BPM's Third Wave

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The first wave of business-process management, outlined in Fredrick Taylor's theory of management in the 1920s, suggested that processes were implicit in work practices, tucked away in policy manuals. Process management was called "methods and procedures analysis."

The second wave, ushered in over the past decade, suggested that processes could be manually reengineered through a one-time activity. Changes were made, but essentially cast in concrete in software, such as the feature-rich but rigid ERP applications. Even with document-centered workflow added to financial-management systems, for example, these applications rarely gave business managers full control over the process life cycle.

The third wave of BPM enables companies and workers to create and optimize new business processes on the fly. Change is the primary design goal. Through agile business processes, value chains can be monitored and continuously improved. The third wave is not business-process reengineering, 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. The third wave of BPM becomes a new foundation upon which to build sustainable competitive advantage.

Discovering innovative ways to improve business processes is now recognized as the path to business agility and competitive advantage. It's something companies are desperately seeking to achieve as they attempt to adapt to the current business and competitive landscape. Business executives cannot look at a trade magazine without seeing that business processes are in vogue—again. Some, however, are asking, "What's new here? Should I pay attention?"

Over the years, business processes have been shrouded with management theories and technologies: Business Change Management, Business Performance Management, Business Process Reengineering (BPR), Six Sigma, Workflow, Orchestration, Composite Applications, Web Services Choreography, the Real-Time Enterprise, Agility, Systems Dynamics—

these are just a few of the terms that litter the field of business processes and their management. Indeed, business processes are hardly a new idea. Although the term "business process" has been in use only for the past decade or so, the concepts of business processes and business process management can be traced back to the early 1920's, under the term "methods and procedures analysis."

Companies have always searched for new ways of restructuring work and improving business organizations, but, until very recently, a practical way to implement and manage the lifecycle of business process design and execution was seriously lacking. This lack led to major setbacks in the delivery of benefits from investments in information technology (IT) and from otherwise excellent theories about the management of process innovation and improvement. Over the last decade, seventy to eighty percent of large process and systems reengineering projects failed to deliver any results at all.

So what's really new?

There is no doubt that business process management (BPM) is on the table in boardrooms across the globe, both in relation to management theory and technology architecture, as evidenced by the growing number of process portals, process books, and process methods coming out of management schools and re-branded technology products. But being reminded that *business process thinking* is paramount is hardly enough for managers to take action, especially given the economic climate and its impact on the IT function during what we call the "IT Ice Age." At the same time, whether or not a company has a "BPM initiative" or whether it even thinks in process terms, it has business processes, and seeks to— and must—improve them.

At one level business processes are the work practices that involve a combination of people, information systems, paper and communication (email, fax, telephone or mail). At another level they are the organizational design, resources, assets and constraints that make up the very fabric of the enterprise.

Like the Hubble Telescope peering back into the origins of the universe, business processes are the fundamental basic building blocks that have so far been hidden and shrouded in theory and technology. Today, however, they can and must be made visible, explicit and transparent to all stakeholders, so they can be improved and optimized, for business

processes are indeed *the business*—products and services are only the by-product of processes.

In every case, the process *is* the product. When World War II broke out, no longer did coal and iron go in one end of Ford's River Rouge plant and automobiles come out the other, tanks rolled off the assembly line. Ford's "product" is its vehicle manufacturing process.

In the 1950s, a young Ronald Reagan hosted the top-ranked television program, the *General Electric Theater,* and made GE's slogan famous: "Progress is our most important product." If that program were to show today, the new slogan would no doubt be, "Process is our most important product." Further, successful business leaders have come to recognize that good processes don't make winners; winners make good processes.

Do not mistake BPM for some new "killer app" or some fashionable new business theory. Instead, think science! For what has changed, what is really new, is not a breakthrough in management approach, but an enhanced ability to recognize, discover and describe business processes, both in work practices and IT systems implementation. This profound step is easy to miss. Processes have been there all the time, but we have—until now—lacked the languages, notations and formalisms to work with them and to put the engineering back into the fundamental concepts of Business Process Reengineering.

The advent of computer-aided design and computer-assisted manufacturing (CAD/CAM) brought radical new efficiencies and efficacies to industrial engineering, starting with the aerospace and automotive industries and later spreading to all industries based on product development. At the outset, reductions in the cycle time from concept-to-production were of the order of 25 to 50 percent. As the new approach matured, ten-fold and even hundred-fold reductions were achieved. Collaboration was vastly simplified as suppliers and specialists in a given industry adopted new tools based on standards such as STEP (the Standard for the Exchange of Product Model Data). But even before standards were adopted, computer-aided design processes had reduced the number of design hand-offs. Over time, design quality improved and production costs were lowered, resulting in high quality products at a better price—"cheaper, better and faster" would never be the same in manufacturing industries. CAD/CAM systems are now standard practice in the industrial sector.

BPM seeks to transfer similar principles and techniques to the IT industry, to create business process discovery, design, deployment, execution, interaction, operations, optimization, analysis and simulation to support work at all levels, from personal productivity tools to end-to-end business processes across the value chain. The renaissance of process thinking, management practice and theory can now take advantage of the science and discipline of manufacturing, engineering and production and apply it across an organization's business processes—BPM is CAD/CAM for business processes. Those companies and their trading partners that master BPM will share in the new wealth characterized by productivity gains, innovation and lowered costs that the industrial design and manufacturing industries have already experienced as a result of implementing a direct path from product design to physical product realization.

Boeing is a world-class example of this type of collaboration. The company designed its 777 airliner "in cyberspace" by electronically sharing its CAD/CAM design tools and processes with engineers, customers, maintenance personnel, project managers and component suppliers across the globe. No physical model. No paper blueprints. The result of Boeings product development process is captured in the slogan, "The 777 is a bunch of parts flying together in close formation." As a result, Boeing's customers no longer have to wait three years for a new airplane. Through process collaboration Boeing aims to deliver a plane in eight to 12 months, and the company expects to have the capacity to build 620 airplanes annually, up from 228 in 1992.

Companies that can imagine the same capability applied to their business processes will have taken their plunge in the third wave of BPM. It need not be on the scale of Boeing computer-aided methods, but the principle is the same. CEO's that recognize the potential of BPM will create value chains where companies, their suppliers and trading partners "fly together in close formation," dominating their markets and delighting their customers.

In *The Max Strategy,* Dale Dauten told some interesting stories about Walt Disney, or "Uncle Walt," as he liked to be called. Now *there* was a man fizzing with intelligence. Someone once asked him his "secret" and he replied, "Do something so well that people will pay to see you do it again."

"There's a scene in *Snow White* where Snow is standing beside a well. And she tells a flock of doves that it's a wishing well. She demonstrates,

saying something like "I wish my prince would come." Then, we see her from the bottom of the well, right through the water. We watch her face, shimmering in the surface of the water, as drops of water fall into the well and create ripples moving out. Now imagine drawing a shimmering face reflected in water that's rippling out in circles. Imagine how hard that would be, especially since this was long before computer animation."

As workers and as consumers, both online and offline, each of us is enveloped by a myriad of business processes—the intricate, dynamic, ever-changing manifestations of the economic activity of companies. Whether we are disinterested, or actively engaged, in these processes, in large part determines the wealth of those who weave them. Companies are looking for secrets, skills and tools that will enable them to create and mesh together business processes that are so outstanding that customers will "pay to see them" time and time again.

Like Walt Disney, companies are not lacking in imagination, but unlike The Walt Disney Company in 1937 that could afford to employ a thousand animators, companies today cannot afford to be distracted by the labor-intensive animation process. To create the compelling business processes they so desperately seek, companies are now looking for the business-process equivalent of Pixar's computer-assisted animation methods—the ones Disney now uses. The third wave of BPM is the end of their search. Through BPM, all processes can be opened to computer assisted refinement as a result of the new focus on explicit process models—just like 3-dimensional CAD/CAM product models are today—and all processes will improve in quality. How to make it happen?

The third wave of business process management (BPM) is a fundamentally new approach to business process innovation and management. For on today's battleground for economic growth, sustainability and innovation, companies like GE, with its Digitization Initiative, are arming themselves with explicitly defined business processes that can be manipulated on a scale previously unimaginable. The strategy they are chasing is not the piecemeal replacement of old processes with new, but a single program, the establishment of a capability for implementing and managing a continuous stream of business process innovations.

The goal is twofold: hyper-efficiency and an unprecedented agility. Put simply, companies like GE want to *take change off the critical path of innovation*. GE seeks to empower every business unit and every workgroup to take control of their processes and to make all the assets of

the company available to be reused, repurposed and recombined with those of partners.

Only by freeing processes from the constraints arising in technology, software and networks, can these lofty objectives be achieved. A similar digitization process happened two decades ago as companies began to use data management systems. The third wave creates a new class of business asset that encompasses data but extends data-centric concepts so that little is left embedded and ingrained within systems or work practices. If this analysis seems extreme, consider the fact that every modern management theory ever devised—reengineering, process innovation, total quality management, Six Sigma, activity-based costing, value-chain analysis, cycle-time reduction, supply chain management, excellence, customer-driven strategy and management by objectives—has stressed the significance of the business process and its management. In light of this constant demand, it seems surprising that the IT industry has up to now delivered only "business applications," small fragments of end-to-end processes capable of little more than manipulating static business data using pre-packaged procedures.

So what's really new in BPM?

All information systems are imperfect simulations of the businesses they support. Companies understand that the principles of inter-connected and inter-related processes are the reality behind today's IT-façade. This change is structural—a shift in the tectonic plates that underlie the business-technology equation. It will only come about by abandoning the assumption that business information systems design must be based upon the separate notions of data, procedure and communication.

Investment in information technology can no longer be justified if business systems remain a weak and incomplete representation of the CEO's strategy. There must be a paradigm shift in the quality and expression of business processes if companies are to apply systematic methods to their development, execution and optimization—in strategy, in practice and in information technology.

Two decades ago companies implemented data management systems because they recognized the value of business data and the data-related problems they would face if data continued to be embedded in each and every business application. That problem got fixed, with the advent of the relational data management systems (RDBMS). Based on strong principles, the RDBMS became the platform that enabled the myriad of

business applications upon which most businesses depend today for their competitive advantage.

As companies face up to their business process future, similar factors are at work creating the demand for the third wave of business process management. Processes are moving center stage, not just on whiteboards, but also at the heart of a new business architecture and the information systems that support it. 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 "application integration" (now 30 percent of IT budgets) 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).

What's really new about BPMS?

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, by those building process management systems and by those modeling business processes. Without its mathematical foundation, businesses would be correct in thinking that BPM is just another buzzword, acronym or marketing ploy. Whilst that may be true for some jumping onto the BPM bandwagon, it is far from the case.

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—the "Pi paradigm" —can therefore provide a single basis not only to express any process, but for a wide variety of process management systems and process-aware tools and services. Some of these process-centric systems 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—the business process—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 provides enhanced business agility, control and accountability. It will streamline internal and external business processes, eliminate redundancies, and increase automation.
- BPM provides a direct path from process design to a system for implementing the process. It's not so much "rapid application development"; instead, it's *removing* application development from the business cycle.
- BPM supports top-down and bottom-up process modeling, right across the value chain, involving all business-process participants: systems, people, information, and machines.
- BPM is a platform for sharing end-to-end business processes in a manner analogous to the use of a database management system as a platform for sharing business data, both between applications and among business partners. BPM is the platform upon which the next generation of business applications will be constructed.
- BPM supports processes that inherently integrate, collaborate, combine and decompose, no matter where they were created and independent of the different technical infrastructures in which they exist. BPM creates reusable process patterns.
- BPM is defined by the ability to change business processes at a speed

governed by the business cycle (day-to-day, week-to-week, quarter-to-quarter), radically reducing the friction arising from today's endemic business-IT divide.

- BPM supports the derivation of key business metrics—for example, activity-based costs—directly from the execution of business processes. BPM processes are accountable, transparent and persistent, and include all the information passed among participants over the process lifetime.
- BPM radically simplifies the deployment of processes that span the value chain, eradicating the point-to-point integration problem that still plagues value-chain execution today.
- BPM supports the fluid movement, management and monitoring of work between companies. It is the operational environment that underpins value-chain integration and business process outsourcing.
- BPM has the potential to automate the *discovery* of business processes arising naturally in the course of business operations, as readily as a database naturally fills with business data during use.
- BPM will enable the industrial-scale collaborative design of business processes among partners, and will provide the tools for the value management analysis of processes supporting virtual organizations.

These possibilities cannot arise on the basis of point solutions, disparate fashionable new IT products or tenuous new management theories. They depend upon an underlying *science of process*, its representation and implementation in a wide range of new tools and platforms.

In 1999, an obscure group of open-source developers, *exolab.org,* and their collaborators, conceived of a plan to create the standards for a new class of mission-critical enterprise software, the Business Process Management System (BPMS), that would bring the third-wave BPM vision to life. BPMI.org was born. That story is told in the seminal BPM book, *Business Process Management: The Third Wave*. The third wave began with the computer science of Robin Milner's process calculus and was realized within the Business Process Modeling Language (BPML) and its implementations. This third-wave BPM innovation is now about to enter its next chapter.

The 800-pound gorillas in the IT industry have awoken to the potential of the process paradigm. These companies seek to empower the business user with tools and methods for BPM where they have already empowered us in data management, numerical computation and collaboration. The third wave is based upon a theory and a practical approach to process management that takes what was good about

reengineering—the creativity, the insight—but eradicates the pain of discontinuity and new process introduction.

BPM's third wave, and the IT industry's response to it is about to grow up, for if companies want change built in, they must act now to build in an agent of change, the BPMS. Animate your business processes so your customers will pay to see them again and again. Learn from Uncle Walt.

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