

Examining Capabilities as Architecture

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Introduction

This Article is a direct response to one written by Mike Rosen titled, "[Are Capabilities Architecture?](#)" [1] published in February 2013 by BPTrends. It offers a different and contrasting point of view on accepting capability modeling and mapping as "architecture."

Business Architecture (BA) approaches and methods, while still evolving, have at least reached a point of maturity where the enterprise can fairly assess how it will develop and advance this initiative. As with any emerging field, a variety of approaches and methods will develop and enjoy success. From an historical perspective, consider the number of Business Process Management (BPM), Enterprise Architecture (EA) and Service-Oriented Architecture (SOA) approaches that have matured over the years. And no doubt, the same will eventually occur with the Business Architecture over the next few years. However, just as with the BPM, EA and SOA some different and contrasting points of view will find their way into the various Business Architecture approaches, techniques and methods.

Today, at least two different and contrasting organizing principles are considered for Business Architecture. One is "capability centric" and the other is "process centric." This article advocates and supports the "process centric" organizing principle, specifically using a value stream which 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.[2] This is a well known term, familiar in Six Sigma, Lean Manufacturing and BPM approaches. And of course, the term "value stream" is very similar to other comparable phrases such as, customer driven end-to-end enterprise business processes, core cross-functional business process and key cross-functional business process. However, the distinction between these two organizing principles - "capability centric" and "process centric" - is clear. At its core, capability modeling uses a mapping technique, whereas value streams use an architectural discipline. One might even provocatively characterize this distinction as "the difference between art using capabilities and science using value streams!"

In Business Architecture, many business and IT professionals support a capabilities modeling and mapping approach. However, it seems peculiar that an approach titled and described as "mapping" can represent an architectural discipline. Many different approaches, methodologies, frameworks and techniques can improve enterprise performance, effectiveness and efficiency. Some represent formal architectural practices and others do not. This article does not diminish capability modeling and mapping as useful to the enterprise; however it clearly disagrees with referring to it as architecture, and using a capability modeling and mapping approach will not deliver true architectural results.

What is Architecture in the Context of an Enterprise?

The reader is asked to consider a well known description and definition of architecture. The architecture of an enterprise is described by John Zachman and it is referred to as "The Zachman Framework for Enterprise Architecture™, The Enterprise Ontology™." As stated from the [Zachman web site](#): "More specifically, the Zachman Framework™ is an ontology - a theory of the existence of a structured set of essential components of an object for which explicit expressions is necessary and perhaps even mandatory for creating, operating, and changing the object (the object being an Enterprise,). The Zachman Framework™ IS NOT a methodology for creating the implementation (an instantiation) of the object. The Framework IS the ontology for describing the Enterprise. The Framework (ontology) is a STRUCTURE whereas a methodology is a PROCESS. A Structure is NOT a Process. A Structure establishes definition whereas a Process provides Transformation." [3]

In the interest of scientific inquiry, the reader is asked to carefully study and research the above 2-page reference and another 7-page article titled "Architecture Artifacts Vs Application Development Artifacts" by John Zachman[4]. On the first page, Zachman defines Enterprise Architecture as "the set of primitive, descriptive artifacts that constitute the knowledge infrastructure of the Enterprise. It is purely structural." The most important characteristic of this definition is that the artifact "be descriptive of the Enterprise, not merely descriptive of an implementation within the Enterprise." Later in the article beginning at the top of page 3, Zachman also provides three test criteria for determining if a model or artifact represents Enterprise Architecture or implementations in the form of Application Development work products.

In this insightful article written way back in 2000, Zachman states that one can analyze an artifact by asking "is it a single variable model (primitive, all components occurring within a single cell of the Framework), or is it a composite, multi-variable model (comprised of components from more than one cell of the Framework)." A composite model without the supporting primitives simply represents an Application Development, point-in-time, work product; it represents an implementation within the enterprise (e.g. an "as-is" or maybe a "to-be" version of something), but not architecture.

Even though the above description and definition of Enterprise Architecture by John Zachman, has been around for a couple of decades, most business and technology consultants cannot objectively define architecture nor can they reference an easily accessible source on architecture for clients to research. If one does not believe this, then the reader should pose this question to a few consultants or colleagues to see what happens.

This challenging question is not intended to offend any business and technology consultants, but it does mean that Enterprise Architecture is an engineering discipline and requires a certain formality. Some innocently misuse the term architecture when referring to enterprise artifacts. Others purposely misuse the term architecture to mean that their enterprise artifacts are more important, relevant and significant than other non-architectural ones. After all, calling something architecture implies that it is better than just some other model, rendering or drawing, and therefore, more critical to acceptance of a proposed solution or deserving of a higher priority consideration.

In the "Are Capabilities Architecture?" Column, the definition for architecture in the context of an enterprise from an "ISO/IEC/IEEE 42010:2007" source was analyzed. Another definition was first referenced, but acknowledged that it is considered by some as TOO subjective. The "ISO/IEC/IEEE 42010:2007" definition analyzed is also TOO subjective even though everyone respects and greatly appreciates the work and achievements of this fine organization. If one were to give twenty people several enterprise artifacts (or models) and then to ask "Is this architecture?" according to their understanding of the IEEE definition, some will agree that it is architecture, some will disagree and still others will not know for certain. Even if all twenty people fully understand the IEEE definition, the use of any subjective definition will not yield consistent results void of opinions and biases. Here again, if one does not believe this, then just conduct this experiment with some colleagues. Objectivity is demanded of scientific inquiry in order to reduce biased interpretations of results. If twenty people are asked "Is this architecture?" according to some criteria, then all twenty should arrive at the same answer.

To think that some models, views, renderings, mappings, diagrams, drawings or descriptive documents could subjectively meet the IEEE definition and then get classified as architecture is amazing. In reality, using the IEEE definition, the best an individual can do is voice an opinion as to whether something is or is not architecture. How does this definition eliminate opinions, biases, arguments and even departmental politics? It does not and it cannot; it is TOO subjective and open to interpretation.

Another interesting quote on defining architecture from the ISO/IEC/IEEE 42010 Frequently Asked Questions web site states, "The original IEEE 1471 definition was the subject of long debate; reflecting the debate that has raged (and continues) in the community at large." [5] What is the cause of this raging and continuing debate? The cause was not emphatically stated, but perhaps the subjectivity of the definition is one of several reasons the debate continues.

What is Missing from the “Are Capabilities Architecture?” Column?

What is interesting about this Column is not necessarily the information presented and discussed, but what is missing. It seems peculiar that there was no reference to any historical archives or documents on capability modeling and mapping in the context of meeting architectural criteria. Where are the references or footnotes to these historical and archived documents? Surely, within the archive of the OMG sponsored Business Architecture Special Interest Group (BASIG) or somewhere else there exist documents describing how capability modeling and mapping met architectural criteria. Discussing the analysis in these documents would have been enlightening and informative, but they were omitted. In the Information Age, one generally expects a hyperlinked reference or footnote which provides the reader an opportunity to do personal research. Perchance these hyperlinks exist and are freely available for research, scrutiny and analysis on the Web, but where are they, how were they analyzed and who vetted them? The absence of these kinds of references might lead one to surmise that capability modeling and mapping were merely assumed to represent architecture or that architecture in the context of an enterprise was misunderstood. Is the Column referenced above the only public manifestation of this architectural analysis?

Are Capabilities Architectural Primitives?

No, but perhaps some will hypothesize that a table or hierarchy of capabilities classified down to level four or five represents a single variable model; an assumption that it is somehow a Zachman primitive. Then depending on how capabilities are further described and defined – for example, as stated in the “[Are Capabilities Architecture?](#)” Column, “capabilities are a description of ‘what the business does’” – advocates may want to somehow place this table or hierarchy in a Zachman primitive cell, perhaps Column 1, Row 2 of The Enterprise Ontology™. Another description of capability mapping relates capabilities to a value stream, a value stream stage and processes as well as capabilities to applications/services. That means a capability is not a single variable primitive, but a relationship between these implementations. This was illustrated by Figure 12 in an article titled, “[The Business Capability Map: The ‘Rosetta Stone’ of Business/IT Alignment.](#)”[6] In the context of the illustration in this Article, a capability is a mapping of implementations and obviously not a primitive, nor described as supported by composites built from primitives, therefore capabilities do not represent architectural primitives.

The capability modeling and mapping approach never refers to a “primitive artifact or single variable model,” but frequently describes associations and relationships between “models of implementations” or perhaps between composite models in Zachman terms. For example, one model of an implementation (a composite) is mapped to another model of an implementation (another composite), perhaps resulting in a composite of composites. Just refer to the following statements in the third paragraph of “[Are Capabilities Architecture?](#)” : “Capabilities are then realized by some combination of organization, process, and information. Organization, process, and information may be realized by some combination of people, systems, and technology.” This quote refers only to artifacts of implementations, not enterprise primitives. Therefore, “capability mapping” using the associations and relationships between composites or models of implementations” fails to meet Zachman’s architecture criteria in an objective manner.

The decision by the reader to accept “single variable primitives” which are representative of the enterprise as “architecture” or to accept models of point-in-time implementations as “architecture” will require some careful study and research into this most interesting subject; and this is encouraged. Just remember, a model, view or other artifact does not have to represent architecture in order to be useful to an enterprise, but understanding the difference between something that is or is not architecture is necessary.

Are Capabilities Fundamental Entities?

Yes, according to the “[Are Capabilities Architecture?](#)” Column which states: “There are several examples of good architecture meta-models that include capabilities as a fundamental entity.....” In this context a capability is an entity which is included in architecture metamodels, but it is not intrinsically architecture. And one can see in The Open Group Architectural Framework

(TOGAF), a reference to this by reviewing the section titled, [34.5 Content Metamodel Entities](#), on the TOGAF 9 web site.[7] However, the “inclusion of capabilities in an architecture metamodel” or being “part of architecture” does not inherently make the capability modeling and mapping approach representative of architecture. One can find other TOGAF “entities” - goal, objective and event - in the list of metamodel entities, but that does not mean that a “goal” is architecture; it is just an entity similar to capability.

Where is the Ontology and Metamodel for Capability Modeling and Mapping?

It is often stated that the anticipated value of capabilities is found in its mapping, as described in the Rosetta Stone article. Almost every discussion on capability modeling and mapping refers to a relationship or association between models - a value stream, a value stream stage, processes and applications/services[8] – all of which represent implementations or Application Development work products. But where are the defined, accepted and approved mapping relationships, ontology and metamodel supporting this description? How can one evaluate the validity and acceptance of an architectural approach with limited substantiating facts and information? These references are missing from the Column, too!

The “[Are Capabilities Architecture?](#)” Column’s description of ontologies and metamodels was informative, interesting and educational. However, it seemed odd that the ontology and metamodel for capabilities modeling and mapping were not specifically discussed, nor were they supported with hyperlinked references or footnotes. In the Information Age, one generally expects a point-and-click reference or footnote which provides the reader additional information to research. Surely, the historical archive of the OMG sponsored Business Architecture Special Interest Group (BASIG) includes the capability ontology and metamodel accessible with the point-and-click of a mouse. One has to believe these links exist, but where are they?

There are consequences associated with not having an ontology and metamodel for an architectural approach. If the components of an approach are not fully defined, understood and explained, then how can the standards for describing the relationships and associations between them develop and become formalized? How does one achieve predictable results from such an undisciplined approach lacking basic standards? Without an ontology and metamodel, it is an [Anything Goes](#) world; and that ain’t architecture by any definition!

Where is the Ontology and Metamodel for the Zachman Framework?

A previous section of this article just described and defined Enterprise Architecture by referring to the “The Zachman Framework for Enterprise ArchitectureTM”. Readers wishing to research the Zachman Framework, ontology and metamodel are encouraged to simply search the Web for “Zachman and ontology,” and “Zachman and metamodel.” An excellent overview was written back in 2008 and is available with the [point-and-click of a mouse](#). This overview illustrated the well-known Zachman 6 x 6 matrix and discussed its ontology and metamodel. After researching these various articles, the reader should have enough information to make an informed decision about the formality and validity of Zachman’s work in Enterprise Architecture.

Is The Enterprise OntologyTM Really Understood?

A previous section of this Article revealed that most business and technology consultants cannot objectively define architecture nor can they reference an easily accessible source on architecture for clients and colleagues to research. Even among some business and technology consultants, an understanding of the The Enterprise OntologyTM is most likely weak as well and this leads to unfounded criticisms.

One popular criticism of the The Enterprise OntologyTM has to do with the difficulty of distinguishing between “primitives and composites.” It is accurate to say that architectural concepts are complex, and require thorough study and research in order to understand its principles, tenets and concepts. So does physics, chemistry, engineering and service-oriented architecture (SOA), but that is not a sound reason for criticizing something simply because it is difficult to learn and requires some hard work to master. For example, consider the evolution of BPM over the past several years. Initially, business processes were modest in scope and simply

sketched out in swim lane linear flow diagrams. In the very early days the models were hand drawn and photo copies distributed to colleagues for analysis; it was labor intensive. Fast forward to today and consider the sophistication of the numerous BPM suites of software available in the public domain. The ability to design, analyze and implement truly engineered, optimized and significantly improved business processes has increased dramatically with these BPM tools. And the business professionals who led and participated in these strategic BPM initiatives have grown dramatically as well. They learned to apply engineering disciplines and rigor to achieve significant improvements in business process effectiveness and efficiency. Since these business professionals succeeded and along the way, developed new engineering skills during the BPM initiatives, the enterprise may rightly expect them to succeed and prosper again in a Business Architecture initiative since they have a successful and proven track record.[9]

The reader is asked to carefully analyze the following overview of Zachman primitives and composites. The cell at Column 1, Row 2 from The Enterprise Ontology™ is a model of the THINGS of the enterprise, a “single variable primitive” model. It represents a Conceptual Data Model of enterprise THINGS. And this information transforms into a fully normalized Logical Data Model in the cell at Column 1, Row 3, which is another “single variable primitive” model. These models are descriptive of the enterprise, not a specific implementation. The reader will find an excellent discussion on the transformation between the rows of Column 1 in a most excellent article written by Loretta Mahon Smith titled, [“Data Analysis for Business Analysts: The Zachman Framework and Data Architecture.”](#)[10]

Now consider a composite model that contains some data and processes with some editing specifications by organization that is used as requirements for developing software.[11] This composite model might represent a “to-be” version of an Application Development work product for a future implementation. Opportunities for reuse abound if the composite model is built from “single variable primitives.” Other composite models can reuse the very same primitives but in different relationships. However, lacking the primitive artifacts, trying to reuse the composite model in its entirety is not only difficult because of the number of variables it contains, but it may require dual maintenance and upkeep after implementation as well. Any changes to a variable in one instantiation of the reused composite will require a supporting change in the other reused composites.

Frequently, composite models or other artifacts (with or without their supporting primitives) that are favored and praised by some consultants are questioned as to why they are not present in The Enterprise Ontology™. These consultants may then regard The Enterprise Ontology™ as incomplete or insufficient because their favorite composite model does not reside in an ontology consisting only of primitive artifacts. These consultants express dissatisfaction by suggesting the ontology needs a new row/column or a renamed row/column or some other expansion which somehow incorporates their favorite composite model. From the consultants’ rather biased point of view, it somehow makes sense to expand an ontology consisting only of primitives to somehow accommodate a composite model. This suggestion manifests a profound misunderstanding of The Enterprise Ontology™. Metaphorically speaking, questioning the absence of any composite model in an ontology of primitives is similar to asking, “Why can’t donkeys fly?” Both questions are illogical, representing the lack of a real understanding of architecture and aerodynamics, respectively.

One rather interesting MSDN Blog in the category of Inside Architecture titled, “Why Business Capabilities are not in the Zachman Framework,” stated: “..... a business capability is an architectural concept that does not exist in the Zachman framework.” Later the posting also stated: “A taxonomy of elements is necessary, but it is not sufficient.” And this posting questioned the all inclusiveness and completeness of The Enterprise Ontology™. The author of this MSDN posting while incorrectly referring to The Enterprise Ontology™ as a taxonomy, concluded with a personal acceptance of capabilities as architectural by stating: “A capability hierarchy is architectural, because it is useful to architects, used by architects, and fundamental to some architectural methods.” This implies that something can be considered architecture because it is useful to architects, not because it meets some formal architectural criteria. From

this opinion, anything useful to an architect is architecture. Is this back to an Anything Goes world?

Another favorite criticism of The Enterprise Ontology™ has to do with its completeness. Many still question if the primitives and approved composites of primitives are enough to meet enterprise needs. If the enterprise believes it needs other models, views, renderings, mappings, diagrams, drawings or descriptive documents that are not formally built from the Zachman primitives and composites, then the enterprise should build them and use them as appropriate. If these other artifacts provide keen insights into new enterprise opportunities or realize solutions to persistent problems, then the enterprise should embrace these artifacts and implement the identified performance improvements. And no single Enterprise Architecture (EA) methodology will ever satisfy all enterprises, all stakeholders and all concerns; that is why we have several methodologies to choose from and consider in the marketplace. Just do not confuse these other artifacts and approaches with architecture, and do not criticize their absence from The Enterprise Ontology™ or an EA Framework for that matter.

As one can see, criticisms of The Enterprise Ontology™ are numerous. However, a quick examination of them usually reveals an innocent misinterpretation or superficial understanding of The Enterprise Ontology™. Therefore, many criticisms are unsupported and lack a factual basis. If the criticism appears reasonable, it is rarely supported with a well defined improvement provided by an alternative “set of descriptive representations relevant for describing an enterprise.” It seems many who favor an alternative set of descriptive representations frequently disparage Enterprise Architecture Frameworks in general and The Enterprise Ontology™ specifically, but seldom offer a better or improved solution to the particular criticism. And this seems peculiar! Why is it necessary to advocate an alternative set of descriptive representations based on unfounded criticisms of The Enterprise Ontology™? Perhaps it is preferable to labor in a subjective, informal, Anything Goes world rather than to prosper in a real world of architectural disciplines. Since many view the world of IT as undisciplined, some may dread and reject the formality, structure, rigor and order required of any discipline.

Are Business Processes and Value Streams Primitives or Composites?

The lowest level swim lane business process model represents “some THINGS transformed by some PROCESSES in some LOCATIONS by some PEOPLE at some TIME for some REASONS.”[12] In the context of The Enterprise Ontology™, these typical, most widely recognized and lowest level swim lane business process models are composite models that integrate all of the Row 2 primitives. Row 2 from the 6 x 6 matrix represents the owner’s perspective. The functioning enterprise, which is the perspective represented by Row 6, should mirror what the owner wants as closely as possible.[13] These composite models integrate all of the excruciating detail from the Row 2 primitives. Process aggregation of these low level swim lane composite business process models may occur all the way up to, for example, a value stream. However, one must strictly adhere to the formality of balancing all inputs/outputs between each level of process aggregation.[14]

The example depicted in Figure 1 illustrates both the composite and aggregation characteristics of the event driven business process – Fulfill Order. It is the highest level workflow representation for Fulfill Order; a composite model with some business process aggregation. Any more aggregation of this model, while possible, may lose the ability to summarize Fulfill Order in a meaningful and easily understood manner. Of course, some will desire a little more detail and others will prefer a little less detail; but this is a decision for the owner. The summarized information in Figure 1 illustrates some THINGS (inputs/outputs), transformed by some PROCESSES (the sequence of the six aggregated business processes identified by red arrows), in some LOCATIONS (the connections between the enterprise and its external entities), by some PEOPLE (the roles of each swim lane), at some TIME (the events) for some REASONS (the decisions affecting sequence flows). Additionally, decomposition of each of the six aggregated business processes may occur for analysis and exploration purposes. Depending on the complexity of each aggregated business process, decomposition down to one, two or more lower

levels is very likely. At the lowest level of this business process decomposition, the primitives and how they were integrated into the composite model are revealed.

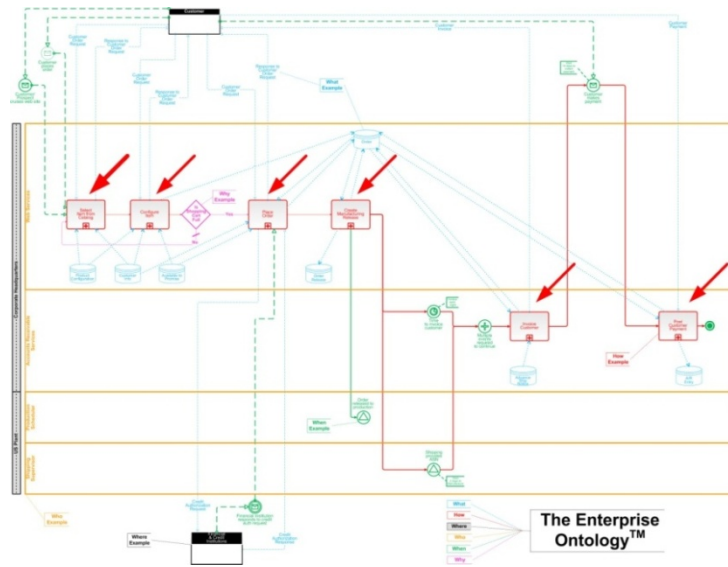


Figure 1. Fulfill Order - A Composite Business Process Model Built from Architectural Primitives

The business processes models are composites built from purposely designed and carefully integrated Row 2 primitives. The typical value stream model is usually summarized in a high-level view and represents an aggregation of purposely designed and carefully integrated business processes. Identification and design of the value streams may develop bottom up through aggregation, top down through decomposition or middle out; here again, it depends on the owner. Please refer to the value streams depicted in Figures 2 and 3. As one can clearly envision from the examples of these illustrations, both business processes and value streams represent the aggregation of composite models built from Row 2 primitives found in The Enterprise Ontology.™ More on this aggregation and decomposition in a later section of the Article.

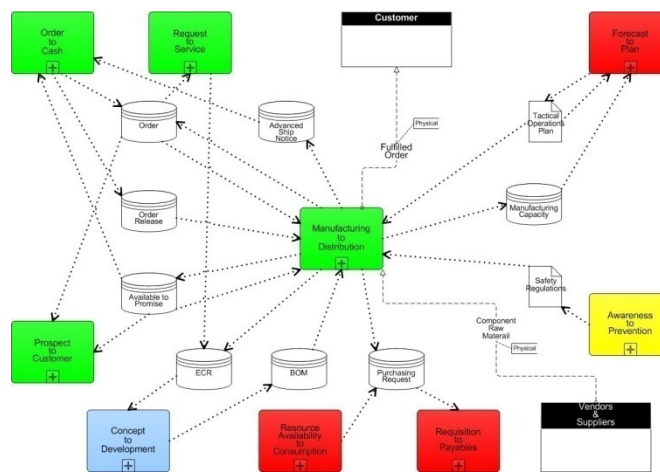


Figure 2. Manufacturing to Distribution Value Stream Model

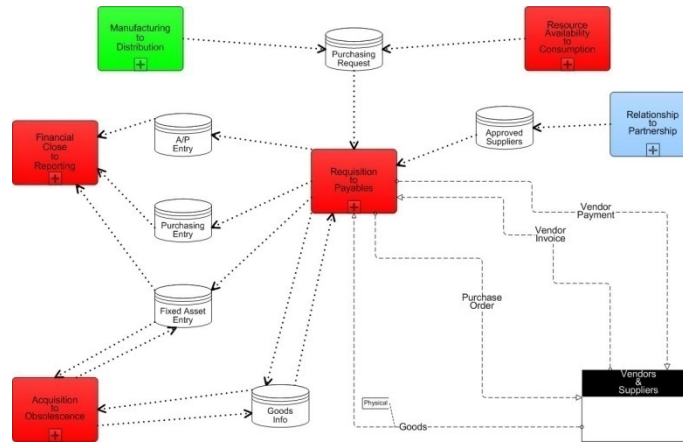


Figure 3. Requisition to Payables Value Stream Model

The Business Architecture Organizing Principle: Capabilities vs. Value Streams

The choice of an organizing principle for the Business Architecture reveals much about an enterprise. Why would any enterprise in the 21st Century choose a functionally centric model based on capabilities over a process centric model based on value streams? The 21st Century Information Age is characterized by the fact that customers can be reached by anyone, anytime and anywhere. Considering for example, the era of social and mobile computing, that obviously means competitors can reach those very same customers, anytime and anywhere as well. In the Information Age, does a functionally centric model represent a mindset characteristic of the Industrial Age? It may, but in the Information Age, the focus has to be on the customer (or consumer, client, member, patient, user and etc.).

It seems awkward to start with a capability hierarchy or table which is functionally centric, and then to map it from level 1 to value streams which are customer centric and then to map it from a lower level to business processes. This was illustrated by Figure 12 in an article titled, “[The Business Capability Map: The ‘Rosetta Stone’ of Business/IT Alignment](#)”[15] and the figure in another article titled, [Business Processes Start with Capabilities](#). [16] Depending on one’s point of view, this mapping might be useful. To others, splitting the natural decomposition of value streams into business processes by this mapping technique might seem to duplicate some already known relationships or it just may seem awkward. Perhaps this mapping was necessary to secure the functionally centric governance of capability planning and the focus on IT/SOA alignment.[17]

The enterprise must grow and expand up from Industrial Age functional thinking, and commit to integrating the cross-functional, end-to-end processes focused on the Information Age customer. The process centric and customer centric integrated value streams must become the new organizing principle for the enterprise, far surpassing a classified table of capabilities which are inherently functionally centric. It is extremely difficult and impracticable to integrate components without a well defined and purposeful organizing principle. The focus on the customer provides the reason, purpose and criteria for integrating the functional components.

What is the Enterprise really Wanting and Needing?

What kind of information is every team member of a strategic initiative needing and wanting that helps them analyze the impact of all enterprise changes required by a strategic initiative? The strategic initiative might represent the introduction of new products and/or services or enhancements to previously implemented social, mobile, and cloud computing initiatives or some significant improvements in productivity. Which artifacts exist in the enterprise knowledgebase that exemplifies this information? Assuming they exist, were these artifacts designed and engineered using architectural disciplines, or were they built using undisciplined approaches or modern day alchemy?

For example, the team members will need to know information such as the strategic initiative’s new/enhanced requirements as well as which business processes, procedures, repositories, transactions, organizations, customers, suppliers, partners, financial institutions and so on that are impacted by the requirements. What would these artifacts look like? Please carefully examine the following discussion with the supporting figures to see examples of these artifacts.

To begin with, one example might look like Figure 4. This artifact represents the hierarchy of value streams for a build-to-order manufacturing company. Similar to organizational or functional hierarchies, the value stream structure in Figure 4 is a classification model. However, considering the rigorous method by which value streams are designed, derived and interconnected via what each produces that is of value - the inputs and outputs - it goes beyond a simple classification of carefully engineered processes. The value streams, denoted by the colored horizontal rectangles, represent the aggregation of customer centric end-to-end flows through the enterprise and explicitly capture dependencies and relationships between cross-functional processes in terms of their inputs and outputs. And of course, the focus on a client, consumer, guest, passenger, patron, citizen, internal business user (or end user), C-level executive, stakeholder, employee and other similar terms are just as valid as customer. In a metaphorical sense, it is similar to a manufactured product’s “bill of materials” (BOM); hence, Figure 4 represents an enterprise’s “bill of value streams.” Just as BOMs are hierarchical in nature with the top level representing the finished product, the elements in Figure 4 are hierarchical in nature with the top level representing the whole company.[18]

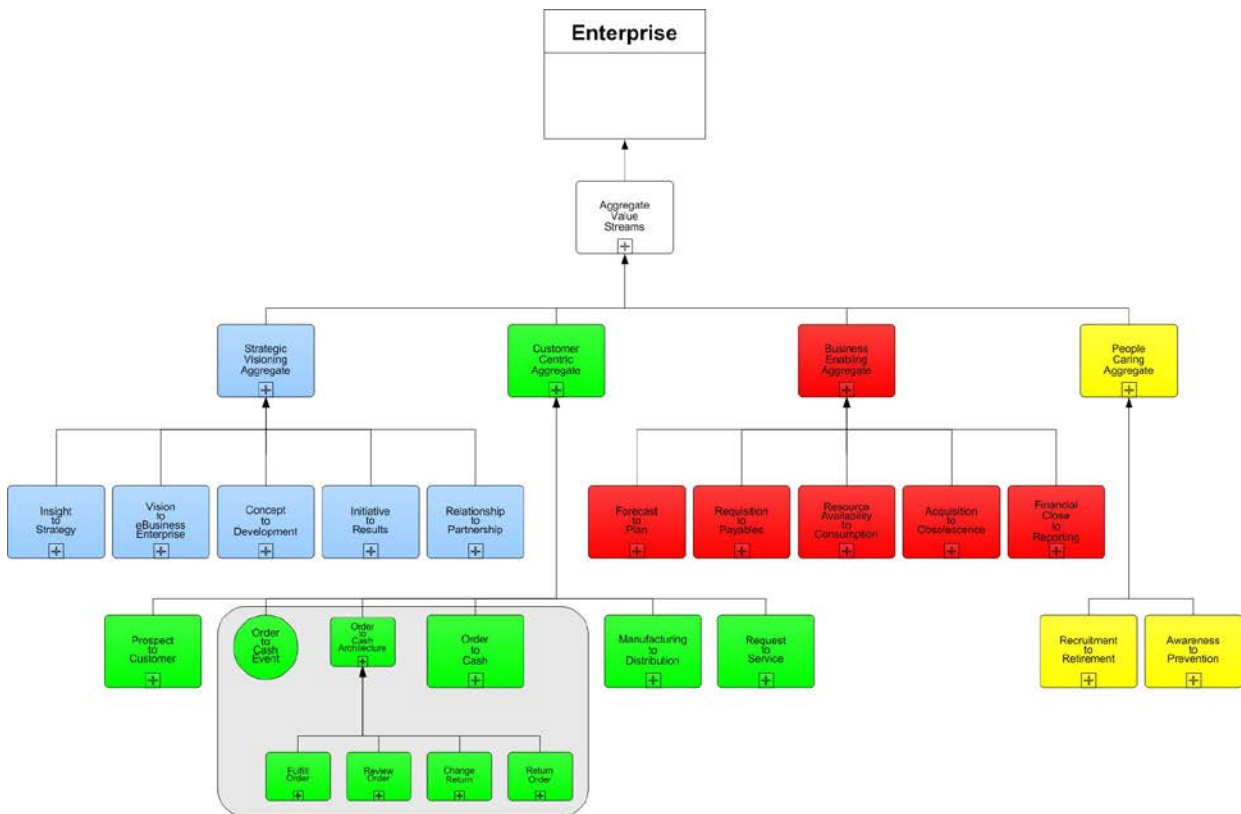


Figure 4. Hierarchy of Value Streams for a Build-to-Order Manufacturer

For analysis purposes, just choose and investigate any value stream in the hierarchy, for example, Order to Cash. The information it provides is depicted in Figure 5. The Order to Cash

Value Stream is singled out as an illustration, but the intent is not to merely consider this value stream in isolation, but rather to consider it in context with other value streams and external entities. Therefore, this value stream is always presented with other value streams and external entities with which it exchanges inputs/outputs. This means that the Order to Cash Value Stream is always referenced by how it is integrated, linked and connected to other value streams and external entities, but rarely considered in isolation.

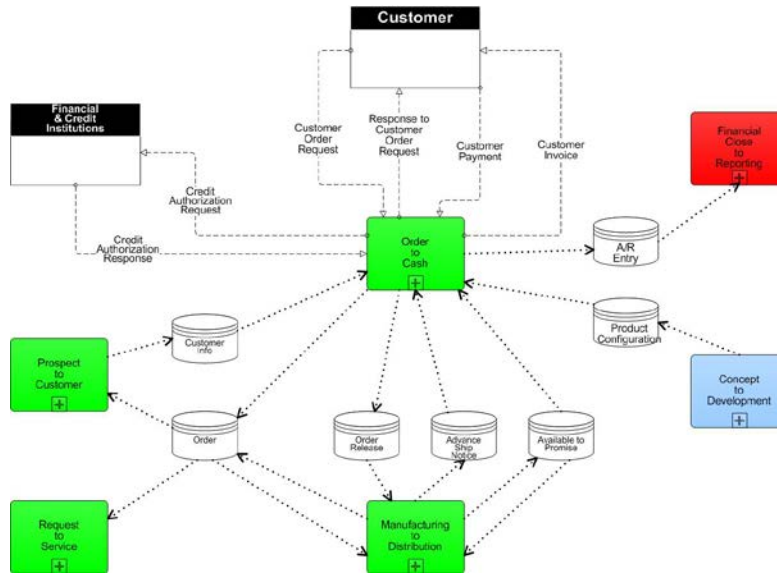


Figure 5. Order to Cash Value Stream Model

Figure 5 is a Zachman composite model built from the aggregations of multiple event driven business processes that are composites of primitives found in Row 2 (the concepts row). The Order to Cash Value Stream decomposes into multiple event driven business processes – Fulfill Order, Change Order, Return Order and Review Order. This is illustrated in Figure 6.

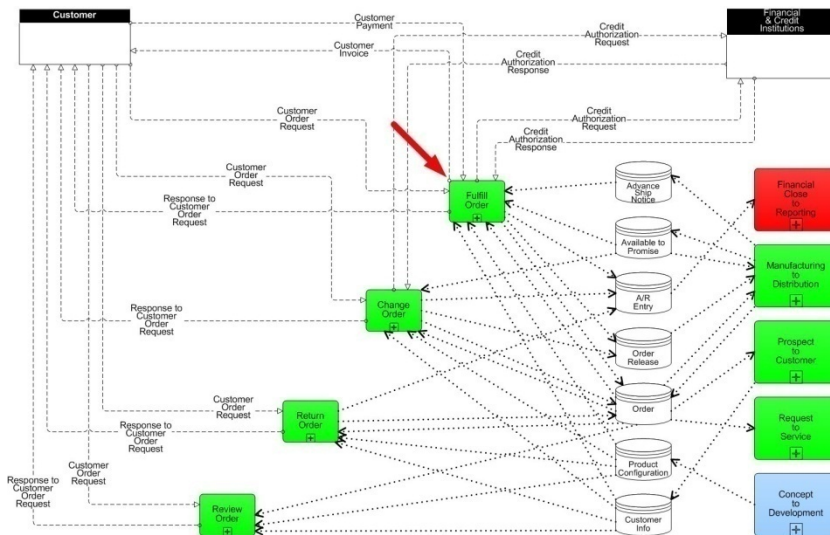


Figure 6. Order to Cash Event Driven Business Processes

Figure 6 is also a Zachman composite model built from the aggregations of purposely selected business processes that are composites of primitives found in Row 2 (the concepts row). Continuing with this example, the decomposition of Fulfill Order which is one of the event driven business processes identified by the red arrow, is depicted in Figure 7. This model illustrates the decomposition of Fulfill Order. Figure 7 represents the first and highest level example of a workflow model, and begins the transition in the hierarchy depicted in Figure 4 from static models representing integrated relationships to dynamic models representing the transformation of inputs into outputs.

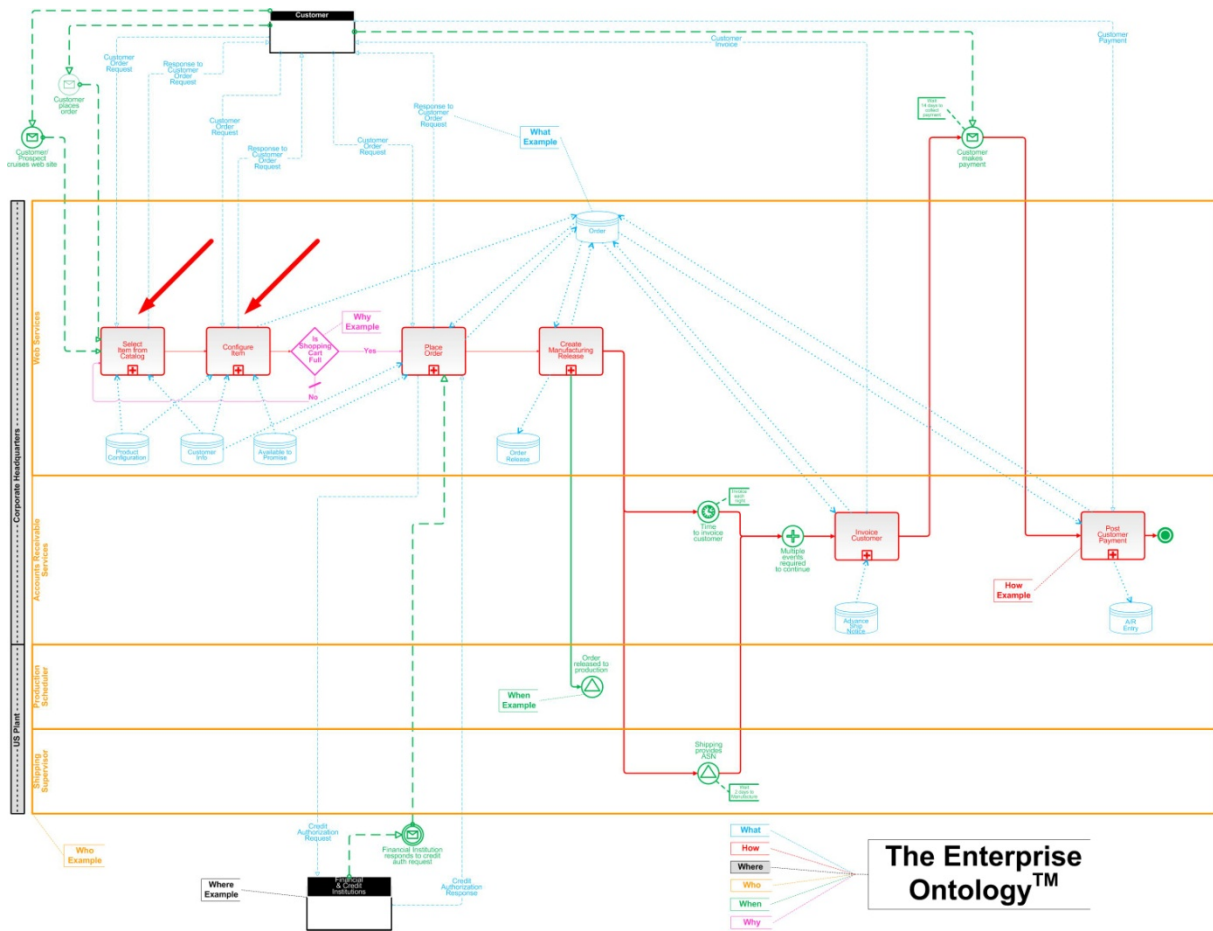


Figure 7. Fulfill Order Highest Level Workflow

Eventually, the business processes in this first level workflow model described in Figure 7, for example, Select Item from Catalog and Configure Item which are identified by red arrows, decompose down to the lowest levels of excruciating detail described by the typical low-level view swim lane models. The swim lane models represent a composite model built from primitives found in all six columns in Row 2 of The Enterprise Ontology™.[19] One might refer to the information presented in these figures as useful for beginning a Row 2 impact analysis or beginning an owner's impact analysis. These examples provide a high-level overview of the information associated with one value stream that is affected by the new strategic initiative. Additionally, other value streams and external entities may get impacted by the initiative as well and this integration is discovered and illustrated by the inputs/outputs exchanged between them in each value stream model. Many business and technology professionals are familiar with this presentation of value stream integration[20] or business process integration.

This is a great place to start the impact analysis, but this is not the only information the team needs and wants. The team needs to understand everything in the enterprise that is affected by

the new strategic initiative's requirements. They need to understand more than the overview information described above by the Row 2 or owner's impact analysis. If this architectural information is managed according to The Enterprise Ontology™ in a robust tool and repository, then an enterprise-wide impact analysis[21] can provide keen insights into the nature of the changes and a precise understanding of what will have to change in order to implement the initiative.

By defining all of the integrations across the Zachman rows and all of the transformations down the Zachman columns one can keep track of all the dependencies needed to understand the impact of any change. Depending on the scope and complexity of the strategic initiative, the artifact – the enterprise-wide impact analysis – produced by the tool and repository may cover a conference room wall[22]. This is the result of real architecture, true engineering and purposeful design.

Perhaps some will say that this “wall sized artifact” is what capability modeling and mapping are intended to provide or imitate, but that is a bit deceptive. The capabilities approach represents an understanding of a relationship, for example, between a high-level capability and a value stream, and a lower-level capability and a business process. This was illustrated in an article titled, “Business Processes Start with Capabilities.” And many believe this mapping approach provides a more stable foundation since capabilities define the “what” an enterprise does and that rarely changes, whereas the mapped to business processes define the “how” an enterprise delivers results and this frequently changes.[23] Capability mapping may provide a more simplistic, stable and abstract view of some enterprise relationships, perhaps even a reductionist's view of the enterprise. However, it lacks the precise engineering and architectural detail provided by the enterprise-wide impact analysis represented in the “wall sized artifact” from a tool and repository.

Of course, one realizes the “wall sized artifact” is not a static representation either. Since most strategic initiatives require several weeks or months of extensive work before implementation, other strategic initiatives and projects may get completed and implemented while others are in work. As long as the enterprise information is organized according to The Enterprise Ontology™ and properly maintained in the tool and repository, a new enterprise-wide impact analysis may get created or generated at any time and it will always be in sync with the current instantiation of the enterprise. This means that the functioning enterprise (Row 6) will mirror the owner's view (Row 2), and alignment and integration are maintained across successive implementations. With the capabilities modeling and mapping approach, not only is the corresponding detail not available, but if the mapping relationships are changed, there is no way to generate the numerous changes across the capability model. This is the consequence of using implementation artifacts rather than architectural ones. That is, the capabilities modeling and mapping must be brought current in some manual fashion rather than generated by a tool and repository that manages the architectural artifacts.

So, what does the team implementing the strategic initiative really want and need? The preceding discussion illustrated the value of using architectural primitives rather than just implementation artifacts in a strategic initiative. Which approach provides an authentic long term solution to implementing strategic initiatives in an effective and efficient manner? That is for the reader and enterprise to decide.

What is the Scope of Capabilities Modeling and Mapping?

Capabilities modeling and mapping was one result of an initiative started back in 2007 by the Business Architecture Working Group (BAWG) which is now the Business Architecture Special Interest Group (BASIG). This author did some research on the capabilities approach last year and the findings were discussed in a BPTrends Article titled, “Examining Capabilities.” [24] The Article stated that capabilities modeling and mapping were too focused on IT/SOA alignment, functionally centric rather than customer centric and an unsuitable architectural approach. While most capability advocates discuss “capabilities” in the context of the Business Architecture, it seems this scope is too confining relative to the illustrations of mappings. Most assuredly, the

Business Architecture integrates with the IT architectures and the Business Architecture must be viewed in the context of all enterprise architectures as well as the strategy. However, the mapping illustrations in the Rosetta Stone and "Business Processes Start with Capabilities." articles seem to expand up to an enterprise scope rather than just a Business Architecture scope. And this is peculiar! Some capability articles and even some LinkedIn discussions seem to compare the capabilities approach to Enterprise Architecture approaches. In doing so as previously discussed, EA in general and Zachman specifically are criticized and disparaged. One might surmise that capability modeling and mapping is a furtive attempt to remake Enterprise Architecture sans a foundation on real architectural disciplines and standards.

Conclusion

The innocent misuses of architecture are easily remedied with appropriate education and training. However, the purposeful misuses of architecture to persuade and pressure acceptance of a proposed solution or to gain a higher priority for an initiative demonstrates a questionable attitude and behavior that is not easily remedied. Judge initiatives and approaches based on their predicted results and anticipated successes, not how the supporting artifacts are classified or categorized. If one approach is better than another, present an objective analysis of its strengths and weaknesses rather than merely casting unfounded aspersions against a competing approach.

This Article provided a different and contrasting point of view on accepting capability modeling and mapping as "architecture." Clearly the lack of point-and-click references in the historical archive referencing its defined mapping relationships, architectural assessment, ontology and metamodel were questioned. The enterprise results from capability modeling and mapping initiatives were neither defamed nor denigrated, but the classification of its artifacts as architecture was refuted. In order to accept and classify any artifact as architectural, simply put, it must "be descriptive of the Enterprise, not merely descriptive of an implementation within the Enterprise." [25]

For the reader, it comes down to the choice of architectural criteria – the use of an IEEE definition or the use of a formally accepted approach such as "The Zachman Framework for Enterprise Architecture"™ with its supporting ontology and metamodel. Ultimately, after scrutinizing both articles and doing some additional research, the reader will have to decide between the two contrasting views presented. Hopefully, both BPTrends articles and their supporting references, hyperlinks and footnotes will encourage the reader to learn more about enterprise architectural principles, tenets, standards and concepts so as to have the information necessary to reach their own conclusions.

The author of this Article welcomes and encourages comments. Please send them to: ralphwhittle@earthlink.net .

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