

Realizing the Value of True Business Architecture

Executive Summary..... 3
Defining Business Architecture 4
Multiple Dimensions 6
Execution-ready Business Artifacts 7
Realizing Business Value..... 9
Summary 9
The Power of Metastorm Enterprise™ 11

Executive Summary

In its report entitled “The Business Architecture Viewpoint: Defining the Bricks,”¹ Gartner states: *“A business architecture brick can be defined as a constituent part, element or ingredient. It is not, as assumed by many software development methods, a software implementation of an autonomous business concept or business process, nor is it an autonomous, reusable element of an information system. What we are considering here are the bricks, elements or ingredients that make up the business — the constituent pieces serving as components of something larger. Again, this is not about business component architecture, which is the essential foundation of service-oriented and event-driven architectures. This is about delivering EA future-state models within the business architecture viewpoint.”*

With Enterprise Architecture (EA), it is critical to look beyond just business processes when planning for the future and seeking areas for improvement. In the following paper, we use the terms “bricks” and “artifacts” interchangeably to represent the various assets of an organization – which essentially serve as the building blocks for determining how to optimize operations at all levels of the business. Once identified and clearly defined, these building blocks can be incorporated into models to help build a big picture of the interrelationships of these assets and how they can be leveraged to more effectively operate together. In any organization – and most especially in large organizations – capturing the assets of an organization and creating formal models to reflect how it operates are critical to truly understanding the business and planning effectively for future change and growth. Organizations need a formal and scalable approach to enterprise modeling.

An enterprise model is an actionable definition of an enterprise that both defines and links strategy with operations. At the operational level, the enterprise model includes both a business and a technical architecture. The business architecture defines – in formal business terms – the structure, dynamics and policy that support business strategy. The technical architecture formally defines the technical infrastructure and artifacts that realize the business architecture in operational systems.

Properly done, the business architecture profiles the enterprise in pure business terms. It consists of business artifacts connected into a single whole which define what the business accomplishes, who makes it happen, how it is done, where and when it takes place. The building blocks of the business architecture are data, people, function and rules organized by location and timing.

The modern, increasingly dynamic business requires agility. Change is both a liability and an opportunity that demands quick but correct adjustments to current market conditions. It requires a formal

¹ “The Business Architecture Viewpoint: Defining the Bricks,” 26 September 2007, Deborah Weiss, Gartner Inc.

understanding of the business that can be modified to produce timely innovation realized by operational systems that monitor and rationalize actual operation with business intent.

Constant evolution requires well-defined business artifacts. These building blocks of business architecture are reordered, replaced and retired as part of normal business evolution. They represent pure-business concepts independent of technical considerations and each has a clearly defined function and fit.

Each artifact is managed both in terms of its natural lifecycle and its own evolution (i.e. its versions). Individual artifacts are routinely configured and linked into higher form artifacts each with a life-cycle and evolution. As a whole, business artifacts are a portfolio of ever-changing business capabilities. They are the building blocks that define how the business works today and the alternative approaches that can be taken in the future.

The effective modern business has command of its capabilities. It understands what it can accomplish and has the building blocks in place to effect quick and correct change. These building blocks are formally defined in pure-business terms as part of an actively managed portfolio.

This paper examines the complexities associated with modeling the business architecture, identifying and defining enterprise building blocks – or “bricks” – and creating an execution-oriented framework for delivering true business value. A formal approach to enterprise modeling will allow you to capture your portfolio of assets and leverage them to drive improvements at all of levels of the organization.

Defining Business Architecture

Effectiveness is powered by a formal model of the enterprise. The enterprise model is inherently abstract in that it exposes the critical, load-bearing aspects (“bricks”) of the enterprise while hiding distractive details. There are many levels of abstraction within the enterprise model but the most fundamental levels are: strategic, operational and physical.

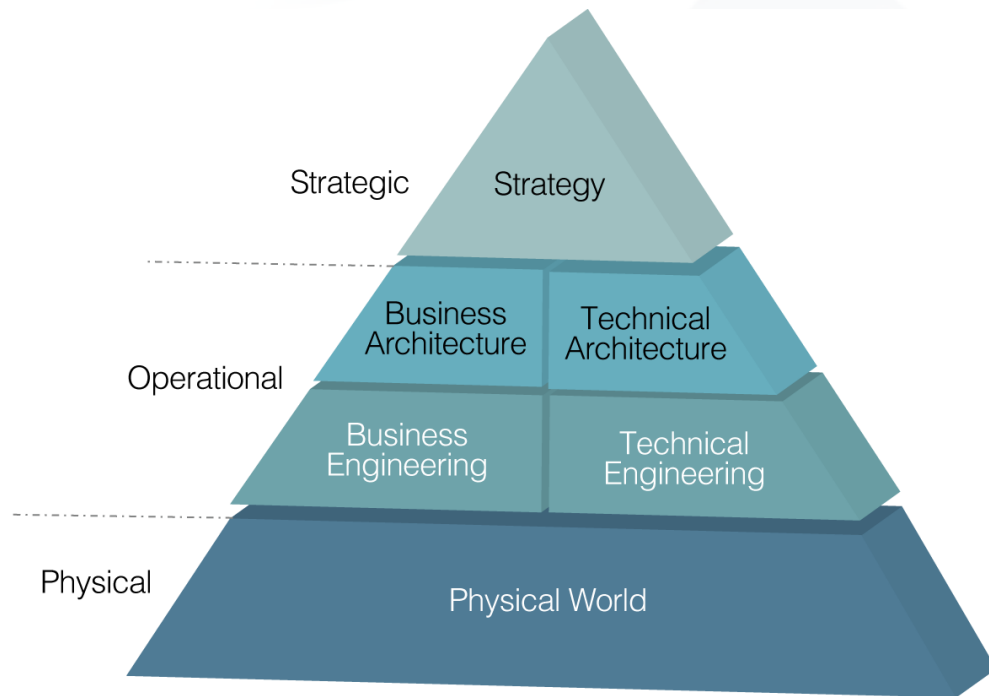


Figure 1 - The enterprise model has three major levels of abstraction

The *strategic* level of abstraction holds the enterprise strategy. The strategy profiles the enterprise in terms of its market position, nature of business, future direction and fundamental capabilities.

The *operational* level focuses more on how the strategy is accomplished. This level contains two sub-levels. The architectural sub-level defines, in concept, how the enterprise operates; it establishes intent. The *engineering* sub-level depicts how the architecture is accomplished considering operational constraints such as resources, time, money and space; this level expresses design.

The *physical* level of abstraction corresponds to real artifacts. It represents characteristic instances such as equipment, buildings, people, programs, databases, etc. that collectively are the enterprise.

The business architecture defines how an enterprise conducts business. It is maintained by business analysts. The key abstractions within this architecture are:

- Business processes
- Data
- Rules
- Agents

Business processes are an organized network of activities or functions. Processes governed by rules operate on business data to produce

results. The agents are external organizations, internal organizational areas, systems and individuals that perform the activities within a process. The business architecture is expressed in business terms and is devoid of engineering considerations.

The typical business architecture will include a wealth of business artifacts including activities, business domains, capabilities, classes, constraints, decisions, deliverables, environmental influences, equipment, events, facilities, goals, impacts, locations, markets, measurements, opportunities, organizations, people, plans, problems, processes, projects, requirements, roles, standards, states, stores and systems. It is a rich, multi-faceted representation of the business that ultimately focuses on three key factors: function, data and policy.

The business process is the modern rally point. At the heart of the business architecture, the business process accomplishes a purpose and produces value by integrating function, data and policy with the agents – e.g. people, organizations, systems – that guide operations. The main functional artifact is the activity. Each activity performs a well-defined, cohesive function. This function accepts input data which, in effect, is a formal request for service. It satisfies the request by accessing business data, such as customer records, past orders, etc., and produces a result seen as output data. The function of an activity is guided by business policy expressed with business rules such as “the delivery date must be within 30 days of the order date.” A business process is formed by organizing activities into a network which establishes clear rules of precedence and the routing of control.

Well formed business artifacts are suitable to be reused. By formally recognizing an organization as a business artifact it is possible to associate the organization as the agent controlling numerous activities across a set of business processes. But reuse of a business artifact is not the objective itself. The real objective is traceability. The organization artifact is defined once but used multiple times. In each usage it is possible to trace from the organization to all objects to which it is linked. By associating an organization as the responsible agent for an activity in a particular business process, we automatically have the means to navigate from that activity to the location of the organization, the roles that comprise the organization, the goals it supports, etc. The linking of reused business artifacts is what turns an inventory of business capabilities into actionable knowledge about the business.

Multiple Dimensions

The business architecture can depict a snapshot of the business at a single point in time. It states the data artifacts used by each activity, which roles belong to which organization, the problems facing each organization, etc. This is accurate but limiting. Effective enterprises have a multi-dimensional business architecture – one that can simultaneously consider various alternatives across many dimensions such as time, location, version, culture, etc. Rather than operate as a snapshot, the business architecture depicts a motion picture of the business. It is a

model that allows the exploration of innovative change, as well as the ability to analyze actual change over time.

Change appears in many forms. A simple example of representing change is the concept of a version. Versions recognize change based upon innovation over time. Version 2 of a business process reflects changes and improvements over version 1 of that business process. However, versions are only one dimension of change.

A business architecture often considers locations or areas. Multinational enterprises define their processes (as well as other enterprise artifacts) differently depending upon the area in which the process executes. The U.S. Order Fulfillment process may work equally well across all states in the Union, but may not work well in France. Thus an enterprise needs an Order FulfillmentUS, Order FulfillmentFRANCE, Order FulfillmentJAPAN, etc. to reflect the unique cultural, political, economic and social differences of each area.

Many other types of dimensions exist naturally. In addition to version and area/location, we see time (e.g. financial quarters), culture (e.g. Asian, European, Middle Eastern), market (e.g. private vs. public) and more. A business architecture needs to express change across numerous dimensions. Moreover, a single concept can be stratified across multiple dimensions. The Order Fulfillment process was shown to vary by area. Each of the example Order Fulfillment processes may also vary by version. This leads to Order Fulfillment(JAPAN v1), Order Fulfillment(JAPAN v2), Order Fulfillment(US v1), etc.

An enterprise is a complex entity that requires expressing fundamental concepts such as a single process across multiple, simultaneous dimensions such as area and version. This complexity again points to the need for a formal approach to enterprise modeling – one that is capable of capturing this complexity in a way that is understandable by both business and IT architects.

Execution-ready Business Artifacts

The ideal business artifact expresses pure business intent on the outside yet carries with it the potency to be realized in technical terms. Enterprise models with no means for execution will deliver little business value to the organization.

At first glance business artifacts may appear as pure business components; however, with the right analysis capabilities we may find bindings to technical IT artifacts. Each business activity may be bound to a technical artifact such as a service operation, a Java bean or any number of function-bearing artifacts. This binding turns a standard business activity from a simple business artifact into an execution-ready business artifact (ErBA).

An execution-ready business artifact sits in the business portfolio available for use and reuse by business professionals as they define business intent. When an ErBA is used its internal bindings go with it. This means that once an ErBA is mapped to its corresponding IT counterpart it does not have to be designed and deployed in each context in which it is used.

Not all business artifacts will be ErBA. Only those artifacts that are touch points with IT will have internal bindings. Of these the most important by far are those artifacts that represent business function, business data and business rules.

Business function artifacts represent things the business can do. They are the 'how' aspect. Typically these are the activities within a process. Each business activity can be mapped to an IT function and, in so doing, becomes an ErBA. The mapping essentially defines what operational IT function will be executed when a user is conducting a business activity.

Business data artifacts represent those things business functions operate upon. They are the 'what' aspect. When two activities communicate, the preceding activity will often provide the succeeding activity with information. The information can be represented in many forms such as voice, documents or digital records. In any case this information is typically used to communicate context-specific information that allows the succeeding activity to continue the process. A simple example of context-specific information is order#. If the preceding activity is Enter Order it may appropriately pass an order# to the next activity which might be Approve Credit. The order# provides Approve Credit just enough information to continue. Approve Credit would likely use the order# to access the Order, get the customer information and proceed with credit approval. The Order that was accessed is also a business data artifact. Unlike the transient order#, Order is a persistent object that will likely have a life-cycle (e.g. Entered → Accepted → Scheduled → Filled → Closed).

Each business data artifact can be mapped to IT artifacts. Transient data such as the order# or entire forms / documents passed between activities naturally map to an IT message structure. Persistent data artifacts such as Order map to one or more tables (or other persistent IT structures). Any data artifact could also map to an IT form (or other user interface artifact) to provide the means for user interaction.

Business rule artifacts – also known as business rules – have a direct effect on business policy. There are three fundamental categories of rules:

- Triggers – Initiate an action, raise an event or trigger another rule
- Constraints – Prevent an action, e.g. deny credit approval
- Calculations – Produce derived data, e.g. a price discount

Business rules cut across all business functions and data to provide a uniform mechanism for managing the policies of the business. Rules within functions fine tune behavior and initiate side-effect functionality. Rules within data constrain values to protect integrity, derive new values and initiate action based upon data changes.

When business rules are distinguished – factored out of business functions and data – the enterprise can more quickly institute changes in detailed behavior. For example, if rules defining credit approval policy are shared and reused, a change in policy is uniformly instituted by simply changing the rules.

An execution-ready business rule maps to a technical counterpart whose sole purpose is to implement the rule. The counterpart, whether implemented as a rule in a rules engine, a database trigger, a module, etc. can be expeditiously modified to effect any change.

Realizing Business Value

Business processes defined in terms of execution-ready business artifacts express pure business intent yet can be gracefully translated into executable processes. This provides the last benefit of the formal business artifact. It not only expresses business intent in a cohesive, reusable and traceable form but carries the internal instructions necessary to quickly bind to the technical artifacts that realize the intent.

A business process defines the dependencies and routing the business needs. This is technically expressed as an executable process. The executable process will invoke the technical artifact bound to the business artifact. It will realize each activity by executing services, stored procedures and other technical artifacts. This in turn realizes business data artifacts by accessing their corresponding tables, files, etc. and the technical implementation of business rules.

Metrics for technical artifacts are captured during execution. These metrics are traced back to the business counterparts as feedback which reflects actual vs. expected. An activity, for example, may be expected to be executed 100 times per day and process 90% of its inputs with success with an average duration of 1 minute. Actual execution feedback closes the loop and provides critical information for the next round of business improvement.

Summary

An effective enterprise exploits the opportunities of change. The differentiator for modern success is the ability to configure well-formed, reusable business artifacts into the next version of a business process in multiple variations and then quickly realize the innovation in feedback-enabled operational systems. Several factors need to be in play to achieve effectiveness:

Pure Business Artifacts	The business architecture needs to evolve over time as a pure expression of the business. Business artifacts are defined and used in business terms without compromise for technical reasons.
Execution-Ready Business Artifacts	While pure business on the outside, business intent needs to be mapped to the technical artifacts that can deliver that intent. Pre-mapped, reusable business artifacts (ErBA) eliminate the need for a lengthy requirements/design/implement cycle for each business change.
Formal Business Artifacts	Each business artifact needs to be well-formed with a defined purpose. The activities, organizations, problems, etc. that comprise a business each need to be recognized as distinct objects that are used in various contexts.
Traceability	Linking well-formed, reused business artifacts turns a business portfolio into business knowledge. It enables navigation across objects and helps answer questions such as: "What is the business justification (the ultimate goal) for this function?"
Multiple Dimensions	The business is inherently complex and must consider multiple simultaneous dimensions. The business architecture must be able to express variations on the theme across dimensions such as time, location, version, culture, etc.
Technical Operation	A formal business architecture that can be quickly adapted to current needs and redeployed is essential for the effective enterprise. Formal business artifacts tied to formal technical artifacts enable both quick deployment and the means to rationalize technical operations against business intent with operational metrics and thus foster continued improvement.

A formal approach to enterprise modeling helps bring it all together into a cohesive, big picture view that can be shared across the organization and leveraged by both business and IT to work toward common goals and objectives that ultimately drive business success.

The Metastorm Enterprise™ software portfolio provides organizations with a formal approach to enterprise modeling that maps out a complete view of the business architecture – with a key differentiator being the ability to analyze and execute on the resulting models to achieve strategic objectives.

The Power of Metastorm Enterprise™

As a unique and integrated product portfolio that combines market-leading enterprise architecture and modeling (EA), business process analysis (BPA) and business process management (BPM) capabilities onto a single platform, Metastorm Enterprise allows organizations to maximize business results by unifying strategy, analysis and execution. Metastorm is the only solution provider to bring together these critical disciplines on a single software platform to enable an understanding of enterprise architecture and strategy, accurate impact and opportunity assessment, effective process execution, and accelerated value realization for organizations worldwide.

Strategy – Metastorm ProVision® provides a complete suite of enterprise modeling tools for both enterprise architects and business analysts. Key enterprise assets or building blocks – including systems, data, resources, products, and suppliers – and their inter-dependencies can be modeled, shared, and refined in a standalone or collaborative environment. Metastorm ProVision provides a formal approach and toolset that helps you layout and understand how the “bricks” in your organization fit together and how they support critical functions.

Analysis – Metastorm ProVision also provides robust business process analysis and simulation capabilities to define critical business processes and associated dependencies, facilitate requirements analysis, simulate multiple scenarios, and optimize processes and related enterprise assets against strategic objectives using Six Sigma, SCOR, ITIL, or other optimization frameworks. Metastorm ProVision’s BPA capabilities help you determine the best way to compose processes out of your portfolio of artifacts and bricks to optimize results, achieve goals, and create an agile framework that allows for flexibility and the exchange and change of these artifacts and bricks without fear of the entire business crumbling from an unknown effect.

Execution – Metastorm BPM® is a highly scalable, enterprise BPM suite designed to support automation, deployment, integration, analysis, monitoring, and improvement of both human and system-based processes within and across organizations. Metastorm BPM allows you to put your enterprise models into action – monitoring results and allowing for substitution and change on a real-time basis. Collecting the metrics you need to improve and get more value out of your portfolio of building blocks.

Each solution in the Metastorm Enterprise portfolio can operate standalone or in combination, and Metastorm’s Common Interchange Format (CIF) and support for industry standards ensures interoperability with other technologies. Combined these applications provide unmatched enterprise visibility and agility – allowing business and IT users of all levels to accurately assess the impact of key decisions, identify new opportunities for improvement, and optimize overall performance for strategic advantage.

Don't end up with a library of bricks and business building blocks that provide suboptimal value – learn more about Metastorm Enterprise at www.metastorm.com.

© Copyright 2009, Metastorm Inc. All rights reserved. Enterprise Process Advantage, Metastorm BPM, Metastorm Discovery, Metastorm DNA, Metastorm Enterprise, Process Pod and ProVision are either registered trademarks or trademarks of Metastorm Inc. Other product, service and company names mentioned herein are for identification purposes only and may be trademarks of their respective owners. 12.13.2008.