BPM in Context:
Now and in the Future

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1. Process Technology – put in perspective

Introduction

This paper looks at the various technologies that make up the burgeoning Business Process Management (BPM) market explores the impact new methods of deployment and design will have on products and how those changes could affect the end users. The paper also provides non-technical readers with a better understanding of what the all encompassing term "Business Process Management" means by explaining the following terms in detail:

- Business Process Management (BPMA)[1]
- Business Process Modeling (BPMO)
- Business Activity Monitoring (BAM)
- Business Operations Management (BOM)

We then draw the common threads together to give a concise picture of what process technology is all about. For completeness We will also take a look at the BPM standards world and try and make sense of what's happening and what impact that may have.

There are certain other technologies considered be a vital part of the BPM landscape for example:

- Enterprise Application Integration (EAI)
- Web Services (all aspects including orchestration)
- Business Intelligence
- Application Servers
- XML

But, despite their importance from a technology perspective, we are not going to explain them in this document and the reason is quite simple – they don't matter! They don't matter to the business user –the people who need to use technology to get some other business related task done, they see BPM as a way of managing cases or tasks in a predefined sequence; getting the right information to the right place at the right time to meet a business need. To them BPM is something that reduces the risk of error, gets tasks completed sooner and more effectively and makes the whole business or running a business easier and more manageable. The integration needs don't matter to them, Web Services could be anything and as for XML – who knows. We are only going to address those aspects of Process Technologies that the end user cares about – **getting the job done**.

One other component that was considered for inclusion in this paper was Business Process Measurement. Process Measurement is a vital aspect of any organization wishing to improve its execution of business processes – the constant feed back loop and process life cycles are essential if the project to address the process needs of the organization is to deliver measurable benefits, however, we decided not to go down the six sigma or TQM paths since it is outside the scope of this document. However, we do look at feedback mechanisms, simulation, instrumentation etc. later on in this paper as part of the future direction of the Process Technology world.

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[1] Abbreviations are those of the author – to try to differentiate one BPM from another

The Context

A good deal of the technology that underpins Process Automation concepts stems from the early efforts of the workflow community. Many of the offerings then were little more than simple document routing and integration tools. Companies such as Staffware, FileNet, Fujitsu, Global 360 (Eistream) and IBM have since spent much time and effort turning their software into full-blown, robust, scalable, transactional BPM products. These incorporate all the features and functions that are generally considered necessary to design, execute and monitor a wide range of processes. They can deal with anything from simplistic procedures through to highly complex line of business applications. Just as you would expect, these products derive from a wide range of underlying methods and architectures.

But before we can try to unravel where all the pieces fit, we need to clarify what Process Based Technology is (we will look at a definition of the basic components below). Well, it is not new. Business software has long supported major business processes. What *has* changed is the realization that business managers need to understand and improve those processes. This is the easiest way for their organizations to be competitive, adaptable and responsive and for them to manage costs. Using process-based software is the key to achieving that.

So we are not trying to solve any new problems – just to solve them differently. The old way was to create isolated 'stove pipe' solutions. These were rigid, difficult to maintain, costly to set up and, worst of all, obsolete by the time they arrived. We want to solve problems cheaply, quickly and effectively. How? By seeing those problems as a set of well-defined and integrated processes.

In May 2003, Nicholas Carr wrote a paper for the Harvard Business Review[2] in which he argued that it is a mistake to assume that as IT's potency and ubiquity have increased, so too has its strategic value. What makes a resource truly strategic –– what gives it the capacity to be the basis for a sustained competitive advantage –– is not ubiquity but scarcity. You only gain an edge over rivals by having or doing something that they can't have or do. By now, the core functions of IT –– data storage, data processing and data transport –– have become available and affordable to all.

Carr's article spawned a "may-bug"[3] industry of counter argument and rebuke – books were written, behemoths were angered – so this paper is not going to enter the fray except to say that what if Carr is right? Buying more IT simply keeps you in that game? What that means of course is that if an organization is only going to get to a "me to" position by spending vast sums on IT infrastructure then they need to look at what it is that will give them the edge and apply technology to that aspect to gain the competitive advantage – the obvious candidate is process – the way you do things – the backbone of your organization.

Applying IT to process technology is going to give you that competitive advantage; it will show a return on the investment – it will keep you in front – and that is where the value will come from – and that is what I believe the Process revolution is all about.

2. What Process Technology Comprises

The components

What are the basic components that contribute the ability of manage, monitor and automate core business processes?

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[2] Harvard Business Review, Publication Date: **May 1, 2003 Author(s):** Nicholas G. Carr **Type:** Harvard Business Review Article

[3] Driven purely by the instinct for self-preservation and thankfully short lived

Business Process Management

Dave McCoy of the Gartner Group encapsulated the essence of what BPMA is back in March 2001 when he said: **"…a blending of process management/workflow with application integration technology … to support rich human interaction and deep application connectivity."**

I would go a stage further and define the technology thus:

> **"Specialist Rapid Application Development Software for:-**
>
> - **the automation of rules based processes**
> - **routing of documents, information and tasks**
> - **within and between organizations**
> - **in a timely manner**
> - **fully integrated with complementary technologies and legacy systems**
>
> **for significant, measurable benefits."**

So BPMA is a piece of technology that allows us to create a process layer, which provides a level of process abstraction, and removes the business processes from the *control* of applications. So, instead of having each application being in charge of a set of processes, and trying to subjugate adjacent applications, to drive its processes, BPMA takes the control of the process away from the individual applications, and make them equal peers, subjugated to a BPMA layer that controls the execution of the processes, and delegates tasks or activities to individual people and applications as dictated by the design and needs of the underlying business process.

In order to do this well, BPMA needs to support all the attributes of a business process. For example, it needs to be able to:

- Manage applications in parallel as well as series
- It needs to manage people-intensive applications
- Inside and outside the organization
- Continuous and discrete, and allow processes to change over time.

BPM can be sub-divided into two sub categories:

- EBPM
- HBPM

eBPM

eBPM is enterprise class Process Management – nowadays this is found in expensive and complex integration suites, such as Tibco, and have become less of a business driven solution. However, there are certain vendors who are championing the standalone message of the independent process layer and in doing so addressing the needs of the end users – vendors in this space include Global 360 (formally Eistream), Metastorm and Savvion.

hBPM

hBPM is the hosted model or Process-on-Demand. Process-on-Demand delivers a simple to use Process Automation technology, where, and when it is needed. Deploying BPM as a managed service along with all the other services that can be found in today's organizations. Instead of buying expensive software licenses and supporting infrastructure the users subscribe to the processes and services they need when they need them – ensuring cost effective deployment and efficient project roll-out. The ideal solution to the small to mid sized organizations.

Business Process Modeling

Virtually all BPMA solutions have a Process Modeling Component. Its main purpose is to assist the end user in documenting processes. These processes can be defined "as is" or "as you would like". The basic idea behind tools supplied by BPMA vendors is that you can use these tools as an alternative to writing code – a sort of "picture writes a thousand lines of code" approach – if you can draw a flowchart, you can define and automate a Business Process.

There is a school of thought that suggests these tools should be outside of the BPMA product portfolios – this is the view promoted (with a high degree of success) by the Modeling Tools vendors.

The answer as to which is a better approach – BPMA approach or BPMO approach lies, as you would expect somewhere between the two extremes. Modeling tools supplied by the BPMA vendors will let you build process definitions that will work with the specific BPMA engine you are deploying and will extract the best from the product and its features. BPMO will let you model to a more sophisticated level, but will not be a straightforward to implement – if that's what you decide to do.

The worst possible scenario is to try and use two products – you will give up – either find another way of defining the process or be willing to accept a compromise.

Business Activity Monitoring

BAM is driven by the needs for organizations to find ways of overcoming transactional lag. This need appears to be driven by the general requirement to improve customer satisfaction, to comply with regulatory requirements, shorten time to market, get a 360 view of the company etc. BAM is closely aligned to BPMA since the general belief is that most activities are part of a process and by monitoring the activities you will, by default, monitor the processes to see where the bottlenecks are, see where service levels are being missed resulting in process feedback and performance improvement.

The focus of most BAM tools is improving the efficacy of business decisions and facilitating fast and well informed responses. The benefits derived are beneficial to all organizations regardless of industry. Despite offering myriad business benefits the majority of BAM solutions currently available do not go far enough.

BAM breaks down into two key options:

Option 1 - When the process cannot be extracted

In the following diagram the internal systems are part of a "business process" but they are Silo based applications. Ordinarily, BPM vendors would argue that these applications would be better served if they were controlled by an independent process layer – a good idea – but not always feasible. The answer to this problem is to let the BAM tool monitor and manage the interaction of these systems and trigger exceptions and pass the exception processing to the BPMS. Once the exception is "caught" it can be passed to BPM tool for processing.
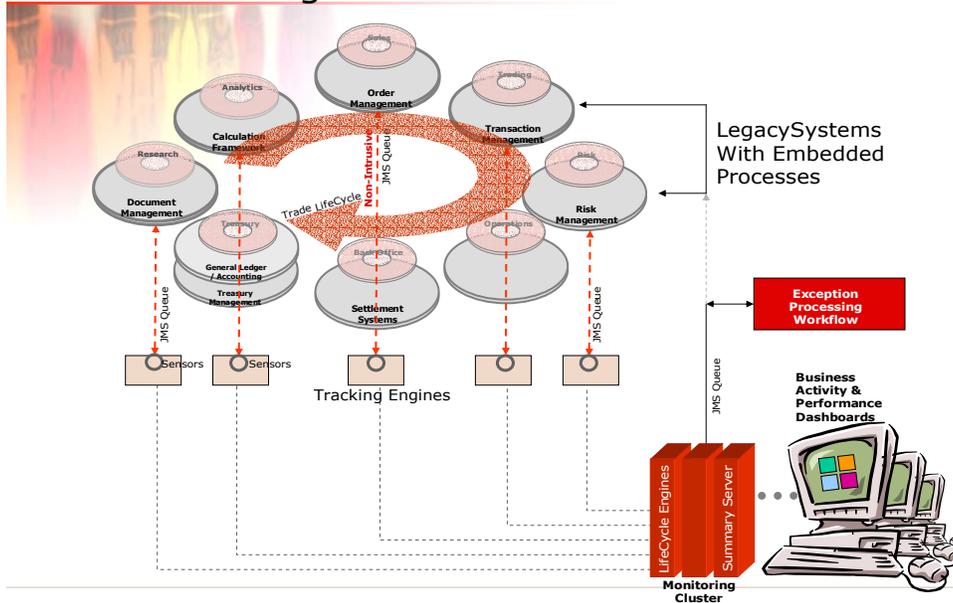
Monitor : Manage

Figure 1 – Monitor/Manage

Option 2 - When the process can be extracted

In this particular scenario BPM users have recognized the need to re-engineer their systems and take a more process centric approach to implementation. This is the natural BPM vendor sweet spot and where a process suite solution fits best. Where the key differentiator comes in now is that this solution would offer a "real time" option rather than a "near" real time solution provided by reporting tools. The advantages of this are numerous and include:

- Real time process monitoring and managing – allowing for automated solutions and dynamic rerouting of work
- Easier integration into systems management systems such as Tivoli
- Extending the monitoring to sub flows (those triggered by EAI demands of process orchestration (web services))
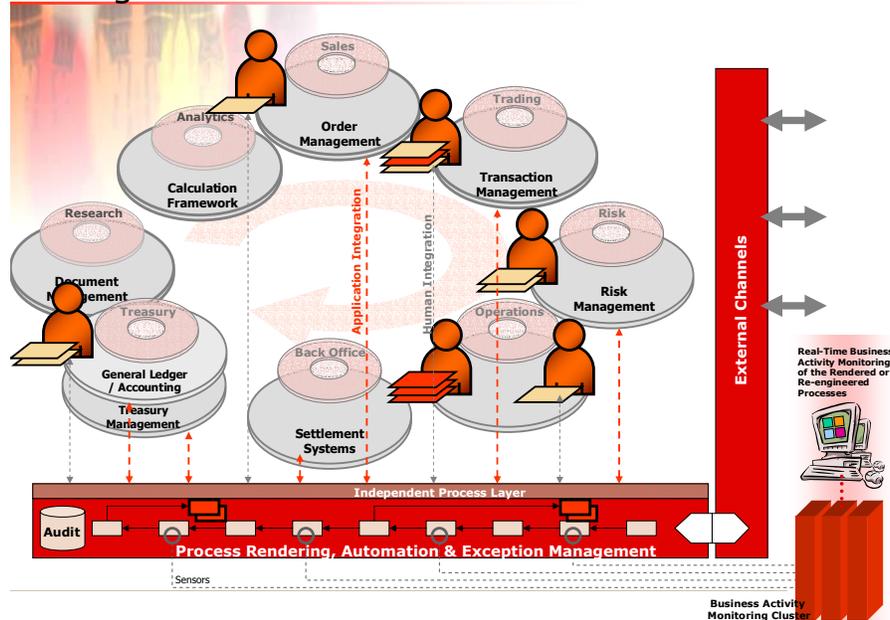
Manage : Monitor

**Figure 2 – The Process Centric approach**

But there is a third option - Option 3.

Option 3 is a combination of the above – the composite processes.

There are situations where parts of an enterprise can be re-engineered (option 2) and where there are certain Silo applications that cannot be touched (option 1) but need to be part of an overall BPM strategy.

Complex Order Management in Telecommunications is probably as good a real life scenario as any to use by way of example.

In a COM situation, there are many back office stand alone systems which are an important part of the provisioning process yet they cannot be fully integrated into the process for a whole host of reasons – complexity being one of the main ones. Yet despite them being outside of the managed process they do run "micro" (think of them as sub) processes which need to be monitored. If a delay occurs in one of these systems, the impact on the automated process could be very significant – so being able to monitor and manage the interactions between the "external" applications the main process can be modeled and controlled far more easily. I doubt this could be done in products as they exist today – yet the solution is relatively simple.

Composite Scenario
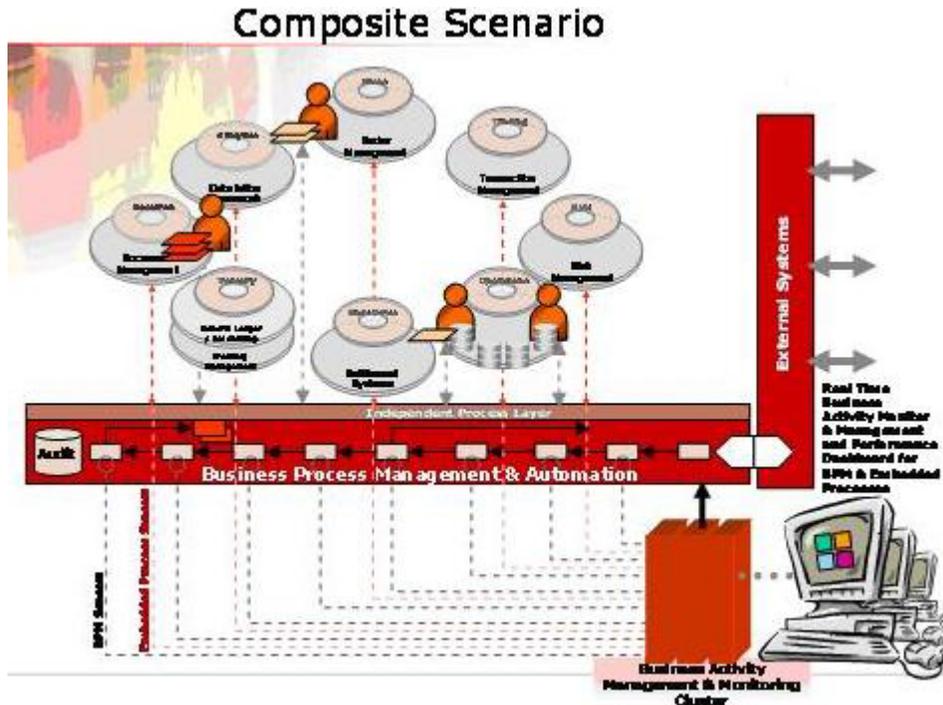
Figure 3. The Composite Scenario

I believe this is what true BAM is all about – being able to manage and monitor processes of every shape and hue and adjust the operation of the business accordingly.

Business Operations Management

BOM concentrates on the needs of managers running teams of people. Basically, BOM accepts work from any third party source, including major BPMA engines and applies a set of business rules on how that work is assigned to individuals, taking into account the available resources, their varying skill levels and efficiency, plus service level objectives. BOM also provides critical support for firms' compliance objectives, automatically supporting the enforcement of regulatory controls and gathering the evidence to prove that work was carried out in a compliant manner.

One critical aspects of BOM solution is that it can be used be used as a standalone package, which means that if you do not have a full BPMA or BAM implementation you can link a BOM package to Line of Business systems so it provides effective management information for a wide range of audiences; from Team Leaders to senior Execs. BOM provides a single view of all work, monitoring items from any source; paper, telephone calls, BPMA engine; e-mail and so on; to provide an integrated approach to work and resource management. As a result of this coordination, all work is managed, tracked and reported upon; enabling an optimal utilization of available resources.

BOM breaks down into three main subcomponents:

- Operational intelligence looks after:
  - forecasting and prediction Services
  - Consolidation and summaries
  - Reporting
  - Performance KPIs, Dashboard integration etc.

- Work management handles:
  - Resource Management
  - Performance Management
  - Quality and Compliance
  - Customer Event Management

- Production Planning
  - Critical components of the Production Management component should include accurate capacity planning, short interval scheduling of resources against work, and load balancing of the available resources.

The Convergence Picture

Figure 4 drills down further into the key components so, on the face of it, it looks more complicated than ever but it really is quite simple.
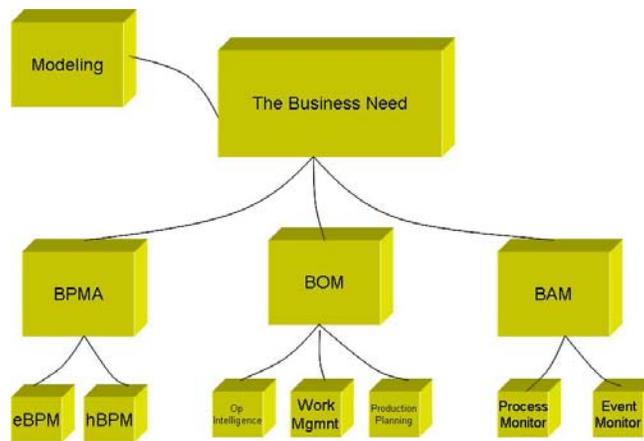
Figure 4. How the key components fit with the business need

Architecture of Deployment

This is a semi technical bit. The following diagram shows what a typical IT architecture looks like with all the bits mentioned above included.
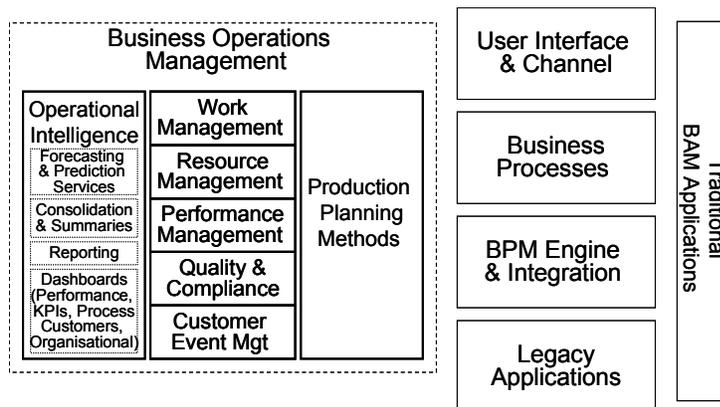
Figure 5. Typical BPM IT Architecture

3. The Future

Two key factors are going to have an effect on the world of process technology.

Enterprise Process Analytics

At the high end, what we referred to as eBPM earlier, there will be less differentiation of large scale BPM engines. They will all:

- Be very scalable,
- Support key standards
- Have good integration capabilities
- Be infrastructure products

The key differentiators will be in the areas of simulation and statistics – in short Business Process Analytics. Organizations are beginning to realize that although they can implement BPMA and workflow solutions without analytics capabilities, they do not have a complete end-to end solution. Their BPMA system does not help their strategic planning nor enable them to accurately develop contingency plans for opportunistic and threatening scenarios. They do not have real insight into their processes or the outcomes they produce let alone an automated way of addressing them.

Analytics give business managers and executives the ability to track and measure performance based on real-time feedback of their processes this gives them real insight into how the organization operating. Once good and accurate analytics are in place, end users can make informed decisions because they are presented with issues that need to be addressed, as well as with the context so they can take the right action. They have the ability to "drill down" into an anomaly and to look at the information from different dimensions giving them greater understanding of the "information behind the information." Forecasting is made possible through ongoing statistical data capture, and reporting functions ensure real-time and predictive information is available.

The powerful combination of real-time process analytics and Business Operations Management means that users can:

- Adjust workflow to changing business dynamics
- Move from managing business processes to managing business process lifecycles
- Tie together Business objectives, strategic planning, process modeling, workflow, application/content management and analytics so that they interact
- Develop feedback loops for change management and incremental optimization of business processes
- Eliminate gap between strategy and business objectives
- Ensure workflow and processes support key business objectives
- Gain the control of operations to manage process lifecycles from end-to-end

Process-On-Demand

The lower end, referred to as hBPM, is where we will see a lot of innovation and rapid growth in the next 3 or 4 years. Process-on-demand is going to be a very interesting market segment. There is a general perception, especially amongst smaller organizations, that BPM is not for them. It's too expensive to buy, too difficult to implement, needs an expensive infrastructure and takes far too long to deliver real business benefits.

There are numerous examples of products being used as expensive alarm clocks or automating one or two steps of a process – the three step process is not at all uncommon. Likewise, many implementations are over-engineered. This makes them unusable and unmanageable – hundreds

of steps in a single process – not even broken down to sub-processes. There's one other problem that needs to be addressed – companies are no longer willing or indeed able to "roll their own" solutions. Building systems from the ground up is no longer an acceptable business practice and it certainly isn't cost effective.

So there is some confusion as to what BPM is best suited for, how it should be deployed and to what level. As a result there are many "enterprise deployments" that simply aren't!

Words and figures don't match when licenses sold are compared with licenses deployed. That's not to suggest any exaggeration on the part of vendors; just that the expectations and vision of the buyers is seldom met. The projects just don't roll out as planned – and this happens time and time again. So what can be done to address the problem?

Well, you could use what you need when you need it – sound simple enough and what makes it so is Process-on-Demand technology. Making BPM a business commodity rather than the infrastructure.

Process-on-Demand delivers a simple to use Process Automation technology, where, and when it is needed. Deploying BPM as a managed service along with all the other services that can be found in today's organizations. Instead of buying expensive software licenses and supporting infrastructure the users subscribe to the processes and services they need when they need them – ensuring cost effective deployment and efficient project roll-out. The IT departments get what they need, the end users get what they need. The ideal solution to the small to mid sized organizations.

The idea behind process-on-demand is the concept of the schema driven enterprise. All data is based on XML structures. XML is the basis for almost all development of new process based and integration software tools. A schema (XSD) is essentially a way of formally describing the elements in an XML document. This description is then used to verify that each item of content in a document adheres to the description of the element in which the content is to be placed.

By defining all of the rules, inputs and interactions, in an XSD it is possible to dynamically define a business process – and then execute it – by defining the forms and documents used by an organization, electronically – using simple drag and drop techniques. Rapid development, rapid deployment and rapid return on investment.

4. Standards

During the last couple of years there has been a significant rise in the amount of work being undertaken to define standards for process based technology. You need only look at the number of bodies involved to get a feel for the scale of the problem – 12 years ago there was only one body, now there are more than 10. The standards specifications have also grown. Those for the WfMC's reference models were, on average, 40 pages long. The average size of these new specifications is around 100 pages. I won't mention the complexity at this stage – it's too scary. Yet all we have done is to create confusion. There is confusion over which standards fit where and which apply to what situation. Unanswered are questions such as – do they compete, are they complementary, will we have to pay for them?

There is no suggestion here that standards are a bad thing – on the contrary – no-one is questioning the needs for standards. There is significant value to be had from such standards as BPEL (Business Process Execution Language), BPMN (Business Process Modeling Notation), WfXML, XPDL and others; but unless those responsible for setting the standards start to work together to consolidate them there will be a substantial loss of interest in implementing them.

There will be a convergence of standards coalescing around:

- BPEL
- BPMN
- WfXML
- XPDL

However, unless standards are of clear benefit to use, they are at the least a distraction. At worst, they could lead you into a damaging technology lock-in. Dave Hollingsworth (Chair of the WfMC Technical committee) summed it up very neatly when he said "the correct approach is to recognize what standards are needed where in the architecture, and for what purpose…Product vendors will adopt them if they add value – and this stems from having a thought through underlying architecture that clearly identifies the value and purpose of each standard."[4]

5. Conclusions

Most IT departments view BPM as part of the technical infrastructure. It is fair to say that many BPM solution vendors see it this way as well. The technology is seen, primarily, as a mechanism for integrating systems and a way of developing new applications. While this "positioning" or understanding may be true to a certain extent, it certainly isn't the full story. There's a business need to be addressed as well, the needs of the end user.

The end users, the people who need to use technology to get some other business related task done, see BPM as a way of managing cases or tasks in a predefined sequence; getting the right information to the right place at the right time to meet a business need. To them it is something that reduces the risk of error, gets tasks completed sooner and more effectively and makes the whole business or running a business easier and more manageable.

As stated earlier, BPM is perceived to be expensive, complex to deploy and seldom used in the way the sponsor envisaged. There are numerous examples of products being used as expensive alarm clocks or automating one or two steps of a process – the three step process is not at all uncommon. Likewise, many implementations are over-engineered. This makes them unusable and unmanageable – hundreds of steps in a single process – not even broken down to sub-processes. There's one other problem that needs to be addressed – companies are no longer willing or indeed able to "roll their own" solutions. Building systems from the ground up is no longer an acceptable business practice and it certainly isn't cost effective.

So there is some confusion as to what BPM is best suited for, how it should be deployed and to what level. So what is the problem we are trying to solve?

There are two:

1. The needs of the Business Process Owner – the CEO – help in making the vision a reality

2. But we must also address the needs of the Data Owner – the CIO

The CEO
In tough economic times, one thing moves to the top of the CEO's agenda - the need to improve business processes. Rapid payback and quick return on investment become crucial.

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[4] The Workflow reference model: 10 years on, Workflow Handbook (WfMC) 2004, Fischer

As well as reducing costs, the CEO needs to improve business controls, and provide quicker response to customers. And above all else, the CEO needs to deliver improved business processes by harmonizing with existing infrastructures and technologies, such as ERP and CRM. The only effective way of achieving these objectives is to improve the effectiveness and flexibility of end-to-end processes.

By implementing BPM, the business community will be able to build and execute processes that are designed with customers in mind, deliver better quality, faster and at lower costs, and retain competitive advantage by being able to execute processes that deliver the business strategy. The CEO doesn't care about systems integration or the concepts of straight through processing, however valid that may be. But the CEO does care about monitoring how the business is performing, being able to react to changes in the market, handling exceptions quickly and effectively and having a complete view of the organization.

The CIO

The CIO has the task of making sure the needs of the CEO are fully met quickly, effectively and with zero disruption to the business. Systems implemented in today's rapidly changing technology world must show fast ROI and bring benefits to the bottom line, without having to discard what works.

Providing technology that enables users to define the business process in clear understandable notation is an important aspect of the technology, but it's only part of the solution. Being able to execute that process, facilitate simple integration with legacy systems and commercially available packages and monitor/manage how those processes are executing, are also vital components. Furthermore, BPM as defined here, enables the CIO to implement new applications quickly and tie the front office applications and the back office systems. This reduces maintenance costs, time to deploy and makes the IT function far more responsive to the business needs.

The future for BPM technology is bright – arguably it will give the biggest return on investment of any technology deployed to date.

The advent of Process-on-demand technology and good analytics couple with solid workforce management principles will enhance this capability still further.

There is not a single organization, large or small, that will be unaffected by the unstoppable deployment of ubiquitous process technology.