Coordination and Governance in Geographically Distributed Enterprise Architecting: An Empirical Research Design

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Abstract

Previous research examining the effective implementation and management of enterprise architecture (EA) has typically used a governance perspective. However, this perspective does not consider the challenges associated with the "architecting" effort—i.e., the processes involved in generating and managing the EA. This requires the coordinated action of many stakeholders and architects, especially when they are geographically dispersed because distance and time barriers need to be bridged to coordinate their efforts. In this paper we adapt a previously suggested architecting coordination framework to develop a research model that integrates the coordination and governance perspectives in order to examine the development and implementation of effective geographically dispersed EAs. We use data obtained from two practitioner workshops on EA and follow up interviews with two participants to do some preliminary analysis. We then propose an empirical research design to study our proposed research framework in greater detail.

1. Introduction

EA is "the explicit description and documentation of the current and desired relationships among business and management processes and information technology" [18] providing a "blueprint for creating enterprise-wide information systems" [2] and executing an organization's strategy [24]. EA helps organizations cope with rapidly changing business and technological environments because systems can be developed with fewer redundancies with each other and better integration of data and applications [4]. In contrast, when systems are designed and implemented as individual silos the result is often an eclectic group of systems that may not work well with each other. Furthermore, an EA is conceptualized with its organization's goals in mind such that individual systems develop consistently with the EA contribute to such goals.

Prior research on EA has predominantly adopted a governance perspective to examine how organizations should put in place various structures, processes and mechanisms to ensure the effective use and implementation of EA [5, 25]. The governance perspective, however, focuses mainly on the mechanistic and structural aspects of managing EA. IT governance is defined as "specific decision rights and accountability framework to encourage desirable behavior in using IT" [32] p. 2. Studies adopting the governance perspective therefore examine who should be making decisions with respect to EA, which roles should be defined for managing EA, and which processes and mechanisms should be in place for ensuring that the EA is successfully implemented within the organization [5, 23]. While specifying governance mechanisms and structures are clearly critical to the success of EA efforts in organizations, this perspective does not sufficiently consider the challenges and difficulties associated with the "enterprise architecting" effort, or the process of generating and managing an effective and flexible EA. For example, there is no empirical evidence on whether governance structures and mechanisms enhance or hinder coordination, or whether having an EA helps governance of the information systems function. Investigating coordination and governance jointly in architecting can offer new perspectives of EA that have not been previously investigated.

The tasks associated with developing and implementing an EA are non-trivial, requiring the coordinated efforts of a large number of individuals and business units. To effectively develop and manage an EA, organizations need to resolve challenges associated with modeling (i.e., conceptualizing and designing the EA), management (i.e., ensuring individual systems comply with the EA; and maintenance (i.e., ensuring that the EA evolves consistently with organizational needs) [18]. The complex dependencies among the task activities of those involved in these three areas need to be effectively managed [2]. Furthermore, the difficulties of coordinating these task activities are further compounded when those involved in architecting are

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geographically dispersed because communication across geographic boundaries is more limited.

Hence, in this paper, we extend the prior literature by drawing upon coordination theories to understand how organizations can effectively resolve the coordination challenges of developing and managing an effective and flexible geographically distributed EA. We integrate the coordination perspective with the governance perspective, by studying how the structures and roles defined in a governance framework and the geographic configuration of the organization constrain or enhance the ability of its members and stakeholders coordinate their various inputs. We also examine how effective coordination, in turn, facilitates effective governance and management of EA.

Therefore, our ***main research questions*** are: *(1) what are the main types of dependencies that exist between various architecting activities; (2) what are the most effective coordination processes to manage these dependencies among various stakeholders; (3) how do EA governance structures and mechanisms enhance or constrain coordination in the process of enterprise architecting? (4) how do geographic boundaries enhance or constrain coordination in the process of enterprise architecting; and (5) how does an effectively coordinated architecting effort affect the governance of the IT function in the organization.*

Our proposed study will make a unique contribution to the research literature because, as far as we know, no attempts have been made to understand how individuals coordinate their collective effort in geographically distributed architecting. The integration of the governance perspective with coordination theories will also provide significant and unique insights into how various structural and micro-coordination processes can be used in complement with one another. In the next few sections we discuss the background of our study, our proposed research model and research design, and our implementation approach. In the last section we provide some concluding remarks.

2. Research Model

A previously formulated research framework [11] suggested the integration of three bodies of research – enterprise architecture, virtual teams and coordination theory – in order to investigate coordination in architecting. Consistently, we integrate the framework with prior literature on IT governance to formulate a more specific research. We posit that the governance structures defined by the organization provide an environment that influences the complexity and extensiveness of coordination that must be undertaken by various architecture roles, especially for phases 1 to 5 – from "developing the target vision" to "planning the implementation". The coordination process in these phases and how organizations overcome the challenges of coordinating across geographic boundaries influence the comprehensiveness and appropriateness of the target architecture and the plans for implementation that are developed. The EA then needs to be implemented and monitored, in the final phase, and the effectiveness of this implementation is moderated by the conformance governance mechanisms that are adopted. We illustrate the research model we have adopted for this study in Figure 1, aimed at helping us investigate and obtain answers to our research questions. This model focuses specifically on interdependencies and coordination processes. This research model represents the "coordination processes" box in our revised research framework, which is illustrated in Figure 2. We explain below our proposed research model and framework in more detail.

In our model we posit that an EA has *"layers"* (i.e., business architecture, information architecture, technology architecture, and application architecture) and *"segments"* or *"verticals"* (i.e., one for each business unit, function, division or location, depending on how the EA is organized). Each layer and each segment usually have their own architect and staff and the work of these people is highly interdependent requiring a substantial amount of coordination. As one of our interviewees described it *"no one size fits all,"* meaning that different layer and different segments require different approaches to architecture. But as the same interviewee put it *"all these pieces need to be consistent with each other,"* which is where coordination comes into play.

We posit that any layer and segment can have dependencies with other layers, segments and with the overarching EA, as represented in our model. Hence, it is important to examine how effective coordination can take place to effectively manage these complex interdependencies. In addition, at different points in time, various EA activities have to be conducted and managed across time. Given the importance of considering coordination issues across architectural layers, segments and activities, we propose a research model which we will investigate in a proposed study. We first describe the interdepencies that need to be managed between EA layers, segments and activities. Based on this description, we then propose a research model where we explain how governance structures, coordination processes, geographic boundaries influence the effectiveness of the target EA, and how the latter, in conjunction with governance mechanisms influence individual system implementation outcomes.

EA Layers vary slightly among different EA frameworks like the Federal EA Framework (FEAF), the U.S. Department of Treasury Enterprise Information Technology Architecture, the Open Group Architecural Framework (TOGAF), among others,

representing the various views of the architecture [2]. However, all include these four views (i.e., layers) or some slight variation of them: business, information and data, applications, and technology architecture views. The business view describes the business processes that support all enterprise activities and organizational mission. The data and information view describes the various data entities and relationships to support the business processes. The application view describes the applications necessary to support the processes. Finally, the technology infrastructure view describes all the hardware, software and communications platforms necessary for the applications to interoperate. Naturally, these layers or architectural views need to be coordinated and they are all driven by the business processes supported. In other words, one of the goals of coordination across layers is to ensure an effective alignment of IT practices with business needs. As one interviewee stated, *"the idea is to align all the technical resources to modernize the business and not to terrorize the business units."* But as the same person stated *"this requires a lot of effort to coordinate."*

EA Segments represent the various business units, functions, divisions, geographic locations or other subdivisions within the overall EA, depending on how the EA has been conceptualized. EA segments can be thought of as sub-architectures that collectively comprise the overall architecture of the organization. This is particularly important for very large organizations. For example, one interviewee from a large U.S. Government agency discussed 4 segments comprising their EA: Technology Management, Human Capital Management, Financial Services and (Audit) Engagement Management. The other interviewee from another large U.S. Government agency referred to these segments as "business units," which included things like: submission processing domain, client accounts, internal management, criminal investigations, and security and privacy among others. This same interviewee commented that it is important to *"let the business units drive the architecture and not the EA managers."* The main idea is for each business unit or segment to have ownership over their segment architecture so that it can be custom fitted to support their segments' business processes. At the same time, this interviewee acknowledged the presence of interdependencies among segments and the need to establish some common ground and coordination through things like shared services, common processes and shared models and common platforms.

EA activities can vary depending on the organization and the particular EA framework utilized. However, according to Armour et al [3], EA activities involve these distinct phases: (1) establishing a vision for the target architecture; (2) describing the baseline (i.e., current) architecture; (3) describing the target architecture; (4) planning the transition to the target architecture; (5) planning the actual implementation of the target architecture; and (6) implementing individual systems according to the architecture. We briefly describe these activities below.

Developing the *target vision* for the EA helps develop a shared understanding of the architecture at a high level of abstraction. It requires a substantial amount of communication and coordination among multiple stakeholder groups (e.g., customers, users, system architects, developers, etc.) with different views of the

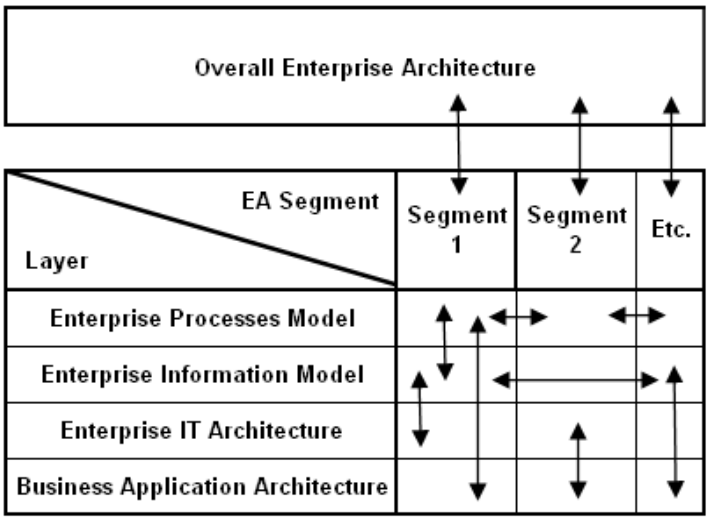

Figure 1 – Proposed Research Model (the arrows represent dependencies)

organization's systems. Describing the *baseline architecture* requires inventorying and documenting all the current business processes, information models, technology infrastructure and business applications used by the organization, which also requires a substantial amount of communication. *Developing the target architecture* is perhaps one of the most complex EA activities because it requires reaching some consensus among the multiple stakeholders about target EA components, which also requires a substantial amount of interaction.

Planning the transition to the target architecture needs to consider the multiple dependencies among baseline EA components (i.e., processes, information, technology and applications) and the target EA, which will require a substantial amount of coordination among all stakeholders affected by the transition to plan things like systems integration, system phase out/in, system rollout plans, and business process redesign, among other things. The actual *target architecture implementation* contains more specific details about financial, technical and human resources and activities necessary for the implementation. Finally, the *individual system implementations* requires ensuring that these systems are develop in compliance with the established EA.

Interdependencies amongst layers and segments. The various architecture layers and segments can be arranged in a matrix as shown in Figure 1. Each cell in the figure has its own distinct architectural components, developed and implemented with a set of activities and processes, which need to be consistent with the general EA formulated for the whole organization. We argue that the architecting activities necessary to develop and manage an integrated EA have inherent complex dependencies between any two cells in this matrix and between any cell and the overall architecting effort. A successful architecting effort is one in which these dependencies have been effectively managed, which is what coordination is all about. These dependencies, represented as arrows in the diagram, are particularly difficult to manage when they span geographical boundaries as often seen in today's modern organizations.

Due to these complex interdependencies, an effective EA requires good coordination, not only across the different architectural layers, and across different business segments, but also across the EA activities discussed above. Different EA activities are targeted for different phases of the EA implementation process, and effective coordination of these activities across time is also critical to generating an effective EA, which is aligned with the organization's business goals.

Proposed Research Model

To determine how coordination influences the effectiveness of EA, we propose a revised research framework illustrated in Figure 2 to show how the governance perspective can be integrated with coordination theories to inform organizations about effective EA implementation. Our research model in Figure 1 provides the details for the "Coordination Processes" box of our revised research framework.

Governance Structures. Prior research has identified various structures and processes to effectively govern and manage enterprise architecture [5, 23]. Governance structures and roles refer to the definition of key architecture roles and the structure of IT decision making in the organization (whether it is centralized within corporate IT or decentralized to local business units). As highlighted by Weill and Ross [32], IT governance applies principles similar to those for financial governance to IT management. It, therefore, specifies who has the rights to provide inputs, and who has decision making rights, in order to make IT decisions that provide the most value to the

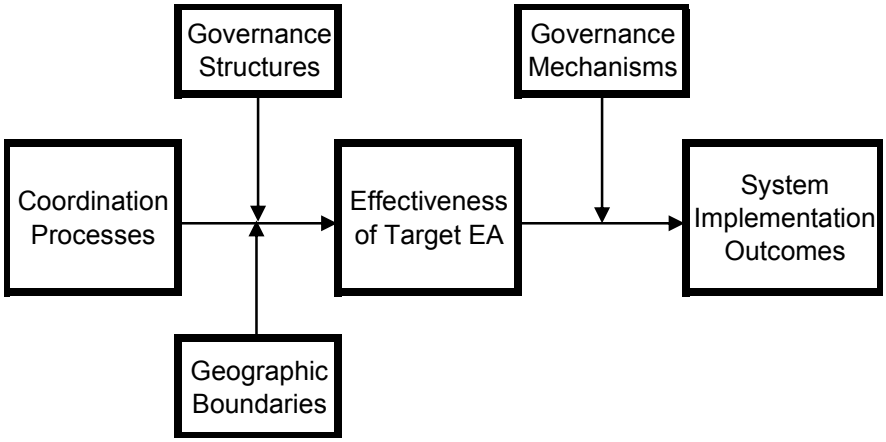

Figure 2 – Revised Research Framework

organization. A key aspect of EA governance is therefore to specify and create roles that provide specific individuals with authority and responsibility to spearhead and accomplish various EA tasks and projects [26]. This provides greater accountability for EA decision making. Boh and Yellin [5] identifies four key architecture roles: (1) the EA management team, which is a governance body responsible for guiding and making high-level decisions about EA standards; (2) the chief architect, who is the primary individual responsible and accountable for leading the efforts for defining EA standards; (3) the architecture team, consisting of individuals whose primary job responsibilities are to define and manage the IT architecture; and (4) the key stakeholders, who are representatives from business groups or IT groups affected by the EA who are invited to provide inputs in the EA setting and management process. The identification and appointment of individuals in these roles provide the resources for organizations to engage in the development and implementation of EA. The effective management of EA thus requires extensive coordination between these specific roles. The coordination efforts are also influenced by the extent of centralization versus decentralization of IT decision making, for various IT decisions (ranging from technology purchases to application development project initiation).

Coordination Processes. Given the structures and roles specified in the governance framework, different architecture roles need to coordinate amongst one another to obtain relevant inputs for the EA, and to generate the EA models and plans. The types of coordination processes adopted will likely depend on the task activities. We posit that coordination will be necessary across all four roles, but we have no a priori reason or empirical support at this time to suggest that a given type of coordination may be more effective for a particular role. We discuss in this section three main types of coordination discussed in the coordination theory literature.

"Mechanistic coordination" (or coordination by program or by plan) [21, 28, 29] is useful for task activities that are more routine and certain, which can be more easily programmed (e.g., project schedules, interface specifications, plans, procedure manuals, and workflow automation tools). For example, one of our interviewees commented that one way to ensure coordination between segments was to *"define shared services or shared models that can serve multiple EA segments"*. The use of these shared entities would be an example of a mechanistic coordination because they would ensure some consistency among segments.

"Organic coordination" (or coordination by communication, by feedback or by mutual adjustment) [21, 28, 29] is more effective with uncertain and non-routine task activities that cannot be coordinated mechanistically because conditions are often changing. Organic coordination can be informal and spontaneous or formal and planned [20, 22], interpersonal or in groups [29], and verbal or non-verbal. Naturally, not everything in the EA can be coordinated mechanistically and layer, segment and enterprise architects will need to communicate often to coordinate organically the less predictable aspects of their respective architectures, which can not be managed with shared artifacts. As one interviewee stated, *"understanding how to coordinate the different segments and how to govern all of this is critical."* One particular challenge that may require substantial organic coordination was described by one interviewee, who said that *"one of the big challenges is that the EA group knows what to do technically, but the business stakeholders are interested in knowing how to keep the information fresh when everything is constantly changing."*

Finally, *"cognitive (or implicit) coordination"* is accomplished when collaborators have knowledge about each other and about each other's tasks, which helps them anticipate what others are likely to do [7, 8, 19] without having to speak with each other [33], helping them plan their own activities. Cognitive coordination comes in many different ways but it is all based on shared knowledge people have about the task and the individuals. For example, the knowledge that one layer architect may have about a particular segment's architecture can help this particular architect develop models and services consistent with the needs of that an other segments thus achieving higher levels of coordination effectiveness. Similarly, knowing the status of the implementation of a particular segment's target architecture can help other segment architects plan their own work accordingly. Another form of cognitive coordination comes from "transactive memory" [31] which knowledge about what other people know and the ability to locate and access expertise when needed [14].

Generally speaking, cognitive coordination is somewhat related to organic and mechanistic coordination in a number of ways. First, organic coordination through communication and interaction helps build shared cognition among collaborators [7]. Second, when collaborators share knowledge about the task and each other, they communicate more effectively, particularly when they are aware of the specific knowledge they share – i.e., "mutual knowledge," which helps develop common ground and shared vocabulary [9]. Finally, shared cognition helps collaborators achieve a mutual understanding about the established mechanistic coordination practices (e.g., standards, specification, shared models).

Geographic Boundaries. Because our interest is in coordination of the EA effort than in the EA itself, and because coordination is affected by geographic boundaries [13], our research model incorporates the effect of geographic boundaries. While there are many types of boundaries, the two most important geographic boundaries in collaborative work are time and distance [6]. Therefore we also examine how distance and time separation influence how coordination mechanisms affect the effectiveness of EA activities – i.e., a moderation effect. For example, geographic distance eliminates most of the benefits of co-presence. As a consequence, collaborators communicate less frequently [1] affecting its timeliness [15, 30]. In addition, communication occurs primarily through electronic media which is less rich [10] of communication because the media through which it takes place are less interactive and have less shared contextual references [9]. Geographic distance also makes it more difficult to develop shared cognition [17].

Time separation – e.g., time zones, different work schedules, etc. – affects primarily the timeliness of communication [12]. The amount of time separation among collaborators has a dramatic effect on communication frequency and effectiveness because as time separation increases the window for real-time interaction diminishes. In sum, geographic barriers among EA stakeholders make it more difficult to coordinate organically, making it more important for the team to implement effective mechanistic coordination processes.

Effectiveness of Target EA. An effective target EA is one that has taken care of the interdependencies across different types of architectures and different segments within the organization. Such an EA results from effective coordination across architectural activities and architectural roles.

Governance Mechanisms. Even the best target architecture is useless when there is no compliance with the architecture. Governance processes should, therefore, specify not only the structures and processes through which the organization's IT objectives are set, but also the means of attaining those objectives and monitoring performance [23]. Conformance to EA, however, does not happen automatically, as it may restrict the choices of users and require changes to existing practices. Furthermore, conformance often involves some sacrifices in the optimal design of local systems or may cause project teams to incur higher costs in the short run [16, 27]. Thus, adequate mechanisms need to be in place to facilitate conformance to EA, and to grant exception to standards where necessary. Allowing for exceptions builds flexibility into the process to allow non-conformance to architecture standards when there is sufficient reason to do so. At the same time, it provides for careful deliberation before abandoning standards conformance for key projects [5].

System Implementation Outcomes. We propose that well-developed target architecture and appropriate conformance governance mechanisms will result in well-coordinated individual system implementations. There are many types of coordination outcomes (or problems), but research in collaborative system development suggests three important types of coordination outcomes in IT projects: technical, temporal and process coordination [13]. *Technical coordination* problems arise when different parts of a system don't integrate or interoperate well (i.e., ineffective management of technical dependencies). *Temporal coordination* problems occur when the delivery schedules of different interdependent task activities are not synchronized or behind schedule. *Process coordination* problems arise when task activities that affect other activities do not adhere to the agreed upon processes, leading to things like priority conflicts, blocking issues, and out-of-sequence workflow activities.

3. Preliminary Study

A preliminary analysis was first conducted to understand the value of integrating both the governance and coordination perspective in the study of EA. Several months ago a number of influential IT managers, CIOs and academics gathered at a workshop sponsored by a research center of a private university in Northeastern United Sates to identify the most critical areas of IT that need research attention. This group discussed a number these areas and then identified EA as the most important topic for this influential group of IT practitioners. Consequently, we planned a workshop on EA, which was held in December of 2007 in which there were 29 participants, including senior IT managers, system architects and CIOs (from the private sector, financial sector, government, and educational and international institutions). Workshop participants identified the key themes of EA research that have most relevance for practice. The three main themes that emerged were: EA generation of business value; shifting from silo based systems to an integrated enterprise IT organization; and developing measures for EA outcomes. Because of the strong interest that this workshop generated, a subsequent workshop was held in April of 2008, in which 26 participants gathered for more specific roundtable discussions on these themes. Three roundtable groups were formed, one for each of the themes, and participants seated voluntarily in the roundtable of their choice to develop a priority research agenda for the center and key subtopics around these themes. A roughly equal number of members gathered at each table.

The three subtopics were then discussed and analyzed at each table and a summary analysis was then shared with all participants. A very long list of individual issues for further research emerged for each of the themes. These issues were then re-categorized into three overarching research themes, aimed at learning: (1) the best processes and practices leading to an effective EA; (2) the organizational outcomes of using EA; and (3) how to measure EA outcomes.

In our preliminary analysis, we focused on the notes generated on the first topic of discussion. Based on the notes, we identified three key problems that organizations faced related to the EA development and implementation process. For each problem, we analyzed the solutions proposed, and classified them into either governance or coordination oriented. This analysis shows us how examining solutions to EA problems from both perspectives provides a more comprehensive view of managing EA. We next present the problems and the proposed solutions, based on both the governance and coordination perspectives.

Problem 1: How to bridge the gap between IT and business personnel? Participants highlighted that IT personnel in EA teams were often too technical in their focus and they lacked the ability to speak the business language, thus influencing their communication with Business personnel. This affects their ability to make a cogent business case for EA and for IT investments. Conversely, Business personnel were not sufficiently leveraging on IT personnel for their expertise.

From the governance perspective, workshop participants suggested providing incentives, and redefining the goals of the EA teams to focus on business development. On the business side, the use of incentives may be more challenging. Another possible solution was the assignment of EA liaison roles, who would be responsible for following up with the requests of specific business units. Other participants also noted that it may be a good idea to require the EA team to partner with business units to make any business case. Hence, making a proposal for a solution requires inputs from both business unit and IT.

From the coordination perspective, workshop participants provided suggestions that clearly illustrated the importance of developing shared knowledge between IT and Business Personnel – i.e., cognitive coordination. Frequent interaction over time – i.e., organic coordination was a key solution. The education of one another was also a key way to build shared cognition. Finally, workshop participants also noted the need to develop both the breadth and the depth of the expertise of the EA team, in order for them to be able to communicate effectively with both IT and business personnel.

Problem 2. How to involve the necessary stakeholders from many different business units? Participants highlighted that a key challenge was in "getting everyone to the table." Given that each business unit had its own budget and was more interested in issues that concerned their own business unit than others, it was a challenge to involve all the necessary stakeholders, and to get cooperation across the entire spectrum of stakeholders.

From the governance perspective, workshop participants suggested that it was important to structure the budget such that the initial stages of EA introduction had its own budget, and did not have to depend on that of business unit. It should also be made clear who makes the final decision. Workshop participants suggested that IT should play the role of the partner, guiding business units to make the appropriate choice. Participants also noted the need to provide incentives for people from different units to work together. It may not always be through the provision of money, but the provision of recognition.

From the coordination perspective, cross-functional work groups were suggested as an effective way for individuals to understand how individual actions in one business unit affect people in another business unit – i.e., understanding task dependencies. This also was a good way to help build shared knowledge between key individuals in different business units – i.e., cognitive coordination. Communication about the budget is also a helpful way to ensure a shared perspective across different units. As highlighted by a participant, it was important to get people together through *"discussions, discussions, discussions"*. Patience and time was also pointed out to be key. While people from different business units may not see eye to eye during the first meeting, they will learn about each others' perspectives through frequent interactions.

Problem 3. How to focus people on the right objectives? For example, one participant noted was that there was increasing focus on cost-cutting in IT, and this may be at the risk of innovation. From the governance perspective, participants noted that it was important to make use of various decision-making frameworks that clarify the key objectives. The use of the right measurements and metrics to show what the organization values is also one way to focus on the appropriate objectives. However, one has to first define the key objectives and this would require the inputs of the top management for both, IT and business.

From the coordination perspective, the CIO and chief architect play a key role in helping to inculcate the right values in their team, to ensure that they focus on the right objectives. This helps develop a shared vision

to which the entire EA effort can aim to reach – i.e., cognitive coordination.

In summary, the preliminary analysis shows that the governance perspective usually identifies structural solutions to various problems and challenges encountered during the EA development and implementation process. The coordination perspective provides complementary insights by identifying additional solutions such as ways to develop shared knowledge amongst EA stakeholders. Hence we believe that integrating these two perspectives in a more comprehensive study would provide us with significant insights into effective EA management. We now describe the research design we plan to use in the next few months to explore our research questions empirically.

4. Further Study

Given that the preliminary study has provided some face validity to our proposed idea of integrating the governance and coordination perspectives, we plan to conduct an in-depth study of our proposed framework using semi-structured interviews and grounded theory methods. Because different organizations may be at different stages of EA maturity [24] and EA implementation, and may employ very different approaches to EA, we plan to interview a large number of enterprise architects and senior IT managers from various organizations in the public, private, government and educational sectors. Several of the participants of the workshops discussed in the Study Background section above have expressed an interest in participating.

Interviews are a widely used method in information systems research for exploratory studies (Orlikowski 1993; Majchrzak, Rice et al. 2000; Malhotra, Majchrzak et al. 2001; Orlikowski 2002). Interview questions will ask multiple participants from various organizations about the governance mechanisms and structures implemented under their governance framework. To inquire about coordination processes, interview questions will be focused on identifying the EA layers, architecture segments and the EA maturity and approach for each company in the sample. The questions will then shift in focus to the discovery of key dependencies between EA layers in the same segment, between segments in the same EA layer, and between any two cells from different layers and segments (see Figure 1). For each dependency identified the follow up questions will be aimed at: (1) classifying the type of dependency as related to technical, temporal or process coordination; (2) identifying particular EA activities involved; (3) documenting the particular coordination process used to manage the dependency; (2) identifying the geographical boundaries separating those involved and determining whether how these boundaries affect coordination; (5) determining how coordination is enhanced or constrained by various governance structure and processes; and (6) evaluating the coordination outcomes of individual systems affected. Interview

The interviews will be audio recorded and transcribed verbatim and then analyzed using Grounded Theory [33, 71]. Grounded Theory is a widely used qualitative method in information systems research [10, 22, 61] and global collaboration [63], particularly when the study is exploratory, and the theoretical development of the topic is in its early stages [61]. As prescribed by Grounded Theory the sample size of participant organizations will be determined by theoretical saturation (i.e., interviews will stop when no new insights are gained from additional interviews). Also, as prescribed by Grounded Theory, the data will be analyzed as is being collected to help re-direct the inquiry based on what the emerging data suggests.

Also, consistent with Grounded Theory, we will develop an initial coding scheme do open coding of the verbatim text data. Open coding focuses on uncovering general recurrent themes. Once the recurring themes are identified and we have refined our coding scheme we will do axial coding of the text data to find relationships among these themes. The interview cases will then be analyzed by sorting text segments by their respective codes to uncover patterns of responses for each code in the coding scheme. Per Grounded Theory, the main goal will be to evaluate similarities and differences among the cases with respect to coordination processes, geographic boundaries, EA activities and coordination outcomes.

5. Concluding Remarks

We have proposed a research model and research design for an empirical study to investigate how EA activities are most effectively coordinated, within the constraints or with the help of a governance framework. Our study method will focus on the generation of rich accounts from interviews with experienced system architects and IT managers that will provide insights into the type of dependencies involved with EA activities in large organizational contexts in which the EA itself and the individuals responsible for it are geographically dispersed.

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