Chapter 5. Using the Business-IT Alignment Model

5.1   INTRODUCTION

The purpose of the previous chapter was to recognize the knowledge embedded in current alignment approaches by inductively creating a Business-IT Alignment Model (BIAM) to answer the second research question, namely:

What model is required to contextualise different business-IT alignment approaches?

The purpose of this chapter is to illustrate the use of BIAM, using two diverse alignment approaches: (1) the Zachman approach, and (2) the Open Group approach. The Zachman approach and Open Group approach were selected for comparison and BIAM-contextualisation, due to their prominence in the market and their difference in emphasis related to the BIAM components. Whereas the Zachman approach emphasises delineation of the alignment *dimensions*, the Open Group approach emphasises the *process* of alignment embedded in an *alignment/design methodology*. In Chapters 7 and 8 a third and fourth alignment approach, (3) the *foundation for execution* approach, and (4) the *essence of operation* approach, are also contextualised and compared.

Sections 5.2 and 5.3 convey the contextualised alignment approaches (contextualising the Zachman Approach and Open Group approach respectively), concluding in section 5.4.

5.2   BIAM AND THE ZACHMAN APPROACH

In this section, the BIAM components delineated in section 4.3 are applied to provide a business-IT alignment contextualisation of the Zachman approach as introduced in section 3.3.1.

5.2.1   Component 1: Alignment belief/paradigm for creating value

In the Zachman approach, the main purpose/value-creating paradigm is to bridge the gap between business people and IT people in communicating effectively. By addressing different *concerns* and *design domains* (see Figure 24 in section 3.3.1, *Audience perspectives* rows and *Classification names* columns in Zachman terminology) the framework ensures that all requirements are addressed. The framework is classified as a "writing system, a planning tool, and a problem-solving tool" (O'Rourke, Fishman, & Selkow, 2003). Zachman maintains that contrary to most other models, his *enterprise ontology* provides a scientific approach in defining *design domains* and *concerns* (Zachman, 2009a, p. 20).

Sidorova & Kappelman (2010) promote the definition of a complete and comprehensive enterprise ontology, but based on a case study by Simons, Kappelman & Zachman (2010) performed at SIL (Summer Institute of Linguistics) International that developed models

according to the Zachman Framework, the Zachman Framework is still just past the proof of concept and prototype stages. Section 8.2 refers to another alignment approach (the *essence of operation* approach) that also sets out to create an *enterprise ontology*.

5.2.2 Component 2: Dimensions

5.2.2.1 Design domains and, concerns & constraints

The Zachman Framework focuses on two BIAM dimensions: *design domains* and, *concerns & constraints* (see Figure 48). The *design domains* consist of six interrogatives (what, how, where, who, when, why), whereas *concerns* of six audiences/stakeholders are defined (executives, business management, architects, engineers, technicians, enterprise). Zachman (2009a) however maintains that the audiences are linked to the process of reification (which is part of the *design process*), i.e. the systematic way of transforming ideas to instantiations. The top three rows represent ideas for design and require transformation into possible technological solutions in row 4 (technology physics). Although not explicitly modelled on the Zachman Framework, row 3 may require the identification of *constraints* prior to selecting a feasible technological solution for row 4 (technology physics) (Giachetti, 2010).
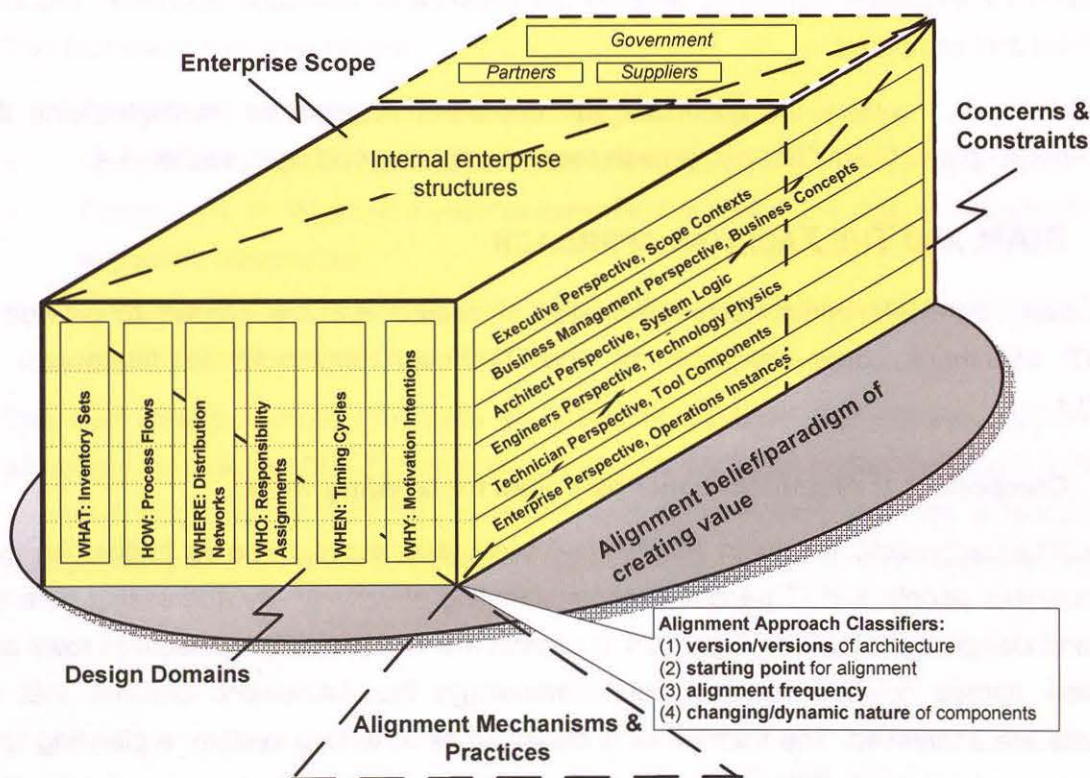

Figure 48: The BIAM contextualization of the Zachman approach

The Zachman Framework implies that the enterprise design team should be able to design each column from scope contexts to operational instantiation/implementation. The question is, could one really design each column (i.e. each Zachman column) separately starting at scope contexts and ending with operational instantiation/implementation? Although possible for the

what column (inventory sets), design for the remaining five columns are challenging (from rows 3 to 6 (Locke, 2009b)). The columns cannot be classified as sub-systems (not every column has *interacting* parts), but do conform to the definition provided by Hoogervorst (2009), i.e. each column is a *system facet* for which *design activities* are required.

The concept of a business domain is not defined in any of the Zachman certification course notes (Locke, 2009a). Locke (the presenter of the Zachman certification course, February 2009) however mentioned that the top three rows roughly cover the concept of business, while the bottom three rows typically represent IT.

5.2.2.2   Enterprise scope

The Zachman Framework is used to do architecture work across the third dimension, *enterprise scope*. The enterprise scope dimension is thus *implied* and defined per cell (36 cells for intersections of rows and columns). Models for *each cell* could be applied enterprise-wide (or a sliver/part-of the enterprise) and on different levels of detail. The Zachman approach provides little guidance on scoping the alignment effort in terms of existing structural entities (e.g business units, departments or projects). The Zachman Framework does allow for alignment of system requirements across different enterprises (e.g. partners, suppliers and government enterprises).

Locke (2009a, p. 34) maintains that if the Zachman Framework defines the three BIAM dimensions, one should be able to define enterprise alignment as follows:

- Alignment for a *design domain* (a single column) is called *vertical integration*, ensuring that no discontinuity exists between the various rows, i.e. ensuring consistency with requirements. *Vertical integration* is a function of the column (Zachman, 2009a).

- Alignment across an area of *concern* (a single row) is called *horizontal integration*, ensuring that no discontinuity exists between different kinds of models from one column to the next. *Horizontal integration* is a function of a row (Zachman, 2009a).

- Alignment across the *enterprise scope* ensures that no discontinuity exists for any one kind of model across the scope of the enterprise. Alignment across the organising scope is a function of a cell (Zachman, 2009a).

5.2.3   Component 3: Alignment mechanisms and practices

Although the Zachman Framework provides an ontology for doing alignment work, Zachman (2009a) is not prescriptive about a required set of *alignment mechanisms and practices*. The project team should select an appropriate set of mechanisms and practices (O'Rourke et al., 2003).

The cells (intersections between rows and columns of the Zachman Framework) need to define the primitive building blocks of the enterprise, but many of the cells (especially from the third row, architect perspectives, downwards) only foster an understanding when combined, i.e. creating composite models. The Zachman Framework provides little guidance or examples on

creating primitive models or transforming models from the executive perspective (row 1) to the enterprise perspective (row 6). Zachman (2009a, p. 81) suggests that one starts design efforts on the columns *what*, *where* and *why*, not providing any rationale for this approach.

Although not part of the Zachman Framework, Zachman offers a Zachman Professions Framework that specifies a *governance model* for establishing governance capabilities within an enterprise (Locke, 2009a).

5.2.4 Component 4: Alignment approach classifiers

The Zachman Framework does not enforce the development of a certain *version* (current or future state) of architecture, nor does it prescribe the *starting point* for alignment (e.g. top down or bottom-up). The Zachman Framework suggests that one should be able to address the *dynamic nature* of the socio-technical enterprise by *continuously* creating, updating and re-using primitive models as new requirements emerge.

5.2.5 Conclusion: BIAM and Zachman approach

To conclude, a BIAM-contextualisation of the Zachman approach contextualised the Zachman approach in terms of the four main components of the BIAM (Figure 45 in section 4.3.2, Components 1 to 4). The contextualisation highlights the focus of the Zachman approach in delineating the three dimensions of the BIAM (Figure 45 section 4.3.2, Component 2) and its main deficiency in stipulating appropriate *alignment mechanisms and practices* (Figure 45 section 4.3.2, Component 3).

5.3 BIAM AND THE OPEN GROUP APPROACH

This section applies the BIAM components delineated in section 4.3 to provide a business-IT alignment contextualisation of the Open Group approach as represented in TOGAF, as introduced in section 3.3.2.

5.3.1 Component 1: Alignment belief/paradigm for creating value

The Open Group (2009, p. 6) states that the purpose of enterprise architecture "is to optimise across the enterprise the often fragmented legacy of processes (both manual and automated) into an integrated environment that is responsive to change and supportive of the delivery of the business strategy".

5.3.2 Component 2: Dimensions

With regard to the BIAM *design domains*, TOGAF divides an enterprise into four *design domains* (business, application, data, and technology) (see Figure 49).

Although TOGAF does not explicitly define a separate set of BIAM *concerns*, TOGAF mentions the importance of defining different stakeholder concerns during some of the ADM (architecture development method) phases. TOGAF requires definition of both enterprise-wide *constraints*

and project-specific *constraints.* Phase E (opportunities and solutions) of the ADM also determines business *constraints* for solution implementation.

TOGAF provides guidance on *scoping* EA effort during the TOGAF ADM preliminary phase. The ADM primarily focuses on alignment within the boundaries of the enterprise, rather than extending to external parties such as suppliers and partners. Figure 49 (yellow-shaded part) indicates the intended scope of alignment in using the Open Group approach.
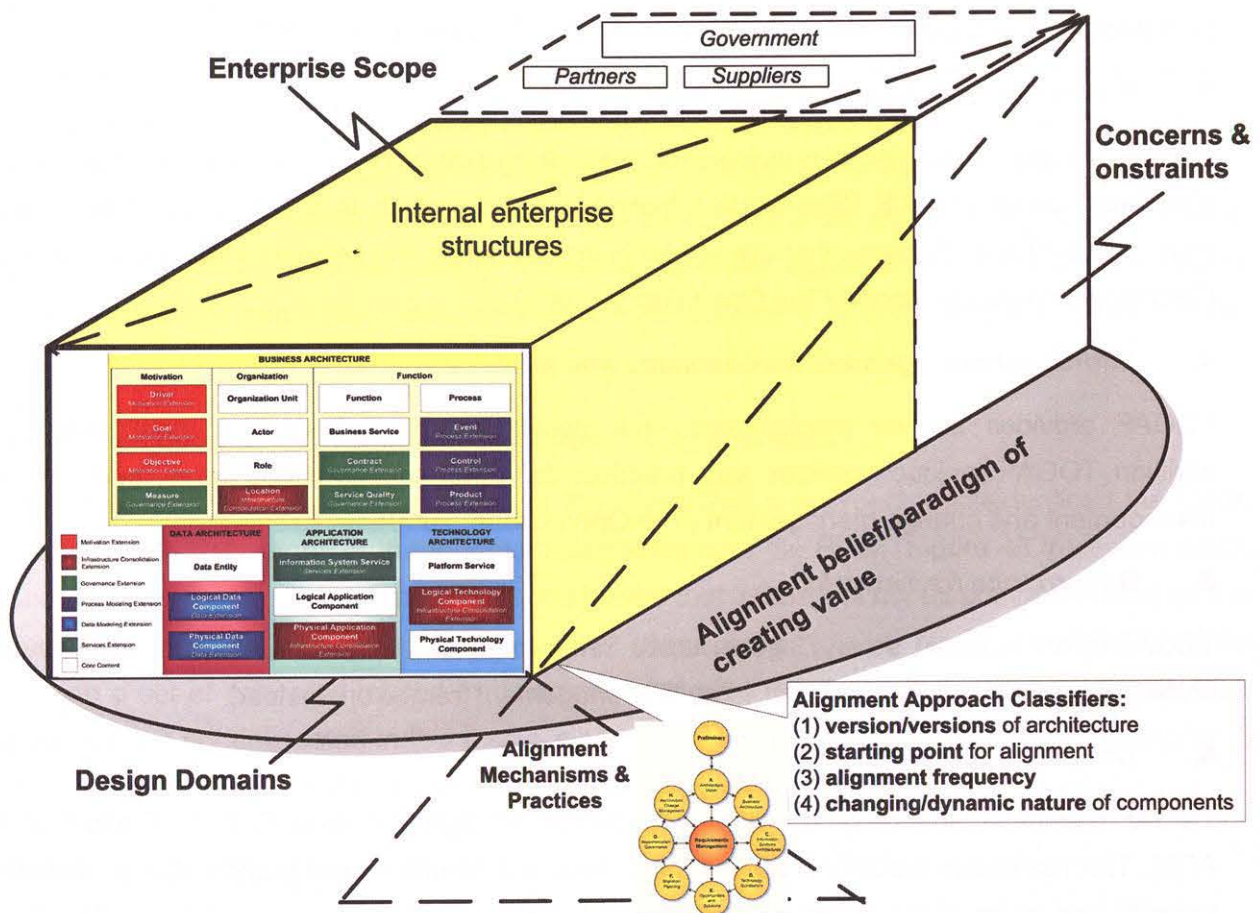

Figure 49: A BIAM contextualization of the Open Group approach

5.3.3   Component 3: Alignment mechanisms and practices

TOGAF provides numerous *alignment mechanisms and practices.*

1.   *Architecture description and reference models*

The content metamodel of TOGAF (see Figure 29, discussed in section 3.3.2) is a work product that expresses the architecture of an enterprise. Some criticise the design domains of TOGAF as not being aligned to that of the Zachman Framework (Giachetti, 2010). Unfortunately the Zachman Framework has its own restrictions and is still in its proof-of-concept phase (Sidorova & Kappelman, 2010). Although not within the scope of the thesis, the architecture description standard ISO/IEC/IEEE 42010 (ISO/IEC JTC 1/SC 7 committee, 2011) may serve as another quality measurement tool for evaluating the content metamodel.

The TRM and III-RM (reference model for integrated information infrastructure) are *reference models* developed by The Open Group to standardise the technology infrastructure. TOGAF also refers to other reference models developed by other authors, such as e-TOM (enhanced telecom operations map) (The Open Group, 2009).

2.   *Alignment/design methodologies*

TOGAF provides a nine-phased *methodology* for architecture development, called the ADM (architecture development method) (see Figure 27) (The Open Group, 2009).

3.   *Principles and standards*

TOGAF provides examples of *principles* for every *design domain*. TOGAF also includes a set of *standards*, called the SIB (Standards Information Base), which is a catalogue of technology standards and specifications that are useful in implementing the services identified in the TRM (Technical Reference Model) (The Open Group, 2009).

4.   *Additional management mechanisms and practices*

TOGAF provides several mechanisms and practices within architecture management. In addition TOGAF includes policies and practices for other management areas, such as risk management and change management (The Open Group, 2009).

5.   *Governance frameworks*

TOGAF refers to CobiT as an IT governance framework (The Open Group, 2009). Hoogervorst (2009) however reasons that CobiT is an IT *management* framework instead.

6.   *Transformation roadmaps*

TOGAF provides guidance on developing roadmaps throughout phases B, C, D, E and F of the ADM. The roadmaps typically include project lists, a time-oriented migration plan to delineate benefits and costs of the migration options, and implementation recommendations (The Open Group, 2009).

7.   *Analyses (e.g. gaps/impact)*

TOGAF includes *gap analyses* for phases B, C and D of the ADM. Phase E (opportunities and solutions) consolidate the gap analyses results into a set of solutions. Although TOGAF mentions the use of impact analyses, practical guidance is limited (The Open Group, 2009).

8.   *Maturity models*

TOGAF mentions several maturity models, detailing the ACMM (Architecture Capability Maturity Model) developed by the US Department of Commerce (The Open Group, 2009).

9.   *Skills/learning requirements*

TOGAF provides an EA skills framework to define sets of generic skills, business skills and methods, enterprise architecture skills, program and project management skills, IT general knowledge skills, technical IT skills, and legal environment skills. Different skill levels (level 1 to

4) per skill, apply for different architecture roles (e.g. architecture board member, architecture sponsor, EA manager etc.) (The Open Group, 2009).

10. Software tools and/or guidance

TOGAF provides evaluation criteria and guidelines choosing automated tools (The Open Group, 2009).

5.3.4   Component 4: Alignment approach classifiers

In terms of *alignment approach classifiers*, the Open Group states that adherence to an iterative ADM, which includes a requirements management phase, would ensure *continuous alignment* between different architecture abstraction layers, addressing the *dynamic nature* of a socio-technical enterprise. However, the gap analysis performed could also lead to *periodic* rip-and-replace initiatives. The methodology follows a *top-down approach* in terms of architecture development and alignment, and promotes the development of both current and future state architectural models (The Open Group, 2009).

5.3.5   Conclusion: BIAM and the Open Group approach

To conclude, a BIAM-contextualisation of the Open Group approach contextualised the Open Group approach in terms of the four main components of the BIAM (Figure 45 in section 4.3.2, Components 1 to 4). The contextualisation showed that TOGAF is not as comprehensive as the Zachman approach in defining Component 1 (three panes of the block), i.e. TOGAF does provide a set of *concerns* related to different stakeholder groups. Other deficiencies may also exist, but are not delineated in this thesis, since TOGAF is not applied in Part C of this thesis. A critical evaluation of TOGAF is provided by Dietz & Hoogervorst (2010).

5.4   CONCLUSION

In this chapter, the BIAM (constructed and delineated in Chapter 4) was applied to contextualise two approaches: (1) the Zachman approach, and (2) the Open Group approach.

The contextualisation of the two approaches (Zachman approach and the Open Group approach) in terms of the BIAM provides strong evidence that the BIAM is useful in providing a common business-IT alignment contextualisation. The BIAM-contextualisation not only highlighted the differences between various alignment approaches, but also creates the opportunity to combine elements from different alignment approaches. Part C of this thesis (Chapters 7 and 8), provides another two BIAM-contextualisations for two approaches: (1) the *foundation for execution* approach, and (2) the *essence of operation* approach. The BIAM is used to highlight deficiencies inherent in using the operating model (OM), which is part of the *foundation for execution* approach and subsequently address some of the deficiencies by using the interaction model (IAM), which is part of the *essence of operation* approach.

The contextualised approaches highlighted the foci of the different approaches in terms of the four BIAM components: (1) the *alignment belief/paradigm of creating value,* (2) three alignment

dimensions to define the scope of alignment, (3) supporting *alignment mechanisms and practices* to ensure alignment across the alignment dimensions, and (4) *alignment approach classifiers* that influences the selection of appropriate alignment mechanisms and practices.

Part C of this thesis (Chapters 7 and 8), provides another two BIAM-contextualisations for two approaches: (1) the *foundation for execution* approach, and (2) the *essence of operation* approach.