Using ESB technology as a foundation for BPM

Best Practices when designing a Business Process Management Infrastructure

Abstract: ESB? BPM? The alphabet-soup of middleware solutions can often be confusing. Enterprise Service Bus (ESB) and Business Process Management (BPM) solutions solve different problems, but have complimentary strengths when utilized correctly. Learn more about where each is appropriate, how to design your solution, and how to select a BPM solution to complement your ESB foundation.

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1 Business Process Management Overview

Business Process Management (BPM) can be a fundamental building block of many business functions. The primary function of a BPM solution is to assist business analysts in modeling and optimizing the processes of their organization. These processes are often long-lived, lasting days or weeks from initiation to completion. While they may at times be fully automated, in most cases manual intervention from a business stakeholder is required.

The ultimate goal of a BPM solution is to improve the functioning of a human-centric business process. As an example, an employee on-boarding process affecting multiple systems such as HR, payroll and building security could be managed by a BPM. Another example could be a low-volume, high-value e-commerce process where manual intervention is often required to approve the completion of a transaction.

The strength of a BPM solution lies in its ability to orchestrate between different systems, people and processes to improve the overall function of human-centric business activities. BPM solutions focus on process definition, execution and monitoring. In this context BPM solutions are generally optimized for long running business processes that include manual processing steps.

2 How an ESB can complement BPM

In direct contrast to BPM solutions, an Enterprise Service Bus (ESB) is optimized for high volume, low latency, system-to-system 'real-time' communication in timeframes spanning fractions of a second to a few minutes. When compared to BPM, an ESB will provide superior performance under high load or high performance requirements and architectural flexibility as a result of the breadth of its system connectivity options. ESB architectures are flexible and scalable due to their ability to support many communication transports and data transformation formats. These '–ilities' become increasingly important traits as systems grow and become more complex over time.

In many cases BPM and ESB systems co-exist and work collectively to solve business problems. In a complex e-commerce application, for example, both ESB and BPM may be required as connectivity is needed to various web services, ERP applications, CRM systems, and billing systems. Some of these may be packaged software applications while others may be custom built. Many may sit within the enterprise while others may

be delivered in a software as a service (SaaS) model. While a BPM solution typically offers limited connectivity to many of these applications an ESB can provide integration to all necessary systems, simplifying the overall integration project.

In a scenario such as this, transaction volumes can be quite high. An ESB is better tuned to handle these high volumes of transactions than a BPM solution. Most transactions typically can be processed with little or no human interaction. A web app can take a credit card number, check the number, process the financial transaction and then send the order to fulfillment. However, this does not mean BPM is not also useful in these scenarios. If orders require complex invoicing, credit checking, auditing, or other special attention, human interaction may be required. In these cases the ESB can process steps of the transaction then integrate with a BPM solution for those steps that require a unique business process.

ESB and BPM are also complimentary in media and content delivery applications. In a real world example, a large media firm relied on Cordys BPM for their content publishing, approval and syndication needs. However, as transaction volumes increased and the media business transformed from a primarily print and television environment to one involving multiple delivery vehicles, the system struggled to keep up with the large amount of metadata surrounding media files passed through the BPM solution. The firm also struggled to keep up with new delivery channels with new APIs such as mobile distribution that became increasingly critical to their business. In direct response to these challenges, the firm adopted Mule ESB as an integration foundation for their BPM solution, managing connectivity and automating more routine tasks. Utilizing this architecture, they increased their system performance significantly.

3 Best practices in selecting BPMs and ESBs

As discussed, BPM and ESB have different strengths. Consequently the challenge becomes accurately determining system requirements and allocating the correct division of responsibilities within your chosen architecture. It is common mistake that organizations choose one or the other without fully considering the nature of the problem they are trying to solve. While use cases vary, a good rule of thumb when selecting whether to utilize a BPM or an ESB solution is as follows:

1. BPM (only) Use Case - If the use case in question involves very low transaction volumes, low performance requirements, and a high degree of human

interaction in the business process and the system requirements are simple and not likely to change much over time, a BPM 'only' solution can be an appropriate choice.

2. ESB (only) Use Case - If the use case in question involves medium to high transaction volumes and architectural flexibility and scalability are also important due to the size or complexity of the implementation, then an ESB 'only' solution is the most appropriate choice.

3. BPM & ESB Use Case - If the use case in question involves medium to high transaction volumes, architectural flexibility and scalability is required, and a substantial portion of these transactions will involve human interaction in the business process, a combined BPM and ESB solution should be applied. In this case the BPM is responsible for the business process and human workflow interactions and executes on a high performing, flexible, scalable ESB foundation.

4 Mule ESB as a complement to BPM

Mule ESB has grown to be one of the most popular ESB platforms among developers due to its open source accessibility, lightweight, simplicity, and robust integration capabilities. It is used in over 3,200 production deployments by leading organizations such as Walmart.com, Nokia, Nestlé, Honeywell and DHL, as well as 35% of the Global 500 and 5 of the world's top 10 banks. It powers mission-critical application responsible for massive revenue streams in organizations ranging from major airlines to global banks.

Mule is especially well suited to integrate with BPM solutions. Mule provides industry-leading performance that augments the weaknesses of a BPM solution. It also provides the widest range of connectivity for both on-premise applications and cloud services. Finally, Mule ESB is a best of breed solution. Unlike some vendors who try to tightly couple their BPM and ESB solutions in a way that impedes architectural flexibility and require additional products, Mule can natively integrate with most in-market BPM products easily, robustly and with minimum time investment and cost.

5 Selecting a BPM solution to use with Mule ESB

Mule provides almost complete flexibility in deciding which BPM solution is a best fit for your selected environment, technology stack or desired features and functionality. Mule ESB integrates seamlessly with many of the BPM products that are currently available in the market. In addition to the aforementioned customer that integrated Mule with Cordys BPM for a media distribution application, MuleSoft customers have also successfully used Mule together with jBPM, Activiti, Bonita, Oracle, Italio, Paga and many other BPM solutions.

Of the BPM solutions available for use with Mule two of the most common are jBPM and Activiti. Each is, like Mule, based upon an open source code base. While each has its strengths and weaknesses both are well-supported, robust products that complement ESB exceedingly well.

jBPM, a BPM product offered by JBoss, is one of the most popular BPM solutions. It offers process management features in a way that appeals to both business users and developers. The product provides a Web based and an Eclipse based editor to define processes. Having been used by many Mule customers in large-scale production deployments, jBPM is one of the most widely deployed BPM solutions for use with Mule ESB.

While newer and less widely deployed than jBPM, Activiti is an open-source, lightweight workflow and BPM Platform. Created by a former jBPM technical lead, Activity is widely backed by several firms including Alfresco, VMWare, Signavio, Camuda and MuleSoft amongst others. A major benefit of Activiti is the fact that it can execute BPMN 2.0 natively. This offers a significant advantage in that the process execution language is both fully executable and understandable by business analysts. It is also highly flexible in defining 'human activities' in business process. These capabilities significantly differentiate Activiti and BPMN 2.0 for BPEL, the previous de facto standard for BPM definition. Development for Activiti can be done using either Eclipse or a Web based editors. Camunda supports the commercial version of Activiti, called Fox.

While MuleSoft typically recommends Activiti as the leading BPM choice on the market, and jBPM as a close second, it is completely up to the customer's discretion

as to which solution they wish to adopt. Mule ESB integrates with a multitude of different BPM solutions beyond these two.

6 Summary

Selecting the right solution for your integration needs can be confusing. At the surface, BPM and ESB can appear to solve similar problems; however, the strengths of each are quite different. ESBs are at their best when dealing with synchronous transactions, automated process, high performance demands and broad ranging connectivity. BPM, in contrast, is relatively limited in each of these capabilities but excels when faced with asynchronous business processes and complex human interactions. The two solve different problems, and can be used in tandem to leverage the benefits of both and deliver superior business value.

Mule ESB is the world's most widely integration platform for connecting applications. It is particularly well designed for integration with BPM solutions. Furthermore, because it is an open, best-of-breed product, it provides maximum flexibility for integrating with various BPM solutions without forcing vendor lock in or unnecessarily complex architectures.

About MuleSoft

MuleSoft provides the most widely used integration platform for connecting SaaS and enterprise applications in the cloud and on-premise. With the rise of cloud and mobile, enterprises face a choice: become overwhelmed by the resulting explosion of end points or seize the opportunity to gain competitive advantage. Founded on the idea that connecting applications should not be hard, MuleSoft lets organizations harness the power of their applications through integration. MuleSoft's Anypoint™ technology eliminates costly, time-intensive point-to-point integration, enabling business agility. Delivered as a packaged integration experience, CloudHub™ and Mule ESB™ are built on proven open source technology for the fastest, most reliable integration without vendor lock-in. Supporting billions of transactions per day, MuleSoft is used in production by thousands of enterprises, including Walmart, MasterCard, Nokia, Nestlé and Honeywell, and powers integrations with leading SaaS vendors such as Salesforce.com, NetSuite, Workday, Intuit and Zuora.

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