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Institutional Work for Enterprise Architecture

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Abstract:

Enterprise architecture (EA) is a systematic approach used for designing and implementing changes in technological systems and processes to improve organizational performance and align technology with business. This paper unpacks the process through which EA moves from strategic-level endorsement to diffusion across organizations. The insights provided are based on a longitudinal case study within the Norwegian hospital sector. An institutional work lens is adopted to analyze the purposeful activities carried out to introduce EA in Norwegian hospitals providing a granular view on diffusion. The paper provides a rich description of the institutional work employed by the key actors involved mapping them to different turns in EA's trajectory. Drawing from this analysis, we contribute to Information Systems literature with a conceptual model that illustrates how institutional work can mitigate the challenges of moving from the strategic-level endorsement of novelty to its diffusion and institutionalization smoothing downturns along the way. The findings indicate ways to facilitate the introduction of EA within complex organizations, providing insights for practitioners involved in EA initiatives, and advancing extant EA research through an institutional perspective.

Keywords: Enterprise Architecture, Institutional Work, Institutionalization, Diffusion, Hospital.

1   Introduction

Enterprise architecture (EA) is a systematic way of designing, planning, and implementing process and technology changes (Bradley et al., 2012; Venkatesh et al., 2007). EA is instrumental for understanding interdependencies between processes and technologies and can support envisioning, implementing, and managing changes within complex organizations (Gong & Janssen, 2020; Shanks et al., 2018). Studies on EA introduction and EA management comprise a growing field in information systems (IS) research (Dale & Scheepers, 2020; Hylving & Bygstad, 2019; Shanks et al., 2018). Several studies in the EA stream have identified challenges to EA introduction and use in different settings (Bakar & Selamat, 2016; Carota et al., 2010; Gong & Janssen, 2020; Janssen & Hjort-Madsen, 2007; Moreno et al., 2014; Zadeh et al., 2014). Nevertheless, extant research provides limited concrete insights on how to expedite the use of EA in organizations, and there are calls for developing more knowledge on how to facilitate EA initiatives (Dang & Pekkola, 2017; Rahimi et al., 2017; Rouhani et al., 2019). In this paper, we explore the dynamics of EA introduction within complex organizations and contribute insights on how EA can be institutionalized.

Prior research has shown that the introduction of EA within organizations follows complex dynamics and that the organizational embedding of EA is a precarious end state (Hazen, Kung et al., 2014; Kohansal & Haki, 2021; Kotusev, 2021). Institutional perspectives are useful for explaining both change and stability within organizations. A new arrangement "is said to be institutionalized when it is widely practiced, largely uncontested, and resistant to change" (Suddaby & Greenwood, 2009, p. 176). To explore organizational change dynamics, Lawrence and Suddaby (2006) propose the concept of institutional work to describe purposeful activities of actors that aim to influence (preserve or change) institutions. The lens of institutional work allow for the investigation of ongoing reconfiguring actions within organizations by foregrounding everyday work activities (Battilana et al., 2009; Meyer, 2008; Vassilakopoulou & Marmaras, 2015). Focusing on institutional work can help develop insights into the effort it takes and the concrete tactics employed to institutionalize and to respond to the calls for developing more knowledge on how to facilitate EA initiatives (Dang & Pekkola, 2017; Rahimi et al., 2017; Rouhani et al., 2019). Specifically, we investigate the following research question (RQ):

**RQ: How can EA institutionalization be facilitated by institutional work?**

To address this question, we explore the introduction of EA in the Norwegian hospital sector. The introduction of EA in hospitals is in a state of flux and there are no standardized EA guidelines for hospitals (Purnawan & Surendro, 2016). The selection of the hospital sector as the research context allows for the investigation of EA institutionalization in complex organizations characterized by a strong autonomous culture. Introducing EA in such contexts is particularly challenging (Brahm, 2017; Hylving & Bygstad, 2019). In this paper, we provide a detailed account of the purposeful activities of key actors involved in the introduction of EA. We analyze these activities through the institutional work lens and map them to different turns in EA's institutionalization trajectory. Our findings indicate ways to facilitate the introduction of EA within complex organizations, thus advancing extant EA research through an institutional lens and providing insights for practitioners involved in EA initiatives.

2   EA in Organizations and Institutional Work

EA can be deployed to coordinate and align change initiatives for processes and technology within organizations according to desirable integration and standardization levels (Bernard, 2012; Ross et al., 2006). The term *enterprise architecture* encompasses sociotechnical arrangements of software, hardware, organizational structures, roles, and incentive schemes, (Ross et al., 2006; Uhl-Bien et al., 2007; Vassilakopoulou & Grisot, 2013). EA addresses enterprise-level objectives such as efficiency and effectiveness, and introduces a holistic perspective supporting the organization as a whole. EA is not confined to specific ISs, but rather it is a way to obtain a comprehensive overview of their current state and define desirable targets (Tamm et al., 2011), facilitating communication between business and IT (Dale & Scheepers, 2020; Gong & Janssen, 2019; Valorinta, 2011). However, prior research has shown that objections by different actors, problems with authority and lack of understanding (Ajer & Olsen, 2018; Banaeianjahromi, 2018; Dang & Pekkola, 2016) can challenge the introduction of EA in organizations and that efforts can dwindle before EA becomes institutionalized (Gong & Janssen, 2020; Lange et al., 2016). Prior research has also shown that the introduction of EA in the healthcare context can cause tensions

among existing medical, technical, and managerial logics and EA principles and assumptions (Ajer et al., 2021).

EA is a comprehensive approach used for managing technology and processes, and its introduction entails being established as an organization-wide institution. Institutions can be rules or normative behaviors that actors must take into account when acting (Meyer & Rowan, 1977). Based on prior research, Mignerat and Rivard (2009) provide a high-level overview of institutionalization processes, that is, the stages in the formation of an institution. In short, such processes go through the stages of innovation, theorization and diffusion to full institutionalization where arrangements are considered taken for granted and can survive over long periods. Institutionalization processes may be followed by deinstitutionalization processes that destabilize established institutions and lead to their replacement by new ones. Figure 1 provides a graphical representation of institutionalization processes, which has been employed by Mignerat and Rivard for positioning prior research on the formation of institutions. The figure is useful for pointing to the institutionalization stages that have been studied in prior research. However, it only provides a broad perspective and does not delve into the details of institutionalization trajectories. In this graphical representation, the process from the innovation stage up to institutionalization is depicted with a monotone (specifically, non-decreasing) curve. This does not capture the ups and downs of diffusion (Rogers, 2003) as organizations form their opinions about a specific innovation, engage in trials, and move toward either adoption or rejection.
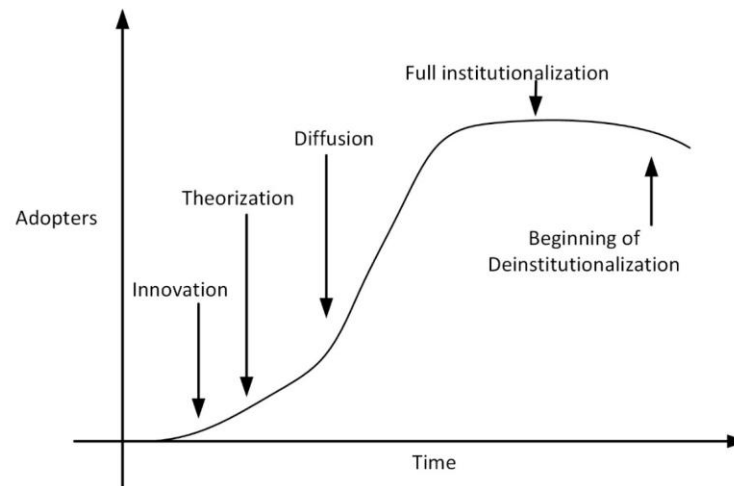
Figure 1. Institutionalization Process for Innovations (Source: Mignerat & Rivard, 2009, p. 372)

Zooming in the diffusion stage is particularly important for EA. Recent research on the introduction of EA in organizations has pointed to the "long series of intermittent fiascos and relaunches, hopes and disappointments" (Kotusev, 2021). Similarly, researchers have described complex EA institutionalization trajectories marked by EA losing traction along the way but in some cases regaining momentum and strengthening (Kohansal & Haki, 2021). These findings align with those of prior research on EA diffusion, suggesting that embedding EA in organizations is a precarious end state that depends on concerted post-adoption activities (Hazen, Kung et al., 2014). Paying attention to the actors and their activities can bring important insights on EA institutionalization dynamics (Battilana et al., 2009; Meyer, 2008). Even more importantly, bringing into focus the purposeful activities for EA embedding can help develop a better understanding of how EA initiatives can be facilitated.

Table 1. The Framework for Institutional Work (Source: Lawrence & Suddaby, 2006)

| Aim	Activity
Creating a new institution	
Reconstructing rules, property rights, and boundaries that define access to material resources	*Advocating* Mobilizing political and regulatory support through direct and deliberate techniques of social persuasion
	Defining Constructing rule systems that confer status or identity, define boundaries of membership or create status hierarchies within a field
	Vesting Creating rule structures that confer property rights
Carrying out actions in which actors' belief systems are reconfigured	*Constructing identities* Defining the relationship between an actor and the field where that actor operates
	Changing normative associations Re-making the connections between sets of practices and the moral and cultural foundations of those practices
	Constructing normative networks Constructing inter-organizational connections through which practices become normatively sanctioned and the relevant peer group is formed with respect to compliance, monitoring, and evaluation
Performing actions designed to alter abstract categorizations in which the boundaries of meaning systems are altered	*Mimicking* Associating new practices with existing sets of taken-for-granted practices, technologies and rules in order to ease adoption
	Theorizing Developing and specifying abstract categories and elaborating on cause-and-effect chains
	Education Educating actors in the necessary skills and knowledge to support the new institution
Maintaining the new institution	
Ensuring adherence to rule systems	*Enabling work* Formulating rules that facilitate the development of institutions and supplement and support institutions, such as setting up authorizing agents or diverting resources
	Policing Ensuring compliance through enforcement, auditing, and monitoring rule systems
	Deterring Establishing coercive barriers to institutional change
Reproducing existing norms and belief systems	*Valorizing and demonizing* Providing the public with positive and negative examples that illustrate the normative foundations of an institution
	Mythologizing Preserving the normative underpinnings of an institution by creating and sustaining myths regarding its history
	Embedding and routinizing Actively infusing the normative foundations of an institution into the participants' daily routines and organizational practices
Disrupting the old institution	
Attacking or undermining the mechanisms that lead members to comply with institutions	*Disconnecting sanctions/rewards* Working through state apparatus to disconnect rewards and sanctions from some set of practices, technologies or rules
	Disassociating moral foundation Disassociating the practice, rule or technology from its moral foundation, as appropriate for a specific cultural context
	Undermining assumptions and beliefs Minimizing the perceived risks of innovation and differentiation by undermining core assumptions and beliefs

Lawrence and Suddaby (2006) have observed that although overall institutionalization processes are extensively researched, there is a lack of elaboration on the practical work of the actors involved in the processes. The focus on ongoing work by involved actors allows them to go beyond a linear or

monotonous view on institutional processes and can be used to account for discontinuities, false starts and loose ends (Lawrence et al., 2009). Based on their review of prior research, especially by DiMaggio (1988) and Oliver (1991, 1992), Lawrence and Suddaby (2006) have identified and categorized different 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" (p. 220). The authors outline three broad categories of institutional work related to creating, maintaining, and disrupting institutions (Table 1). Institutional work does not proceed linearly from disruption to creation to maintenance; instead, it involves all three simultaneously and during overlapping time periods (Zietsma & McKnight, 2009). By focusing on institutional work, the ups and downs of EA diffusion can be captured. This can lead to a more fine-grained understanding of EA trajectories in organizations and to concrete insights on how EA initiatives can be facilitated.

3   Research Setting and Method

3.1   Study Context

In Norway, almost all hospitals are public and organized in Hospital Trusts (HTs). The trusts are allocated to four Regional Health Authorities (RHAs). Our study was conducted within the South Eastern RHA (SERHA), which serves the largest region of the country by managing 30 hospitals with a total of 78,500 employees in 9 HTs (Figure 2). The hospitals in the region use more than 1,200 different applications for clinical and administrative services and are supported by SERHA's technology provider (the Hospital Partner [HP]), which has 1,650 employees. As early as 2003, the Ministry of Health established a separate entity named the National ICT (NICT) to ensure strategic coordination of key ICT issues across the health regions. The Norwegian government is concerned with the increasing complexity in public organizations' applications and has endorsed EA as a systematic way to ensure a good connection between work processes and technology applications in public organizations and avoid the establishment of IS that do not communicate with each other. In this context, EA was endorsed by SERHA at a strategic level. In this study, we follow the efforts of actors within SERHA to move from the strategic-level EA endorsement to its diffusion and use across hospitals in the region.
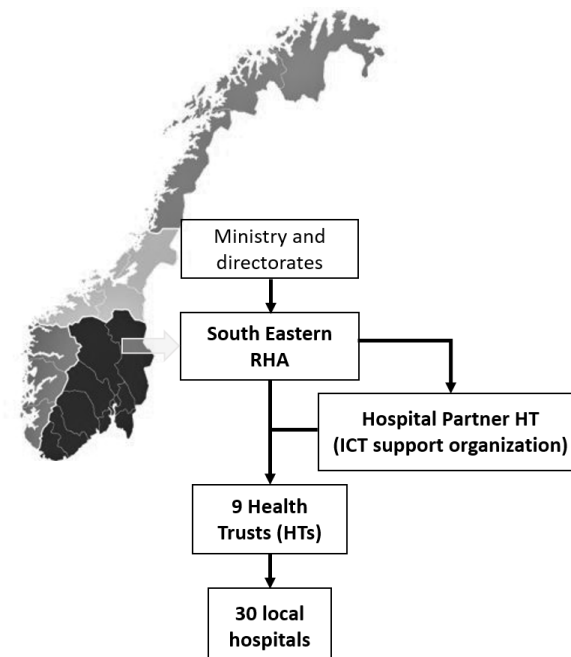
Figure 2. The Norwegian South Eastern Regional Health Authority (SERHA)

The selection of SERHA as the research context allowed us to investigate EA's diffusion in a complex organizational setting characterized by a strong autonomy. We focused on the purposeful activities of EA advocates over a 15-year period from 2007 to 2021. SERHA is an information-rich case (Patton, 2002), and the focus on the micro-level concrete activities can lead to a fine-grained understanding of EA institutionalization trajectories and concrete insights on how EA initiatives can be facilitated. Through the

lens of institutional work, we were able to analyze the organizational efforts to institutionalize EA and to investigate how individuals brought the new approach into their daily lives (Powell & Colyvas, 2008). In the next subsection, we elaborate on our data collection and analysis for this study.

3.2   Research Approach and Data Collection and Analysis

We used a qualitative and interpretive research approach (Walsham, 1995). By conducting an interpretive case study, we sought to gain an in-depth understanding of the trajectory followed to introduce EA within SERHA hospitals. We used Klein and Myers' (1999) seven principles for interpretive field research as practical guidance. Our main data collection method comprised semi-structured interviews, and we complemented the data obtained from the interviews with data sourced from documents. The documents were used as both exploratory sources (helping us develop an initial understanding of key events) and confirmatory sources of evidence (complementing the information sourced from interviews).

Two rounds of interviews were conducted. The first round took place from late 2016 to the summer of 2017 and the second round from late 2018 to early 2019. The first round of interviews was exploratory; we broadly aimed to understand the context, the history of EA in SERHA, and the efforts to introduce it in daily practices. As the interviews proceeded, we adjusted the interview guide to the insights that we gradually developed, in line with the interpretive and hermeneutic approach (Klein & Myers, 1999). The questions were about EA-related activities; EA documentation and tools; EA acceptance, participation, and collaboration; and finally, EA experiences and challenges. In the second round of interviews, we concentrated on the evolution of EA within SERHA and the experiences gained from measures related to strengthening EA practices. We interviewed key informants who were actively involved in the introduction of EA in SERHA and asked them about the work they performed. Following a purposeful sampling strategy (Suri, 2011), we selected key participants who have been actively involved in advocating and establishing EA within SERHA. Other potential interviewees were identified through snowballing, asking interviewees to recommend other relevant persons (Patton, 2002). The organizations' websites were used to identify additional interviewees. We interviewed three of the interviewees twice (both in the first and the second round) as they were engaged in EA-related activities during all the years of our fieldwork. On two occasions, two interviewees were present at the same time during the interview. In total, we performed 34 interviews. The interviews lasted 68 minutes on average. All interviews included a starting section where the interviewees explained their roles and responsibilities, a main section where questions about prespecified topics were asked, and a final section where the interviewees could add to and reflect on the conversation. We recorded and transcribed all interviews after obtaining consent from the participants. Table 2 provides an overview of all interviewees.

We also collected an extensive number of documents, including government reports, project reports, and minutes from meetings. The documents helped us construct a comprehensive timeline of the trajectory toward EA adoption and use within SERHA. The timeline was helpful when analyzing the interviews and helped us organize our interviewees' historical recollections in different periods.

Table 2. Overview of Interviewees in the Two Rounds of Interviews.
(NICT = National ICT, SERHA = South Eastern Regional Health Authority, HP = Hospital Partner)

Interview Round	No. of Interviewees	Role	Organization
First	5	Enterprise architect	NICT
	1	Enterprise architect	SERHA
	3	Enterprise architect	HP
	2	Enterprise architect	Hospital
	2	Program / Project manager	SERHA
	1	Program / Project manager	HP
	1	Chief executive officer	Hospital
	1	IT manager	Hospital
Second	1	Enterprise architect	NICT
	2	Enterprise architect	SERHA
	4	Enterprise architect	HP
	1	Enterprise architect	Hospital
	2	Deputy director	SERHA (former)
	1	Chief information officer	SERHA (former)
	4	IT manager	HP
	4	Project manager	Hospital
	1	Program / Project manager	SERHA

Figure 3 provides an overview of the constructed timeline.

On the upper side of the timeline are historical events related to ICT in South Eastern Regional Health Authority (SERHA). Under the timeline, the institutional work related to enterprise architecture (EA) is accounted for.
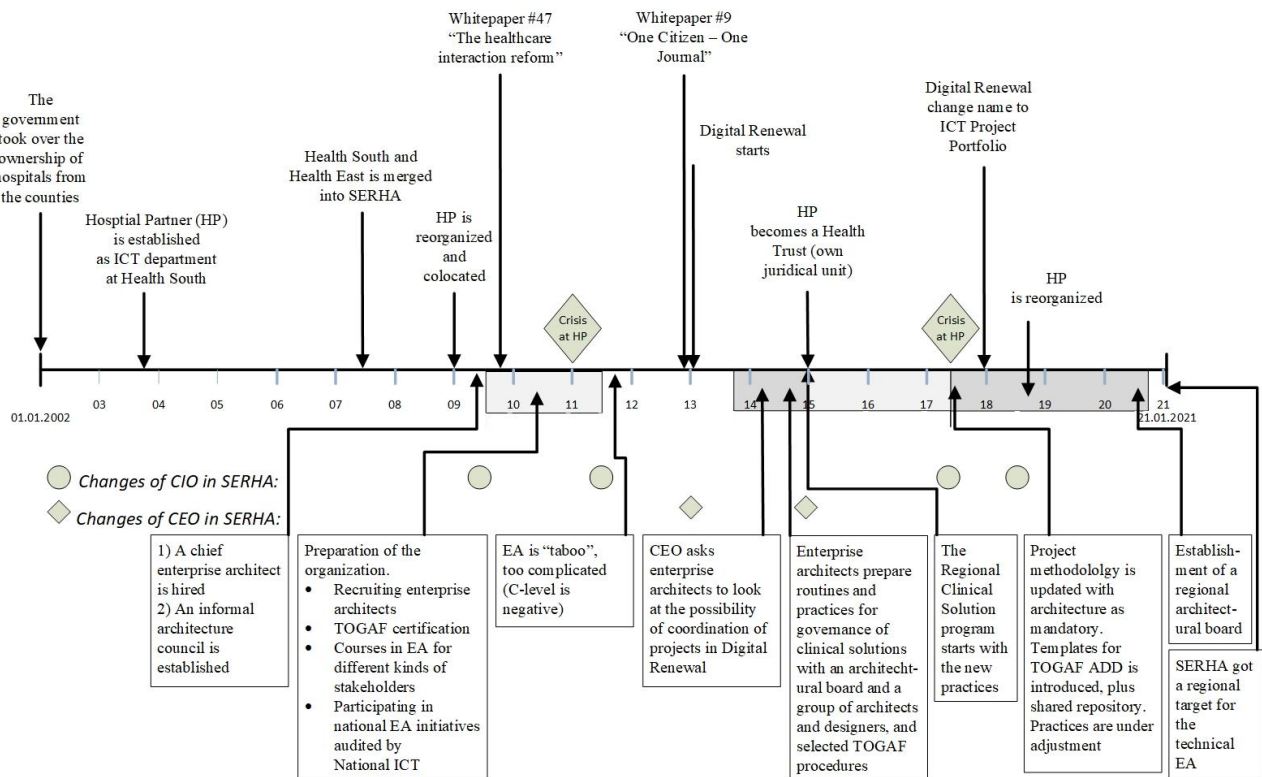

Figure 3. Timeline of Key Events over the 2002–2021 Period

The interviews provided rich empirical descriptions. After carefully reading the interview transcripts and consulting the timeline of events that was based on the documents, we prepared a detailed narrative of the EA trajectory within SERHA. We then imported the narrative (as a Word document) into NVivo. This narrative and the verbatim extracts from the transcripts were used to create a node tree based on the framework for institutional work (Lawrence & Suddaby, 2006). Figure 4 provides an illustration of the node tree; additionally, an example of the coding is included in the Appendix A.
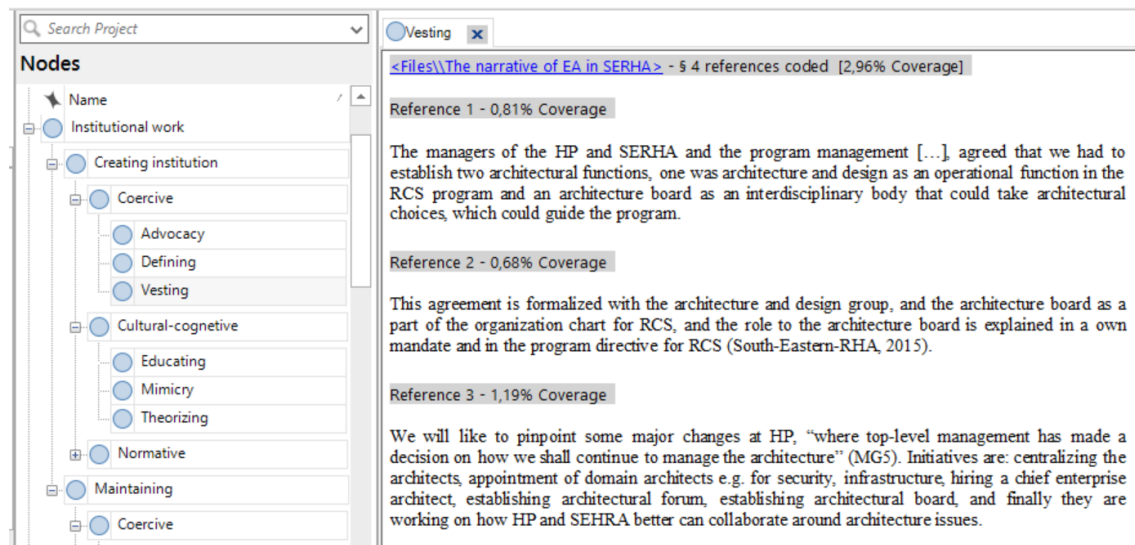
Figure 4. Node Tree and Example of Coding

4   Findings: Institutional Work for EA at SERHA

In this section, we provide an overview of the work performed to institutionalize EA at SERHA. The findings are grouped into three different periods that signify different turns in EA´s trajectory as it was diffused within SERHA.

The optimism phase (2007–2011). During this period, SERHA introduced EA for the first time as a new, promising approach. This occurred in the aftermath of a national initiative across all RHAs, which concluded, "[EA] is needed to create changeability, flexibility, and process-supporting IT systems that are aligned with the business" (NICT, 2008, p. 2). This national initiative also introduced The Open Group Architecture Framework (TOGAF), one of the most popular EA frameworks. The NICT (2008) report mobilized support at the managerial level. The deputy director of SERHA advocated EA and supported its introduction; also, the chief executive officer (CEO) had an architectural mindset. A new chief information officer (CIO) with a long experience at a large hospital was headhunted. The deputy director at SERHA explained, "[We both were] concerned about architecture as a foundation. … if we were to succeed, we needed someone that understood the [hospital sector] practice from real life."

One of the first steps was to establish an informal forum for architects, as explained by the deputy director:

> *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.* (Deputy director, SERHA)

During this period, SERHA hired TOGAF-certified enterprise architects and put TOGAF certification for current employees and education of stakeholders on the agenda. When the first enterprise architects were certified, they developed an educational program intended to prepare the organization for EA thinking, which was a step toward changing the normative associations for IS development. SERHA educated more than 100 different stakeholders in this first phase, as explained by an enterprise architect at SERHA, "There were IT people, doctors, and social scientists who participated. We made a basic course, and the idea was to raise awareness within SERHA on what architecture and EA would be."

These activities relate to institutional work for advocacy, definition, and education of stakeholders to *create a new institution*. Furthermore, the TOGAF certification helped in constructing enterprise architects' identities, and the informal forum served to build normative networks by establishing inter-organizational connections and peer groups for EA. Table 3 gives an overview of the activities during this phase and maps them to different types of institutional work.

Table 3. Institutional Work for EA in the First Period (2007–2011), the Optimism Phase.

Institutional Work Type	Activity within South Eastern Regional Health Authority
Advocacy	• Mobilization of management support through a national initiative that explained and promoted EA
Defining	• Selection of TOGAF as EA framework • Strategic hiring of professionals with architectural skills
Construction of Identities	• TOGAF certification for architects
Education	• EA course delivery for different stakeholders (over 100)
Construction of Normative Networks	• Establishment of the informal architectural council with enterprise architects from SERHA and HTs

The downward phase (2011–2015). In 2011, SERHA hired a new CIO, which put EA on hold, an enterprise architect explained:

> *One of the reasons why the 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, it soon became 'oh no, those architects with their difficult maps'. The CIO was pragmatic and wanted action*. (Enterprise architect, SERHA)

Despite putting EA on hold, SERHA's chief enterprise architect and the CIO participated in developing EA practices at the national level; thus, the CIO developed a good understanding of the concept and contributed to establishing inter-organizational connections.

In 2013, SERHA hired a new CEO and started the Digital Renewal portfolio program with a budget of 6585 MNOK for the 2013–2020 period (SERHA, 2015). The aim of the Digital Renewal was to deliver standardized and integrated regional solutions for clinical, administrative, and research uses (SERHA, 2012). Approximately one year after the start of Digital Renewal, the CEO asked for improved coordination across the projects. The enterprise architects took the opportunity to advocate EA as a means for coordination of the projects within clinical solutions and the program Regional Clinical Solution (RCS) was established. The RCS program includes projects for the consolidation of electronic patient record systems, and laboratory and radiology solutions, among others. One of the enterprise architects at SERHA explained:

> *The CEO asked how we could handle issues that went across the projects 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 within the RCS program and [the other was] an architectural board as an interdisciplinary body that could make architectural choices, which could guide the program.* (Enterprise architect, SERHA)

This phase ended with establishing two formal structures with the responsibility to monitor, guide and resolve architectural issues for the RCS program. The first one was an architectural board that could make architectural choices (as described in the preceding quote). The second was an architecture and design group with an operational function and resources to discuss and guide the projects when there was a need for clarifications related to architecture.

This decision allowed EA to start regaining its momentum. However, the already agreed upon roadmap was taken for granted and EA was associated with the existing sets of rules and practices. Thus, for the RCS program, EA adoption was eased through mimicry work that came with a cost. Several informants mentioned that the established project methodology did not properly support EA, no common repository was in place, and it was difficult to have an overview of the interdependencies across the landscape of systems and processes, making EA work difficult. The institutional work activities of this period did not only relate to mimicry but also to vesting through the creation of new structures (the architectural board and the architect and design group) and to constructing normative networks. Table 4 gives an overview of the activities during this phase and maps them to different types of institutional work.

Table 4. Institutional Work for EA in the Second Period (2011–2015), the Downward Phase.

Institutional Work Type	Activity within South Eastern Regional Health Authority
Construction of Normative Networks	• Participation in developing EA practices at national level
Vesting	• Establishment of formal architectural board for RCS • Establishment of formal architecture and design group for RCS
Mimicry	• Enterprise architects' promotion of the use of EA to improve coordination among projects in the Digital Renewal portfolio, associating it with existing taken-for-granted rules and practices

The reconsolidation phase (2015 onward). At the start of this period, SERHA put its effort into promoting holistic thinking and engagement. A project manager for one of the RCS projects at SERHA explained, "We have used incredible time talking to people, with many anchoring meetings. Over 3,000 meetings with different departments, units, and subject matter specialists." Interestingly, several informants mentioned one of the enterprise architects as a key person for actively promoting EA to all actors and stakeholders and for driving the development of EA practices in RCS projects. When interviewed, this specific enterprise architect stated that persons with an architecture mindset brought architectural thinking forward and it was a difficult journey, "like climbing the Everest".

Due to a security crisis at SERHA, the CIO left in May 2017 and was replaced with a temporary CIO until a new one started in September 2018. This crisis put pressure on the organization to have improved control over architecture. In June 2017, EA became mandatory for the RCS program, and this decision was accompanied by the introduction of a template for the TOGAF Architecture Definition Document (ADD), a shared repository and a common tool. In the following year, SERHA changed its EA tool and adjusted the ADD template. These new rules and tools enabled EA work to support the actual use of EA. However, implementing these decisions was not a straightforward process. One of the project managers explained, "We have to keep the practice under surveillance; it is complicated, and paradoxically, many of the architects are afraid of working with the new tools." The difficulties were also explained by one of the enterprise architects at SERHA:

> *The implementation of standardized documentation practices has been challenging, related to the lack of in-house competency to maintain continuity and to assure that consultants follow the practice, … and understanding among the managers that tools and new practices take time to learn.* (Enterprise architect, SERHA)

The organization followed up with an educational program offering short courses. In June 2017, it also started a monthly news bulletin to enhance information sharing across RCS projects. The architecture and design group monitored the work and argued for following the EA methodology, thereby policing toward compliance. The regular meetings improved the understanding of EA among managers. These meetings were important as explained by one of the managers:

> *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; that it is good enough to move forward.* (Project manager, SERHA)

The EA repository grew significantly. At the end of 2018, one of the enterprise architects experienced the architecture to be more available and useful:

> *I am very enthusiastic about this [EA initiative]; … 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 minor changes.* (Enterprise architect, HP)

Similarly, one of the project managers in the RCS stated:

> *There is a much greater focus [on architecture] in the recent years, describing it down to the box and process level. It visualizes very well, and it's much easier to simply go and see when you get a new tool or want to change a little the tool you have, what it means for our architecture and processes. So, I have to say I am pleasantly surprised.* (Project manager, Hospital)

Moreover, another project manager at SERHA commented, "It is quite clear, yes [we have a better basis for decision making]. Both from concept to planning [and] from planning to implementation, we have greater control over the solutions."

In February 2020, SERHA's CEO established a portfolio board with a document that states:

> *Architecture governance is a natural part of comprehensive portfolio management and a comprehensive architecture management will be an important contributor to projects and programs delivering the right quality within the domain of architecture, and also [contribute to] the right projects' start.* (SERHA, 2020a, p. 4)

In September 2020, the CEO also established a regional architectural board. The CIO is the leader of the board, and the members are enterprise architects and representatives from SERHA, HP, and large hospitals (SERHA, 2020b). In January 2021, the architectural board approved the first version of the document (SERHA, 2021) that describes the technical target picture (the vision) of the EA, with well-defined architectural principles to support this vision. SERHA consulted many stakeholders for this work to anchor it within the organization. One of the enterprise architects at SERHA stated:

> *A critical prerequisite for achieving this [an approved document for EA vision and principles for the region] has been the new CIO [at SERHA] and his understanding of what architecture is and his interest in the subject area as a tool for realizing systematic change.* (Enterprise architect, SERHA)

The architectural principles were used as a checklist for SERHA projects to ensure that they would indeed work toward the vision and would follow EA as an overall methodological approach for the whole region.

Overall, the institutional work activities of this period included work to construct EA as an institution (vesting, educating, and advocacy) and work to maintain the new EA institution, including embedding and routinizing, enabling work, policing, valorizing, and demonizing. Table 5 provides an overview.

Table 5. Institutional Work for EA in the Third Period (2015–2021), the Reconsolidation Phase.

| Institutional Work Type	Activity within South Eastern Regional Health Authority
Vesting	• Establishing a formal architectural board for the region
Education	• Offering short courses on EA rules and tools
Advocacy	• Holding anchoring meetings
Enabling work	• Formalizing architecture in project methodology and articulating a concrete EA vision to orient projects
Embedding and Routinizing	• Infusing day-to-day routines with the introduction and adjustment of EA tools and templates
Policing	• Using architectural principles as a checklist for projects
Valorizing and Demonizing	• Publishing a monthly news bulletin for information dissemination across RCS projects

5   Discussion

The analysis of the EA institutionalization within SERHA and of the work performed by the involved actors provides a granular view that goes beyond the monotone, non-decreasing, curve suggested by Mignerat and Rivard (2009) for the trajectory from innovation to institutionalization (Figure 1). By utilizing the empirical data gathered from this study, we can focus more closely on the process of diffusion and gain a more detailed perspective. This detailed perspective is needed for capturing the ups and downs of diffusion (Rogers, 2003) and is graphically represented in Figure 5 which provides an overview of the EA diffusion trajectory within SERHA. The studied period spans 15 years (from the beginning of 2007 to 2021). During this time, the use of EA was diffused within SERHA through persistent efforts by multiple committed actors. This is consistent with prior research that points to the importance of continuous work by actors committed to creating and maintaining new institutions (Lawrence & Suddaby, 2006; Suddaby et al., 2015). Specifically, the analysis of the empirical materials led to the identification of optimism as the first phase, with increasing momentum, followed by a downward phase, during which the EA approach lost its traction within SERHA. However, due to the convincing promotion of the EA approach, they went ahead with the EA initiative in the reconsolidation phase.

The optimism phase of continuously increasing commitment to EA was followed by a phase when leaders started questioning EA's usefulness when realizing its complexity. They thought that EA is difficult to

implement and quite theoretical in nature. This downward phase is not indicated in Figure 1 but is described for technical innovations (Dedehayir & Steinert, 2016). Despite this setback, proponents of EA worked during the downward phase to ensure that it was not completely disregarded. They engaged in institutional work activities such as vesting, constructing normative networks, and associating EA with existing rules and practices. Additionally, the chief enterprise architect and the CIO participated in EA work at the national level, increasing the CIO's familiarity with EA and its holistic approach. These efforts preserved EA within SERHA and paved the way for its momentum to be regained. The shift from the downward phase to the reconsolidation phase is when the CEO called for better coordination across projects, and EA advocates suggested the use of EA for this. The phases of optimism, downward, and reconsolidation occur within the diffusion phase providing a zoomed in and more detailed view of Mignerat and Rivard's (2009) diffusion phase depicted in Figure 1.

The findings of the SERHA study indicate that deliberate institutional work can flatten slumps during EA diffusion. By allowing multiple stakeholders to gain and increase their knowledge and experience with EA ensuring that management understood and familiarized themselves with the concept, the organization was better prepared to resume the initiative. Therefore, we argue that focusing on activities to create institutions (Lawrence & Suddaby, 2006) during the optimism phase, particularly involving senior managers who play a crucial role in the success of EA (Banaeianjahromi, 2018; Venkatesh et al., 2007), can facilitate diffusion. This can help identify and address controversies related to the complexity of EA earlier, allowing organizations to move beyond the "wall of complexity" (Ajer & Olsen, 2020). The findings show that while employing EA for coordination within the RCS program, the organization gained experience and developed new EA practices, gradually increasing its stakeholders' commitment. In 2020, SERHA established a formal governance structure for EA in the entire region and soon after that, published the EA vision and the related architectural principles. Thus, persistence over time and concerted actions culminated in EA diffusion throughout the region.

Paying attention to the institutional work performed over the 15-year trajectory allowed the generation of insights on diffusion dynamics. The actual trajectories followed for diffusing novelty within organizations are not always monotonous. The number of adopters can decrease if key actors become disappointed, leading to delays as they need additional efforts to re-establish the momentum and regain the lost ground. In the worst-case scenario, institutionalization may never occur. Such a trajectory can look similar to Gartner's Hype Cycle (Dedehayir & Steinert, 2016); the trajectory may have a pattern of early peak, disappointment, and recovery or even multiple peaks and slumps (i.e., more than one ups and downs).
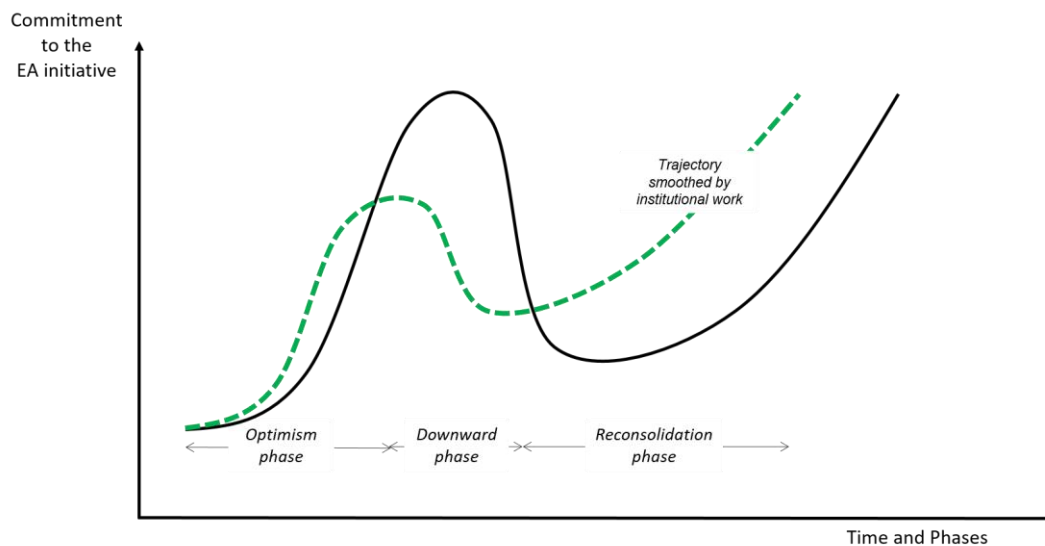
Figure 5. A Granular View on the EA Diffusion Trajectory: Institutional Work Easing the Ups and Downs

We suggest the conceptual model shown in Figure 5 as our key contribution. The model contributes to extant research on institutionalization trajectories by focusing on diffusion and providing a representation that goes beyond the simple monotonous curve suggested by Mignerat and Rivard (2009). The dotted green line indicates how institutional work contributes to smoothing ups and downs along the process. Engaging in different types of institutional work early in the process, contributed to the slow but resolute

growth in commitment, leading to less organizational disillusionment and thus, greater ability to recover after the decline of interest in the second phase. This work created favorable conditions for swift reconsolidation and eventually EA diffusion within SERHA.

The model also contributes to practice as it shows how institutional work can reduce the risk of abandoning EA initiatives and speed up EA institutionalization. This is particularly important for EA as prior studies have shown that the introduction of EA in organizations can be precarious and losses of traction can be looming (Hazen, Hanna et al., 2014; Kohansal & Haki, 2021; Kotusev, 2021). The analysis of this case and the developed conceptual model can help practitioners gain a better understanding of how EA initiatives can be facilitated. Of particular interest to practitioners is the fact that institution creation and maintenance activities had to be performed in parallel as they gradually involved new projects, new people, and new sub-units. 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 & Suddaby, 2006, p. 232). Institutional work does not proceed linearly from disruption to creation to maintenance but can include a mix during overlapping time periods (Zietsma & McKnight, 2009). Similar to Guillemette and colleagues' (2017) findings in their investigation of the institutional work for the transformation of a health institution's IT function, SERHA employed a large variety of institutional work types (as evidenced by the different types of institutional work presented in Tables 3, 4 and 5). The findings add to prior research (Weiss et al., 2013) on addressing the difficulties of introducing EA within organizations by specifically focusing on the institutional work that can flatten diffusion slumps.

5.1   Limitations and Future Research

We conducted our research in the Norwegian healthcare context. Theory generated from a single case analysis may not generalize to other empirical settings; thus, this study has contextual limitations that provide opportunities for future research. Scandinavia is well-known for its work culture with low power distance, bottom-up approaches, and democratic processes (Gregory, 2003). Further research can investigate the types of institutional work employed by actors in settings with different work cultures where it is more common to impose new arrangements with a top-down approach. Our study showed that vesting, education, and advocacy were imperative for building legitimacy and initiating new EA practices. In other cultures, other kinds of institutional work may also be needed (e.g., deterring); this is an avenue for future research. Comparative studies can be particularly useful for understanding how institutional work should be approached in different cultures. By emphasizing the role of culture within the organization, one can address a limitation of the institutional process view, which often focuses primarily on power structures, external shocks, or environmental shifts (Mahoney & Thelen, 2010; Thelen, 1999). Another limitation of the institutional process view is the challenge of identifying differences in the process of institutionalization, as institutions typically change incrementally and are influenced by multiple factors (North, 1990). Moreover, while rules and regulations can be measured, norms and values are more difficult to quantify (Peng et al., 2017). However, researchers and practitioners could benefit from a closer collaboration to explore EA institutionalization. Applying engaged research methodological approaches, such as action research and clinical research, can contribute to a better understanding of EA institutionalization. These methods provide possibilities for interventions to improve practices, processes, or technologies and are longitudinal in nature—which is needed for gaining insights into institutional processes. Finally, it would be interesting to see studies—from an organizational learning perspective— that would investigate how EA might create new capabilities and increased value within organizations, as well as how its introduction might affect established knowledge regimes.

6   Conclusion

In this study, we explore the dynamics of EA introduction in the Norwegian hospital sector to advance extant EA research and provide insights for practitioners involved in EA initiatives. We find the concept of institutional work (Lawrence & Suddaby, 2006) as a useful lens to study the trajectory from strategic-level EA endorsement to its diffusion across organizations. Our findings provide a rich description of the institutional work employed for EA diffusion, as well as the basis of a conceptual model that shows how institutional work can expedite EA initiatives and reduce the risk of abandoning EA.

This paper contributes to both theory and practice through a conceptual model that was developed based on the empirical findings on the EA trajectory within SERHA, Mignerat and Rivard's (2009) work on institutionalization processes and the hype cycle for technological innovations (Dedehayir & Steinert, 2016). The model shows diffusion occurring through three phases: optimism, downward, and

reconsolidation. It illustrates how institutional work can mitigate challenges and facilitate EA institutionalization. Our argument is that focusing on activities to create institutions (Lawrence & Suddaby, 2006) during the optimism phase, particularly involving senior managers who play a crucial role in the success of EA (Banaeianjahromi, 2018; Venkatesh et al., 2007), can facilitate the availability of resources to navigate the complexities of EA and recover from subsequent downturns. Our findings indicate ways to facilitate the introduction of EA within complex organizations, thus advancing extant EA research through an institutional lens and providing insights for practitioners involved in EA initiatives.

Acknowledgments

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Appendix A: Coding Example

Table 1A. Examples of Empirical Material Mapped to the Institutional Work Framework (Lawrence & Suddaby, 2006).

Aim	Activity
Creating a new institution	
Advocacy Mobilizing political and regulatory support through direct and deliberate techniques of social persuasion	Deputy director #1 at SERHA continued to explain why the first informal forum for architects was 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 hospitals". We asked if guidelines from national authorities had any impact on the decision to facilitate EA work, but the director told us that the initiative came from those who worked with the ICT strategy. "We have used incredible time to be out talking to people, a lot of anchoring meetings. Over 3,000 meetings with different departments, units and subject matter specialists" (program/project manager, SERHA).
Vesting Creating rule structures that confer property rights	This agreement [of using EA methodology] is formalized with the architecture and design group and the architectural board as a part of the organization chart for the regional clinical solution (RCS) program, and the role of the architectural board is explained in its own mandate and in the program directive for RCS (SERHA, 2015).
Constructing identities Defining the relationship between an actor and the field where that actor operates	"Not all project participants, there are quite a few participants in RCS, but there were courses in the tool and methodology for the architects [in connection with the changes made in June 2017], and then there is follow-up of the architects so that they receive assistance when they work with architecture to get the most out of the method" (program/project manager, SERHA).
Constructing normative networks Constructing inter-organizational connections through which practices become normatively sanctioned and the relevant peer group is formed with respect to compliance, monitoring and evaluation	"We agreed that one had to get better control of the architecture in HP. Since the beginning of 2018, we have been working on this, and the idea is that this will also be balanced with the regional architecture management. We want to control architecture centrally. We have an architecture forum that has just been established, where all architectural documents must be approved. The forum consists, among others, of responsible domain architects in different domains. …. The forum has executive authority, depending on the scale of the case. A group consisting of the eight division directors sponsors the forum. We give assignments and can occasionally guide the forum" (IT manager, HP). "We have a joint methodology meeting [in the RCL program] every third week, where you can ask questions—'I need help with this. How should I do this? What is best? Here we have a connection between two systems, two projects; how are we going to work with it?'—as examples of many of the challenges that the project architects can come up with, and it is then used to discuss what the different projects have done to inspire" (program / project manager, SERHA).
Mimicry Associating new practices with existing sets of taken-for-granted practices, technologies and rules to ease adoption	The enterprise architects promote the use of EA to improve coordination among projects in the Digital Renewal portfolio, associating it with existing taken-for-granted practices, but become frustrated by the ignorance of EA practices, "The project managers follow the methodology, and as long as it does not state that enterprise architects shall be involved, we are not invited. …. We have fought for a long time to get a checkpoint to involve enterprise architects in the concept (first) phase" (enterprise architect, HP).
Education Educating actors in the necessary skills and knowledge to support the new institution	"There were IT people and 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" (enterprise architect, SERHA). An enterprise architect from HP told us that he was assigned to organize an educational program for digitalization primo 2019 that addresses EA, including innovation, culture, organization, working routines, among others. First, the top-management group will attend, followed by a broader audience.

Aim	Activity
Maintaining the new institution	
Policing Ensuring compliance through enforcement, auditing, and monitoring	Nevertheless, there was engagement from the program management in persuading the project members to produce the deliveries in the expected way by "getting the project managers to pay attention to the architecture deliveries. Another instrument was the architecture and design group that could help out if things got difficult" (program/project manager, SERHA).
Valorizing and demonizing Providing for public consumption positive and negative examples that illustrates the normative foundations of an institution	In June 2017, the RCS started to publish a monthly newsletter on its website to inform the program members of the status of the different projects.
Embedding and routinizing Actively infusing an institution's normative foundations into the participants' day-to-day routines and organizational practices	Since the change in June 2017, the architecture practices have been adjusted after experiences. After around half a year, the tool for documentation was changed from TROUX to SPARX. In late 2018, the TOGAF ADD template was changed.

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