Integration and Infrastructure Software
White paper

WebSphere® software

Driving business agility with composite business applications on IBM WebSphere Business Services Fabric

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Introduction

Regardless of industry or size, many companies face a universal challenge: the inability to change complex processes rapidly and respond quickly to new demands for process variations. Organizations need the ability to create new innovative business models, deliver new and exciting products and services, and personalize their products and services to varying customer segments. Adding new geographies, channels, partners, suppliers and products are examples of how processes are becoming complex so rapidly in today's marketplace. Adding to that complexity are infrastructure changes resulting from system consolidations to mergers and acquisitions or legacy system modernization. Wherever the need originates, being able to adapt to these changes rapidly and flexibly can set your company apart from the rest.

Business Process Management (BPM) enabled by service-oriented architecture (SOA) can add value by helping to manage and control continuous change. It can help companies accelerate such efforts as changing operational processes, automating processes, viewing operations in real time, and collecting data for analysis and improvement. By modeling, developing, deploying and managing business processes throughout their lifecycles, BPM enabled by SOA can help businesses absorb and manage change more easily.

But today's marketplace requires companies to change dynamically and innovate faster than ever before. The faster a company can incorporate change, the more agile it is, and the more competitive it can be in the marketplace. IBM provides a way to manage the complexity of business process change that extends traditional BPM. By combining reusable building blocks called business services into composite business applications in a service-oriented environment, companies can achieve dynamic process change more rapidly and manage that change more easily over time.

Highlights

There are different levels of abstraction within an SOA, leading to increased levels of business agility.

Simplifying process change with composite business applications

In most companies, business logic related to how services are assembled and contextualized to deliver business functionality is embedded in multiple locations and disparate IT systems such as portals, system interfaces, or back-end systems. Having this type of business logic spread across the enterprise, whether captured in screen flows or embedded in integration code, makes process change difficult and costly to manage. Careful impact analysis is required for each change as it can potentially impact other systems within the enterprise. Composite business applications help to decouple, or abstract, business logic from multiple locations into a centralized location, so that changes—and their impact—can be more easily understood and executed.

In a typical SOA, operational capabilities are exposed and abstracted from many different IT assets into units of functionality called services. These assets can be reused across the enterprise, speeding deployment of IT solutions and reducing IT maintenance costs. It's these capabilities that have experts touting SOA as an essential part of BPM. One recent Upside Research report states, "The road ahead for BPM is promising. Its alignment with [SOA] promises to take it even further as an enabling solution for maximizing business benefits." *

There are different levels of abstraction within SOA, leading to increased levels of business agility. At the very basic level are Web services. Web services help to simplify integration and are typically where companies start out with their SOA initiatives. At this level, BPM automates processes by orchestrating services and connecting them together into business processes. As SOA adoption increases, additional business context information can be abstracted and consolidated into an entity called a business service. A business service represents a discrete business function, and is a fundamental building block of a composite business application. Composite business applications provide dynamic adaptation and delivery of business functionality through dynamic service selection at run time in response to changing business context. The composite business application's dynamic behavior is enforced at run time through business policies. By abstracting additional business context information and associating it with composite business applications, it becomes easier to modify business processes and achieve greater business agility and responsiveness from these processes.

This is the level where business services and business policies can come into play. Companies can go beyond capturing just technical details, and start abstracting business information in the form of meta-data for the purpose of customizing a business service to respond to changing business situations. A business policy is an integral part of a business service and, as the name suggests, represents how the business intends to operate in a given business context or scenario. A business policy, when enforced, acts upon the abstracted business information and meta-data to ensure compliance of the business intent within the process. An example could be using contextual information such as the state or city in which a customer resides to determine how to handle an insurance claim.

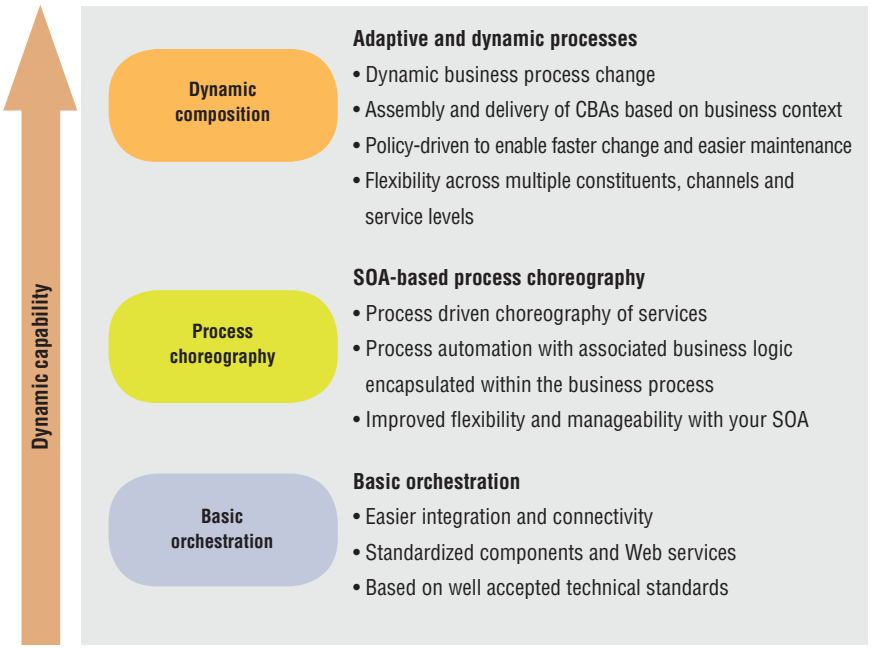
Business policies can help simplify process change because they are easier to understand and easier to modify by more people throughout the enterprise. These policies govern business service behavior and can enable faster and easier process change rather than going through a costly and time consuming business process redeployment. When a process is changed in a traditional environment, it is touched by several people: the business person talks to the business analyst, who talks to the development person, who changes the code, tests it in a development environment, rolls it out to a production environment and then redeploys it. The whole lifecycle of making a process change may take months. In an SOA environment using business services, most changes can be made more rapidly at the business level through business policies and metadata changes without requiring a lengthy redeployment cycle and the added complexity and costs associated with it.

Increasing business agility and flexibility

BPM enabled by SOA realizes greater flexibility and responsiveness through the use of composite business applications. Because composite business applications are loosely coupled and policy-driven, they can be easily modified, customized by business context and dynamically executed. These flexible and modular composite business applications can help organizations achieve greater business agility and flexibility, faster time to market for new products and services, and reduce costs through reusing and repurposing IT assets (see Figure 1). They can also provide the following key benefits.

- *Flexibly aggregate business functionality from legacy, third-party, custom and packaged systems*
- *Dynamically respond and be easily customized to changing business needs*
- *Leverage pre-built SOA content to speed time to market*
- *Enable faster change through policy configuration instead of coding and redeployment*
- *Extend and enhance existing IT capabilities rather than perform time-consuming and costly IT system "rip and replace" projects*

Figure 1: Composite business applications enable dynamic process change



Business services are the building blocks that help composite business applications provide the level of dynamic change and customization needed by businesses today. By consolidating business policies and descriptive business information into one place for easier discovery and change, business services can be customized and adapted to changing business and user contexts.

For example, an insurance quote process can be personalized so that independent agents who use that insurance company can receive real-time quotes over their preferred communication channel, including Web portals, B2B connections, hand-held devices, automated phone response systems or other channels. Furthermore, an agent can access his or her own customized services portfolio, subscribing and unsubscribing to available business services as needed. With a few clicks, the agent can get information on new products, view policy and quote status, and take action on open items. Agent services can be easily customized for different services levels, such as priority straight-through-processing for highly valued premium agents. Services can also be delivered from multiple insurance lines such as auto, home and commercial while providing the same uniform and consistent user experience. Greater productivity for the agent means greater profit potential, including the flexibility for the agent to reach the insurer anytime, from anywhere.

At the same time, the insurer can track agent activity internally—monitoring it from customized performance dashboards. That way, agents can be quickly and easily rewarded for high volume sales with additional agent benefits and higher service levels, for example. In this case, composite business applications help provide flexible access, tailored interactions, allow agents to be more productive, and reward loyalty with higher levels of agent benefits.

Enabling faster business model innovation

What is the difference in business value and total cost of ownership for those using a service-oriented approach and those not using it? And what about those who take SOA a step further, by using composite business applications for easier and faster process change and greater business model innovation? When composite business applications are introduced, business functionality becomes more modular and can be mixed and matched, allowing companies to achieve business model innovation more easily. Figure 2 summarizes the increased value of adopting the business services approach.

Figure 2: Achieving the most value by extending BPM enabled by SOA

	Non-SOA	BPM enabled by SOA	Extending BPM enabled by SOA using CBAs
Business value	• *Restricted business agility* • *Delayed time to value* • *High risk of "big bang" or "rip and replace" system changes*	• *Increased business agility* • *Accelerated and incremental time to value* • *Reduced risk*	• *Highest business agility through composite business applications* • *Further accelerated time to value* • *Reduced risk*
Total cost of ownership	• *No reuse* • *Cost associated with implementing and integrating packages and/or cost to custom develop* • *Low flexibility with high cost and time needed for change*	• *Web services reuse* • *Cost associated with exposing legacy code, custom development and change management* • *Increased flexibility with medium cost and time needed for change*	• *Increased levels of reuse through business services* • *Lower change costs and lower development costs through higher reuse* • *Highest flexibility with lowest cost and time needed for change*

The insurance claims filing process can be used as an example of business model innovation versus a traditional model. A traditional claims filing process, as shown in Figure 3, can present challenges including:

- *An inability to handle claims overflow (unusually high demand resulting from catastrophic situations), resulting in frustrating delays and customer service problems.*
- *Inconsistent user experiences, incorrect results, or inaccessibility via different channels and methods of access.*
- *Multiple parallel business support systems built over the years with point-to-point connectivity to back-end legacy systems.*
- *Communication channels that are connected independently with hard-wired mapping, processes and rules.*

Figure 3: *Before:* Inefficient insurance claims filing process

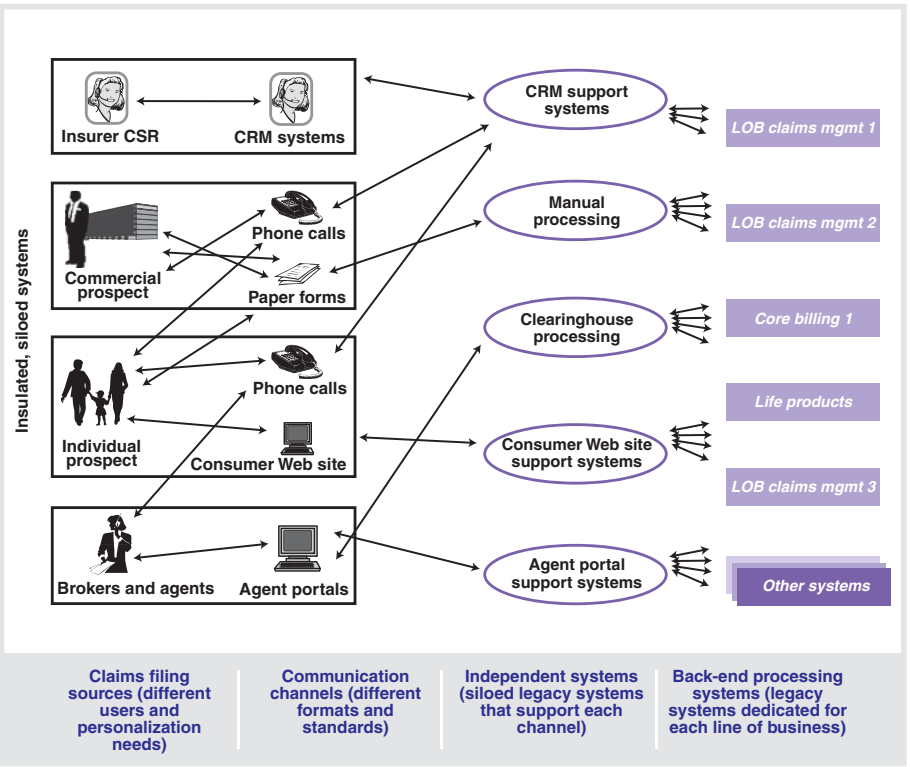
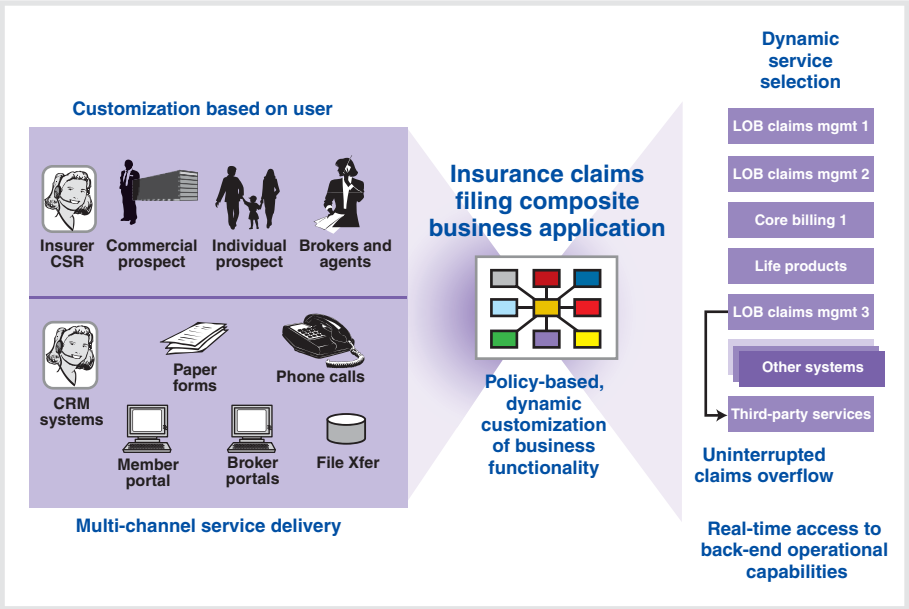


Figure 4: *After:* Dynamic insurance claims filing process using WebSphere Business Services Fabric



Now consider the benefits of claims filing using an insurance-specific composite business application, as shown in Figure 4. The once fragmented and embedded business logic is now wrapped around reusable and modular business services that are assembled into a composite business application. This application can help provide:

- *Optimization of claims service levels and processing cost with business policies that span user roles, communication channels and operational capability.*
- *Consistent user experience across multiple communication channels with policy-based customization and delivery of business functionality.*
- *Uninterrupted claims overflow by dynamically routing claims to outsourced overflow centers without the need for time consuming process redeployment.*
- *Greater flexibility and responsiveness through dynamic service selection instead of creating and deploying hard coded service bindings.*

Highlights

WebSphere Business Services Fabric is a comprehensive SOA offering that builds upon and extends IBM's BPM platform.

Introducing WebSphere Business Services Fabric

IBM WebSphere® Business Services Fabric is a comprehensive SOA offering that builds upon and extends IBM's BPM platform and is designed to help companies assemble and manage composite business applications to achieve greater flexibility and business model innovation.

- *Extends WebSphere Process Server to provide the run-time and manage time capabilities for business services*
- *Extends WebSphere Integration Developer to provide the tooling necessary to assemble business services*
- *Integrates with WebSphere Registry and Repository to source technical Web services meta-data used in the assembly of business services*

Additional benefits include:

- *Flexibility to change processes and service execution behavior across multiple business processes and disparate IT systems.*
- *Policy-driven business services to provide customized business functionality based on changing business contexts.*
- *Faster process change and easier ongoing maintenance with business-level policies stored in a centralized location.*

WebSphere Business Services Fabric helps companies assemble adaptive, customized and modular composite business applications consisting of existing IT assets including legacy, packaged, custom or third-party systems. Composite business applications enable companies to dynamically customize and deliver business functionality based on business context, and enable faster process change using business policies and meta-data that business users can more easily understand and adapt.

Additionally, WebSphere Business Services Fabric includes capabilities for lifecycle management and governance of business services, including:

- *Highly scalable, dynamic service selection and delivery engine based on business and user context.*
- *Centralized repository to store business services and business-level policies in conjunction with IBM WebSphere Service Registry and Repository.*
- *Management, control and automation of business service entitlements for role-based users and systems.*
- *Business services visibility and monitoring to manage performance.*
- *Business policy management and enforcement.*

Industry Content Packs

Composite business applications become even more valuable when they are tailored to specific industries and leverage industry-specific and technology standards and best practices. According to the Upside Research report, "Predefined templates and models for various industries (i.e. how to model a loan application) can save time and money by allowing business analysts and IT folks to fast track projects." *

IBM has introduced Industry Content Packs so that customers can accelerate the deployment of industry-specific composite business applications. These packs contain pre-built SOA accelerators including reference business services templates to accelerate business service deployment and their assembly into industry business processes. The templates include definitions of business assertions, business roles and business channels, based on an Industry Business Glossary. The included glossary presents a taxonomy of industry terms, with associated relationships and properties to facilitate greater interoperability and reuse.

The Industry Content Packs help ensure consistency and reuse across geographic locations, lines of business, and industry business processes. Web service interfaces adhering to industry and technical standards enable interoperability across disparate systems in the customer's enterprise ecosystem. Industry Content Packs include these additional prebuilt SOA assets, tailored to each industry.

- *Industry Common Services that can speed the delivery and assembly of composite business applications*
- *Industry Business Object Model (BOM), used as a semantic model for composite business application design and development*
- *Knowledge Assets that accelerate the consumability and extensibility of the pre-built SOA content packaged in the Industry Content Packs*

Industry Content Packs are available for the insurance, healthcare, banking and telecommunications industries. IBM Insurance Property & Casualty (P&C) Content Pack for WebSphere Business Services Fabric focuses on the P&C lines of businesses for insurance enterprises. IBM Healthcare Payor Content Pack for WebSphere Business Services Fabric focuses on the payor processes in healthcare enterprises. IBM Banking Payments Content Pack for WebSphere Business Services Fabric focuses on payment capabilities of financial services enterprises. And IBM Telecom Operations Content Pack for WebSphere Business Services Fabric focuses on billing, fulfillment and assurance operations for telecommunications service providers.

Summary

Companies need flexible solutions to support change in an environment of increasing process complexity. Composite business applications assembled from business services can meet these needs by dynamically adapting business functionality based on changing business context. Additionally, using business policies stored in one centralized location to govern the behavior of business services allows for easier process change, impact analysis and maintenance. WebSphere Business Services Fabric extends the BPM enabled by SOA platform to achieve these benefits while offering optional Industry Content Packs to accelerate the deployment of industry-specific composite business applications.

For more information

For more information about extending your company's BPM platform using business services, visit **ibm.com**/software/integration/wbsf

For more information on SOA from IBM, visit **ibm.com**/soa

For more information on IBM WebSphere BPM Suite, visit **ibm.com**/software/websphere

For more information on IBM Business Innovation and Optimization, visit **ibm.com**/software/innovate

Glossary of terms

BPEL – an XML-based language for the formal specification of business processes and business interaction protocols. BPEL extends the Web services interaction model and enables it to support business transactions.

Business context – also known as the operating context, it refers to the business situation of a service request. This includes multiple attributes that describe the business process, including organization, role, channel, environment, service level agreement (SLA), and other domain specific business aspects of any given service request.

Business policy – specifies the set of conditions that must be satisfied for a given business context when a service is executed. In WebSphere Business Services Fabric, business policies are used to choose the best service implementation for a given business service request.

Business process – collection of interrelated tasks that solve a particular issue.

Business Process Management (BPM) – a discipline at the intersection between management and information technology, encompassing software, business expertise, methods, techniques and tools to design, enact, control and analyze operational business processes involving humans, organizations, applications, documents and other sources of information.

Business service – a business-level building block representing a specific business function that is aligned with an end user's view of the business and capabilities it provides. It encapsulates processes and Web services whose behavior is adapted at run time based on the business context and service request of the user or system making that request.

Composite business applications – derives its functionality from existing set of enterprise systems and applications exposed as Web services. In WebSphere Business Services Fabric, they are represented as a collection of business services and integrated into a company's IT infrastructure.

Service orchestration – involves a central process (which can be another Web service) taking control of the involved Web services and coordinating the execution of different operations on the Web services involved in the operation. The involved Web services do not "know" (and do not need to know) that they are involved in a composition process and that they are taking part in a higher-level business process.

Service choreography – does not rely on a central coordinator. Rather, each Web service involved in the choreography knows exactly when to execute its operations and with whom to interact. All participants in the choreography need to be aware of the business process, operations to execute, messages to exchange, and the timing of message exchanges.

Service-oriented architecture (SOA) – a conceptual description of the structure of a software system in terms of its components and the services they provide, without regard for the underlying implementation of these components, services and connections between components.

Web service – defines its interface by using the Web Services Description Language (WSDL) and is accessible by using a protocol that is compliant with Web Services Interoperability (WS-I) such as but not limited to SOAP over HTTP or JMS.

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* "Insider's Guide to Business Process Management ROI enabled by SOA," David A. Kelly and Heather Ashton, Upside Research, 2007.

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