Chapter III

Model-Supported Alignment of Information Systems Architecture

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ABSTRACT

The chapter presents an alignment framework and an associated representation framework for information systems (IS) architecture management. The alignment framework supports identification of high-level longer-term principles for evolution of IS architectures. The fundamental idea of the alignment framework is to generate alternative future IS architectures by grouping IS-architecture phenomena into IS-architecture areas in different ways. The representation framework supports the creation of IS-architecture models that can support IS-architecture alignment and other IS-architecture management tasks. In addition, the representation framework is a conceptual model for thinking about IS-architectures. Together, the alignment and representation frameworks constitute an early theory of IS architectures and IS-architecture work. They are part of a comprehensive methodology that results from several years of case and theory studies, tool developments, industrial projects and consulting.

INTRODUCTION

Contemporary enterprises have numerous computer-based information systems (ISs). Each IS consists of one or more applications and other software

systems, which often include one or more databases. Related in several ways, ISs exchange data, store the same kinds of data, support the same kinds of operations and so on. When the entirety of information systems in an enterprise and the relationships between them are managed improperly, or altogether ignored, problems occur. IS architecture, therefore, must be recognised and managed as a singular phenomenon. Andersen and Opdahl (1996) define IS architecture as "the set of computerised ISs in an enterprise, as well as the computerised communication paths between them. In a wider sense, [IS architectures are] also related to human information systems and communication, as well as infrastructural and organisational issues." This chapter presents two important elements of a methodology for IS-architecture work: frameworks both for IS-architecture alignment and for representing IS architectures.

IS-architecture work seeks to realise a satisficing long-term IS architecture for an enterprise. On the one hand, to support the enterprise well, the IS architecture must align with the enterprise. On the other hand, to maintain flexibility, it must remain independent from the enterprise's most volatile aspects. The balance between alignment and independence depends on a large number of other IS-architectural considerations. Whereas "alignment" in IS-management literature is often synonymous with "strategic alignment"—alignment with business goals—this chapter takes a broader view of alignment: one that includes alignment with organisational elements such as organisation and process structures, in addition to strategic alignment.

IS architectures and IS-architecture work have been central topics in both IS practice and IS research for several decades. Earlier work include Zachmann's (1978) seminal paper on information architecture; Nolan's (1973, 1977, 1979) *Information Resource Management (IRM)*; industrial methodologies, such as IBM's *Business Systems Planning* (Gillenson & Goldberg, 1984, chapt. 5); Brancheau and Wetherbe (1986); Andersen Consulting's *Method/1* (Flaatten, 1986), as well as its academic methods by Wetherbe and Davis (1983); Vogel and Wetherbe (1984); Leifer (1988); Hugoson's (1986) *Function-Based Systems Structuring (VBS)*; Kiewiet and Stegwee's (1992) clustering approach; Magoulas and Pessi (1991); Petterson and Goldkuhl (1994); Axelsson's (1995) discussion and comparison of IRM and VBS; Axelsson's (1998) process, activity, and component-oriented IS-architecture structuring (PBS & PAKS); Päivärinta (2001); and Päivärinta and Tyrväinen's (2001) work on genres and genre systems in IS-architecture work. Hackney, Burn, and Dhillon (2000) have challenged many of the assumptions underlying current approaches to IS-architecture work.

This chapter presents an alignment framework (section 2) for IS-architecture work, as well as an associated representation framework (section 3). The alignment framework and the representation framework are part of a compre-

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