



Human Processes

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Preparing for the Third World War

The other day my 10 year old son asked me about acid rain.

He is seriously worried about the condition in which our generation is leaving the world – more truly scared than many adults, who have gradually become inured to such concerns. His fear of eco-disaster reminds me of how people felt about atomic weapons in the 1960s, when the threat of global Armageddon was a new enough idea to keep people awake at night. Teenagers of my generation canvassed for CND and argued passionately about unilateral disarmament (now, there's a phrase one doesn't hear anymore).

My son also asked me whether people have to pay more if they throw away more rubbish. To my knowledge, businesses generally do but individuals generally don't, a state of affairs that makes no sense in the long term. Long before he should have to be worrying about such matters, my son feels impelled to start seeking solutions to environmental problems. No doubt many of his generation will get actively involved in the implementation of these solutions – as they are already doing at his school, where they are putting up a windmill in the playing field to generate electricity.

He and his peers have reason to be concerned, of course. At present, governments are just tinkering. The level of commitment required to really clean up the planet is akin to how Britain approached the Second World War – a fight for survival to which all possible resources are devoted. It was this single-minded war effort that created modern computing, via the work at Bletchley led by Alan Turing, and saw many other breakthrough technologies, such as jet aircraft and rocketry, cross the chasm into production use. Similar advances will be needed to fight the true Third World War, which will not be between nations or religions, but will be all of us against environmental damage.

The impact on business will be extreme. It is inevitable that new regulations will be introduced to govern many aspects of corporate behavior, regulations so stringent as to make Sarbanes-Oxley, et al., seem like a gentle hint from a kindly uncle. Hence, organizations have a choice to make. Should they carry on making token gestures towards ecological awareness – recycling paper, ensuring furniture fabric is made of renewable materials, and so on – and wait a few years for drastic changes requiring immediate implementation to descend like a bombshell? Or would it be wiser to start preparing now for a radical shift, a shift that will bring with it completely new modes of operation?

Here are the main changes to business operations that will be required in a few years:

- 1. Travel less**

Current efforts to replace some face-to-face meetings with tele- or video-conferences are simply papering over the cracks. True virtual working requires deep structural changes, which encompass everything from developing replacements for non-verbal behavior cues to encouraging home working.

2. **Get work done faster**

Every task uses energy, even if it's only the power required for the monitor of your computing device. So reducing your energy footprint means achieving the same results with less effort – i.e., working more efficiently.

3. **Leverage the cloud**

Shared server hosting brings massive economies of scale. So how much computation will move to the cloud? What, if anything, will stay local?

In this article I will look at some of the key operational changes ahead, and suggest how forward-thinking organizations can use **Human Interaction Management (HIM)**¹ and the associated technology (a **Human Interaction Management System**, or **HIMS**) to position themselves so that environmental responsibility puts only their competitors out of business.

Travel less

The combination of networked supply chains, business process outsourcing, and low cost aviation have generated an enormous increase in business travel during the last few years. The “road warrior” with millions of air miles is no longer the exception but, in many industries, the norm among knowledge workers.

The side effects of this trend include not only a boom in divorce law but also an energy cost that is unacceptable to an environmentally conscious organization. In an attempt to reduce this cost, many corporate offices now include video-conference facilities, often in the form of a room fitted out with screens, cameras, and a dedicated high-speed Internet connection. Is this making a real difference to the way in which people work with each other across the globe?

People who use such facilities know that they are essentially a makeshift replacement for face-to-face meetings. It is nearly always necessary to supplement video-conferencing with regular physical visits, to provide the vital human interaction missing from meetings conducted over the network. This is for 2 main reasons:

1. Cameras and microphones make it hard to interpret non-verbal signs – facial expressions, body language, gestures, glances, pauses, and a range of other subtle elements of human interaction that give vital context to the words spoken out loud. Without these non-verbal aspects of human interaction, misunderstanding or only partial understanding are common, resulting eventually in damage to the business.
2. It is very hard to build up personal relationships within a formal setting. The interaction you have with people when getting a coffee (or, better yet, in a social setting outside the workplace) is often what really makes you team mates. Of necessity, this interaction is absent in a virtual meeting.

Better technology may alleviate the first of these problems in the near future, but is unlikely to do much about the second. Assuming that globalization of labor is here to stay for the foreseeable future, what can be done to reduce the need to travel? The answer lies in a new approach to business process design and implementation – an approach that provides a process context for knowledge work as well as for routine activities.

¹ <http://human-interaction-management.info>

1. Better team building

Teams that are more harmonious from the start will have less need for informal bonding via after-hours drinking sessions.

HIM includes an extended version of a theory, originating with Meredith Belbin, that identifies characteristics that define what sort of contribution an individual makes within a team environment. The characteristics are divided into 4 categories of **Action**, **People**, **Cerebral**, and **Leader**, where the last category is added to Belbin's original theory by HIM. Each person possesses a different combination of characteristics, and an ideal team possesses the complete range of characteristics. Individuals tend to find it revealing and helpful to discover their own characteristics, since it explains why they have had team interaction issues in the past and what to do about them. Work process definition in a HIMS includes the identification of user characteristics, and the HIMS makes them visible as part of the process summary.

2. Formal team building by agreement

Teams in which there is a clear, shared understanding of goals, responsibilities, and commitments are less likely to break down due to restricted communication facilities.

HIM is based on the division of business processes into separate Roles, where a Role is much more than the grouping of tasks found in typical process notations (as in a BPMN swim lane, for example). A HIM Role includes not only data and documents, but also an explicit set of goals and responsibilities. By accepting the assignment of a HIM Role in a work process defined via a HIMS, an individual commits to meet the corresponding goals and take on the corresponding responsibilities. Acceptance is not mandatory – a HIMS allows Role assignment to be refused, or the goals and responsibilities to be re-negotiated prior to acceptance.

3. Longer-lasting teams

Teams that stay together for different assignments are able to carry over the bonds previously established, reducing the need to re-make such bonds for each assignment.

A HIM work process includes not only the definition of Roles, but also of the people (Users) assigned to the Roles. Previous work processes can be re-used as templates for new ones in a HIMS, with Roles and/or Users adjusted as required to suit each case. This makes it very simple not only to keep teams intact, but also to measure their performance as a *team* (i.e., independently of specific work processes), and take any measures necessary to optimize this performance by adjusting the team composition in future processes.

4. Encouraging location independence

Travel is conducted for working purposes not just between different offices, but between home and office. On balance, the environmental cost of the latter (the daily commute) may well be the greater of the two. Encouraging working out of the office would greatly reduce the environmental impact of corporate travel.

Not everyone likes or is suited to home working – many people need continual social interaction with their colleagues to feel motivated and part of a community. However, other people are more family-oriented, or just self-sufficient, and may find commuting provides nothing more than inconvenience. For such people, home working is a boon, and allows them a more fulfilling home and social life while simultaneously increasing the hours they contribute to their organization. However, many managers are reluctant to authorize home working for fear of being unable to control, monitor, and/or support their workers closely enough. HIM facilitates management interactions with their staff by providing a complete framework in which work can be designed, assigned, resourced, tracked, and adjusted – all in real-time, not as a retrospective activity based on periodic status reports.

There is no single magic bullet that can reduce corporate travel costs. Rather, several strategies need to be used in combination. HIM supplies the framework necessary to design work processes that utilize such strategies, and the HIMS provides the technology required to implement these processes.

Get work done faster

Every task uses energy, even if it's only the power required for the monitor of your computing device. So reducing your energy footprint means achieving the same results with less effort – i.e., working more efficiently.

However, while mainstream BPM is bringing efficiency improvements to the routine work in production processes via such methodologies as Six Sigma and Lean, it is unclear to many people how to achieve similar reductions in time and cost for the non-routine work in collaborative processes: What Peter Drucker called information work is often now called knowledge work, and HIM calls it **interaction work**.

To improve a process, you must first determine how it is currently taking place. In other words, you need to *understand* interaction work before you can make it happen more efficiently – and collaborative processes are very different from production processes, as anyone knows who has tried to apply the square peg of mainstream BPM techniques and notations to the round hole of interaction work.

HIM provides a complete theory of what interaction work *is*. Based on a set of 5 principles that characterize all human collaboration, HIM defines a complete framework for capture of any knowledge work process, along with specific patterns not only for the work itself but also for its management.

Using the framework does not require learning a set of complex new technical symbols. Rather, a HIMS such as HumanEdj², provides a tried and tested notation made up of simple boxes and arrows via which human collaborative process can be depicted. A Role is a vertical rectangle, Interactions between Roles are horizontal lines, and Activities are boxes in the rectangle (that may be joined by lines indicating precedence and/or connected to enabling/validating Rules):

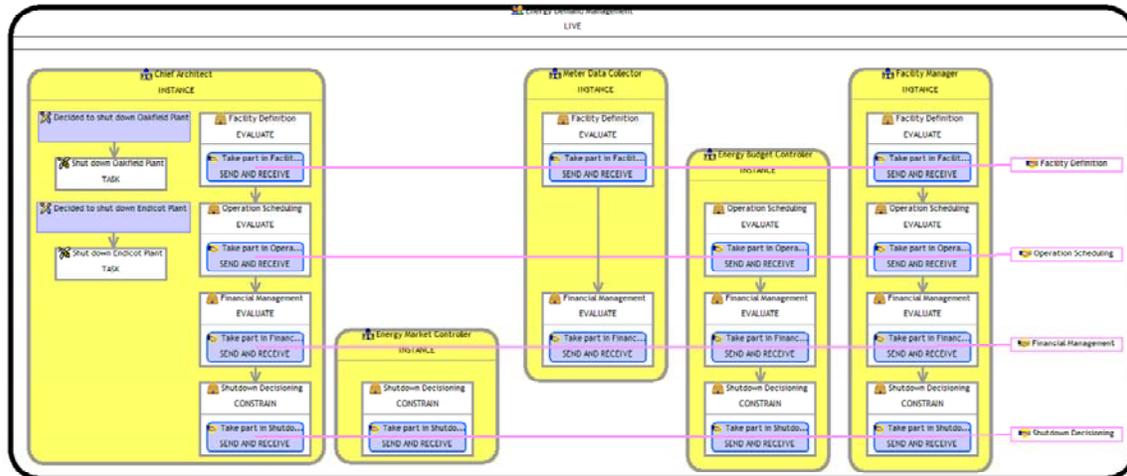


Figure 1. Overview of an outline Story for energy demand management

N.B. For a clearer view of this diagram, use the zoom in tool on this page in Acrobat.

Since a human-driven process is for execution by people rather than by machines, it is not necessary for the notation to include the same level of detail found in a computer program. A HIMS process says “just enough” to allow the people concerned to understand their work assignments, and for the HIMS engine to help them carry out the work to achieve their goals. Those parts of a HIMS process requiring automated execution (for example, a Web service invocation task, or a fully automated Role) can be fleshed out with the necessary detail without impact on the overall diagram.

Once a human-driven work process has been defined in a HIMS, it can be changed at any time by negotiated agreement among the participants. The HIMS itself includes facilities to make and implement such agreements, exposing and tracking them for management purposes. Typically, such agreements are made at the conclusion of each stage of a project or venture, in order to assess progress so far and decide how exactly the next stage will be carried out, within the context of a HIM pattern called **Collaborative Transaction**.³

² www.humanedj.com

³ http://www.ebizq.net/blogs/it_directions/archives/2007/05/taking_the_chao.php

Just as a mainstream BPM/BPMS approach brings production processes under control, the HIM/HIMS approach brings collaborative processes under control. Once this has been done, interaction work can be improved. Using the **Levels of Control** pattern integral to HIM, interaction work can be made not only more *effective* (delivering more value to the organization) but also more *efficient* (consuming less resources).⁴

Reducing the environmental impact of knowledge work means doing it better, for which it is necessary first to understand it. HIM techniques and HIMS technology provide the means.

Leverage the cloud

Server hosting brings massive economies of scale. The energy consumed by applications running in shared data centers where large servers host multiple virtualized operating systems is orders of magnitude less than the energy consumed by the same applications running on separate servers in each organization. In a modern data center, server capacity can be optimized to make maximum use of each machine's computing power, whereas a server dedicated to a single application (currently by far the most common scenario) uses far less than its maximum capacity:

"Typically today, with the powerful capabilities of modern 2- or 4-way servers, utilization figures are about 10-15% per server"⁵

Further, the effort required to maintain an enterprise IT infrastructure is significant. It is estimated that companies spend 75% of their IT budget on managing existing systems – upgrades, maintenance, and troubleshooting.⁶

So how much computation will move to the cloud? What, if anything, will stay local?

Analysts are in general agreement that cloud computing is on the rise. Amazon's "Elastic Computing Cloud" is going from strength to strength,⁷ and IDC predicts that software-as-a-service will achieve year-on-year growth of 30% until 2011,⁸ and Gartner predicts that by 2015 more than 75% of IT infrastructure will be purchased as a service from external and internal hosting providers.⁹

For the routine work of production processes, hosting technology is maturing – witness, for example, HP's recent research work towards the provision of adaptive cloud computing via their "Closed Loop Management Framework."¹⁰

⁴ http://www.ebizq.net/hot_topics/soa/features/7719.html?&pp=1

⁵ <http://xen.org/files/xenWhitePaper3.2.pdf>

⁶ "The End of Software: Transforming Your Business for the On Demand Future", T. Chou, Sams Publishing, 2004

⁷ <http://www.amazon.com/gp/browse.html?node=201590011>

⁸ http://www.idc.com/uk/prodserv/feature_article_2007-10-05.jsp

⁹ Gartner Research, June 2007, ID Number: G00148987

¹⁰ <http://www.hpl.hp.com/techreports/2008/HPL-2008-80.pdf> and <http://www.hpl.hp.com/techreports/2008/HPL-2008-85.pdf>

For the more flexible work of collaborative processes, however, the answer is more complex, since there are apparently contrasting trends in software support:

- Knowledge work depends on creation of *private*, locally stored information that is only shared when the owner is ready, an age-old approach encouraged by the increasing use of portable devices with facilities for creation and storage of messages, documents and data;
- This tendency is mitigated by the rise of various forms of Internet-enabled content management that make it ever easier to store documents on a central server.

It is likely that, for the foreseeable future, any cloud-based system to support for knowledge work must deal with both locally-stored and centrally-stored information. This is an obstacle to vendors with mainstream BPM systems who seek to adapt their tools to HIM, since such systems do not provide a way to handle local information – documents on your hard disk, text messages on your mobile, emails sent from your BlackBerry, etc.

A HIMS is different, being designed from the ground up to support all forms of information relevant to the process, wherever it is created and stored – and whatever happens to it thereafter. For instance, versioning and sharing are automatically taken care of in the background, as part of the process infrastructure – there is no need to design such features into the process, use additional tools to support them (although such tools can be seamlessly integrated with a HIMS), or worry about these aspects of document lifecycle when doing the work itself.

The bulk of enterprise computing will inevitably move to the cloud, to reduce both cost of maintenance and the environmental impact of server power usage. According to Forrester, 85% of business processes involve people¹¹ – so organizations that prepare their knowledge work support systems for the cloud via implementation of HIMS technology will be in a far better position to leverage the next step change in computing efficiency.

Take Away: Preparing for the Third World War

An organization seeking to become more environmentally friendly must prepare for radical change—change that goes to the heart of its operating procedures and management structure.

HIM and HIMS both simplify such change and reduce its risk. Improve interaction work for the sake of the organization bottom line by applying standard HIM techniques and introducing HIMS technology, and you will see environmental advantages drop out as a welcome side effect.

Of course, new management practices and new software systems are always a challenge, for any organization. However, the choice is straightforward. In due course, environmental pressure will force organizations everywhere to clean up their act. Either you act now, while there is still time to take it at your own pace, or wait and be forced to take it at a restrictive deadline under penalty from draconian governments fighting for their citizens' survival.

Knowledge work is the next frontier in the fight for the environment, and doing knowledge work better requires new techniques and new technology. Fortunately, unlike WW2, rocket science is not required—only HIM and HIMS.

Your children will thank you for fighting the Third World War on their behalf.

¹¹ <http://www.ebizq.net/topics/bpm/features/7462.html>

Author

Keith Harrison-Broninski is a researcher, writer, keynote speaker, software architect, and consultant working at the forefront of the IT and business worlds.

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