Research

Comparing BPM from IBM, Oracle and SAP

Taking a high-level look at BPM solutions from three of the top industry players

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Executive Summary

Business Process Management (BPM) has become a key focus for many companies over the last few years, and this high level of interest has withstood the recent economic upheavals pretty well. Indeed, as companies look for ways through the economic downturn, streamlining business processes is seen as a high priority by executives keen to reduce the company cost base while simultaneously delivering higher levels of customer service to a wider customer set with increased competitiveness. BPM solutions are increasingly viewed as the most effective way to achieve this process optimization, while at the same time contributing to a more agile and better managed business.

Software vendors and systems integrators have not been slow to react to this opportunity, and BPM solutions abound from what is still a wide spread of suppliers, even though market consolidation is gathering pace. In particular, three of the largest software vendors have a major stake in the BPM game - IBM, SAP and Oracle. SAP's interest stems from the fact that its applications often form a major part of process execution, and it is keen to protect its revenues by being seen to be responsive to market needs while maintaining control in its accounts and fighting off growing competition. IBM sees BPM as a powerful driver of its market-leading middleware and project-related services sales, powered by widespread customer desire to achieve increased business agility and cost efficiency. Oracle falls somewhere between the two, with its own application portfolio like SAP that it is keen to protect but also with a major corporate focus on driving lucrative middleware sales, its fastest growing business segment.

The difficulty for many senior managers is that BPM can seem quite a complex area, with vendor presentations quickly dropping down into long and confusing lists of detailed technology arguments and functional checklists. What many managers are looking for is enough information on the different vendor approaches to be able to get a feel for at least a priority list of potential suppliers, in order to ensure that investigative work and purchasing recommendations are carried out as efficiently and productively as possible. This assessment tries to satisfy this need, taking a high level look at the BPM functionality offered by each of these players and drawing out some of the main differences.

In the final analysis, a key difference of philosophy and approach emerges throughout the assessment that is likely to strongly influence any BPM purchase decision. SAP, and to a lesser extent Oracle, have both guided their BPM functionality from a starting point of serving the immediate needs of those individual processes instantiated by their own applications and packages, and then building this functionality outward and upward to expand its applicability. In contrast, IBM has started from a focus on using BPM to deliver business benefits across the enterprise, such as being able to do more with less and having the flexibility and adaptability to respond with agility to changing market needs, and has then filled out the functional details to support this goal. In today's harsh investment climate, while the SAP and Oracle approaches may offer added value to deployments of their respective packages, it is arguably the IBM approach that is likely to fit best with current business and investment imperatives.

Introduction

In order to make a sensible assessment of the BPM (business process management) solutions from each vendor, it is necessary to first put BPM into context – what is it, and what can it deliver to the business? There have been numerous debates over the last few years over BPM, BPA (business process automation), BPO (business process optimization) and Workflow over what the terms actually mean. However, the industry has gravitated towards BPM as the convenient cover-all for referring to solutions designed to improve process execution in all its forms.

Why BPM now?

Before looking at BPM from a technology viewpoint, it is important to ground the subsequent discussions within the current difficult economic climate. Many executives may be working from an initial premise that now is not the time for investing in new projects and technologies. Rather, focus today should be on making best use of current implementations and investments while following the "do more with less' mantra. But well-bounded BPM projects are not contrary to this position – in fact, they actually *support* the central goals of increased efficiency and reduced costs.

Perhaps the most applicable drivers today are the need to operate a **cost-out model**, particularly addressing people cost efficiencies given the need to reset the ongoing cost base, the need to support **rapid and varied growth of the customer base** as businesses seek every opportunity to access precious spending power, and the requirement to visibly address externally-perceived **compliance** issues. These three drivers fall squarely into the BPM camp. BPM is all about focusing on the processes that run the business, establishing clear and verifiable process implementations that are streamlined, automated and able to be easily combined and recombined to service new requirements. A sound BPM project will mainly be about reusing existing programs and investments, putting a structure around them that makes it much easier to verify them for compliance, identifying and implementing process optimizations and sharing processes and sub-processes across new business offerings and services.

BPM Background – the process view

The main issue with processes has always been the same – a business knows what it wants to do, but the required tasks are carried out by often complex interactions between people, IT systems and partners. It is the translation of business need into execution instructions where the problems lie. Individuals may understand pieces of a process, different IT programs and packages may implement others, and partner activities may also fit into the picture. If business was static, this might be manageable, because each party could be clearly instructed on its own piece of the action once, and then for ever more execute based on these instructions. But businesses are dynamic, and are always interested in innovation across the whole process. This dynamism coupled with local innovation results in business processes ending up implemented in disparate pieces across the different process participants, as depicted below.
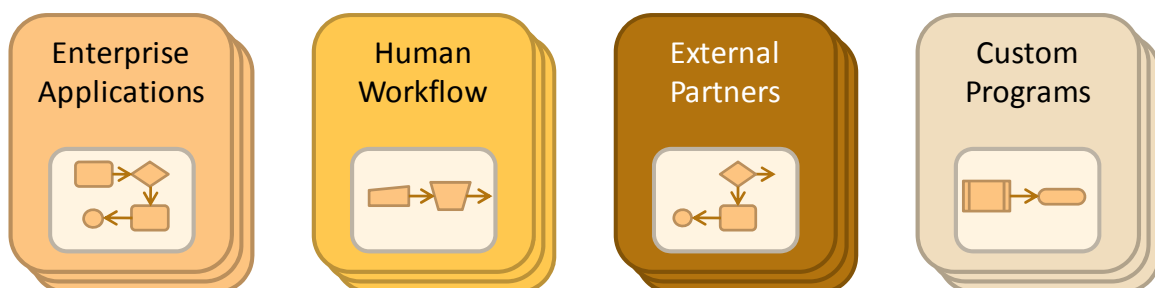

Figure 1: Process implementation today sees pieces of process embedded in process participants

This causes all sorts of problems, due to the fact that the relationship between the desired business process and the implementation is confused and based around different knowledge sets. Visibility into processes and their execution instances is poor, often only being at a very coarse level such as 'the order was processed successfully' or 'the order generated an error'.

BPM solutions enable many opportunities for process improvement, and the core reason is that with BPM the desired process is decoupled from, but put much more clearly in control of, operations. The process specification is extracted from the process participants so that it can be viewed as a whole, and then process execution is governed by this process specification. In human workflow terms, this means that end users are usually presented with clear task lists and work queues, perhaps forms based, with built-in routing rules to move work to the next step, all based on the process specification. In IT terms, where change is often much more dynamic, a process execution engine uses the process specification as a blueprint for the execution of each process instance. This not only ensures processes are executed properly, but also offers the opportunity to monitor the process as it passes from step to step, providing vital information for process improvement and run-time awareness of business performance.
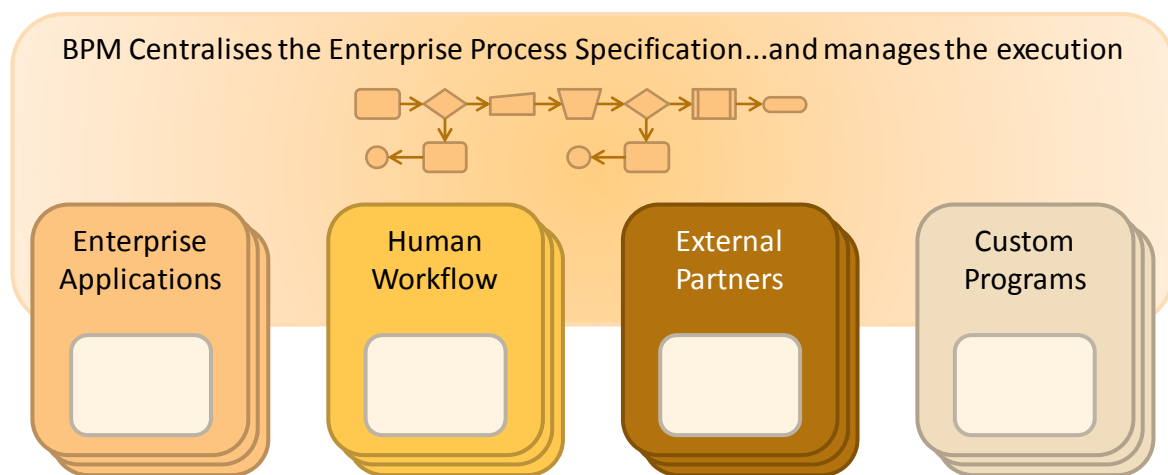
Figure 2: BPM extracts the process specification and then controls execution accordingly

This improved visibility of process definitions coupled with the enhanced linkage between specification and execution offers opportunities for all sorts of process improvement areas.

- **Process validation, compliance and governance**
  Because the process specification is available in one place, it becomes much easier to confirm that the process is correctly defined and implemented, and also to ensure that changes are controlled and governed properly.
- **Process monitoring and measurement**
  The clear linkage between each process step and its corresponding execution makes it possible to monitor and measure process execution at the step level, enabling companies to get immediate and historic information on process performance and effectiveness, and hence overall business performance.
- **Process modelling and optimization**
  The combination of the ability to see the overall process definition and to measure process performance provides vital input to subsequent process optimization and reduction of redundancy. Enhancements can be modelled, simulated and assessed to find the best solution.
- **Process change**
  Visibility and availability of the process definition in one place makes managing change much more effective. Processes can be modelled, simulated, designed and implemented with less effort.

Assessment approach

For the assessment to make sense at a business level, it is vital that it relates to today's challenges. As already discussed, BPM is particularly relevant to some of the most critical demands in the current economic climate – cost reduction through process efficiency and automation, the flexibility to rapidly deploy existing assets in new ways to address the needs of an expanding customer and product base and the ability to validate processes for compliance and to demonstrate responsible governance. The functional areas above fit neatly with these real-world requirements, but in order to be able to differentiate in the assessment it is necessary to break the functionality down to a lower level. So, looking back to the three main drivers today of cost-out, supporting a wider and more varied customer base and ensuring demonstrable compliance, it is important to relate the likely functional differentiators directly to the requirements of these scenarios.

In terms of removing cost by streamlining and automating processes as far as possible, key functionality will be the ability to **model** the processes at design time, translate this model into an **execution implementation** and **monitor** it at runtime to gather the necessary information to close the loop and be able to iteratively improve the processes. During this activity, **collaboration** support will help to ensure the best possible results by pooling different areas of talent and knowledge. However, the job doesn't stop there. By addressing the **user interface** needs, for example by providing tailored workstations or adopting **forms-based** interfaces, user productivity can be increased and hence more cost can be squeezed out. The ability to use **business rules** to govern process operations can make it much cheaper and easier to implement tweaks to process operation, further reducing costs. Finally, **events handling** offers yet another way to increase automation levels and consequently reduce human involvement.

In order to satisfy the needs of a growing and broadening user base, a key part of the solution will be the ability to **integrate** process activities across a wider range of applications and environments. **Process specification** and **execution** must take these broader needs into account, and **user interfaces** will have to take up the challenge of insulating the end user from having to be aware of the changes. **Process monitoring** will be particularly important to ensure that maximum scalability and performance can be achieved, and **document management** will provide another key tool to address potentially different sorts of customers and services.

From a compliance point of view, it comes as no surprise that the ability to **model, implement** and **monitor** processes in a disciplined fashion is of paramount importance. **Executive dashboards** are of particular interest, providing a window into operations for executives to use to keep their fingers on the pulse and maintain compliance. **Business rules** and **document management** tools provide easily accessible ways to control process implementation and execution, while **event handling** offers an essential mechanism for compliance officers to be alerted to potential compliance exposures.

Consequently, any assessment of BPM solutions and their ability to meet the challenges of today needs to take these functional areas into account when looking for differentiation between suppliers. However, this same pragmatic approach based on current challenges throws up two other important factors to consider – the **time** it takes for a project to deliver value, and the **overall value** potential.

On the first of these two additional factors, more and more companies in today's business climate need to be very clear about when expected returns will start to flow. Often, business cases for investment are scrutinized in great detail to ensure that precious budget is not exposed to too great a risk. As a result, an important area to consider when looking at different BPM solutions is how quickly the promised benefits can be realized. The other factor is value potential; that is, the overall potential benefit that could result from a particular vendor's BPM solution. Some may focus simply on implementing existing processes in BPM terms, while others may concentrate on a much wider brief of helping companies re-engineer their business models and hence achieve optimal processes on an enterprise-wide basis. Some may be primarily focused on human aspects of workflow or program-to-program linkage, while others may span document-based processing too. These are the sorts of factors that are likely to affect the potential value over time of the BPM initiative. This overall value potential is important because it will play a key role in the allocation priorities of the severely limited investment funds and

resources. The table below summarizes some of the relevant BPM solution characteristics contributing to all three areas.

Functionality	Time to Value	Value Potential
•Process modeling •Process implementation •Execution engine •User workstation •Forms •Document management •Executive dashboards •Process monitoring •Business rules •Collaboration •Governance •Integration infrastructure •Business events handling	•Ease of use •Skills requirements •Support for existing investments •Affinity with user application portfolio •Professional services •Methodologies •Samples and templates •Industry support	•Human-based support •Document-based support •System-based support •Extension across the value chain •Support for business re-engineering and transformation •Continuous process improvement •Industry standards •Reliability / integrity / availability

Figure 3:- BPM solution assessment criteria

The assessment will take into account these three main areas of criteria, first looking at each of the three vendors individually and then contrasting the three. Throughout, the assessment will try to link back to the groundings of the wants and needs in the current economic climate. The intention is to pull out salient points in each section, rather than to provide an exhaustive, in-depth analysis of each solution. It is expected that prospective users will carry out their own due diligence analysis of the details as part of the RFP process.

A few words on process modelling and standards

Before looking at what each vendor offers, it is worth spending a few moments reflecting on process modelling in general and the key standards that are involved in BPM solutions. Obviously, standards offer value in terms of the availability of more readily accessible and therefore more cost-effective skills and the opportunity to leverage general BPM understanding and experience. As usual in the rapidly moving world of technology, there have been various standards wars, but a few key ones have remained as being the most relevant in BPM terms.

BPMN (Business Process Modelling Notation) is a standard governing how process specifications and flows are recorded. Most vendors have elected to follow the BPMN standard now, at least for system-related workflow needs. XPDL (XML Process Definition Language) is more of a process design format for storing flow diagrams as opposed to complete business models, but it is often used in the document-driven workflow area. BPEL (Business Process Execution Language) is an execution level, technical flow specification. Usually there are maps between the higher level standards and BPEL for execution, and most vendors who support both BPMN and XPDL offer ways to import and export flows between the two.

On the overall process modelling side, there is often confusion over enterprise modelling compared to process modelling. In simple terms, enterprise modelling is all about looking at how activities flow through the enterprise in terms of business assets involved, roles and responsibilities, and so on. In other words, it is really about how the business works. This high level modelling normally then feeds down to a more direct level, where specific processes are modelled, and then down to an execution-oriented, technically accurate process flow.

BPM from Oracle

Oracle's initial efforts at building its own middleware portfolio were largely driven by the need to support the Oracle applications business, ensuring that these applications could be leveraged in the more integrated, modern business world. As a result of this narrow focus, Oracle struggled to assemble a truly generic set of middleware products, but then in 2007 Oracle acquired BEA Systems, one of the leading pure-play integration middleware vendors. This has finally enabled Oracle to put a strategy in place to deliver a comprehensive SOA (service-oriented architecture) and BPM middleware portfolio by combining the best of the BEA technology with some of the more successful Oracle components. In practice, this strategy involves starting off with the BEA componentry and then gradually importing any useful Oracle technology over time. As a result, the Oracle BPM solution is definitely a solution in transition. This assessment will try to focus on what Oracle currently delivers while keeping its overall future intentions in view.

Oracle functionality

As might be expected, Oracle claims to have all the required BPM functionality. However, there are some specific points to note in Oracle's functional support. The first observation is that, as already stated, Oracle is smashing together a number of different technology bases. For example, the new Oracle BPM offering is essentially made up of the BEA AquaLogic BPM product as the basis for the **human-centric workflow** support and the Oracle BPEL Process Manager for dealing with **program-level flows**. However, the challenge Oracle faces is not just bringing the BEA technology together with Oracle's Fusion product set, but also accommodating the more specialized, application-centric offerings like Oracle AIA (Application Integration Architecture). Oracle AIA was designed to enable different Oracle applications to interact, while Oracle BPEL Process Manager was developed with the broader intent of managing flows between any programs. This leaves Oracle with three different approaches to different aspects of BPM, implemented through three corresponding toolsets and styles. This is a recipe for confusion – so, for instance, while Oracle uses the BPEL standard for specifying execution of program or service flows, as implemented in its original product offerings, the human-centric capabilities brought in from the BEA product set are based on the XPDL standard.

On top of this, the Oracle **process modelling** environment, Oracle BPA, has been built on IDS Scheer's ARIS platform, offering yet another environment. Oracle has said it will converge its technologies into a single BPM family with a single associated toolset and Oracle WebCenter as the primary user interface, but this challenge should not be underestimated. During the transition, users can expect to experience difficulties and inconsistencies. As an illustration of this point, Oracle currently recommends BPM customers to use BEA AquaLogic BPM Designer for agile process modelling, such as a business user wanting to build an ad hoc processes, but the IDS Scheer-based Oracle BPA tool for more rigorous enterprise process modelling. The concern this raises with users is how will Oracle go about converging these capabilities? Which will become the main platform and toolset?

This issue is reinforced when looking at Oracle's packaging options. Oracle BPM (essentially the BEA BPM product) is available standalone, but Oracle also offers the Oracle BPM Suite which consists of Oracle BPM. Oracle BPA, Oracle BPEL Process Manager, Oracle Business Rules, Oracle Business Activity Monitoring and Oracle WebCenter Suite. There is considerable overlap between the first three products in this list, generating much concern and confusion, but Oracle's problem is that at the moment all three products are required to claim a competitive BPM product. Eventual convergence may resolve this, but simply packaging them into the same suite does not.

Process monitoring and analysis is carried out using a combination of Oracle BAM and Oracle BPA. However, even here there are potential hurdles that Oracle will have to jump. BEA users of AquaLogic BPM were provided with a basic dashboard capability, and now that this product has become Oracle BPM, it is unclear where this leaves these implementations. Will Oracle continue to allow users to use this alternative or

will everyone be moved onto the Oracle BAM offering? Then there is the problem that Oracle BAM is currently a .NET-based offering, and only available today for Windows – how will Oracle resolve this in the future?

A strong SOA foundation is essential to the best BPM solutions, since it provides the ideal integration framework with which to carry out the process execution linkages required by modern integrated processes. Oracle's **SOA support** is now considerably better than it was, thanks to its acquisition of BEA. Very sensibly, Oracle has opted to switch its key SOA products, such as its Enterprise Service Bus (ESB), to the BEA versions. However this once again demonstrates fault lines, at least during the transition phase, in its 'one family, one toolset' positioning.

Lastly, **event handling** is based around the use of the old BEA WebLogic Event Server as a lightweight collector of event information from all the sense points, and Oracle Complex Events Processor as the tool to make sense of all the gathered information. The use of CEP technology offers users a very powerful tool for analysing and correlating events information from executing processes across the enterprise, although to be frank there will be few scenarios where full-fledged CEP is required. CEP is usually only deployed in situations where high volume, fast processing of events is required, such as in an algorithmic trading scenario in a securities business.

Oracle time to value

Oracle constantly reiterates its strategy of providing 'pre-integrated' solutions – that is, products that are designed to install and work together under a single toolset and in a single environment. The idea is to provide a strong story on both **ease of use** and **skills requirements**, key contributors to delivering rapid time to value. However, the problem discussed previously of combining multiple different code bases makes this goal hard to achieve in the near term at least. Different skills are needed to work with the BEA and Oracle parts of the portfolio, and with overlapping functions such as executive dashboards from both the BEA-based Oracle BPM product and Oracle's own BAM product, there is plenty of opportunity for confusion. While this may be resolved over the next year or so, the result is that at the moment this impacts the time to value metric.

One way Oracle hopes to speed time to value is through the provision of **accelerators** that reduce the effort of building cross-application processes. The Oracle AIA (Application Integration Architecture) was designed to address this need, and the heart of it is the Process Integration Pack (PIP) concept. PIPs are essentially prebuilt composite processes that span Oracle enterprise applications. Perhaps the most mature example is the Order to Cash PIP, offering a composite process spanning the Siebel CRM system and the Oracle E-Business Suite order management component. Oracle claims a range of PIPs encompassing specific business processes crossing two or more of its application packages, including **cross-industry** ones like Order to Cash and **industry-specific** ones such as Siebel to Oracle Comms Billing and Revenue Management, although it is unclear how widely these have been used. Also, it should be remembered that Oracle AIA has been designed specifically with the Oracle application packages suite in mind – it doesn't help with processes spanning non-Oracle applications.

In terms of **process templates**, Oracle will immediately point to its PIPs. But this is where the problem arising from the separation of the middleware-based BPM solution and the application-based AIA solution occurs. Oracle has not done a good job of making these two product sets work together. So, for example, while a PIP does offer a template of the particular business process as it is implemented in Oracle application terms, this PIP model is read-only. If a BPM user wants to modify one of these processes, this has to be done down at the BPEL implementation level rather than at the modelling stage.

Oracle does offer a limited amount of what it calls hot-plugability - that is the ability to support components of the overall solution supplied by other vendors. The purpose is to speed time to value by making the BPM solution **less invasive** and leveraging current expertise and investments. So, although Oracle offers its own Business Rules Engine, it will also allow the substitution of rules engines from vendors such as ILOG or Fair Isaac. However this replacement strategy only works in some areas, not all.

Oracle value potential

In terms of scope, the Oracle BPM product covers **human-oriented** and **system-oriented** workflow. However, as discussed the system-oriented process management needs are a bit confused, with AIA focusing on processes that span Oracle applications while the Oracle BPM and BPEL products deal with the more generic program-based process needs. The challenge, of course, is to bring these technologies together. As far as **document-oriented** workflow is concerned, the picture is not clear. While Oracle offers content management products that can handle the management and storage of images of paper documents such as claim forms, its main product for fitting documents into workflows is Oracle Imaging and Process Management, based on the acquired Stellnet offerings. However, this product has been tailored to incorporate documents into processes instantiated by the Oracle application packages, rather than offering a generic solution for handling documents as part of any process workflow. It is therefore an Oracle application-centric offering, which limits its wider value contribution considerably.

Oracle BPM can extend **across the value chain** through the use of the Oracle B2B product that forms part of Oracle's SOA suite. This has EDI and ebXML adapters to make it easier to extend process integration into partner companies. Oracle BPM also supports **continuous process improvement** through its BAM, process modelling and simulation/test capabilities. However there is confusion over how this will work given Oracle currently offers a mix of modelling environments, for example, with Oracle BPM for casual process modelling and the ARIS-based Oracle BPA Designer for formal enterprise process modelling. In more general terms, Oracle offers some limited **industry-specific** support through the industry-based PIPs, but in truth it does not do much to help drive value in particular industry scenarios, preferring instead a more cross-industry focus.

BEA had a range of tools it acquired for building on Enterprise 2.0 social networking capabilities, and Oracle has taken these to form its **collaboration** support in its BPM solution. In simple terms, the idea is to be able to incorporate into the BPM scope those parts of the business process that are currently unstructured, such as the procedures and techniques used by individuals to resolve an exception. The technology involves such Web 2.0 tools as Wikis, and provides intriguing possibilities in areas such as sharing knowledge between workers and various training activities. This part of the BPM solution is still being made production-ready, but if successful this could offer the potential for Oracle to provide revolutionary capabilities around handling processes that encompass unstructured steps.

The table below summarizes the salient points regarding Oracle's BPM support.

BPM from Oracle

Functionaltiy	Time to value	Value potential
• BPM, SOA and BAM in transition following the BEA acquisition	• Single family claims are still some way from being fulfilled	• Good coverage for system and human processes, but weak on document-driven processes
• Good SOA support based on acquired BEA technology	• PIPs offer good accelerators for getting started with some processes, but there are not nearly enough	• Solid partner support (B2B)
• Conflict between AIA for package-centric BPM support, and Oracle BPM middleware for more generic support	• PIPs are read only, severely impacting their effectiveness	• Potential for revolutionary Web 2.0-based facilities for handling unstructured parts of the process, although more work is required
• Full complex event processing analytics for handling demanding events needs	• Some 'hot pluggability' allows the use of thrid party products such as Business Rules Engines	

Figure 4:- Key characteristics of Oracle's BPM support

BPM from IBM

IBM was initially rather slow to address the growing needs of business process integration and management, although it has a strong pedigree in supplying the middleware that makes integration possible. In the past it acquired a workflow product, which it turned into IBM MQSeries Workflow, but this did not address the full range of BPM needs. However, once it applied the proper strategic focus to BPM as an important way for users to generate sustainable business value through cost efficiency and business agility, things have improved dramatically. Through a combination of internal development and further acquisitions, IBM has now assembled a comprehensive range of BPM functionality, and while it may be argued that integration of these components is not yet complete, such as in the case of the ILOG business rules capability that has only just been acquired, it is worth pointing out that IBM is a lot further down the path to a single BPM family than Oracle or SAP. At the product level, the IBM WebSphere product line handles human and system-oriented workflow needs, while IBM's FileNet acquisition delivers document-based process workflow support. The other key point to note is that while SAP and Oracle have a natural tendency to orient around their own application packages, since IBM does not sell applications it concentrates on supporting all equally, enabling it to offer the broadest applicability.

The strategic focus mentioned above has been a key part of fulfilling IBM's BPM solution. IBM's view is now very much about driving BPM from the high-level business imperatives of cost reduction and efficiency, and the flexibility and adaptability to respond quickly to market changes. A clear illustration of this focus in BPM terms is IBM's support for what it calls Dynamic Business Processes – processes that 'increase business agility and optimize costs'. While this may sound like motherhood, IBM has filled in enough of the functional requirements to demonstrate a real commitment to this claim. At a high level, the intention is that Dynamic Business Processes can be optimized through automation capabilities, adapted dynamically to market shifts as they happen, and provide sufficient visibility to support effective decision-making. In IBM terms, this means providing support to make processes

- <u>Explicit</u> – Documented, understood and agreed
- <u>Visible</u> – Measurable and actionable
- <u>Easily changed</u> – Tasks, activities and endpoints are all flexible and dynamically adjustable
- <u>Driven by the business</u> – Process management is contextual, governed and extended to all stakeholders

This focus has dictated a lot of the functionality of the IBM offerings, and is already driving significant customer value in a variety of live production deployments.

IBM functionality

Process modelling support is provided in a number of different forms due to IBM's acquisition history in this area. IBM WebSphere Business Modeler delivers a BPMN-based graphical environment for describing process flows and then makes these models available to WebSphere Process Server as BPEL-based process flows. The WebSphere Integration Developer can now be used to manipulate these BPEL flows or to develop ad hoc ones as required. FileNet P8 Designer can also be used for process modelling, storing the process in XPDL format. The reason for this is that FileNet was primarily focused on document-related workflow needs, and for this type of activity XPDL is the most appropriate format. In order to make these two environments work together, IBM has provided import/export capabilities between the two environments. So, a document-related flow could be modelled with FileNet, then exported into WebSphere so that it could become part of a wider process flow. Obviously having two choices for process modelling is not ideal, but it is probably the only way for IBM to look after both the FileNet and WebSphere customer bases fairly. FileNet P8 has comprehensive support for **document-related workflow**, but for the sake of this assessment, the rest of this section will concentrate on the IBM WebSphere BPM support since this is targeted at the human and system related workflow needs which are generally the ones of most concern to users.

In addition to being able to import models from FileNet, WebSphere Business Modeler can also import Visio flowcharts or ARIS-based process models. Once a model is created, it can be published for **collaboration** with process reviewers or other process specialists for refinement and approval, using WebSphere Business Modeler Publishing Server. This support, combined with built-in versioning functionality, makes it possible for process models to be defined, reviewed and updated across the enterprise as needed. Another useful feature offered by WebSphere Business Modeler is a 'hot deploy' facility, where an authorized business process specialist can design a process modification and deploy it directly, without the need for developer involvement. Clearly this facility needs to be used with great care, but it is useful for delivering simple changes quickly into production operations, for example when an audit step is added to a particular process in the event of compliance concerns.

WebSphere Business Modeler comes in a number of different flavours, including a basic product package and the WebSphere Business Modeler Advanced packaging that brings in other WebSphere tools to support additional features. This advanced packaging offers process simulation capabilities, where **process simulation and analysis** can be carried out before implementation. **Process implementation and execution** is handled by WebSphere Process Server. Not only does WebSphere Process Server provide the WebSphere Integration Developer tool for building and refining BPEL flows to control workflow, but it also includes support for **forms-driven** human workflow based on its Lotus technology, as well as all the other human workflow functionality such as task lists. To complete the process modelling picture, it is necessary to position the recent Telelogic acquisition. Telelogic Systems Architect also allows process modelling, but this is more at the enterprise planning level. These models can be imported into IBM WebSphere Business Modeler for further refinement into operational process flows.

IBM offers a number of options to support users of the process. WebSphere Portal can be used to create a **user workstation**, customized to the needs of the role, but IBM has also introduced a Web 2.0-style capability called Business Space which provides a mash-up approach to the user workstation, allowing different widgets representing particular user activities to be dragged into the browser window. Forms can also be displayed using the Lotus Forms Viewer capability.

IBM WebSphere Business Monitor offers support for **process monitoring** and **executive dashboards**. Process performance data gathered by WebSphere Business Monitor can be exported directly into WebSphere Business Modeler for further analysis. **Business rules** support is provided at a basic level by WebSphere Process Server, but for anything other than simple rules IBM offers the specialist rules engine from its ILOG acquisition. **Business events** support is provided by WebSphere Business Events, which offers a business-level, 'plain English' interface to defining business events that may occur in process execution and what action to take if such an occurrence is detected.

As far as delivering the **integration infrastructure** required for BPM, IBM is arguably the market leader in service-oriented architecture (SOA) based integration infrastructure, with its WebSphere family of offerings. This has the advantage for BPM users that the integration infrastructure and the BPM tools are all provided under one family through the use of a common Eclipse-based tooling environment.

IBM time to value

On the skills front, one challenge for users of the IBM solution is that they have to deal with potentially two different BPM environments in the shape of the WebSphere and FileNet based solutions, each with their own specific **skills requirements.** However, at least IBM is able to offer what is predominantly a single environment for the WebSphere side of its BPM support, being an Eclipse-based toolset with plug-ins for the various different requirements.

Considering the **ease of use** question more generally, as touched on previously IBM has delivered a valuable capability called Business Space, which offers many strong ease of use possibilities and also helps address skills requirements issues. The principle behind Business Space is that for each part of the BPM solution,

whether it is process modelling, process participation or process monitoring, there is a need for an interface that is tuned to a business-based skills set rather than a technical one. Business analysts need to be able to model processes, end-users will need to be able to see what tasks are awaiting their attention and where completed work should be routed and management will be interested in business performance and KPI status. Business Space is a Web 2.0-style capability for customizing a web browser display based on selecting a number of different widgets to be displayed. For example, a process analyst might have a display with one portion handling the process review capabilities offered by WebSphere Publishing Server, another used to draw up new processes and simulate them, and a third showing a report on how a newly deployed process is performing. This idea of a personalized browser interface, coupled with a wide selection of widgets covering all aspects of IBM's BPM support, contributes substantially to improved ease of use, resulting in less need for acquisition of new skills and greater **productivity**, all of which accelerate time to value.

In terms of **supporting existing investments** to smooth the BPM implementation as much as possible, one of the biggest challenges for IBM is in the area of packaged applications. In many cases packaged applications will form a key part of business processes, and while Oracle and SAP are major application providers and therefore have a natural affinity to them, IBM must instead work with these packages and others. IBM offers limited support for specific vendor packaged solutions, but instead compensates by offering hundreds of **process templates** that are either industry based or generic. For instance, IBM's IFW (Information Framework) process models offer a wide range of prebuilt process templates for the banking industry to handle challenges such as alignment with Basel II requirements. As far as application packages themselves are concerned, integrating with these packages is relatively easy since IBM's SOA layer has adapters that can talk to most major application packages, but getting hold of the process templates representing these packages is not so easy, although IBM's acquisition of Telelogic promises to address this issue.

There is one more powerful advantage IBM offers in accelerating IBM has a powerful advantage in accelerating time to value - its IBM Global Services systems integration arm. This has a number of implications. Firstly, this ensures that IBM has plenty of BPM-skilled **professional services** resources that can be made available to help speed up BPM time to value directly, but also the extensive experience it has built up over hundreds of implementation projects has enabled it to produce best practices BPM **methodologies**. Additionally, this same experience has made it possible for IBM to build and continually extend industry-specific accelerator opportunities, through **industry frameworks** such as IFW, mentioned above, and the recently announced Retail Integration Framework.

IBM value potential

The first point to observe is that by combining the WebSphere and FileNet parts of the BPM solution, IBM provides comprehensive BPM support across the full range of process needs, spanning **human, system and document related activities**, although being two solution families does present some challenges. Extending its BPM solution into the value chain, IBM offers **B2B support** in the shape of its WebSphere Partner Gateway, a B2B hub offering EDI support and various adapters. The ability to handle all the different process disciplines and extend beyond the enterprise greatly enhances the overall potential of the IBM BPM solution.

However, IBM is able to go even further. BPM can be implemented at many levels, but for the best possible results it is often necessary to stand back and look at the business as a whole in terms of its moving parts and how they relate to each other. This leads to an overall business model which can be optimized and rationalized before then starting to drive downwards into specific BPM implementation. The result is not so much BPM support for particular processes, but rather a BPM-based **business transformation** that can deliver extensive benefits across the board. IBM once again leverages its systems integration arm, offering a range of services designed to take executive management through this business modelling methodology to achieve the desired transformational results. Then **continuous process improvements** through the IBM mix of process modelling, simulation, and monitoring capabilities together with the IBM events support provides for continual optimization

of this newly re-engineered business. It is this 'business-centric' focus of IBM's BPM approach that offers perhaps its biggest differentiation from Oracle and SAP.

One area deserving special mention in terms of value potential is IBM's focus on **process integrity**. While most vendors offer a basic level of recoverability and availability measures, IBM has put considerable effort into looking at process integrity needs. There are all sorts of complex challenges to be handled in the BPM area in terms of integrity due to the varied nature of the processes being handled. For example, there may be long-running tasks where state has to be maintained over a lengthy period, issues with handling indeterminate state through the involvement of human activities, and problems with ensuring activities are properly sequenced in recovery scenarios. IBM has focused particularly on the issue of compensatory activities (or spheres in IBM terminology) that represent the IT-based and human tasks needed to ensure a consistent business state. As BPM becomes more prevalent, this issue of maintaining process integrity is likely to rise higher and higher on the list of user requirements.

Finally, IBM's even-handedness towards applications and packages from any suppliers means that IBM's BPM solution can offer value across a much wider segment of the enterprise than the more supplier-specific Oracle and SAP ones. The table below summarizes the relevant points that relate to IBM's BPM solution.

BPM from IBM

Functionaltiy	Time to value	Value potential
• Two different BPM environments (WebSphere and FileNet) • Good collaboration support for process design and review • Telelogic offers enterprise modelling, but needs integrating with the other BPM offerings • Business Space offers a powerful and flexible user interface for business users • ILOG will provide a strong Business Rules Engine • SOA support through the WebSphere family is best in class	• Two skill sets may be required to handle processes covering document-related and other needs • Business space will make business users much more productive and reduce training needs • A wide range of generic industry specific and cross industry process templates and frameworks to speed solution delivery • Strong skills and experience in delivering BPM solutions to hundreds of clients • Tried and tested BPM methodologies	• Comprehensive support for system, human AND document-based processes • Extensive process-based business transformation experience / services • Market-leading ability to ensure process integrity is maintained • Sustainable customer value delivered through the IBM focus on 'Dynamic Business Processes' • Vendor-agnostic approach in terms of application / package suppliers

Figure 5:- Key characteristics of IBM's BPM support

BPM from SAP

Like Oracle, SAP is going through transition in terms of its BPM offerings. Although it does provide functionality in previous releases, the new SAP NetWeaver BPM is the major focus for BPM support, with early deliveries taking place in the second half of 2008 and general availability expected early in 2009. This assessment takes into account the functionality as promised in this new code base, since it is already in the market at early customer sites, and SAP is talking freely in public about it. One of the main features of NetWeaver BPM is that it brings the human-oriented and system-oriented workflow management together in one implementation. However, an important theme throughout this section is that SAP's BPM support, and indeed its underlying SOA support, reflects its focus on SAP application workloads and serving the needs of the SAP application portfolio base. This focus results in a narrow view of required BPM functionality, but strong capabilities in the SAP-specific process case. However, it necessarily means that SAP's BPM solution is far less attractive outside

of its SAP portfolio heartland, and is geared towards specific SAP component needs as opposed to delivering a broad, enterprise business solution.

SAP functionality

SAP NetWeaver BPM is a standards-based BPM product that is shipped as part of the SAP Composition Environment. It offers BPMN-based **process modelling** support through its Process composer component, **process execution** managed by the Process server component and **user workstation** support through Process desk. Process composer creates process models to the BPMN standard specification and enables these models to be manipulated and updated, while Process server executes these processes in the Java application server environment included in the SAP NetWeaver Process Composition facility. The Process Composition facility also includes access to the SAP Enterprise Services Registry for discovery and registration of services, and software lifecycle management capabilities such as versioning. User workstation support enabled by the Process desk component either makes use of the standard SAP user interface offered by the applications suite or universal worklists provided by the SAP NetWeaver Portal product. Not only does it support task management and event resolution, but it also allows user interfaces to be designed with SAP Web Dynpro, and PDF-based **forms** support through SAP Interactive Forms by Adobe.

As well as offering process modelling at the BPMN level through SAP NetWeaver BPM, SAP also supports higher, enterprise level of modelling through its relationship with IDS Scheer, the supplier of the ARIS modelling tool. SAP Enterprise Modeling Applications by IDS Scheer offers modelling support for business, IT and business intelligence architects. Models created in this environment can then be accessed by the SAP NetWeaver BPM facility.

SAP offers limited **business rules** support through its SAP NetWeaver Business Rules Management product, delivering a basic level of rules-based capabilities. However, SAP has recently acquired the Indian business rules engine provider, Yasu, and in future BPM releases it is expected that the Yasu functionality will be incorporated into or replace the SAP NetWeaver Business Rules Management product. The challenge for SAP will be to manage this switchover without causing its user base unnecessary disruption.

SAP **process monitoring**, **event handling** and **analytics** are in a state of transition at the moment, which may spell problems for current users. The SAP NetWeaver infrastructure encompasses SAP's process integration capabilities, and process monitoring was provided as part of this. However, with its acquisition of business intelligence (BI) company Business Objects, SAP is now bringing in the analytical and reporting facilities of Business Objects into the SAP NetWeaver picture, through its SAP NetWeaver BI capability. It is here that tasks such as monitoring business metrics and KPIs and detailed analysis are carried out. SAP NetWeaver also contains an events processing facility to handle the detection and notification of events. **Executive dashboards** and informational displays on business performance are handled from the NetWeaver layer too.

SAP NetWeaver Process Integration provides the necessary **integration infrastructure** to achieve SOA-based integration, together with a range of adapters for talking with non-SAP environments. Since the process integration and BPM capabilities are both based on the NetWeaver platform, they benefit from sharing a common toolset and operate smoothly together.

SAP time to value

SAP is trying to offer **ease of use** by putting all its BPM activities under a single Eclipse-based tooling environment, but this is some way from being achieved so far.

Perhaps the strongest card SAP has to play on the BPM front is its **support for existing investments**, at least in the shape of investments in SAP application packages. Because SAP owns these applications, it is ideally placed to leverage this in-depth understanding in a BPM environment. When a user has identified additional business value to be obtained by modifying or combining elements of business processes together, a major

part of the task is the discovery phase, where the BPM team needs to work out how the process is implemented today. Until this is done, BPM cannot even get going. But In a SAP-application dominated enterprise, most of the relevant business processes will be implemented today by SAP applications, and in this case SAP offers the process templates these applications represent in its Enterprise Services Registry. This gives these enterprises a significant kick-start in their BPM activities, enabling them to start straight away with a blueprint of the way the processes work today. SAP has made sure these process templates can be brought directly into the process modelling environment to make the task as easy as possible. These processes can then be manipulated, combined and the new versions stored in the Enterprise Services Registry.

However, while support for existing SAP investments is excellent, the SAP BPM solution does not have a strong story to tell when it comes to non-SAP assets. ARIS charts can be imported into NetWeaver BPM, but apart from that it has no special support for process templates from other application suppliers such as Oracle. Admittedly the SAP NetWeaver Process Integration product provides an SOA-based integration infrastructure that supports a range of adapters to at least try to establish a level of interoperability with other environments, but most of the adapters are supplied by iWay, offering a patchy level of support across all the different environments. This all just re-emphasizes SAP's narrow focus on serving SAP package needs first, and dealing with all other environments as a secondary consideration.

One attraction of the SAP approach to BPM is the fact that its capability is based on the SAP NetWeaver platform, just as the process integration capability is. The advantage in terms of time to value is that the skills set required to work with the two solution areas is largely the same, and since the integration infrastructure is a prerequisite to being able to implement BPM this will have a beneficial effect on overall **skills requirements**.

The SAP-application focus carries forward across just about everything SAP does. So, for companies based predominantly around SAP applications, SAP offers a strong combination of **methodologies, samples, templates and industry support**. It offers different systems management environments for various industry needs, and indeed an industry focus runs through a lot of what SAP offers in terms of **professional services**, particularly for the financial services, manufacturing, public sector and general services industries.

SAP value potential

While the new SAP NetWeaver BPM product brings together **human** and **system** based process needs, SAP does not offer a lot in terms of **document-based** workflow support. It does offer content management facilities to archive and manage documents and images, but it does not currently do anything to bring these elements into an overall process flow apart from SAP application-specific examples. However, SAP has a better story in terms of carrying its BPM values across the **value chain** through its SAP NetWeaver Process Integration capability. Not only does this offer a range of technology adapters, but SAP has also partnered with Seeburger to provide a wide range of adapters for different industries and EDI formats. Also, SAP has worked with Informatica to build the SAP Conversion Agent which accommodates unstructured and semi-structured data needs, enabling integration with Microsoft Office tools.

At the broader level of BPM value creation, SAP Enterprise Modeling applications by IDS Scheer provides access to the IDS Scheer ARIS modelling tool at both business and IT architecture levels, providing facilities for enterprise modelling. This enables a limited amount of **business re-engineering** on top of BPM. In terms of **industry standards**, though, SAP has a reasonably good record. It has been particularly active in establishing some of the industry interoperability standards such as RosettaNet, as well as some of the web services standards such as BPEL4People, the update of BPEL to handle human interactions.

If SAP can successfully integrate its Business Objects acquisition into its SAP NetWeaver infrastructure, then this may well promise a high degree of **business performance analysis**. Business Objects was one of the major business intelligence vendors before SAP acquired it, and as such it has strong analytical and reporting capabilities.

The following table provides the main observations related to SAP's BPM approach.

BPM from SAP

Functionaltiy	Time to value	Value potential
• BPM capabilities primarily available in one environment, that is SAP NetWeaver • Business Objects technology provides strong business intelligence / analytics capabilities • Business rules vendor Yasu needs to be brought into the overall solution • SOA support is reasonable although quite SAP-centric • Excellent support for processes involving SAP applications	• As SAP moves closer to delivering one toolset, this will reduce skills requirements • Process templates for SAP applications can be imported, modified and exported freely • Industry-based support is very good for BPM needs that involve predominantly SAP applications	• Little generic BPM support for document-based workflow • Good B2B support through the Seeburger partnership • Potential for powerful BPM-based analytics through exploitation of Business Objects technology • Largely SAP-application centric, with limited support for non-SAP environments

Figure 6: Key characteristics of SAP's BPM support

Contrasting the different BPM solutions

When contrasting the various different vendor approaches to BPM, it quickly becomes clear that each vendor's positioning is dictated to a considerable extent by its strategic starting point. In essence, SAP approaches the topic from a basis of dealing with the needs of users of their own package portfolios, in a bottom-up fashion, as does Oracle to a lesser extent. In contrast, IBM tackles the subject from the broader, top-down perspective of BPM as a tool to drive cost efficiency, productivity and agility across the enterprise.

To illustrate the difference, first consider SAP and the development of its BPM story. SAP's primary focus is users of its applications portfolio. Partly this focus is to continue to serve these users to maintain user growth and loyalty, but also SAP is seeking to defend itself from increasing attack from all sorts of areas including specialized CRM/ERP/SCM solutions and piecemeal replacement of SAP components. Therefore, a top priority for SAP was to provide the process templates of existing SAP applications, discussed in the earlier SAP section. In contrast, SAP has only recently started to pay serious attention to providing a vendor-agnostic service-oriented (SOA) middleware platform for general integration needs, preferring initially just to concentrate on internal SAP portfolio integration requirements. Indeed, a proof-point to this argument is the public statement from SAP management that the purpose in life of its NetWeaver integration middleware is first and foremost to serve the needs of the application portfolio. Therefore, not unsurprisingly, BPM support for non-SAP application packages is considerably less comprehensive than for SAP ones, being more or less limited to interoperability through middleware-based adapters. Of course, SAP is likely to continue to work to expand this 'SAP-centric' position, for example by acquiring business rules support provider Yasu to replace its SAP-internal, basic-level business rules capabilities. However, given its strategic focus on its own portfolio progress will continue to be gradual.

A similar story emerges with Oracle. Of course, Oracle started out life as a database management system vendor, but although this is still a strong, mature business, in more recent years Oracle's focus has been on its role as a provider of a wide range of business applications and packages in a similar mode to SAP. Through acquisition of companies such as Siebel, PeopleSoft and JD Edwards, Oracle has built a broad portfolio of

application packages, and for some considerable time has been dedicated to expanding and maintaining this application business. However, as users have increased demands to get more value from existing application investments, the requirement to be able to integrate these applications together in different ways has grown. Also, as in the SAP case, Oracle is eager to defend itself from new forms of competition. As a result, BPM has become a focus for Oracle, but initially driven by the user requirements around its own portfolio rather than broader demands. So, Oracle delivered its application integration architecture (AIA) as a way to improve integration across its packages, sourced as they were from multiple different acquisitions. It introduced its process integration packs (PIPs) as a way of speeding this integration. But these were all measures driven by the narrow needs of the individual Oracle application packages.

Admittedly it did also begin to deliver elements of the broader enterprise BPM solution by starting to deliver its own integration and SOA middleware, but success with these offerings was patchy at best. It is only since it recently acquired BEA Systems that it can boast a more comprehensive infrastructure to support wider BPM usage, and even then there is a long transition path ahead for users as Oracle merges the BEA offerings with its own. However, Oracle's challenges stretch beyond having to accommodate this acquisition at the product level. While on the one hand it wants to deliver a more complete BPM and integration solution, its Oracle portfolio-specific focus that has resulted in AIA and the PIPs does not always sit well with the more vendor-agnostic approach offered by the BEA base. For example, note the way that although the new BPM solution can get at process models delivered by the PIP offerings, these models are read-only to the BPM tools. In other words, the package-centric Oracle faction has allowed the BPM middleware tools to look at what they do, but not to change or influence it. This is a real drawback for BPM projects, and is representative of this deeper cultural issue. Then there is the issue over who controls the various user interfaces – application packages providing performance information and user forms and displays, or the BPM middleware offering the same thing.

In contrast to this, IBM starts from a position that it does not own applications, but is a broader IT-based solutions provider, with a market-leading integration middleware infrastructure as well as a great deal of experience in IT projects across all industries through its global systems integration arm. As a result, perhaps the biggest difference in the BPM space between IBM's approach and those of Oracle and SAP is the business-oriented focus that underpins everything it does. IBM is focused on BPM as a way for users to do more with less while at the same time achieving a level of business agility that allows them to compete and respond to market changes more effectively. For instance, this is instantiated in IBM's focus on delivering on its 'dynamic business processes' concept. IBM seems to have approached the whole BPM question in a top-down fashion rather than the bottom-up one used by SAP and Oracle. That is, while the other two vendors are working from the perspective of improving things for users of their own processes as much as possible, adding functionality piece by piece to achieve this, IBM seems to have decided to work down from the need businesses have today for agility and cost optimization across their entire IT portfolios, leading to the implementation of processes that are explicit, visible, adaptable and business-driven regardless of different suppliers or implementation environments.

Additionally, since IBM has no vested interest in supporting one particular application portfolio over any other, it offers vendor-agnostic support as far as applications are concerned. IBM's integration infrastructure provides connectivity that is effective across a wide range of applications, both bought-in and home-grown, all through an infrastructure with strong systems-related characteristics such as process reliability, integrity and performance. It may not be quite as easy for IBM BPM users to manipulate SAP or Oracle packaged processes as it is for users of the respective vendor's BPM solutions, but this is more than balanced by the fact that the IBM BPM solution is generally more suited to addressing process needs that are not restricted to a single application portfolio.

This broader, business-oriented vendor agnosticism is exhibited in a number of ways in IBM's BPM solution. For example, while SAP and Oracle may offer some methodologies and industry solutions based specifically around their own application use cases, IBM typically offers professional services support that has a much wider applicability in the enterprise, often including industry-specific capabilities too. In addition, because IBM

has to address the needs of all applications, with no self-serving interest in the application choice, it is more than happy to offer help with SAP and Oracle applications. For example, the Telelogic offering can import the same SAP application process models used by SAP NetWeaver BPM into IBM WebSphere Business Modeler. The flip side of this is that typically Oracle and SAP do not offer much help in interoperating with applications from the other supplier, since they see each other as major competitors.

Summary

Business process management (BPM) today spans all aspects of IT-assisted process handling, across the enterprise and beyond. This may involve human interactions with processes, interoperation between different IT programs and components and externally-submitted forms and imaged paper documents. In today's economic environment, focusing on processes is particularly important. For instance, businesses are striving to minimize costs by streamlining and automating processes wherever possible, offering the opportunity to cut the ongoing cost base through people reductions. In addition, as companies scramble for all possible sources of revenue, process operations need to be dynamic enough to support a growing and diversifying customer base, and at all times executives are acutely conscious of the need to be able to demonstrate strict and responsibly managed compliance in process execution.

Most major software vendors have moved to address these BPM needs, but with varying degrees of success. One important factor to bear in mind when making any decisions on BPM technology is which application suites and packages are driving the business today, since these will represent a major part of IT-based process instantiation. For instance, Oracle BPM offerings are very focused on Oracle packages, while SAP technology concentrates on SAP applications and services. However, the other factor to take into account is whether the desire is to zoom in on addressing the needs of a particular SAP or Oracle-implemented process, or instead to take a more general, top-down view of delivering increased process agility and cost optimization through BPM in a vendor-agnostic way. This is the IBM approach, reflected in its comprehensive functionality, and for most users in today's economic climate this more general, business-oriented, more widely applicable focus could well dictate supplier choice. As a result, at least for the moment, SAP and Oracle have to play catch-up just to keep IBM in their sights.

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