Chapter IV
Optimizing the ROI of Enterprise Architecture Using Real Options

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ABSTRACT

This chapter illustrates how to optimize the return on investment (ROI) of enterprise architecture. Enterprise architecture is a blueprint for defining the structure and operation of organizations such as local, state, and federal agencies. Done well, enterprise architecture results in leaner and more effective information systems that satisfy organizational goals and objectives. This chapter introduces a suite of simple metrics and models for measuring the ROI of enterprise architecture. This chapter also introduces real options, which is a contemporary approach to measuring ROI. Whereas typical measures tend to underestimate ROI, real options have the ability to unearth business value hidden deep within the economics of investments in enterprise architecture.

OVERVIEW

Enterprise architecture is a comprehensive framework or taxonomy of systems analysis models for aligning organizational strategy with information technology. Strategies are plans to satisfy organizational goals and objectives by competing based on size, cost, variety, speed, quality, uniqueness, or innovation. Information technology refers to the computers, software, and networks used for safely storing, processing, retrieving, and transmitting data and information. John A. Zachman is credited with creating enterprise architecture, though its foundations date back to the early 1900s (Zachman, 1987).

Enterprise architecture has five major layers: (a) scope, (b) business model, (c) system model, (d) technology model, and (e) components as shown in Table 1. The purpose of the layers is to align an organization's strategy with its informa-

tion technology. Two basic assumptions are that a strategy exists and the result is a functioning enterprise. A centralized strategy may not be defined for large organizations (e.g., enterprise of enterprises), though it should be, which makes developing models difficult. Enterprise architects often start building information technology from the bottom up, because they cannot see the relevance of strategy and modeling.

METRICS AND MODELS

The value of enterprise architecture may be measured using seven metrics: (a) costs, (b) benefits, (c) benefit to cost ratio, (d) return on investment, (e) net present value, (f) breakeven point, and (g) real options (Kodukula, 2006; Rico, 2004, 2005, 2006). Costs are the accumulation of expenses, such as labor, training, tools, verification, validation, and compliance or maturity assessment. Benefits are the monetization of increased efficiency, reduced operational costs and personnel numbers, increased customer satisfaction, and consolidated legacy computer systems. Costs and benefits are the basic inputs to benefit to cost ratio, return on investment, net present value, breakeven point, and real options.

COSTS AND BENEFITS

There are also five major classes of costs and benefits for enterprise architecture: (a) financial improvement, (b) constituent services, (c) reduced redundancy, (d) economic development, and (e) fostering democracy (Meskell, 2003). Financial improvements mean reducing the costs of organizations and enhancing revenue collection. Constituent services mean improved service to customers, suppliers, and key stakeholders. Reduced redundancy means consolidating, reducing, or eliminating un-needed legacy computer systems. Economic development means to grow local, state, and federal economies. Finally, fostering democracy may mean offering a consistent level of customer service to all stakeholders, regardless of political affiliation.

RETURN ON INVESTMENT EXAMPLES

Using enterprise architecture for aligning the strategy with the information technology of local, state, and federal agencies, and corporations has measurable return on investment (Meskell,

Table 1. John A. Zachman framework for enterprise architecture

Interrogatives	What?	How?	Where?	Who?	When?	Why?
Product (Form)	**Data** (Entity/Relation)	**Function** (Process/IO)	**Network** (Node/Line)	**Organization** (Agent/Work)	**Schedule** (Event/Cycle)	**Strategy** (End/Means)
Scope (Contextual)	Business Priorities	Business Processes	Business Locations	Business Organizations	Business Cycles	Business Goals
Business Model (Conceptual)	Semantic Model	Process Model	Logistics Model	Workflow Model	Schedule Model	Business Plan
System Model (Logical)	Logical Data Model	Application Architecture	Distributed System Architecture	Human Interface Architecture	Processing Structure	Business Rule Model
Technology Model (Physical)	Physical Data Model	System Design	Technology Architecture	Presentation Architecture	Control Structure	Rule Design
Components (Out-of-Context)	Data Definition	Computer Program	Network Architecture	Security Architecture	Timing Definition	Rule Specification