

Work 2.0

Peter Fingar



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2.0 is all the rage: Web2.0, Enterprise2.0, Office2.0, the list goes on. The pundits are out in full force proclaiming the democratization of the Internet and the wisdom of crowds. Blogs, wikis, and all manner of social networks are set to bring unprecedented transparency to the business world, giving customers a say in just about everything. No more one-way messaging from company to consumer. Secret R&D labs are dissolving in favor of open innovation. *Finally*, we have the executable Internet some 20-plus years after Sun Microsystems' John Gage coined the phrase 'The Network is the Computer'

Too wonderful to be true? Probably, for now we have InformationOverload2.0, and many workers are being pushed beyond their capacity to cope. Just consider the not-so-new technology of email. According to a BBC report in the UK, it's not unusual for office workers to spend as much as two hours a day, every day, sorting and reading all the email that pours into their in-boxes. Worse, that doesn't include the time they have to spend responding to it. Now, add instant messaging, podcasts, blogs, Wikis, Skype, MySpace, Orkut, YouTube, del.icio.us, digg, GoogleGroups... oh my.

Taming Information in a Wired World

Bill Gates, in an email prior to Microsoft's 2005 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 productivity¹

Both Gates, at the 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: incorporate software that helps 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, 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'être* 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.

Taming Work in a Wired World

As we've discussed, with all 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

¹ From: Bill Gates | Sent: Thu May 19 10:55:42 2005 | To: (Microsoft customers) | Subject: The New World of Work

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, blogs and meetings). In other words, what's needed is a structured interaction process—a next generation of project management, or simply stated, Work2.0. 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 with how 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.

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 guide us in the development of a full process description framework for a new world of Work2.0.

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.

In an article I wrote, I borrowed the title, *The Greatest Innovation Since BPM*, from the award winning CIO, Michael Hugos' new book on business agility, *The Greatest Innovation Since the Assembly Line* (www.mkpress.com). Thanks Mike, for the idea fits so well in what I hope to articulate about the current state of BPM and where we need to go beyond what's now so loosely called Web2.0. Before I begin, let's turn to the UK business-tech magazine, *Information Age*, to set some context:

Riding the Fourth Wave

A new generation of people-centric collaborative information management tools is set to produce the first fundamental advances in personal productivity since the arrival of the spreadsheet. Three years ago in their book *Business Process Management: The Third Wave*, Howard Smith and Peter Fingar wrote what has since come to be regarded as a manifesto for radical business change based on business process management (BPM) technology. Now though, says Fingar, the time is already right to prepare for a new, and potentially even more radical, fourth wave of business automation – human interaction management systems (HIMS).

According to Fingar, even though much of what he and Smith described in *The Third Wave* has still to be realised, among its most sophisticated early adopters, BPM has already eliminated most of the back-end system bottlenecks that have traditionally impeded business development.

For these organisations, it is time to move on: 'The real future, if you look at business process management – the key part of it that has not been fully addressed – is human to human interaction', he says.

To some extent, this assertion is already recognised in the current industry vogue for collaborative, Internet-based personal productivity tools such as Google's Writely word processor and spreadsheet products. Unlike first generation Microsoft Office-like applications, such so-called Office 2.0 products are designed from the ground up to distribute and share documents. However, HIMS proponents believe that these advances do not really solve human interactivity problems, and may actually be making them far worse [e.g. with *infoglut*].

What Howard Smith and I wrote about didn't in any way ignore human interaction management. The people components of a business process were given equal status to machine components in our definition of a business process: '*A business process is the complete and dynamically coordinated set of **collaborative** and **transactional** activities that deliver value to customers*'. But the IT industry went its own way, by and large focusing on the 'transactional activities,' relegating the collaborative part to be trapped in the world of traditional workflow, with BPM lipstick. BPM vendors with a strong workflow heritage began labeling their BPM suites as 'people-oriented.' Meanwhile, other vendors competed in the space known as 'integration-centric BPM' – hmm, a new term for next-generation EAI?

Such labeling is a red herring, for the way humans interact among themselves to get work done is far different from integration-centric BPM or the predefined notion of workflow, even with complex nesting and chaining logic built in. These are primarily notions of system-to-human (S-2-H) systems, where people are treated as cogs in an assembly line, dynamic as it may be, shoving tasks from station to station. The chairman of the WfMC, Jon Pyke, noted:

Supposing you were playing golf; using the BPM approach would be like hitting a hole in one every time you tee off. Impressive – 18 shots, and a round finished in 25 minutes.

But as we all know, the reality is somewhat different (well, my golf is different) – there's a lot that happens between teeing off and finishing a hole. Ideally, about four shots (think nodes in a process) – but you have to deal with the unexpected even though you know the unexpected is very likely; sand traps, water hazards, lost balls, free drops, collaboration with fellow players, unexpected consultation with the referee – and so it goes. Then there are 17 more holes to do – the result is an intricate and complex process with 18 targets but about 72 operations.

Like the game of golf, when it comes to the creative and innovative forms of business processes that reside in the domain of human-to-human interactions, the processes cannot be predefined or 'flowcharted in advance'. In short, such collaborative human processes are 'organic'. That is to say, they 'represent emergent processes' that change not only their state, but also their structure as they are born, and then grow and evolve. Such processes deal with new business initiatives, new programs, new marketing campaigns, new product development, case management, research, and all to often, unexpected crises. These are not the kind of processes you call in IT to analyze, model and code – and get back to you in 18 months with a solution. In the messy real world of business, people communicate, research, think, consult, negotiate and ultimately commit to the next steps that are unknowable at the outset. As new commitments are made, the process continues, often involving new participants playing new roles as the process expands. The participants usually cross organization and company boundaries: functional departments, customers, regulatory agencies, suppliers, suppliers' suppliers, design firms, market research firms, channel partners, and so on. Unlike the internal command and control within a single company, one company cannot command another company to do this or do that.

Figure 1

Communication 'With Implied' Collaboration in a Web2.0 World (A Real Mess)



Instead, the parties must negotiate and commit to next steps, and track the many agreements made along the way. Such human collaboration shifts the requirements for IT support from ‘information processing’ where data are tracked, to ‘commitment processing’ where agreements are tracked. Does your EPR or BPM system do that? Does your Wiki or blog do that?

Human Communication with Implicit Collaboration

Let’s take a brief look at the tools people use to carry out knowledge work, decision-making and collaboration. It’s not a pretty picture, but we need to grasp the diverse and complex nature of how humans interact to accomplish their goals, as shown in Figure 1.

Portrayed in Figure 1 are people from four companies:

Company J (Joe, Jane, and John),

Company T (Tim, Terry, Tanya, and Tom),

Company G (Greg and Gina) and

Company C (Carl, Casey, and Cassie).

Company J wants to develop a new financial service to provide a new form of health insurance that allows consumers to utilize the growing number of low-cost, high-quality health providers (hospitals, surgeons, assisted living facilities, and nursing homes) in the emerging Globalized Health Care industry. Joe is the CEO, Jane is the V.P. of Business Development, and John is an M.D. with international health expertise.

Company T is a health services company representing transnational hospitals and related organizations based in India, Thailand, and Israel. Tim is V. P. of Business Development, Terry is V.P. of Quality and Government Compliance, Tanya is Research Director, and Tom is V.P of Finance.

Company C is a highly specialized broker responsible for channel development. Cassie is the CEO and Casey is V.P of Business Development.

Company G is an international law firm located in The Hague that specializes in international medicine regulations and the intricacies of related global trade agreements.

Somewhere in all their communications, and all their ‘Web2.0’ endeavors, there must be collaboration taking place, right?

Of course there is, but it's 'implicit collaboration'. Keeping track of what's really going on is all in their heads, each head having its own assessment of what's going on at any particular time.

Yet there is no real technology support to structure their collaborations. Quite the contrary, the participants suffer from information overload, also known as infoglut:

Who got 'cc: ed' on the latest version of the risk assessment projections? Who have or have not completed their latest critical path tasks? Which experts do we now need to bring to the table? Was the contract signed with the Thai government? Do we have a business plan for acquiring and managing the hospital in Belize? Now that the contract has been signed for managing the hospital in Panama City, what are the next steps, and who and what are needed to move forward? Where's the latest version of the lobby layout? Have the investors committed to the Belize project? What steps do we still need to complete for certifying our Indian medical staff in Costa Rica? Did we get responses to our RFP from the pharmaceutical companies in India?

Such is the real world of new business initiatives, new marketing campaigns, new joint ventures, mergers and acquisitions, research, and business innovations in general. It's a world of human interactions, which to date have little technological support that truly provides 'human interaction management'.

So, what's needed?

Explicit Collaboration Via Human Interaction Management Systems

If technology is to be used to support human interactions, collaboration can no longer be *implicit*. It must be *explicit* if it is to be brought under management control. For this to happen, five basic principles are needed:

- 1. Connection visibility:** to work with people, you need to know who they are, what they can do, and what their responsibilities are as opposed to yours.
- 2. Structured messaging:** if people are to manage their interactions with others better, their communications must be structured and goal-directed.

- 3. Support for knowledge work:** organizations must learn to manage the time and mental effort their staff invest in researching, comparing, considering, deciding, and generally turning information into knowledge and ideas.
- 4. Supportive rather than prescriptive activity management:** humans do not sequence their activities in the manner of a procedural computer program. There is always structure to human work, sometimes less and sometime more, but it is not the same kind of structure that you get in a flowchart.
- 5. Processes that change processes:** human activities are often concerned with solving problems, or making something happen. Such activities routinely start in the same fashion – by establishing a way of proceeding. Before you can design your new widget, or develop your marketing plan, you need to work out how you are going to do so – which methodology to use, which tools to use, which people should be consulted, and so on. In other words, process definition is an intrinsic part of the process itself. Further, this is not a one-time event – it happens continually throughout the life of the process. Human interaction management requires a major shift from ‘information processing’ to ‘commitment processing’, where participants negotiate and commit to next steps. The process itself is *emergent*, not predefined.

To achieve all this, a new kind of software system is required, one based on the six different kinds of ‘objects’ defined by Human Interaction Management (HIM): Roles, Users, Interactions, Entities, States and Activities. This is not the place to discuss the nature of each HIM object type, but all six must be used as the fundamental basis of any system intended to properly support collaborative human work in the enterprise.

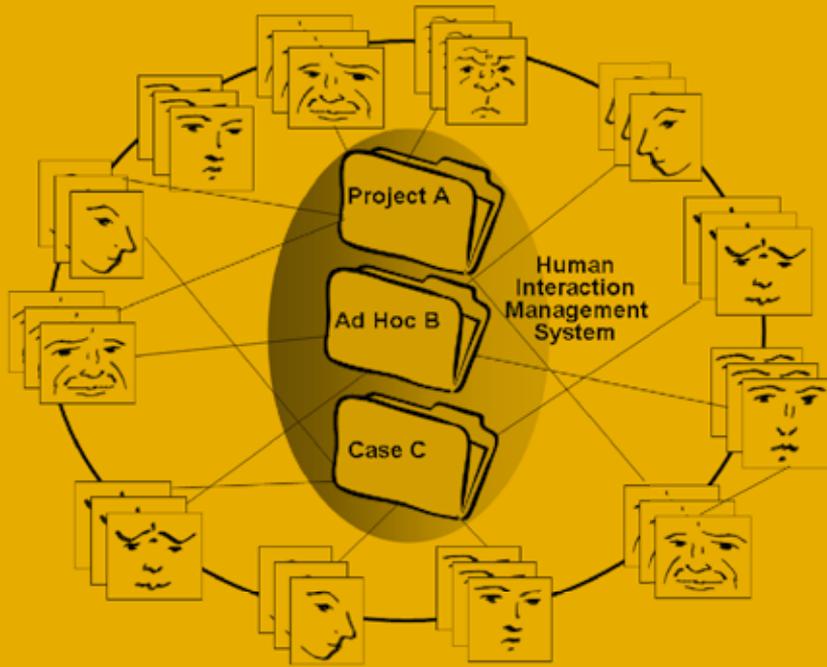
By implementing these principles in software, a human interaction management system can support human collaboration in a way that can effectively turn strategy into action, and provide the mechanisms for ensuring strategic, executive and operational management control. All these forms of management control have direct ramifications for corporate and government compliance. Implementing these principles allows management participation in the process execution, including ongoing re-definition of the process itself, thereby ensuring maximum *agility* and responsiveness.

With support from a Human Interaction Management System (HIMS), (call the HIMS *Workware*, or the *Work Processor*, if you like) an organization can provide new means to help people work better as they take on the constant stream of new business initiatives and human-centric tasks that make successful companies tick:

- new product development,
- promotions,
- special events,
- research,
- new marketing campaigns,
- customer self-service,
- case management,
- mergers and acquisitions,
- opening new global markets,
- complex sales proposals,
- management-level compliance,
- all the projects people undertake to innovate, to grow the business, or
- to stave off competitive threats and deal with crises (you know, the real stuff of any business).

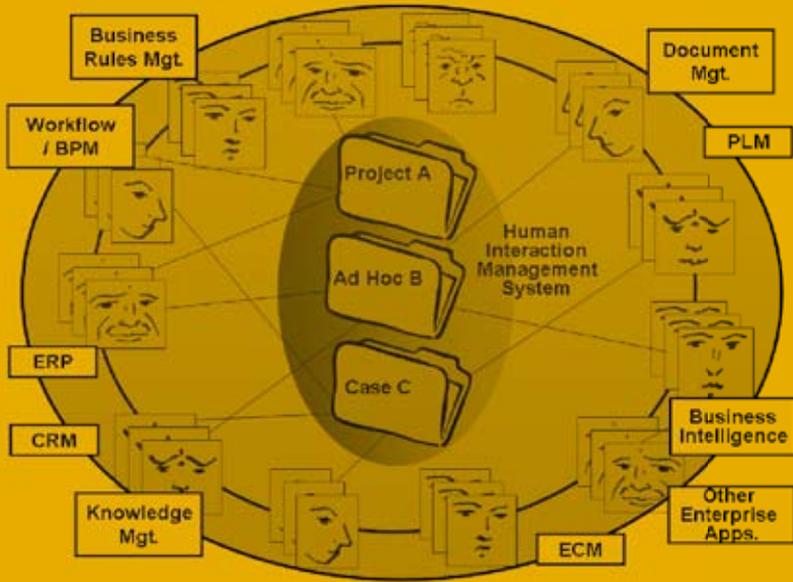
This is the stuff people do that allows companies to go from good to great. It's about going beyond efficiency and on to effectiveness, going beyond being a commodity player to becoming an innovator. It's about dealing with tacit information, not transactional data.

Figure 2 illustrates the use of a HIMS to support human work. Each of the participants, typically scattered across companies as we previously discussed, plays *multiple roles* in *multiple projects*. Such roles can vary from 'responsibility' for a given project to simply 'being informed' on other projects. The HIMS is used to add *structure* to collaborations, making them explicit. Collaborations can be structured around specific *goal-driven* projects or cases, but can also be used to add structure to ad-hoc collaboration, taming what is now 'in-box hell' . Just consider the 'global CC: nightmare' wherein people just CC:/FWD: emails to each other randomly, rather than taking proper responsibility for sorting out issues.



No, I haven't forgotten that today's companies are complex and depend on their IT systems. Thus we can now take Figure 2 and surround the people involved in human collaboration with the 'background' IT systems that are embedded in most organizations, as shown in Figure 3. To many in a typical organization, they have to get their thinking and decision-making work done in the context of, and often while maintaining, a host of often disparate enterprise systems as illustrated in Figure 3. Such is the case for, let's say, a sales manager who must do the real work of collaborating with customers, suppliers and sales people, while also feeding and caring for the CRM machine. But because, as Forrester Research points out, 85% of all business processes involve people, and because human-driven processes have not been fully addressed in the majority of today's BPM systems, I simply started with people in this discussion. After all, as John Seely Brown once pointed out, 'processes don't do work, people do.'

Modern Businesses Depend on Multiple and Disparate IT Systems



There are essentially two ways people are involved in business processes:

1. as cogs in a workflow where they are asked to 'approve' or 'not approve' predefined next-steps, or 'do this task' or 'post this transaction,' or 'escalate this problem;' and
2. as knowledge workers and decision makers going where no routine, transactional process has gone before: not simply operating today's business, but charting tomorrow's course, or addressing major disruptions in the industry.

The first case, cogs in a workflow, is handled reasonably well at present by workflow systems – except, that is, for the 20% of special cases that actually consume 80% of your resources! This is of deep concern to telcos, for instance, who are struggling desperately to control the costs of resolving line faults that cannot be dealt with automatically and thus go to manual 'case management' mode – costing some telcos millions of dollars.

In the second case, the knowledge worker/decision maker has little support whatsoever from workplace applications at present. What they need is a new kind of interface to their existing tools that allows automated integration of knowledge work with routine business processes handled by heritage workflow, BPM, and ERP systems – and increasingly Web 2.0 technologies.

Yes, people are a part of almost all processes, excepting straight thru processes (STP) such as financial trade or other routine transactions. It's the 'non-routine' that drives competitive advantage, and that's what human-driven business processes are all about. Indeed, shouldn't this class of process be paramount in any business? After all, the routine, operational processes are commodities, and who wants to be a commodity player in today's hypercompetitive global marketplace? Michael Hugos writes in his new book that companies should be 'efficient enough', but the real prize is responsiveness. Being responsive to changing market conditions, competitive threats and new market opportunities is what successful business is all about. And, that's all about people and how they collaborate to innovate.

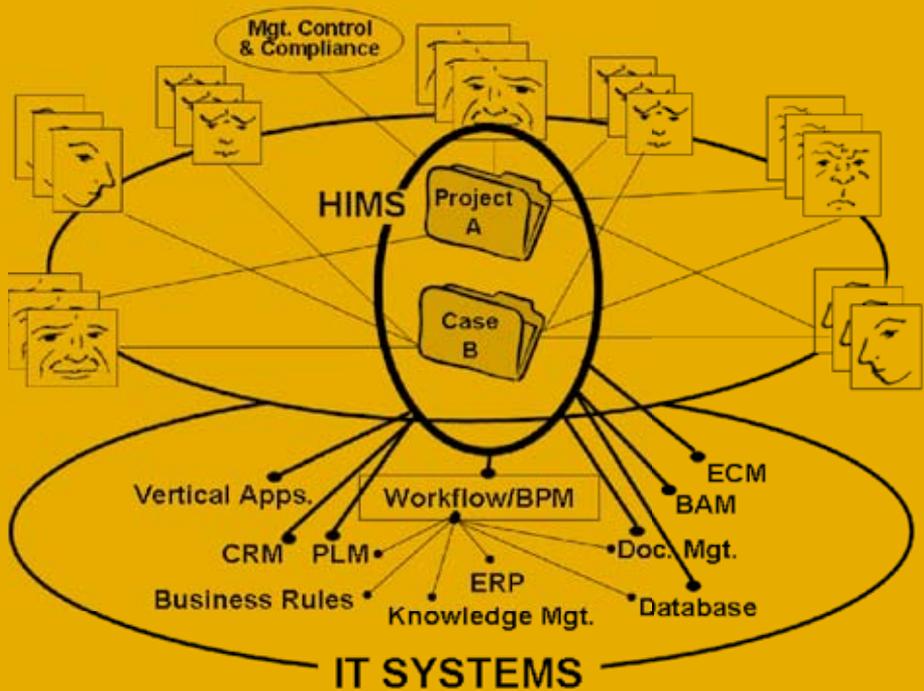
We still need continuous process improvement via workflow and integration-style BPM, and many companies are just now coming to grips with these process-oriented IT systems. Service-oriented architecture (SOA) and Web 2.0 MashUps have enabled great advances and are currently all the rage. But SOA, by itself isn't enough. BPM pioneer, Ismael Ghalimi, said it best, 'BPM is SOA's killer application, and SOA is BPM's enabling infrastructure.' Human interaction management pioneer, Keith Harrison-Broninski takes that notion one giant step forward, 'HIM is BPM's killer application.' SOA is primarily in the domain of IT analysts. BPM is primarily in the domain of business analysts. HIM is primarily in the domain of business people themselves, providing support for the way humans actually work and interact with one another.

Figure 4 ties together the two worlds of human interactions with the surrounding world of IT systems. The HIMS puts heritage IT systems in their proper place, for humans don't work together in isolation from their IT Systems (even though many wish they could). The HIMS is not a replacement for workflow/BPM any more that business rules management systems (BRMS) or a business intelligence systems (BI) are. They are orthogonal. They are complex systems in their own right, and in their own domains. But just as a BPM system can fuse disparate IT systems into

end-to-end business processes (esp. with the help of Web 2.0 services and SOA), the HIMS must have the capability to fuse workflow/BPM and other heritage systems into the 'information base' managers and knowledge workers use when they collaborate via human-driven processes.

Figure 4

The Relationship Between HIMS and Heritage IT Systems



The HIMS can help keep non-routine work activities in context (telling everyone 'what's going on,') and can change the way executives, line managers and high-value knowledge workers manage their work as they guide the business into the future. But for all this to come about, the design of an enterprise-class HIMS must incorporate the underlying computer and social sciences that reflect how humans actually interact together. They must have the underpinnings of:

- negotiate-and-commit speech acts, so that agreements, not just information can be tracked, and so that human-driven processes can be redefined as they emerge/evolve over the lifetime of the process,

- role activity theory, where human interactions, not computer interactions, can best be modeled,
- distributed computing techniques to cope with multiple and dynamic asynchronous communication channels, allowing a given human-driven process to be redefined as participants in that process are dropped in or out,
- multi-agent systems, where collaborating software agents use their own unique business rules and knowledge sources,
- cognitive science models (such as REACT/AIM) that reflect how knowledge workers think and act,
- choreography methods for handling interactions with process participants, including stable, operational processes in heritage IT/BPM/Workflow systems,
- private information spaces, where versioning and shared access are under the control of the participants that own the information, work objects and even processes, and
- other ingredients that make computer-supported collaborations reflect real-world human interactions?

Of course, these underpinnings should never be seen by business users of such systems, just as relational algebra isn't seen by business users of modern database systems. But they had better be there, else the HIMS will not be flexible enough for adaptive and dynamic collaborations in which the interaction patterns cannot be anticipated. Such collaborative processes include creative, innovative human activities such as research, design and multi-party project/case management. The activity sequencing of these processes cannot be prescriptively imposed. Why? The contracts of interactions, deliverables and business rules are continually renegotiated during the life of the process: emergent behavior, emergent processes. The HIMS pushes the envelop of the typical workflow/integration BPM approaches in managing these kinds of 'impromptu' processes.

Putting it All Together

With the onslaught of Web 2.0 technologies and already being surrounded with legacy IT systems that must be fed and cared for, today's workers are growing desperate. Now, more than ever before, there is a pressing need to come to grips with support for human interaction management for non-routine, knowledge-based workplace activities, and to address the desperation people feel when they are swamped by increasing demands and infoglut in today's workplace.

In ‘Linking Insight to Action: The Next Big Goal’ posted at *Intelligent Enterprise*, Doug Henschen reveals a real problem in business, ‘I’ve had a number of conversations in recent days around the theme of linking analysis to action. There’s lots of frustration out there, understandably, because managers and executives increasingly have plenty of tools that spot problems – reports, alerts, dashboards, KPIs, scorecards, etc. – but they’re not connected to levers that enable them to take action.’ Indeed, how do we connect the levers for action in light of Web2.0 technologies? To reach for Doug’s next big goal, we can turn to EDS’s Janne Korhonen depiction of the evolution of process management as shown in Figure 5 and relate that to how HIM can turn strategy into action:

- **Strategic Control:** the definition of aims and measures for each high-level process
- **Executive Control:** the definition of outline processes that include a mixture of Roles, Interactions and Users
- **Management Control:** adapting the outline processes into a form for initial execution and later ongoing redefinition of the process, along with executive feedback (e.g. dashboards, statistical reports)
- **Agreements:** contract of interactions, deliverables and business rules is continually renegotiated during the life of the process

To paraphrase Admiral David Farragut, ‘Damn the flowcharts, full business speed ahead.’ Flowchart-based technologies treat work as steps in a routinized process, and hence people as cogs in a machine. Because such technologies don’t ‘understand’ knowledge work, they can only mimic its superficial appearance as a sequence of tasks. Tasks are but the tip of the knowledge-work iceberg. It’s time to take insight, innovation and strategy into action. That’s about people and dynamic human interactions, not predefined workflow/BPM or the wild-wild Web2.0 technologies.

It’s time to go beyond assembly-line workflow.

It’s time to go where no routine process has gone before.

It’s time for the greatest innovation since BPM.

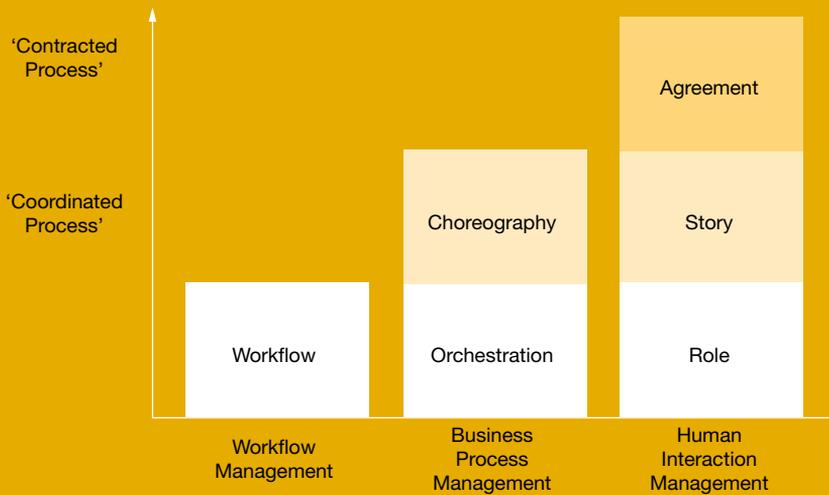
It’s time to tame and harness the bewildering Web2.0.

It’s time to go beyond the Information Age and on to the Process Age.

It’s time for human interaction management.

It’s time for Work2.0.

Evolution of Process Management



In the real-time age of globalization, the process-managed enterprise will dominate by implementing radically new means of support for human interactions, Work2.0. 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 will be 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.

After fifty years of coping with the limited tools at their disposal, it's time that interaction workers be supported properly by, instead of having to slavishly support, legacy computer systems, and now Web2.0 systems. It's time for Work2.0 to tame all the other 2.0s.

