



A Guide Through the BPM Maze

WHAT TO LOOK FOR IN A COMPLETE BPM SOLUTION

With multiple vendors, evolving standards, and ever-changing requirements, it becomes difficult to recognize what meets your BPM project requirements. This whitepaper discusses what makes a BPM solution complete, allowing for end-to-end management of your core business processes, in a way that improves your organization's productivity and effectiveness.

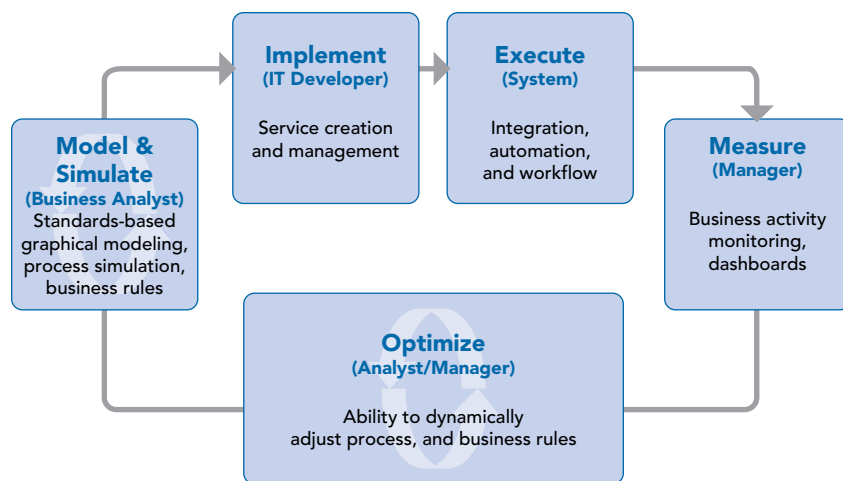


Introduction

At the heart of every business is a set of processes that determine how the business functions. The efficiency of these processes directly affects the success of the business. With increased competition, governance and regulatory requirements, and the ongoing need for operational efficiency, these processes are becoming more and more important and core to how companies differentiate themselves. Business process management (BPM) is as old as the existence of trade and business and has always been about managing these core business processes in ways to improve the business and meet regulatory requirements.

However, recent technology advancements and standards have taken BPM to a new level. It is now possible to provide a comprehensive, technology-based solution for automating and managing the entire business process, for a closed loop of continuous process improvement, from modeling and simulation, to execution, to monitoring and optimization. In addition to automating this closed loop for continuous process improvement, different user profiles are taken into consideration at every stage of this life cycle to enhance the usability of these tools. For example, the modeling and simulation of a business process is typically done by a business analyst; implementation of the business process, so it integrates with the existing IT system, is done by the IT developer, and so on.

Figure 1. Life cycle of a business process, with user roles





This approach has heightened the potential for process efficiency and ease of operation to a level that has never existed before. In order for any business to excel in an increasingly global and highly competitive marketplace, it becomes imperative for the organization to embrace BPM.

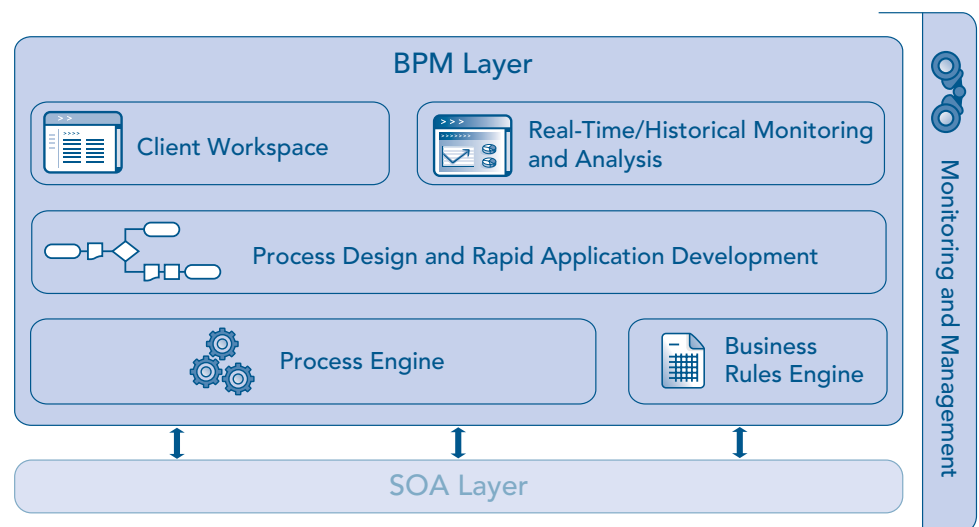
What Is a Complete BPM Solution?

A complete BPM solution will allow end-to-end management of the business processes of an organization in a way that promotes the organization's productivity and does so in a flexible manner. To do this, a BPM solution needs to have several well integrated components that are optimized for their users. Over the next few sections, we will describe the high-level architecture of a complete BPM solution, taking into consideration:

- The factors that motivate each stage of the business process life cycle
- The requirements of each component at each stage in the life cycle
- The profile of the person who will interact with the business process at each stage in the life cycle

The following diagram summarizes the functional components required for a complete BPM solution. Subsequent sections explain how each component contributes to the complete solution.

Figure 2. Reference architecture of a complete BPM solution





DESIGN

Design Environment for the Business Analyst

A good design environment for BPM will support sophisticated modeling and simulation. This requirement has become more and more important as the business becomes more active in process management projects. Successful BPM projects typically come from the business and from business requirements. The success of the project is directly impacted by the level of participation of business analysts and modeling is where the participation starts. The need for a modeling environment arises from the necessity to white board the process in order to define it. The modeling stage should generate a process definition that is stored in a repository with version control and management. This process definition, designed by the business analyst, should be made available seamlessly through the shared repository to the application developer, for implementing the details of the business process. The need to simulate the process arises from a need to factor in service level agreements (SLAs) into the process design and to perform 'what-if' analysis across multiple scenarios.

A BPM modeling environment should provide a user interface designed for a business analyst, without presenting that user with overly complex technical details. The modeling environment should be able to receive process definitions from other modeling environments. It should generate a standards-based process definition such as using XPDL (XML Process Definition Language) or BPEL (Business Process Execution Language). A good modeling environment should not require the user to write code.

Rapid Application Development Environment for the IT Developer

The promise of BPM includes the ability to deliver flexibility and embrace change. This requires a shorter development cycle. That is where the advantage of a Rapid Application Development (RAD) environment comes in. RAD increases speed of development and improves the quality of the business process implementation. A RAD environment should cater to IT developers, enabling them to build out the implementation details of the process in the shortest possible time.

The application development environment should connect seamlessly with the modeling and simulation environment and enable developers to leverage the same process definition and repository used by business analysts. IT should not have to reword or recreate the process model, as that would allow room for errors. As far as possible, a good application development environment should not require any custom coding. Custom code is expensive and typically requires very specialized skills to build and maintain. It



should provide capabilities for managing business processes using a process repository, include version control, and provide a means to test and debug the process. Finally, the application development environment should be intuitive and easy to use.

Process Reusability

A BPM solution should support process reusability – the practice of sectioning business processes into reusable process components and reusing process components to form new business processes. This fosters a goal-oriented approach to BPM: processes are designed in terms of goals, with each step towards the goal achieved by process components. It allows for critical path analysis to see if any sub-goals have not been met that might jeopardize the entire process.

Ease of use is a key requirement for process reusability. The user should not have to write any code to create process components. Similarly, it should be easy to connect process components as required. When process goals change “in-flight,” it should be possible to restructure the process on the fly to meet the new requirements.

EXECUTION

Service-Oriented Architecture and Business Process Management

In any IT implementation, the only constant is change. SOA is an architectural style that has evolved to deal with change and it can help insulate companies from the impact of change. An IT implementation without SOA has to deal with routine and unscheduled changes, such as a network provisioning or a new CRM implementation, which wreak havoc on day-to-day operations and affect the bottom-line productivity of the organization.

The goal of SOA is to achieve loose coupling among interacting software agents. This allows reusability and abstracts the implementation details so that agents can change independently of each other. This allows resources on a network to be made available as independent services that can be accessed without knowledge of their underlying platform implementation. The resources are saved and indexed as services in a service repository.

When deployed as a layer on an SOA, BPM is insulated from the plumbing details of the IT infrastructure. BPM can leverage the services offered by SOA as building blocks that can be orchestrated to model complex business processes. The SOA layer shields the BPM layer from changes that happen in the underlying layer by exposing services through pre-defined and published interfaces. It is possible to have a BPM solution without SOA, where the integration to the IT plumbing happens directly from the modeled business process.



But this has the less desirable result of making the business process tightly coupled with systems, making it hard to maintain and much more complex than in the layered approach. A good BPM solution will not be tied to any specific SOA implementation.

Industrial Strength Process Engine

The core of every BPM solution is an industrial strength process engine. The need for this stems from the necessity to manage long-running transactions between applications and people. The quality of the engine will directly affect the quality of your BPM solution. Following are some guidelines to consider in evaluating a process engine:

- **Transactional integrity:** Consistency and atomicity of transactions within the engine as well as transaction integrity of the engine across critical applications that the engine interacts with.
- **High availability:** The engine cannot afford to have any downtime. It must be available 24 hours a day, 7 days a week.
- **Load balancing:** The engine must support load balancing capabilities over a cluster of servers.
- **Disaster recovery:** The engine should be able to back up critical pieces of information and process metadata, to rollback in case of failure. This backup data should always be current to avoid data loss.
- **Scalability:** Adding n number of new users or a million more cases should not bring the engine down.
- **Predictive and ad-hoc error and exception handling:** It should allow users to build in error and exception handling for situations they can anticipate at design time. Ad-hoc exceptions and processes should also be easy to handle.
- **State maintenance:** The engine should have state maintenance, similar to a state machine, to move from one step in the process to the next and rollback in case of errors.
- **Context maintenance:** Not all the users and applications in the business process need visibility to all functions and information. The engine should have built-in capacity for maintaining contextual information.
- **Standards-based process definition:** The engine should not be a source of vendor lock in. It should be capable of running any process defined according to industry standards.
- **Ease of testing, debugging, and deployment:** Before turning the process over to production mode, it should be possible to run the process in test mode. It



should also be possible to use process level debug settings. It should also provide management and monitoring capabilities for the status of the engine at all times. Moving a process from testing to production mode should not be problematic.

- **Version control:** It should be possible to deploy different versions of processes, even in-flight, and to keep track of version differences.

Business Rules Engine

A business rule is any statement that defines the constraints and conditions governing business processes, actions, and procedures within a business. One of the requirements of a BPM solution is the capacity to integrate with a business rules engine (BRE). Business rules can originate from all parts of the organization. For example, what rules apply when a service level agreement is not met? What rules apply when approving a transaction? It is quite common that business rules change more often than the process definition. For example, the approval threshold for a credit card application may change more often than the actual process of approving credit cards.

A good BPM solution will not require business rules to be hard coded into the business process, as the conditions of each rule can be volatile. It should be possible to change business rules independent of the business process. BPM should support an independent BRE that is loosely coupled with the process engine and can trigger actions in the business process. An effective BRE should not allow ambiguity in the business rules, should be user friendly and not require a huge learning curve, and should use algorithms that minimize response time.

Client Workspace for a Participant of the Business Process

The BPM client workspace represents the face of the business process to the end user, so usability is key.

The workspace should allow users to find and complete work items quickly and allow management to view and control the work. It should allow IT developers to modify the workspace and extend or embed it in other applications. The client workspace should allow for context and state maintenance. The client workspace should also allow for easy and automatic refreshing of user queues so new work items appear automatically. The work items should have built-in sorting, searching, and filtering functionality.



MONITORING AND MANAGEMENT

Business Activity Monitoring for the Manager

In BPM, business activity monitoring (BAM) software is used to monitor business processes in real time for actionable insight. It allows managers to identify exceptions, analyze aggregate throughput, find resource bottlenecks, track key performance indicators (KPIs), and alert the appropriate personnel when KPI thresholds are exceeded. For example, a company processing mortgage applications can track how many applications are in process or completed, calculate the average applicant credit rating or loan interest rate, and raise an alert if too many high-risk loans are approved within the last hour.

Real-time monitoring is not about building a data mart faster or polling the transaction system faster. It must be based on events and capturing those events in real time. Effective BAM will determine process efficiency, identify resource bottlenecks, and track performance against targets, all in real time. It will have capabilities to monitor processes against KPIs. The responsiveness of users to trends and developing situations should not be limited by the capabilities of the BAM tool. Finally, it should have capabilities to improve decision making by correlating historical data with real-time data for actionable insights.

Process Analytics for the Analyst

An important requirement of BPM is the capacity to constantly improve efficiency and effectiveness of business processes. The most valuable way of doing this is by analyzing historical information associated with business processes. Process analytics differs from BAM in that analytics looks at historical information relating to the business process whereas BAM analyzes real-time information. A feedback loop from historical information is valuable in that it can help confirm that the basis for the planning was correct, identify areas of potential improvement, and determine if the planned execution times were met.

A good analytics tool will allow for evaluation of the performance of a business process against KPIs. It will help in understanding return on investment (ROI), efficiency, and profitability calculations. The user interface should provide for different types of business users to be defined who can collaborate among themselves by creating shared content. Analytics is about retrospective analysis based on historical data of the business process gathered over different time intervals.



Monitoring and Management for the System Administrator

With any distributed system, there is a need to monitor and manage the system, especially when it runs mission-critical processes. BPM is no different. One of the necessary components of a BPM solution is a monitoring and management tool that can be used to manage the different processes that comprise the BPM solution, providing a unified interface for troubleshooting and monitoring purposes.

A sound BPM solution will provide a good monitoring and management tool that can be used to manage the process engine and all the related components so there is no system downtime. It should also provide for forensic analysis, using log management and related reporting tools. It should be a fault tolerant system, with the capacity to identify problem severity levels quickly so the system administrator can react quickly to the problems. Finally, it should provide a unified user interface to monitor the various components in the distributed system.

Other Things to Consider

This section considers some of the other requirements of a good BPM solution.

DOCUMENT MANAGEMENT

One of the primary purposes of BPM is process orchestration. Document handling is a natural fit with process orchestration as a lot of business processes inherently involve exchange of documents between different participants. In evaluating a BPM vendor, one of the things to consider is ease of integration with an enterprise content management system. Capacity to correlate with documents previously received, indexing, searching, data mining, storage, and retrieval are all important aspects of document management

COMPLEX EVENT PROCESSING

Complex event processing (CEP) is an innovative technology that aggregates information from distributed message-based systems, databases, and applications in real time and dynamically applies rules to discern patterns and trends that would otherwise go unnoticed. CEP gives companies the ability to identify and even anticipate exceptions and opportunities represented by seemingly unrelated events across highly complex, distributed and heterogeneous IT environments.



BPM and CEP is a very powerful combination. It allows triggering of business processes based on the occurrence of events. It also allows for feeding complex events from business processes in order to correlate with other events across the organization. The audit trail involving events and participants of the process allows for root cause analysis providing unparalleled visibility within the organization.

MASTER DATA MANAGEMENT

Master data management enables organizations to manage information within the organization and synchronize it across the value chain. It allows organizations to align enterprise master data (such as product, customer, and vendor information) across multiple systems and departments and with trading partners. It also ensures that the necessary processes, policies, and procedures are put in place so clean data remains clean as new data is introduced or existing information is updated.

Master data management (MDM) has become a priority for large organizations across industries. Whether it's navigating complex multi-tier supply chains in manufacturing and retail, consolidation in financial services, ever-changing product and service bundles in telecom, better risk and portfolio management in energy, or unified and differentiated customer service across the board, organizations are faced with new challenges that demand a new way of accessing and responding to information.



Summary

The following table summarizes the factors to consider in defining a complete BPM solution.

Factor	Reason
BPM over SOA	Abstracts the internal IT plumbing of the organization from business process modeling and management
Industrial Strength Process Engine	Used to run the business process implementation
Design Environment	Used to model and simulate the business process
Rapid Application Development Environment	Used to implement the business process
Client Workspace	Used to present work items to users who participate in the business process
Monitoring and Management	Used to maintain the health of the business process management system
Business Rules Engine	Used to tie in business rules from within the organization with BPM
Business Activity Monitoring	For real-time analysis of the business process to see if it meets KPI, SLAs, etc.
Process Analytics	For historical analysis to feed back into the design of the business process for optimization
Process Reusability	To leverage existing business processes
BPM & Document Management	To integrate with enterprise content management solutions
BPM & Complex Event Processing	To feed events into and correlate information from business processes
BPM & Master Data Management	Allows access to a global data management system



Conclusion

The nature of BPM is such that you need various well integrated components, each with exceptional functionality, to get a fully functional BPM solution. This paper provides a comprehensive list of what comprises a complete BPM solution and describes the requirements of each component. It also suggests the different user roles to keep in mind while evaluating different components of the BPM solution. To benefit from the competitive edge that business process management can bring to your organization, it is essential to choose a comprehensive BPM solution with proven performance and usability.

For more information visit the BPM Resource Center at www.tibco.com/solutions/bpm.



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