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Crossing the Chasm of Agile Enterprise Architecture Innovation: A Case Study of Service Modernization at a Railroad Company

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Research Idea

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Abstract

Agile EA is the process for managing enterprise architecture modeling and redesign efforts with principles of agile methods such as iterations, lean thinking, pair programming etc., for faster development times. However, very little work has been done till date on how organizations adopt these methodological innovations such as integration of agile methods with enterprise architecture. This is problematic, because we know that organizations face stiff challenges in bringing new innovations that fundamentally disrupt their enterprise architecture. It is for this reason organizations rely on external consultants to internalize the concepts that are non-native to its actors. Hence we ask: *What factors affect the adoption process of agile EA in organizations? If so what is the adoption rate over time? And what is the role of internal and external change agents in adoption process?* To address this questions, we plan on conducting a field study in a top railroad company referred to as "Alpha" (a pseudonym) for exploring the variations in routines to understand the agile EA adoption process. Specifically, the proposed research study has two goals. First, we wish to develop a formal process theory about the adoption of agile enterprise architecture innovations using grounded theory approach. Second, through this study we would like to provide design guidelines for crossing the chasm of agile EA.

Keywords: Agile, Enterprise Architecture, Adoption, Agile EA.

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Introduction

Agile Enterprise Architecture (or simply "agile EA") is an evolving discipline that stemmed its roots from John Zachman's pioneering work on enterprise architecture in 1980's (Bloomberg 2013). We define agile EA as the process for managing enterprise architecture modeling and redesign efforts with principles of agile methods such as iterations, lean thinking for faster development times[1] (Bloomberg 2013). However, very little work has been done till date on how organizations adopt these methodological innovations[2] such as integration of agile methods with enterprise architecture.

This is problematic, because we know that organizations face stiff challenges in bringing new innovations that fundamentally disrupt their enterprise architecture systems (Richardson et al. 1990; Tyre et al. 1994). It is for this reason organizations rely on external consultants and change management teams to internalize and institutionalize the concepts that are non-native to their actors (Birkinshaw et al. 2008). While past studies on agile EA have provided insights on how organizations can build enterprise architecture in increments through institutionalization (Isham 2008; Ross et al. 2006), there is little emphasis on how actors adopt to agile EA and how they change their routines and work patterns in designing EA artifacts (Laanti 2014; Leffingwell 2007). Hence we ask: *What factors affect the adoption process of agile EA in organizations? If so what is the adoption rate over time? And how do actors readjust and modify their behaviors while using EA design artifacts? And what is the role of internal and external change agents in adoption process?*

Recently scholars have suggested exploring temporal dimensions of adoption across multiple stages to track the divergences in routines that emerge due to the situated local practices of actors (Feldman et al. 2003; Karahanna et al. 1999; Russo et al. 1995). We follow this logic in addressing our research questions. To this end, we are conducting a field study in a top railroad company referred to as "Alpha" (a pseudonym) based in United States. It was established in mid 1800's and provides high-speed links for transporting bulk cargo. It is regarded as the top transporters of intermodal freight and bulk cargo in North America.

Alpha has a long history of traditional enterprise architecture for over 25 years. It has established Transportation System in the year 1990s with Mainframe systems and is currently undergoing a major transformation through Service Modernization. In this initiative, it is investing in its people, processes and technologies for creating advanced technological features such as GIS/ Self-support and real-time data analytics for improving end-to-end business cash flows. As the existing EA system was fraught with challenges, external consultants (one of the top management consulting firms based in US) recommended changes in traditional EA model. In the year 2011, Alpha started the initial studies for modernizing the systems by analyzing their competitors and benchmarking the company's performance. To this end, Alpha restructured its architecture practice with introduction of new principles like "just enough"and "just-in-time", to name a few (the company uses an in-house method that integrates agile methods such as Scaled Agile Framework with traditional EA). With top management support, Alpha has successfully transitioned to agile EA for integrating data coming from multiple channels. These newly implemented systems are designed to support 30 million lines of code and 3.6 billion queries. We are currently investigating this

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[1] www.agiledata.org (Refer to this website for more details about usage of agile methods in enterprise architecture)

[2] We call this as methodological innovations in EA as the concept of using agile methods is quite novel. Further, the concept of lean thinking and just in time is fundamentally oppositional to traditional EA principles that ask for extensive documentation.

initiative and have conducted 15 semi-structured interviews with top management and enterprise architects involved in this service modernization. Our plan is to conduct more interviews (or until we reach data saturation) with team members of 1) shipping and 2) workforce management under this initiative to identify the emerging constructs to elicit how agile EA gets adopted in practice. Our research study phases are described here for clarity: 1) problem formulation 2) case study design 3) open coding and data collection 4) selective coding and data collection 5) process analysis and data collection 6) theoretical coding and data collection 7) scaling up and 8) theoretical integration (see Gregory et al 2013 Appendix A1 for more details, which we have adopted here) (Gregory et al. 2013).

Specifically, our proposed research study has two goals. First, we wish to develop a formal process theory and framework on the adoption of agile enterprise architecture innovations using grounded theory approach (Strauss et al. 1994; Utterback 1971). Second, through this study we would like to provide design guidelines for practitioners in crossing the chasm of agile EA similar to earlier studies on Electronic Data Interchange (EDI) (Iacovou et al. 1995). Till now, very few companies have successfully adopted agile EA and hence this study should be of benefit to organizations that are planning to adopt agile EA. The limitations of the study include less generalizability, as the interview data is going to be collected form one organization. However, this study is first in kind and should provide new roads for IS scholars to better understand the adoption process.

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