

## Association for Information Systems AIS Electronic Library (AISeL)

MCIS 2011 Proceedings

Mediterranean Conference on Information Systems  
(MCIS)

2011

# APPLYING THE CONCEPT OF BUILDING BLOCKS FOR ENTERPRISE ARCHITECTURE MANAGEMENT SOLUTIONS IN PRACTICE

Ingrid Prem

*Technische Universität München, [prem@in.tum.de](mailto:prem@in.tum.de)*

Ivan Monahov

*Technische Universität München, [monahov@in.tum.de](mailto:monahov@in.tum.de)*

Sabine Buckl

*Technische Universität München, [sabine.buckl@in.tum.de](mailto:sabine.buckl@in.tum.de)*

Florian Matthes

*Technische Universität München, [matthes@in.tum.de](mailto:matthes@in.tum.de)*

Follow this and additional works at: <http://aisel.aisnet.org/mcis2011>

### Recommended Citation

Prem, Ingrid; Monahov, Ivan; Buckl, Sabine; and Matthes, Florian, "APPLYING THE CONCEPT OF BUILDING BLOCKS FOR ENTERPRISE ARCHITECTURE MANAGEMENT SOLUTIONS IN PRACTICE" (2011). *MCIS 2011 Proceedings*. 36.

<http://aisel.aisnet.org/mcis2011/36>

This material is brought to you by the Mediterranean Conference on Information Systems (MCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in MCIS 2011 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# APPLYING THE CONCEPT OF BUILDING BLOCKS FOR ENTERPRISE ARCHITECTURE MANAGEMENT SOLUTIONS IN PRACTICE

Prem, Ingrid, Technische Universität München, Boltzmannstrasse 3, 85748 Garching,  
Germany, prem@in.tum.de

Monahov, Ivan, Technische Universität München, Boltzmannstrasse 3, 85748 Garching,  
Germany, monahov@in.tum.de

Buckl, Sabine, Technische Universität München, Boltzmannstrasse 3, 85748 Garching,  
Germany, sabine.buckl@in.tum.de

Matthes, Florian, Technische Universität München, Boltzmannstrasse 3, 85748 Garching,  
Germany, matthes@in.tum.de

*Enterprise architecture (EA) management has become a generally accepted practice to guide enterprises in their transformations responding to changing environmental factors. Although there is guidance in this field from a variety of EA management approaches that have been developed by scientists, practitioners, standardization bodies, and tool vendors, no commonly accepted reference has yet evolved. The existing approaches are either too abstract to provide implementation guidance or too general by neglecting organization-specific EA-related requirements. The concept of building blocks for enterprise architecture management solutions (BEAMS) provides a development method that enables the design of an organization-specific EA management function including an information model with affiliated EA management processes and visualizations.*

*This paper introduces the concept of BEAMS and illustrates the application of the development method in a case study. Therefore, we identify the stakeholders' goals and concerns and derive an organization-specific information model. This model is complemented with a documentation, maintenance, and communication process and integrated into the existing IT management related processes of the case study participant. Furthermore, stakeholder specific visualization used throughout the EA management processes are developed to facilitate communication between stakeholders. Finally, we discuss the validity of our solution developed with BEAMS and propose future areas of research.*

*Keywords: Enterprise Architecture management, EA management function, building blocks, case study*

# 1 INTRODUCTION

Over the last decade enterprise architecture (EA) management has become a common technique for modern enterprises to respond to changing requirements of business and IT. Thus, the management of the EA has attracted several researches and practitioners that have developed EA management approaches differing highly in their characteristics. The first framework was developed by Zachman (Zachman, 1987), and his idea has inspired many succeeding EA management approaches. The probably most well-known framework for EA management is *The Open Group Architecture Framework* (TOGAF) (The Open Group, 2009). Scientists (cf. Frank, 2002; Hafner/Winter, 2008; Lankhorst, 2005; Ross et al., 2006; Wegmann, 2003), practitioners (cf. Dern, 2006; Keller, 2006; Hanschke, 2010; Niemann, 2005; Schekkmann, 2008), and governmental institutions (cf. DoD, 2009; The Chief Information Officers Council, 1999) add further EA management approaches. Some of the existing approaches provide a holistic and general view on EA management; while others concentrate deeply on specific properties of EA management (Winter et al., 2010). Therefore, an organization, which wants to implement one of the mentioned approaches, can run into difficulties caused by the dichotomy of abstraction levels.

The concept of building blocks for enterprise architecture management solutions (BEAMS) of the Technische Universität München provides a structured approach for designing and evolving an organization-specific EA management function. According to Hafner and Winter (2008) an EA management function is a continuous and iterative management function that needs to be established similar as other enterprise-level management functions, and according to the ISO Standard 42010 an EA is “the fundamental conception of the enterprise in its environment, embodied in its elements, their relationships to each other and to its environment, and the principles guiding its design and evolution” (ISO, 2007). BEAMS relies on these definitions and evolves from the EA management pattern catalogue (Buckl et al., 2008) that documents approximately 120 practice-proven solutions to recurring problems in a specific context by so called EA management patterns. These patterns represent a best-practice basis for the development of BEAMS which designs an organization-specific EA management function from practice-proven building blocks. Thereby, the development method of BEAMS guides the user in selecting, adapting, and integrating the building blocks according to the organizational context of the company. BEAMS can also be combined with other frameworks like TOGAF (Buckl et al., 2011) needing certain input parameters (e.g. goals, concerns, organizational contexts) to develop an EA management function and is open for individual extensions or changes.

In this article we describe the development of an organization-specific EA management function with the concept of BEAMS in practice. Therefore, several workshops and interviews were conducted with the case study participant that resulted in an iterative development of the EA management function according to the development method of BEAMS. Preparing our exposition on how an organization-specific EA management function with BEAMS can be implemented, we describe its theoretical foundation in Section 2. Then, Section 3 introduces the case study participant and details the development and results of the EA management function. Finally, the article is concluded by a critical evaluation and a short outlook in Section 4.

## 2 THEORETICAL FOUNDATION OF BUILDING BLOCKS FOR ENTERPRISE ARCHITECTURE MANAGEMENT SOLUTIONS

The building-block based approach for EA management solutions (BEAMS) provides a *method base* to store best-practice knowledge on method descriptions, called *method building blocks* (MBBs), for EA management. It also provides techniques to foster the organization-specific identification and configuration of MBBs resulting in a comprehensive EA management function. Thereby, a MBB represents a reusable, problem-independent design prescription applicable in a defined context and is organized according to the *EA management activity framework* shown in Figure 1 along the activities *develop & describe*, *communicate & enact* and *analyze & evaluate*. The fourth activity, namely *configure & adapt*, of the framework is a meta-activity for which BEAMS provides an *administration*

*method* as well as a *development method*. The goal of the *administration method* is to maintain and evolve the *method base*. With the *development method* organization-specific EA management functions using MBBs are designed. The following descriptions are taken from (Buckl, 2011).

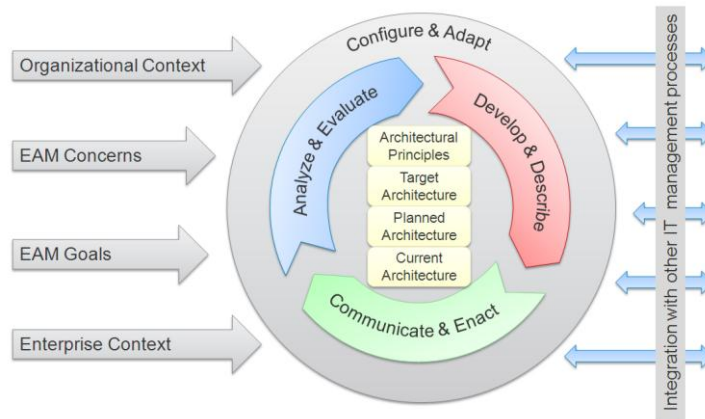


Figure 1. EA management activity framework

**Develop & describe** a state of the EA, either a current state describing the as-is architecture, a planned state, or a target state.

**Communicate & enact** architecture states and principles to EA-relevant projects and to related management functions as project portfolio management.

**Analyze & evaluate** architecture scenarios (planned states) or analyze whether a planned state helps to achieve the target state or not.

**Configure & adapt** the EA management function itself, i.e. decide on the management concerns, goals and methods.

In the four phases of the *development method*, namely *characterize situation*, *configure MBBs*, *analyze EA management function*, and *adapt and evolve EA management function*, an organization-specific EA management function is developed (see Figure 2). The output of each phase of the *development method* is stored in an organization-specific configuration that is iteratively enhanced and contains the selected *problems*, *organizational contexts* and the resulting *EA management function*.

**Problem:** A problem represents the objectives of the EA management function by defining what to achieve. A problem in the area of EA management typically consists of a **goal** representing an abstract objective, e.g. increase homogeneity, increase transparency or improve project execution, and a **concern**, i.e. area of interest in the enterprise, e.g. business support or application systems.

**Organizational context:** The organizational context represents the situation in which the EA management function operates. Factors that are considered in the organizational context are the organizational culture, organization of the IT department, background of the EA management initiative, and tool support for EA management.

**Building block (BB):** The building blocks form the practice-proven solution models to be combined to an organization-specific EA management function. There are two kinds of building blocks, **method building block (MBB)** describing who has to perform which tasks to address a problem in the situated context, and **language building blocks (LBB)** referring to which EA-related information is necessary to perform the tasks and how it can be visualized.

LBBs can be distinguished into two subtypes, namely information building blocks (IBBs) and viewpoint building blocks (VBBs). This paper focuses on MBBs; however, examples of LBBs are in Section 3, and a detailed description of them can be found at (Schweda, 2011).

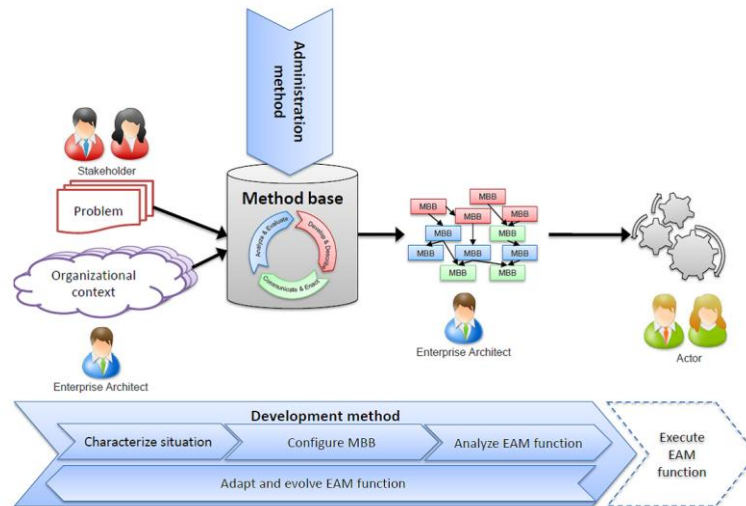


Figure 2. Approach of building blocks for enterprise architecture solutions (Buckl, 2011)

**Characterize situation** is executed by consulting the enterprise architect and other stakeholders of the EA management initiative to determine the organizational context, to identify and operationalize EA-related goals as well as to specify existing information sources. The output is a set of defined organizational context descriptions, an actual problem to be pursued and information on already existing EA-related content. They describe the environment in which the EA management function should be embedded.

**Configure MBBs** takes the organization-specific configuration from the first phase as input and iteratively selects and configures MBBs to address the defined problem. Thereby, four different types of variables, namely trigger, participant, viewpoint and information variables, are determined to develop the organization-specific EA management function.

**Analyze EA management function** analyzes the operational implementability of the EA management function by examining the involvement of stakeholders and actors.

**Adapt and evolve EA management function** measures the performance of the developed EA management function and can cause a redesign of it.

A detailed scientific validation of this approach is conducted at (Buckl et al., 2010). Thereby, based on Pries-Heje and Baskerville a design theory nexus instantiation for an organization-specific EA management function is developed.

### 3 BUILDING BLOCKS FOR ENTERPRISE ARCHITECTURE MANAGENT SOLUTIONS IN PRACTICE

#### 3.1 Case Study Participant and its EA Management Endeavor

The participant of this case study is a non-profit organization under private law in the form of a registered association with the primary goal to promote research at its own institutes performing research in three scientific sections namely chemistry, physics & technology, biology & medicine, and humanities. There are 80 institutes and research facilities, four institutes and one research facility placed abroad employing a total of 13.384 people and additionally over 7.700 guest and junior researchers. For the purpose of advising and supporting its institutes and research facilities the Association of Research Institutes (ARI) has an administrative headquarter in Munich that runs the day-to-day business, supports the organs in preparing and implementing decisions as well as helps the institutes to meet their administrative tasks. The case study participant has decided to introduce EA management with BEAMS, and this chapter describes the development of the EA management function.

The first phase of the *development method*, namely *characterize situation*, determines in its first sub-activity the *organizational context* that can be described in the following way. A *centralized IT department* is situated at the headquarter with approximately 50 employees supporting the IT of the administrative headquarter and advising the institutes in particular IT solutions like collaboration platforms, data storage solutions, or master data management. Since 2010 the position of an enterprise architect has been established to manage the evolution of the historically grown heterogeneous EA as well as to ensure that synergies are used. To accomplish this goal, ARI has decided to start an *EA management pilot project* under the supervision of the enterprise architect who is supported by a technical project manager and can rely on *high-level upper management support*. The pilot initiative should also be used for marketing purposes and illustrate the benefit of EA management. Furthermore, the data of the EA management endeavor is stored in *office tools*, but it is planned to use a hybrid wiki as an EA management tool in the future (Buckl et al., 2009).

The next step of the *development method* is to *identify and operationalize EA-related goals*. Therefore, the enterprise architect browses the catalogue of goals and selects “what” he wants to achieve with EA management. For each goal, the *method base* of BEAMS provides different possibilities how a goal can be pursued and recommends concerns that specify “where” the goal can be applied. Based on the combination of a chosen goal and concern, a problem is defined and an information model is created. An excerpt of the information model of ARI is shown in Figure 5, and the following paragraphs describe the development of the information model through selection and integration of IBBs exemplarily.

ARI has decided to start with the goal *increase transparency* to provide the upper management with an overview on the current state of the EA and to identify gaps and potential areas for improvement in the application landscape. This overview can be used as basis for discussion to approve harmonization projects to adjust the EA. To depict this area of interest, ARI chooses the involved elements in the EA that can be found in the concern *business applications support business processes at organizational units* on which the goal should be applied. Figure 3 shows the selected IBB that is added to the information model.

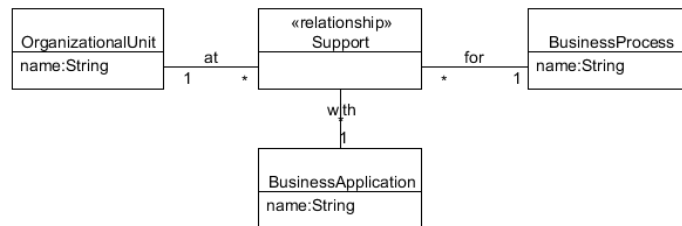


Figure 3. IBB business applications support business processes at organizational units

Furthermore, technical project managers of ARI complain that maintenance costs and the complexity of the EA are increasing. Thus, the enterprise architect selects the goal *increase homogeneity* to reduce costs and complexity via standardization with the concern *basic standardization* and applies it on the concern *business applications use technologies*. Thereby, a *book of standards* is developed which marks a technology either to be standard or not. This is implemented via an attribute *isStandard* in the class *technology*. ARI has decided to start with this concept because it easily characterizes used technologies, before ARI wants to introduce a more sophisticated approach for standardization.

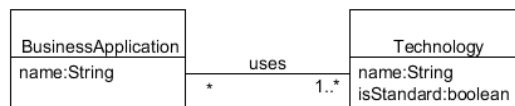


Figure 4. IBB business applications use technologies

Another area of interest where EA management can support business and IT is the complex announcement process of business applications that ARI is requested to do by law. The goal *improve project execution* fosters this intention by adding the *IBB projects introduce, change, and retired architecture elements* to the information model. This IBB helps the enterprise architect and the

technical project managers to track changes and potential effects of those changes in the application landscape caused by projects. Thereby, it is distinguished if business applications are changed, retired, or introduced to the EA. Additionally, the enterprise architect supports the announcement process when the project portfolio management prioritizes projects, and the announcement descriptions is developed with the help of the *target architecture*, the *book of standards*, and the *book of criteria* containing guidelines that the new business application should fulfill like user satisfaction or needed skills.

### 3.2 EA Management Information Model

The generated information model defines the syntax of an organization-specific EA modeling language referring to the selected goals and concerns describing the depicted elements of the EA. It consists of several IBBs representing best-practice solutions, and different IBBs can be combined with each other to a comprehensive information model. A detailed description of how to combine these IBBs can be found at (Schweda, 2011). Due to space limitations Figure 5 illustrates only an excerpt of the information model. Some concepts of it are explained exemplary in the next paragraph.

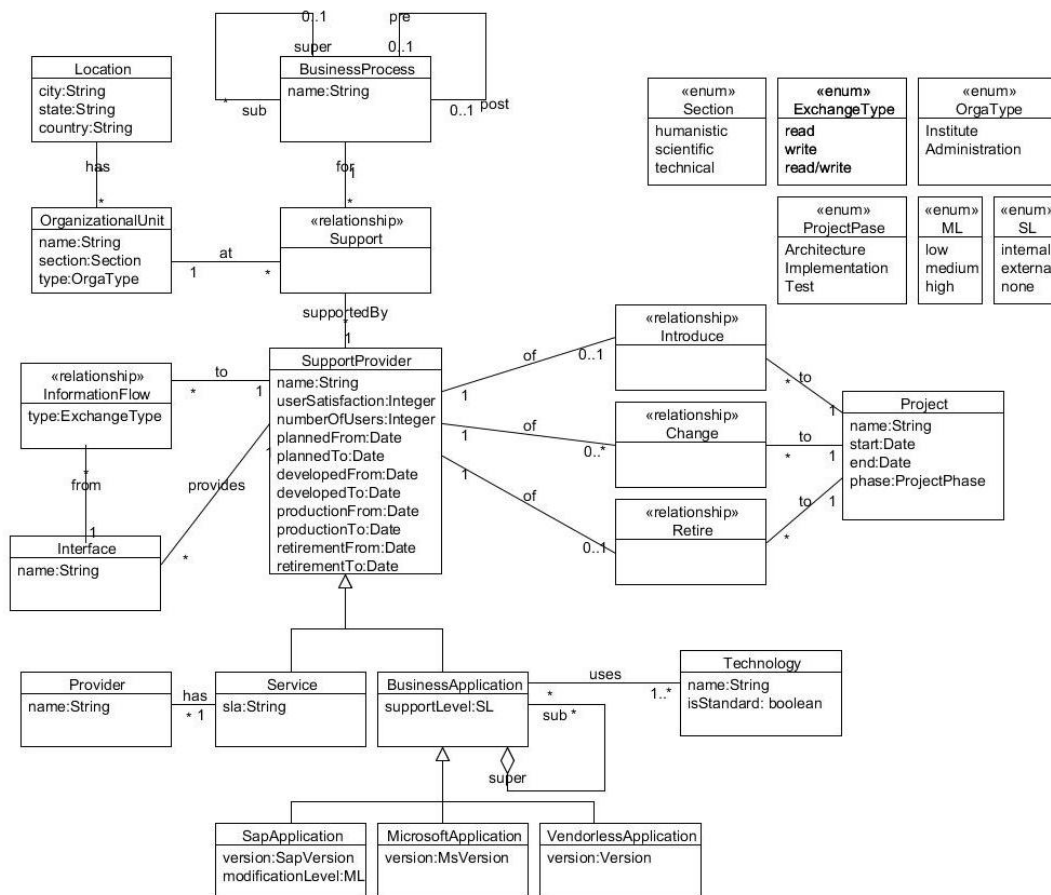


Figure 5. Excerpt of the information model of ARI

The information model uses two different stereotypes. The stereotype <<relationship>> is a hub for different relationship ends that handles one or more simultaneously deployed conceptualization. The ternary relationship *Support*, for example, fosters the analyses about current, planned, and future supports. The stereotype <<enum>> is an enumeration of different characteristics of an attribute.

Firstly, the class *BusinessProcess* is elaborated to describe process sequences and hierarchies. Secondly, *Location* and the attributes *section* and *type* are added to *OrganizationalUnit* because ARI uses different marketing strategies to promote software solutions for the institutes according to their section and type. Thirdly, the class *BusinessProvider* is added between the class *Support* and the class

*BusinessApplication* as a super-class to distinguish between *Services* which are software as a service solutions supplied by an external *Provider* and *BusinessApplication* which are applications hosted by the case study participant. Furthermore, *SupportProvider* is extended with the classes *InformationFlow* and *Interface* to describe information flow exchanges between applications and/or services. As already mentioned above the goal *increase project execution* extends the information model with the classes *Introduce*, *Change*, *Retire*, and *Project*. The attribute *phase* of the class *Project* is thereby a trigger of an EA management process that is performed when a phase changes. Fourthly, the attribute *supportLevel* is added to the class *BusinessApplication* to indicate if an application can be maintained by internal or external employees. In this case this attributes indicates applications that should be replaced. Fifthly, the class *BusinessApplication* is refined into three sub-classes, namely *SapApplication*, *MicrosoftApplication*, and *VendorlessApplication*, to foster a different treatment of the application according to its manufacturer. For *SapApplication*, for example, the modification level is documented to provide information about how much migration effort has to be conducted. Furthermore, the class *SupportProvider* contains attributes that are used by both applications as well as services. The attribute *userSatisfaction*, for example, is gained yearly through survey providing the enterprise architect guidance in the selection of new applications.

### 3.3 EA Management Processes

The information model is complemented with documentation, maintenance, and communication processes that are integrated into the existing IT management related processes of the case study participant describing how the EA information is gathered, analyzed, and communicated. The EA management function is developed in several iterations starting with the activity *configure MBBs* for the goals *increase transparency*, *increase homogeneity*, and *improve project execution*. The first two goals are described through the same EA management processes since they both require documented business applications and corresponding used technologies. Next, we provide a detailed description of the activity *configure & adapt* for these two goals.

The *EA management activity framework* (cf. Section 2) defines for each EA problem a process for documentation and maintenance in the *develop & describe* activity, a process for communicating the results in the *communicate & enact* activity, and an appropriate analysis process in the *analyze & evaluate* activity. In this vein, a typical solution cycle with dedicated pre and post-conditions originates as described in Table 1.

EA management activity	Pre-condition	Post-condition
Develop & describe	-	concern.documented
Communicate & enact	concern.documented	concern.documented, concern.communicated
Analyze & evaluate	concern.documented	concern.documented, goal.documented

Table 1. Typical solution cycle with pre and post-conditions for an EA management function

Further meta-attributes can be added to the cycle, e.g. *consistent* or *approved*. A detailed description of additional meta-attributes and conditions of a MBBs can be found at (Buckl, 2011).

After understanding how the corresponding pre and post-conditions interrelate, applicable MBBs are identified by the enterprise architect according to the selected organizational context. Thereby, the parameters stored in the *organization-specific configuration* from the phase *characterize situation* are used as input to identify applicable MBBs. Then, the enterprise architect has to select one of these MBBs and to add it to the EA management process.

Table 2 shows a list of applicable MBBs with respect to different organizational contexts for the goals *increase transparency* and *increase homogeneity*. Being in the activity *develop & describe*, no pre-conditions have to be full-filled and according to our organizational context four MBBs are applicable to describe the current state of the EA.



Applicable MBBs	EA management pilot	Centralized IT department	Office tools
Describe by interview	X		X
Describe by questionnaire			
Describe by workshop			X
Describe automatically by crawler			
Describe by central repository		X	

Table 2. Applicable MBBs for the goal increase homogeneity

To gather the information about the current application landscape, the enterprise architect decides to use the *MBB describe by interview* (cf. Figure 6) with respect to its description, forces and consequences.

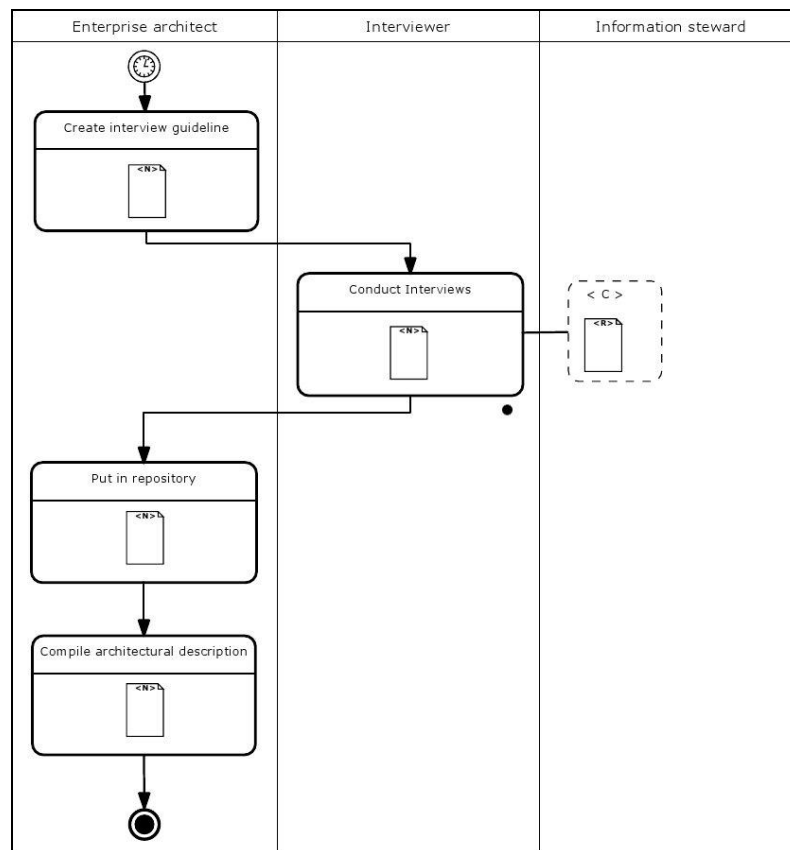


Figure 6. MBB describe by interview

After selecting an appropriate MBB for collecting the data for the underlying information model, three variables still have to be processed. First, trigger variables initiate the execution of a sequence of tasks. In our case, the interviews for collecting the required EA data should be executed *yearly* as shown in Figure 7. Then, the roles *interviewer* and *information steward* (cf. Figure 6) are replaced by the organization-specific role *application owner* as shown in Figure 7.

The enterprise architect continues with the next applicable MBBs until all activities of the EA management function (cf. Table 1) are covered. Table 3 shows a detailed overview of the configured method fragments of the processed goals. The EA management function for the goals *increase transparency & increase homogeneity* shown in Figure 7, contains four EA processes and involves five stakeholders. The first EA process gathers the required EA data yearly, and the application owner evaluates this data till all consistency deviations are detected. The second EA process is the development of the *book of standards* as described in BEAMS. Thereby, a *multi expert evaluation* is performed yearly by the responsible EA experts to develop or update this *book*. Project managers and the upper management are informed by the enterprise architect if the *book of standards* or the *current*

state of the EA has changed. Then, the reported changes have to be acknowledged by the project managers to ensure their commitment. The last process of this EA management function is performed by the enterprise architect who evaluates the EA regarding deviations from the defined standards, and reports his findings to the respective stakeholders. The extension of the EA management function with the goal *improve project execution* can be accessed online at (BEAMS, 2011).

Goal	MBB	Pre-conditions	Post-conditions
Increase transparency & homogeneity	Describe by interview &		concern.current.documented
	Ensure information consistency	concern.current.documented	concern.current.consistent
	Multi expert evaluation		standards.documented
	Publish architectural description &	concern.current.documented, standards documented	concern.current.communicated, standards.communicated
	Request acknowledgement for architecture description	concern.current.communicated, standards.communicated	concern.current.approved, standards.approved
	Pattern based analysis &	concern.current.documented, standards.documented	conformity.documented, goal.documented
Publish report	conformity.documented	conformity.communicated, goal.communicated	

Table 3. Pre and post-conditions of the configured EA management function

After a goal is been operationalized, the enterprise architect can either continue with the operationalization of the next goal or with the next step of the *development method*. In our case, the goal *increase project execution* is operationalized first.

Thereafter, the enterprise architect ensures that every associated stakeholder is informed about the results in the *analyze EA management function* activity. Therefore, the dependencies between information providers and information consumers are analyzed. Thereby, no direct-line-of-control between the enterprise architect and the application owner is identified, however the enterprise architect believes that the organizational impenetrability is still assured due to existing upper management support for the EA management initiative.

The last phase of the *development method* targets the performance of the EA management function. Currently, the EA management function is well-performing, however evolution paths to enhance its maturity level can still be identified, e.g. to enact the results of the pattern-based analyses by the involved stakeholders after these results are been published. According to the findings of the *method base* of BEAMS stakeholders often pay more attention to the results of the EA management function if they have to enact it, e.g. acknowledge the result. Another possible enhancement of the maturity level would be to increase the level of standardization. Currently, standardization is modeled using the concept of *basic standardization*. A higher standardization level can be achieved by using the *IBBs standardization via book of standards* or *standardization by individual prescription*. Furthermore, the task *select project solution* in the EA management process for the goal *increase project execution* could be enhanced by the *MBB multi-expert evaluation* to enable an iterative selection process with a defined stop criterion. Last but not least, an additional enhancement could be achieved by the *MBB aggregate analysis results based on prioritization* to support prioritization for the iterative selection process.

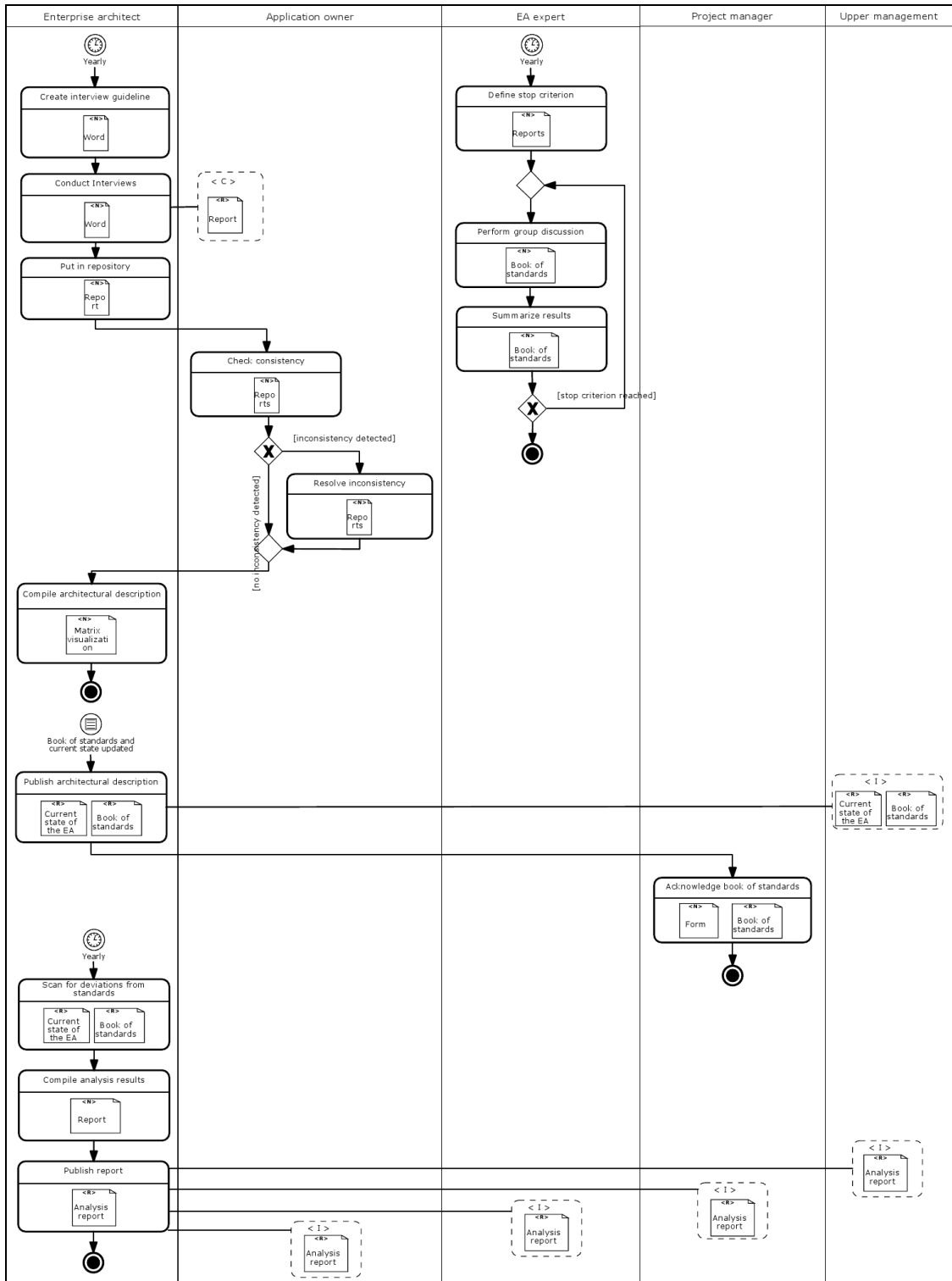


Figure 7. EAM function for the goals increase transparency & increase homogeneity

### 3.4 EA Management Visualizations

Based on stakeholder-specific viewpoints, different EA management visualizations are used at ARI to provide information for discussions and decision-making. According to the introduced goals *increase transparency* and *increase homogeneity* two types of EA visualization using on the data of the underlying information model are used at ARI. The first visualization is a *process support map* relating business processes, organizational units and business applications is employed to visualize which applications are standard conform and which redundancies in the current EA exist. The second visualization is a *pie chart* showing which amount of business applications is standard conform (Schweda, 2011).

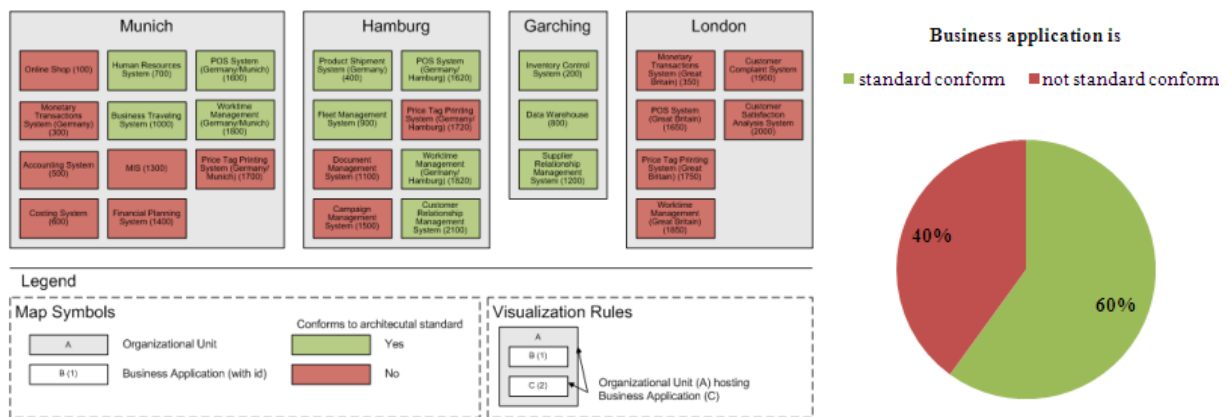


Figure 8. Process support map & pie chart providing showing standard conformity

## 4 CONCLUSION & OUTLOOK

This article describes the first application of the BEAMS approach in practice at an organization situated in the public sector. The method base of BEAMS was utilized to develop an organization-specific EA management function for three goals of the EA management endeavor. Thereby, the building blocks from the method base of BEAMS form over 90 percent of the used artifacts in the EA management function. The remaining artifacts are individual extensions to both the information model as well as the EA management processes. They were necessary because the building blocks of the method base supply primarily solutions for organizations situated in the industry and service sectors. Currently, the case study participant is implementing the developed EA management function by using a wiki-based tool (cf. BEAMS, 2011) and will continue operationalizing further EA goals with BEAMS. In addition, while applying the BEAMS framework at ARI, we identified possible extensions to the meta-model of BEAMS e.g. multiple inheritance and conditions between tasks and involved actors. Thus, further case studies should also evaluate possible extension of the meta-model.

The developed extensions in this work will be proposed as building blocks candidates for the method base. Further case studies in different sectors applying BEAMS in practice have to be performed. The conducted results should be then evaluated regarding new building blocks and sector-specific applications thereof.

## References

BEAMS (2011). Wiki for Building Blocks for Enterprise Architecture Management Solutions. Case studies - Association of Research Institutes. In: <http://www.matthes.in.tum.de/wikis/beams/association-of-research-institutes>.

- Buckl, S. and Ernst, A. and Lankes, J. and Matthes, F. (2008). Enterprise Architecture Management Pattern Catalog (Version 1.0, February 2008). Technical University of Munich, Chair for Informatics 19, Technical Report TB 0801, Munich.
- Buckl, S. and Matthes, F. and Neubert, C.; and Schweda, C. M. (2009). A Wiki-based Approach to Enterprise Architecture Documentation and Analysis. In: 17th European Conference on Information Systems (ECIS2009), Verona, Italy, p. 1476-1487.
- Buckl, S. and Dierl, T. and Matthes, F. and Schweda, C.M. (2010). Building Blocks for Enterprise Architecture Management Solutions. In: Harmsen, F. et al. (editors), Practice-Driven Research on Enterprise Transformation, second working conference, PRET 2010, Delft, Springer, Lecture Notes in Business Information Processing (LNBIP), Vol. 69, 17-46.
- Buckl, S. (2011). Developing Organization-Specific Enterprise Architecture Management Functions Using A Method Base. Doctoral Thesis. Technical University of Munich (to appear).
- Buckl, S. and Dierl, T. and Matthes, F. and Schweda, C.M. (2011): Complementing The Open Group Architecture Framework with Best Practice Solution Building Blocks. In: 44th Hawaii International Conference on System Sciences (HICSS 2011), Kauai, Hawaii.
- Dern, G. (2006). Management von IT-Architekturen – Leitlinien für die Ausrichtung, Planung und Gestaltung von Informationssystemen. Vieweg, 2nd edition.
- DoD (2009). The Department of Defense Architecture Framework (DoDAF), Version 2.0.
- Frank, U. (2002). Multi-Perspective Enterprise Modelling (MEMO) - Conceptual Framework and Modelling Languages. In: Proceedings of the 35th Annual Hawaii International Conference on System Sciences 35, 1258-1267.
- Hafner, M. and Winter, R. (2008). Processes for Enterprise Application Architecture Management. In: Proceedings of the 41st Hawaii International Conference on System Sciences - 2008, 396.
- Hanschke, I. (2010): Strategic IT Management: A Toolkit for Enterprise Architecture Management. Springer, Berlin.
- Pries-Heje, J. and Baskerville, R. (2008). The design theory nexus. MIS Quarterly, 32(4). 731-755.
- ISO (2007): International Organization for Standardization. ISO/IEC 42010:2007 Systems and software engineering - Recommended practice for architectural description of software-intensive systems.
- Keller, W. (2006). IT-Unternehmensarchitektur – Von der Geschäftsstrategie zur optimalen IT-Unterstützung. dpunkt Verlag, Heidelberg.
- Lankhorst, M. (2005). Enterprise Architecture at Work – Modelling, Communication and Analysis. Springer, Heidelberg.
- Niemann, K. D. (2005). Von der Unternehmensarchitektur zur IT-Governance – Bausteine für ein wirksames IT-Management. Vieweg.
- Ross, J.W. and Weill, P. and Robertson, D.C. (2006). Enterprise Architecture as Strategy. Harvard Business School Press, Boston, Massachusetts, USA.
- Schekkerman, J. (2008). Enterprise Architecture Good Practices Guide – How to Manage the Enterprise Architecture Practice. Trafford Publishing, Victoria, Canada.
- Schweda, C. M. (2011). Development of Organization-Specific Enterprise Architecture Modeling Languages Using Building Blocks. Doctoral Thesis. Technical University of Munich. (to appear).
- The Chief Information Officers Council (1999). Federal Enterprise Architecture Framework, Version 1.1.
- The Open Group (2009). TOGAF “Enterprise Edition” Version 9. In: <http://www.togaf.org>.
- Wegmann, A. (2003). On the Systemic Enterprise Architecture Methodology (SEAM). In: Proceedings of the 5th International Conference on Enterprise Information Systems, 483-490.
- Winter, K. and Buckl, S. and Matthes, F. and Schweda, C.M. (2010). Investigating the state-of-the-art in enterprise architecture management method in literature and practice. In: 5th Mediterranean Conference on Information Systems (MCIS2010), paper 90, Tel Aviv.
- Zachman, J. (1987). A framework for information systems architecture. In: IBM Systems Journal, 26 (3), 276-292.