Chapter 2.1
Strategic Technology Engineering Planning

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ABSTRACT

This chapter presents a methodical strategic technology engineering planning (STEP) approach, to effectively cope with the design complexity in service-oriented architecture and manage the strategic planning of solution development of information systems. This holistic model comprises four modules: Want-Is-Target (WIT) model, Transition and Alignment Grid (TAG), Comprehensive Architecting Process (CAP), and Joint Analysis & Roadmapping (JAR). The characteristics and features of the constituent elements in the STEP model are articulated in great detail. The WIT model defines three stages of architecture states – current, target, and end state. TAG specifies two dimensions for architecture planning, namely current-to-future state transformation and IT-to-Business alignment. CAP presents an overarching method for step-by-step engineering and design in system architecture and portfolio optimization. JAR comprises the best-of-breed strategic analysis techniques, accompanied by a hybrid method with strategy-driven and initiative-driven planning streams. Applying the framework in planning and future trends are also discussed in the context. This overarching framework provides a comprehensive multi-disciplinary approach to conducting strategic and tactical technology planning for both near-term needs and long-term goals.

INTRODUCTION

The e-business models in today's dynamic business world demand increasing flexibility and responsiveness of information systems applications. It becomes mandatory for the information technology (IT) group in an organization to provide a higher level of services and better quality products at a lower cost for the business to compete and succeed in a globalized economy. The reality is

that IT must build more complex, interoperable, scalable, reusable, innovative, forward-thinking, and sustainable technical solutions, to satisfy the ever-growing business needs.

Most large companies like worldwide financial institutions have built, acquired, or purchased virtually hundreds, if not thousands, of IT systems through the years to provide electronic services for external customers and internal staff, resulting in heterogeneous technologies and architectural platforms to satisfy diverse functional requirements from different lines of business. In the banking industry, the business process generally contains different business sectors that address retail, small business, commercial, corporate investment, wealth management, and capital management markets. In particular, services are delivered through a variety of channels. In order to effectively manage the architectural assets and design high-quality IT solutions in such a diverse environment, a highly structured methodology is crucial to achieve an array of goals – separate concerns, divide responsibilities, encapsulate complexity, utilize patterns, leverage best practices, control quality, ensure compliance, and establish operationalization processes.

A majority of today's information system development planning is still ad hoc, manual, subjective, incomprehensive, and error-prone, which inevitably leads to chaotic outcomes and failures in the execution. According to recent surveys, a vast majority of information systems projects are behind schedule, over budget, or canceled. A lack of a systematic framework describing the key design practices and disciplines in the planning of service-oriented information systems is a major cause of this situation.

A new model is proposed in the next section, with more detailed descriptions of the key characteristics and features of the components presented in the section that follows. The subsequent section discusses how to apply the framework in planning, followed by sections on future trends and related work. The chapter is concluded in the last section.

BACKGROUND

Most of the previous architecture planning methods reveal the architectural aspects of a software application to some extent at a fairly high level or from a restricted perspective. A comprehensive approach to architecting the end-to-end information system solutions has become a necessity, calling for a systematic disciplined mechanism. To meet this growing need, a highly structured method is designed in this article to present a comprehensive and holistic view of the core architectural elements, components, knowledge, platforms, planning, and their interrelationships. Design procedures are established accordingly in this methodical approach to facilitate the creation, organization, and management of the architectural assets and solutions at different levels in a large organization.

Design Philosophy

Developing the disciplined mechanism followed a set of key design principles, partly derived from TOGAF (The Open Group, 2008), but significantly modified/expanded to be tailored to the services-oriented development process of information systems.

Business Principles

- *Primacy of principles*: All stakeholders and relevant groups in an organization must follow these principles of technology planning.
- *Maximize benefits*: Maximum benefits will be achieved for the entire organization, rather than individual divisions.
- *Business continuity*: Business operations are not interrupted despite system and process changes.
- *Active engagement*: All stakeholders are actively involved in the process to accomplish business objectives.

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