



Human Processes

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Human Interaction Management

Synopsis

I thought it would be useful to try and summarize the ideas set out in this column over the last 12 months.

New standards such as Business Process Modeling Notation (BPMN), for process depiction, and the emergence of Service-Oriented Architecture (SOA) as an architectural style for enterprise IT, have led to mainstream adoption of Business Process Management modeling and accompanying automation techniques. However,

1. There is little evidence that current BPM deployments deliver significant Return On Investment (ROI), since most deployments are small-scale and tactical rather than enterprise-scale and strategic;
2. BPM/SOA deployments pose a business risk, since the necessary new management techniques are not yet well understood.

I suggest that, in both cases, the way forward for BPM is to integrate the routine processes amenable to application of current BPM techniques with “interaction work”:

1. High-level work such as organizational control and change;
2. Knowledge work such as R&D, sales support, team management, and customer service;
3. Sectors in which human activity is critical, such as healthcare, law, policing, and disaster relief.

Support for interaction work requires a framework for modeling and facilitating collaborative, adaptive human-driven processes. Such a framework is provided by the theory of Human Interaction Management (HIM), which shows how to

1. Describe processes so as to facilitate management of teams, communication, knowledge, time, and plans;
2. Automate processes involving human collaboration, even those that cross organizational boundaries.

Introduction of HIM into the enterprise, and its integration with both organizational strategy and mainstream BPM, is facilitated by an associated methodology, Goal-Oriented Organization Design (GOOD). I introduce the part of GOOD that shows how to describe human-driven processes and support them via software, thus:

1. Increasing individual productivity;
2. Improving organizational memory;
3. Aligning human work more closely with organizational goals.

Introduction

A report from BEA Systems published in March 2008 draws together their own market research with that from several analyst firms (Gartner, Forrester, and IDC) to conclude that “the BPM market is quickly growing and evolving, with a range of vendors and products spanning the market”.¹

However, the report is notable for what it omits – namely, a quantitative estimate of the Return On Investment (ROI) that can be expected from a BPM deployment. The closest the report gets is a table listing the “drivers” from which CIOs expect to get the greatest ROI.² The last major research reports to provide ROI estimates were from Butler Group and Gartner, both in 2004. Butler Group was dismissive of the financial return on a BPM project:

“Whatever the size and scale of the BPM implementation, companies are advised not to believe vendor hype and be prepared for little or no ROI.”³

By contrast, Gartner estimates were more optimistic, stating that BPM does deliver ROI:

“78% of the BPM projects [in the survey] yielded an internal rate of return (IRR) of over 15%.”⁴

However, while 15% makes a BPM project worth doing, it does not make it very exciting – especially when one considers that (for example) a high street High Interest Savings Account can deliver over 7% capital appreciation per annum.⁵

The underlying reason for the low rate of return on technology originally heralded as “disruptive” is that the level of disruption is too small-scale. The management techniques that underpin current BPM deployments, such as Lean and Six Sigma, derive from principles that have been standard practice for over 50 years:

1. Scientific Management, from the 1910s (Taylor);
2. Statistical Quality Control, from the 1930s (Shewhart);
3. TQM / Hoshin Kanri, from the 1950s (Juran and Deming).

These techniques were designed for the improvement of production processes – routine and repetitive work such as manufacturing. 50 years after the emergence of these techniques, most organizations now do production processes in a reasonably efficient, and often standardized, fashion:

“The main area of benefit is BPM's ability to increase the efficiency of a core business process. However, in reality, most processes have already been made efficient over time.”⁶

Further, production processes are only a part of any organization's activity. The remainder, human-driven processes, is based on humans collaborating and innovating:

1. High-level work such as organizational control and change;

2. Knowledge work such as R&D, sales support, team management, and customer service;
3. Sectors in which human activity is critical, such as healthcare, law, policing, and disaster relief.

By some estimates, human-driven processes constitute the larger portion of organizational activity. For example, take customer service. The exceptional cases typically consume the most resources – by Pareto's rule, 20% of exceptions result in 80% of the cost, and for many organizations the number of exceptional cases is much higher than 20%.⁷

It is possible to quantify to some extent the total amount of human work. By focusing only on the second category above (knowledge work), and ignoring developing countries (for which statistics are not readily available), we can calculate the total number of knowledge workers in the US and Europe as follows:

1. Estimates of the proportion of knowledge workers in the US economy vary from 59%⁸ to 80%⁹ - here I assume 59%. The size of the US workforce in 2004 was 138.5 million¹⁰, giving 81 million knowledge workers in the US.
2. A report prepared for the Knowledge Economy Programme in November 2007 concluded that "in 2005 just over forty per cent of the European workforce was employed in knowledge based industries as defined by Eurostat"¹¹ – here I assume 40%. I take the size of the European workforce from Eurostat figures for 2007 as 235 million (the "Active population" out of a "Total population" of 487 million)¹², giving the 94 million knowledge workers in Europe.

This gives a total number of knowledge workers in the US and Europe alone as 175 million, a significant number by any standards.

The importance of human-driven processes is not just about staff numbers, however. Management of production processes focuses on *efficiency* – reducing time and cost. It is human work that delivers *effectiveness*, resulting in high customer satisfaction and (for private sector companies) market leadership. The true rewards of BPM deployment come from extending its reach beyond small-scale, tactical improvements of production processes to enterprise-scale, strategic activity.

Human activity is also critical in the management of process improvement itself. Following a recent large SOA/BPM project at Deutsche Bank, the board member responsible for the project said:

"We underestimated how large a transformation this could be; that is, going from vertically-aligned IT operations environment to something that's trying to make much greater use of shared assets. It's not just about teaching developers how to use web services. It's changing how the funding is done for shared services. It's putting governance structures in place. It's defining engineering and process standards. It's creating new roles where you have actual process analysts; roles that just don't exist today."¹³

The complexity of process implementation is such that it needs to be controlled using the same principles that are used to manage organizations at a high level; for example, via Balanced Scorecard.¹⁴

Other potential problems are more subtle. For instance, the Dutch Government has created a business process in BPMN that includes over 250,000 independent steps.¹⁵ This represents a vast, complex piece of business software, and the chance of it being perfectly correct is infinitesimally small. However, the tools used to build it include no testing features – only simulation features, which for such a large process are of little use. It is left to the users to detect (where possible) the bugs of all impact sizes that undoubtedly exist.

Human Interaction Management

Research shows that knowledge workers typically waste 28% of their time due to poor control over interactions and information.¹⁶ Hence, supporting human work processes requires more than the extension of current BPM systems to support current working practices – creating ad-hoc collaborations, using email and adopting Web 2.0 tools. Human workers need a *formalized approach* that

1. Helps them achieve goals;
2. Structures the creation, maintenance, and re-use of knowledge;
3. Ensures the ongoing alignment of human activity with changing organizational strategy.

Support for work based on human interaction requires a framework for modeling and facilitating collaborative, adaptive human-driven processes. Such a framework is provided by the theory of Human Interaction Management (HIM),¹⁷ which shows how to describe processes so as to facilitate management of **teams, communication, knowledge, time, and plans**.

A further concern of HIM is providing software support for processes involving human collaboration, even those that **cross organizational boundaries**, via the definition of a new kind of software system, a Human Interaction Management System (HIMS). A HIMS is not a centralized state machine like current mainstream BPM software, but a *means to manage distributed objects*. An HIM process is a set of objects, each owned by a different player in the process. Each player uses an HIMS to do their work, and in the background, their HIMS synchronizes specific aspects of their own objects (such as Interaction messages) with those of their peers.

Note that it is possible to take part in a HIM process without using a HIMS: so long as one player is using a HIMS, the others can use email, for example, and the sole HIMS instance will ensure that the work is structured for all players according to the process definition.

A summary of HIMS features, and comparison with other approaches to organizational work management, is given below in Table 1.

Table 1. Summary of HIMS features and comparison with other approaches to work management

Software for Knowledge Work	Collaborate					Work					Manage																
	Decentralized, cross-boundary collaboration Deploys on any platform or device	Purposeful, context-aware messaging Allow colleagues to negotiate next steps	Change process definitions on-the-fly	Prioritize messages	Context-aware voice calls and Instant Messaging	Integrate with corporate email	Automatically file email attachments	Manage process participation on-the-fly	Define software for a process using a diagram	Validate process definitions	Generate standard process skeletons	Reuse template processes	Zero-coding forms to enter and maintain data	Define and apply business rules	Define tasks using a scripting language	Prioritize tasks	Recognize and support purely mental work	Adapt tasks to changing circumstances	Provide version control for documents and data	Support local and/or remote workspaces	Integrate with users' calendars	Facilitate management controls	Maintain audit trails for each process	Provide archive and purge facilities	Integrate with business intelligence	Track progress within each process	Call Web services
Document and Data Management																											
Shared Web Workspaces <i>e.g., Groove, Collanos</i>																											
Case Management <i>e.g., EMC, Global 360</i>																											
Document / Content Management <i>e.g., Alfresco, SharePoint</i>																											
Message Management																											
Language-Action Perspective <i>e.g., ActionWorkflow, Demo</i>																											
Role-Based Collaboration <i>e.g., E-CARGO</i>																											
Email Add-ons <i>e.g., Xobni, Nelson</i>																											
Project Management																											
Project Planning <i>e.g., BaseCamp, Zoho</i>																											
Project Control <i>e.g., Primavera, 4Projects</i>																											
Work Stream Management																											
Flowchart Tools - Wiki based <i>e.g., Itensil, Makna</i>																											
Flowchart Tools - Email based <i>e.g., Prolify, ActionBase</i>																											
Flowchart Tools - State based <i>e.g., FLOWer, Cordys</i>																											
Workflow / Human-centric BPM <i>e.g., Lombardi, Coghead</i>																											
Human Interaction Management																											
Human Interaction Management System <i>HumanEdj</i>																											

The starting point of HIM is with 5 observations that characterize collaborative human work. Since an organization is effectively a manifestation of long-term human collaboration, these “principles” apply to organizations just as to any other form of project or venture. Here are the 5 principles, along with their implications for any modeling framework that aims to capture human collaboration:

1. Team building

To create effective teams, it must be clear who is involved in a particular process, and what each person brings to the table. As a starting point, the identity, skills, experience, and personal characteristics of each person must be captured. It is then necessary to define each individual’s responsibilities, and negotiate their commitment to accepting these responsibilities.

The modeling framework must contain Role and User objects, both instances and types.

2. Communication

If people are to manage their interactions with others better, their communications must be structured and goal-directed. Within a process, there must be specific channels of communication for different purposes, each of which unifies messages transmitted via a variety of means (email, text message, FAX, voice-over-IP, etc).

The modeling framework must contain Interaction objects representing multiple asynchronous channels.

3. Knowledge

Organizations must learn to manage the time and mental effort their staff members invest in researching, comparing, considering, deciding, and generally turning information into knowledge and ideas. The people responsible for creating and managing this knowledge must be able to control its usage and distribution.

The modeling framework must contain Entity objects that can be created, versioned, and shared in a structured way.

4. Empowered time management

Humans may not sequence their activities in the manner of a software program, but there is always structure to human work, which must be understood and institutionalized so that it can be managed and improved. This means empowering people to choose and/or create their own work activities from an appropriate range, guided by understanding of organizational context (so that they can aim to deliver maximum value), and restricted by business rules that prevent contravention of applicable policies and standards.

The modeling framework must contain State objects that can both enable and validate Activity objects, along with the Roles that contain them.

5. Collaborative, real-time planning

Human activities are concerned often 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 are required, which people should be consulted, and so on. In other words, process definition is an intrinsic part of the process itself. It takes place via negotiation between all involved parties, and is not a one-time thing but happens continually throughout the life of the process.

The modeling framework must support manipulation not only of objects but also of user interfaces and integration mechanisms via the process that contains them.

HIM includes a notation providing the necessary elements. HIM also provides guidelines on use of this notation, by identifying a number of patterns resulting from the principles above, such as the REACT and AIM patterns that underlie any form of human activity (collaborative or not):

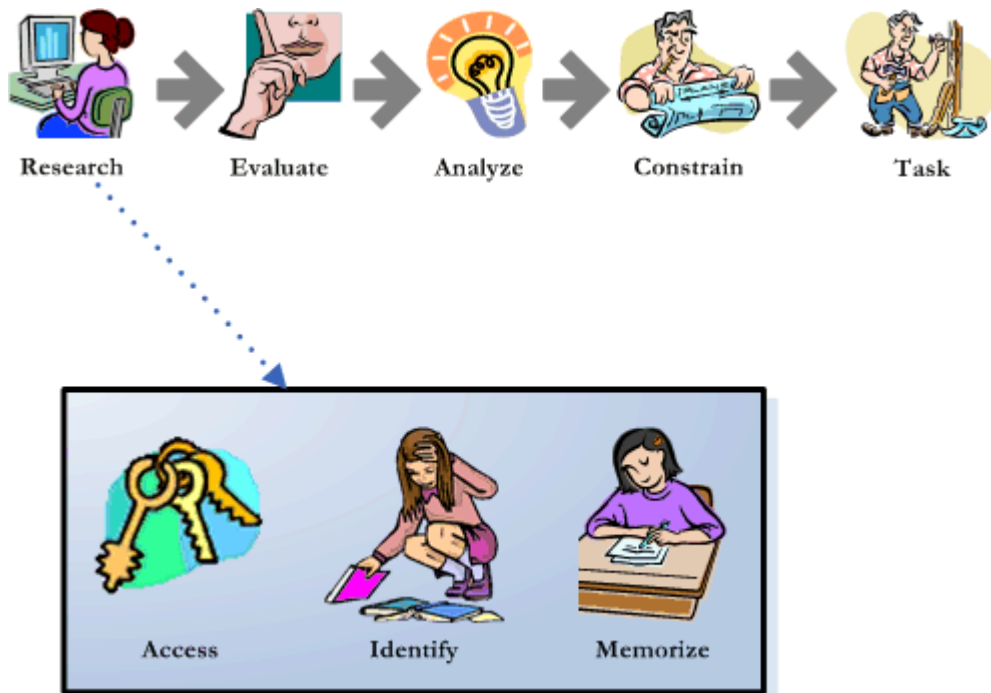


Figure 1. REACT and AIM

Discussing the stages of REACT in turn:

1. **Research**
Map out the terrain, investigate the principles, talk to those in the know, locate potential threats, and so on, in order to gain information from external sources, and turn it into personal knowledge. The external sources may be close at hand – members of a “community of practice,” for example, as discussed below. Alternatively, information may be acquired from an impartial expert in the field, a textbook, or a search on the Web. The details are different every time, but the principle is the same. Before you can start to work on something, it is only common sense to find out what you are getting yourself into.
2. **Evaluate**
Step back and consider the knowledge thus acquired. Internalize it, in a sense, by making connections between different opinions or facts. Once you have discovered the general lay of the land, you then need to familiarize yourself with it. You may need to carefully read a pile of papers on your desk, or to mull over some advice that you don’t yet understand. This stage may take minutes or years, but it is crucial: There is no point doing an investigation unless you make an effort to take on board the information you gathered.
3. **Analyze**
On the basis of your new-found understanding, decide on an approach to the problem. In general, the approach you settle on may result partly from applying logic to reduce the problem to more manageable sub-problems – and partly from an intuitive judgment on what feels “right.” The balance varies both with the type of problem and with the type of person trying to solve it. However you arrive at a conclusion, though, the decisions made at this stage are not necessarily a final say on the matter; they are simply a way forward for now, enough to let you proceed further with the work in hand.

Sometimes it is hard to be sure whether you are doing the right thing, so you might choose a way forward that hedges your bets – following multiple paths at the same time, in the hope that at least one will work – or decide only on the first few steps, and leave decisions about other steps for later. But you have to make some kind of decision at this point, at least on how to start.

4. **Constrain**

Divide the work into separate chunks, and organize them. This may be simply a matter of deciding an approximate order to do them in, or it may be a huge task involving all the techniques of project planning: dependency and impact analysis, critical path definition, re-resource allocation, budgeting, contingency planning, and so on. However, you are dealing with human-driven processes here, in which people rarely do things in the order laid down, and rightly see it as part of their work to determine how things should proceed. So this stage is not about defining “workflows,” in the sense of ordering activities into strict sequence; it is about laying down the constraints that govern the chunks of work, insofar as they can be understood at this point. Typically, constraints are of rather vague form – “Before you can promise a delivery date for a product, make sure the component suppliers can meet it” or “It is okay in principle to take on contract staff, as long as you’ve made a reasonable effort to resource the project internally first.”

5. **Task**

You have determined how to break the work into chunks, and handed out these chunks to appropriate people (including yourself, perhaps), so now all those concerned can get on with the tasks at hand. For a small job there might only be one chunk, and you might do it yourself. For a large one, this stage may involve many different people and organizations working together to deliver a product or service.

The first stage of REACT, **Research**, can be further broken down into a sub-pattern AIM, which describes any research activity:

1. **Access discovery services**

Decide where you will go to obtain information, and obtain any necessary authorization. This might be permission to contact someone, login details for a database, or funds to use some kind of finder agency.

2. **Identify resources required**

From the service(s) above, choose resources likely to be of interest. At this stage, you will have only cursory understanding of their content - what matters is that they seem likely to be useful.

3. **Memorize information obtained from particular resources**

It is important to focus on committing information to memory, even if the information is only the outline of an idea you will use later. Unless you have memorized information gathered at this first stage of REACT, it will be of no use in the following stage, **Evaluate**, for you cannot synthesize ideas you have forgotten, or would need to look up in order to understand. This stage is all about internalizing the ideas in question.

Similarly to the way REACT describes human work in general, AIM describes the particular activities of information discovery.

Taken together, the REACT and AIM patterns describe all human working behavior. The patterns capture the way that people respond to an assignment, fulfill a responsibility, achieve a goal – the way they *react* to the work they take on. REACT and AIM help simplify complex situations since the patterns can be repeated, overlapped, and nested in order to reduce any work assignment to the same fundamental stages.

HIM includes further patterns additional to REACT and AIM, for example:

- **Collaborative Transaction**
An archetypal structure for describing a stage of collaborative work – a project phase, for example. The structure includes initiating and concluding Interactions, separated by work Activities divided amongst several Roles. Collaborative Transactions can be nested.
- **Levels of Control**
A natural division of responsibility and authority between Strategic, Executive, and Managerial Roles. In brief,
 - **Strategic Control** is about identifying goals and measures;
 - **Executive Control** is about identifying key Roles and Interactions;
 - **Management Control** is about constructing, implementing, supporting, and reporting on an executable process.

Goal-Oriented Organization Design

Introduction of HIM into the enterprise, and its integration with both organizational strategy and mainstream BPM, is facilitated by an associated methodology, Goal-Oriented Organization Design (GOOD). GOOD differs from mainstream BPM methodologies in being *derived from an underpinning set of consistent principles*, which are those of HIM itself.

GOOD supplies a step-by-step method for applying these and other patterns to human work, by starting from a basic observation - that the primary value delivered by humans to an organization lies in their ability to collaborate, adapt and innovate as required to deal with changing and unexpected circumstances. As described above, human-driven processes are not precisely repetitive – rather, they typically evolve during usage, as the participants repeatedly collaborate to agree on next steps.

Hence, GOOD emphasizes *effectiveness over efficiency*. Human work should not be managed using the narrow measures of waste and cycle time typically applied for improvement of mechanistic processes. Rather, people at all levels of an organizational hierarchy must have some leeway to judge for themselves the most effective actions according to circumstances. Hence, GOOD focuses on enabling structured, partial decentralization of management authority while ensuring continued alignment with strategic organizational goals.

In particular, GOOD supports process and service development, maintenance and improvement via governance processes – human-driven processes defined using HIM notation, and inter-related via HIM Levels of Control. GOOD governance processes apply quality techniques drawn from HIM principles – metrics and indicators that measure the effectiveness of a process by tracking how well it makes use of the humans involved.¹⁸

There are 3 key stages of GOOD, which taken in turn provide 3 complementary views of organizational life:

1. **Top-down**

"Process Architecture" defines business strategy via a network of interacting high-level processes;

- First, draw up a process architecture to unite business goals with business processes. This is a *sine qua non* - unless you start here, you will be building a house on sand. Goals are the true and only foundation of business activities - profit is simply an enabler.
- Assess the processes in your architecture to see which are strategic, which are tactical, and which are operational.
- On this basis, refine the architecture to reflect your organization's long-, medium-, and short-term goals.

2. **Middle-out**

"Levels of Control" separate process governance into **Strategic, Executive, and Management**,

- Use HIM "levels of control" to assign strategic, executive, and management responsibility for processes, and gain commitment from the right people.
- Assess the interactions between processes in the new architecture to decide which processes can and should be outsourced.
- For those processes you have decided to manage internally, apply HIM techniques to make best use of the humans in your organization at all levels of the organization chart – not in order to downsize your people away, but, rather, in order to leverage the skills you have on board.

3. **Bottom-up**

"Stories" represent collaborative work processes that the participants evolve on-the-fly as part of the work itself.

- Roles representing goals and responsibilities;
- Users representing commitment to playing Roles;
- Interactions representing long-lived, purposeful communications between Roles.

Respond to Request for Proposal

I will introduce the part of GOOD that shows how to describe human-driven processes and support them via software; in other words, I focus on HIM process modeling notation. I illustrate the essential characteristics of HIM notation via a comparison of how simple process examples might be depicted (if possible), using the standard mainstream notation BPMN.¹⁹

As a first step towards exploring the depiction of human-driven processes in BPMN, I will use a very common process – responding to a Request for Proposal (RFP). Here is a simplified version of this work in BPMN:

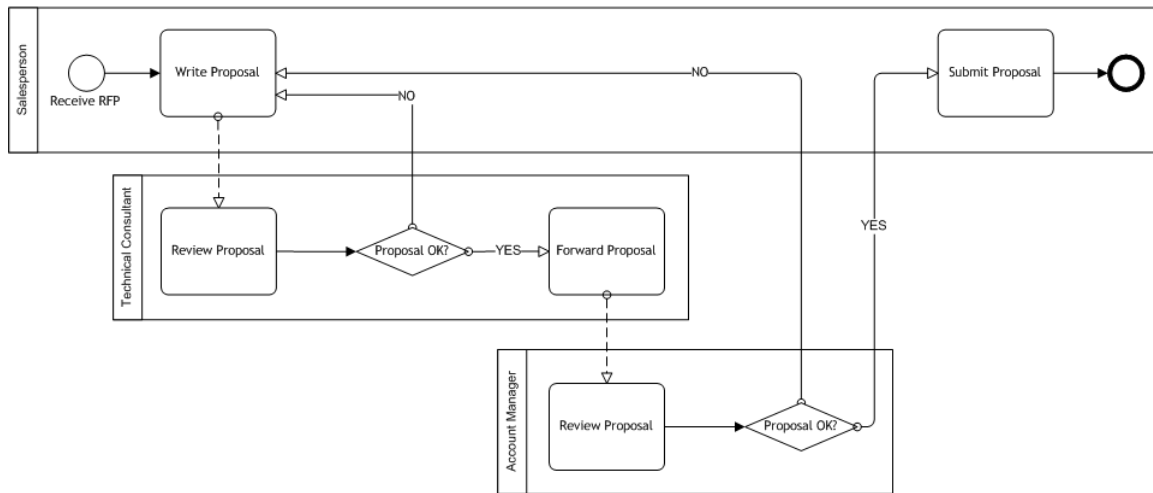


Figure 2. Respond to Request for Proposal (An attempt to capture the process using BPMN)

From a manager's perspective, there are several important questions about this process. The process as shown could be carried out exactly as depicted, yet completely fail to deliver what the business needs. Whatever an organization's "process maturity level" and however sophisticated its BPM software, implementing the process without answering these questions is more likely to harm the business than to improve it. However, the diagram itself offers no hooks on which to hang the answers.

Taking these questions in turn:

- *What are the goals and responsibilities of each player?*
A BPMN lane or pool is simply a grouping of activities; it is not an organizational role, with associated goals and responsibilities.
- *How can the Salesperson know what the others are looking for?*
Starting from a diagram such as this, the proposal author is effectively working blind; he or she has no idea on what basis the work will be reviewed, or even by whom.
- *To what policies and regulations must the players adhere?*
The diagram shows no indication of organizational context – to what conditions the proposal must conform.
- *What skills, experience, and personality type should each player possess?*
Encoding processes in standard format can be dangerous; without providing any information about the players, it gives the false impression that the work is somehow independent of the people carrying out the activities.
- *What if the Salesperson needs help from another Salesperson to write the proposal?*
If the proposal turns out to be too much work for one person in the time available, they may need to share it with someone else, but the diagram offers no means to achieve this.
- *What if the Salesperson needs to discuss matters with the others?*
The most efficient way to prepare a document draft is to allow communication with

reviewers prior to submission, but BPMN does not allow the depiction of interactive, multi-party communication channels, only one-off messages sent from 1 pool to another as part of a workflow.

- *What if other work, apart from document writing, is necessary to prepare the proposal?*
Writing the proposal document is actually the tip of the iceberg compared to the research, evaluation, and analysis that underpin the document. Such activities tend to be hard to predict in advance, yet BPMN makes no allowance for on-the-fly adjustment to the process.
- *What supporting information is needed?*
It is critical to supply each player with the reference material they need, yet BPMN allows artefacts to be associated with a process only as activity inputs/outputs.
- *How is material containing that supporting information made available to the participants?*
It is not enough just to show reference material; the players need to know what form it is in, where to find it, and how to access these locations (account details for a technical journal subscription, for example).

In summary, anyone who has ever prepared a proposal in response to an RFP will see immediately that this diagram is totally unrealistic - the real world is neither as simple nor as rigid as the workflow depicted. BPMN is a fine process notation when used for its natural purpose, which is to capture routine work in which the only human activities are data entry and low-level decision making. Work suited to depiction using BPMN is automated, semi-automated, or so repetitive that one day it will be automated. Effectively, BPMN is a high-level software design notation.

When it comes to human knowledge work, a BPMN diagram simply does not contain the right information. Even if business people can be persuaded to try and understand a notation stuffed full of engineering symbols, a software design notation is the wrong tool to capture collaborative, adaptive, innovative human activity.

By contrast, given below is a representation of the same process in HIM notation:

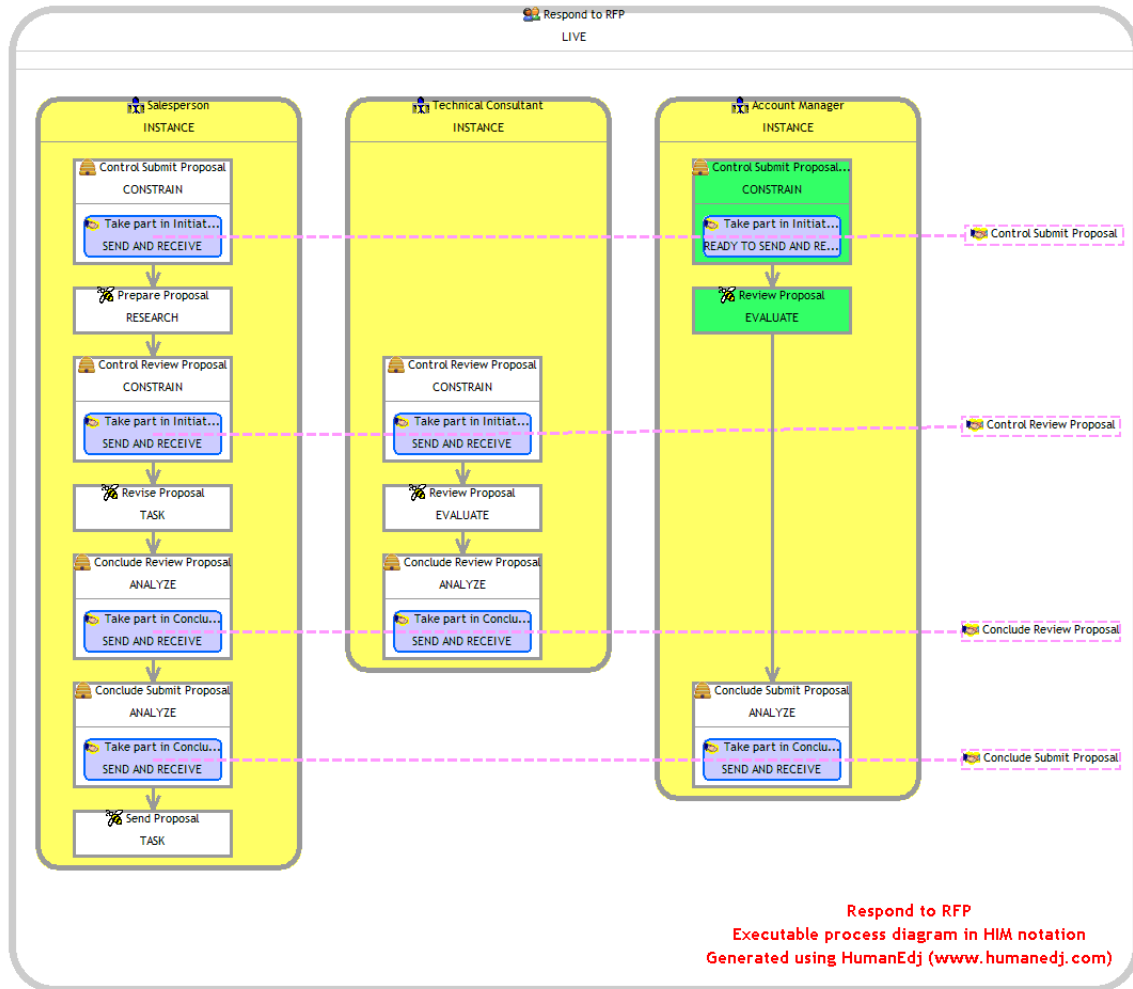


Figure 3. Respond to RFP (Executable process diagram in HIM notation)

The diagram looks quite different from the BPMN version, and those similarities that exist are superficial; the notational constructs are not equivalent. Here are some key aspects of the diagram:

- *Roles*
Instead of lanes/pools, as in a BPMN diagram, with documents/data floating about in thin air, each player in an HIM process has a Role – the vertical rectangles with yellow background. A Role is more than a collection of actions; it is a mini-workspace that provides you with a lot more than "things to do in a specific order." For a start, each Role has its own goals and responsibilities, which, by agreeing to play a Role, you commit to meeting. To help you meet the goals and responsibilities, each Role has its own private documents/data that you can update and share with colleagues when appropriate. A Role also contains business rules that help you decide when to do what, and that help ensure that your work stays in line with higher-level policies and regulations.
- *Interactions*
Instead of messages from one party to another, as in a BPMN diagram, an HIM process has Interactions between Roles – the purple, dashed, mainly horizontal lines.

A HIM Interaction is a purposeful communication channel, a means by which messages can be exchanged repeatedly and in any direction between any number of parties. Think of Interactions as "email plus process context," although any form of messaging can be used to implement an Interaction.

- *Collaborative Transactions*
 Instead of subprocesses, as in a BPMN diagram, a HIM process has Collaborative Transactions – stages or phases of a process, as highlighted in the marked-up version of the diagram below. Collaborative Transactions start with an Interaction between all parties (to establish the purpose of the ensuing work); contain various actions for each party; and conclude with another Interaction (to agree that the work is completed and to decide on next steps). Collaborative Transactions can be nested, as shown here, without introducing a hierarchical structure foreign to human interactions; in reality, people can talk to one another at any time, whatever part of a process they are supposed to be carrying out.

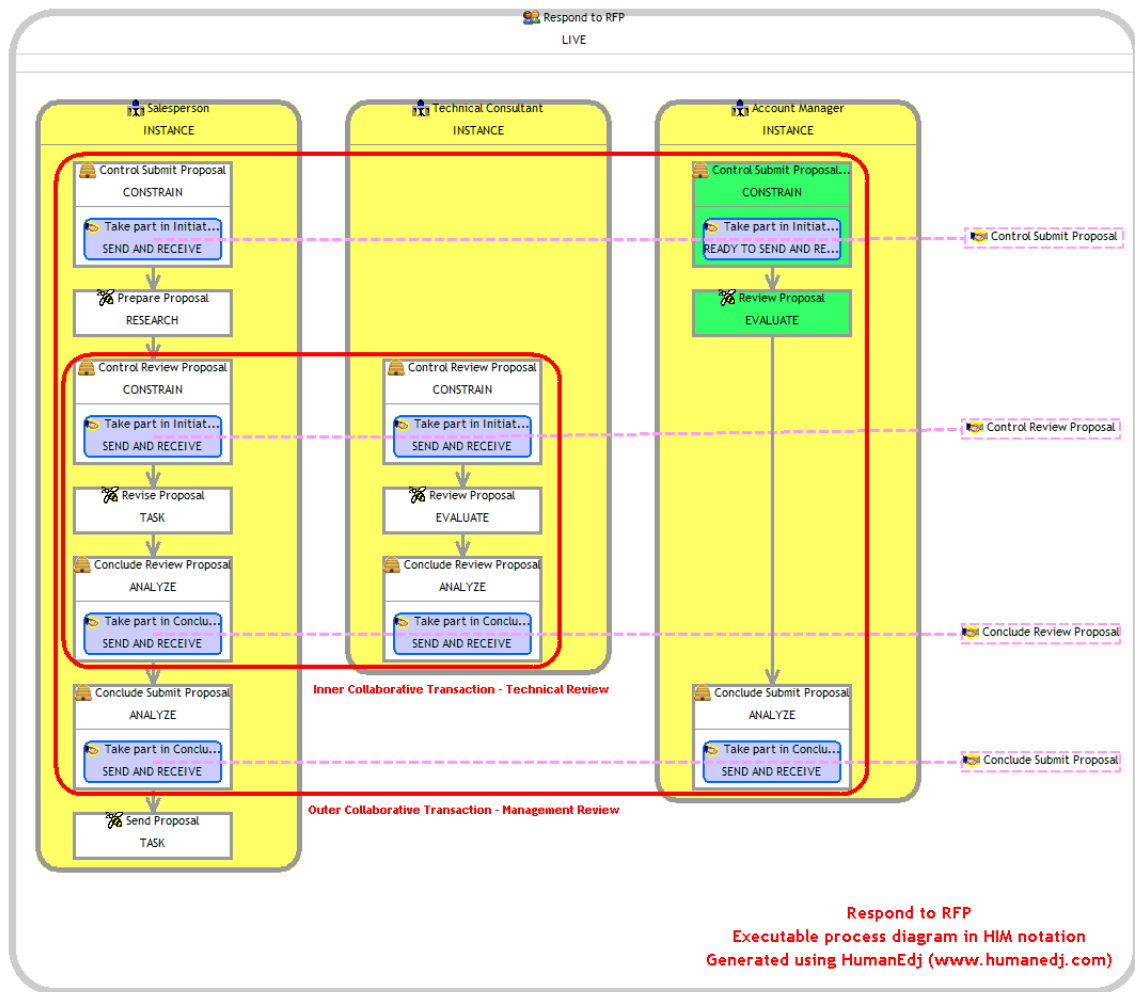


Figure 4. Respond to RFP (Executable process diagram in HIM notation) – Collaborative Transactions

In the HIM diagrams above, each Role (yellow rectangle) has the word **INSTANCE** underneath its name. This means that the Role is active in the process - it represents a real, working participant. Some Roles, however, are used differently. Here is another version of the HIM solution above to "Respond to RFP":

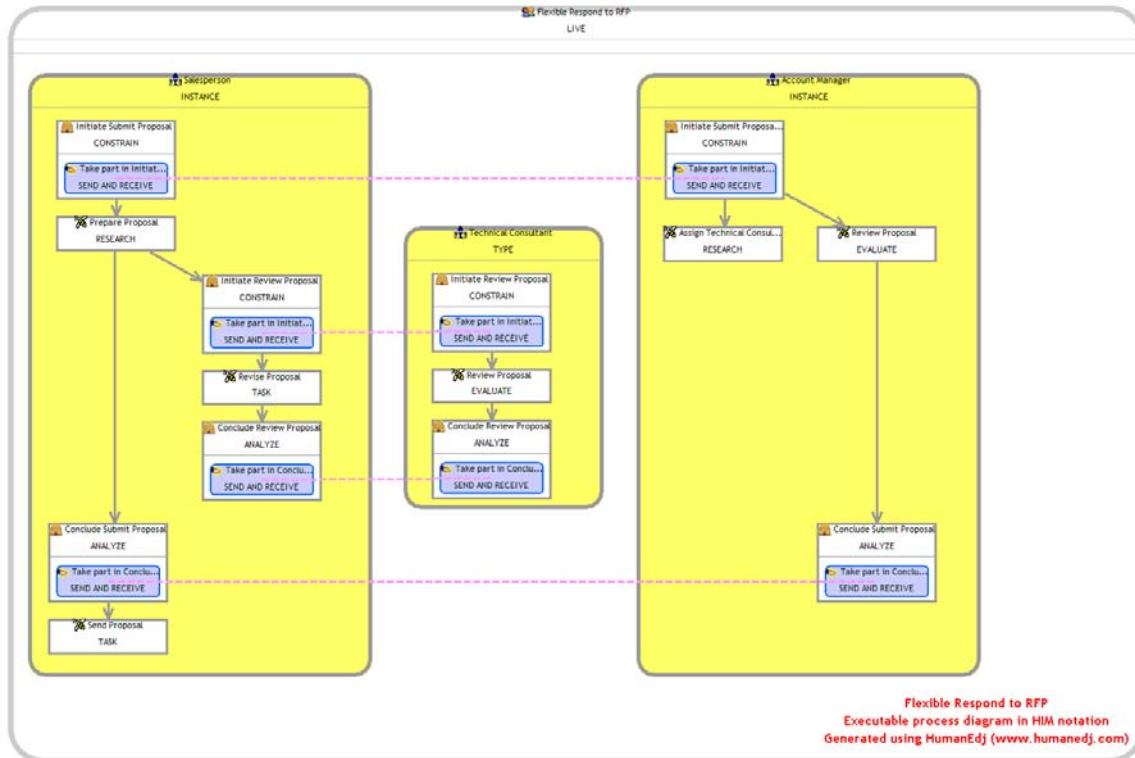


Figure 5. Respond to RFP (Executable process diagram in HIM notation) – Extended

Notice that this time the Technical Consultant Role is shown as a TYPE rather than an instance. Also, the Account Manager has a new Activity, to assign a Technical Consultant.

The new diagram reflects the fact that, in some cases, the Salesperson will not need technical consultancy; they will be familiar enough with the solution to be offered to the client that they can prepare the proposal unaided. In the new version, the Salesperson and Account Manager can discuss this via the **Initiate Submit Proposal** Interaction, and, depending on the outcome of that discussion, the Account Manager may or may not create an "instance" of the Technical Consultant Role "type."

To depict this in BPMN, one would have to create a swim lane for the Technical Consultancy work, and make all its activities optional in the process. In other words, work has been assigned but may never happen. Further, there is no explicit depiction of how the work will be assigned – under what circumstances, when, who by, to whom, the sort of skills and experience required, and so on. Critical aspects of human resource planning are omitted from the process – of necessity, since there is nowhere to put them.

Development of Branding Package

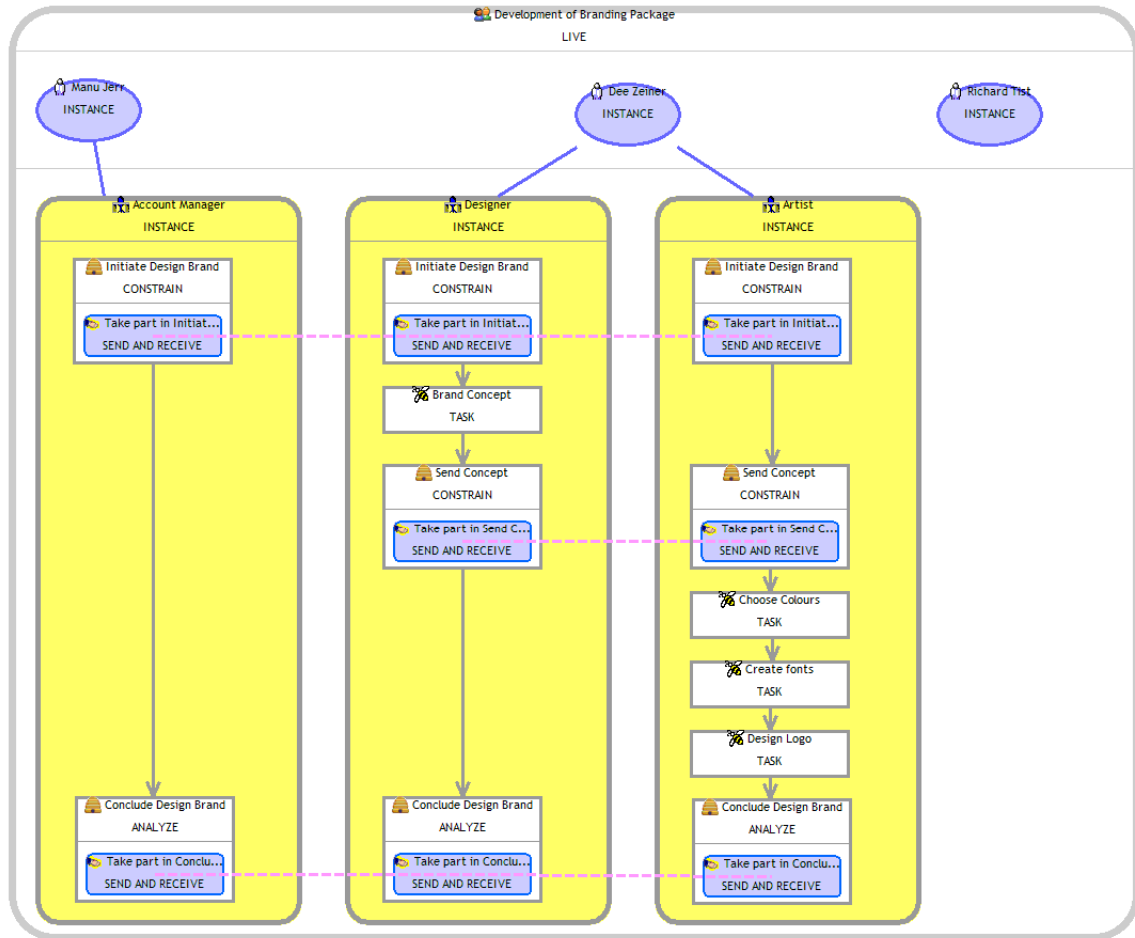
I consider another example process – development of a branding package (colors, fonts, logo, artwork, etc), in which

1. The account manager, designer, and artist throw ideas back and forward for review and debate (concepts, images, documents, etc) – usually, but not always, by email;
2. The same person acts as designer and artist at the start, but has the option of handing over the artwork creation to others if their workload becomes too heavy;
3. It is possible to add more artists as needed during the life of the process, all of whom participate in the same communications.

This process cannot be depicted in BPMN at all:

1. With regard to "throwing ideas back and forward," message flow in BPMN is limited to a single, one-way send from one pool to another. The send can be repeated if the appropriate looping constructs are used, but it is very hard to depict message flow between more than 2 parties, and any attempt to reproduce the flexible manner in which people exchange messages is doomed to failure. Mainstream BPMS software currently deals with this limitation by claiming that message exchange between colleagues is not really part of a work process; rather, they claim, it is an ad-hoc activity on which no structure can (or needs to) be placed. In other words, what is perhaps the most fundamental tool of knowledge work is relegated to be floating around under the organizational radar, in an unmanageable backwater.
2. With regard to "handing over work," BPMN has no concept of *who* does the work. It simply shows what needs to be done by someone or something. Hence, it is impossible to include in a process diagram any indication of the people, or sorts of people, involved. Again, fundamental aspects of knowledge work (acceptance and delegation of responsibility, capabilities, personal characteristics, and so on) are quite literally out of the picture.
3. With regard to "adding more" of a certain role, there is no means to achieve this in a BPMN process. It is hard even to imagine how the notation could be extended to support the notion, since the flowchart principles on which BPMN are based do not support such a concept. Yet human resource planning is fundamental to process management, as it is to all management. How is process software supposed to support human resource planning using a notation in which it is not possible to depict, let alone adjust, the resource levels assigned to a work package?

By contrast, here is a simple diagram using HIM notation that shows all the above constraints:



Development of Branding Package
 Executable process diagram in HIM notation
 Generated using HumanEdj (www.humanedj.com)

Figure 6.: Development of Branding Package (Executable process diagram in HIM notation)

As above, the *Interactions* show message exchange between the 3 parties to the process. Messages can flow in any direction, repeatedly as necessary.

As above, the yellow rectangles are *Roles* in the process. This time another construct is shown – the ovals at the top are *Users* of those Roles (the User section was collapsed on the previous HIM diagram). At the start, Dee Zeiner is playing both the Designer and the Artist Roles. However, the diagram includes an extra User, Richard Tist, to whom the Artist Role can be reassigned during the process if Dee takes on other work and has to delegate.

Finally, should it become necessary to add another Artist as extra resource, this can be done in a HIMS simply by right-clicking on the Artist Role and asking for another one. The HIMS will prompt for the details of the person to be assigned the work and then duplicate the Role, automatically assigning the new Role to the new person and including the new Role in the same Interactions as the current Role.

There are many other aspects of HIM notation that make it more suitable for collaborative, adaptive human work than BPMN. For example, consider the following aspects of the process above:

- The Artist must create a draft set of colors before starting to create fonts.
- However, once they have created a draft set of colors, [the semantics of an HIM diagram mean that] they can repeat and interleave the color and font creation activities as they wish.
- Similarly, they must create a draft set of fonts before starting to create a logo.
- However, once they have created a draft set of fonts they can repeat and interleave the color, font, and logo creation activities as they wish.

These aspects of the process are simple common sense. However, it is extremely hard to depict in BPMN, requiring very artificial constructs in order to show (for example) how the Artist can go directly from colour creation to logo creation only once they have created fonts.

Unlike people, a flowchart has no memory. A HIMS does, however, and organizations need a memory too.

Conclusion

BPMN is a symptom of a deep problem with BPM, which is that its management practices completely ignore leading management thinking since 1960. The great figures of the last half century – Drucker, Handy, Senge, and others – all pointed out that organizations are *systems* in which feedback loops cross boundaries. For the organization to operate effectively, people must collaborate in order to make real-time changes to running processes. This requires both visibility of what is happening at many levels and empowerment to implement such changes.

Yet mainstream BPM practice, as it currently stands, is based on describing an organization as a hierarchical tree of processes, starting with separate value streams/chains, and descending with inexorable rigor to routine, repetitive flowcharts more suited to enactment by CPUs than to enactment by humans. Such an approach is well suited to the factories with which Deming and Juran were concerned in 1950, but not at all to a modern, globalized organization in which a huge part of the work is collaborative human activity.

This paper illustrates some features of HIM that go beyond the capabilities of mainstream process and case management technology, even offerings that appear to be at the leading edge. HIM notation directly addresses five aspects of management with which organizations are currently struggling:

1. Teams
2. Communication
3. Knowledge
4. Time
5. Planning

Further, the current inexorable trends towards outsourcing, partnering, and sub-contracting as the fundamental means of doing business in a globalized economy mean that in each of the 5 aspects of management above it is critical to support decentralized, cross-boundary processes where there is not necessarily a single process "owner".

To meet these requirements, a new paradigm for process description is required, one that is based not on state machines – in which the process is a clockwork mechanism that moves from stage to stage, controlled centrally by a single engine – but on object models where a process is a set of objects in different domains; whose interaction and synchronization is controlled collaboratively by agents acting on behalf of each player. This new paradigm is what HIM notation, and the underpinning HIM semantics, provide.

As to why this is necessary, the global economy is undergoing a sea change for which the deep reason is simply the advent of the Web, with the consequent rise of "Asia, Automation, and Abundance." The only way to survive such change is to adapt, which means taking dramatic steps *early on*. For once, only the early adopters will survive; those that wait until new ideas have been fully tested will be out of business before they get a chance to put them into practice for themselves.

To meet the challenge of globalization, a conceptual breakthrough is required in business. Pareto's law tells us that the 20% of "exceptional cases" account for 80% of the costs - but it does not tell us *why*. To discover *why*, and deal with it, one must appreciate that "exceptional cases" are not *exceptional* at all; they are the norm, since they occur all the time. Further, the "exceptional" cases are what truly test your business practices.

To deal with the "long tail" – i.e., to operate efficiently and effectively in a globalized economy based on an explosive proliferation of niches – one must abandon the hopeful notion that business processes can be defined once, then run thousands of times with only minor change. One must create an operational environment in which change is not only possible, but structured, encouraged, and aligned with strategic objectives.

This means taking a much richer view of "process" – a view in which people, communication channels, knowledge, time, and plans are all managed along with the activities that are more easily visible, across multiple domains that include not only you and all your trading partners but also your customers. Bottom-up empowerment is not enough. Top-down control is not enough. Organizations need an enterprise management framework that supports both at the same time, using the same approach.

Change is never easy, especially under market pressure. However, at the start of the 21st century, there really is little choice. Improving routine processes, using current mainstream BPM techniques, only brings you up to the level of your competitors. To stay ahead, and stay in the game, you need to improve the human-driven processes that cannot be fully planned in advance, and you need to improve them on enterprise scale.

Author

Keith Harrison-Broninski has been regarded as an IT and business thought leader since publication in 2005 of his book *Human Interactions – the Heart and Soul of Business Process Management*.²⁰ Building on 20 years of research and insights from varied disciplines, his theory of Human Interaction Management (HIM) provides a new way to describe and support collaborative human work. HIM has been described as

- "the next logical step in process-based technology" (Chair of the Workflow Management Coalition)²¹

- "set to produce the first fundamental advances in personal productivity since the arrival of the spreadsheet" (Information Age)²²
- "the breakthrough that changes the rules of business" (Peteringar, author of *Business Process Management: The Third Wave, Extreme Competition*, etc)²³
- "the overarching framework for 21st century business technology" (bptrends.com).²⁴

Keith Harrison-Broninski is CTO of Role Modellers, whose mission is to develop understanding and support of human-driven processes across industry – the field that Keith pioneered. Their product, HumanEdj, is the reference implementation of a Human Interaction Management System and leads the industry in computerized support for innovative, collaborative human work.

More information about Keith and his work is available online.²⁵

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