White Paper

Business Process Management

Managing Change for the Dynamic Enterprise

IBM ®
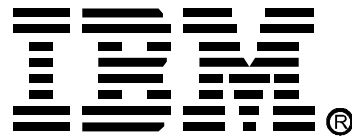
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Important Notice

► EXECUTIVE SUMMARY

E-business gives us the opportunity to work within a dynamic flexible environment, to respond to changing market forces more readily than in the past, to be able to influence the tides of change – rather than being swept along with them. We will all need to operate within extended networks that are constantly changing, and within which each organisation's position or role will also change.

These opportunities will only be seized by those organisations that recognise the need to have effective management tools available, which will make the control of the rapidly changing markets possible.

This is the basis of IBM's offering in the field of Business Process Management. A set of tools, methodologies, infrastructure, and experience that will place control back at the heart of the business. With a 'business dashboard' that will display the state of the business in real-time, and allow business people to make alterations to the underpinning business processes that will – again – happen in real-time.

An important aspect here is the giving of control to the business person, and allowing that control to influence and change the business processes. There can be nothing more important, in Butler Group's view, than these two elements. Control by business people over business processes. The ideal of Business Process Management.

Naturally enough, this can only happen if the technological infrastructure allows the adoption of such a solution. If this infrastructure is restrictive in any way, then there is a layer of complexity added that will either remove the real-time nature of change, or will take away control from the people who understand the business needs.

This is the strength of the IBM solution. It ensures that there are no underlying technology issues, the management of which will have a negative impact on managing the business processes. Additionally, it ensures that all available processes information is immediately available for analysis and change.

This 'freeing up' of technological constraints is made possible by the WebSphere Platform, which has grown from an application server to become the basis for e-business in the IBM product and services offerings.

In a world where there is more 'hype' than substance, it is refreshing to consider a solution that addresses real needs and can create an operational framework that will allow organisations to take advantage of the e-business possibilities.

► BUSINESS PROCESS AS THE POINT OF REFERENCE

With any evolving business model, it is necessary to have a point of reference from which the way forward can be clearly mapped. This is doubly true with the move towards becoming an e-business, or taking up the e-business model.

Due to the sheer complexity of the e-business model – which has yet to stabilise – this reference point has to be an element that is fundamental to business itself. In the early days of e-business, the focus was on the Internet; taking a delivery medium as the driver instead of an enabler. This, all too soon, has proved to be a blind alley.

There are several reference points that Butler Group would consider as being relevant and key enablers, but none more so than the actual processes that form the central 'how' of the business. By taking these processes, discovering them, and abstracting them, a model can be built that defines which processes need to adapt, which can remain unchanged as core elements of the new model, and which can become flexible and take on a dynamic role in the fast-changing world.

This is only the first part of the picture. The next requirement is to consider the 'why' of becoming an e-business. The driver has to be more than the simplistic statement 'that all your competitors are doing it'. This is not a driver; it is a reason – which, despite what it may first appear to be, is far more than a semantic difference.

The 'why' of e-business is often put down in snappy phrases, without proper consideration given to their true meaning, or their true purpose. The first part of this White Paper will examine more closely the true benefits that can be gained from becoming an e-business, using the common phrases of the day, but with a deeper examination of these phrases.

From this starting point, we will examine the reasons why business processes form such an effective central reference point on which to build the e-business model, and the specifics of IBM's solutions in this area.

Business Process Management involves the understanding of each and every resource; what its purpose is, where in the process it acts, how long it acts for, what is the effect it has on future actions and resources.

Firstly, we have to define exactly what we mean by a process, and what management entails. A process can be considered as a series of actions that are undertaken to produce a given result. Each of these actions will involve different and diverse resource, both internal and external to the organisation, and both technical and human.

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Furthermore, Business Process Management involves administration of the interaction between different processes. It is a rules-based cause and effect model that defines relationships and manages the result of rules change both within the specific process and across related processes.

▶ REDUCTION OF COST

Technology has always been seen as a driver for reducing the cost base of a business. Automation, in the early years of technology, created processes that could run without – or with very little – human intervention.

With the core systems that came under this sort of control, this automation of processes was a prime target, and the costs saved – in the micro-economic sense – created a whole new business model that was taken up by the vast majority of businesses.

One negative aspect of the success that technology brought to this area of business was the feeling that 'process automation' was the way forward for all business processes. This has proved to be incorrect. There is a real danger that automation – as opposed to management – will have the opposite effect to the one desired.

There are still many cost savings to be made from the correct implementation and use of technology solutions, but not all of these are gained by the simple automation of processes; the vast majority of the savings will be achieved by creating a technology process infrastructure, aligned with and allied to the human element of the same infrastructure.

To take one of the new high-level processes that are coming under much discussion – E-Procurement – as an example, one can see that automation is not the answer. Before looking at e-procurement as an example, the term 'high level process' should be explained.

Processes can be considered on multiple levels. At the high end, there are strategic processes (ways of running a business) such as E-Procurement or Customer Relationship Management (CRM). At the lowest end, there are process instances that can contain a single transaction, wrapped in business logic (that make sense of the transaction).

Between the two extremes are different levels of processes that fall between the operational and the strategic model. These are the most common types that require levels of automation and human intervention, but all of which require managing.

To return to E-Procurement as an example of how cost savings can be made, but how the solution has the all important human element attached, we need to examine where and how the savings are made.

What an effective E-Procurement solution does is to give greater control and understanding to anybody entering into the high level process. It can take the parts of the lower level processes and make them transparent to any user. It removes the required 'knowledge' of a process part away from an individual and makes it accessible to any and every user.

Thus, in this example, sourcing a supplier of office equipment would not require knowledge of suppliers used in the past, but would present an aggregated catalogue of the items required to any user; from which, a selection could be made dependent upon other requirements such as cost, delivery times, suitability of product, etc.

This is the first example of where taking processes and automating selected elements can have a beneficial effect. The process element in this case is the way that primary selection is carried out. In the old model, it would be an outbound element, with the user actively searching across supplier catalogues; the new model is inbound with the information being presented to the user.

Which elements can be automated, and which need to come under human control is a key part of process management. This raises the question of why we should use the term management, when, in this instance, we are talking about process planning.

The answer is that processes are not static. If there is one thing that businesses need to understand, it is that e-business processes will be constantly changing, and as such will need to be managed; as does any dynamic model.

▶ THE DYNAMIC NATURE OF PROCESSES

Already, organisations are coming to terms with the rapidly changing face of business. This is not just a matter of becoming aware of new channels to market, but understanding that these channels will not remain static. As these channels change and evolve, so will the attached and inherent processes need to do the same.

To take an example from the physical world, we will examine the changes that were required as businesses moved from multiple outlets (channels) to more centralised and larger channels.

The introduction of hypermarkets (and the subsequent closure of smaller outlets) had two major effects on the ordering process. The number of individual orders decreased, and the size of each individual order increased. The net effect in terms of total volume of goods ordered (ignoring market share changes) may have been zero, but the effect on the processes themselves was anything but.

In the first model, procurement processes could be directed at single suppliers. In the second model, the procurement process would have to be divided before being sent to individual suppliers. There are two changes here. In the first model, the processes were distinctly linear in nature, while the second model shows the processes to be more complex.

Historically, processes have been internal, short-lived, and with clearly defined end-points. These end-points were the human interfaces that helped define the processes themselves. With the growth of e-business, it has become apparent that processes are now being externalised, they have a longer instantiation, and the end-points are other infrastructure systems rather than a human element.

The first requires very little management, while the second has a much greater degree of management overhead required, as the process is more dynamic. If there is one thing that we can be sure of in the new economy is that there will be more than two models and that the complexity of processes will increase. With increased complexity comes the need for more management, and easier management.

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▶ NEW BUSINESS PROCESSES

Earlier, we talked of different levels of processes, and indicated that the vast majority of these exist within a range that contains a number of transactions. We also talked of processes being transaction(s) wrapped in business logic that made sense of the transaction(s). This is an important point to consider when solutions for process management come under scrutiny.

To look at it in a different form, it can be considered as the difference between the syntactical and the semantic elements. We have technologies that are very good at the syntax – eXtensible Markup Language (XML) is the latest that has come to the forefront – but that is only one part of the picture, we also need the semantic element; otherwise, all we are doing is base-level integration.

We also need to examine why we need the two different elements. Internally, we need to connect across diverse applications, and to build and manage processes that run across these applications. At one level this is a syntactical problem – how applications will talk to each other. At a much higher level, it is a problem of semantics; what are we trying to achieve with any specific instance of integration.

Processes are being externalised. That is, they no longer just need to be able to run across internal applications; they have to interface with external applications. This creates a whole new raft of business concerns.

Firstly, there is the issue of access to internal processes from external sources. Again, it comes back to a difference between base-level and high-level control. At the base level, we would be talking about access to data sources – the passing of data between applications – at the higher level, we are talking about the process itself; the reason for the passing of the specific data.

Internal processes are relatively easy to control; external ones, less so. Yet both are equally important. That is why it is imperative to choose a solution provider that understands the difference between the two distinct elements and has solutions that can distinguish between the two.

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IBM uses the model of the 'public' and the 'private' process. Whereby private processes are fully under the control of an individual organisation, and public processes are agreed between various organisations. A public process can invoke a private process, but cannot actually 'see' that private process.

Taking this as a starting point for creating a secure process model, it can be seen that process management becomes central to the whole model itself. Any change in a private process must not impact the ability for an agreed public process to work correctly. As private processes are undergoing constant change, and as new applications are becoming part of those private processes, it is incumbent upon all organisations to ensure that these internal changes do not cause the whole structure to fall apart.

The only way that this can be controlled is by separating the business logic from the application itself. Alternatively, to return to the previous discussion; to remove the syntax from the semantic while retaining control and understanding of both elements.

The term 'business logic' is an all-embracing one and is used to represent the idea that control of different elements has to be given over to the resource best able to handle them. This does not indicate that there is a single instance of a set of 'business rules' that can be managed from a central point, but rarther that there are multiple layers that need to be managed separately, but with an understanding of the total effect.

If management is available at these two levels then any changes in the way that business is carried out becomes an irrelevance. We can start with direct connections in a B2B sense, and make the systems extensible to include any new intermediaries (such as the suddenly popular e-markets) without the need to re-engineer all our processes at the application level.

Butler Group has long taken the view that the much-touted Enterprise Application Integration (EAI) space has to a large extent being missing the point. It is not just a question of application integration (although this is an element that is needed), but Business Process Integration (BPI) that will be the key to success in the e-business market. Those organisations that rely solely on the ability for applications to communicate with each other (even across organisational boundaries) will ultimately be left behind as the e-business market evolves.

Unless they understand the differences between EAI and BPI and implement solutions that deal with the latter rather than the former any change in the market will leave them exposed. They also need to understand that BPI is not a static model. There is no point-to-point solution that should not involve the ongoing change-management element of BPI. The tools have to be available that isolate the individual processes and allow them to be changed; while maintaining the integrity of the larger process requirement.

▶ PROCESS AND TRANSACTION INTEGRITY

A further consideration of process management is integrity, and this needs to be looked at from two distinct viewpoints. As a process exists as a series of transactions wrapped in process flow logic (part of the all-embracing 'business logic' discussed earlier), it is vital that any single transaction contained within a single process retains its integrity across the lifecycle of the process itself.
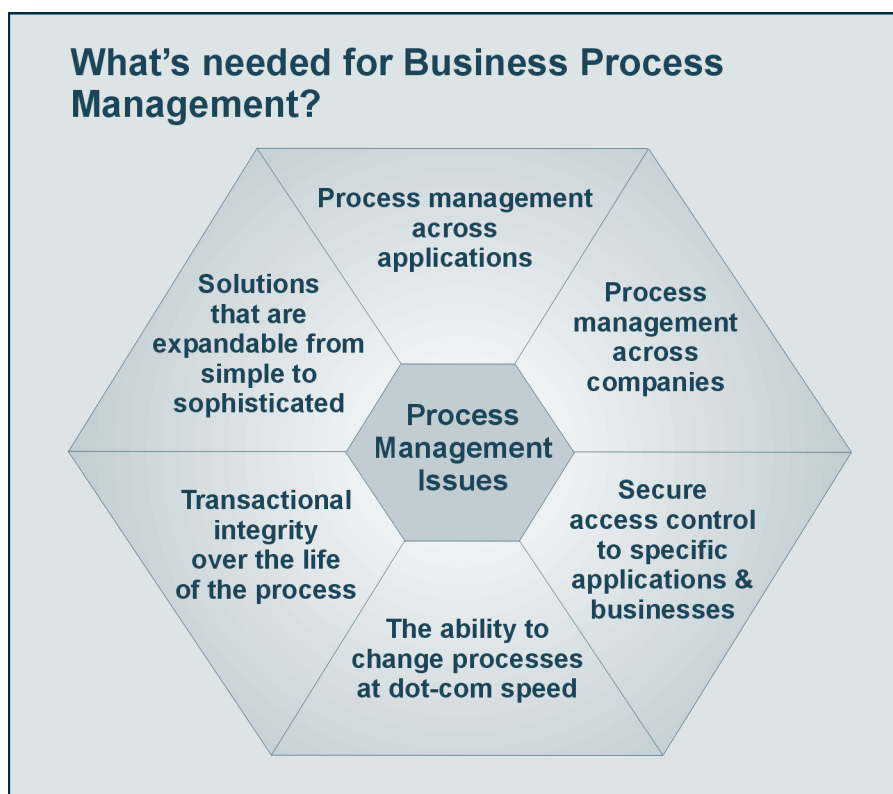
A single transaction can have a life expectancy of anything from seconds to several months (theoretically a transaction could be continuous, but this would probably indicate that something within transactional modelling had gone awry). It is necessary to have an infrastructure that allows that transaction to be rolled back should an error occur. This is not a simple task in itself.

Ensuring transactional integrity (across long-running transactions) is in itself is a complex problem, that very few solution providers can handle. Extending this to multiple transactions within any given internal process increases the problems exponentially. Once the process is externalised, then the scale of the problem becomes almost impossible to comprehend. It certainly becomes impossible to manage at the human level.

Any business process management solution has to be able to 'understand' the relationships between transactions and between processes. Any single transactional failure within a process will compromise the process itself, and will also affect related processes.

Because of the inter-relationship between transactions, processes that contain those transactions, and other processes, a business process management solution has to be able to understand the process flow, in order to know how far it needs to rollback the process on single transaction failure.

Butler Group has always considered that IBM's MQSeries is the proven messaging system for transactional integrity. Therefore, given the initiatives that IBM has put in place with partner organisations, it will come as little surprise that we also believe that IBM has extended this to take MQSeries with the WebSphere platform – the implementation of both synchronous and asynchronous messaging – to the point where the complexities that surround business process management can be handled.

What's needed for Business Process Management?

Process Management Issues

- Process management across applications
- Process management across companies
- Secure access control to specific applications & businesses
- The ability to change processes at dot-com speed
- Transactional integrity over the life of the process
- Solutions that are expandable from simple to sophisticated

One of the problems with e-business is not knowing the future. To be strictly accurate, this has always been a business problem, but an e-business has the ability to grow faster than any type of business before.

The IBM implementation also addresses the issue of scalability. One of the problems with e-business is not knowing the future. To be strictly accurate, this has always been a business problem, but an e-business has the ability to grow faster than any type of business before.

Traditional businesses may have had to plan for growth – in terms of infrastructure requirement – at the rate of 10-20 per cent.

An e-business has to plan for percentage growth in terms of thousands. It may not always happen, but the infrastructure has to be in place in case it does.

Scalable infrastructure is a much-misunderstood concept. Building redundancy into an infrastructure is not the only (or necessarily the best) answer. What is required is flexibility; an infrastructure that will grow with the business – no matter how fast or slowly the business grows. In terms of business process management, the need for the correct infrastructure comes from an understanding of the issues involved.

▶ THE IBM ANSWER

The central element of creating business process management is the WebSphere platform. Having started life as an application server, IBM has taken the brand (along with the base functionality) and created an architecture for e-business.

For those people who have followed the WebSphere history, or who have implemented WebSphere as an application server, it is important to understand that WebSphere is this e-business architecture, and contains within the architecture MQSeries, MQSeries Integrator, MQSeries Workflow, and MQSeries Everywhere. This is not the limit of the products contained within the WebSphere brand, but they the ones that are highly relevant to business process management.
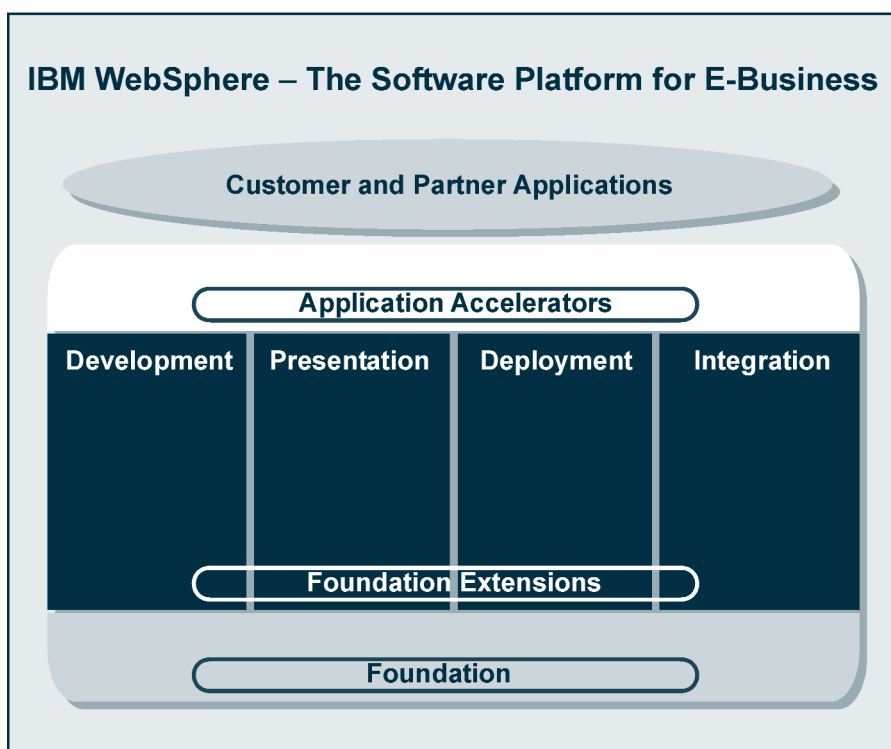
The following diagram illustrates the complete make-up of this new e-business architecture. Building on the foundation of the WebSphere Application Server and MQSeries, there are foundation extensions split into three distinct areas of requirements: development, presentation, and deployment. Above that are what IBM term Application Accelerators, and the final layer contains applications that are being built by IBM and its partners.

From a development point of view, VisualAge for Java and WebSphere Studio can be used to define business processes and develop reusable templates.

On the deployment side, MQSeries Integrator creates a controlled environment for the exchange of application content around the organisation, and Tivoli Policy Director that handles common access control that was discussed earlier with public and private processes.

The top layer – the Application Accelerators – has MQSeries Workflow for internal process management, WebSphere Partner Agreement Manager the handles the inter-company processes, and WebSphere B2B Integrator that acts as the control point for all the other components.

IBM WebSphere – The Software Platform for E-Business

Customer and Partner Applications

Application Accelerators

| Development | Presentation | Deployment | Integration |

Foundation Extensions

Foundation

With this mix of components from the WebSphere Platform, all the various elements of business process management can be brought together.

It is this totality of offering that, in Butler Group's opinion, forms such a persuasive argument for taking IBM's view of business process management and utilising the expertise and extensive product set available.

Although the products contain separate functionality, and perform specific tasks, it is the integration within these products for this particular business case that becomes a major differentiator. To take as a simple example, the VisualAge for Java and WebSphere Studio components. The purpose of these components is to allow the development and defining of business processes and the creation of templates for future development. These are not the only tools available on the market to do these tasks, but they are the only tools available that are already integrated into a whole business process management system at this level, and underpinned by the messaging foundation of WebSphere Application Server and MQSeries.

The issue of proprietary systems has to be addressed, as it is something that always seems to raise its ugly head. At Butler Group, we believe that proprietary is wrong; tying yourself into a single system is an almost sure-fire recipe for disaster. However, we need to understand exactly what we are talking about when we use the word proprietary.

In this instance, choosing this solution is not locking a business into a single system. It is not about having to make a choice as to the future direction that e-business may take, it is about understanding a fundamental of any business and having in place an open independent framework that supports that fundamental element.

If we take the business processes as the fundamental element, and as indicated earlier, Butler Group would see these as a prime starting point for modelling an e-business; then the IBM WebSphere Platform is an ideal starting point.

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Furthermore, it allows the system to become extensible should further modelling be required within other specific areas. In this case, we believe that if anyone is still looking at this platform and worrying about it being proprietary in terms of diminishing future choice, then they have misunderstood exactly what IBM is setting out to achieve and to bring to market.

It would be naïve to suggest that IBM are working in some altruistic fashion; of course it wants people to buy its products, but IBM has recognised the way that this can be best achieved is by creating open solutions that bring real benefit to the market.

It is worth noting that the MQSeries family of products has undergone a shift of emphasis to fit into the WebSphere Platform for e-business. This has not meant a diminution in services but a restatement of where messaging fits into the whole e-business structure.

We have looked at the need for creating an infrastructure that is responsive to change, and indicated that the best way forward is by the separation of business logic from the underlying applications. Messaging is the perfect infrastructure to create this model. The message is the informational part of a business. This information can be understood by applications and humans both inside and outside of the organisation.

MQSeries is the foremost messaging system available today. The MQSeries family also includes MQSeries Integrator, which should no longer be thought of as a technology integrator, but as an information integrator. MQSeries Integrator will perform its translation and routing on each individual event dependent upon the business process rules for that event. The single events are also controlled within the larger picture as to the order of delivery and execution.

The core strengths that have always been the foundation of MQSeries are even more relevant when looked at from a business process management viewpoint. Assured delivery is the only way that business process management can be made to happen. Knowing that the message has been transmitted and acted upon is central to all what follows.

► PARTNERSHIPS

There are three key partnerships that IBM has in the B2B space that require further discussion. These are with Ariba, i2, and Extricity. The first two are focused on the application space and form a powerful; alliance of application development that can and will leverage the power of the WebSphere Platform. The partnership with Extricity is for the WebSphere Partner Agreement Manager, which sits between the internal processes and the external customers.

From a total business process management standpoint, the central control that is offered by WebSphere B2B Integrator is crucial. Without this part of the jigsaw, the totality of offering that Butler Group sees as being such a differentiator would be sadly lacking.

With all three partnerships, IBM has taken a positive stance of looking at true e-business; the total end-to-end management of B2B processes. Up until now, much of the e-business implementation from across the industry has focused on the B2C space, which in Butler Group's opinion was the easy side of the market to attack.

In many instances, the expected returns on B2C solution implementation failed to materialise because the missing element was the need to extend the supply chain into the B2B space and take account of managing complex trading agreements and partnerships in a flexible manner.

► CONCLUSION

The introduction of e-markets and other associated economic entities have forced a rethink on how the new economy will work at the implementation level rather than the conceptual. In Butler Group's opinion, IBM – by taking an early position in this market – has created an opportunity that will bring it to the forefront of e-business. Having promoted the phrase so strongly, it is perhaps only fitting that this should be the case. The vision was not IBM's alone, but the WebSphere Platform will certainly make it a market leader in the move towards helping to create true e-businesses.

Butler Group ▶