



# Business Process Management on an SOA Foundation

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A Unified Framework for Process Design and Deployment



## Executive Summary

Organizations seeking to deliver business process management (BPM) on a service-oriented architecture (SOA) have traditionally been faced with one of two compromise solutions: a workflow approach with limited connectivity or an integration approach with limited BPM functionality. This paper describes a unified architecture for BPM in an SOA environment from TIBCO that overcomes these limitations.

Using this unified approach results in a process layer and a service layer, each independent of the other. Changes can be made to processes without affecting the underlying services and the line-of-business applications with which they interact. Similarly, changes can be made to the technical underpinnings of the service without impacting those business processes using the service. This flexible design approach significantly increases process agility, isolates the impact of change and allows the specialized skills of business analysts and IT developers to be properly harnessed.

## The Goal: Independent Process and Service Layer

An SOA is an architecture that breaks down key applications and data into discrete, independent components, or “services,” that can be executed in a highly distributed manner. An SOA increases business agility by enabling IT departments to reuse services that have known scalability and quality of service characteristics. Such reuse can help reduce time to market as well as development costs.

When BPM is deployed on an SOA, these services are used as building blocks that can be orchestrated via BPM to model complex business processes. In addition to creating new services, a key design principle of SOA is the ability to wrap components of existing legacy applications, and then expose those components as services that can be called by different business processes. These reusable services can also be assembled to form new “composite” services and applications. Not only does this reduce time and costs, since it avoids having to build and test new code, but it also mitigates risk of process failure since SOA leverages services that have already been proven through production use.



The elegance of this approach is that business analysts need not concern themselves with the technical underpinnings of the service. Instead, they can focus attention on the business process. When that process requires a service, they just need to select the correct service and the inputs and outputs between the process and service. At the same time, augmentations made to the service by IT developers should not have any impact on existing processes that use the service. As IT increases the depth and breadth of service assets, business processes require less and less complex development, and business analysts gain greater control over the end-to-end process; each group can work in an independent but collaborative manner to quickly and economically implement process management. Deploying BPM on an SOA results in a more agile and efficient enterprise.

While almost everyone would agree that this is how BPM should be implemented on an SOA, delivering on the promise has been elusive to date. Until now, BPM on an SOA has been delivered as BPM with limited connectivity (by vendors with a workflow background), or as an SOA with limited BPM functionality (by vendors with an integration background). Each vendor focuses on providing robust, easy-to-use functionality for their market segment and tends to oversimplify the requirements for the complementary technology.

## **Traditional BPM Offerings Require Substantial Development Efforts**

BPM vendors with a background in the workflow or document-management world have tended to focus on process design and management – definition, modeling, simulation, work queue management, user interfaces, rules engines, analytics and process interactions with people – and have done so in a fashion that puts the tools and, ultimately, ownership of the process in the hands of the business analyst. The necessary connectivity to communicate with particular integration services has been added seemingly as an afterthought, often via loosely integrated OEM relationships or basic integration adapters.



**Required functionality to deploy BPM on an SOA:  
traditional approaches provide partial solutions**

Task	BPM-oriented approach	EAI-oriented approach
• Design of business processes – easy-to-use interface for business analyst	• <b>STRENGTH</b>	• Weakness
• Business rule creation and management	• <b>STRENGTH</b>	• Weakness
• Application UI development and deployment tools	• <b>STRENGTH</b>	• <b>STRENGTH</b>
• Process analytics	• <b>STRENGTH</b>	• Weakness
• Connectivity to applications, technologies and services	• Weakness	• <b>STRENGTH</b>
• Reliable messaging (execution of business processes)	• Weakness	• <b>STRENGTH</b>
• Integration infrastructure to create and manage services	• Weakness	• <b>STRENGTH</b>
• Service discovery	• Weakness	• <b>STRENGTH</b>
• End-to-end system management	• Weakness	• Weakness

On the other hand, BPM vendors with an enterprise application integration (EAI) heritage have approached the challenge from a connectivity perspective – in other words, how to enable SAP to talk to Siebel and deliver that information to a mainframe application and a data warehouse. These tasks are accomplished with highly specialized tools that leave the process design up to the developer rather than the business analyst. A low priority has been placed on any features dealing with human aspects of the process.

The result is two classes of products, each of which goes halfway toward solving the problem but falls short of a complete solution with the associated benefits – flexibility, adaptability and efficiency for both the business and IT.



The table on page 4 lists the functionality required to successfully deploy BPM on an SOA and shows how well each class of products delivers on that functionality.

Choosing either of these approaches as the basis of your BPM on an SOA strategy requires a significant compromise:

- You can embrace the workflow view of the world and resign yourself to the fact that developers will need to do a lot of coding to connect to and orchestrate systems.
- You can adopt the integration view and accept that while a comprehensive infrastructure and connectivity framework will exist, analysts will need to communicate business requirements to developers and rely on them to design, deploy and support an application – and do so without the specialized human-centric capabilities.

## TIBCO Delivers the Full Benefits of BPM on an SOA Foundation

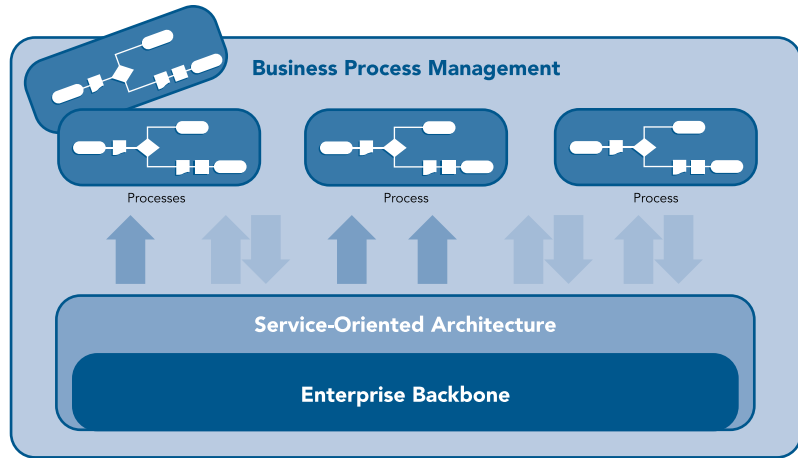
From an architectural point of view, TIBCO believes that to deploy effective and efficient BPM, the strengths of both the BPM-oriented and EAI-oriented approaches must be combined and built to operate in an SOA. The following TIBCO products deliver this functionality:

**TIBCO iProcess™ Suite software** allows organizations to create a process-centric infrastructure based on their business processes. This suite is composed of multiple modules, including TIBCO iProcess Modeler software and TIBCO iProcess Engine.

**TIBCO BusinessWorks™ software** provides an enterprise service bus and integration backbone that enables iProcess Suite business processes to connect with and use data from potentially hundreds of different service providers that can span the entire enterprise – including both web services and non-web services.



Figure 1: A unified architecture for BPM in an SOA environment



The combination of iProcess Suite and BusinessWorks provides a foundation for a complete BPM solution in an SOA environment, as shown in Figure 1. The combination is enhanced with products that provide business activity monitoring and system monitoring. In order for each of the products to leverage the strengths of the others, they are integrated at key points. This unified architecture provides unparalleled visibility into all the workings of a business process – from design through deployment to production. Business analysts can perform each of these activities with vastly reduced development resource requirements and, most importantly, greater control over the business process.

The following sections detail how the integration between iProcess Suite, BusinessWorks and other TIBCO monitoring tools improves results throughout BPM projects.

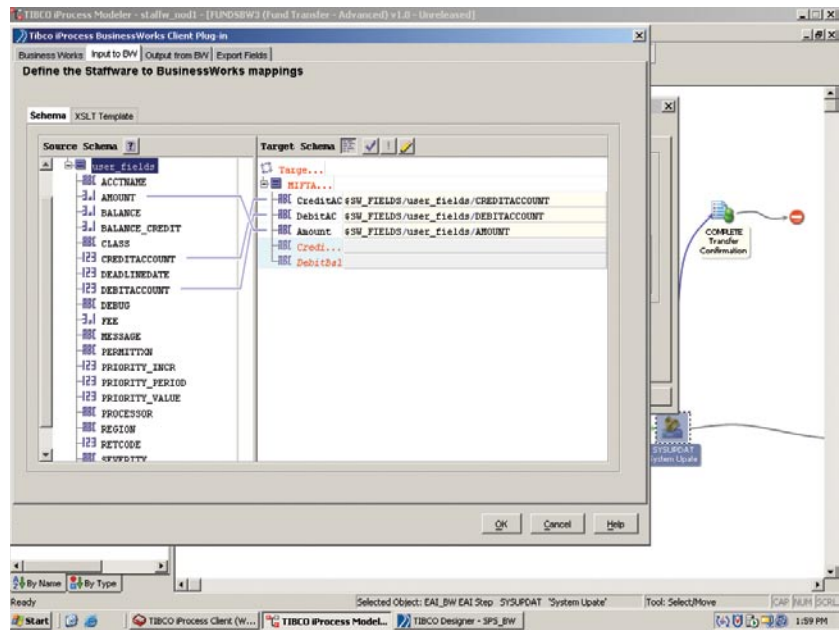
## Leveraging Services to Accelerate Process Design

Many BPM vendors provide the functionality required for business analysts to design complete and effective processes. What has been missing from this toolbox is the means to access prebuilt integration services for incorporation into business processes, facilitating the retrieval, update and synchronization of information from line-of-business applications.



**Figure 2: Repository introspection facilitates rapid process definition and design**

The integration between iProcess Suite and BusinessWorks delivers a solution to this requirement. IT developers, using BusinessWorks as their SOA platform, develop a series of coarse-grained integration services such as Retrieve Customer Profile, Update Address, Calculate Credit Score or Update Inventory.



Meanwhile, the business analyst, using iProcess Modeler for business process design, can inspect the registry of available services, choose the correct one, drop it into the process flow and then map the relevant inputs and outputs, as shown in Figure 2.

With this approach, business analysts need not concern themselves with the technical underpinnings of the service. They can focus on the selection of the correct service and the mapping of data models between process and service.

The iProcess Modeler includes key design-time features such as field validation between the process and the service to ensure accurate processing of data types, as well as the ability to test the process and service end-to-end without having to deploy either one.



Using this approach results in a processes layer and a services layer, each independent of the other. Changes can be made to processes without affecting the underlying services and the line-of-business applications with which they interact. Similarly, changes can be made to the technical underpinnings of the service without impacting those business processes using the service. This flexible design approach significantly increases process agility, isolates the impact of change and allows the specialized skills of business analysts and IT developers to be properly harnessed.

## **BPM on an SOA Enhances Process Monitoring**

One of the principal benefits of BPM is the ability to monitor and analyze processes from end to end – and to do it in real time. The unified BPM and SOA architecture, coupled with TIBCO’s unique “event enabling” of business processes, expands the scope and efficacy of this monitoring.

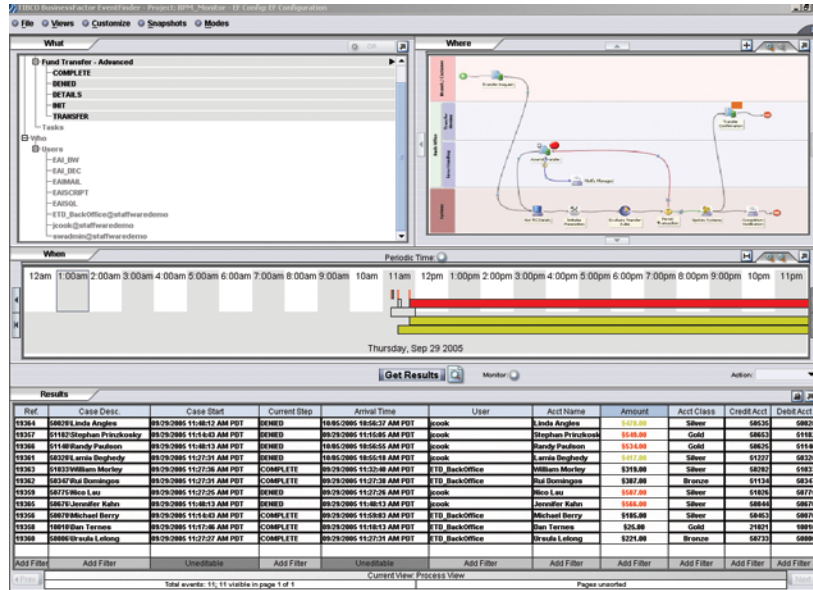
Both iProcess Engine and BusinessWorks are “event-enabled,” meaning that each publishes messages at multiple points throughout a business process. As jobs progress through a business process, all associated events can be collated, aggregated and displayed in real time through the business activity monitoring dashboard of TIBCO BusinessFactor™ software. The events are displayed in the exact context of the business process, incorporating precise data from both low-level integration tasks and high-level human tasks. Because BusinessFactor can incorporate messages from multiple sources, including external sources such as a data warehouse, organizations can get a complete, real-time view of business processes. TIBCO is alone in providing this all-encompassing real-time process monitoring capability.

The iProcess Engine publishes Java Message Service (JMS) messages at key state changes. A message is generated each time an instruction in the iProcess Engine produces an audit trail entry – such as case started, work item released, work item overdue, work item reassigned and others. The selection and granularity of each message is configurable.





Figure 3: End-to-end activity monitoring gives a complete process view at all levels



At the same time, BusinessWorks publishes JMS messages with information regarding interactions at the infrastructure level. Examples of this type of interaction might include notification that a database update succeeded (or failed) or that an attempt to connect with a service failed. Selection of events that trigger messages is a user-configurable option.

Beyond providing the relevant audience – business analyst, developer or systems architect – with up-to-the-second information about a desired process, dashboards can also be easily modified by users. Filters can be applied to display the particular messages of interest, and both triggers and alerts can be set based upon predefined or personalized parameters. As a result, the analyst has all the tools necessary to monitor, correct and change all the activities without requiring additional resources.

## Process Execution and Management

While the effort that goes into creating a reusable service or business process is significant, managing and maintaining them is also a significant and long-term task.

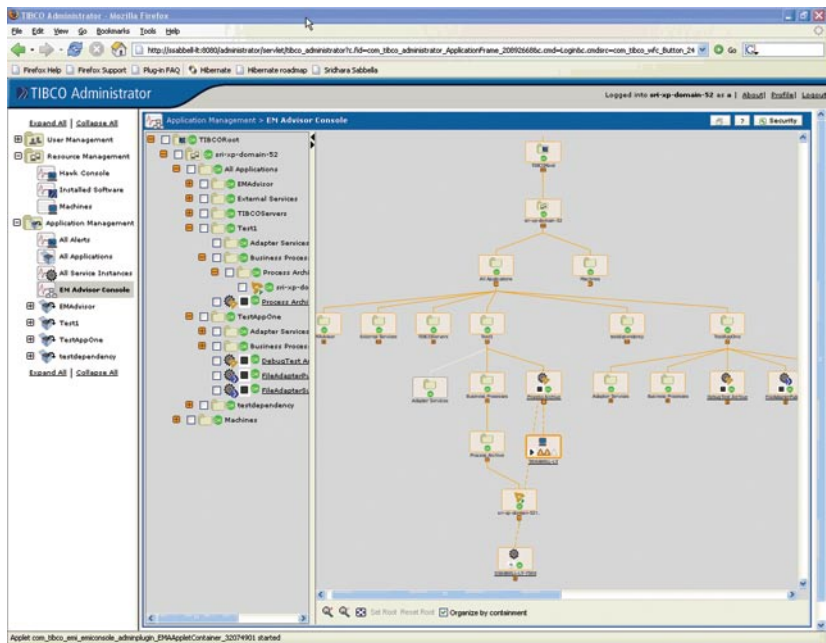


Once a business process is designed and tested, it moves into production. In a production environment, consistent system management of all components and processes within the BPM and SOA solution is critical to quickly spotting and correcting problems.

TIBCO provides end-to-end self-correcting system management capabilities that are fully integrated with the execution engines. The foundation of these management capabilities is TIBCO Hawk® software, a sophisticated tool for monitoring and managing distributed applications and systems throughout an enterprise. Hawk can be used to manage all aspects of the BPM and SOA deployment, including the ability to start and stop engines on specific machines, report diagnostic messages, monitor error logs and issue various automated alerts. Ultimately, Hawk allows system administrators to proactively manage the day-to-day operation of their systems infrastructure.

One of Hawk's more sophisticated capabilities is its use of rules to automatically modify engine configurations based on predefined thresholds.

**Figure 4: TIBCO Hawk console controls and monitors all TIBCO components from a single point**





For example, should the CPU utilization on a particular machine exceed a specified threshold, Hawk can automatically start up a copy of the engine on a second machine.

Hawk enables system administrators to monitor application parameters, behavior and loading activities for all nodes in a local- or wide-area network (Figure 4) and take action when predefined conditions occur. By fully monitoring iProcess Suite and iProcess events, Hawk allows operations personnel to keep abreast of all interactions of any TIBCO component.

## About TIBCO

TIBCO has more than 15 years of experience in delivering integration software and is a recognized leader in terms of market share and analyst rankings. As the need for BPM on an SOA was emerging, TIBCO completed the acquisition of leading BPM vendor Staffware and has integrated its best-of-breed BPM software, now called iProcess Suite, with BusinessWorks, BusinessFactor and Hawk. With this integration, TIBCO customers are able to reap the benefits of BPM in an SOA: easily introspecting the BusinessWorks service library from iProcess Suite, pulling iProcess components for inclusion into a BusinessWorks process, readily creating dashboards to monitor all of these in BusinessFactor, and more.

### FOR MORE INFORMATION

For information on a broad range of topics specific to SOA and event-driven architectures – including best practices, standards, organizational governance and relevant technologies – TIBCO invites you to access the SOA Resource Center at [www.tibco.com/software/soa/](http://www.tibco.com/software/soa/). More information on TIBCO products and professional services can be found at [www.tibco.com](http://www.tibco.com).



Global Headquarters  
3303 Hillview Avenue  
Palo Alto, CA 94304

Tel: +1 650-846-1000  
Toll Free: 1 800-420-8450  
Fax: +1 650-846-1005

[www.tibco.com](http://www.tibco.com)