

The Business of SOA

Evolving an Agile Enterprise with Metastorm Enterprise

Executive Summary

The justification of technology as a key business driver is drawing renewed attention as executives look to build Service-Oriented Architectures (SOA) to meet the needs of their dynamic enterprises.

While an SOA can go far in addressing the important security, reliability, and re-usability of services, SOA is nonetheless a technical approach. Thus, the challenge of SOA—and the key to achieving business value—is elevating service enablement beyond just technology functions. The reality is that a SOA has limited value unless it encompasses disparate applications and platforms, moving beyond technology to be orchestrated and controlled in the context of business processes. SOA technology and methods provide a foundation for service enablement in an orderly fashion and allow an organization to avoid the pitfalls of deploying an uncontrolled maze of services.

But from the outset, organizations face the challenge of where to start. What services are going to add immediate value? And how are they going to be used by the most important business functions? Identifying the services that are consumed by the most critical business processes in an organization can be a daunting proposition.

That's why Enterprise Architecture (EA), Business Process Analysis (BPA) and Business Process Management (BPM) are integral to effective service-orientation. SOA relies on the work of EA, BPA and BPM to define, analyze, and execute resources where SOA has the best effect. The result is an agile enterprise in which business models drive executable business processes powered by a portfolio of services.

In fact, Forrester underscores the importance of tying SOA to a bigger architecture vision. "No prior industry initiative for IT architecture has had an impact as positive and broad-reaching as service-oriented architecture (SOA). But SOA's impact is only part of the story: You have many more technology initiatives besides SOA. You need a bigger architectural vision that encompasses SOA, business process management, event processing, Web 2.0, and much more besides. Although SOA is far from dead, it should be buried inside a larger vision," according to *SOA is Not Dead – But it Should be Buried: Doing SOA Right Opens the Door to a Much Bigger Architecture Vision*, Forrester Research, Inc., May 11, 2009.

To answer the demand for collaborative and business-driven SOA, Metastorm Enterprise provides a unique set of interrelated, state of the art offerings that enable visibility across the enterprise – thus empowering organizations to build systems that accurately reflect business processes, easily adapt as processes change, and improve productivity and process consistency. It all begins with comprehensive modeling and analysis to bridge the communication gap between business and IT. The Metastorm ProVision® enterprise modeling solution is designed to enable business users to participate in SOA initiatives and also robustly supports the vital role of business and system engineers by effectively defining execution-ready activities that marry business processes to the services that make them work.

The Metastorm BPM® platform plays many other roles in the SOA. While it guides service enablement and is an active consumer of services, Metastorm BPM also allows actions within automated business processes to be exposed via the SOA. With BPM orchestration, this exposure of key business events and information to users at the appropriate times and in the appropriate contexts adds tremendous business value that might not otherwise be achieved with an SOA. And Metastorm Integration Manager (MIM), the system-based process management component of the Metastorm BPM suite, manages the execution of those services in key business processes under a single SOA – integrating legacy mainframe applications, enabling real-time data transfer, and exposing legacy applications as services.

By focusing on the processes, activities, events, information, and services that are required to execute the business, SOA gives business owners a more direct and active role in the design of IT systems that enable enterprise agility. In this paper, Metastorm takes a close look at the opportunities and challenges of SOA, and reveals how the powerful combination of EA, BPA, BPM and SOA provide an important platform for business/IT alignment.

EXECUTIVE SUMMARY.....	2
SOA: A PROFOUND OPPORTUNITY.....	5
DYNAMIC RETOOLING USING REUSABLE ENTERPRISE FUNCTIONS ENABLES AGILITY.....	5
SERVICES DEFINITION IS THE FINESSE POINT FOR SOA.....	6
THE CHALLENGE TO FORMALLY DEFINE THE ENTERPRISE.....	7
EMPOWERED BY MIDDLEWARE.....	9
A BROAD SCOPE: SOA INVOLVES THE ENTIRE ENTERPRISE.....	11
MODELING MANAGES COMPLEXITY.....	13
STRATEGIC MODELING.....	14
BUSINESS MODELING.....	15
TECHNICAL MODELING.....	19
THE POWER OF BPM IN AN SOA ENVIRONMENT.....	21
ORGANIZING COMPLEX BUSINESS FUNCTION REQUIREMENTS.....	22
CLOSING CRITICAL PROCESS GAPS.....	24
IDEAL FRAMEWORK FOR SOA.....	24
PROVISIONING A WIDE VARIETY OF PROCESS SERVICES.....	25
ADVANCED SERVICE INTEGRATION AND LEGACY CONTROL.....	26
CONCLUSION.....	27

SOA: A Profound Opportunity

SOA presents a profound opportunity to improve organizations at an enterprise level.

Applying well-founded concepts that exploit the ability of modern system resources to collaborate independent of location across heterogeneous technologies, SOA uses the same standards-based communication technologies that underlie the web to allow system resources to communicate dynamically. It defines architectural principles backed by technology to tap into system resources that in the past were isolated but can now freely participate in a larger community – then provides tools and techniques to orchestrate the reuse of these newly available resources into the processes that drive the enterprise.

While impressive, the technology behind SOA will succeed only to the degree that the enterprise can leverage these two core capabilities:

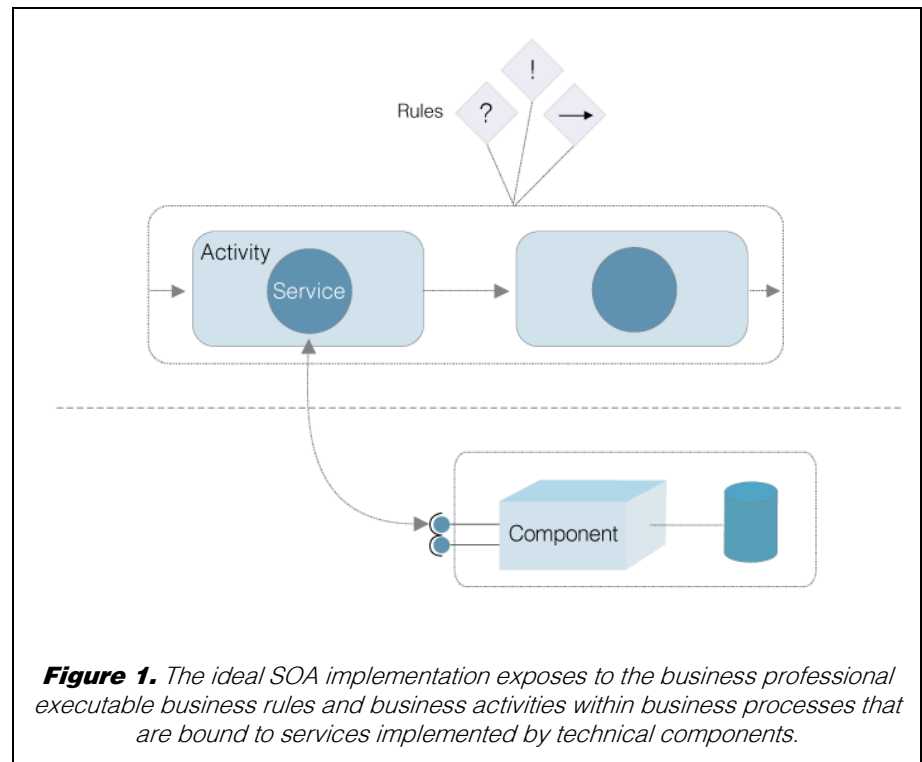
- Reusable system functions (services)
- Orchestration of services into enterprise processes

By effectively deploying SOA programs, today's agile enterprise can deliver a comprehensive portfolio of pre-built, flexible, easily used, reusable, business-oriented services to business professionals who configure rules and processes to meet changing demand.

Dynamic Retooling with Reusable Enterprise Functions Enables Agility

The big picture view of SOA shows an enterprise leveraging complex system functions to realize immediate change. Business professionals armed with formal tools adjust the way the enterprise operates. The main dimensions they consider are their processes, data and the rules that govern the behavior of the processes.

Change is effected in business terms using business concepts. A change in policy may be realized by a change in the rules governing calculations, approvals or the triggering of other actions. A change in procedure may be realized by adding new activities into a business process and rerouting deliverables. The key is to make available executable business artifacts that can be manipulated by business professionals without requiring technical system development.

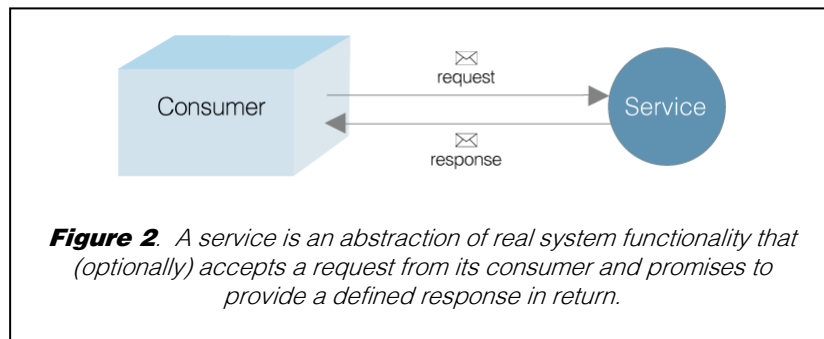


Services Definition is the Finesse Point for SOA

The term Service-Oriented Architecture aptly describes an architectural approach centered on the notion of a service.

A service is, in effect, a function. It is something that can be requested to do useful work. But a service is not a technical artifact; it is an abstraction of many possible technical artifacts into a single business artifact. The abstraction provides enough detail to understand what the service can do, what is expected from its consumer (the entity requesting the service to act) and what the service will produce in return.

To use a service, the consumer must be able to reference the service by its identity (its formal name), provide the service with the data it needs, and understand the data it produces in response. But SOA demands more than producing abstractions of functionality. A service is a special type of abstraction, one that is defined carefully to deliver functionality that is coarse enough to be managed (e.g., discovered, registered, located, activated), yet cohesive enough to be of general purpose use in a particular scope. The abstraction must hide all technical details and expose the essence of function to the non-technical consumer. A well-defined service is easily understood in terms of the function it performs, the contract (the input and output) it supports with its consumers, and the quality of service it delivers with factors such as cost, timeliness and reliability.



Properly implemented, SOA delivers a portfolio of services that can be leveraged by business processes to meet the needs of the dynamic enterprise, yet can be managed so that desired services can be located and reused with efficiency.

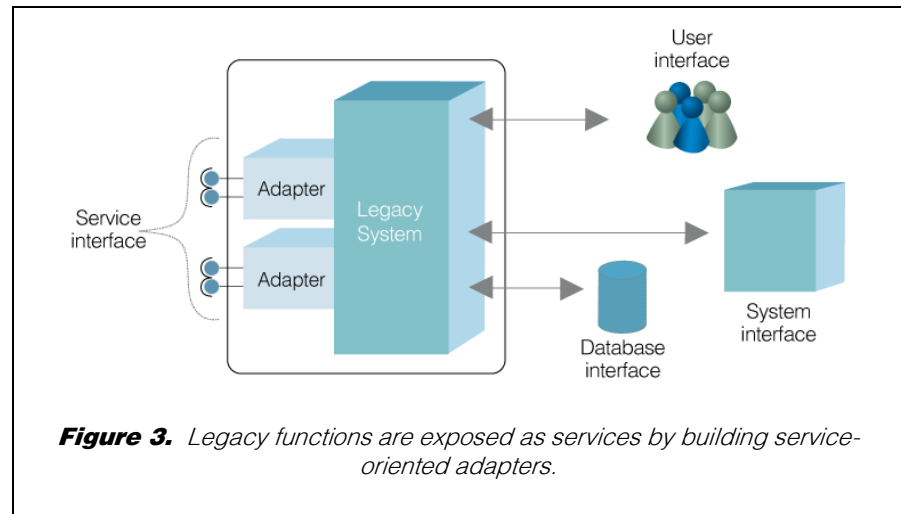
The Challenge to Formally Define the Enterprise

Although its concepts and technology are based upon decades of progress in IT, SOA requires additional work to free functionality locked up in legacy systems and to promote the culture of reuse required to make effective use of that freed functionality.

SOA starts at the enterprise level of scope. At this level, an enterprise needs to rationalize the goals, measures, etc. that direct progress toward its mission. It needs to profile its core capabilities and understand which capabilities are critical to achieve its goals and what enterprise artifacts provide the

capabilities. This understanding is used to direct resources to implement SOA where the enterprise needs it most.

Below the strategic view we have the definition of how the enterprise functions. This is where we find business processes, data and rules. At this level SOA must empower business artifacts with system functionality. The objective is to express formally how the enterprise works in its own terminology, and to enable the business professional to change processes, rules and the use of data. The professional essentially changes a model of the business to effect change in operational systems.



This requires balancing simplicity against control and control against IT resource integrity. The model of the enterprise needs to be familiar to each community. It must also contain enough details to express the changes the enterprise needs to realize. Yet this model must enforce the real-world constraints of the supporting IT components. Each component consumes time, incurs cost, and has limitations on availability, frequency of use, etc. Changes in one business process cannot be allowed to impact other business processes inadvertently. Data integrity cannot be compromised. Security measures, audits, logging, and other facets of the IT infrastructure must all be preserved. In other words, the challenge is to expose enough functionality to allow the business to retool safely without losing control over the underlying IT resources.

Exposing IT functionality under SOA involves publishing services and providing the means to execute the underlying components that realize each service. Defining services properly is no easy task. The notion of function is general enough to apply to almost anything. The enterprise needs to adopt formalisms for recognizing service functions so that 1) there is sufficient

coverage to support business processes and 2) the service portfolio grows in a controlled fashion and holds only those services that are truly needed.

The other critical IT challenge is to unlock functionality already implemented in legacy systems. Most legacy systems were designed with specific user and system interfaces. They were not designed in the context of an overall service architecture and thus do not provide access to the functions they implement. For example, an Order Entry system may provide stellar validation, approval, scheduling and routing functionality, but other than the defined user and system interfaces, there is no way to employ these functions.

IT must change these legacy systems to provide a means to tap into functions, such as order scheduling. Once the function is delineated, IT can build an adapter that exposes the function as a service. The purpose of the adapter is to provide an interface to the outside world that conforms to the protocol all services follow. The adapter looks like a service to the outside world but delegates its implementation to the legacy function.

Empowered by Middleware

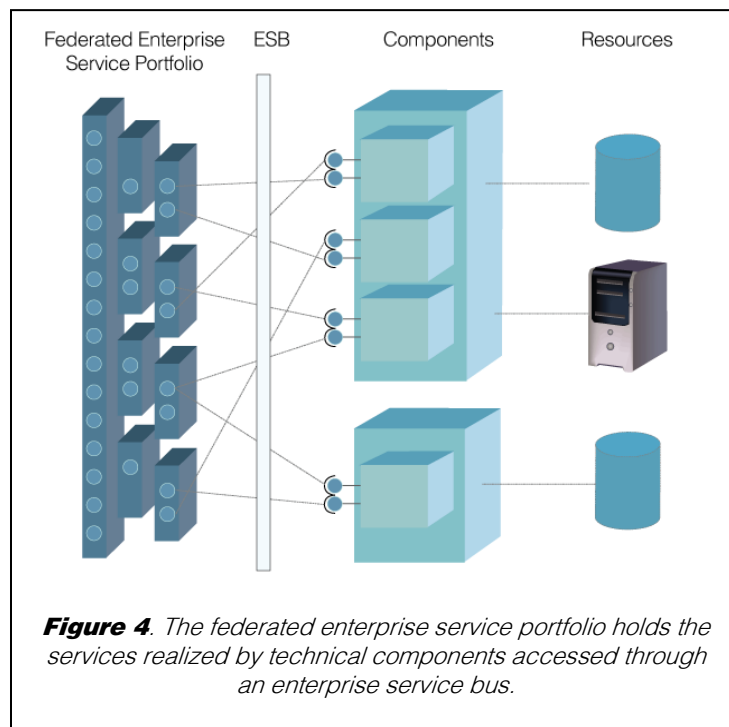
The primary new technology of SOA is known as the Enterprise Service Bus (ESB). The ESB is middleware that accomplishes much of the required magic. Its main job is to locate and execute technical components to satisfy a request for service.

The ESB helps eliminate barriers that prevented SOA in the past. The first barrier is connectivity. As simple as it sounds, the ability to send a request to a service provider and receive the response was limited by technology and space. In addition, many of the past connections were implemented by static, point-to-point links. These links are inflexible, costly and difficult to maintain. By brokering dynamic connections between the two “endpoints” regardless of technology and the location of the endpoints, the ESB brings the equivalent of the telephone grid to the world of technical components.

It helps to compare an ESB to a telecommunications system. The telephone grid and the ESB both implement loose coupling, which reduces to a bare minimum what each endpoint must know of each other endpoint. The less an endpoint knows, the more it is independent of change. A telephone caller does not need to know any information other than a telephone number to make a call. Similarly, the ESB ensures that the consumer and provider of

a service know only enough about each other to accomplish the interface. This enables the underlying service delivery mechanism to change without having to rewire connections between consumers and providers. A particular service with five providers today may have ten tomorrow. The ESB provides a standardized plug-in environment for the creation, change, and retirement of service providers, and dynamically links the consumer to the appropriate provider, keeping both endpoints on a “need to know” basis.

However, full connectivity does not solve all the problems. Two individuals connected by telephone, but speaking different languages, will not communicate. The same is true for technical components. Differing technology platforms, standards and development practices isolate components by creating the equivalent of technical “languages”. To enable communication, the ESB serves as a universal translator that transforms messages from the language of the sender to that of the receiver.



Connectivity and language mediation work only if the consumer of a service can first find the service it needs. All available services need to be registered and published as available in an Enterprise Service Portfolio. Using another analogy, the portfolio is the phone book for SOA. It maintains a timely list of available services, the supporting profile details of each service, and the means to address the service (i.e., the phone number) so it can be used.

The portfolio also provides “yellow page” mechanisms to help locate an appropriate service based upon desired qualities. The consumer may want a service that can schedule a shipment with a specific type of carrier to a specific location. The portfolio would deliver services that can perform this function and enable the consumer to pick the most desirable based upon timeliness, cost, and other factors.

A single portfolio covering the entire enterprise would include services that are universally shared, but it would also include services that are of use only to certain communities. A more useful structure organizes services into smaller portfolios by community. The resulting federated portfolio is hierarchically organized to allow communities to use services of limited generality without diluting the more general portfolio with out-of-context, inapplicable services. Moreover, the federated portfolio allows governance of services to be distributed. This divides the complex governance into smaller pieces and enables each community to care for the special needs of its local services.

Beyond the ESB and portfolio, SOA encourages technology to support enterprise data sharing. The objective is to provide a uniform view of enterprise data that can be used (reused) by all. This concept started in the early days of database management systems and most recently continues with data warehouse. A data warehouse is a processed copy of select portions of enterprise data. It provides a uniform view but is limited in scope and timeliness.

Data service technology carries service-orientation to enterprise data by exposing data services. A data service provides ubiquitous access to data housed in many types of persistence mechanisms. Through the use of metadata management, service-orientation and sophisticated optimization techniques, data service technology enables uniform access to enterprise data to match uniform service access provided by the ESB.

A Broad Scope: SOA Involves the Entire Enterprise

The entire enterprise is covered by the scope of SOA. It affects all business and technical concerns. Industry approaches such as enterprise architecture and component based development, as well as technologies such as process engines, database engines, rule engines, application servers, etc., are required to make service-orientation a reality.

SOA relies upon well-founded practices and technology. Databases will be created, application functions will be developed and acquired, user interfaces will be crafted and IT will maintain the infrastructure for disaster recovery, security, fault tolerance, etc. Going forward, new technologies will advertise “service enabled” features as key competitive differentiators and thus strengthen the potential of the approach. As a result, SOA offers a new way to exploit current technology and inspires capabilities for future technology.

But SOA includes both the business and technology in its scope. In so doing it consolidates aspects of the enterprise that need to work together. Most notable is the gap between business operations and the IT systems that support them. The infamous lack of alignment between these adjacent areas of the enterprise represents 3 key business-oriented problems to be solved by SOA:

1. *IT needs a precise definition/understanding of business needs.* Much work has been done to improve the communication between experienced business professionals working in specialties of the business (e.g. claims management) and the IT professionals who evolve the supporting infrastructure. Today, business modeling is used to express formally how an enterprise works in business terms and with business concepts. These are mapped to technical models that depict how technology supports the business concepts. Under SOA, the formal modeling is not only a representation of the business; in many ways it is the business. When a business professional can directly effect business changes by manipulating a model of the business, the communication gap with IT becomes much less of an inhibitor.
2. *It is easier to experience than to imagine.* It is not always possible to state, upfront, all of the requirements needed for business process execution. In response, iterative development methodologies have evolved and blended with prototyping. These efforts are all driven by IT and require coordination of IT and business resources to identify the differences between “as built” and “as imagined.” SOA defines a paradigm of business-driven prototyping. Instead of IT working to present a solution that matches the business vision, the business professional directly expresses the vision as an executable business process, with support from IT to complete the details of implementation.

3. Requirements change while automation solutions are being developed. The significant advances in iterative development still require a broad bandwidth of interplay between business and IT professionals. Requirements, however, continue to change during this interplay. The business-driven, model-based capabilities of SOA improve the time-to-market by reducing the interplay between the business and IT.

Modeling Manages Complexity

Top CIOs and business executives use modeling to manage the complexity of an enterprise. Enterprise-wide visual modeling, performed with Metastorm ProVision, enables organizations to improve their performance and competitiveness.

Bringing SOA to the Business User

Metastorm ProVision is the first solution of its kind to answer industry demand for SOA modeling support. An innovative solution, Metastorm ProVision is wired “behind the scenes” for SOA support. Rather than asking business users to adopt a new technical paradigm, allowing them to create workflows using Metastorm ProVision’s acclaimed intuitive interface.

Four significant capabilities within Metastorm ProVision allow for this superior SOA support:

- Preservation of the business analyst's viewpoint, retaining business terms and not requiring business users to understand the technical aspects of SOA.
- Methods for the technical user to configure execution-ready business activities so they directly translate into services.
- Auto-completion feature within a service-intelligent user interface.
- Delivery of real-time verification of execution-ready status.

As a result, Metastorm ProVision dramatically reduces the amount of time and interaction required to transform business processes

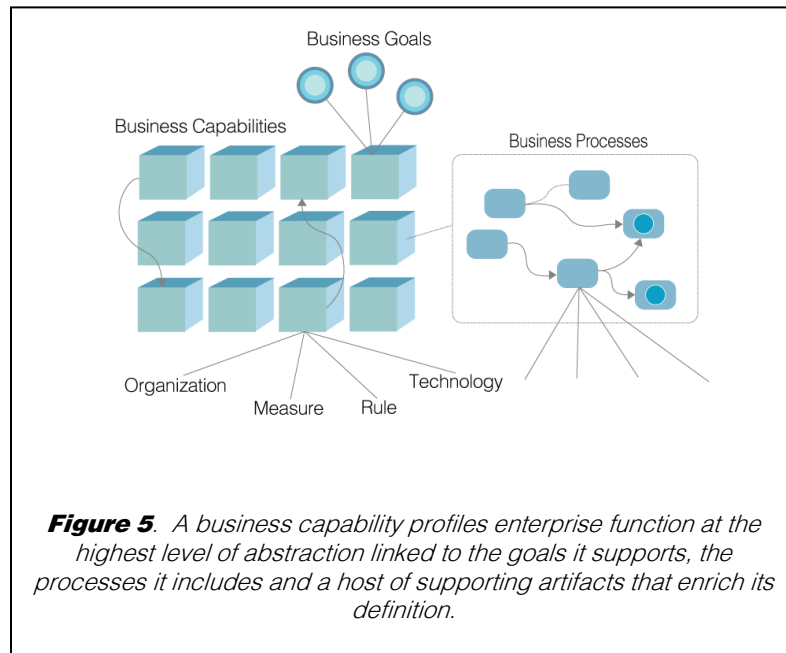
into executable functions. Business engineers can take the execution-ready activities and, at the push a button, produce a BPEL-equivalent of the model that will reference the services that implement the process. This provides a preliminary design of the structure and services, allowing the designer to work through technical issues such as security, compensation of failures, and logging.

Modeling is vital to SOA because SOA involves abstraction — the removal of non-essential information to achieve a succinct, easy to manage model of reality. SOA, following the lead of MDA (Model Driven Architecture), uses models to enhance understanding and to effect direct change. Metastorm ProVision enables organizations to perform the three types of modeling that are needed in SOA: strategic, business and technical. The following sections will discuss aspects of each of them.

Strategic Modeling

To produce change, an enterprise must formally understand how it works today and how it should work tomorrow. In the early stages of an SOA program strategic modeling clarifies the mission, goals, inhibitors, opportunities, etc. and profiles the enterprise in terms of its capabilities. This form of modeling is used to analyze the enterprise at a high level and target specific areas where resources should be applied over time.

The mission of an enterprise states its direction. To accomplish the mission, the enterprise must achieve its goals. Strategic SOA maps goals to aspects of the enterprise that are critical to achieving goals. One such aspect is the capability. The typical enterprise is armed with dozens of relatively stable high-level capabilities.

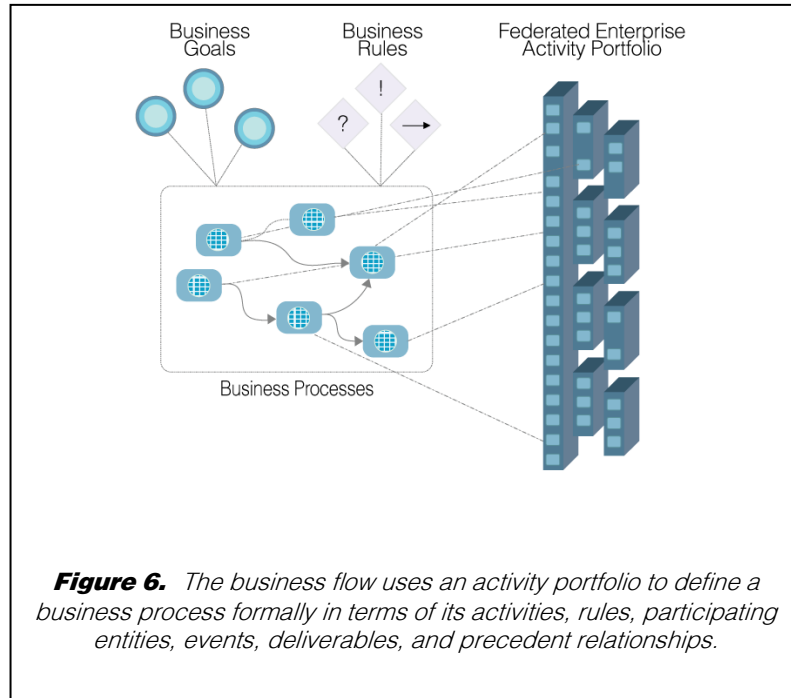


Capabilities depict, at the highest level, what an enterprise can do. Common capabilities include Inventory Management, Pricing, Order Processing, Direct Sales and Public Relations. Using Metastorm ProVision, each capability is mapped to factors such as related organizational areas, measures, governing rules, data, and supporting technology. The most distinguished mapping is to the business processes that comprise the capability. To improve a capability in support of SOA goals, an enterprise will first turn to its processes. For example, an enterprise could have goals such as “increase foreign market penetration” which in turn might nominate Order Processing as a good candidate for SOA resources. Order Processing may involve multiple business processes and be richly described in terms of opportunities, inhibitors, and influences, as well as substantive factors such as required data and governing rules. Once nominated at the strategic level, the Order Processing capability will be analyzed in detail to determine how it can best support its highest priority goals.

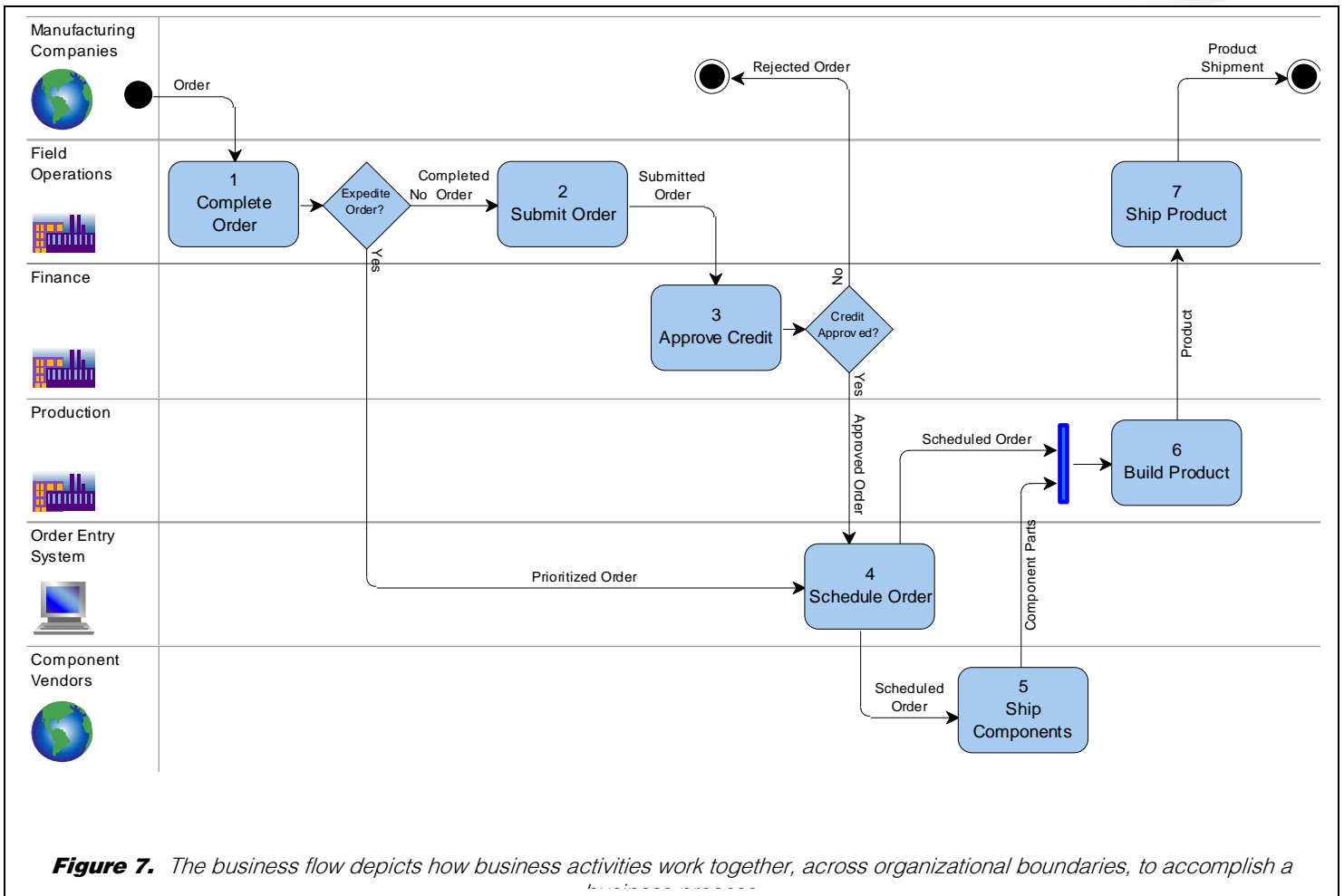
Business Modeling

Business modeling defines how processes, data, rules, services, organizations, resources, etc. interact to affect business operations and maps them to the strategic artifacts they support. Process improvement (e.g. simulation, analysis, prototyping) employs the same type of models to prescribe the future and

subsequently clarify the gap between the “as is” and the “to be” states of the enterprise.



Business flow models depict business processes as a network of activities linked by precedence relationships and driven by events. Each activity performs a function governed by rules, and can produce and consume deliverables. A single business flow will often show the collaboration among various business participants. Business participants are typically organizations (within and outside of the enterprise), roles (job functions), individuals, systems, locations, facilities or even equipment. Each activity is performed by a participant.



As result, a flow from one activity to another activity performed by a different participant depicts collaboration among areas within an organization as well as with external organizations. Figure 7 shows a simple Metastorm ProVision business flow supporting the Order Processing capability. The business flow model is the main mechanism for describing how an enterprise functions. This model has a rich support structure. Each activity requires and possibly changes data, supports goals, adheres to standards, is measured, is burdened by problems, etc. The business flow model is the backbone of a comprehensive definition of the business process.

Under SOA, business modeling takes a very active role. The definition of the business process essentially *becomes* the business process. This is accomplished by defining reusable business activities implemented by services. When the business professional incorporates these execution-ready activities, the resulting business flow model not only describes the business process but also can execute services to implement the business process.

For example, the activity Schedule Order presents to the business the ability to schedule an order for processing based upon supplied criteria. This is the business view. Internally, IT has worked with the business to enable access to a Schedule service that can place the current order in the queue for processing and deliver the results of the scheduling operation. The business activity encapsulates the details regarding which service is used. This simplifies the job of the business professional and provides the flexibility for IT to substitute the hidden service with a functionally equivalent alternate service in the future without affecting the logic of the business process.

The execution-ready enterprise activities are maintained in an activity portfolio. The portfolio is a business mechanism that profiles each activity in terms of the function performed, required inputs and produced outputs. It also maintains the tie that maps to the service that provides the functionality. The portfolio contains the raw material used by the business professional to define and refine the business processes. It presents business activities in business terms and provides mechanisms to help locate the appropriate activity to meet a business need. A business professional can now construct executable business process models by dropping in service-enabled activities and linking them together according to their required inputs and outputs.

The service within each activity is able to trigger system functionality. It will also directly or indirectly operate on enterprise data. The behavior of the service, whether functional or data access, is governed by business rules. A business rule can:

- Initiate an action – Trigger an event; trigger another rule
- Constrain behavior – Prevent an action (e.g. deny credit approval)
- Derive information – Calculate (e.g. a price discount)

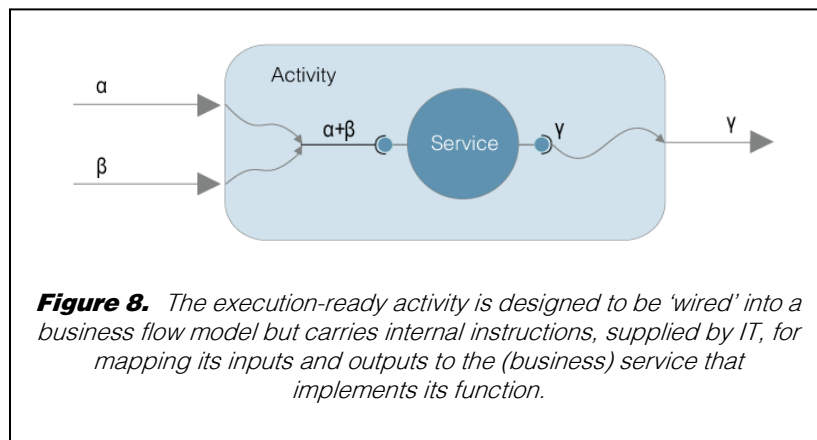


Figure 8. The execution-ready activity is designed to be 'wired' into a business flow model but carries internal instructions, supplied by IT, for mapping its inputs and outputs to the (business) service that implements its function.

Business rules cut across all business services and provide a

uniform mechanism for managing the policies of the business. When business rules are factored out of services the enterprise can more quickly institute changes in detailed behavior. For example, many services deal with tax policies in different locales. These policies should not be encoded in technical components but rather exposed to the business as modifiable rules.

With rules and execution-ready activities the business is able to make fundamental changes in the way it operates. It can add or remove activities and reroute business flow to change business process operations quickly. It can also modify business rules to affect changes in policy.

Technical Modeling

Technical modeling is two-fold—logical and physical. Logical modeling defines the technical artifacts (e.g. systems, components, databases, networks) comprising the enterprise technical infrastructure and maps them to the business artifacts they realize. It defines technical intent without binding to the characteristics of any particular technology. As with business modeling, logical modeling enables the enterprise to achieve a broader understanding of its technical infrastructure and to more effectively determine how the infrastructure will evolve. Physical modeling allows the specification of technical artifacts. It is used at the engineering level, considering details of the underlying technology. The primary benefit of physical modeling is to hide or generalize computable details and to provide a more graphical, picture-based metaphor for expressing artifact characteristics.

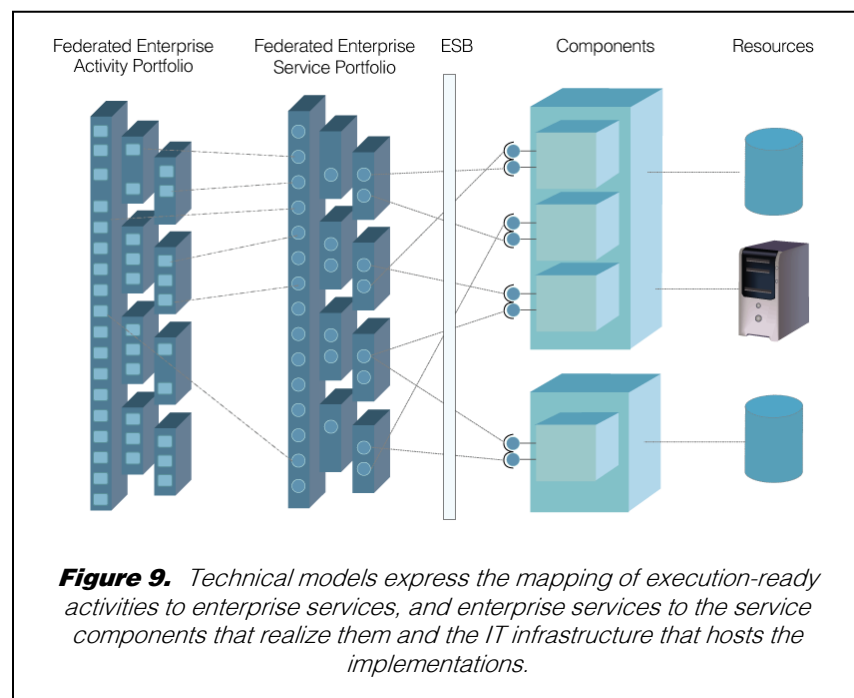
In figure 9, the left side of the Federated Enterprise Service Portfolio (FESP) is the business view, which includes execution-ready activities, business services, business rules and many supporting artifacts. The right side of the FESP is the technical view. It contains the ESB, the components that realize (technical) services and the resources required by the components.

Technical service-orientation employs the entire infrastructure of IT, including technologies such as database, message, application servers, business process execution, and rule engines. The components that realize technical services are implemented across multiple platforms and employ various paradigms. A component may be anything from a function wired within a legacy COBOL application to an executable process invoking external web services. Anything that can provide functionality and conform to a service interface can be an SOA technical artifact.

Because of the unlocked potential of legacy components, a key part of SOA is the visualization of legacy applications and databases. Legacy modernization tools and techniques demystify the complex, archaic implementations to expose reusable functionality. This functionality can be wrapped and adapted to a service interface. Ideally, the rediscovered functionality is retooled into a more modern implementation. Technical models showing modules, database records, parameters, interfaces, etc., reveal untapped potential in the abstract, and enable IT to target new service providers.

Although many components can be mined from legacy applications using tools like Metastorm Integration Manager, a key technical benefit of SOA is the ability to compose new services from existing services. Similar to how the business wires execution-ready activities to create a business process, IT can build composite services by reusing other services as components. An Order Validation service, for example, may be defined to accept an Order and deliver an errata list. This service could be constructed by composing lower level services:

- Product Availability – Ensure the requested products can be purchased
- Customer – Validate the customer information
- Credit Approval – Ensure the customer has approval to purchase



Technical process models choreograph message flows, decisions and data transformations among component services

into an executable process that performs the intended function. Since this choreography can be orchestrated (executed) by a process execution engine it can be adapted and registered like any other executable component as a single technical service. This new service may later be composed into more sophisticated services.

The ability to treat uniformly anything that can be executed as a service, coupled with the ability to compose existing services into a new service, provides tremendous technical potential. IT has a uniform means to deliver functionality across heterogeneous platforms, independent of location and available for reuse. The core SOA technical models center on the definition and composition of technical services and their supporting components. Service models define the technical services as abstract functions, with defined interfaces and quality of service properties. Each service is minimally mapped to the activities it supports, the rules it abides by, the data it accesses, the services it composes or, indirectly, to the technical components that provide its function. Component models define each component, its service interface and ties to underlying systems, platform technologies, and resource artifacts. Over time, new components will emerge, retire, and transform. It is the job of the technical models to abstract, visualize and manage the dynamic environment that delivers enterprise functionality.

In the end, all forms of modeling – strategic, business and technical – provide the same fundamental benefits. A model formalizes understanding of some aspect of the enterprise. It abstracts and thus focuses on the critical properties of interest while hiding details until they become relevant. Models enhance our ability to understand and manage complexity and to communicate essential information to others. Most significant to SOA, models are leveraged to drive change. Using domain-specific terms and concepts, models present the relevant aspects of an enterprise to the agent of change. With Metastorm ProVision, professionals can affect the change directly via the model instead of spending time informally communicating the change to others.

The Power of BPM in an SOA Environment

After modeling and staging the strategic, business, and technical aspects of an SOA program with Metastorm ProVision, that program can be executed with the Metastorm BPM® suite.

Organizations that position BPM as a core component of their SOA strategies realize more business value from service enablement as BPM helps optimize the use of the SOA across the core business processes that most directly impact executives' top performance objectives such as:

- Increased productivity
- Enhanced customer service
- Greater competitive advantage
- Stronger financial performance

A key differentiator of the Metastorm BPM platform in this regard is its ability to manage both human-centric and system-centric processes. The human-centric capabilities of Metastorm BPM enable the deployment of services to business users in the form of cohesive, orchestrated business processes synchronized across the enterprise. Complementing these human-centric functions, the Metastorm BPM suite offers Metastorm Integration Manager (MIM), a full-featured integration tool, to handle high-volume, system-based processes and to leverage even the most obscure legacy applications.

Organizing Complex Business Function Requirements

Metastorm removes the complexity of managing access to multiple types of services—including technical, business function, and business data services—by applying these services at the appropriate points in a process. In addition, Metastorm provides visibility and access to the complete “roundtrip” process life-cycle, giving organizations the ability to apply SOA concepts in process design, integration, execution, analysis, and ultimately the improvement of these strategic processes.

While an organization may have many processes that do truly stand alone, most mission-critical business processes have complex data and business function integration requirements. Traditional integration architectures take several forms, among them: custom integration code that is replicated across different integration customers (customers = applications), enterprise application integration platforms, and message brokers. All of these approaches are quite complex and exist at a level far beneath the actual processes and applications that require the data or the business functions offered by the integration.

Metastorm BPM organizes the services offered in an SOA in the following manner:

Business Function Services are generally coarse-grained services that represent a transaction/activity with significance to the business (for example: creating a customer record, creating an invoice, or closing an open customer service ticket). Business function services are usually related to a transaction and require the planning and control appropriate to the transaction, such as locking, concurrency, etc. These types of services are differentiated because of their unique requirements.

Business Data Services provide access to the information contained in the various applications, systems, and repositories of the organization in an open but secure fashion, and they eliminate replication of point-to-point integration between systems and processes. For example, business data services would provide a sales order entry process with data about active customers, available product sets, and current inventory status. In a well-planned SOA, SQL, host data sources, transactions, and batch file data sources may be served up by business data services. Business data services often deal with large, complex data sets and are often associated with interactive usage when used in a human process context. For example, browsing a large list of customers might dictate data services that accommodate paging, sorting, and filtering capabilities or the ability to combine asynchronous data manipulation operations.

Technology Services make available fine-grained supporting functions, offered as part of the platform, such as a function to create a customer-specific folder in a content management tool. Other technology services would include single sign on, shared authorization services, and transaction time-stamping.

Metastorm BPM uses standards-based technologies to orchestrate the consumption of specific business functions, business data, and technical service functions within and across multiple business processes. BPM also provides the ability to leverage these services throughout the complete lifecycle of each process, whether the service is invoked as part of a system action or interactively from a user form. Complementing this is Metastorm's support of a wide array of SOA-enabling technologies to make process components—including actions, stages, and user interfaces—available as services, delivered to consumers via the SOA, whether those consumers are people, applications, or systems.

Closing Critical Process Gaps

BPM plays a leading role as the process service provider in a firm's SOA, but beyond the technical aspects of this role, BPM also eliminates the gaps that exist in organizations—gaps between people, between organizational units, and between business applications. What differentiates BPM from traditional workflow is the inclusion of all aspects of the process, as opposed to a more narrow focus on the movement of documents and data. BPM technology has focused the attention of executives on the business processes that make their organization unique and competitive. As a result, business processes are increasingly viewed as independent and unifying assets of the organization.

Metastorm BPM software is specifically designed to close the gaps across applications and people and create a virtual “process layer” across the enterprise. This layer supports critical processes both within the organization as well as external to the organization, with suppliers and customers.

The visibility that this process layer delivers affords greater insight into the business and eases the challenge of identifying value-add services during the modeling and analysis phase of building an SOA. That visibility also plays an important role in the execution of services once the SOA is deployed.

Ideal Framework for SOA

In the analysis and modeling phase of process deployment, it is vital not only to understand the steps and activities that make up a process but also to identify the various business services and content required by each process. Metastorm's Stage Action Role (STAR) methodology, designed to align with the BPM software that will interact with services, clearly identifies how this information will be used in the process, even capturing the organizational roles of the people using the information.

The human role in the process is to make decisions using the information identified, and these decisions result in execution of a business function. Metastorm's STAR methodology allows for the clear capture of key business functions that need to be executed in the process. In this way, Metastorm BPM provides the ideal framework for identifying which systems must be enabled as services in an SOA to deliver value directly to the business.

When multiple processes are subjected to this analysis there is an additional benefit. SOAs and services are no longer viewed in the context of a single process but across multiple processes, spanning a wide range of business functions and organizational units. The result is the identification of cross-cutting concerns in an SOA, highlighting the systems and services required to add value across the entire organization. This view opens new doors for value-based analysis and planning business-wide.

Starting with a solid approach to planning and modeling an SOA, as outlined above, is critical to easing the challenges associated with deployment.

Provisioning a Wide Variety of Process Services

From a technical perspective, Metastorm BPM has been designed based on three simple but significant constructs: messages, services, and events. These three building blocks are present at every level of the Metastorm BPM architecture—from the inner workings of the process management engine and web server to Metastorm's unique ability to provide instant access to a firm's unique business processes.

This architecture makes Metastorm BPM an ideal platform to provision a variety of process services in an organization's SOA. These services can represent high-level business activities such as opening a new customer account, or more specific supporting functions such as adding comments during the review of a customer's annual report. In addition, Metastorm can provision these services using a variety of technologies, including web services, .NET assemblies, Java objects, XML messages, WebSphere MQ messages, mainframe functions, and even command-line protocols.

As part of designing and deploying an SOA, organizations using Metastorm BPM quickly view processes as first-class services to be delivered as part of the services infrastructure. No longer is business processes locked inside a single packaged application or even an organization's bespoke solution. Processes are captured, understood, and deployed in a way that enables easy interaction with other systems and processes, allowing for coordination across an entire canvas of available business services.

Advanced Service Integration and Legacy Control

Another significant consideration in SOA is integration and legacy control. As part of the Metastorm BPM suite, the Metastorm Integration Manager (MIM) provides a platform for designing, executing, monitoring and auditing system-based processes. When it comes to SOA, customers can leverage MIM to create services that tie together legacy applications across all major distributed and mainframe operating systems with new solution development for seamless process execution across a variety of platforms and channels.

MIM's portfolio of capabilities can transform items like files, databases and legacy applications into XML-based, message-driven services. Disparate services can then be orchestrated into coarser grain, higher value business services. These choreographed business services can be utilized by the organization and driven in any number of ways, including higher-level, human-centric business processes. By exposing legacy assets as services and managing the execution of those services in key business processes, MIM offers a service-oriented approach to providing business process integration within the context of the BPM suite.

MIM also provides three key benefits to the Enterprise Service Bus (ESB) technology component of an SOA. As a reminder, an ESB acts as a messaging backbone to facilitate communication between different services. MIM's roles include:

- **Managed File Transfer** – MIM's service-oriented, process-centric managed file transfer capabilities enable data to be moved across the ESB. This establishes a portfolio of batch and real-time data integration services for the organization.
- **Auditing Subsystem** – A complete auditing facility for tracking, tracing and logging is provided within MIM. This powerful tool assists organizations in demonstrating they have developed the business controls required for compliance with regulatory obligations, such as Sarbanes-Oxley.

- Exception Handling – MIM's seamless integration with Metastorm BPM provides a comprehensive, human-centric business process management platform for all forms of exception handling. Because most service-oriented initiatives are system-based, they cannot provide solutions when unexpected errors occur. People must get involved when things go wrong, so the concept of human-centric exception handling is critical. It's estimated that 80 percent of the costs for ongoing operations of integrated solutions comes from the 20 percent of errors that occur. Metastorm enables organizations to create rich processes and resolve these problems quickly, thus keeping costs down and benefits up.

Conclusion


SOA has great potential to help organizations implement programs more quickly and cost-effectively in today's demanding business environment. It achieves results that significantly benefit the enterprise:

- Agility – Rapid adaptation to changing market conditions and internal initiatives
- Reuse – Using past work in different contexts and not reinventing the wheel
- Uniformity – Broad-based ability to share regardless of technology or location

The key to success for SOA is ultimately the value it can deliver to the business. SOA will have established its foothold when business professionals gain the ability to control their own processes and rules directly, as well as adapt to change rapidly and correctly. Beyond that, SOA delivers a bonus by offering a real chance for IT to deliver broad-based reuse and component-based development in a uniform technical environment.

As the leader in EA, BPA and BPM innovation, Metastorm helps organizations realize business value from SOAs and achieve Enterprise Process Advantage®—a heightened level of business performance resulting from increased efficiency, control and agility across mission-critical processes.

Metastorm ProVision provides the foundation for SOA efforts with an integrated repository and unsurpassed modeling capabilities that enable organizations to capture critical components including strategy, business architecture, data architecture,



application architecture and technology architecture. This complete enterprise visibility enables critical business and IT alignment. Building upon the capabilities of Metastorm ProVision, the Metastorm BPM suite combines the strategic advantages of business process management with the integration technology required for SOA to effectively align IT initiatives with the strategic goals of the business user at every level within the organization. This powerful synergy of the solutions within the Metastorm Enterprise platform provides for unmatched SOA support, true process improvement and greater results for the business.

© Copyright 2009, Metastorm Inc. All rights reserved. Business to the Power of 3, Enterprise Process Advantage, Metastorm BPM, Metastorm Discovery, Metastorm DNA, Metastorm Knowledge Exchange, Process Pod, ProVision, and the See.Think.Do image 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. 7.15.2009.