

Business Process Management 101

Howard Smith, July 2003

BPMI.org defines BPM as a new technology addressing age-old business problems

The age-old problem is the management of business processes. Over the years, businesses have used a variety of terms to refer to this critical activity, including: business mapping, continuous improvement, change management, operations research, process improvement, process redesign, reengineering (BPR), six sigma, and total quality management. The common element in all these approaches to business improvement is the *business process*, the coordination of end-to-end activities (manual, automated, usually both) that gets work done and provides value to customers. Companies have, and will always, seek to optimize their unique business processes that provide differentiation and competitive advantage, even if those processes are completely manual. Hence, the role of IT in business transcends automation of business transactions and covers the complete process lifecycle, from creation or discovery, to optimization and analysis, and ultimately disposal.

Over the years, companies have used a variety of tools and methods to help them manage their business processes. Because technologies that *directly* address those processes were lacking, companies had to translate business process descriptions into IT metaphors such as data models, workflows, objects, interfaces, rules and programming logic. The members of the Business Process Management Initiative (BPMI.org) are set to change this, by unifying what were once diverse representations and disjoint technologies. BPMI.org is defining a way to standardize the development of technologies that provide direct representation and manipulation of business processes. To do so it has defined a new abstract entity for describing business processes.

Business people immediately understand business processes when expressed in business terms. Software engineers, on the other hand, use all manner of techniques to represent or digitize business processes. For them, a new abstract entity, the business process, is troublesome, because engineers currently lack the tools, techniques or experience to deal with the business process as a digital construct. The same requirement for a new way of thinking about software itself was the case when object orientation (OO) was introduced as a mental model for software development. It's tough to change ingrained thinking, then and now. Indeed, software engineers seldom see the business process as a new, self-contained construct, and naturally try to connect the concepts to that with which they are already familiar. For example, early computer programmers wrote some excellent

Fortran programs in COBOL when that language first appeared in business computing. They naturally clung to that which they already knew. Today, many software developers see business processes as a construct they automatically map to pre-existing paradigms, for example, software objects and workflows. In short, new ways of thinking never come easy, but change we must if we are to move the business process and business process management center stage in the world of business automation. The change will come about as the availability of “third wave” BPM technologies increases, driven by businesses who see possibilities to accelerate their process management endeavors.

In defining the direct representation of business processes in digital form, BPMI.org found it necessary to develop a new technology architecture, not additional layers in an already complex technology stack, that gives business processes a paradigm of their own. This was crafted to take account of today’s Web services (service oriented) infrastructures. BPMI.org has drawn from computer science developments that allow processes to be represented digitally, and thus, manipulated directly with business tools. In doing so, BPMI.org observed real world behavior of business processes, not IT metaphors, and then found the underpinning computer science theories that could approximate the reality of business processes, for example, how processes grow, shrink, morph, merge and split. Whereas previous technology paradigms address only pieces of the business process, BPMI.org has developed a representation that forms the basis for higher-level process idioms that combine elements across a wide variety of process semantics, including:

- Automational, eliminating human labor from a process
- Informational, capturing process information for purposes of understanding
- Sequential, changing process sequence, or enabling parallelism
- Tracking, closely monitoring process status and participants
- Analytical, improving analysis of information and decision-making across processes
- Geographical, coordinating processes across distances
- Integrative, consolidating and integrating sub-processes and tasks
- Intellectual, the process of capturing and distributing intellectual assets
- Disintermediating, eliminating intermediaries from a process
- Computational, performing calculations as part of a distributed process
- Collaborative, allowing participants to manage sets of shared work processes
- Compositional, building new processes from elementary reusable process patterns

The work of BPMI.org has laid the foundations for the Business Process Management System (BPMS). The BPMS serves as a mission-critical enterprise platform on top of which *tools* can be built that business people can use to manage the complete *lifecycle* of processes. Just as data models are today, BPMI.org believes that business processes should be defined and owned by the business, not IT. By contrast, the traditional view is that an IT application *is* the business process, albeit engrained or embedded in packaged software. Casting the traditional view aside, BPMI.org is moving the goal posts. See figure 1.

Second-generation “process centric” applications (BPMS)
First-generation applications (BPM tools)
Processes (schemas)
Business process management system
Pre-existing IT systems

Figure 1 – BPM stack

To explain its work, BPMI.org uses the analogy of the Relational Database Management System (RDBMS) in the management of business data. The RDBMS does not dictate a data model or a data methodology. The RDBMS supports applications (via SQL) and reliable data manipulation (based on relational algebra). In the BPMS, the process is not the application, but rather the model (or schema) under manipulation.

For years IT has automated the business; now it’s time for the business to automate IT, taking traditional software development off the critical path of business process management. The BPMS manages many of the complexities inherent to today’s software stack, allowing the business to focus purely on the specification of the business process, not IT artefacts. The BPMS provides straight-through-processing allowing business people to model, deploy and manage mission-critical business processes without the intervention of IT—just like they do with spreadsheets for numerical calculations.

The BPMS will initially consist of tools such as process modeling, analysis and simulation. As more powerful process tools emerge, such as a Mergers and Acquisitions tool, or a Value Chain Integration tool, these business tools will access the BPMS through a standard interface known as the Business Process Query Language (BPQL).

Myriad applications will be built on top of the BPMS, just as they are today with the RDBMS. BPQL provides a birds-eye view of all processes in the enterprise. Process-oriented applications will be able to directly manipulate whole processes, not just discrete components of a given business process. In a sense, the *business process* will supersede the *computer application* as software’s metaphor. Some

digital business processes such as a Six Sigma process will be used to improve, over time, other processes, completely obviating the notion of an application as the primary means of packaging software.

Other applications of the BPMS include accountability, activity-based costing, activity-value analysis, business performance management, business process outsourcing, competitive intelligence, concurrent engineering, collaboration, cost-benefit analysis, crisis management, critical-path analysis, customer process alignment, decision management, economic value analysis (EVA), information management, inter-organizational systems, just-in-time (JIT), key performance indicators, knowledge management, lean enterprise, lifetime customer value, management by objectives, mass customization, pay-for-performance, portfolio analysis, resource-based strategy, security audit, scenario planning, simulation, strategic alignment and planning, supply chain optimization and transparency. Even this list does not do justice to the many creative uses companies will find once they understand the significance of the shift from data digitization and data management systems, to process digitization and process management systems.

BPMI.org does not define business methods and techniques, but brings to market technologies and standards that business managers can use to manage their processes directly. In short, BPMI.org is bringing technologies to market that accelerate a firm's ability to perform process management and take change itself off the critical path of business innovation.

A BPMS is a design-driven architecture (DDA) that directly represents the business process, helping software developers capture the value that is usually lost during the waterfall model of the software design and development process. The BPMS takes on much of the complexity inherent in the *behavior* of business processes, issues that normally have to be translated and built into software design. By using a BPMS, complexity is eradicated from the tasks of business analysts and software developers who are then free to focus only on the process schema itself.

BPMI.org has published a representation for business processes, the Business Process Modelling Language (BPML). Using BPML, the process design intent is clearly represented in the process schema, minus the distracting details that arise from considerations of process execution lifecycle and process design lifecycle—these are issues handled by the BPMS. This approach significantly decreases the time needed to create processes, and opens them to direct manipulation with high-level process tools, since only essential details are included in the process design model. In addition, all stakeholders can include facets of process design that are relevant to them without distraction from implementation details. This simplification significantly increases

the quality and the value of the business process, making it easier to maintain and change.

Although such techniques can be included in other software development paradigms, the BPMS is unique in that, based on a foundational process semantics rooted in process calculi theory, the BPMS can simultaneously express any possible process, while at the same time provide consistency and transparency across all processes. This is similar to the role of the relational algebra in that it can support any enterprise data model, yet also support operations on data such as query and aggregation. In the same way, using BPML, it is possible to query processes and ensure that all possible queries make sense, even when applied across widely divergent process models including those developed independently by business partners. Key to this transparency (which is ever more important in business) is that all processes have a consistent past, present and future design model, both in terms of their execution state and their design. This consistent process meta-model, at the heart of the BPMS (a Process-Oriented Architecture) allows a wide range of process analysis and optimization techniques to be successfully deployed by business.

Process models, like data models, can be combined and flexed in numerous ways, opening the way to collaborative process management between and among business partners. Some have therefore compared the new BPMI-defined business processes to a new form of content, or knowledge, spanning the enterprise and placing all business information in the context of its use, end-to-end. One analyst group described this approach as the next generation of content and knowledge management. Certainly, BPML processes lie at the other end of the spectrum from the embedded processes found in EAI suites and application servers where different pieces of a given process is broken up across disparate technologies. The business processes BPMI.org defines are mobile distributed processes, free to roam. For example, a process could be sent in an email between business partners or shared using Web services.

Business process management systems are not simply an incremental improvement on existing technologies. When Computer Aided Design/Manufacturing (CAD/CAM) and later Computer Integrated Manufacturing (CIM) systems were introduced, the manufacturing industry experienced a huge surge in productivity: one, two, or even three orders of magnitude. New options in manufacturing and mass-customization appeared almost overnight. The BPMS will have a similar impact on business processes. BPMI.org's core mission is to affect this shift of perspective and platform in the construction of enterprise business systems. BPM is the CAD/CAM of the IT industry.

Today, there is a wide interest in “automating IT”, as evidenced by the rise of design-driven, model driven, intentional, aspect-oriented and transformational programming. While software development techniques will continue to evolve, BPM leverages those techniques within the BPMS and remains focussed on the new abstract entity of most benefit to business people, the business process.

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