How Stakeholders Make Decision About Changes in Enterprise Architecture. Cases in Private Business and Public Organization

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Abstract. Companies currently are forced to remain in constant development in order to stay competitive. One approach to manage this process is Enterprise Architecture (EA) and Enterprise Architecture Management (EAM) as a tool for continuous support of organization evolution. Huge changes in EA are implemented within Enterprise Architecture Project (EAP) that involves specialists and managers from different functional areas into collaborative work. Despite a great amount of research and literature on EA, the participations suffer of lack of understanding managers drivers regarding EAP outcomes. Yet, the questions of what differences in vision about EAP outcomes within Stakeholders Management Group (SMG) exist and how to manage conflicting interests within it remain unanswered. The present paper investigates decision making process within SMG by qualitative analyses the cases in public and private businesses. To this end we have identified two types of conflicts that may occur during discussion process about changes in EA. This study contributes with the evidence which describes decision making process within SMG as interaction of rational agents. Generally, game theory approach is to be implemented to describe conflict situation in a formal way. The finding equilibrium state in which conflicting interests are harmonized in the most optimal way is followed.

Keywords: business IT alignment, enterprise architecture project, stakeholder management group, cooperative decision making process

1 Introduction

The current business environment is characterized by digitalization, volatile external environment and high competition between suppliers. To stay competitive many large and middle organizations use Enterprise Architecture (EA) as a tool to improve alignment between business processes, information support and technical infrastructure [19, 28]. They implement such an alignment in Enterprise Architecture Projects (EAP). Architectural Projects are typically complex in nature, they need proper Project Management to stay on track and deliver on promise [2, 3]. In the context of EAP management previous studies investigated the role of architects [12], problems occurring during communication with

IT-specialists and specialists other functional areas [13, 20, 21], EA modelling languages [6, 22] as well as EA decisions [24, 37]. These are elaborated in detail in the following section.

However, the current state of EA literature limits to researches focused on communication and decision making process within Stakeholders Management Group (SMG). It is arguably that SMG consists of managers from different functions areas and their interests are potentially conflicting [9, 21, 26]. In terms of EAP the conflicting interests are caused by limited project resources, comprehensive character of EA changes across multiple organization and own set of metrics to assess work efficiency in each functional department [35].

In this paper we report on results of the quality study conducted to analyze the decision making process about necessity to implement changes in EA and drivers of each manager. We will use two case studies from profit and non-profit organizations with different EA governance style to find difficulties, similarities and differences in EA decision making process.

The research question we aim to answer in this paper is:

RQ: How stakeholders from different functional areas collaborative decide on EAP?

This paper is structured as follows:

In the next section we discuss related works that we used in this multiple case study. Section 3 presents interview results of both public and private business cases. Section 4 focuses on determining some common features about conflicts existing within SMG and structures these. Finally, in Section 5 we summarize our research findings and suppose actions to prevent negative outcomes of different, sometimes conflicting, EAP expectations, followed by presenting some related works from EAM literature and our future research direction.

2 Theoretical backgrounds

2.1 Related works

The topic of EA as a management instrument is promoted to improve the Business-IT alignment and support of strategy execution has garnered considerable interest in research, [28, 32, 33] among them. In the literature we've found a lot of study focuses on how organizations benefit of EA [25, 37] as well as challenges on the EA Management and Project practices [12, 13, 31].

Typically EAP activities involve EA stakeholders across multiple organization units and collaboration process is challenging for both internal (between stakeholders) and external perspectives (with EA/IT consultants). In this context Martin van den Berg and Hans van Vliet [5] conducted a multiple case study of the Enterprise Architect role, where they investigate how architects contribute to better IT decision-making. They conclude that Enterprise Architecture role is determined by four different context factors: the formalization of process, the mindset of decision-makers, and the magnitude of impact and time pressure. In similar way several researches highlight, that soft skills of Enterprise Architect

can play a solid role during decision making process on alternatives and can considerably influence project results [12, 31]. The Roles Concept was presented in work [36] where authors have identified eleven roles, incl. several solely Architects Actors that may constitute EAM Team. The goal of their research was to provide grouping of roles and to match them with needed skills and work tasks which will improve EAM praxis. However, the communication process within stakeholder managers remains out of scope.

As a way to improve collaboration between Enterprise Architect and stakeholders with different background knowledge, EA modelling languages are considered in several researches [16, 18]. In [16] Johnson P. et al. emphasizes the decision-supporting potential of EA modelling and present a tool that guides the user in the generation of enterprise architecture models and subjects these models to analyses of various properties, as e.g. the availability, performance, interoperability, modifiability, and information security of the modeled Enterprise Information Systems.

The process of creating EA models and EA documentation is challenging. In [29] Roth et al. present a survey among 140 organizations. The authors focus on companies located in USA, Europe, India etc. and present information on what EA challenges organizations face in terms of documentation of EA. Despite the fact that the survey focuses on EA documentation, amount their findings was the problem that many EA initiatives are struggling to get management support. One reason seems to be the perceived low return of investment (ROI) according to 25.71% of survey participants.

Several authors also outline problems with differences in stakeholders' vision and assessment EA benefits. A research conducted by Bas van der Raadt et al. [27] presents the cognitive map of various Stakeholders' (Change Management, Program Management, Application Management and Project Leader) expectations regarding EA functional products and services. The results of this work confirm that Stakeholders' objectives are potentially conflicting and each expectation is hardly to satisfy. Based on empirical evidence Hirvonen, Ari P., and Mirja Pulkkinen [12, 13] provided information that the outcomes of EA development effort may be negative from some organization unity's perspectives indeed. For example, in case of decreasing the number of applications (software products) the enterprise is forced to buy licenses for [13].

It is largely argued that organizations can benefit from EA in different ways. For example, Plessius et al. introduce the framework to categorize the benefits of EA [25] and based on this framework developed the Enterprise Architecture Measurement Instrument. From their point of view EA benefits can be classified into twelve classes: four perspectives (Financial, Customer, Internal and Learning & Growth) times three phases (Development, Realization and Use). Based on their survey research the team find out, that many organizations are interested "in measuring the benefits of architecture, but did not have a clear understanding of the type of information that is needed to measure it".

The topic of EA decisions was elaborated by Platanious et al. In work [23] they introduced the Anamnesis approach. The Anamnesis approach is focused

solely on individual decisions and lacks explication of the relationships of this decision with other decisions. Based on these limitations in their later paper [24] the Anamnesis approach was extended with a metamodel for capturing relationships between decisions. Researches defined four types of relationships: translation, decomposition, alternative, substitution and introduced Decision Design Graphs enabling the capturing and visualization of the impact of decisions across the enterprise. Despite the fact that this approach considers EA decisions from different EA perspectives, researchers solely concluded, that "different stakeholders with different individual rationales and stakes, from business as well as IT, have to coordinate to collaboratively come to the final EA decision".

To sum up, current state on EA literature have provided information that EAM is considered as a tool that helps organizations in achievement their strategical targets by Business-IT alignment through proper IT support. Scholars and practitioners confirm the challenges existing in communications between Stakeholders Board and EAP Executive Team. In order to contribute in their better collaboration EA modeling languages and documentation practice were examine and evaluate. However, communication process solely within SMG is also challenging. Members of SMG admit that they need to use EA practice and proper IT support to stay competitive, but the question on how each of functional areas manager can estimate and predict EA benefits and how SMG collaboratively decides on EAP is still out of scope.

In the next section we present theoretical information about EA decisions and tools that help stakeholders to meet optimal decisions.

2.2   Decisions on EA changes and Architectural Solution

In our first paper [14] we've introduced a pattern Architecture Solution (AS) – a tool that provides the insight for stakeholders not IT area on EA changes (decisions second stage) in order to solve the problem of stakeholders' misunderstanding. Changes in existed EA design might be also caused by integration a new solution in existing EA design. By using EA modelling languages we were able to present a document form "Architectural Solution" that in nature is an extended form of preliminary textual design document, visually describing changes in existing EA state due to EA models. AS and EA models aim to provide a holistic view and changes visualization caused by necessity to release a new solution to business issue in existing EA and subsequently support decision makers with relevant information [19]. Another contribution of AS is that such type of document can be used by Project Team following Agile methodology for getting stakeholders' approval of a new Solution Architecture (high and middle level views on Business, Service and Data, Technological levels). The developed form of document "AS" is in line with other researches arguing that holistic perspective on an Enterprise helps clarify the business advantages of IT, analyze cost structure of decision etc. [19].

Based on literature review and our previous work we assume three hypotheses as significant factors for organizations in terms of EAP outcomes and benefits for our next research way:

1. Organizations benefit from EA in from of concrete AS (i.e. solution to a problem, solution as an opportunity to be more comprehensive [8]); ASs constitute the whole EA;
2. The characteristic of AS could be measured by diverse ranges of criteria like quantitative (time to design and implementation, labor involvement, Total Cost of System Ownership), and qualitative (EA agility, usability, sustainability, flexibility);
3. Holistic AS document form not only contributes to collaboration between internal business stakeholders or with IT-consultants/architects, but also provides information for measurement and assessment the needed resources and project investments.

3 Research methodology

This section describes methods we have used to collect and analyze research data. We used quality methods in form case analysis for collecting empirical data. The quality research methods are used in order to obtain deeper insight into situation context and take into account a great major of influencing factors. According to other researcher [30] firstly, study in IS development is highly context specific, secondly, EAM praxis supports the strategy execution that is always unique for a company. At the same time, decision making process within SMG is taking by individuals, who behavior frequently are influenced by numerous factors, sometimes irrational, like power-hierarchical structure, person's soft-skills and personal loyalty to individuals [11, 15, 26].

We used cases on both public and private businesses to collect research data. Using cases from different types of companies enabled us to facilitate data towards finding features of decision making process in different contexts. Furthermore, we used grounded theory methodology at the stage of data analyses in order to review collecting data [10].

3.1 Case Organizations

The first organization in our research is a Russian Sales Unit (SU) of one Multinational Corporates (MNC) providing services and products for the metal cutting industry. The main activities of the SU is direct-to-customer and per intermediaries sales and distribution of metal cutting tools. The company business model provides complex services to logistic production support, but the main goal of MNC is to conquer the market share of cutting tools their brands. Figure 1 present the SU organizational structure, modeled with the EA modelling language ArchiMate. The staff members are 5 Service Engineer designing special customer solution, 20 Sales Engineers promoting standard catalog's solutions, 4 Internal Sales Assistants responsible for Order-to-Delivery process, 3 Accounting Employees, one HR-Specialist, one Marketing Communication Specialist and one Market Manager. The MNC group operates in global SAP ERP/CRM environment.
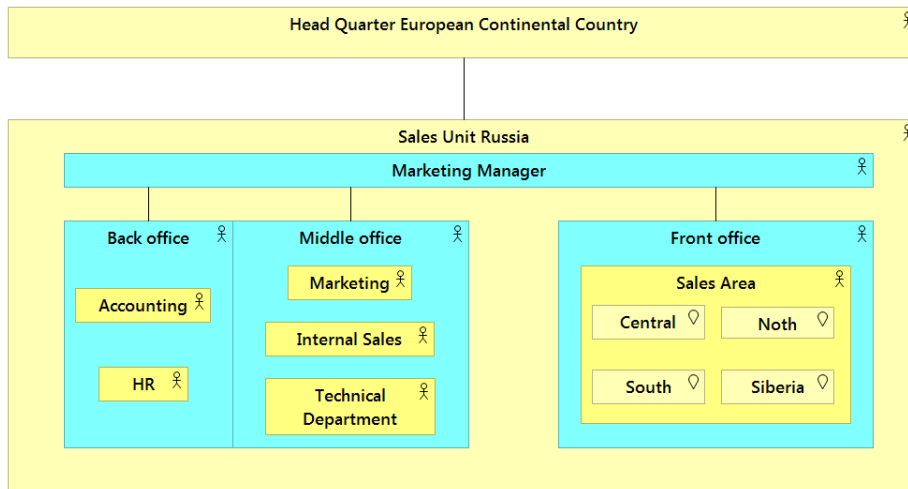
Fig. 1. Study Organization 1. Sales Unit Organization Structure

The second case-study organization is the St. Petersburg Metro State Unitary Enterprise – nonprofit organization with government support. Metro main function is to provide underground public transport service. Enterprise sees its mission in providing mobility with minimal transportation costs, meanwhile meeting safety requirements and accessibility for citizens and city guests. In year 2017, the Metro system consisted of 67 stations More than 1,600 train cars on five lines transport 2.3 million St. Petersburg residents and city guests a day. The enterprise has state budged support, which is reassessed each year. The number of employees includes 15,000 individuals; the organization structure is matrix [1].

3.2 Data collection

We collected data from different resources: documents, observation and interviews. The data collection process started with the interviews the company representatives. We asked managers and business process owners that had authority for decision-making in EAP. In particular their responsibilities cover tactic, operating, budgeting and controlling levels.

During interviews with organizations, among others, the following questions were asked.

– What was the nature of occurred business issue?
– What is your opinion, what part of them could be solved through IT support?
– How did you determine and discuss possible solutions?
– How did you predict and evaluate decisions outcomes?

In parallel with interviewing we got access to internal project documentation incl. mails, meeting protocols, project execution plans.

3.3 Data analyze

After interviewing results were noted and summarized, we decided to discuss them together with representatives of two IT-consulting agencies, which are partners of our Graduate School. At this stage we used grounded theory methodology to review the case study problems.

To collect and analyze data we conducted a total of 4 interviews with 4 head departments and 5 consultants from two agencies. Hence, we propose that the resulting decision making features that we are highlighting in the next section are generalizable to other not only considered organizations.

4 Results

The summary of data analyze are provided in Table 1. For each case organization we were asked to work out the problems that are predicted to lead into EA changes and necessity to conduct EAP. Each EAP required a board of stakeholders to discuss issues and possible solutions. The table presents the data in time order, that means that first business issue (problem) occurs that should be analyze in context (problem background) and discuss enterprise-wide (involving departments). Despite we organized information collection in order followed by discussion and decision making logic, the distance between events is out of scope in our research.

Case 1. Private profit business. In first business organization the department that faced problem was the Sales Area department, the first contact person (Front office) to customer. The problem in SU occurs from external driver: some customers were unsatisfied with delivery time. The business process owner responsible for Order-to-Delivery process couldn't affect the delivery time of standard products locally (problem background), because the storage was located in European country and delivery were globally arranged by a Distribution Center (DC).

Possible solutions in this case were a delegation the planning stock function to the local Sales Unit level. A question arises – where should the stock physically be located, either in Russia or DC (level of realization)? As it was mentioned earlier the SU doesn't have any local IT support, therefore Market Manager next discussed possible solutions with the Head Quarter (HQ). For both scenarios the new function and process should be delegated and integrated at the local SU level

The global IT department is in charge of maintaining the whole IT infrastructure (incl. IS functionality, Service Desk Support) for Multinational Corporation, the current IT strategy is to integrate all type of activities of remote Units (production plans, DCs, SU, R&D) in SAP CIS with minimal level of local customization.

Table 1. Decision-making context of EA changes. Discussion towards EAP within SMG.

	Case 1st Private profit business	Case 2nd Public non-profit Enterprise
Problem	Sales Subsidiary of production MNC, sales and distribution of metal cutting tools. Some items aren't able on stock, when Customers order them as urgent. The delivery time increase unpredictably.	St. Petersburg Metro State Unitary Enterprise Accounting of the compressed air consumption is inaccurate. One must to get budgetary subsidies is to provide the precise costs calculation for coming year.
Problem background	Stock planning is on responsibility of Distribution Center (DC) that covers the demand of whole European Region. Sales Units don't plan stock and don't have a function on replenishment and demand planning as a rule.	The business process "Provision of compressed air" is supported by several IS, existing data exchange model doesn't cover all systems.
IT and IS infrastructure	Global SAP, IT department is also responsible for Systems Customization	Local Solutions based on SAP, and individual self-development Systems.
Involved Department (Actor) – Role in context	1) Manager of Internal Sales Department – *Order-to-Delivery business process owner* 2) Area Sales Manager – *the Central Russia Sales development Manager* 3) Financial Officer – *Controlling and budgeting, Risk Management* 4) Market Manager – *Global MNC strategy execution at Russian Region level*	1) Planning and Accounting – *Demand planning* 3) Production and Technical department – *Producing and Technical trouble Shooting* 4) Financial department – *Accounting and budgeting, controlling, Risk Management* 5) IT department – *IT Maintenance and User support* 6) Security department – *Data security, Safety and legality regulations observe*
Possible Solution	Delegate planning functions to Sales Unit level in the ways: *1st scenario* Build/Outsource Storage and maintain local stock *2nd scenario* Maintain hold stock for Russian region at DC	Different level of automatization *1st scenario* Automate data exchange model between accounting and production systems; *2nd scenario* full one platform process realization, implementation EAM practice.
Level of solution realization in EA context depending on chosen scenario	*Head level* DC and IT departments: Create physical stock and organize inventory accounting (2nd scenario); IT department: Integrate the demand planning process at the Sales Unit Level in existing ERP System (both scenarios); IT department: Provide necessary instructions to key user. *Local level*: Internal Sales Department: Analyze the necessary of creation an additional role to execute demand planning process (both scenarios); Financial Officer: Consider influences on all associated functions and processes: accounting, resources, legalcy (1st scenario); Internal Sales Department: Provide instructions/ training of users on the new application (both scenarios)	*Metro Enterprise level* IT department:, asses IT changes, Coordinate the EAP (both scenarios), Develop IT Strategy (2nd scenario); Finance: Resource investment, Compliance management (2nd scenario); Security department: Security and vulnerability assessment, risk assessment (non-financial) (2nd scenario); *"Provision of compressed air" process level* Planning and Accounting, Production and Technical departments: use the new IT Infrastructure (both scenarios); segregation of duties.

At the moment we conducted interviews (July 2016 – November 2016) SU were at the stage of discussing solutions and their realization with IT-department. For SU it becomes clear that the requests about delegation the planning function to the local level and IS customization are complicated and this stays in conflict with global IT-strategy. The necessity to implement local business process localization is supposed to be demonstrated and substantiated.

Case 2. Public non-profit Enterprise. In second Enterprise the problem occurs when the Planning and Accounting department was asked to provide the Government authorities about the needed amount of budgetary subsidies for the "Provision of compressed air" process for coming years. The Metro public transport in Russia is supported by Government budget and one of the conditions to get them is to provide documents with accurate plan of needed resources. Manager of Planning and Accounting department needed information that supports his\hers in meeting decision on demand forecast for coming year. The problem occurs from internal driver: "Provision of compressed air" process was supported by several ISs (Production, Distribution, Accounting, Procurement), and exchange data model didn't cover all systems (problem background), the data were delivered to related departments manually. This leaded to loss and distortion of actual information about estimated volume and cost of compressed air production and consumption.

According to Business Reengineering Project Results several solutions we present. Differences between them were the level of automatization – from local data exchange model automatization to full technological data exchange integration. In second scenario the integration of whole process for one platform in fact is connected with necessity to start EAM practices implementation and IT Strategy development, as the role of IS will increase significantly. Among questions to be answered are: What of IT Suppliers is to choose, How much resources do we need to design, implementation, support and modernization of new solution, will we in line with Government strategy, will we get Government Support and under what conditions? Will the new solution ensure our Strategy?

5   Discussion

Within our case study we were focusing on analyze decision-making process within SMG, members of which have power to influence decision taking. Based on case study results we identified two classes of conflicts may arise during decision making process on EAP: one, *global-local* conflict and other *the same level conflict.*

Global-local conflict. In case of global MNC acting worldwide conflicting interests are presented between IT department HQ level and local SU business. IT department is interested in standardization and aggregation all processes globally, at the same time SU is faced the external problem and it requires the delegation the planning function to the local level. While the SU is more interesting in having

some tools for planning and replenishment function at remote physical storage location (DC) merely by implementing new function in ERP-system, the global IT-department wish this problem to be solved on the local SU level manually without any changes in global IS practice. IT department in MNC strive for duplication Standard Solutions as a means of controlling cost and complexity. Any localization of business processes is undesirable.

In case of St. Metro public organization any changes in software and technological infrastructure that were suggested according to the results of Business Reengineering Project must be approved by Compliance committee, since St. Metro belong to strategic object of the Russian Federation. In case the Metro Enterprise decides to invest in creating EAM practice, the role of IT function will modify organization power structure accordingly. In spite it unnecessary will lead to conflict department arises, Compliance committee might stand in contradiction to Managers expectation of Systems Solution by force them to buy licenses by limited number of IT vendors in order to support small and medium Russian business.

The same level conflict. Another type of conflict occurs between managers of different functional areas on the same local level.

The motives include:

– Users and process owners operate in global information environment and changes in one process/function/domain or unit can cause changes in process of other departments;
– Changes in EA might influence segregation of duties, transparency of processes and creating new Cost Centers;
– Reaction of human behavior to any changes is often resistant;
– Project execution require resources that are as a rule limited and especially in project work intent to be increasing during project execution. Return of IT investment is considered as low.

6   Conclusions

This study provides concrete insights into decision making process about changes in EA and necessity to execute EAP. We contribute to the understanding of conflicts occurring during solutions discussions within SMG before EAP starting by qualitative analyze of cases from a MNC and a non-profit Enterprise going beyond EA literature state so far.

The major finding is two levels of conflicting interests (global-local level and the same level conflicts);

One way to harmonize conflicting situations determined by differences in drivers of decision-makers during discussion EAP outcomes is to consider this process from game theory perspectives [7, 17, 34]. The game theoretical implementation in EA has been recently in work [4]. The purpose of our further study is to provide a tool for scholars and practitioners for harmonizing EAP decision making process and its potential conflict from different managers' perspectives.

The unity and clearly understanding of goals and metrics of evaluation EA contribution in SMG will lead to effective collaboration between EAP participants. This finally will enhance results of requirement engineering as well as EAP on whole.

References

1. Official site of St. Petersburg metro. http://www.metro.spb.ru/en/metro.html
2. The open group architecture framework version 8.1.1, enterprise edition (TOGAF 9.1). The Open Group (2011)
3. Architecture project management. how to manage an architecture project using the TOGAF framework and mainstream project management methods. The Open Group. A White Paper. (2016)
4. Abraham, R., Aier, S.: Architectural coordination of transformation: Implications from game theory. In: Rahman, H., Mesquita, A., Ramos, I., Pernici, B. (eds.) Knowledge and Technologies in Innovative Information Systems: Proceedings of 7th Mediterranean Conference on Information Systems (MCIS 2012). pp. 82–96. Springer, Berlin, Heidelberg (Sep 2012)
5. van den Berg, M., van Vliet, H.: The decision-making context influences the role of the enterprise architect. 2016 IEEE 20th International Enterprise Distributed Object Computing Workshop (EDOCW) pp. 1–8 (2016)
6. Boh, W.F., Yellin, D.: Using enterprise architecture standards in managing information technology. Journal of Management Information Systems 23(3), 163–207 (2006)
7. Branzei, R., Dimitrov, D., Tijs, S.: Models in cooperative game theory. Springer Science & Business Media (2008)
8. Brosius, M., Aier, S.: The impact of enterprise architecture management on design decisions in IS change projects. In: Multikonferenz Wirtschaftsinformatik (MKWI). pp. 1405–1416. Tagungsband Multikonferenz Wirtschaftsinformatik (MKWI), Ilmenau (2016)
9. Donaldson, T., Preston, L.E.: The stakeholder theory of the corporation: Concepts, evidence, and implications. The Academy of Management Review 20(1), 65–91 (1995)
10. Fernández, W.D.: The grounded theory method and case study data in IS research: is-sues and design. Information Systems Foundations Workshop: Constructing and Criticising 1 (2004)
11. Freeman, R.E.: Strategic management: A stakeholder approach. Cambridge University Press (2010)
12. Hirvonen, A., Pulkkinen, M.: Evaluation of enterprise IT architecture solutions: How can an ICT consultant tell what is best for you? In: Management Centre International Limited. Proceedings of the 10th European Conference on Information Technology Evaluation, pp. 327–337. University of Jyvaskyla, Finland (2003)
13. Hirvonen, A.P., Pulkkinen, M.: User participation in consulting projects: Client and provider role variations. In: Proceedings of the 13th European Conference on Information Systems, Information Systems in a Rapidly Changing Economy (ECIS). pp. 140–153. Regensburg, Germany (May 2005)
14. Ilyin, I., Grigoreva, A., Zapivakhin, I.: Architectural solution as a tool for planning and approval of changes in projects for information systems implementation and customization. Biznes informatika-Business informatics 2(40), 68–78 (2017)

15. Jensen, M.C.: Value maximization, stakeholder theory, and the corporate objective function. Journal of Applied Corporate Finance 14(3), 8–21 (2001)
16. Johnson, Pontus, e.a.: A tool for enterprise architecture analysis. EDOC 2007. 11th IEEE International Enterprise Distributed Object Computing Conference (2007)
17. Jørgensen, S., Zaccour, G.: Developments in differential game theory and numerical methods: economic and management applications. Computational Management Science 4(2), 159–181 (2007)
18. Jugel, D., Sandkuhl, K., Zimmermann, A.: Visual analytics in enterprise architecture management: A systematic literature review. In: Abramowicz, W., Alt, R., Franczyk, B. (eds.) Business Information Systems Workshops: BIS 2016 International Workshops, Leipzig, Germany, July 6-8, 2016, Revised Papers, pp. 99–110. Springer International Publishing (2017)
19. Lankhorst, M.: Architecture at Work. Modelling, Communication, and Analysis. Berlin, Germany: Springer-Verlag (2005)
20. Lindström, Å., Johnson, P., Johansson, E., Ekstedt, M., Simonsson, M.: A survey on cio concerns-do enterprise architecture frameworks support them? Information Systems Frontiers 8(2), 81–90 (2006)
21. Nakakawa, A., P.v.B., Proper, H.: Challenges of involving stakeholders when creating enterprise architecture. In: 5th SIKS/BENAIS Conference on Enterprise Information Systems (2010)
22. Niemi, E.I.: Enterprise architecture stakeholders – a holistic view. In: AMCIS 2007 Proceedings (2007)
23. Plataniotis, G., de Kinderen, S., Proper, H.: Ea anamnesis: Towards an approach for enterprise architecture rationalization. In: Proceedings of the 2012 workshop on Domain-specific modeling. pp. 27–32. ACM (10 2012)
24. Plataniotis, G., de Kinderen, S., Proper., H.A.: Relating decisions in enterprise architecture using decision design graphs. In: 2013 17th IEEE International. Enterprise Distributed Object Computing Conference (EDOC) (2013)
25. Plessius, H., Slot, R., Pruijt, L.: On the categorization and measurability of enterprise architecture benefits with the enterprise architecture value framework. Lecture Notes in Business Information Processing 131, 79–92 (2012)
26. Post, J.E., Preston, L.E., Sauter-Sachs, S.: Redefining the corporation: Stakeholder management and organizational wealth. Stanford University Press (2002)
27. van der Raadt, B., Schouten, S., van Vliet, H.: Stakeholder perception of enterprise architecture. In: Morrison, R., Balasubramaniam, D., Falkner, K. (eds.) Software Architecture: Proceedings of Second European Conference (ECSA). pp. 19–34. Springer, Berlin, Heidelberg (Oct 2008)
28. Ross, J.W., Weill, P., Robertson, D.C.: Enterprise architecture as strategy: Creating a foundation for business execution. Harvard Business Press (2006)
29. Roth, S., Hauder, M., Farwick, M., Breu, R., Matthes, F.: Enterprise architecture documentation: Current practices and future directions. In: Wirtschaftsinformatik (2013)
30. Schelp, J., Stutz, M.: A balanced scorecard approach to measure the value of enterprise architecture. In: Lankhorst, M.M., Johnson, P. (eds.) Proceedings of the Second Workshop on Trends in Enterprise Architecture Research (TEAR 2007), June 6 2007, St. Gallen, Switzerland. pp. 5–11. Via Nova Architectura (2007)
31. Smolander, K., Päivärinta, T.: Describing and communicating software architecture in practice: Observations on stakeholders and rationale. In: Pidduck, A.B., Ozsu, M.T., Mylopoulos, J., Woo, C.C. (eds.) Advanced Information Systems Engineering: Proceedings of 14th International Conference, CAiSE 2002. pp. 117–133. Springer, Berlin, Heidelberg (May 2002)

32. Spewak, S., Tiemann, M.: Updating the enterprise architecture planning model. Journal of Enterprise Architecture 2, 11–19 (2006)
33. Spewak, S.H., Hill, S.C.: Enterprise architecture planning: developing a blue-print for data, applications and technology. QED Information Sciences, Inc. (1993)
34. Von Neumann, J., Morgenstern, O.: Theory of games and economic behavior. Princeton university press (2007)
35. Weill, P., Ross, J.W.: IT governance: How top performers manage IT decision rights for superior results. Harvard Business Press (2004)
36. Wißotzki, M., Köpp, C., Stelzer, P.: Rollenkonzepte im enterprise architecture management (2015)
37. Zimmermann, A., Jugel, D., Sandkuhl, K., Schmidt, R., Schweda, C., Möhring, M.: Architectural decision management for digital transformation of products and services. Complex Systems Informatics and Modeling Quarterly (6), 31–53 (2016)