A firm's competitive strategy starts with its value proposition described by its Value Chain Model

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MAKING IT MATTER
The Business Significance of Architecture to the Modern Enterprise

A better title, in three parts:

1) Information Systems Capabilities for Creating Sustainable Competitive Advantage

2) Enterprise Architecture Business Decision Methodology

3) Enterprise Architecture as an Academic Discipline

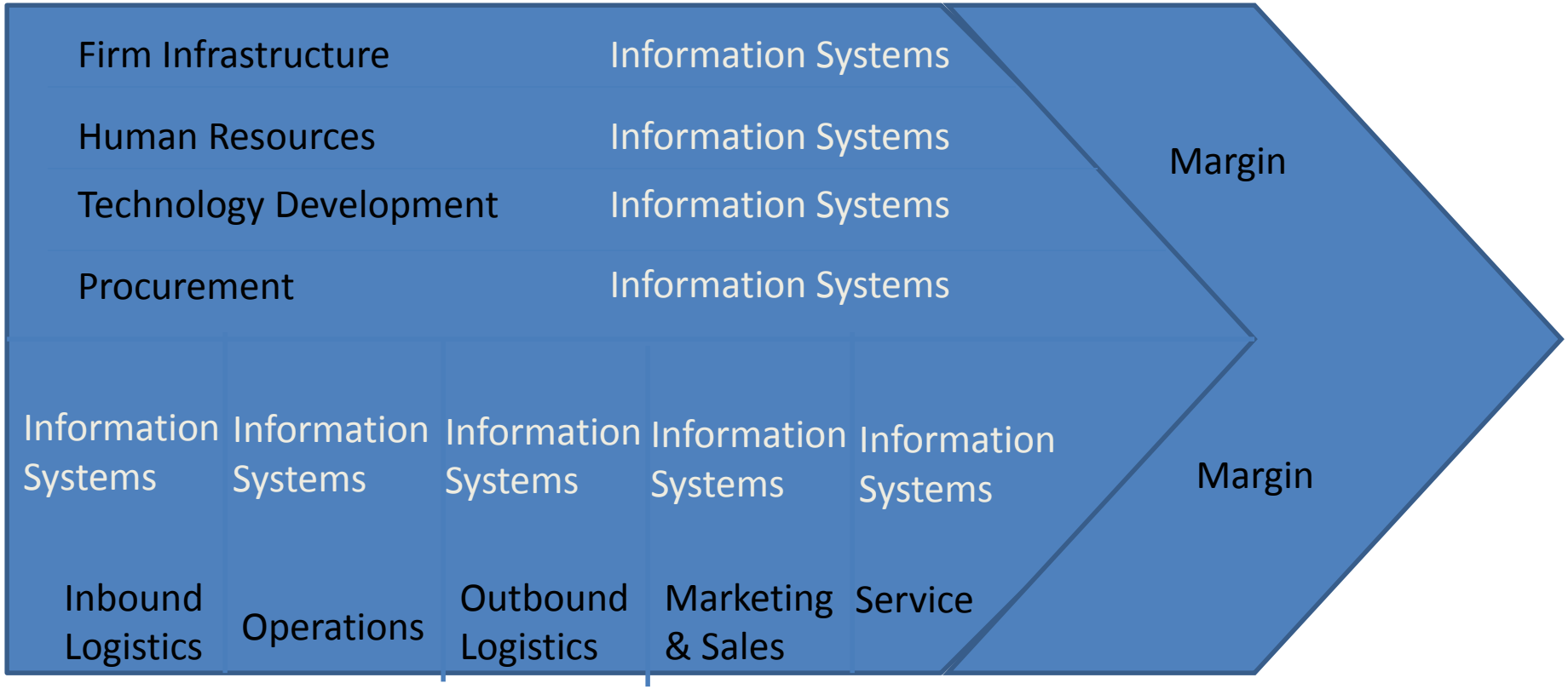
This Research Builds Upon Prior Work

1. 2010 *Information Systems Capabilities for Creating Sustainable Competitive Advantage.* *(Argosy conference on Sustainability in Business. Eagan, MN)*
2. 2012 *Enterprise Architecture Business Decision Methodology.* *(Argosy conference on Sustainability in Business. Eagan, MN)*
3. 2013 *Introduction to Information Systems Decision Framework.* (Society for the Advancement of Management, Washington D.C.)
4. *2014 Enterprise Architecture as an Academic Discipline.* *MAKING IT MATTER: The Business Significance of Architecture to the Modern Enterprise Architecture*

Part 1

Information Systems Capabilities for Creating Sustainable Competitive Advantage

The Value Chain is the Source of [Business] Competitive Advantage



Note from: Porter, M. E. (1998). *Competitive advantage : Creating and sustaining superior performance .* New York: Free Press.

As generic business strategies, sustainable competitive advantage is well Known.

- Cost Leadership
- Differentiation
- Focus
  - Cost Focus
  - Differential Focus

Note from: Porter, M. E. (1998). *Competitive advantage : Creating and sustaining superior performance*. New York: Free Press.

Business Competitive Advantage Relative to Information Systems Competitive Advantage

- Business strategy was developed prior to information systems matured as a strategy.
- Information systems are critical components of a firms' value chain.
- Technology and systems are often confused as being one in the same.
- Information systems competitive advantage involves IS capabilities and IS assets.

Information Systems Sustainable Competitive Advantage

History of Information Systems (IS)

Differences between Information Systems (IS) and Information Technology (IT)

Creating Barriers to Erosion of Competitive Advantage

- IS Capabilities
- IS Assets

Sustaining Competitive Advantage

- Core Competencies of IS
- Sourcing IS assets

HISTORY OF INFORMATION SYSTEMS

Era	Description	Definition
1960s	Data Processing (DP)	Characterized by improved efficiency. This began in the 1960s and continues.
1970s	Management Information Systems (MIS)	Characterized by improved effectiveness. Beginning in the 1970s information was presented is a manner that improved effectiveness. Often through MIS reports.
1980s	Strategic Information Systems (SIS)	Characterized by the use of information systems as a competitive advantage. Beginning in the 1980s the strategic value of information systems started to be realized.
1990s	Information Systems Strategic Planning (ISSP) also referred to as Strategic Information Systems Planning (SISP)	Characterized by long term strategic planning for information systems. Because of missed opportunities and wasted IS resources that lacked sufficient attention to long term IS planning, beginning in the 1990s strategic planning methodologies were applied to information systems.

Note from: (Edwards, Ward, & Bytheway, 1991; Somogyi & Galliers, 1987)

Information Technology (IT) versus Information Systems (IS)

Information Technology

- Hardware and Software
- Generally little difference in vendors
- Decreasing cost (Moore's Law)
- Commodity
- *Does IT Matter**

Information Systems

- ❑ People, process, data enabled with technology
- ❑ Proprietary
- ❑ Differentiate by Competencies and Assets
- ❑ "Meaning making" to a firm's value chain.

* Carr, N. G. (2004). *Does IT matter? : Information technology and the corrosion of competitive advantag*e. Boston, Mass.: Harvard Business School Press.

Information Systems Sustainable Competitive Advantage

- IS literature describes competitive advantage in terms of **creating barriers to erosion** of competitive advantage.
- Barriers are created by:
  - Information systems capabilities
  - Information systems assets

Information System Sustainable Competitive Advantage

- Information Systems Capabilities
  - Technical skills that are developed through organizational learning.
  - IS management skills that are developed through organizational learning.
  - Relationships developed as an asset over time.
- Information Systems Assets
  - IS infrastructures built up as asset accumulation and matured over time.
  - Information repositories that are developed and matured over time.

Note from: Piccoli, G., & Ives, B. (2005). It-dependent strategic initiatives and sustained competitive advantage: A review and synthesis of the literature. *MIS Quarterly, 29*(4), 747-776.

Core IS Capabilities Should Always be Kept In-house

- Leadership
- Informed Buying
- Making Technology Work
- Relationship building
- Contract Facilitation
- Architecture Planning
- Business Systems Thinking
- Vendor Development
- Contract Monitoring

IS Infrastructure Assets: Onshore outsourcing vs. In-house sourcing

- Infrastructure sourcing is almost always done onshore.
- A business with sufficient “critical mass” for in-house IS organization should consider in-sourcing.
- Onshore outsourcers draw from the same staff resource pool and operating environment.
- Generally in-house IS organizations can perform the same tasks for 15-20%* less cost because outsourcer profit is eliminated.
- Direct control of system security

* Lacity, M. C., & Willcocks, L. P., & Feeny, D. F. (1996) The Value of Selective IT Sourcing. *Sloan Management Review*. Spring 1996. 37(3); page 21

Information Systems Assets

- Information Systems Infrastructure
  - Not a core competency but can be used as a strategic advantage.

- Information repositories
  - Information repositories are the data, process, and methods used in decision making. Meaning making.

Conclusions:

- Business sustainable competitive advantage strategies by default include Information System sustainable competitive advantage strategies.
- Information systems capabilities and assets are a strategies for sustainable competitive advantage in business.
- A business should focus on information systems core capabilities and develop these capabilities internally.

Part 2

Enterprise Architecture Business Decision Methodology

Proposed Service Capabilities Framework (SCF)

- A firm has Information Systems capabilities for new business opportunities. Product Level: Strategic Themes
- Depending on the new business, one of many systems capabilities will be used. Execution Activity Level: Enterprise Operations Model
- Capability enablers are sourced based on the enablers importance as a business differentiator. Enabling Level: Sourcing Decision Model

Product Level: Strategic Themes

Shown at the top of figure 1 are elements from Porter's Value Chain Model, as the highest level of a firm's strategic themes for products or services it produces.

Traditionally these strategic themes are (a) low cost (b) differentiation or (c) an uncontested "Blue Ocean" market space (Kim & Mauborgne, 2005).

The strategic themes are long term constants that are decoupled from the underlying execution level.

Execution Activity Level: Enterprise Operations Model

Below the product or services level is the execution activity level that includes the capabilities that execute the firm's value chain. The capabilities at the execution activity level are governed by the Enterprise Operations Model, which provides for strategic combination, based on the degree of enterprise business process integration and standardization.

The execution activity level is decoupled from the strategic theme level allowing for capabilities to be swapped out without impacting the overall strategy.

Enabling Level: Sourcing Decision Model

In order for capabilities to be executed there must be technology or systems at the enabling service level. The enabling service level is composed of services in a portfolio of business processes and functions. Critical capability has underlying enabling services which should be kept internal to the firm as a competitive differentiator. Commodity services that enable a firm's capabilities should economically sourced.

The enabling level is decoupled from the execution level allowing for sources to be swapped out without impacting the capabilities.

Synthesis of Enterprise Architecture Models

- The Strategic Capability Networks (SCN) provides a framework for analyzing a firm in terms of its resources, capabilities and strategic positions (Tulskie & Bagchi, 2001).
- A modification of the SCN is proposed, shown in figure 1, as a synthesis with additional models including:
  - The Value Chain Model (Porter, 1998)
  - The Enterprise Operating Model (Ross, Weill, & Robertson, 2006)
  - The Sourcing Decision Model (Lacity, Willcocks, & Feeny, 1996)

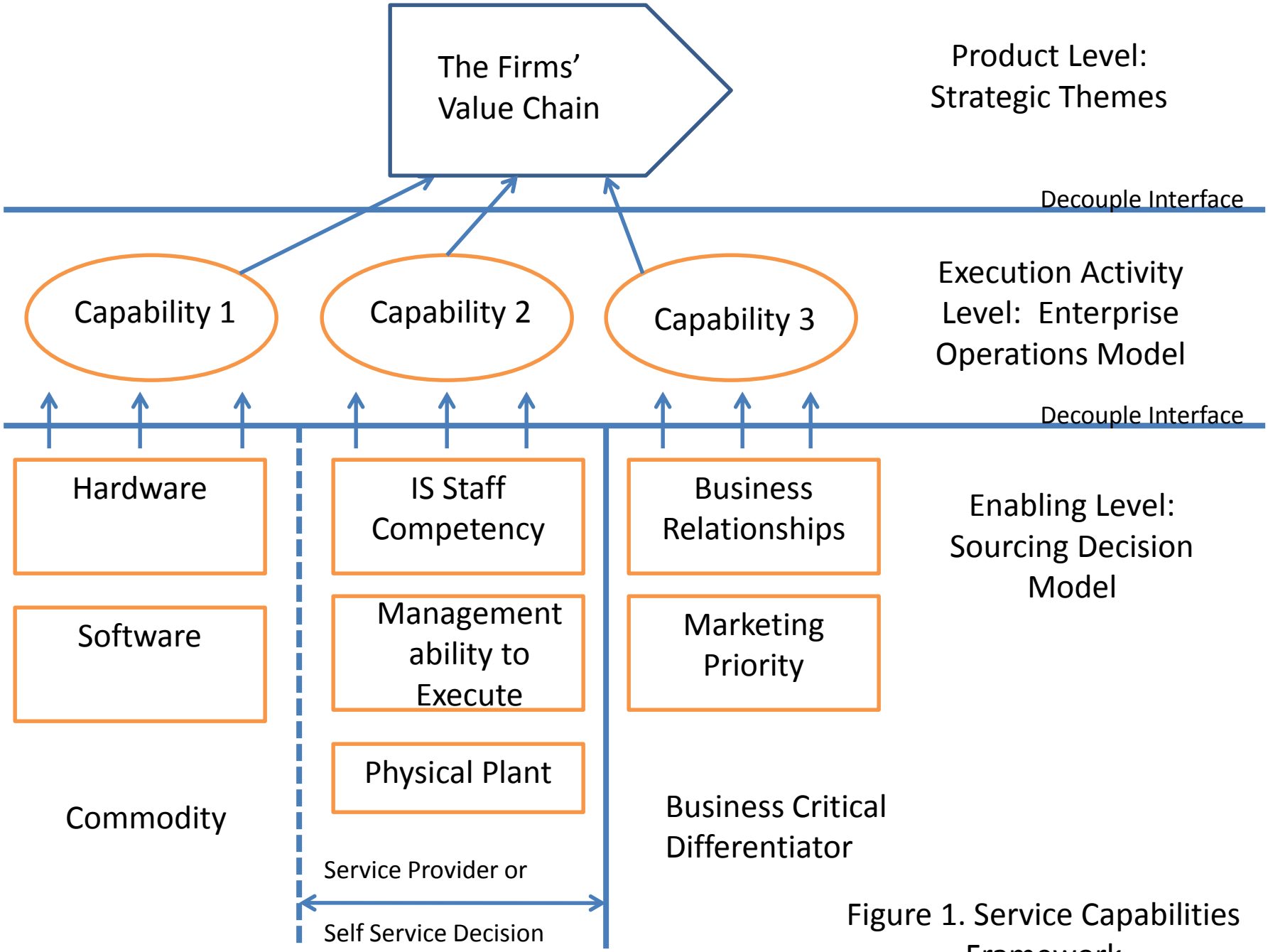


Figure 1. Service Capabilities Framework

Hypothetical Application of SCF for Decision Support

- A dollar value is estimated for each execution level capability. Enterprise Operations Model
- Cost and constraints of IT capability enablers is estimated. Sourcing Decision Model
- A linear programming such as Microsoft Excel can used to determine optimum profit given the value of IT capabilities and the constraints of IT resources.

Hypothetical Decision Support using SCF Linear Programming

Problem:								
Optima mix of IT resources (e.g. platform) to support IS capabilities								
Variables	Mainframe	UNIX	WinTel	Sign	RHS		LHS	Slack / Surplus
Objective Function	$800,000	$500,000	$100,000	=	Max P / Min C	Profit	$1,795,302	
Constraint Hardware	30	10	2	<=	50		50.0000	0.0000
Constraint Software	1	10	50	<=	50		20.8054	29.1946
Constraint Staff	1	50	100	<=	100		100.0000	0.0000
Constraint Compentency	1	50	100	<=	100		100.0000	0.0000
Constraint Speed to Implement	1	10	100	<=	100		20.8054	79.1946
Constraint Market Priority	10	2	1	<=	100		14.0268	85.9732
	Solutions							
	Mainframe	UNIX	WinTel					
	1.007	1.980	0.000					

Part 3

Enterprise Architecture as an Academic Discipline

Reflections

History of Selected Disciplines

- 16th century modern mathematics
- 17th century scientific methods
- 1661 *The Sceptical Chymist*, a distinction between chemistry and alchemy
- 1950s computer hardware e.g. UNIVAC 1101
- 1972 IBM Information Systems Management Architecture (ISMA)
- 1973 Langefores, classical definition of Information Systems

History continued

- 1987 *A Framework for Information Systems Architecture*, by J.A. Zachman
- 1994 Technical Architecture Framework for Information Management (TAFIM), later turned over to The Open Group
- 1995 The Open Group presented TOGAF 1.0
- 1999 Federal Enterprise Architecture Framework (FEAF)

Comparison of Practitioner versus Scholarly

Practitioner Publications

- Provides a point in time "state of the art" view
- Experiential information or opinion
- Generally accepted by the industry but not the academic community
- Often published as books

Scholarly Research

- Builds upon prior research
- Provides for peer-review
- Provides a pathway from seminal research to your practical application
- Often published as papers

Evolution of an Organization

- 1951 A constitutional convention was held in Chicago, the State of Illinois granted a charter and the National Machine Accountants Association (NMAA) was founded.
- 1962 Adopted a more progressive name, the Data Processing Management Association (DPMA).
- 1996 Evolved to the Association of Information Technology Professionals (AITP). *This organization is still very active.*

- Lesson: technical organizations must continue to evolve to stay relevant.

Information Systems (IS) Architecture is a Relatively New Discipline

- The original term IS Architecture includes the plethora of sub-domains e.g. Enterprise, Business, Solution, etc.
- Practitioner publications document the current state of the evolving IS Architecture.
- It is important to *integrate* other mature disciplines e.g. business, operational research, rather than *isolate* as an independent enterprise

Thank you

Questions, comments, or suggestions