



Business Process Management

The Next Fifty Years

For the past fifty years, computers have been seen as "data machines." But the demands of the new business process management are taking IT in another direction.

BY HOWARD SMITH AND PETER FINGAR

Back in the 1950s there was the myth of the great thinking machine. Later, the myth of MIS, the management information system, rose up to replace it. The reality, however, is that to this day, computers are record-keeping machines, not management machines.

They can take in, chew up and spit out trillions of bytes of *data*, but where is the management insight, the *actionable information* needed in context, in real time at all levels of automated and human decision-making? The methods, techniques and mindset of IT today remain fixated on data—on its capture, storage and retrieval.

However, business processes of all shapes and sizes are the focus of management attention today—management wants to overcome the great "business-IT divide" and gain control over business processes.

Numerous strategies and technologies have been proposed over the years for bringing the two worlds together, none successful. Instead of proffering yet another fix that merely extends the existing IT paradigm, we take a radical approach to closing the divide. We say, "Place the emphasis where it belongs: Give ownership of business process management back to business people."

Under the data-centric IT paradigm, business people cannot take control. They have no way to obtain the information systems they need in order to compete, not only on cost, but also on quality, speed and service. These competitive variables require not mere data, but actionable information and knowledge that resides both inside and outside the firm.

Furthermore, the business is no longer a self-contained entity. Producer-controlled markets, in which costs were tallied and margins added, have given way to customer-driven value chains in which activity-based costing must consider numerous players to make the total cost of producing value for the customer visible and understood.

Companies can no longer only manage their own internal processes; they must venture outside and manage their relationship with the entire value chain. However, no IT vendor and no IT department can provide a "killer app" for this.

Companies that want to increase their effectiveness in this new way of competing must bite the bullet and take on the challenge of making process, *not* data, *not* the application, the basic unit of computer-based automation and support. They must shift their focus from systems of record to systems of process. In short, "data processing" must give way to "process processing."

This means that employees, customers, suppliers and trading partners must share not just a "data base" but an actionable "process base" that is always on and always up-to-date, reflecting dynamic events in the entire business ecosystem. Businesses need dynamic systems of process, not the after-the-fact "systems of record" of typical back office applications. Systems of process are not only what's happening now—they are also what's happened in the past and a description of the path for future action. We are not speaking about only the past, present and future values of mere data structures. We are talking about the past, present and future of business process structures, for *business processes are the business*.

During the celebrations heralding the arrival of the 21st century, many companies were concerned that their industries might get "Amazoned," that a dot-com just might turn their industry upside-down. But with the dot-com clutter cleared away, companies in all industries better be worried about getting "General Electrified." Jack Welch responded to the dot-com era with a destroy-your-company-dot-com initiative. GE's new CEO, Jeff Immelt, has taken the baton and expanded the company's original vision with the Digitization Initiative, which aims to digitize as many business processes as possible, especially those outward-facing processes used to actually conduct business with customers and trading partners.

GE's automated business processes are now required to provide their own analytics so that business leaders can have the personalized digital cockpit instruments they need to navigate their organizations through turbulent times, in real time. GE is intent on making course corrections daily or weekly, rather than monthly or quarterly, saving time and money and better serving its customers. As the prevailing economic winds led brick-and-mortar companies to decimate technology budgets, GE increased IT spending in 2001 by 12 percent, to \$3 billion. GE understands the new process-based battlefield of business.

The Next Wave

Companies like GE and other pioneers are making breakthroughs in the way information systems are conceived, designed and implemented, transforming the very processes they automate and making the reengineering revolution of the past decade look like child's play. The vision of the fully digital corporation has now crystallized, and pioneering companies are already quietly (or secretly) building the agile enterprise.

Embracing new game-changing technologies that don't "fix IT," but instead take the software development process off the critical path of business change and innovation, these companies are intent on dominating the decade ahead and achieving never before possible gains in productivity and agility. What GE and other companies are pursuing is a breakthrough that makes end-to-end, dynamic, expanding, contracting and ever changing business processes manageable. What's needed to accomplish this is the third wave of business process management (BPM):

- In the first wave of business process management, which began in the 1920s and was dominated by Fredrick Taylor's theory of management, processes were implicit in work practices and not automated.
- In the second wave of the past decade or so, processes were manually reengineered and, through a one-time activity, cast in concrete in the bowels of today's automated ERP and other packaged, off-the-shelf systems.
- In the third wave of BPM, the business process is freed from its concrete castings and made the central focus and basic building block of all

automation and business systems. They become first-class citizens in the world of automation. Change is the primary design goal because in the world of business process management, *the ability to change is far more prized than the ability to create in the first place*. It is through agile business process management that entire value chains can be monitored, continuously improved and optimized. Feedback of results, agility and adaptability are the bywords of the third wave. The question is, however, how can such noble goals be attained?

In the minds of many companies, business processes have become synonymous with integration, but that conception is far from accurate or complete. While systems integration in fact creates "integrated processes," it does not necessarily open those processes to further processing. It does not recognize that processes have a lifecycle all of their own, independent of the IT systems that drive their automation. In addition, integration processes are only one form a business process may take. Many business processes, such as the movement of goods, the behavior of machines and manual work, are quite independent of any automation support from IT systems. IT may still, however, play a huge role in understanding and improving these "non-IT" processes, through the digital execution and simulation of process models. Conventional thinking about the relationship between IT and business processes must change if companies are to gain the process agility they need to compete in today's uncertain world and super-competitive marketplace.

If end-to-end business processes are the focus of internal and cross-company integration, why not deal directly with the "business process, as application" instead of "data" and "applications"? Because business processes can no longer be cast in concrete the way they are in today's applications, the "business process" must supersede the "application" as a means of packaging software. In addition, companies must leverage existing IT investments as they build new process-aware information systems that understand the enterprise process design right across the value chain. Companies are demanding a breakthrough that shifts the locus of automation from the affairs of IT to the affairs of the business. They want to shift their efforts from further automating integration to make up for the limitations of IT, and move on to managing business processes. That breakthrough is the methodology of BPM and its technology engine—the business process management system (BPMS).

A Synthesis and an Extension

The third wave of business process management of which we speak is not business process reengineering (BPR), enterprise application integration, workflow management or another packaged application—it's the synthesis and extension of all these technologies and techniques into a unified whole. This unified whole becomes a new foundation upon which the enterprise is built, an enterprise more in tune with the true nature of business processes and their management.


The third wave of BPM is not a fantasy, a false promise or hype. For BPM, like other true breakthroughs, is based in the mathematics, specifically process calculi, the formal method of computation that underpins dynamic mobile processes, as opposed to static relational data. Pi-calculus, one branch of process calculus, has recently drawn considerable attention in the computer science community and by those building process management systems. The underlying semantics of BPM, the business process modeling language, must be based on an open standard available to all participants (people and computer systems) in a value chain. The radical breakthrough is that in the third wave, business processes are directly and immediately executable—no software development needed!

BPM doesn't speed up applications development; it eliminates the need for it. Without its mathematical foundation, businesses would be correct in thinking that BPM is just another buzzword, acronym or marketing ploy. To make BPM a reality, its underlying business process language must be rich enough to describe the

process of hosting a dinner party yet also precise enough to describe how computer system "A" talks to computer system "B" while computer system "C" may drop in or out of the conversation, in the same way participants do in real business processes.

The essence of the BPM innovation is that, based on the mathematics, we now understand data, procedure, workflow and distributed communication not as apples, oranges and cherries, but as one new business "information type" (what technologists call an "abstract data type")—the business process. The recognition of this new fundamental building block is profound, for each element in a complete business process (the inputs, the outputs, the participants, the activities and the calculations) can now be expressed in a form where every facet and feature can be understood in the context of its use, its purpose and its role in decision making. This problem-solving paradigm can therefore provide a single basis not only to express any process, but as the basis for a wide variety of process management systems and process-aware tools and services. Some of these are already available; others will be developed in the future. The implementation of such technology has required a reexamination of some deeply entrenched common wisdom, such as the notion that software is always built from objects and components. Now we can "develop with processes" as well as "manage with processes."

Going forward, this new information type and its associated management systems will be far more important than the relational data model and its associated database management system that underpins the vast majority of today's business applications. The new information services that implement this approach can read, write, query, compose, decompose, transform, measure and analyze end-to-end business processes, internally, with business partners and in the context of external information sources.

BPM enables businesspeople to manipulate familiar business processes directly and provides the ability to conduct what-if analyses to optimize results. No programming needed—simply design, and, presto, execute! BPM takes software development off the critical path of business process management, and off the critical path of business change and innovation. Do not conclude that BPM is a lightweight solution suitable only for trivial tasks. BPM encompasses a mission-critical infrastructure equal to, or exceeding, that of today's massively scaleable, fault tolerant, data management and transaction processing platforms. Welcome to the next fifty years of business and IT. 

Excerpted from *Business Process Management—The Third Wave*.

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