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BPM, BRMS and SOA Delivering on the Promise of Organizational Agility

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“I HAVE A SIMPLE THOUGHT. HOW YOU GATHER, MANAGE, AND USE INFORMATION WILL DETERMINE WHETHER YOU WIN OR LOSE.” — BILL GATES, BUSINESS @ THE SPEED OF THOUGHT.

Companies have long struggled to find faster and more effective ways to connect users with the necessary information, in the right context, efficiently, and at the right time. Ten years ago, it was groupware bundled with email and calendar applications that helped manage and drive the flow of information from person to person within an organization. Since then, the growth of the Internet and the accelerating pace of business have created a tremendous surge in the amount of corporate data. This avalanche of data is overwhelming for most organizations, and is of little benefit unless companies can find faster and more effective ways to turn it into useful information and knowledge.

Business Process Management (BPM) has made this goal possible. Today, BPM systems help sophisticated enterprises make their corporate data accessible and actionable by:

- Automating human tasks (i.e., managing work lists for process participants with pre-defined deadlines, alerts and escalation actions)
- Integrating diverse business systems (i.e., exchanging data and coordinating transactions among systems that may be based on different IT platforms and/or programming languages)

- Optimizing process performance (i.e., continuously tracking average cycle times, costs and other process metrics, and making them available in analytical tools and management dashboards for reporting and remedial action)

As a result of the ever-increasing volume of data, as well as the need for rapid decision-making across multiple business units and geographies, business processes are continuously becoming more complex. In turn, BPM systems now require powerful and flexible decision-making capabilities.

In the following paper, we'll explore how a BPM strategy that includes business rules and a service-oriented architecture can provide a perfect combination for enterprise computing; one that empowers organizations to lower operational costs, increase responsiveness to changing business conditions, and gain an advantage in a highly competitive marketplace.

ENTER BUSINESS RULES MANAGEMENT SYSTEMS

In the past decade, the business environment has changed dramatically. The world has become smaller, and once-independent departments and business systems find themselves ever more tightly intertwined and interdependent. Each has

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its own rules, but increasingly they need to work together. An exception in one simple activity can ripple through the entire enterprise with unknown consequences. Other factors complicating matters across vertical industries include new compliance mandates such as Sarbanes-Oxley, Basel II, and the Health Insurance Portability and Accountability Act (HIPAA), among others.

Where BPM deals with the complex and changing processes interconnecting people and systems, business rules management systems (BRMS) focus on the complex and changing rules within each business function. For example, consider the insurance claims process. When a claim is filed, a sequence of processes is launched to evaluate, assess and validate the settlement of the claim. All these processes are similar in that they involve complex decisions based on multiple sources of information, such as: Is the applicant creditworthy? Should the claim be paid in full? Can an application be automatically approved?

Is additional information required? Is the deal compliant with government regulations and company policies? The answer to each of these questions depends on rules which may in turn be linked to other rules. BRMS provides the infrastructure for defining business rules, or groups of rules organized into rulesets, maintaining them in a repository, and evaluating them on command.

HOW BUSINESS RULES MANAGEMENT SYSTEMS WORK

Both BPM and BRMS manage and evaluate rules, but the nature of the rules and how they are managed are completely different. In BPM, rules are most often simple conditions evaluated at a branch point in the flow. Using the insurance claims process as an example, a simple rule might consist of:

If ClaimAmount [a process variable] > \$10,000,
route to ControllerApproval

Rules like these are defined in process models within the individual steps where they are executed. In this example, if 'Controller approval of claim requests over \$10,000' were a corporate policy, that rule would need to be replicated in every process model involving purchase requests, perhaps in multiple steps in each one. If a revised company policy raised the threshold to \$150,000, the rule would have to be changed in each place. Additionally, a process rule is generally specified as a single expression of process variables. It cannot "chain" to other rules. In order for a process rule to use data stored in either external or internal data storage, an automated process step would first have to look up the value and store it in a process variable.

Now suppose the actual rule for approvals of claims not only depended on the claim amount, but also on the department and job title of the requester, the accounting code of the requested items, and the state of various financial controls. While this scenario could in principle be implemented as a process rule, it would be much easier to define and maintain as a rule set in a BRMS where rules are stored in a rule repository and shared by multiple applications and processes across the organization. Decisions in BRMS are based on evaluating sets of many rules, which may chain to other rules. Furthermore, business rules apply to any application that invokes them, so a change made once applies everywhere.

Another difference is that process rules are typically constrained to acting as switches in BPM flow logic. In contrast, a BRMS rule set can control virtually any action that the invoking application can perform. Thus, in a process context, business rules can be used for more than simply what step to take next, but to answer such questions as what is the appropriate price or discount, or which user should be assigned to approve the purchase request.

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Finally, because process rules are part of the executable process model, changing them requires modifying the model and deploying a new version to the process engine. While changing a process model is not hard, the need to redeploy and run multiple versions of the process in parallel adds complexity.

Integrating BRMS makes rule changes easy. With BRMS, the rules are maintained separately from the applications that invoke them, so they can be changed with or without versioning the requesting process. And the changes take place immediately, even for process instances in-flight.

BPM AND BRMS: A POTENT COMBINATION

BPM and BRMS use the power of rules in complementary ways. Today, companies are increasingly looking to implement them together in an integrated fashion. In this integration, BPM manages the end-to-end process and invokes business rule evaluation in the BRMS from various steps in the flow.

The integration of BPM and BRMS can be achieved by having a business process engine act as a BRMS client and simply invoke business rules as needed through out the process. This solution, however, would require having two data models – one for BPM and another for BRMS – which would need to be kept in synch. A better approach to providing an integrated solution allows BPM to automatically communicate its data model, process variables, as well as BPM system data, to the BRMS for use in business rules. Additionally, an integrated solution should facilitate an automatic update of the rules model in the BRMS whenever it changes in BPM.

Combining BPM and BRM provides benefits such as:

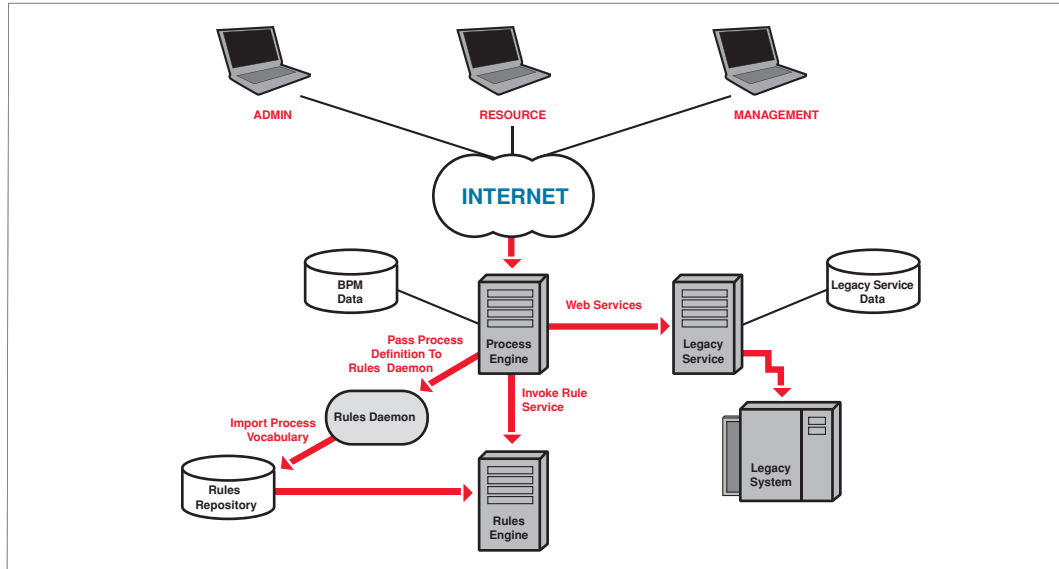
- **Lower operational costs and faster cycle times.** Costs are cut by automating manual tasks such as validating data, generating correspondence, querying data sources, and retrieving and archiving documents. In addition to automating in-

dividual tasks, BPM automates the handoffs between process steps, gathering the information needed at each one, translating it into the proper format, and ensuring that the most critical work gets done first. At the same time, business rules can be adjusted on the fly through the BRMS without the need for costly deployments of the BPM application..

- **Improved compliance and adaptability.** With an integrated BPM and BRM solution, ad hoc procedures are brought under strict rules-based control. BPM ensures that the rules for a process are followed in every instance and in every location, and can back it up with an auditable history.
- **Greater consistency and control.** Beyond compliance, companies are striving to standardize procedures and conform to best practices across all locations. BPM enforces consistency while reducing the burden of change. BRMS ensures that rules are managed in a centralized repository accessible to all processes throughout the enterprise.
- **Increased agility.** BPM and BRMS mutually enhance responsiveness to policy changes and shifting competitive pressures.

Figure 1 presents a high-level architecture diagram depicting one way of integrating BPM and BRM systems. Users can create and modify BPM processes through a Web browser using various types of BPM user interface (UI) elements ranging from simple tabular process/tasks presentation to sophisticated drag and drop task management systems. Users can also add and modify rules and assign them to various BPM processes. Rules can usually be defined using rules languages, decision tree and decision tables. However, this approach requires the BPM system to be “rule-aware” and, at the same time, the BRMS to be “BPM-aware,” meaning that rules and processes should be mapped to each other. Users can update rules us-

FIGURE 1: INTEGRATING BPM AND BRM SYSTEMS



ing the BRMS UI while the process is being executed. All the processes/tasks that are aware of this rule will use the new version of the rule as soon as the update transaction is completed.

Another important part of the architecture is the ability of the BPMS/BRMS to connect to legacy systems. Legacy systems may need to be updated as a result of the task completion, or BRMS may need data for rules processing residing in the legacy system.

BPM AND SOA: UNLEASHING A NEW WAVE OF PROCESS MANAGEMENT AND AUTOMATION

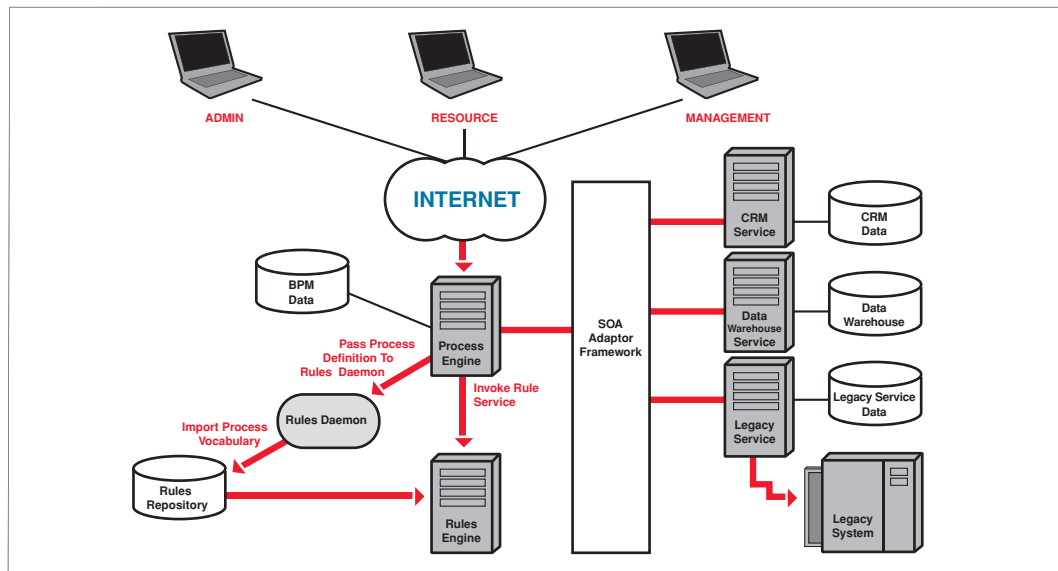
Another challenge for today's enterprise is managing various services, processes, and IT assets. Multiple technologies (J2EE, .NET, Legacy, and so forth) and disparate applications (SAP, IBM, Oracle, and so on) reign in an enterprise, which can lead to integration chaos if not properly architected.

Service-oriented architecture (SOA) aims to alleviate many of these problems, as well as create new paradigms for truly lean, proactive organizations.

Solving integration issues becomes especially important when designing business processes involving disparate systems. BPM systems must be able to seamlessly integrate different steps of the business process, which may be executed across multiple systems and environments. When different systems are unable to share their data effectively, information bottlenecks are created that require human intervention to resolve in the form of decision making or manual data entry. SOA attempts to enable new and innovative ways of sharing organizational knowledge to create further competitive advantages for the enterprise.

When BPM is deployed on a SOA, Web 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

FIGURE 2



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.

Finally, BPM in an SOA environment allows business analysts to select the correct service and the inputs and outputs between the process and 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.

Figure 2 presents a high level architecture diagram depicting BPM deployed on an SOA.

CONCLUSION

Together, BPM, BRMS and SOA provide a perfect combination for enterprise computing. BPM provides the higher-level abstraction for defining businesses processes, as well as other important capabilities of monitoring and managing those processes. BRMS provides a separate infrastructure for describing, computing, and enforcing the ever-changing assortment of business rules used to make complex decisions. Business rules also ensure compliance with corporate policies, government regulations, and best business practices. Even within a single decision, business rules may be numerous, interdependent, and continually changing. A BRMS ensures they are evaluated quickly and precisely, and are applied consistently throughout all systems and processes across the enterprise. Finally, SOA provides the capabilities for services to be combined together and to support and create an agile, flexible enterprise.

The companies that will succeed are those that can successfully automate and streamline their processes through strategic IT investments, making efficiency and productivity seem easy in an environment where processes are only growing more complex. Adoption of a BPMS and BRMS on an SOA framework provides the ideal environment, resulting in increased efficiency, control and agility across mission critical processes.

Molecular, an Internet consulting firm, designs and builds digital solutions to help companies increase revenues and decrease operating costs. Since 1994, Molecular has directed successful Web initiatives for the nation's top companies, including The Finish Line, Inc., Fidelity Investments, MFS Investment Management, Hewlett-Packard and Talbots.