from the participants. The interviewees were identified through snowballing, asking interviewees to recommend other relevant persons. The website of the organisation and LinkedIn were also used to identify interviewees. Three of the interviewees were interviewed twice, and on two occasions, there were two interviewees present at the same time. The interviews were conducted either face-to-face, by phone or by video sessions.

The first round of interviews (conducted from late 2016 until the summer of 2017) were explorative, and the main aim was to study how EA was used and identify its general challenges. As the interviews proceeded the interview guide was adjusted to the new insights that gradually developed in line with the interpretative and hermeneutic approach (Klein and Myers, 1999). In the second round, from late 2018 until early 2019, the questions were concentrated on the evolution of architectural governance and the concrete use of architectural practices. Having interviewees from different organisational levels, we could both analyse the measures taken from the higher level and explore how the measures were received at the organisation’s lower level. Table 2 provides an overview of the interviewees and their role in the organisation.

An extensive number of documents were collected. The documents collected include reports from the government, its agencies and directorates and also project reports and minutes from meetings. The documents were used as background information and sources to identify key events in the trajectory towards EA adoption and use in SERHA. The timeline was helpful when analysing the interviews and helped us organise our interviewees’ historical recollections in different periods. In Figure 3, we provide an overview of the constructed timeline.
Table 2. Overview of interviewees.

<table>
<thead>
<tr>
<th>Year</th>
<th>Count</th>
<th>Type of informants</th>
<th>Average length</th>
<th>Method</th>
</tr>
</thead>
</table>
| 2016-2019 | 34 interviews 33 informants | 1 Chief executive officer in a Health Trust (HT)  
1 Chief information officer from one of the HTs  
4 directors and department managers at Hospital Partner (HP)  
2 previous managers at South Eastern Regional Health Authority (SERHA)  
17 enterprise architects from National ICT, SERHA (one former), HT, and HP  
8 program and project managers from SERHA and HP | 68 min          | 20 phone 2 video 12 face-to-face |

Table 2. Overview of interviewees.

On the upper side of the timeline are historical events related to ICT in SERHA. Under the timeline major institutional work is accounted for.

Figure 3. Timeline of key EA-related events at the South Eastern Regional Health Region Authority (SERHA).

The in-depth interviews provided opportunities for rich empirical descriptions. This allowed us to analyse the data from different theoretical perspectives. Our work builds upon the analysis we have previously performed to identify the main challenges of EA institutionalisation. Specifically, for hospitals, we have identified seven essential challenges: 1) autonomous units, 2) financial issues, 3) lengthy processes, 4) tool support, 5) lack of willingness to change, 6) lack of understanding of EA and 7) visualisation of the value of EA (Ajer and Olsen, 2018).

The analysis performed to investigate institutional work includes a sequence of steps. First, by reading the interviews carefully, we prepared a detailed narrative of the trajectory of EA in SERHA. Second, the different empirical episodes were mapped to the framework of Lawrence and Suddaby (2006) (see Table 3). Third, we evaluated the different types of work concerning the three types of institutional pressure. Finally, we mapped the institutional work to the EA challenges previously identified (see Table 4).
4 Findings and analysis

In this chapter, we describe how the EA institutionalisation unfolds, and how different activities have affected the process. We find four distinctive periods at SERHA starting with activities that lead to a shift of attention to EA. The activities are summarised in Table 3.

In the first period (2007–2011), EA was a new approach that had not been previously used in the organisation. A national initiative where enterprise architects from all the RHAs participated concluded that ‘The architecture is needed to create changeability, flexibility and process-supporting IT systems that are aligned with the business’ (NICT, 2008, p. 2). Further, TOGAF as a framework was explained, and they recommend assessing the use of a framework and tool support for governing the architecture. This work contributed to lifting EA to the normative level for the participants, and the subsequent report advocated the EA concept.

EA as a methodology was introduced in SERHA around 2009, and the deputy director and the chief information officer (CIO) were facilitating and supporting the EA initiative coming from IT strategists. The director headhunted a new CIO with long experience as CIO at a large hospital, additionally, he had an architectural mindset. The director explained: ‘[I was] concerned of architecture as a foundation […] if we should succeed, we needed someone that understood the [hospital sector] practice from real life’. The director explained why the first informal forums for architects were established: ‘When you have EA, you need someone to play along with the architecture community at the hospitals that is a part of the strategic ICT procurement function, […] therefore we established the architecture forum, with enterprise architects from the health trusts’. New hires, TOGAF certification and education of stakeholders were on the agenda. The types of institutional work were advocacy, defining (e.g., a hierarchical structure with chief enterprise architect) and education to create a new institution. These are the regulative and the cultural categories of institutional elements.

The few actors involved in the beginning had already been exposed to normative pressure via networks, as well as the discourse at that time. When the first enterprise architects were certified, they developed an education programme intended to prepare the organisation for EA thinking, which was a step towards changing the normative association with how IS development should be conducted in the future. More than 100 different stakeholders were educated in this first phase as explained by an enterprise architect ‘There were IT people, doctors and other social scientists who participated. We made a basic course, and the idea was to raise awareness in SERHA on what architecture and EA are’.

In this first phase, the institutional work was to make the organisation ready, involving hiring staff, certification of key personnel, and conducting a large education programme. These actions influence the actors’ belief system. Furthermore, the certification and education activities could empower the actors to support the EA initiative.

In the second period (2011 – 2015), EA lost momentum in SERHA. An enterprise architect explained: ‘One of the reasons architecture did not gain momentum was that the leaders simply did not understand it. They thought it was difficult and became very theoretical. When we started talking about the models and how we had to see everything in context, - then it soon became “oh no, those architects with their difficult maps”’. The CIO was pragmatic and wanted action’. Despite putting the EA initiative on hold, the chief enterprise architect and the CIO participated in developing EA practices at the national level. In 2013, a new chief executive officer (CEO) was hired, and SERHA started the portfolio programme Digital Renewal.

Approximately one year after the start of Digital Renewal, the CEO wanted improved coordination across the projects. In conjunction with the reorganisation leading to the RCS program, one of the first enterprise architects who was hired took the opportunity to question: ‘How we could handle issues that went across the projects in the program in a better way […]’. The managers of the HP and SERHA and the program management […] agreed that we had to establish two architectural functions, one was
architecture and design as an operational function in the RCS program and an architecture board as an interdisciplinary body that could take architectural choices, which could guide the program’. Thus, EA practices were developed and approved in 2015 for the RCS programme.

The institutional work entailed participating in a normative network, and by doing so, producing knowledge; thus, cultural and cognitive processes were at work. The enterprise architects advocated EA as a means for coordination of the portfolio in Digital Renewal. This advocacy resulted in two formal vesting mechanisms (vesting is a regulative mechanism to monitor and manage a new institution). The first one was the architecture and design group as an operational function with resources to discuss and guide the projects when there was a need for clarifications related to architecture. The other was an architectural board as an interdisciplinary body that could make architectural choices.

In the third period (2015 - June 2017), the organisation gained experiences with the new EA practices. Related to the program, an initiative to promote holistic thinking and engagement for one of the RCS projects was taken. A project manager explained: ‘We have used incredible time talking to people, with many anchoring meetings. Over 3000 meetings with different departments, units and subject matter specialists’. The medical director attended and was responsible for anchoring clinical issues.

Several informants mentioned one of the enterprise architects as a person who actively promoted EA and was the driving force behind developing EA practices in RCS. The enterprise architect explained that architectural thinking was brought forward from persons with an architecture mindset and not from managers or the business side, and it was a challenging journey: ‘it’s like climbing the Everest’.

The over 3,000 anchoring meetings represented institutional work of the constructing identities type, where the actors in the field were exposed to the new normative situation. Importantly, advocating the concept was of great importance to get more people familiar with architectural thinking.

Altogether, RCS faced challenges with the adoption of EA thinking and use. Several informants mentioned that the project methodology that HP owned did not support EA, and the personnel from HP or different consultancy companies were unfamiliar with the RCS practices. Further, the lack of a common repository and the use of different tools did not give the organisation the benefit of an overview of the interdependencies across the ICT landscape, thus, some of the RCS’s central actors advocated the importance of getting the EA methodology as a part of the formal project roadmap.

In the fourth period (from June-2017), EA was made mandatory in RCS in an attempt to remedy the lack of formal guidance. The changes include a template for the TOGAF Architecture Definition Document, the use of a shared repository and the decision to use common tools. The methodology was (in the autumn of 2018) adjusted after a year of experience. There were educational and support activities in conjunction with these changes. However, these changes have been challenging; one of the participants explained: ‘[…] we have to keep the practice under surveillance, it is complicated and paradoxically many of the architects are afraid of working with new tools’. In sum, “the implementation of standardised documentation practices has been challenging related to in-house competency to maintain continuity, and assure that consultants follow the practice, […] and understanding among the managers that tools and new practices take time to learn’ as explained by one of the enterprise architects. Enabling work is necessary to maintain and strengthen the institution and contributes to regulative pressure. The organisation followed up with education by short courses. The architecture and design group used regular meetings to show and discuss how to use the enhanced methods and tools. These actions relate to the embedding and routinising category and were used to influence the project members’ normative attitude. The architecture and design group also monitored the work and argued for following the methodology, thereby policing towards compliance. The regular meetings improved the understanding of EA among the managers, and this was very important. As one explains ‘It gives a sense of security in the way that we follow the template that SERHA has decided, and it also gives me a sense of confidence that we get to investigate the problems so when we go to decision points we have done what is expected of us; that it is good enough to move forward. […] There is a much greater focus [on architecture] in recent years, describing it down to the box and
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process level. It visualises very well, and it's much easier to [...] - to simply go in and see that when you get a new tool or want to change a little on the tool you have, what does it mean for our architecture and processes. So I have to say I am pleasantly surprised’. There was a notable growth of the EA repository and one of the enterprise architects experienced the architecture to be more available and useful ‘I am very enthusiastic about this, [...] we invest much time in making an EA, [...] I think we will benefit from it, as long as we run the race. Moreover, we see it in other operating conditions when we include what we have documented - and the "as-is" architecture - it becomes easier to make the minor changes’.

Table 3 shows the analysis of the institutional work performed at SERHA. These activities are mapped to the framework of Lawrence and Suddaby (2006).

<table>
<thead>
<tr>
<th>Activity in SERHA</th>
<th>Institutional Work Activity</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in NICT forums for enterprise architects with the other regions</td>
<td>Constructing normative networks</td>
<td>2007-2017</td>
</tr>
<tr>
<td>ICT strategists search alliance with director</td>
<td>Advocacy</td>
<td>2009–2011</td>
</tr>
<tr>
<td>The hiring of a chief enterprise architect and another strategic hiring of</td>
<td>Defining</td>
<td>2009–2012</td>
</tr>
<tr>
<td>professionals with architecture skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOGAF was selected as the framework.</td>
<td>Defining</td>
<td>2009–2011</td>
</tr>
<tr>
<td>The first three persons were certified in TOGAF; later, more IT personnel were</td>
<td>Education</td>
<td>2009–2011</td>
</tr>
<tr>
<td>Course activity in EA for different stakeholders (over 100 persons)</td>
<td>Constructing identities</td>
<td>2009–2011</td>
</tr>
<tr>
<td>Informal architectural council with enterprise architects from SERHA and HTs</td>
<td>Constructing normative networks</td>
<td>2009–2011</td>
</tr>
<tr>
<td>Participation in developing EA practices</td>
<td>Constructing normative networks</td>
<td>2011–2015</td>
</tr>
<tr>
<td>Enterprise architects suggesting using EA methodology to improve coordination</td>
<td>Advocacy</td>
<td>2013–2015</td>
</tr>
<tr>
<td>Enterprise architect’s effort of having architecture mandatory in project</td>
<td>Advocacy</td>
<td>2015–2017</td>
</tr>
<tr>
<td>Meetings (about 3000) to anchor one of the projects in Digital Renewal</td>
<td>Constructing identities</td>
<td>2015–2016</td>
</tr>
<tr>
<td>Meetings arranged by architect and design group for information and learning</td>
<td>Changing normative associations</td>
<td>2015–2017</td>
</tr>
<tr>
<td>Development and formalised use of TOGAF Architecture Definition Document</td>
<td>Enabling work and Defining</td>
<td>2017–2017</td>
</tr>
<tr>
<td>Information meeting to persuade people to use the mandatory methodology</td>
<td>Constructing identities</td>
<td>2017–2017</td>
</tr>
</tbody>
</table>
Enterprise Architecture and institutional work

<table>
<thead>
<tr>
<th>Activity in SERHA</th>
<th>Institutional Work Activity</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOGAF Architecture Definition Document updated in 2018</td>
<td>Enabling work</td>
<td>2017-2018</td>
</tr>
<tr>
<td>Information meeting to persuade people to use updated methodology</td>
<td>Embedding and routinising</td>
<td>2017-2018</td>
</tr>
<tr>
<td>Finding ways to collaborate around architectural governance</td>
<td>Advocacy</td>
<td>2017-2018</td>
</tr>
<tr>
<td>RCS publish a monthly news-bulletin</td>
<td>Embedding and routinising</td>
<td>2017-2018</td>
</tr>
<tr>
<td>External consultants may lose their opportunities to prolong the contract if they disobey the use of mandatory tools and methodology</td>
<td>Deterring</td>
<td>2017-2018</td>
</tr>
</tbody>
</table>

Table 3. Institutional work for EA in the South Eastern Regional Health Authority (SERHA).

5 Discussion

In the work aiming to institutionalise EA, we find that activities constitute a mutually reinforcing cycle as anticipated by Lawrence and Suddaby (2006). The narrative demonstrates that in large organisations, where the responsibility for the organisational architecture is distributed among different autonomous units with varying EA approaches, the normative work is especially challenging, and it can take a long time. As the findings show, this implies that creation activities and maintenance activities have to be performed in parallel because there will continuously be new projects, new people and new sub-units involved. Without maintenance, ‘the coercive foundations for institutions are likely to crumble, becoming empty threats or promises rather than self-activating means of institutional control’ (Lawrence and Suddaby, 2006, p. 232).

Our analysis shows how institutional work was employed for introducing EA in hospitals. We observe that institutional change happens over time with the institutional work of actors with a strong commitment to the cause and ability to initiate actions to create and maintain the new institution (Lawrence and Suddaby, 2006, Suddaby et al., 2015), and not with an imposed change by the authorities. However, we argue that these actors have to have support from top management to be able to perform the work in such large organisations. Different types of institutional work were used to address different types of challenges related to 1) autonomous units, 2) financial issues, 3) lengthy processes, 4) tool support, 5) lack of willingness to change, 6) lack of understanding of EA and 7) visualisation of the value of EA (Ajer and Olsen, 2018). Table 4 summarises the suggestions to deal with the major challenges.

These suggestions add to prior research on addressing the difficulties of introducing EA in organisations. Weiss and colleagues made several suggestions to increase positive stakeholder response to EAM initiatives (Weiss et al., 2013). However, these suggestions came from analysing factors that lead to EAM benefits (Social legitimacy, Efficiency, Organisational Grounding, Trust, Governance, Goal Alignment, Enforcement), while we have mapped institutional work to the challenges related to EA institutionalisation. These challenges are intertwined. The most critical ones relate to autonomy, financial issues, and lack of EA understanding (Ajer and Olsen, 2018).

Autonomy influences how EA work is undertaken (Steenbergen, 2011); thus, it is important to address autonomy to maintain coherence in an organisation (Zadeh et al., 2014). The challenges related to autonomy when accompanied by lack of EA understanding especially among top managers, lead to problems embracing EA within organisations and facilitating the necessary EA arrangements. Financial issues can preclude top managers from committing to EA initiatives. Financial conditions can hinder knowledgeable and legitimate people from participating in EA projects (Ulriksen et al., 2017), and such people are critical to success (Drews and Schirmer, 2014, Martin, 2012). Thus, to encourage managers in autonomous organisations to support the EA approach, financial incentives are crucial (Hjort-Madsen and Burkard, 2006, Banacianjahromi, 2018b).
Increasing the understanding of the EA among top managers is imperative to gaining the necessary support for the EA initiatives (Banaeianjahromi, 2018a), which is crucial ‘for organisations to justify investment in EA programs and benefit from its value’ (Bernus et al., 2016, p. 97). EA needs to prove its value to further the diffusion among the actors. Since this is challenging for the EA initiative, the inability to trace the value back to EA is a critical obstacle to the institutionalisation process. This is in line with Tolbert and Zucker’s (1983) suggestion that early rejection of an innovation can occur if there is a lack of consensus on its value. Moreover, crediting EA initiatives is difficult when the progress is slow (Bui, 2015). Nevertheless, clarifying the value from EA is found to be a challenging task (Tamm et al., 2011, Bygstad and Pedersen, 2012, Gong and Janssen, 2019).

### Challenges

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Institutional work to address the challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomous units</td>
<td>Constructing normative networks</td>
</tr>
<tr>
<td></td>
<td>Constructing identities</td>
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<tr>
<td></td>
<td>Regulative support - assessment of the governance arrangements and the authority related to architectural development and decisions, at both national and regional levels</td>
</tr>
<tr>
<td>Financial issues</td>
<td>Vesting</td>
</tr>
<tr>
<td></td>
<td>Regulative support - national changes of finance model</td>
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<tr>
<td></td>
<td>Normative support - buy-out arrangements among jurisdictional units</td>
</tr>
<tr>
<td>Lengthy processes</td>
<td>Changing normative associations</td>
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<tr>
<td></td>
<td>Cultural-cognitive support - enabling iterative and incremental development</td>
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<tr>
<td>Tool support</td>
<td>Enabling work</td>
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<td></td>
<td>Embedding and routinising</td>
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<tr>
<td></td>
<td>Normative and cultural - adjust tools to fit normative assumptions and cultural needs</td>
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<td></td>
<td>Regulative adjustment of frameworks to achieve coherent management</td>
</tr>
<tr>
<td>Lack of willingness to change</td>
<td>Mimicry</td>
</tr>
<tr>
<td></td>
<td>Constructing identities</td>
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<tr>
<td></td>
<td>Provide incentives for personnel to participate in projects and managers to free up personnel (a specialist is not easy to replace, e.g., collaboration across the country)</td>
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<td></td>
<td>Education and participation in EA work, valid for all professions</td>
</tr>
<tr>
<td></td>
<td>Additional cultural-cognitive, peer principle (advocacy, education and training in new systems are undertaken by peers)</td>
</tr>
<tr>
<td>Lack of EA understanding</td>
<td>Defining</td>
</tr>
<tr>
<td></td>
<td>Education and participation in EA work, valid for all professions</td>
</tr>
<tr>
<td>Visualisation of the EA value</td>
<td>Advocacy</td>
</tr>
<tr>
<td></td>
<td>Small increments can facilitate proof</td>
</tr>
<tr>
<td></td>
<td>Visions must comply with the normative understanding of the actors</td>
</tr>
</tbody>
</table>

Table 4. Suggestions to deal with the major challenges.

A recent study of EA in three major Norwegian public sectors (Ajer and Olsen, 2020) found that there was a common pattern in how the projects played out over time. It consisted of phases of optimism, resistance, decline and finally reconsolidation. This pattern was similar to the Gartner Hype Cycle for emerging technologies and different from the institutionalisation process proposed by Mignerat and Rivard (Figure 1). In this recent study, the institutionalisation does not reach a plateau after diffusion but has a downfall after meeting a wall of complexity. They found that EA meets considerable organisational resistance due to organisational and technical complexities before gaining new momentum. This new momentum improved the situation and facilitated the required measures to make the projects successful. We argue that the institutional work measures proposed in Table 4 would flatten out the bumps in the EA process cycle, as indicated with the dotted green line in Figure 4. Such measures would imply a slower but more resolute and concerted effort in the optimism phase, leading...
to lower organisational disillusion and resistance in the second phase – and thus less loss of commitment in the decline phase. With less disillusion and resistance, the progress would then be steeper in the fourth phase of reconsolidation.

Figure 4. The EA process cycle, improved.

6 Conclusion

This paper’s primary objective was to explore the dynamics of EA introduction in organisations and contribute towards a better understanding of EA adoption and use. To this end, we suggest that the concept of institutional work (Lawrence and Suddaby, 2006) provides a useful lens. The concept of institutional work helped us sort out the different kinds of work and what impact this had on EA adoption and use. Furthermore, this lens helped us in developing insights for concrete suggestions to address EA challenges. To our knowledge, the lens of institutional work has not been used in prior research on EA adoption and use.

Our study contributes to both theory and practice. For practice, our research is novel through its rich description of the institutional work that can support EA initiatives. Through an empirical narrative of how an EA institutionalisation process unfolds, we explain and give an overview of the institutional work employed in the process. Further, we provide suggestions on how to overcome various challenges emerging when the holistic EA approach is introduced. For theory, we contribute with a conceptual model that shows how institutional work can mitigate the negative consequences of the inherent challenges that EA projects entail, and thereby speed up adoption and use. Hence, this work adds to prior work on EA assimilation and the role of institutional pressures (Brosius et al., 2018). For the broader IS research, we support the finding from Guillemette et al. (2017, p. 359) that ‘suggests that all the categories of institutional work regarding rules, norms, and meaning play complementary roles, and that all appear to be necessary, at different periods during the transformation process’.

References


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