

# Franchise Tax Board



## **Business Process Management Suite Standards**

April 30, 2009

By

Franchise Tax Board's (FTB) Enterprise Architecture (EA)

Business Process Management (BPM)

Center of Excellence (CoE)

# BPM Center of Excellence

Draft Business Process Management Suite (BPMS)  
Standards  
April 30, 2009



## Table of Contents

- Overview ..... 2
  - What is a Business Process Management Suite?..... 2
  - Components and Tools ..... 2
  - Supported Activities..... 2
  - Process Flow..... 3
- Non-Functional Standards ..... 4
  - Architecture ..... 4
  - Interaction and Connectivity..... 6
  - Quality Assurance and Security Administration ..... 7
  - Performance ..... 8
  - Availability, Continuity, and Monitoring..... 8
  - Retention, Backup, and Recovery ..... 10
  - Business Rule Management..... 11
  - Enterprise Content Management (as it relates to a BPMS)..... 12
- Functional Standards ..... 13
  - General..... 13
  - Model and Simulate ..... 14
  - Deploy and Execute ..... 15
  - Monitor and Analyze..... 16
  - Define and Optimize ..... 17
  - Audit Trail, Archiving, History, and Reporting ..... 18
  - Enterprise Content Management (as it relates to a BPMS)..... 18
- Glossary..... 19

## Overview

### *What is a Business Process Management Suite?*

Business Process Management Suite (BPMS) is a software set facilitating all aspects of business process management, including process design, workflow, applications, integration, and activity monitoring for both system and human-centric environments.

### *Components and Tools*

A complete, robust BPMS will contain these core [BPM](#)-enabling components and tools:

- **Simulation and Optimization Tools** - Enable business managers to compare new process designs with current operational performance. Scenarios are executed, altering resource constraints and business goals, to assess risk and display the financial and operational impact on FTB.
- **Orchestration Engine** - Coordinates the sequencing of the activities and steps (system and manual) according to the flows and rules in the process model.
- **Rules Engine** - Executes rules that abstract business policies and decision tables from the underlying applications, and make available more-flexible process changes.
- **Enterprise Rules Repository** - Contains process definitions, process models, business rules, and business rule data to enable reuse across business functions.
- **Enterprise Service Bus** - Links the model to other system assets (data and logic) that support work steps.
- **Business Intelligence and Analysis Tools** - Provides business activity monitoring tool to support analysis of data produced during process execution. Capabilities range from reporting to online analytical processing analysis to graphical user dashboards. This is done in real time with proactive alerting.

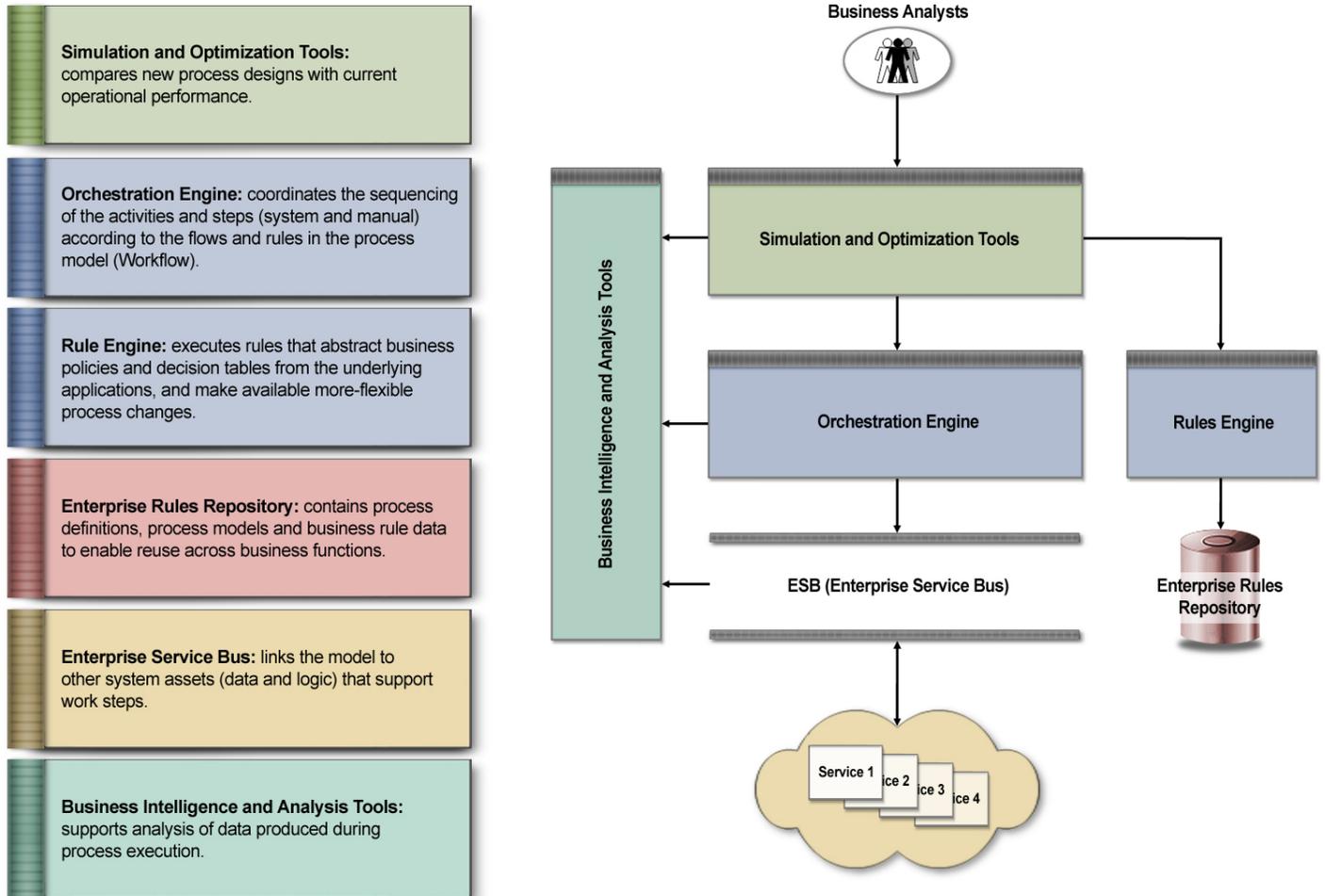
### *Supported Activities*

A BPMS will support these core [BPM](#)-enabling activities:

- Modeling and analysis of business processes, including all aspects of workflow to be managed (that is, tasks, roles, decisions, approvals, reviews, escalations, collaborations, flows, rules, policies, forms and other business information objects, events, goals, objectives, and scenarios) to identify the best possible design.
- Round-trip engineering between the model and its physical implementation, so that changes made to the model are easily reflected in the execution and so that changes to the resources are easily fed back into the model.
- Manipulation and management within the process context with access to various forms of business content (both structured and unstructured information).
- Monitoring, reporting, analysis and notification of work activities and business events, using both data about completed work transactions and in-flight business transaction data (in real time and offline, potentially for predictive analysis).
- Process simulation and optimization using real-time, historical and estimated data values.
- Management of all process components (see the above list) through their life cycle (that is, access control, versioning, descriptive metadata and so on).

### Process Flow

## Business Process Management (BPM) Flow



### Non-Functional Standards

A Business Process Management Suite (BPMS) at a minimum must meet these non-functional standards.

#### Architecture

1.	Must be based on <a href="#">Service Oriented Architecture</a> (SOA).
2.	Must support and interact with a <a href="#">design and run time registry/repository</a> including <a href="#">Web Services</a> .
3.	Must be open, modular, and interoperable with any FTB system or application.
4.	Must not include or be independent on proprietary applications or systems.
5.	Must use industry standard <a href="#">Business Process Modeling Notation</a> (BPMN).
6.	Must support industry standard <a href="#">Business Process Execution Language</a> (BPEL) for interoperability across execution engines.
7.	Must be replaceable by any other BPMS without loss of data related to processes, execution results, or rules.
8.	Must be able to provide the business processes as reusable components and services to be used by any other services or processes.
9.	Must have the ability to exchange and use information with heterogeneous processors. (Interoperability)
10.	Must allow processes to run concurrently with rule groups or sets in order to increase throughput and/or decrease processing time.
11.	Must provide the ability to run multiple versions of the same processes or rules simultaneously.
12.	Must be able to version by time or other criteria (e.g., tax year, process year, date).
13.	Must be able to decide when a change occurs.
14.	Must meet accessibility requirements. [Federal – Section 508 of the Rehabilitation Act of 1973 (as amended in 1998), Subpart B part 1194.22 and Subpart C part 1194.31 of Title 36 are applicable.]
15.	Must provide escalation capabilities to address late work, important events, or other activities that occur.
16.	Must provide the ability to locate and orchestrate services, legacy systems, and other processes in execution mode.

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Standards

April 30, 2009



17.	Must provide an integrated log that records state changes of the resources being coordinated including people, structured and unstructured data, semi structured, information content, rules, and goals.
18.	Must support indefinite business event processes.
19.	Must support <a href="#">distributed process management</a> .
20.	Must support a continuum of timers (including sub-seconds, seconds, minutes, hours and days) to wait for state updates from resources.
21.	Must receive, recognize, and execute rules based on real-time events.
22.	Must be able to execute a programmed action in real time.
23.	Must provide the ability to create multiple environments (e.g., Development, Staging, and Production).
24.	Must support asynchronous event-driven processes based on business rules.
25.	Must provide a graphical user interface during execution to allow all business processes to be viewable.
26.	Must provide a centralized <a href="#">Business Rules Repository</a> (BRR) for storage and management of all types of business and workflow rules along with information about the rules for proper execution (such as rule types, meta data etc).
27.	Must provide the <a href="#">BRR</a> as a relational database.
28.	Must provide a <a href="#">Business Rules Engine</a> (BRE) that is a non-integrated component of the BPMS managed independently from processes and workflows.
29.	Must allow for electronic workflow management.
30.	Must provide the capability to visualize, understand, collaborate on, track changes and document the business processes.
31.	Must provide the capability to visualize, understand, collaborate on, track changes and document the business rules.
32.	Must support production promotion and configuration management.
33.	Must provide the ability to configure print options to print sections or entire models over one or multiple pages.

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Standards

April 30, 2009



34.	Must provide the ability to move or exchange data from the registry/repository to comparable registries/repositories.
35.	Must support load-balancing capabilities over a cluster of servers.
36.	Must provide failover capabilities.
37.	Must use the same model for both design and deployment.
38.	Must provide Virtual Tape storage technology.

## *Interaction and Connectivity*

39.	Must have the ability to interface both real time and batch with existing FTB applications.
40.	Must fully interface and integrate with services based on <a href="#">SOA</a> .
41.	Must interface and integrate with a new or existing <a href="#">ECM</a> solution.
42.	Must be able to integrate the case management process or other business processes with <a href="#">ECM</a> workflows and document-oriented processes that are provided by an ECM solution.
43.	Must interface with the <a href="#">Enterprise Data Warehouse</a> (EDW).
44.	Must interface the <a href="#">Enterprise Operational Data</a> (EOD).
45.	Must interface with <a href="#">Data Mining Applications</a> .
46.	Must integrate with independent <a href="#">Business Rules Engines</a> (BRE).
47.	Must integrate with business services to execute business activities and with data services to provide workflow persistence.
48.	Must provide interfaces that adhere to FTB's Enterprise Architecture.
49.	Must provide a portlet model that adheres to FTB's Enterprise Architecture.
50.	Must leverage existing data, systems, and applications.
51.	Must provide "out of the box" ability to retrieve data from legacy systems.
52.	Must have the capability to standardize all 3rd party data loads and match processes for the enterprise, currently distributed across legacy systems.

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Draft Business Process Management Suite (BPMS)

Standards

April 30, 2009



53.	Must provide the ability to send and receive messages using industry standard transports (MSMQ, JMS, SOAP, etc.).
54.	Must provide the ability to produce and consume <a href="#">Web Services</a> using leading WS protocols.
55.	Must provide basic interfacing protocol support such as ODBC, JDBC, SQL and HTTP.
56.	Must support system message routing, message queues, and transformation and data access through a component such as an <a href="#">Enterprise Service Bus</a> (ESB).
57.	Must provide the ability to create processes, workflows, and applications incorporating existing FTB legacy systems.
58.	Must support process archiving and deployment across distributed systems.

## ***Quality Assurance and Security Administration***

59.	Must provide an audit trail of any changes made to the processes or rules.
60.	Must provide authentication and access control mechanisms.
61.	Must capture and store authentication and system access information.
62.	Must allow only authorized staff to route work to another work queue (based on preset and configurable routing conditions).
63.	Must provide encryption for all archived messages that deal with confidential or sensitive data (e.g., username, password, SSN, address information, payment amounts).
64.	Must encrypt stored login information for all external system Interfaces.
65.	Must use an encrypted channel (e.g., TLS/SSL, VPN, secure FTP) for each interface that uses confidential or sensitive data (e.g., username, password, SSN, address information, payment amounts).
66.	Must use a signed/hashed archival method for each interface that uses confidential or sensitive information.
67.	Must provide self-security administration with ownership privileges.
68.	Must provide directory integration, including <a href="#">Lightweight Directory Access Protocol</a> (LDAP) and <a href="#">Active Directory</a> (AD) for assigning users to roles, departments and groups.

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Draft Business Process Management Suite (BPMS)

Standards

April 30, 2009



69.	Must provide user group administration and role-based access to managerial capabilities.
70.	Must provide resource and role administration linked to capability profiles.
71.	Must ensure that confidential and sensitive data at-rest is secured from unauthorized access and appropriately encrypted.

## ***Performance***

72.	Must meet or exceed current performance levels of each process/system throughout the yearly cycle and the daily cycle processes.
73.	Must be able to meet or exceed current volumes of information that will be processed and stored.
74.	Must be scalable (both vertically and horizontally) to meet increase in users or transactions.
75.	Must support report data retrieval, rendering, and delivery with no discernable production impact.
76.	Must be able to run back-end processes and not impact performance.
77.	Must be able to sustain sub 10 millisecond response times to retrieve data.
78.	Must support peak timeframes, inquires, workloads, and throughputs.

## ***Availability, Continuity, and Monitoring***

79.	Must have no single point of failure.
80.	Must be available 24x7.
81.	Must provide failover and fault tolerance.
82.	Must have 99.7% uptime.
83.	Must allow maintenance without downtime.
84.	Must allow load balancing.
85.	Must have redundant connections to the network.
86.	Must follow FTB policies regarding service monitoring, logging, and tracking of services.

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Draft Business Process Management Suite (BPMS)

Standards

April 30, 2009



87.	Must integrate with FTB approved enterprise system management and monitoring tools.
88.	Must provide the capability to monitor and log all relevant service activity and transactions (e.g., online response times, batch processing times, incidents, errors, logs) for statistical reporting.
89.	Must provide comprehensive error handling, to notify the user of errors and to log errors for subsequent analysis.
90.	Must support the ability to send real-time alerts based on user-defined thresholds.
91.	Must provide comprehensive error handling with abilities to log errors and to notify the user of errors displayed with sufficient reference information for subsequent analysis.
92.	Must deliver diagnostic information to help FTB staff quickly identify processing problems, by implementing the following at a minimum: <ul style="list-style-type: none"><li>• Programs that process data must produce diagnostic information.</li><li>• Batch programs, if any, must produce completion reports as determined during design.</li><li>• The content and extent of the diagnostic information captured must be user configurable.</li><li>• The diagnostic information captured must contain sufficient reference information for proper subsequent analysis.</li></ul>
93.	Must provide for each interface the ability to specify how many retries, and what interval between retries, before the interface attempt fails.
94.	Must generate an interface error log in the event of failure.
95.	Must archive error and message logs based on a configurable “number of days” parameter.
96.	Must automatically delete error and message logs after expiration of retention period.
97.	Must provide access to event streams.

# BPM Center of Excellence

Draft Business Process Management Suite (BPMS)

Standards

April 30, 2009



## *Retention, Backup, and Recovery*

98.	Must provide incremental and full backup.
99.	Must use a commercially available and transportable backup medium.
100.	Must be able to recover or rollback with minimal loss of data in case of catastrophic failure.
101.	Must provide synchronized recovery of interdependent databases/tables/data-stores.
102.	Must be able to conduct unattended backup and restore operations.
103.	Must be able to recover to a customer specified point in time.
104.	Must provide a restoration process that does not make the system or any other system unavailable for longer than six hours.
105.	Must be able to complete backups with minimal user impact.
106.	Must adhere to FTB policy for retention, archiving, purging or deletion of data.
107.	Must utilize disk pooling and virtual tape whenever possible for the backup and recovery process.
108.	Must provide encryption for offsite storage needs.
109.	Must provide the capability for recovery and re-start for events such as operator errors, data errors, and/or hardware/software failures.
110.	Must provide an automated recovery and restore capability in case of system malfunction or failure.

## ***Business Rule Management***

111.	Business rules for any functionality such as process modeling and workflow management must reside in a <a href="#">Business Rules Repository</a> (BRR).
112.	The <a href="#">BRR</a> must make the rules available to be used as services for driving external workflow and/or modeling.
113.	The <a href="#">BRR</a> must be able to import/export rules to other BRRs.
114.	The <a href="#">Business Rules Engine</a> (BRE) must have prebuilt rule content such as vocabularies and multiple rule representations, decision tables, pseudo-linguistic, linguistic with context and decision trees.
115.	The <a href="#">BRE</a> must support rule groupings around policies and scenarios synchronized with rule rollout procedures.
116.	The <a href="#">BRE</a> must provide rule inheritance.
117.	The <a href="#">BRE</a> must provide rule consistency, rule collision, rule overlap and “underlap” checks.
118.	The <a href="#">BRE</a> must provide the ability to visualize and modify rule-firing sequences.
119.	The <a href="#">BRE</a> may support inductive and deductive problem sets.
120.	The <a href="#">BRE</a> must provide rule management capabilities, such as mapping to owners or stewards.
121.	The <a href="#">BRE</a> must provide impact analysis capabilities.
122.	The <a href="#">BRE</a> must provide the ability to rerun from a point that has passed.
123.	The <a href="#">BRE</a> must provide the ability to enter new rules to become effective on a future date.
124.	The <a href="#">BRE</a> must provide rule and release versioning with rollback.

# BPM Center of Excellence

Draft Business Process Management Suite (BPMS)

Standards

April 30, 2009



## *Enterprise Content Management (as it relates to a BPMS)*

125.	The <a href="#">Enterprise Content Management</a> (ECM) Solution must provide <a href="#">SOA</a> capabilities that provide and consume services for interfacing, receiving, delivering and storing electronic content.
126.	The <a href="#">ECM</a> Solution must support the delivery and sharing of unstructured content across the enterprise via services per FTB's Architecture Design.
127.	The <a href="#">ECM</a> Solution must access existing scanning processes for uploading scanned images via services.
128.	The <a href="#">ECM</a> Solution must work with multiple content types such as PDF or Word documents, TIFF images, emails, faxes, audio, video files, etc. per FTB's ECM Architecture Design.
129.	The <a href="#">ECM</a> Solution must store templates, template versions, and template variations.
130.	The <a href="#">ECM</a> Solution must provide visual representation of all electronic content.
131.	The <a href="#">ECM</a> Solution must provide for document versioning.
132.	The <a href="#">ECM</a> Solution must support multiple languages, at a minimum English and Spanish. (Chinese, Korean, Russian, and Vietnamese are pluses.)
133.	The <a href="#">ECM</a> Solution must provide the ability to create documents and correspondence.
134.	The <a href="#">ECM</a> Solution must be scalable to meet an increase in users or transactions.
135.	The <a href="#">ECM</a> Solution must be able to associate structured data with unstructured content (e.g., ECM system repository, email).
136.	The <a href="#">ECM</a> Solution must include at a minimum, all scanned paper images and perfected OCR data.

### Functional Standards

It is recommended that at a minimum a robust BPMS meet the following functional standards.

#### General

137.	Should provide training on BPM concepts as well as the BPMS tools.
138.	Should provide a tutorial feature, to explain: <ul style="list-style-type: none"><li>• Processes, process applicability, process management capabilities, and applicable process rules; and</li><li>• Rules, rule applicability, rule management capabilities, and rule processes.</li></ul>
139.	Should provide an online help feature on how to use the process for both business and technical users.
140.	Should provide design, modeling, and deployment components that can be operated with minimal technical training or knowledge.
141.	Should provide the capability to visualize, collaborate on, make and track changes, and document business processes and business rules.
142.	Should provide a user interface for process or rule creation, alteration, and removal as an abstraction layer from an underlying code set.
143.	Should be capable of service hosting, mediations, interface mapping, orchestration, end-to-end transaction processing, and storing state of transactions, exception and fault handling.
144.	Should allow searching of all content related to and across all processes by word, or phrase.
145.	Should have ability to change process search criteria as required.
146.	Should have a <a href="#">Business Rules Repository</a> with the ability to change the search criteria as required.
147.	Should provide the capability to save files on mainstream media for printing outside the system.
148.	Should allow for the highlighting of changes.
149.	May provide thick and thin client access to work queues.
150.	May provide staging and configuration management capabilities.

### *Model and Simulate*

151.	Should support the use of process and rule templates, with placeholder positions for missing information, which can be reused.
152.	Should provide the ability to choose to use pre-built templates or not.
153.	Should provide the ability to monitor, design, analyze, simulate and optimize the business work flows (including business rules and processes).
154.	Should provide dynamic simulation (discrete and continuous) and animation.
155.	Should provide the ability to predict events and adjust them to optimize process outcomes.
156.	Should provide design, modeling, and deployment components that are operated via a web browser.
157.	Should provide the ability to create an impact analysis for a potential business process or rule change.
158.	Should provide visual workflow process tools that create standards-based output useful to both developers and business analysts.
159.	Should provide simulation output useful for deciding: <ul style="list-style-type: none"><li>• Rules</li><li>• Strategies for process modeling</li><li>• Strategies for simulation, and</li><li>• Strategies for workflow execution.</li></ul>
160.	Should provide the capability for: <ul style="list-style-type: none"><li>• Process modeling of both manual and automated tasks,</li><li>• Organization modeling,</li><li>• Resource modeling,</li><li>• Data and artifact modeling, and</li><li>• Timeline and location modeling.</li></ul>
161.	Should incorporate manual, automated, and document-oriented workflow processes.
162.	Should provide the ability to define human process steps with visual drill-downs and sublevels.

163.	Should provide diagram validation such as domain checks, completion checks and warnings on inconsistent patterns.
164.	Should provide customizable representations of processes with the inclusion of graphical formats such as icons, stencils and shape libraries.
165.	Should provide support for roles, resources and organizational mapping/modeling consisting of multiple views of the same model including reporting and functional unit relationships.
166.	Should provide the ability to assemble and create business services, composites and sub-flows during design.
167.	Should support multiple graphical representations, including overview and drilldown maps and exposing various degrees of technical abstraction to support business as well as IT roles.
168.	Should be able to import business process and rules data from a <a href="#">BPEL/BPMN</a> compatible system/tool.

### ***Deploy and Execute***

169.	Should provide the ability to modify, terminate, update, and suspend processes in real time.
170.	Should provide the ability to schedule future events, steps, sub-processes and process execution.
171.	Should respond to event-driven processes.
172.	Should have the capability to manage multiple processes.
173.	Should have the capability to manage multiple work queues.
174.	Should provide the capability for the workflow system to route exceptions to different work queues.
175.	Should allow the creation of complex rule sets (including nested decision trees, complex expressions and formulas, assertions, and constraints).
176.	Should provide the ability to link to scenarios with policies and rules in real-time.

# BPM Center of Excellence

Draft Business Process Management Suite (BPMS)

Standards

April 30, 2009



## *Monitor and Analyze*

177.	Should maintain statistics about process execution times.
178.	Should maintain statistics about batch processing times.
179.	Should monitor the work queues.
180.	Should have the capability to monitor multiple work queues.
181.	Should have the capability to monitor multiple processes.
182.	Should facilitate acquisition of tracking metrics available to <a href="#">Business Intelligence</a> (BI) and governance groups.
183.	Should provide measurement and tracking data in a useable format to the <a href="#">BI</a> and any other dependent solutions.
184.	Should allow for any other <a href="#">BI</a> tool to extract data.
185.	Should monitor for business performance evaluation consistent with <a href="#">Key Performance Indicators</a> (KPIs).
186.	Should provide monitoring of analyzed <a href="#">KPIs</a> to thresholds and historical trends with real time events.
187.	Should provide the ability to modify <a href="#">KPIs</a> without technical support.
188.	Should enable measurement of business process effectiveness and efficiency based on metrics.
189.	Should enable measurement of workflow effectiveness and efficiency based on metrics.
190.	Should support shared visibility into process definitions, work progress and dashboard results.
191.	Should provide analysis functions that combine process context with historical event context.
192.	Should analyze performance patterns and correlate to a root cause.
193.	Should provide critical-path and value chain analysis.
194.	Should support a variety of alerting mechanisms, such as instant messaging or email.
195.	Should be able to alert the appropriate managers, reroute work, and escalate work through configurable parameters based on business rules.

196.	May provide real-time capture and correlation of transient business event information to metrics that can be used to trigger actions and process flows and/or deduce processes from measurements and event patterns.
197.	May provide analysis of work and information progress flows with auto discovery for best practices for both predefined and indeterminate processes.
198.	May provide 2D and 3D representation of process progress and event data.
199.	May provide dynamic, customizable, animated and interactive dashboards.

### *Define and Optimize*

200.	Should be able to support time frames for when a rule is active. This includes support for: <ul style="list-style-type: none"><li>• An activation date for using a process, and</li><li>• A termination date for when the process is no longer applied.</li></ul>
201.	Should provide an interface for rule creation, alteration, and removal as an abstraction layer from underlying code set.
202.	Should allow rule sets to include and call other rule sets.
203.	Should provide the ability to establish thresholds for normal behavior over time.
204.	Should provide the ability to add, modify, or suspend dynamic business rules without technical support.
205.	Should provide the ability to set rules responding to event sets and prebuilt <a href="#">KPIs</a> .
206.	Should provide a user interface to enable user communication with the <a href="#">Business Rules Repository</a> (BRR).
207.	Should provide a graphical user interface to enable user communication with the <a href="#">BRR</a> .
208.	Should provide dashboards to monitor process activities.
209.	Should provide the ability to manage actions based upon alarms and tolerances.

## ***Audit Trail, Archiving, History, and Reporting***

210.	Should maintain a revision history for every change that occurs to the business processes or rules.
211.	Should adjust to configurable levels of retention of all logged information without technical support.
212.	Should provide the ability to archive interface data.
213.	Should generate reports that contain detailed listings of changed business processes or rules at the user's request.
214.	Should provide printable reports that measure business and system performance based on all the KPIs (Key Performance Indicators) as required.
215.	Should provide printable reports that measure inventory based on all the <a href="#">KPIs</a> as required.
216.	Should provide customizable reports.
217.	Should provide reports with print preview functionality for both Microsoft Word and PDF.
218.	Should provide the ability to define and store queries that can be invoked to generate detailed reports from the <a href="#">Business Rules Repository</a> .
219.	Should provide <a href="#">Business Activity Monitoring</a> (BAM) reports.
220.	Should provide automatic capture and storage of metadata content, relationships and transformations.
221.	Should provide maintenance of the history of relationships and transformations.

## ***Enterprise Content Management (as it relates to a BPMS)***

222.	Should support creation of documents, form, folders, and sub-folders.
223.	Should support text indexing of content created and document linking.
224.	Should provide search capabilities for structured and unstructured text, indexes, images and internal content or on the web.
225.	Should support web content management and publishing capabilities including authoring, template staging, viewable web formats, and archiving.

## Glossary

### **AD (Active Directory)**

AD is a hierarchical framework of objects. The objects fall into three broad categories: resources (e.g., printers), services (e.g., email), and users (user accounts and groups). The AD provides information on the objects, organizes the objects, controls access and sets security. Each object represents a single entity - whether a user, a computer, a printer, or a group - and its attributes. Certain objects can also be containers of other objects. An object is uniquely identified by its name and has a set of attributes - the characteristics and information that the object can contain - defined by a schema, which also determines the kind of objects that can be stored in the AD.

### **BAM (Business Activity Monitoring)**

Business activity monitoring is real-time (or near real-time) visibility of business processes, meaningful events and transactions.

### **BI (Business Intelligence)**

Business intelligence is a business management term, which refers to applications and technologies that are used to gather, provide access to, and analyze data and information about company operations and performance.

### **BPEL (Business Process Execution Language)**

XML business process modeling language that is executable and universally supported. BPEL supports both public (protocol) and private (execution) languages.

### **BPM (Business Process Management)**

Business process management is defined as a strategy for managing and improving the performance of a business through continuous optimization of business processes in a closed-loop cycle of modeling, execution, and measurement. The methods, techniques, and tools used to design, enact, control, and analyze operational business processes involving people, systems, applications, data, and organizations.

### **BPMN (Business Process Modeling Notation)**

A standardized graphical notation for drawing business processes in a workflow, facilitating improved communication and portability of process models.

### **BRE (Business Rules Engine)**

A business rules engine is a software system that executes one or more business rules in a runtime production environment. A rules engine is commonly provided as a component of a BPMS which, among other functions, provides the ability to: register, define, classify, and manage all the rules, verify consistency of rules definitions, define the relationships between different rules, and relate some of these rules to IT applications that are affected or need to enforce one or more of the rules.

### **BRR (Business Rules Repository)**

The business rules repository is a centralized repository of all business rules and information about the rules and has the capability to externalize rules outside the process implementation.

# BPM Center of Excellence

Draft Business Process Management Suite (BPMS)  
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April 30, 2009



## Data Mining Applications

Data mining applications are specialized software to extract hidden patterns from data. They are commonly used in a wide range of profiling practices, such as marketing and fraud detection.

## Distributed Process Management

Distributed process management is the management, translation, and communication between multiple systems and processes. |

## ECM (Enterprise Content Management)

Enterprise content management is the strategies, methods and tools used to capture, manage, store, preserve, and deliver content and documents related to organizational processes. *(Definition by the Association for Information and Image Management International, the worldwide association for enterprise content management.)*

## EDW (Enterprise Data Warehouse)

An enterprise data warehouse is a data warehouse containing all publishable quality data of a permanent nature collected by an organization.

## EOD (Enterprise Operational Data)

Enterprise operational data is data that supports the production systems that run the business. This includes, but is not limited to, online transaction processing (OLTP) systems.

## ESB (Enterprise Service Bus)

In computing, an enterprise service bus refers to a software architecture construct. This construct is typically implemented by technologies found in a category of middleware infrastructure products, usually based on recognized standards, which provide fundamental services for more complex architectures via an event-driven and standards-based messaging engine (the bus). An ESB generally provides an abstraction layer on top of an implementation of an enterprise messaging system, which allows integration architects to exploit the value of messaging without writing code. (See SOA Glossary)

## KPI (Key Performance Indicators)

KPI are financial and non-financial metrics used to help an organization define and measure progress toward organizational goals.

## LDAP (Lightweight Directory Access Protocol)

LDAP is an application protocol for querying and modifying directory services running over TCP/IP. A directory is a set of objects with attributes organized in a logical and hierarchical manner. The most common example is the telephone directory, which consists of a series of names (either of persons or organizations) organized alphabetically, with each name having an address and phone number attached.

### SOA (Service Orientated Architecture)

A framework for integrating business processes and supporting IT infrastructure as secure, standardized components – services – that can be reused and combined to address changing business priorities and is based on the following design principles:

- Technology Neutral – uses industry agreed upon standards to create interfaces, which make it possible for consumers on any platform to invoke services provided on any platform.
- Modular – self-contained components that can communicate with each other through a well-defined interface.
- Sharable – can be reused by more than one functional area.
- Loosely Coupling (agility) – ability to make changes to one part of the system without changing the other – each component offers a small range of simple services to other components.
- Encapsulation – focus is on the contract rather than the underlying implementation details - hides any data or behavior that is specific only to the internal working of the service and irrelevant to the service consumer.

### SOA Registry/Repository

A SOA repository is a database containing the software and meta-data that constitute an SOA registry. The registry is an evolving, interactive, controlled-access catalog that facilitates the management of SOA (service-oriented architecture) projects, allowing businesses to easily discover and communicate with each other using Web services. As a metadata repository the SOA repository facilitates content validation and workflow support for the SOA. The repository is the medium of record for policies, processes, attributes and schemata related to SOA governance. In some publications and contexts, the repository and the registry are treated as a single entity called the "SOA registry-repository" or "SOA registry/repository."

### Web Service

A service with encapsulated logic used for transforming and/or transferring structured data to disparate systems regardless of platform or programming language. Typically implemented in an Internet platform using XML and SOAP messaging.