

## The Coming IT Flip Flop: And the Emergence of Human Interaction Management Systems

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In 2003, the infamous article, "IT Doesn't Matter," splashed onto the pages of the *Harvard Business Review*, and subsequently got used in boardrooms across America as ammo for deep IT budget cuts. Even though General Electric's CEO, Jeff Immelt, called the article "stupid" the great IT backlash had begun – IT spending flip flopped from the late 1990s' stupendous overspend, which was driven by the dot-com frenzy, to the current under spend, driven by IT-wary business executives. The tabloid-like article set forth the following New Rules for IT management: "Spend less; follow, don't lead; and focus on vulnerabilities, not opportunities." In the May 12, 2003 issue of *ComputerWorld*, the author reasserted one of his fundamental ideas when he said, "Companies have increasingly bought into the assumption that IT is a strategic resource. As a result, they have brought in CIOs who are conceptual, strategic thinkers about IT. I think there's less of a need for those types of individuals."<sup>[1]</sup>

It's time now for another IT flip flop, and here's why: the outsourcing of white-collar work and the growing trend of multi-company alliances. While many members of boards of directors were lulled to sleep by that HBR article and were dreaming of huge IT cost savings, India, China, Russia, and Eastern Europe were burning the midnight oil opening up a whole new trend toward outsourcing and offshoring that no business wanting to remain competitive can ignore. As I mention in my forthcoming book, *Extreme Competition*, "With the far away brought to our desktops by the Internet, Shanghai and San Francisco, Chennai and Chicago, and Boston and Bangalore are now next-door neighbors." It won't be just the satellite/fiber networks that drive the continued globalization of highly skilled white-collar workers, it will be the ability to create virtual work spaces where far flung teams can work together in real time. As globalization continues, the demand for a new generation of technology support for work accomplished by geographically dispersed teams becomes clear.

Contrary to the HBR article, it is not time to constrict the role of IT, but to expand it. However, it's not the kind of IT known as data processing or transaction processing or record keeping, as cited in the HBR article. It's not the kind of IT that companies blindly threw money at during the dot-com frenzy. It's an IT of a different kind. You can think of this badly needed new category of technology, the Human Interaction Management System, as *workware* – technology that animates human work and collaboration similar to the way that software animates computer hardware. While business executives don't want more and more software, they know they need workware, for they know how complex their business operations have become. This is precisely the kind of business technology needed for teams scattered across the globe to work together effectively.

Consider the need for better management capabilities as manufacturers globalize operations in their efforts to reduce costs and to slash product development and delivery cycle times. Such geographically distributed operations can boggle the mind with a complexity involving specifications, collaborative design, and production materials planning; across multiple product portfolios, across multiple suppliers and contract manufacturing companies, across multiple time zones, across multiple countries, and across disparate scheduling and production systems. Each company that contributes to the value chain (the typical value chain consists of over 20 independent companies) works against its own clock, using its own internal automation systems, such as material requirements planning, production scheduling, and ERP and CAD systems. And changes to such operations that arise from work by one party, or events in one place, must

seamlessly ripple throughout the network of collaborators, if all participants are still to sing from the same hymnal. The internet does, indeed, offer a newfound opportunity to interconnect all these systems to transform the very ways manufacturing companies operate.

Yet, with the opportunity to interconnect business resources and systems, the Internet also poses an immense challenge in that the humans, the very heart and soul of any company, can be overwhelmed by the volume of business information that can flow through the Net. What's really needed is a World Wide Workspace for systematic and well-managed human interactions (as opposed to the chaos of emails, phone calls, instant messages, faxes, and meetings). In other words, what's needed is a structured interaction process – a next generation of project management, if you will. For example, consider the worldwide manufacturing operations of Dell Computer. When a Dell demand signal is beamed to its 30 tier-1 and 400 tier-2 suppliers scattered across the globe, they all work asynchronously, against their own clocks, using human and system resources in non-predetermined ways. That is, the critical challenges in synchronizing such work are those darned 20% exceptions that must be dealt with in real business – consuming 80% of resources – if a company is to achieve a razor-sharp, competitive edge.

The business world is struggling to discover the way to manage such complexity with computer-based support. And the answer isn't workflow. The shortcomings of workflow – the narrow focus of each process, limited systems integration capability, inability to cater for change to or interaction between work streams, and so on – have led to new developments over the past five years, many coming under the banner of Business Process Management (BPM). Every major IT vendor now offers BPM software, though much of it is workflow or application integration with some BPM lipstick applied. This isn't meant to downplay the importance of current BPM solutions, for application-to-application integration, rules-driven workflow, and real-time distributed transaction management are vital. And they are, in no way, trivial undertakings, but very complex endeavors. That's why BPM solutions providers place so much emphasis on Web services and service-oriented architectures as means of grappling with the complexity of system-to-system interactions. As a result, most of today's BPM solutions can take care of 80% of the routine, predetermined, system-to-system scenarios with predefined workflow and inter-application transaction management. Such capabilities are needed to help a company put its "house in order" with application integration. But they don't directly support the way people actually accomplish their work.

What's needed is dedicated support for dynamic human-to-human interactions that cannot be preordained or preprogrammed the way system-to-system interactions are. Further, it's the human-driven business processes that are the very heart of business process management and project management.

### **A New Category of Business Technology**

Bill Gates, in an email prior to this year's Microsoft's annual CEO Conference, wrote, "To tackle these challenges [of information overload], information-worker software needs to evolve. It's time to build on the capabilities we have today and create software that helps information workers adapt and thrive in an ever-changing work environment. Now more than ever, competitive advantage comes from the ability to transform ideas into value – through process innovation, strategic insights, and customized services. At Microsoft, we believe that the key to helping businesses become more agile and productive in the global economy is to empower individual workers, giving them tools that improve efficiency and enable them to focus on the highest-value work. And a new generation of software is an important ingredient in making this happen. In a new world of work, where collaboration, business intelligence, and prioritizing scarce time and

attention are critical factors for success, the tools that information workers use must evolve in ways that do not add new complexity for people who already feel the pressure of an 'always-on' world and ever-rising expectations for productivity.”[2]

Indeed, to harness the Net for business innovation and transformation, we can no longer rely on incremental upgrades to legacy process support tools. Breakthrough thinking and new systems will be needed to provide the freedom that workers need so that they are helped, and not hindered, by the system. That new way of thinking is Human Interaction Management, and the technology needed to harness the Net for helping people work better in the wired, flat world of global business is a new category of business technology, the Human Interaction Management System.

In the groundbreaking work, *Human Interactions: The Heart and Soul of Business Process Management*, Keith Harrison-Broninski describes how people really work and how they can be helped to work better. According to Harrison-Broninski, we must ask, “What is involved in amplifying human-driven processes? We need to first understand how to formally describe the human interactions that accomplish work. This should lead us naturally to a better understanding of how to manage those interactions. Then – ideally – we can capture this understanding in a computer system, a Human Interaction Management System.”

Human Interaction Management is not concerned with the individual, detailed tasks of a single worker, such as writing a document, doing a calculation, or giving a presentation. Instead, it concerns the higher level processes that give work shape and structure as people work together to reach a shared goal. We need to find ways of thinking about human-driven processes that allow the controlled management of change – something that is innate in all work interactions between humans. This way of thinking, just in itself, delivers to the enterprise the ability to regain control of the kind of dynamic, collaborative, geographically diverse activities discussed above. However, the techniques of Human Interaction Management, being based on formal principles, provide more than just this.

Human Interaction Management shows how to model all human work processes in a way that allows us to support them properly with software. Software support can make it far easier to participate in, measure, and facilitate processes that not only involve multiple players, but also evolve continuously throughout their lifetime – as they do in the messy real world of business.

Bill Gates has been serving up his vision of “the new world of work,” which he characterizes by the inter-company collaboration that has resulted from the globalization of white collar work and new forms of government regulation, such as Sarbanes Oxley. Both Gates, at this year’s CEO Conference, and Steve Balmer, at TechEd, indicate that Microsoft intends to beef up its Office suite with human interaction capabilities. An even stronger indication that a new breed of software is in Microsoft’s sights is the company’s acquisition of Groove Networks, a provider of peer-to-peer “shared spaces.” The goal seems clear: Corporate software will help workers collaborate, search for information sans information overload, and manage information needed for working on ad hoc projects. After all, in the world of today’s information workers, life is but a stream of projects. Microsoft seems intent on providing the tools needed to organize human activities around information while, at the same time, taming information overload, and taking on information chaos. But is that enough?

It’s not enough to organize human activities around information; it must be organized around the work itself. In the Industrial Age human activities were organized around the assembly line; and in the Information Age human activities are organized around information (the *raison d’etre* for functional management). In the emerging Process Age, where a company’s business processes

are key to effectiveness, it's now time to organize human activities around the work itself. That means fusing traditional collaboration and information tools and extending them with a complete theory of human work if we are to build systems that can support the way people actually work, versus treating them as cogs in an information machine.

Before we can construct a universal way to describe human-driven processes, we need to impose some order on the apparent chaos of human activity, and seek the fundamental properties of human work. The search must lead us to ideas from biology, organizational theory, social systems theory, cognitive theory, sociology, and psychology. The properties and patterns we discover from these diverse disciplines will guide us in the development of a full process description framework.

Although a system's formal and theoretical underpinnings should not be visible to business users, it is those very underpinnings that enable systems to work under the stress of the real world problems they are intended to solve. For example, who cares that today's database systems have relational algebra as their underpinnings? But that mathematic basis is, indeed, what makes today's information systems solid, reliable, and scalable. So, too, the Human Interaction Management System needs formal foundations – and these include role-activity theory, Petri nets, Pi calculus, first-order predicate logic, the computer science of speech acts and conversations for action, autopoiesis, and other principles drawn from cognitive theory, psychology, learning theory, biology, and social systems theory.

Whew! For the business user, this level of detail is, of course, overkill – and such underpinnings are completely hidden in daily use of a Human Interaction Management System. However, they are essential to its ability to handle the true dynamics of human collaborative activity. In short, a complete theory of how humans actually work must underpin Human Interaction Management. It's clear that if Microsoft or other IT and BPM solutions providers are to build new tools to support human work, they must go beyond information management theories and onto a complete theory of human work processes. In addition, they must provide process-modeling tools and techniques that CIOs can use to model their organizations' human-driven work processes. While approaches such as UML are fine for modeling system-to-system interactions, role-based techniques such as role activity diagramming (a well-established notation whose use is refined for the purposes of Human Interaction Management) are essential for modeling human-to-human interactions.

Okay, so much for the underlying theory. Let's get practical and put all this into the realm of the CIO. At this point, a hard-working, reality-grounded CIO may be thinking, "Hold on a second. We've already got groupware. We've got knowledge management. We've got workflow. We've got Business Process Management. We are the collaborative enterprise. I don't need this."

All these technologies are major players in today's business world, and the ideas underlying them are highly pervasive, so we need to look at what they do and do not offer, if we are to assert that more is required. Interestingly, each of the above-mentioned technologies is often promoted as the solution to human collaboration. But they're very different.

Groupware is about messaging and document sharing. Knowledge management doesn't usually do messaging, but does document sharing very well – better upload and search facilities than you get in groupware. Workflow is different again; it allows people to sequence certain types of activities (data entry or document approval, for instance), while many current incarnations of Business Process Management permit yet more powerful messaging and automation features (application integration and distributed transaction management, for instance). But where is the formal support for the way humans actually work? for human-driven processes? That's the ultimate question and the missing link in today's BPM systems. Xerox's former Chief Scientist,

John Seely Brown, is correct: "Processes don't do work, people do." Think of the Human Interaction Management System not only as the fusion of groupware, knowledge management, workflow, and BPM, but also as the extension of these technologies with formal techniques from the cognitive and social sciences that incorporate the ways in which humans really work.

In the real-time age of globalization, the process-managed enterprise will dominate by implementing radically new means of support for human interactions. Winning companies will deploy innovative information technology tools to manage human-driven processes, capture information deeply personal to each participant, and help them use this information both individually and collaboratively. With a new breed of software – the Human Interaction Management System – smart companies will be able to optimize the human-driven processes that are, in the end, their jobs – and the next source of competitive advantage.

Human Interaction Management can permit companies to establish a fundamentally human integration (versus machine integration) with their customers, by engaging directly with the human-centered processes for which their products will be used. In the twenty-first century – where customers are bewildered by choice and seek understanding from their suppliers, as well as low price and efficient delivery – such integration is a necessity. Customers will find suppliers that they trust, engage with them, and stick with them. Anyone can compete in this heady new world, but to keep the customers you gain, you need Human Interaction Management.

It is time for another IT flip flop. After fifty years of computer systems that treat humans simply as data processing engines, we need computer systems that understand and support the complex work humans really carry out, if we are to benefit from an increasing sophisticated business ecosystem. Just consider the last wave of enterprise systems, Customer Relationship Management (CRM). Their 80% failure rate is well known, and it's clear that sales and marketing people were pushed over the top not only by having to get their work done, but also in having to feed and care for these information-processing CRM beasts. Revolt! Even the man most associated with CRM systems, Tom Siebel, pronounced that "CRM is dead." Long live the business processes that actually support customer relationships – and those are human-driven processes.

Now is the time for companies determined to dominate their industries in the decade ahead to embrace the future of process support, and demand Human Interaction Management Systems from their IT vendors (some of whom are already quietly working to develop such systems). After fifty years of coping with the limited tools at their disposal, it's time that interaction workers are supported properly by – instead of having to slavishly support – computer systems. Contrary to the shallow arguments of the HBR article, companies increasingly need CIOs who are conceptual, strategic thinkers who can provision the needed capabilities for Human Interaction Management, and lead their companies beyond the Information Age and into the Process Age.

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<sup>1</sup> Melymuka, K., "Get Over Yourself: The Pervasiveness of IT may be making it strategically irrelevant," *Computerworld*, May 12, 2003.

<sup>2</sup> From: Bill Gates | Sent: Thu May 19 10:55:42 2005 | To: (Microsoft customers) | Subject: The New World of Work

**Peter Fingar** is the Executive Partner at the Greystone Group. His new book, *Extreme Competition: Innovation and the Great 21st Century Business Reformation* is due out in December and focuses on many of the issues covered in this article (pre-release copies can be ordered directly from [www.mkpress.com](http://www.mkpress.com)).