Business Architecture and BPM - Differentiation and Reconciliation

A Business Architecture Guild Whitepaper

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Foreword

A bicycle shed is a building, but the Lincoln Cathedral is a piece of architecture.

--Nicholas Pevsner

Imagine holding your hand at arm's length in front of your face and blocking your view of the earth, the entire earth? Astronauts can do that. The world below them looks drastically different from their perspective. They see the whole earth. Today's business architects, business analysts and BPM practitioners need a shared astronaut's perspective.

Systems thinking is a formal discipline of management science that deals with whole systems and in terms of the interconnections and interactions of their parts. Systems thinking is the "Core" Core Competency for both Business Architecture and Business Process Management. But because today's business rests on automation, practitioners of building lasting, growing, profitable businesses are going to need tools and "shared vocabularies" to help them take the holistic systems thinking perspective.
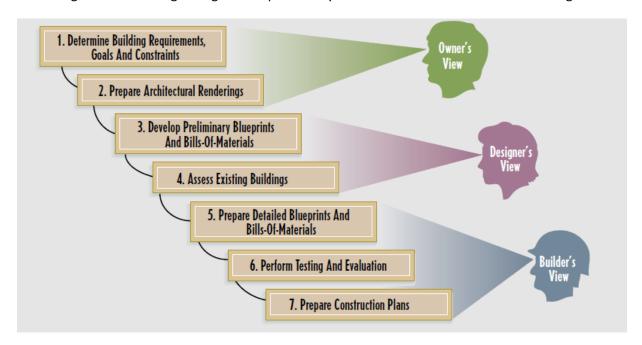
What is a system? At its highest level of abstraction, a system is a set of connected things that work together for a particular purpose. A business is a system. An information system is a system. All systems have an underlying architecture or logical scheme for defining their interfaces and arranging their components. Today, most systems architectures are implicit, but next generation business systems require that systems architectures be made explicit. Placing a system within a context and using it within that context are what makes architecture important. The enterprise that successfully designs complex, adaptive systems appreciates the need to match process and style with the organization.

What if we simply ignore architecture and continue to build more information systems as we have done in the past? A popular tourist attraction in the San Francisco Bay area, the Winchester House, is a result of nonstop construction spanning a 38-year period and which consumed vast resources. Supposedly haunted by ghosts of those poor souls killed by rifles made by her husband, Mrs. Winchester turned to her spiritual advisors who told her that she would live as long as she continued to build her house. Today, people tour the mansion that has, as its highlights, a chimney that does not quite reach the roof, doors and windows shut off by walls, a greater number of hallways than rooms and stairways that lead to ceilings. The Winchester House is an example of constructing a building without an architecture. The similarities between the Winchester House and many of today's information systems are all too obvious.

As Eberhardt Rechtin wrote 20+ years ago in his book, *Systems Architecting*, "Both architects and business managers live in ill-structured, unbounded worlds where analytic rationality is insufficient and optimum solutions are rare. Both have perspectives that are strategic and top-down. Top managers, like chief architects, must architect strategies that will handle the unforeseeable, avoid disaster and produce results satisfactory to multiple clients—to boards of directors, customers, employees and the general public. Their common modus operandi is one of fit, balance and compromise in the overall interest of

the system and its purposes."[1]

How does a systems architect create a successful architecture? To answer that question, we can turn to an analogy of developing an architecture for an office complex and relate the steps to building a systems architecture. It's all about views by the people involved and the concepts they have in their mental models: The Owner's View (the business people), the Designer's View (business analysts and architects) and the Builder's View (implementers of BPM systems). Closing the gaps between these views is the key to building and maintaining the agile enterprise ready for whatever the uncertain future brings.

This paper closes the gaps between these views. Read, learn and act!

Peter Fingar

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[1] See Eberhardt Rechtin, Systems Architecting: Creating & Building Complex Systems, Prentice Hall, 1990.

Introduction

One of the key issues facing practitioners who are attempting to establish a business architecture practice is how to reconcile some of its concepts with those of other related analytic practices. This issue is perhaps most frequently encountered when organizations attempt to reconcile business architecture with existing practices in their business process management (BPM) areas. Some organizations begin their practice of BPM using information technology to automate processes. Other organizations first adopt BPM as a management discipline and then enable it with information technology. This paper is intended to provide a foundation for organizations to use to begin building linkages between these two analytic areas by defining and illuminating the differences and touch points between them. Subsequent papers will be written to discuss additional topics such as approaches to aligning business architecture and BPM as management disciplines.

Mapping the concept of a business process (and its constituent elements) to any applicable concept in a business architecture (or vice versa) presents challenges due to definitional and granularity differences between those concepts. These differences generally arise from the mixing of what is a business process as defined in BPM, which is based on an organization's operating model, with concepts that resemble a business process from an organization's business architecture, which arise out of the business model:

> *"An Operating Model is an abstract representation of how an organization operates across process, organization and technology domains in order to accomplish its function."*[2]

> *"A Business Model describes the rationale of how an organization creates, delivers, and captures value."*[3]

Practitioners in the business architecture and BPM disciplines have been confused by perceived semantic ambiguities regarding the meaning of terms between these two contexts. This has led to inconsistency in the use of the business process concept, requiring some form of corrective resolution.

Resolution is somewhat complicated by the impact the language used for modeling business processes has on the nature of the mappings between the concepts in a business architecture and the concepts in a process model. This tension exists between the metamodel for the business architecture framework and the metamodel for the process modeling language, and is manifested as incongruities in the definitional and granularity aspects of the conceptual boundary for a business process.

While there are many obstacles that have made it difficult to achieve the needed reconciliation, there are major benefits in achieving that goal: better targeting of BPM efforts when aligned with a business architecture, and greater effectiveness of a business architecture when linked with the deep insights

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[2] See Wikipedia (*http://en.wikipedia.org/wiki/Operating_model#cite_note-1*), cited as coming from Marne de Vries, Alta van der Merwe, Paula Kotze and Aurona Gerber. (2011) *A Method for Identifying Process Reuse Opportunities to Enhance the Operating Model.* 2011 IEEE International Conference on Industrial Engineering and Engineering Management, and added into the *BIZBOK® Guide* from the Business Architecture Guild.

[3] See Alexander Osterwalder and Yves Pigneur, Business Model Generation, Self-Published, 2010, Page 14, which is incorporated into the *BIZBOK® Guide* v4.1, Section 3.3, from the Business Architecture Guild.

provided by BPM efforts. In particular, the lack of reconciliation leaves a gap in providing an integrated framework for process governance at an enterprise level. This gap undercuts an organization's ability to provide a top-down business perspective for planning process related work, changes, and targeted improvements. This whitepaper lays the basis for closing this gap via the needed integrated framework.

Defining Business Architecture

Business architecture is defined as:

> *"A blueprint of the enterprise that provides a common understanding of the organization and is used to align strategic objectives and tactical demands."*[4]

If this definition is decomposed, it has several important elements that create the foundation for a business architecture and related best practices. The most fundamental aspect of a business architecture is that it represents a business.

As part of the practice of business architecture, we separate the concern of what we do (capability), from who does it (organization), from how value is achieved (value stream), from how it's done (process), from the information that's needed, from the systems that are used, and so on. These individual concepts and relationships are stored and managed in a knowledge base, which is built incrementally.

Business architecture is an interdisciplinary practice area, bringing together the requisite skill sets and perspectives to define and analyze these separate concerns, and to integrate them together. In practice, the creation of a business architecture has been as its own effort or as part of creating the more IT-focused enterprise architecture. In other cases, it has been merged with BPM-driven efforts.

Defining Business Process Management (BPM)

BPM is a term that has come to mean many different things to many different but related communities. To the BPM system or suite (BPMS) community, it has become what the vendors tell their clients, which is that it is a platform for process automation wherein all of the relevant BPM concepts come together. To the business analyst community, it is mostly about process modeling (presumably) in support of process improvement. To the architecture community, it is essentially an activity view of the organization that is of value to a business architecture or an enterprise architecture.

A recently developed definition of BPM reflects this pull to have BPM serve such a diverse community of needs:

> *"Business Process Management (BPM) is a discipline involving any combination of modeling, automation, execution, control, measurement and optimization of business activity flows, in*

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[4] See the *BIZBOK® Guide* v4.1, Section 2.4, p. 117.

support of enterprise goals, spanning systems, employees, customers and partners within and beyond the enterprise boundaries."[5]

While comprehensive and inclusive to a fault, the totality of BPM's interdisciplinary nature as implied in this definition can threaten to overload its meaning as applied in practice. This challenge is particularly manifest in the treatment of the concept of a business process.

Though there is no singularly accepted definition for what is a business process, there have been definitional flavors that have (more or less) gained widespread acceptance over time.

- Born out of the business process reengineering (BPR) movement of the early 1990s, a **value-based** flavor was crafted that focused on value-creation for the customer(s) as the principal output of a set of related activities.[6]

- Also arising out of the BPR movement, a concurrent **functional** flavor was crafted that focused on the transformation of inputs into outputs by a set of related activities, albeit for the benefit of particular customer(s).[7]

- More recently, an **operational** flavor has emerged, as process modeling languages have evolved and become standardized, that further generalized and refined the outcome of the set of related activities to be the realization of business goals and objectives.[8]

Of these three flavors, the operational definition is closest to that which is currently used by the Business Architecture Guild in the *BIZBOK® Guide*.[9] Coincidentally, it is also the one typically embraced by the modeling community that uses the Business Process Model and Notation (BPMN) modeling language standard from the Object Management Group (OMG).[10]

While superficially very similar, the three flavors cited here are actually quite distinct, with different

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[5] See the source for this definition at *http://social-biz.org/2014/01/27/one-common-definition-for-bpm/*, which was based on discussions on or with *Linked-In's BPM Guru Group*, BPM.COM's Forum, Workflow Management Coalition (WfMC) Members, and the Association of BPM Professionals (ABPMP) Forum.

[6] "Process is a technical term with a precise definition: an organized group of related activities that together create a result of value to the customer." – From *Reengineering the Corporation: A Manifesto for Business Revolution* (1993), p.35, by Michael Hammer & James Champy.

[7] "In definitional terms, a process is simply a structured, measured set of activities designed to produce a specific output for a particular customer or market." – From *Process Innovation: Reengineering Work Through Information Technology* (1993), p. 5, by Thomas Davenport.

[8] "A set of one or more linked procedures or activities which collectively realize a business objective or policy goal, normally within the context of an organizational structure defining functional roles and relationships." from the Workflow Management Coalition (www.wfmc.org), cited in the "In OMG's OCEB Certification Program, What is the Definition of Business Process?" May 2008 (http://www.omg.org/oceb/defbusinessprocess.htm).

[9] "A business process is a series of logically related activities or tasks (such as planning, production, or sales) performed together to produce a defined set of results." - see the *BIZBOK® Guide* v4.1, Section 3.4, p. 259.

[10] See http://www.omg.org/spec/BPMN/index.htm for the standard's specification, and http://www.bpmn.org/ for additional information. The operational understanding of a process can be seen in *BPMN Modeling and Reference Guide* (2008), p. 27, by Stephen A. White, Ph.D and Derek Miers, and in *BPMN Method and Style*, 2nd Edition, p. 11, by Bruce Silver.

consequences for the approaches used to model what are thought by the practitioners to be the business processes. In practice, these consequences have been overlooked or misunderstood, which has often led to different or mixed modeling approaches applied in the same context.

Consider the range of semantics necessary to support the description of a business process across various possible perspectives:

- Captures an organized group of related activities that together create a result of value to the customer
- Captures a standardized set of high-level terms that an organization can use to effectively talk about what it, and similar organizations, do
- Captures the normal path (aka, the "happy path") and exceptional paths with associated error conditions required to provide closed-end definition for operational flows
- Establishes a taxonomy giving identity for each unique behavior in the context of its containing category
- Provides abstractions that eliminate the interior details of a flow in order to reduce the amount of information exposed in a particular context
- Captures the roles which are responsible for completing individual assignable tasks
- Captures the patterns of interactions between specific organizations without regard to the behavior of individuals in each organization
- Captures abstract patterns of interaction that can be used by any organizations which agree to follow a protocol
- Captures the metrics associated with how cumulative cycles of a flow spend time at various positions in the flow, and the rates at which various paths are taken
- Captures the relationships between activities and flows, and the governance associated with these.

Such diverse understandings of what can be considered a business process have led to the modeling of some things as business processes that are better represented as different but related business concepts, such as value streams. This is the essence of the conflict in the principal overlap between BPM and business architecture for many practitioners. However, in very formalized and rigorous modeling environments, such as those engaged in defining an enterprise architecture, these distinctions are more clearly understood because of the need to have unambiguous understandings of modeling concepts.[11]

When practitioners try to tease apart the various semantics that this array of usage patterns implies, a framework is often helpful in helping to sort and parse those patterns. Such a framework tries to identify core concepts shared across the various usages. Using these concepts, it is possible to examine

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[11] For example, the Department of Defense Architecture Framework (DoDAF), a business process can be represented as a set of behaviors in the event trace, which is an operational view formally known as OV-6c (see http://dodcio.defense.gov/dodaf20/dodaf20_ov6c.aspx), which is separate from but related to a capability view.

the distinctions of how these are related, which are implicit in each of the usages. These distinctions represent differences in the semantics that, while implied, are not necessarily formalized. The following is a summary of some key concepts for understanding a process that are common to most process modeling languages, including standard ones such as BPMN.

- **Span of Control** – A process will have a span of control that defines the controlling context that governs/enforces its flow, application of business logic, assignment of performers, etc.

- **Decomposition** – Decomposition of a process is essentially a decomposition of a span of control, wherein a higher-level expression of execution exchanges with a lower-level one.

- **Triggering and End States** – A process when instantiated has a specific set of circumstances that constitutes a definitive beginning, and another that constitutes a definitive end(s).

- **Exchange Interfaces** – A process will have interfaces through which exchanges occur between the span of control of a specific process and other processes.

By applying such a framework, it becomes possible to identify distinct semantics within the large pool of meaning that currently occupies the BPM space. Generally speaking, the list of areas identified earlier (and potentially several others) has the formal semantics covered by BPMN, which is largely achieved by providing rigor and guidance for the definition of operational flows. However, the first two areas in that list are ones where business architecture can offer a more appropriate approach to the needed semantics for best describing the associated business concepts.

Value Streams

Earlier in this paper, the following was identified as one of the many semantics that are given to business processes:

> *Captures an organized group of related activities that together create a result of value to the customer.*

Within business architecture, "the primary blueprint used to do this is the value map which shows the activities that an organization performs to create the value being exchanged between itself and its stakeholders."[12] There are various notational approaches to illustrating this type of flow, including:

- Using an ordered line of chevrons typically used for value streams (as would be familiar to most practitioners), and other similar techniques for showing value-generation

- Using a modeling language, like BPMN, to model it as an operational process with constituent activities representing abstract behaviors as a "high-level process."

However, existing approaches ignore either the poor fit between the notation used and the related semantics of a formal modeling language (e.g., BPMN), or the lack of any rigorous semantics for the

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[12] See the *BIZBOK® Guide* v4.1, Section 2.4, p. 117.

other approaches for showing value generation (e.g., with value streams).

For example, modeling an end-to-end business process as a "high-level process" in BPMN can be done, but this requires making accommodations in how it is decomposed into more operational (and less abstract) expressions so that the models do not violate BPMN semantics. Unfortunately, this tends to lessen the overt sense of value creation that other notations (such as the ubiquitous chevron motif) convey better.

The framework described earlier can be used to help differentiate the requisite semantics of a value stream with constituent value stages, and what distinguishes it from other kinds of business processes with operational flows.

Span of Control

The span of control of a value stream is the most radical difference between it and a business process with operational flows. A value stream "provides a common baseline for envisioning how to deliver high visibility stakeholder value,"[13] which is not necessarily tied to nor controlled by a single business organization other than perhaps the enterprise itself. Thus, there may be more than one span of control involved in realizing a value stream.

In addition, though not representing a flow in the operational sense, the linking of the value stages that are its compositional elements is nonetheless illustrated visually using some linear notation (e.g., arrows or nested chevrons). However, this forward progression illustrates delivery of additional or incremental value rather than completeness of an activity. A value stage is therefore not an execution context, so the linked realization of values stages does not occur within a concept of span of control as there is in operational business processes.

Finally, because the scope of a value stream is limited to including those activities that directly deliver value to the triggering stakeholders, it is intentionally a non-complete inventory of all operational activities that might take place. Unlike definitions of operational processes, this is not merely a matter of levels of detail. This scope is distinct from many other flows where the scope is driven by things such as ownership boundaries, organizational boundaries, product completion states, or the final exchange of goods or services. Because of this difference in span of control, a value stream may not map directly or completely to a particular set of operational business process. The opposite is also true for the same reason. Both outcomes are indicated below in Figure 1 - Sample Process to Value Stream Mapping.

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[13] See the *BIZBOK® Guide* v4.1, Section 2.4, p. 118.

Example Mapping of Operational-Level Business Processes and Activities To Related Value Stream and Value Stages		Prospect Customer Value Stream and Value Stages			
		Search Quotes	Identify names	Contact Customer	Verify Interest
Conduct Mailing Campaign Process and Activities	• Prepare mailing lists of prospective customers	X	X		
	• Produce items to mail to prospective customers				
	• Mail items to prospective customers			X	
	• Record received customer responses			X	
	• Perform response follow-up to customers			X	X
Mine Customer Purchases Process and Activities	• Perform periodic queries of recent purchases	X			
	• Determine potential new purchases by customers		X		
	• Update customer purchase profiles		X		
Provide Customer Quote Process and Activities	• Record customer quote request			X	
	• Prepare customer quote response				X
	• Deliver customer quote response				

Figure 1 - Sample Process to Value Stream Mapping

Decomposition

When a value stage is decomposed, it captures only the activities that deliver value to the stakeholders at the lower level of decomposition. Because of this a value stage decomposes into a construct whose value items directly contribute to the value items at the parent level, as shown below in Figure 2 - Example Value Stream and Associated Value Stages, from which the value stream and value stages were pulled for inclusion in Figure 1.
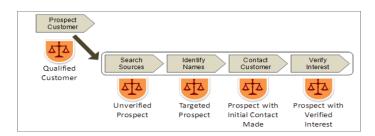

Figure 2 - Example Value Stream and Associated Value Stages[14]

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[14] Source: *BIZBOK® Guide* v4.1, Section 2.4, p. 131.

Contrast this decompositional relationship with that for an operational flow, where the relationship of the parent level to the child level is strictly one that requires the child not to be out of conformance with the interface and execution context provided by the parent.

Triggering and End States

The structure in the figure above has a superficial similarity to operational processes with definitive triggers that end with definitive end states, yet the semantics diverge greatly. These semantics diverge in terms of the characterization of the objectives of the stakeholders. The value stream identifies value achievement rather than outcomes. In many cases, the value of the whole is greater than the sum of the parts. Because of this characteristic, achievement of value in a higher level value stream is not simply the sum of all the lower level value items delivered. This result is in stark contrast to process decomposition where nothing new can be added at higher levels of abstraction.

Exchange Interfaces

While an activity within an operational business process exists to capture the fact that some behavior is being performed, a value stage within a value stream exists for very different reasons. "Each value stage of a value map as it moves from left to right creates value for one or more stakeholders,"[15] which is not the same thing as a set of operational behaviors being performed. As stated previously, this means that the value stages of a value stream do not necessarily capture a complete inventory of all the activities that need to be performed to deliver the value at that point in the value stream. Instead, only the activities that directly deliver value to the stakeholders of that value flow are included within it.

This means that any exchange interface that occurs within a value stream for realizing value may exclude items that exist in an operational flow, and may include items (such as branding) whose value becomes tangible at some value stage whose appearance would not be noted at that point in the operational flow. Within a value stream, the objective of the stakeholders is to achieve a comprehensive value that is delivered or enabled by the value stream. Within a typical operational flow, only value concretely delivered within the scope of the flow can be identified, as shown below in Figure 3 - Example Value Structure.

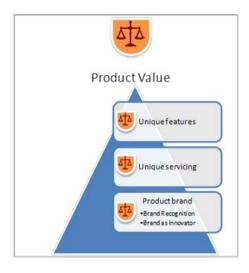
[15] See the *BIZBOK® Guide* v4.1, Section 2.4 p120.

Figure 3 - Example Value Structure[16]

Capability Mapping

At the outset of this paper, a second semantic was identified as being an area where existing process semantics are weaker than those available using business architecture:

> *Captures a standardized set of high-level terms that an organization can use to effectively talk about what it, and similar organizations, do.*

Within business architecture a capability is defined as:

> *Specifically, the business capability is "a particular ability or capacity that a business may possess or exchange to achieve a specific purpose or outcome."[17]*

The two definitions appear to be very close, and in practice it is frequently the case that business processes are used to capture what are, in effect, capabilities. However, a capability can only decompose into finer-grained capabilities, and not to more discrete operational behaviors, as is the case with process modeling, or other views of the business.

This situation has led to a great deal of confusion for individuals and organizations trying to reconcile their business architecture and BPM practices. The weak semantics available within process modeling for representing capabilities often make it difficult to distinguish a process model from a capability map.

Applying the framework again helps expose the missing process semantics that business architecture has formalized as part of the capability mapping technique.

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[16] Source: *BIZBOK® Guide* v4.1, Section 2.4, p. 132.
[17] See the *BIZBOK® Guide* v4.1, Chapter 2.2, p. 47.

Span of Control

While a business process generally implies that there is some kind of flow, so-called "high-level processes" typically function as a kind of categorization scheme and communication device rather than as an ordered set of defined paths for executing work. When "high level processes" are created (and even decomposed to a limited extent) that do not imply a flow or imply it only in the loosest sense, then they no longer really share many of the key characteristics of a business process. In particular, the span of control for these high-level processes commonly has no formal linkage to the span of control of the lower level processes they decompose or map into.

Though these top-down structures can be created internally as what essentially amount to functional decomposition node trees, they are often developed and standardized for horizontal or vertical segments of an enterprise.[18] These off-the-shelf constructs are generally referred to as process classification frameworks (PCFs) or industry reference models (or something similar), the names of which give a clue as to the intended purpose.

The classification (or categorization) of business processes is a very different semantic than that for a flow. A business process with flow is generally understood as being a discrete sequence of activities, with definitive start(s) and end(s), as opposed to the continuous nature implied by PCFs and similar constructs. Unfortunately, this mixing of meanings in practice is often another source of confusion between business architecture and BPM to their mutual detriment.[19]

Used properly, PCFs or industry reference models provide powerful benefits to BPM and business architecture efforts. They can have a helpful normalizing effect on the vocabularies used to name business processes, providing areas of needed alignment. On the other hand, the elements in them are essentially capabilities, meaning they are more akin to capability maps than process models.[20]

Properly practiced, business architecture solves the issue of overloaded meanings for business processes in this conflict by distinguishing these non-actions as the "whats" that a business has available to implement through the "hows" of business processes, and distinguishes these as clearly a different architectural concept by naming them "capabilities." A capability is distinct from a business process because a capability exists outside the context of any flow. Rather, a capability represents a construct that transforms, produces or eliminates an item of business value outside the context of any flow.

When a capability is realized by a business process, it gains a usage context that constrains it, keeping in mind that a capability may have multiple processes that make use of it. Because of this difference in

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[18] Different horizontal and vertical segments gathered by the American Productivity & Quality Center (AQPC) can be found at http://www.apqc.org/. Industry examples include the telecommunications industry in the eTOM Business Process Framework (see http://www.tmforum.org/businessprocessframework/1647/home.html) and for supply chain industry in the SCOR Process Reference Model (see https://supply-chain.org/our-frameworks).

[19] For a brief but good discussion of this phenomenon and its impact on modeling processes in BPMN, see *BPMN Method and Style*, 2nd Edition, pp. 11 - 12, by Bruce Silver.

[20] A more expansive treatment of how best to use these types of constructs within a business architecture context can be found in the *BIZBOK® Guide* v4.1, Part 8, p, 445.

span of control, a capability may not map directly or completely to any particular set of operational business processes. The opposite is also true for the same reason. Both outcomes are indicated below in Figure 4 - Sample Process to Capability Mapping.

Example Mapping of Operational-Level Business Processes and Activities To Related Capabilities		Account Restructuring Capabilities				
		Basic Eligibility Determination	Customer Product / Matching	Account Risk Determination	Account Price Determination	Account Offer Finalization
Conduct Mailing Campaign Process and Activities	• Prepare mailing lists of prospective customers	X				
	• Produce items to mail to prospective customers		X			
	• Mail items to prospective customers		X			
	• Record received customer responses		X			
	• Perform response follow-up to customers			X		
Mine Customer Purchases Process and Activities	• Perform periodic queries of recent purchases	X				
	• Determine potential new purchases by customers		X			
	• Update customer purchase profiles		X	X		
Provide Customer Quote Process and Activities	• Record customer quote request				X	
	• Prepare customer quote response				X	
	• Deliver customer quote response					X

Figure 4 - Sample Process to Capability Mapping

Decomposition

Earlier in this paper the concept of decomposition was characterized as follows:

> *Decomposition of a process is essentially a decomposition of a span of control, wherein a higher-level expression of execution exchanges with a lower-level one.*

This process-based view of decomposition implies that the interface between levels is driven by initiating and ending events, the matching of inputs and outputs between parent and child levels, and anything else needed to ensure the integrity of control passing from the parent to the child and back. This view is driven by the need to be certain that there are no gaps or areas of ambiguity that represent undefined or under-defined operational behaviors. Decomposition of capabilities maintains a particular business perspective, such as specific business entity (e.g., a contract) or specific business concept (e.g., marketing). Thus, the concept of decomposition of capabilities is different in that it is strictly and rigidly functional, as shown below in Figure 5 - Example Capability Map (Levels 1 - 5), from which the Level 2 and 3 capabilities were pulled for inclusion in Figure 4.

Figure 5 - Example Capability Map (Levels 1 - 5)[21]

As discussed above, process hierarchies commonly confuse levels by creating top-level processes that serve either as unreconciled conceptual flows or as categorizations of business behaviors. This approach creates confusion because it fails to make clear which of three semantic patterns - business model flows, operating model flows, or business capabilities - is being used. This mixture of semantics, combined with a lack of clear identification of when each one is being implied, creates a confusion that is difficult to resolve as individuals attempt to build a consistent process hierarchy for use in either business architecture or BPM efforts.

Triggering and End States

Earlier in this paper the concept of triggering and end events was characterized as follows:

> *A process when instantiated has a specific set of circumstances that constitutes a definitive beginning, and another that constitutes a definitive end(s).*

While there can be no question of the importance of the triggering and end state concepts, it is clear

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[21] Source: *BIZBOK® Guide* v4.1, Section 2.2, p. 83.

that the semantics differ greatly depending on which semantic pattern is being used.

Capabilities are "whats" not "hows," so capability maps have no flow to trigger and no end state to realize (though they may have desired outcomes). These are concepts that make no sense in that context. When a PCF is created or used as a way of capturing capabilities, this implies that no triggering event should be captured. However, this creates an apparent paradox because all business processes are expected to begin by some triggering event. This inconsistency once again highlights that by using processes to represent distinct semantics, practitioners end up inadvertently muddying the waters.

Exchange Interfaces

Similar to the discussion above on triggering and end states, the issue of the semantics of exchange interfaces is a poor fit for capability maps. The definition provided earlier illustrates this problem:

> *A process will have interfaces through which exchanges occurs between the span of control of a specific process and other processes.*

While a capability does not have interfaces in this sense, which would in effect establish relationships with other concepts, it does not exist within a vacuum but rather has a set of critical relationships with other key concepts in the business architecture, as shown below in Figure 6 - Relationships between Capability and Related Business Architecture Perspectives.
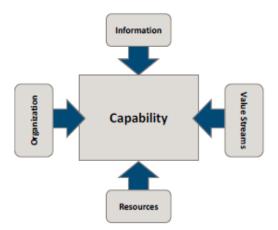

Figure 6 - Relationships between Capability and Related Business Architecture Perspectives[22]

The interpretation of these relationships does not imply that a capability contains or interfaces with organization, information, value streams, and resources (or any other concept in the business architecture). The relationships are mappings that exist per the Business Architecture Framework.[23]

However, capabilities gain a context when they are realized by a process. Because of this, a capability cannot have an exchange interface because it exists independent of any particular usage context. By

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[22] Source: *BIZBOK® Guide* v4.1, Section 2.2, p. 49.
[23] Source: *BIZBOK® Guide* v4.1, Part 1, p. 5.

using PCFs to capture or model capabilities, practitioners can run the risk of inadvertently creating implied links between a capability and an exchange interface with some other process element. This incorrect linkage ties a capability to a specific process element, making it no longer able to be used within other processes that need similar behavior. Some process models have taken to creating separate sets of reusable process components to try to deal with this issue. However, instead of creating special cases to circumvent this problem, it is a much more resilient outcome if practitioners simply separate out the concept of capability from the concept of business process.

Linkages

This paper has discussed several key elements of business architecture and how those concepts relate from theoretical and anecdotal perspectives. The following provides a summary of the business architecture concepts and relationships discussed.

Value streams are one of the business architecture concepts introduced in this paper. Value maps illustrate how an organization orchestrates capabilities in order to create stakeholder value and align to other aspects of the business architecture. In business architecture, a value stream is made up of value stages. This value stream is a linking within the business model. These value stages are activities understood at the business model level. As an organization translates their business model to an operating model, those value stages are translated into business processes.

This translation results in a mapping, but this mapping is not a simple one-to-one type. A single value stage may map to one or more business processes. This mapping represents operating model decisions about how to segregate a single business model level activity into the ways in which an organization has structured itself. Similarly, one or more business processes can map to a single value stage. This mapping represents the ability of an organization to find commonality at the operating model level that can be shared across a single business model level activity. The resulting many-to-many mapping is shown below in Figure 7 - Granularity Difference between Processes and Value Stages.
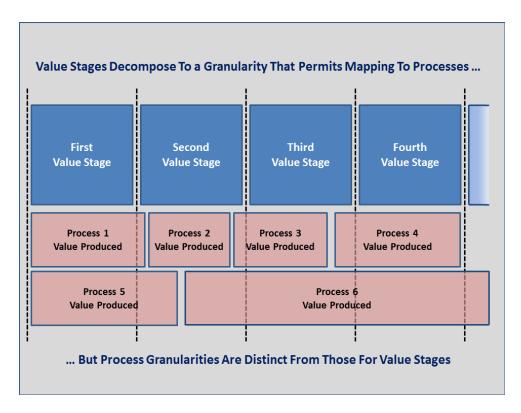
Figure 7 - Granularity Difference between Processes and Value Stages

A capability brings together the value streams, information, resources and organization structure that combine to enable an organization to achieve a desired outcome. Capabilities are the "what" in an organization that make up the basic behaviors that an organization has identified as building blocks within the business model. Capabilities can be decomposed into lower levels of granularity, and this decomposition indicates that the higher-level capabilities are made up of these lower-level capabilities. This does not indicate that the set of lower-level capabilities by themselves make up everything within the higher level capability.

Because of this characteristic, the decomposition is not a level of abstraction as is the case in process decomposition, particularly as would be required by the semantics of a formal modeling language. Because capabilities are building blocks, deriving value from them is delivered by mapping them to value streams in a value context within the business model or to business processes in an operational context within the operating model. A capability similarly may map to more than one business process if the same capability is used across a variety of business processes. A single business process may map to more than one capability if those capabilities are all used within the span of the flow defined by that business process. The resulting many-to-many mapping is shown below in Figure 8 - Granularity Difference between Processes and Capabilities.
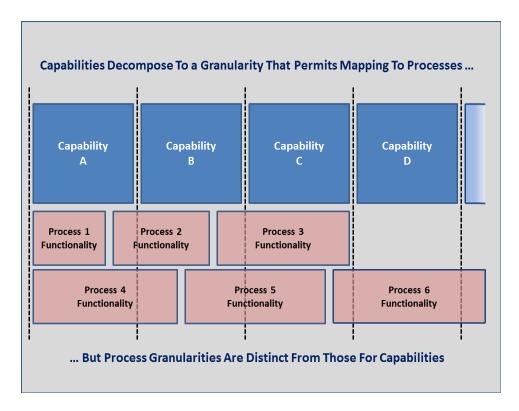
Figure 8 - Granularity Difference between Processes and Capabilities

Practice Reconciliation

This paper has examined some of the key conflict areas surrounding the treatment of business processes by the two distinct but related inter-disciplinary practices of business architecture and BPM. Reconciliation requires that efforts in each space have a shared and correct understanding of what is and what is not a business process. To that end, here are some prescriptive recommendations to follow:

- Value streams should be represented not as high-level end-to-end process models using a formal modeling language, but rather notationally as linked nodes of value generation.
- "High-level processes" developed top-down without flow or acquired as PCFs should be understood not as business processes but rather candidate capabilities in a capability map.
- Business processes with flow should be understood as modeling operational behaviors, and should be done using a formal modeling language such as BPMN.

Business processes can thus be mapped to value stages and capabilities as the means for relating and synchronizing business architecture and BPM efforts. These mappings support key ways in which business architecture's concepts can add value to existing BPM-driven efforts, including:

- Identification of potential process redundancies (multiple processes for doing or realizing the same thing, as evidenced by seemingly unnecessary multiple mappings)
  - By linking capabilities or value stages to business processes, it is possible to identify whether or not process variation is driven by unique capabilities or by differing operational implementations. This identification is an essential input into the strategy aspect of business architecture where such process variations can be evaluated for strategic alignment and value contribution.

- Identification of organic inconsistencies across processes (relationships that should be present across all process variants not being present, as evidenced by missing mappings)
  - By linking capabilities or value stages to business processes, it is possible to compare how variations on processes are making use of an organization's capabilities or realizing an organization's value stages. This opens up the ability to determine if potential reuse opportunities have been missed, and contributes to both operational improvement and strategic alignment with enterprise investment priorities.

- Discovery of poorly understood competitive variations (multiple processes to support business variations, as evidenced by presumably necessary multiple mappings)
  - More often than not, one discovers that a single capability or value stage is realized by multiple organizations, via multiple business processes, and with multiple information models. The mapping relationship gives the organization better insight into the existence of these many-to-many relationships, and more promising opportunities to address them. Then, given the business issue(s) under scrutiny, one can combine these concepts together to more effectively address the issue.

- Support for process improvement through better targeting of BPM-driven efforts (via mappings among business processes, value streams, and capabilities).
  - Heat maps can be created from the developed many-to-many relationships, wherein the operational analyses from BPM-driven efforts inform the ratings in the heat maps for value streams and capabilities, just as the architectural analyses out of business architecture-driven efforts for value streams and capabilities inform the ratings in the heat maps for business processes, providing more precise targeting of the most promising opportunities for improvement to address.

Summary

This paper has touched on the various linkages that are implied within the mixed semantics of existing process modeling practices as they relate to business architecture and BPM. Business architecture segregates these semantics into distinct elements, allowing organizations to consistently identify and link these concepts in powerful ways. BPM provides the deeper operational insights necessary to best leverage the power of these concepts. Both practices are best served by letting one inform the other through mutual recognition of their respective strengths and weaknesses.

The elements provided by business architecture may seem new to many in the process world. However, in practice most process modelers have been identifying the unique semantics of each of these in their existing work. For these individuals, business architecture provides a more thorough and consistent set of semantics that can be applied to existing business process practices to help clarify and extend the power of the models already being produced.

About the Business Architecture Guild

A cadre of leading industry experts formed the Business Architecture Guild to develop *A Guide to the Business Architecture Body of Knowledge™ (BIZBOK® Guide)* and to promote best practices and expand the knowledgebase of the business architecture discipline. The *BIZBOK® Guide* evolves organically through the work of countless members who come together to form collaborative teams around a given topic. The Business Architecture Guild is a member-based and member-driven not-for-profit organization dedicated to growing and disseminating authoritative information on business architecture. Contact us at info@businessarchitectureguild.org or at www.businessarchitectureguild.org.

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