

Value Chains, Value Streams, Value Nets, and Value Delivery Chains

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The Value Chain Group together with partners have developed approaches and methodologies to support the process of successfully aligning business and IT strategies, architecture, design, execution, monitoring, and management of the processes. But there has still been a considerable amount of discussion about value chains and related concepts like value streams and value nets by those involved in business process change. This paper discusses the evolution and current use of these concepts. Clarification of this terminology is especially important to those of us involved in the Value Chain Group, as our framework depends on a clear understanding of these terms.

The Value Chain Group

The mission of the Value Chain Group is to enable excellence in value chain performance by leading the development, promotion, and maintenance of a unified, broadly adopted, open standard business process framework and related reference models for value chain management. The Value Reference Model (VRM) is a key model of the VCG. VRM provides common and normalized business semantics. There are advantages of using VRM as the common business semantics language: There are advantages of using VRM as the common business semantics language: It helps to analyze and understand customer facing BI processes; provides detailed substantiation for any business rules; supports testing the feasibility and potential impact of changes; enables validation of the business rules; and enables extensive support for the collaborations.

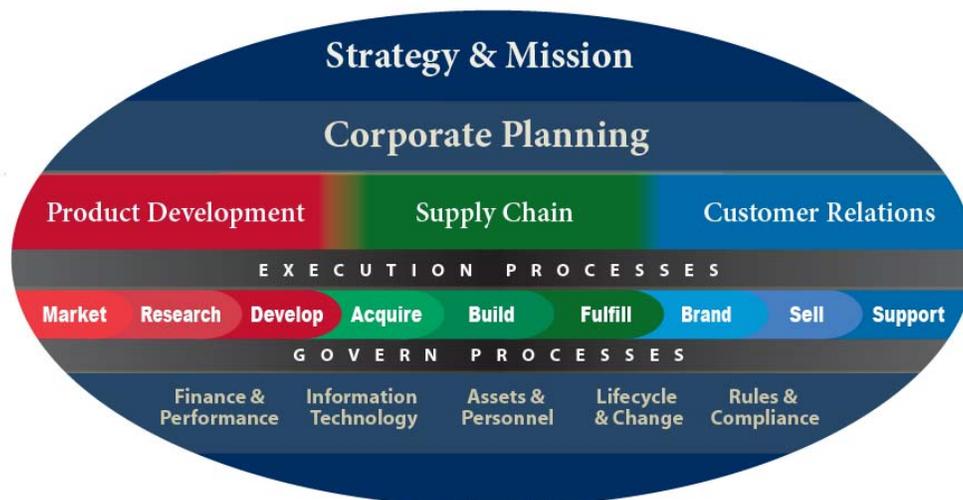


Figure 1. The VRM™ Coverage Graphic

To identify value opportunities that will improve the processes, criteria must be established for what should or should not be considered a value opportunity. Value is to be determined both subjectively (non-quantifiable) and objectively (quantifiable). We must define value in the context of decisions based on costs/benefits – i.e., time, price, quality, innovation – and show the decision matrix. Subjective knowledge of value should be converted into objective knowledge via data and metrics.

The recent focus of Value Chain Group research is on Business Agility. Special focus has been given specifically to methods and tools to ensure that business group goals are met in business agility through

Value Chain Management and through the transition to SOA. Value delivery and business flexibility have evolved through concepts of Value Chains, Value Streams, Value Nets, and Value Delivery Chains. Our agenda is to sense operational performance and market change, assuring business agility and driving market distinction by addressing critical areas of need for becoming an Agile Enterprise.

Value Chain Analysis or Value Stream Mapping are useful tools for working out how you can create the greatest possible value for your customers, as well as your best route to profit maximization. Dealing with restructuring value chains has changed considerably due to the decades of growth in electronic commerce leveraging the internet.

This brief document covers some of the conceptual evolution of business process management through concepts of Value Chains, Value Streams, Value Nets, and Value Delivery Chains. Some of the material in this paper comes directly from documents that go back over 20 years, including writing by Michael Porter, James Martin, Ralph Whittle, and David Bovet.

The value chain is a concept from business management that was first described and popularized by Michael Porter in his 1985 best-seller, *Competitive Advantage: Creating and Sustaining Superior Performance*. [1] Porter termed the larger interconnected system of value chains the "value system." [2] A value system includes the value chains of a firm's supplier (and their suppliers all the way back), the firm itself, the firm distribution channels, and the firm's buyers (and presumably extends to the buyers of their products, and so on).

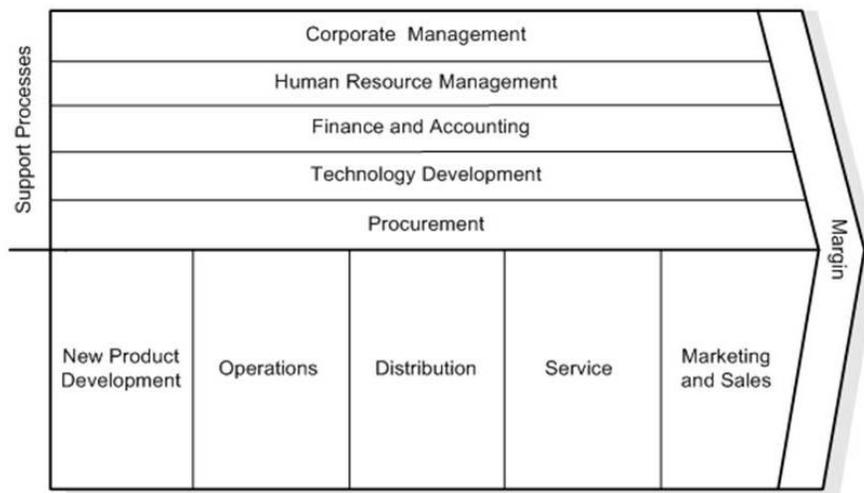


Figure 2. Porter's Value Chain

Value Streams were introduced in Michael Porter's book but were explained more clearly by James Martin in his 1995 book, *The Great Transition*, which pulls together the many issues, models, and methods for transforming the traditional old-world organization into a value-creating enterprise. [3] Martin uses value stream, rather than process, to define the end-to-end stream of activities that deliver particular results for a given customer (external or internal).

The 2004 book, *Enterprise Business Architecture*, by Ralph Whittle and Conrad Myrick, provides a common reference model by defining the business strategy, governance, organization, and business functions, and establishes a baseline that links strategy and results by defining which organizations perform those functions. This book [4] provides a consistent classification of all the tasks, activities, functions, and processes into Value Streams. For the EBA, the Value Streams are the organizing and

unifying principle in the foundation. The book represents the initial Enterprise Business Architecture (EBA) for companies and will serve to ensure that investments in information technology support the business of corporations.

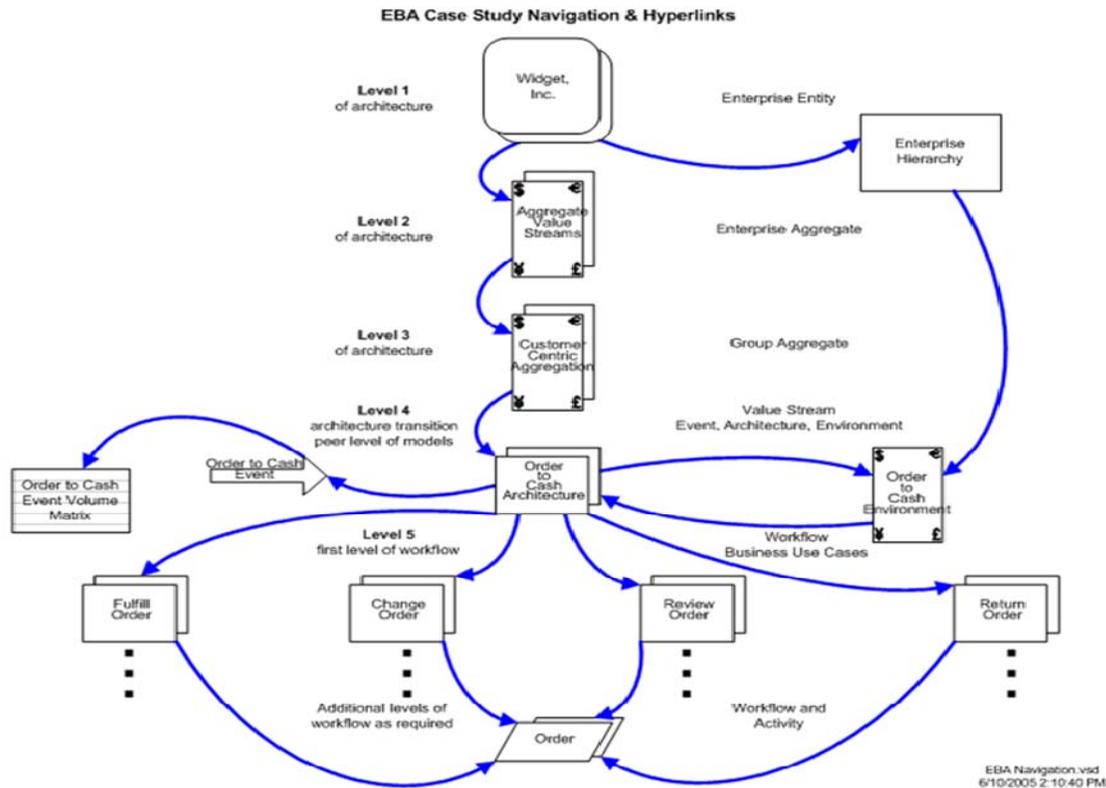


Figure 3. Whittle & Myrick EBA Navigation

David Bovet, a vice president at Mercer Management Consulting, co-authored *Value Nets: Breaking the Supply Chain to Unlock Hidden Profits*. Inspiration for Value Nets came from the drive to design a new networked paradigm that allows companies to fulfill customer expectations for speed, reliability, convenience, and customization. A value network is a web of relationships that generates economic value and other benefits through complex dynamic exchanges between two or more individuals, groups, or organizations. Any organization or group of organizations engaged in both tangible and intangible exchanges can be viewed as a value network, whether private industry, government, or public sector. [5] Bovet makes it clear that a value net is a web of relationships that generates economic value and other benefits through complex dynamic exchanges between two or more individuals, groups, or organizations.

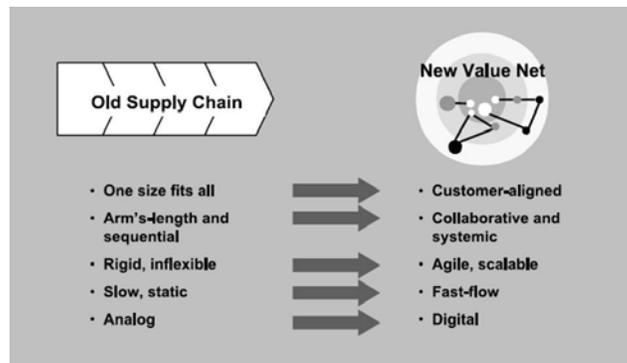


Figure 4. Value Net Scheme - Bovet

This brief paper will enable readers to understand how the evolution of these concepts has led to approaches that are now based upon workflow technology, i.e., flow of data and control over cross-organizations. In order to describe the procedure of a restructured value chain that processes inter-organization transactions, we should use a virtual value chain model having multiple nodes, such as consumer, merchant, delivery, and manufactory, which are logically hooked on the Internet. Internet workflow technology merged into the electronic commerce will be effective in terms of restructuring market value chains and reducing costs of processing cross-organizational transactions.

Value Chain

Value chain is a high-level model of how businesses receive raw materials as input, add value to the raw materials through various processes, and sell finished products to customers. The value chain categorizes the generic value-adding activities of an organization.

A value chain is the disaggregating of a firm into its strategically relevant activities for the purpose of understanding the behavior of costs as well as the existing and potential sources of differentiation. The concept has been extended beyond individual organizations. The industry wide synchronized interactions of those local value chains create an extended value chain, sometimes global in extent. Capturing the value generated along the chain is the new approach taken by many management strategists. By exploiting the upstream and downstream information flowing along the value chain, the firms may try to bypass the intermediaries creating new business models.

Value Chain (Level 0)

The horizontal chain with interdependent processes that generates benefits and value to the end user.

**Strategic Level** (Level 1)

The ValueCard and all processes in Govern, Plan, and Execute in VRM can be applied for gaining competitive advantage.

Tactical Level - (Level 2)

The second level of the model contains processes supporting the implementation of strategic goals through tactical decisions and configurations.

Operational Level (Level 3)

The third level of the model establishes links between enterprise-specific activities and the value chain.

Activities (Level 4)

A decomposition of VRM operational processes, each activity is specific to an enterprise that may or may not be shared among partners.

Actions (Level 5)

Individual work instruction items. Cannot be decomposed

Figure 5. The VRM Framework

Another type of value chain is the Business-Web where the context provider structures and directs a Business-Web network to produce a highly integrated value proposition. The output meets a customer order or market opportunity. The seller has the final say in pricing, for example, Cisco.

The value chain is a model that describes a series of value-adding activities connecting a company's supply side (raw materials, inbound logistics, and production processes) with its demand side (outbound logistics, marketing, and sales). By analyzing the stages of a value chain, managers have been able to redesign their internal and external processes to improve efficiency and effectiveness.

The value chain model treats information as a supporting element of the value-adding process, not as a source of value itself.

To create value with information, managers must look to the market-space. Although the value chain of the space can mirror that of the place – buyers and sellers can transfer funds over electronic networks just as they might exchange cold, hard cash – the value-adding processes that companies must employ to turn raw information into new market-space services and products are unique to the information world. In other words, the value-adding steps are *virtual* in that they are performed through and with information. Creating value in any stage of a virtual value chain involves a sequence of five activities:

- Gathering
- Organizing
- Selecting
- Synthesizing
- Distributing information.

Just as someone takes raw material and refines it into something useful – as in the sequence of tasks involved in assembling an automobile on a production line – so a manager today collects raw information and adds value through these steps.

The difference between the traditional supply or value chain and the value stream is that the former includes the complete activities of all the companies involved, whereas the latter refers only to the flow of activities which add value.

Value Streams

A *value stream* is an end-to-end collection of activities that creates a result for a "customer," who may be the ultimate customer or an internal "end user" of the value stream. The value stream has a clear goal: to satisfy (or, better, to delight) the customer.

The term *value stream* refers to an end-to-end set of activities. Order fulfillment, for example, is a value stream: the input is the order, and the results are the delivery of ordered goods. Order entry is one activity in the collection of activities that constitute the order fulfillment value stream.

A value stream is a collection of activities that function together. The value stream customer has certain desires, and the value stream consists of work activities dedicated to serving that customer. Value streams and their customers cannot be separated: The focus on customer gives the value stream its purpose.

Value Stream: An end-to-end collection of activities that create a result for a customer, who may be the ultimate customer or who may be an internal "end user" of the value stream. The value stream has a clear goal: to satisfy or to delight the customer. Value streams differ from functions in that a value stream is a cycle of activity that begins with a specified event and ends when a specified output is produced.

The customer is sometimes the ultimate customer of the enterprise; sometimes the "customer" exists within the enterprise.

A value stream is an end-to-end set of activities that is collectively valuable to a customer. The customer may be the ultimate, external customer or an internal user of the value stream.

- An enterprise is a collection of value streams.
- In most enterprises all of the value streams need reinventing.
- Value stream reinvention usually involves total redesign of a system.

A value stream is all the actions required to bring a product through the main flows essential to nearly every product. A value stream map (AKA end-to-end system map) takes into account not only the activity of the product, but also the management and information systems that support the basic process as well.

Value Stream solutions should focus on three areas:

1. *People* - Focus on developing this human capital to create a foundational culture of trust, teamwork, and collaboration, and to counter the unintended consequences of change. Human Capital programs develop effective people skills (interpersonal communication, teamwork, and empowerment, etc). This area must be addressed throughout change efforts since it has such an impact on shifting attitudes that sustain new behaviors.
2. *Process* - Everything that happens within an organization comes from a process, whether formal or informal. The only way to be successful in the long run is to create new processes that allow people to be more flexible, make change, and adapt to the new way quickly, even if that way will be changed again soon. Value Stream solutions should provide training and development opportunities for clients in core-activity skills, leadership, management and supervisory skills, as

well as Problem Solving and other decision making tools that allow clients to effectively work together and fulfill their company's mission.

3. *Product* - The product or service provided by companies is what they do to make money or serve the social sector. The marriage between the company and its products and services sometimes gets in the way of creating profitable, responsive, and customer driven enterprises, especially when the company is young and may have been founded on a single product or service. Value Stream mapping can help identify problems and opportunities in the client's product or service offerings. Alignment of People, Process, and Products are essential for long-term success.

Value Stream solutions should suit needs for improving quality, increasing productivity, growing profit, and eliminating waste. This focus creates capabilities to better compete in the current world economy.

Value Stream Definition Perspectives

R&D

Organizations engaged in investigation, experimentation, and prototype development of new technologies and related applications. Examples: advanced materials research on new temperature properties for polymers; energy research on improving generation efficiency.

Source

Organizations engaged in extracting, refining, or otherwise providing production input materials. Examples: a chemicals provider; an ore mining operation.

Process

Organizations engaged in producing goods or materials to be used in the manufacture of final goods; component products. Examples: a manufacturer of cold temperature, break and crack resistant moldable plastics; a manufacturer of turbine blades.

Distribution

Organizations engaged in the distribution of component goods and materials or final goods. Examples: a plastics distributor or distributor of lightweight expedition gear; a turbine blade distributor or an electricity distribution company.

Application

Organizations engaged in the production of final goods that are ready for end customer use; stand-alone products. Examples: a manufacturer of arctic expedition emergency radios; an electricity generator.

Value Streams versus Value Chains

The concept of a value stream differs from that of a value chain, which is described by Michael Porter in his book, *Competitive Advantage*: "The value chain disaggregates a firm into its strategically relevant activities in order to understand the behavior of costs and the existing and potential sources of (competitive) differentiation."¹ This analysis focuses on activity costs and margins as a strategic-analysis activity.

A value stream is much simpler than Porter's value chain. Porter's value chain relates to the enterprise as a whole, whereas value streams relate to a set of activities that satisfy a particular type of customer (internal or external).

The value chain perspective is driven by a functional business view, evaluating costs and margins as a basis for competitive comparisons.

The value stream perspective is based on streams of work activities in every enterprise that deliver a particular result for a particular type of customer or user. These streams of work are clumsy and slow because they pass through multiple departments and functional areas. In most corporations, scrapping and replacing the awkward value streams with well-organized teams using powerful information systems can achieve dramatic improvements.

Redesigning the value streams can be a relatively straightforward way to improve competitiveness (although implementing the redesign is a major management challenge).

An enterprise consists of a collection of value streams. Most large companies can be broken down into a dozen or more value streams. IBM identified 18 major value streams; Ameritech, 15; Dow Chemical, 9; and Xerox, 14 in its document-processing business. One major insurance company envisions itself having 14 value streams.

Representing an enterprise as a collection of value streams is a useful way of understanding an enterprise. Reinventing each value stream to make it serve its customer in the most direct, focused way will give a corporation a major competitive advantage.

The list of value streams differs somewhat from one enterprise to another. An insurance company may have a separate value stream for claims processing. A telecommunications company needs a value stream for managing its network. An airline needs a value stream for maintenance of aircraft internationally.

In the top three value streams of James Martin book [7], the corporate customer is the value-stream customer. In the other value streams the customer is internal. Each value stream has clear customers, however, and its goal should be to satisfy those customers in the simplest, most direct way.

Although a value stream has many work steps, these should be tightly coordinated and compressed into the minimum time needed to maximize response to the customer. Work steps should be done simultaneously, where practical, to increase speed. Unnecessary work should be eliminated. Handovers from one group to another, which tend to cause errors or things "slipping through the cracks," should be avoided where possible.

Value Nets

This introduces an entirely new class of business designs – designs that deliver new and unique levels of service and personalized products to customers. Value nets integrate the essential front-end understanding of customer needs with the crucial back end that precisely delivers on the front-end promise. Value nets are digital, collaborative, agile powerhouses that unlock hidden profits for shareholders. They begin by capturing what is important to different customers and work back to physical production and distribution processes enabled by unifying information flow design – a business design that uses digital supply chain concepts to achieve both superior customer satisfaction and company profitability.

A *value net* is a business design that uses digital supply chain concepts to achieve both superior customer satisfaction and company profitability. It is a fast, flexible system that is aligned with and driven by new customer choice mechanisms.

A value net is not what the term *supply chain* conjures up. It is no longer just about supply; it's about creating *value* for customers, the company, and its suppliers. Nor is it a sequential, rigid chain. Instead, it is a dynamic, high-performance network of customer/supplier partnerships and information flows. The traditional supply chain manufactures products and pushes them through distribution.

In a recent paper by IBM [6], there is a description of the changes needed to effect the transformation of companies to become on demand businesses. In particular, the paper describes the important role played by componentization and by service orientation and how componentization enables a business to operate in a value net, a network of partnerships with customers and suppliers supported by real-time information flows and information technology systems.

In value nets, information is moving in real-time across the cooperating businesses, the relationships among the partners is dynamic and varies with changing conditions, and the operating targets of the business include not just efficiency but also agility. In value nets, the business value is created by businesses and their suppliers, buyers, and partners through the combination and enhancement of services provided by all participants.

Value Delivery Chain

The entities of relevance to a business, including suppliers, intermediaries, primary entities, their customers, and off-line entities; understood as delivering value to each other and as one interconnected set of relationships.

Value Proposition

A value proposition is a statement of how value is to be delivered to customers and what value is offered, delivered, and consumed that justifies a business right to exist. Internally, it identifies the value drivers it is attempting to offer to target customer groups and the activities involved in producing the value together with the cost drivers involved in the value-producing activities. Externally, it is the means by which a firm positions the enterprise in the minds of customers. Each value stream should itself have an articulated set of values that incorporates the enterprise values but also includes values specific to the value stream.

Enterprise Business Architecture

Enterprise Business Architecture defines the enterprise value streams and their relationships to all external entities and other enterprise value streams and the events that trigger instantiation. A value stream map (modeled in VRM) takes into account not only the activity of the product, but the management and information systems that support the basic process.

The EBA is a model built with rigor and discipline, the same that is applied in the fields of engineering and construction. It is a formal model representing the business as a manifestation of the strategy. An Enterprise Business Architecture defines the enterprise value streams and their relationships to all external entities and other enterprise value streams and the events that trigger instantiation. It is a definition of what the enterprise must produce to satisfy its customers, compete in a market, deal with its suppliers, sustain operations, and care for its employees. It is composed of architectures, workflows, and events. A value stream is an end-to-end collection of activities that creates a result for a "customer," who may be the ultimate customer or an internal "end user" of the "value stream." The value stream has a clear goal: to satisfy or to delight the customer.

Structuring the enterprise around a core set of building blocks, called "value streams," is one of the key enablers or precepts to enterprise wide integration. The value streams (sometimes called core processes) contain the cross-functional processes and ordered sequence of activities that produce results from functional organizations. The value streams are customer centric and designed around the effective and efficient delivery of results, outcomes, products, or services – a capability not afforded by viewing the enterprise in terms of its functions. The values streams are purposeful encapsulations of the results of optimized processes that are connected by the balanced and leveled inputs and outputs of the processes. You connect and integrate business processes in an architecture model by using the inputs and outputs as the nexus or "causal link." Ultimately, the results of the value streams are linked to the defined and measurable outcomes of a strategic objective.

Value Streams modeled in VRM will help define value opportunity:

- Prospect to Customer
- Order to Cash
- Manufacturing to Distribution
- Request to Service
- Insight to Strategy
- Awareness to Prevention
- Concept to Development
- Initiative to Results
- Forecast to Plan
- Relationship to Partnership
- Requisition to Payables
- Resource Availability to Consumption
- Acquisition to Obsolescence
- Financial Close to Reporting
- Recruitment to Retirement
- Vision to eBusiness Enterprise

Conclusion

The Value Chain Group has a number of approaches and methodologies to enable business agility. VRM, the framework, metrics, and methodologies have been developed and maintained as an integrating framework across the extended enterprise value chain and can facilitate agreement of business semantics across domains and ensure integration and consistency across value nets.

There is distinctiveness in the VCG model, architecture, tools, and methodology in addressing issues around the realization of value through complex, global, extended enterprise value chains.

VRM can be used to model Value Streams and contribute to identifying and quantifying value opportunities in process improvements within the scope of selected Value Streams, as well as being the basis for a methodology to define services from a business process perspective

The VCG will support OMG to provide access to relevant, real-time business insight and information. Our approach will facilitate adaption and modification of key business processes and more quickly deliver applications for competitive advantage, as well as keep pace with change and create business value. As a result, business value is manifested as increased agility, productivity, and scalability, and the capability to manage greater complexity.

References

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2. Michael Porter. *Competitive Advantage: Creating and Sustaining Superior Performance*. (1985) Pg. 34. "A firm's value chain is embedded in a larger stream of activities that I term the value system..."
3. James Martin. *The Great Transition: Using the Seven Disciplines of Enterprise Engineering to Align People, Technology, and Strategy*. (1995) Pg. 66. "A value stream often crosses multiple functional areas, each with its own goals and measures..."
4. Ralph Whittle and Conrad Myrick, *Enterprise Business Architecture: the Formal Link between Strategy and Results.* (2004).
5. David Bovet and Joseph Martha. *Value Nets: Breaking the Supply Chain to Unlock Hidden Profits*. (2000)
6. Cherbakov et al., Impact of Service Orientation at the Business Level, IBM Systems Journal, Vol. 44, NO 4, (2005)
7. James Martin. *The Great Transition: Using the Seven Disciplines of Enterprise Engineering to Align People, Technology, and Strategy*. (1995) Pg. 107. Exhibit 7.2 "A typical collection of value streams in a corporation"

Author

George W. Brown is a Research Architect for the Value Chain Group, Inc.