

DEFINING THE BUSINESS VALUE OF IT

*A simplified methodology for realizing
business benefits from IT investments*



STRATEGIC ENTERPRISE
CONSULTING GROUP

Edward A. Bullen
President
The Strategic Enterprise Consulting Group

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EXECUTIVE SUMMARY

Surveys have listed defining business value of IT as one of the top three issues for CIO's for in recent years. IT spending has risen dramatically over the past decade, yet studies have shown it to be next to impossible to correlate IT spending to traditional business metrics such as ROI or productivity.

Lack of alignment of IT initiatives with business initiatives has become an issue. Improving the internal governance of IT operations is also a topic of concern. The majority of companies do not perform post IT project assessments of the costs and benefits.

Much effort has been put forth to figure out how to overcome current disconnects and develop a model to define the business value of IT. The single key to measuring value of IT is defining a linkage to business goals and imperatives. Models have been introduced that effectively quantify the business benefits of IT. Some propose new metrics to replace traditional business measures. The risk, here, is that the stockholders will not validate these metrics. Other models include complex and, sometimes, subjective elements that limit the broad usage of the model. Availability of pertinent data is a challenge for these models.

A thorough examination of the literature shows that these complex models can be reduced to two key concepts: 1) Enterprise IT Architecture, and 2) Technology Lifecycle Cost Management. IT spending is driven by the enterprise architecture as part of pre-defined business strategies and initiatives. This, coupled with the employment of a risk-adjusted lifecycle cost management methodology to optimize IT costs, provides the desired framework for defining the business value of IT.

It is proposed that the creation and implementation of a formal enterprise IT architecture, coupled with lifecycle cost optimization initiatives, will assure that IT projects will meet a minimum hurdle rate within the business, or, nominally, the recovery of the cost of capital. Such an approach has potential of broad acceptance in defining the business value of information technology.

DISCONNECT BETWEEN IT SPENDING AND ROI AND PRODUCTIVITY

Surveys listing the top CIO issues and the top tech issues show that *defining business value of IT* is a major concern. This concern follows a period of almost unbridled IT spending. In the beginning of this decade, U.S. businesses spent \$664 billion, or almost 47% of all capital spending, on IT. (Bureau of Economic Analysis, December 21, 2001) This was nearly double the spending of the previous decade. While IT spending has declined as a percentage of overall capital spending since a peak in the year 2000, the concern over the connection between IT spending to business value has grown. This is mainly because organizations have had extreme difficulty in correlating IT spending to return on investment (ROI) or productivity.

Pisello and Strassman¹ studied 10,000 public companies and compared IT spending against a multitude of benefits with random results. Performance measures included corporate financial results, economic value add (EVA), return on equity, return on assets, information productivity (ratio of EVA to SG&A). The study found that companies that spent more than average on IT and companies that spent less than average on IT were likely to perform equally well. The bottom line was that IT spending alone did not deliver corresponding returns. The numbers showed that there is simply not a correlation between investment in IT and profitability or other key measures of business success.

A related study by the management consultancy, McKinsey², evaluated the impact of IT spending on productivity. The results showed that in 53 of 59 industries, increased spending did not result in a corresponding jump in productivity. McKinsey claims that the relationship between IT and productivity is murky, and that, except in rare cases, IT does not produce dramatic increases in labor productivity.

IT spending without correlated results has been dubbed “the computer paradox.” This term emanated from an observation by MIT Professor, Robert Solow that “... you can see the computer age everywhere but in the productivity statistics.”³

IT spending is generally focused toward achieving operational excellence (i.e. process automation), business enablement (i.e. B2B and EDI), and innovation (i.e. modeling and process optimization), yet the apparent lack of alignment of IT initiatives with business initiatives has become a glaring failure for corporate IT. Marchand and Peppard⁴ have concluded that most IT-enabled business projects are ‘designed to fail’!

Governance is also an issue. A.T. Kearney reports that “although companies believe IT adds value to the business, their planning and governance models do not allow the organization to capture full benefit of their IT investments.”⁵ Some studies have shown that up to 80% of IT projects are not monitored against original projected benefits for validation. A Gartner Group survey found that almost every company does a formal pre-assessment of IT project costs and benefits yet only 13% of companies do a post-assessment of the costs and benefits of all of their projects and 10% percent never do post-assessments. No wonder that IT spending is considered a necessary evil rather than a value add by business unit managers. Defining the Business Value of IT

¹ Pisello, T. and Strassman, P., *IT Value Chain Management – Maximizing the ROI from IT Investments*, The Information Economics Press, 2001

² Cho, M.M. and Neiman, B., “*Computers, Why the Party is Over.*” The McKinsey Quarterly, 2002 Number 1.

³ Solow, Robert M., *We’d Better Watch Out*, The New York Times Book Review of *The Myth of the Post-Industrial Economy*, July 12, 1987

⁴ Marchand and Peppard, *Designed to Fail: Why IT Projects Underachieve and What to do About IT*, California Management Review November 2009

⁵ *The Road to Business Value – An Integrated Approach to IT Investment*, A.T. Kearney, 2003

Despite its elusive nature, much effort has been put forth to figure out how to overcome current disconnects and develop a model to define the business value of IT. Peppard, et.al, document a qualitative approach to documenting benefits from IT investments.⁶ They discuss the development of a Business Dependency Network to document the business case for IT investment and the plan for delivering the benefits.

A comprehensive quantitative model, defining the business value of IT, is still desirable. The single key to development of such a model is defining a linkage between IT and business goals and imperatives. This would seem simple enough; however, an additional degree of complexity is introduced by the variety of measurements that can be used to describe the impact of IT on the business.

Unlike classic business processes, the IT impact variables are not static. Particularly, since the advent of the personal computing paradigm, IT impact on the enterprise has become a moving target. This is likely to remain true as we move into the next computing paradigm, Internet Appliances, which introduce the architectural concept of “personal information.”⁷ Technologies related to these paradigms have enhanced information flow efficiencies and improved business-related decision-making, while increasing convenience and control for the end user. Job descriptions have, as a result, broadened to absorb new capabilities, particularly in the areas of communications and data exchange. But, due to the ubiquitous nature the technology, the marketplace has also changed, making simple correlations difficult.

Some have attempted to create a single model to document the business value of IT. Pisello and Strassman propose to extend the traditional ROI analysis to include intangible benefits and risk assessment which would be on an equal footing to the more traditional cost-benefit analysis.⁸ Their proposed methodology includes:

- **Net Tangible Benefits** – Capturing all lifecycle costs, including IT costs and business unit costs.
- **Risk** – Adjusting the discounted cash flows to account for the likelihood and scope of risk in the project. Potential elements of risk include labor resource availability, user acceptance, compatibility, Management commitment of funding, legal and governance issues, etc.
- **Intangible Benefits** – Strategic gains derived from the project (i.e. brand recognition, competitive advantage, intellectual capital, customer satisfaction, etc.)

The strategic advantage of the intangibles is directly related to the establishment of a formal Enterprise Information Architecture. IT spending is driven by the enterprise architecture as part of pre-defined business initiatives.

Gartner, Inc.⁹ developed a methodology called “Total Value of Opportunity” (TVO) to determine the business value of an IT investment. Gartner describes this methodology as “... a metrics-based approach to measuring business performance, [that] includes the important factors of risk, time and conversion effectiveness (an assessment of an organization’s ability to convert projected value into actual business benefit.)” Embodied in this methodology are Gartner’s “Five Pillars of Dynamic Benefits Realization.”

1. **Strategic Alignment** – Weight the importance of midterm/long-term alignment of this initiative to organizational goals
2. **Business Process Impact** – Weight the organization’s requirement to have the capacity to rapidly and radically change business process in line with changing business conditions.

⁶ Joe Peppard, John Ward, and Elizabeth Daniel, Managing the Realization of Benefits From IT Investments, MIS Quarterly Executive Vol. 6 No. 1 / Mar 2007

⁷ Bullen, E., Transitioning to a Mobile Work Environment, IBM White Paper, 2002

⁸ Pisello, T. and Strassman, P., IT Value Chain Management – Maximizing the ROI from IT Investments, The Information Economics Press, 2001

⁹ Apfel, A., The Total Value of Opportunity Approach, , Gartner, Inc. Research Note, Decision Framework, DF-17-0235, 2002

3. **Architecture** – Weight the importance placed on adherence to the organization’s overall IT architecture as a criterion for the achievement of IT value.
4. **Direct Payback** – Weight how important it is to get the direct payback from investments to the organization.
5. **Risk Assessment** – Weight the organization’s tolerance for risk for IT failure.

It is no secret that many companies have challenges in gathering IT process-related metrics. Gathering business-related metrics from IT is doubly challenging. The complexity of the TVO model and the somewhat subjective nature of certain data elements required within the methodology may cause its application to be somewhat limited. How, then, is it possible to draw in all of the various metrics required to define the business value of IT, and yet maintain an element of simplicity that would allow broader participation within the marketplace?

Ultimately, the Gartner model can be boiled down to two key concepts: 1) Enterprise Information Architecture, and 2) Technology Lifecycle Cost Management. This generalization is supported by the literature. An A.T. Kearney study, conducted by Harris Interactive,¹⁰ identified the following elements in managing information technology to create measurable business value: 1) Move beyond IT alignment toward integration business and technology, 2) Manage IT as a portfolio of capabilities – from operational costs to innovative opportunities, 3) Invest in leading-edge, innovative IT as an organizational activity aimed at delivering business value, 4) Integrate measurement into the evaluation and strategic decision-making for IT investments, and 5) Anticipate the next wave of technology and define its impact on business and industries. This would suggest the creation of a formal *Enterprise Information Architecture* to be of great value. Enterprise IT Architecture, discussed in more detail in the next section of this white paper, by definition, links business strategy to IT strategy.

It is, therefore, postulated that the *creation and implementation of a formal Enterprise IT Architecture* coupled with documenting, managing, and then *optimizing Technology Lifecycle Costs* with adjustments for risk, will assure that IT projects will meet a minimum hurdle rate within the business, or, nominally, the recovery of the cost of capital.

IT/ENTERPRISE ARCHITECTURE

Information architecture or enterprise architecture is a collection of principles, models, and standards that define an infrastructure and the information systems required to meet business strategies. IT architecture establishes a distinct linkage between business strategy and IT strategy. As well, IT architecture takes a holistic view of information needs from business requirements to the information technology platform. (See Appendix A)

LIFECYCLE COST OPTIMIZATION

Lifecycle optimization is the determination of the duration of time that an IT product should be deployed within an enterprise coupled with an operating discipline that manages process elements throughout the entire lifecycle. I have developed a lifecycle cost optimization financial model that has been used to determine the optimum life of hardware as well as software.¹¹

The impact of lifecycle costs on the enterprise is quantified in this cost optimization financial model with the following flows:

- Investment Flows: procurement, deployment
- Annual Flows: lease charges, steady-state support, asset management

¹⁰ The Road to Business Value, A.T. Kearney, 2003

¹¹ Bullen, E., End-to-End Lifecycle Cost Management, IBM White Paper, 2001

- Disinvestment Flows: disposal costs, proceeds on disposal, tax on gain

These cost elements are represented in a cash flow format, taking into account the tax shield benefit of depreciation as well as the tax impact of the hardware residual value. The present value of these cash flows is then annualized in order to compare the current processes (“as is”) against the “best practices” model (“to be”). Cost savings are represented on an equivalent uniform annual basis. The lifecycle cost optimization model is based on the concept of equivalence. That is, the financial impact on the enterprise is quantified on a “unit (per seat, MIP, cycle, etc.)” basis.

The Lifecycle Cost Model is useful for business case justification of initiatives such as full or partial asset refreshes, global standards development, and consolidation of end user services such as, help desk, servers, e-mail, and internet/intranet. In addition, this model is useful in making single sourcing and lease versus buy decisions, and in performing brand value comparisons.

RECOMMENDATIONS

In order to take advantage of the simplified framework for defining the business value of IT, the following recommendations are given:

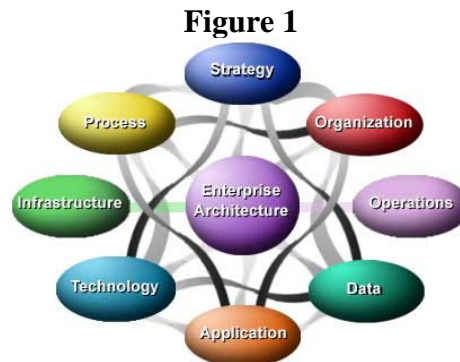
- Establish and Implement a Formalized IT/Enterprise Architecture.
 1. Defines principles, models, and standards for each business unit within the enterprise as umbrella principles, models, and standards for the entire organization
 2. Establishes direct linkage between business units and IT
 3. Identifies strategic advantages for the enterprise that are affected by IT projects
- Establish a structured methodology to quantify the value of “IT-enabled (business) change” – with tangible benefits and within the constraints of affordability and managed risk.¹²
- Establish an IT Project Office
 1. Tests projects for architectural relevance
 2. Collects data on baseline cost picture (“as-is”) and analyzes the “to be” cost environment. This includes assessment of risk, including labor resources, user acceptance, compatibility, vendor issues, management commitment and funding, schedule, market or strategic, legal and governance, organization, dependencies and intangible benefits analysis such as brand advantage, strategic advantage, competitive advantage, intellectual capital, organizational advantage, risk avoidance.
 3. Prioritizes projects based on a) business need, and b) business case (including corporate financial impact)
 4. Gathers and publishes “before” and “after” metrics.
 5. Provides data and input to business unit managers for lifecycle cost optimization

¹² John Thorp, APM Business Management Conference, July 29, 2010, Birmingham, UK

APPENDIX A

ENTERPRISE IT ARCHITECTURE

Information architecture or enterprise architecture (see Figure 1) is a collection of principles, models, and standards that define an infrastructure and the information systems required to meet business strategies. IT architecture establishes a distinct linkage between business strategy and IT strategy. As well, IT architecture takes a holistic view of information needs from business requirements to the information technology platform.



The overall management system requires commitment to disciplined planning, prioritization, development and deployment processes complemented by an agreed-to Architecture Management Process.

Benefits of IT or Enterprise Architecture

The primary benefits of an IT or Enterprise Architecture are to move toward common processes and systems worldwide and to foster communication and coordination of business units with the information technology function.¹³ They are listed as follows:

- **Facilitates planning and decision-making**
 - Use and reuse of common components
 - Utilizes consistent frameworks, blueprints, process models, technology
 - Prevent duplicate data being created/deleted by multiple processes
 - Facilitates a simplified technology infrastructure
 - Impact of changing process or technology can be evaluated
- **Improves time to market**
 - Better identification and clarification of scope at project start
 - Use and reuse of common components
 - Uses a structured approach to management and development
 - Improved communication through a common language (frameworks, blueprints, processes)
- **Improves resource allocation**
 - Assists in preventing process gaps and overlaps
 - Includes allocation of people, time, and money
- **Facilitates continuous improvement**
 - Able to apply any new requirement against process scope
 - Metrics and measurements are designed into the process
- **Facilitates more robust, integrated processes and applications**
 - Provides a clear baseline to facilitate integration
- **Assists prevention of unnecessary organizational role development**

¹³ Enterprise Architecture, IBM Whitepaper, 2004

- Uses consistent roles and relationships

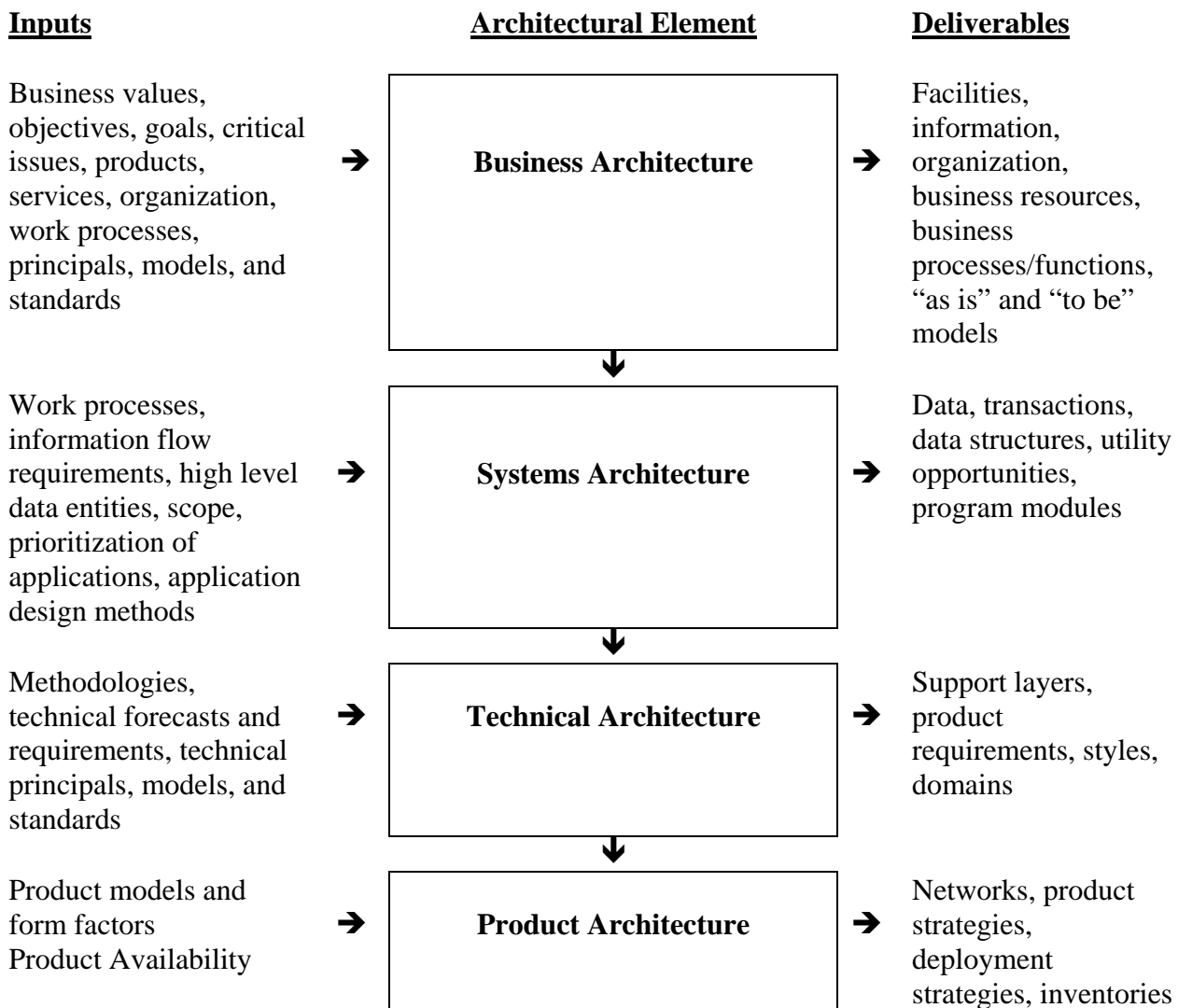
Architecture Framework

The following elements define the architectural framework¹⁴:

- **Business Architecture** – Founded on visions, strategies, and core values of the business. Identifies work processes needed to meet business objectives.
- **Systems Architecture** – Translates the high-level designs into descriptions of sub-processes, applications, and data to be implemented. Identifies priorities for information systems development, along with migration from existing systems to new ones.
- **Technical Architecture** – Defines the styles, concepts, and techniques for creating a common technology foundation. Provides the standards which guide the development of integrated information systems.
- **Product Architecture** – Identifies the vendor products for hardware, software, and telecommunications that are consistent with and in support of the Technical Architecture.

The process within which this framework functions is depicted in Figure 2.

Figure 2



¹⁴ Information Systems Technical Strategy and Architecture, Digital Equipment Corporation, 1989

Architecture Building Blocks

Each type of architecture can be described by three components: principles, models and standards.¹⁵ The relationship between these components is dynamic. There is a natural flow from creation of values to the development of principles, models, and standards. These architectural building blocks are described as follows:

- **Principles** – Embody the philosophy of the business and its objectives. Based on the values of the enterprise in such areas as user autonomy, risk acceptance or aversion, etc.
- **Models** – Picture of the desired end-state, with emphasis on how it is all connected
- **Standards** – Rules or guidelines for implementing the model

¹⁵ Partnership for Research Information in Systems Management, Index Systems/Hammer and Company, 1995