



Illustratus

Research

*Using IBM BPM to
Maximize the Value of
Business Interactions*

*Creating business value through
better insight with IBM WebSphere
Business Monitor*

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Executive Summary

As IT systems have taken over the running of most businesses, it has become harder and harder for business teams to understand what is happening on a day-to-day basis, let alone minute-to-minute. Indeed, in its 2008 Global CEO Study, IBM found that 85% of CEOs required a greater degree of visibility into their businesses. After all, how can operations be guided and controlled in today's highly competitive world without a clear picture of business performance? How can the senior management team ensure corporate goals and strategies are being achieved without this visibility? And what chance do companies have of improving their business operations and identifying new innovations if daily operations vanish into an IT black hole? It is only by being able to see how different parts of business operations are interacting, both historically and in real time, that business value can be maximized.

Over the last few years, IT vendors have been striving to improve the alignment of IT to business needs, and to place more and more of the IT-based systems into a business-friendly context. Business Activity Monitoring (BAM) has emerged as the way to offer a business view of IT operational performance, giving the business community insight into how the business is running and interacting, and the opportunity to be made aware of anything that is performing outside expectations. Using BAM, users can have up-to-the minute and historical tracking of such business measures as key performance indicators (KPIs) as well as detailed information about individual business transactions, enabling them to visualize business performance and identify key situations as they occur. In addition, by clever usage of filters this visualization can be tuned to ensure that each user only sees items of interest, and is not swamped by reams of unwanted information.

This business-context based insight goes a long way to addressing the stated desire for better business visibility business, but it is only part of the story. Watching the pretty flames flicker as Rome burnt to the ground might have been fun for Nero, but the obvious corollary is that executives would prefer not just to see what is happening but be able to do something about it, or even stop it happening in the first place. BAM addresses this need in three ways. Firstly it offers extensive historical records of business performance combined with reporting and analytic tools to enable business analysts to identify business operations improvements. Secondly it offers the ability to define various business 'events' which cause some action to be taken. This action might be to send an email or text to alert someone of a potential problem, or even to automatically trigger some other IT-based activity to respond to the event. An event might be something like liquidity dropping below a prescribed level or customer response time goals being missed, and ideally should be created and customized by the business users themselves. However there is a third aspect that BAM brings to the table – the ability to see how the business is behaving and trending over time and to start making predictions based on these trends, so that responses can be taken proactively. For instance, knowing that a sales target has been missed is one thing, but realizing that if current trends continue the target is likely to be missed allows corrective action to be taken when it can still make a difference.

BAM therefore offers not just insight into business operations for the business community, but also the ability to turn that insight into action, both dynamically and proactively. It is this opportunity to change the way the business works based on how it is currently performing that is the basis of the extensive benefits offered by BAM. While numerous BAM offerings have appeared in the marketplace, IBM offers one of the more comprehensive solutions, and it is this solution that is the focus of this paper.

Introduction

Over the last ten years or so, the IT industry has taken huge strides in developing technologies to improve the alignment of IT resources more closely with business strategy and objectives. One particularly successful aspect of these developments has been the decoupling of the specification of business activities and requirements from the technical implementation details. BPM (Business Process Management), for instance, allows business processes to be recorded in non-technical terms for future editing and modifications. These documented process flows are then used by IT-based BPM technology to automatically control and dictate business operations and execution. The result is that the business community can clearly see how current processes are designed and can rapidly implement new requirements. Not only does this yield increased agility, but also a much stronger position on compliance and governance, since implementations can now be more easily verified and controlled.

Other developments in this area of improving the linkage between business communities and IT implementation and execution include areas such as BRMS (Business Rule Management System) technology, designed to make it possible to drive IT application execution based on a collection of 'business rules', and Business Events technology that enables automated actions to be taken when certain business situations occur. IBM offers full and effective coverage of all these areas, but as far as this paper is concerned the prime focus is its support for the area of Business Activity Monitoring (BAM). In essence, BAM provides the ability to monitor online operations, but whereas traditional systems monitoring software delivers information on how the IT resources are performing, BAM monitors the health and performance of business activities. However, it doesn't stop with looking – like other types of monitoring, BAM also supports the ability to take specified actions automatically when particular conditions occur. This turns BAM into much more than a passive measuring tool; instead it becomes a proactive tool that can improve business performance and effectiveness.

The visibility challenge

One of the biggest challenges companies have faced in the past is gaining visibility into operations within a business context. Ever since there have been computers, there have been monitoring tools that can tell operations staff the amount of information flying across the network and response times for various applications. This information is vital for keeping IT operations running smoothly and efficiently. However, the information is all in a technical, IT-based context. But the business community is not actually interested in these details, other than wanting to know systems are all up and running OK. Typical operational questions that worry business managers tend to be

- What percentage of loan applications are having to go for supervisory approval?
- Where is this customer's order? Why has it not been processed yet?
- Are we managing to handle all customer service requests within our corporate policy guidelines?
- Are we seeing any trends in current operations that might suggest new opportunities to win more business?
- Are we tracking to our corporate goals?

The difficulty has always been that because the applications are designed by technical people, it can be difficult to get visibility of what business actions are being carried out at each stage of the application. But the new technologies designed to put IT execution in its business context have opened the way to achieving this level of business visibility that companies desire. SOA (service-oriented architecture) results in services that correspond to individual business actions, BPM technology links IT execution to process flowcharts and steps, and business rules govern how business decisions are made in real-time execution. It is this new level of business-oriented visibility that offers the opportunity to get a much tighter grip on IT-based business execution, which in turn opens the way to more effective execution, improved business optimization and new opportunities. BAM technology provides the capabilities to achieve these aims.

Business Activity Monitoring (BAM)

What is BAM?

BAM does for business execution what systems monitors do for technical execution. So, BAM offers tools to look at the performance of operations in terms of business activities and to display those results in an easily consumable fashion. But BAM also offers the ability to do something about the information it finds, enabling a degree of automation that is most valuable in real-time operations.

Perhaps the easiest way to picture BAM-generated information is to envisage an executive dashboard, with colour-coded dials and bars that provide up-to-the-minute information on the business performance of real-time operations. One display might be a real-time picture of particular business metrics at that point in time, while another might be a historical picture of how KPIs are trending over a period of time. The screenshot below shows some of the IBM WebSphere Business Monitor widgets displayed with IBM Business Space.

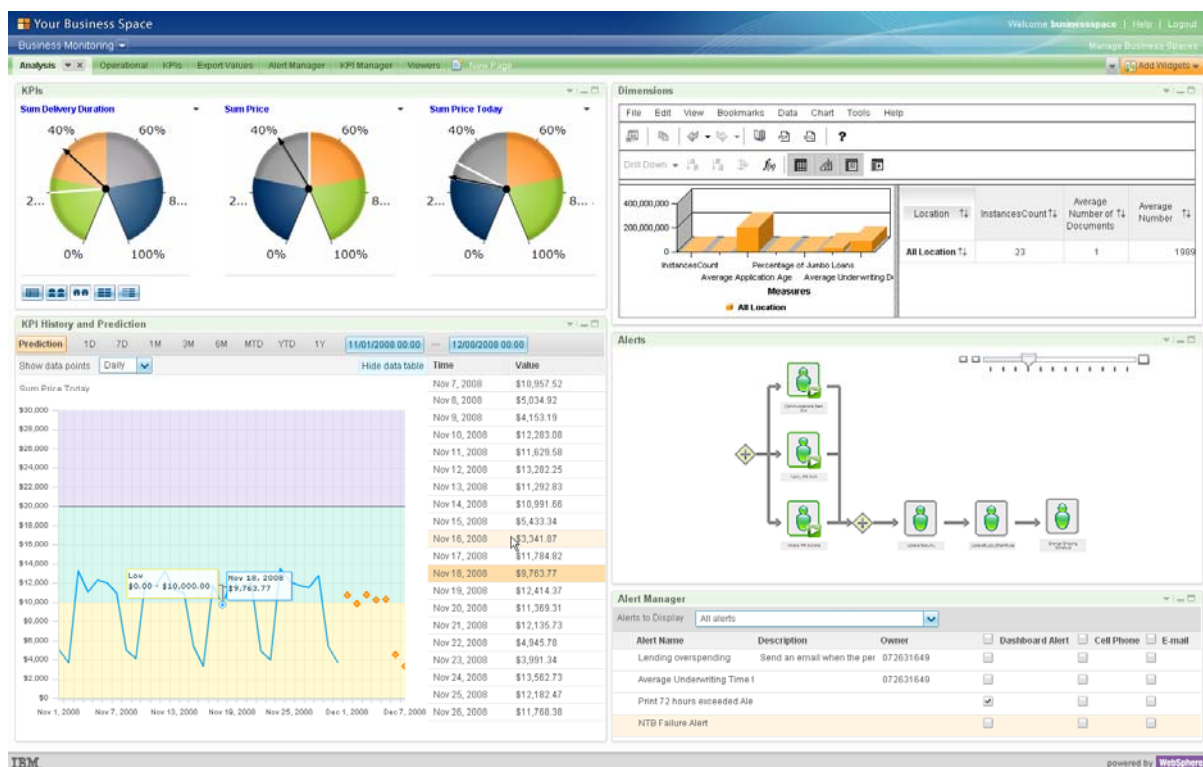


Figure 1: The business-oriented dashboard

When discussing BAM, it is hard not to also discuss business event processing (BEP), business intelligence (BI), business process management (BPM) and business automation – it is closely related to these areas and there is some degree of overlap. However, all areas fall under the looser category of business analysis and optimization. In order to avoid confusion, it is worth looking at the boundaries between BAM and the other areas although these boundaries are not fixed but fluid.

BI is all about understanding and optimizing business performance just as BAM is, but the difference is that BI is primarily concerned with historical data. It is typically used to mine operational data to identify what has been happening and any interesting trends. In contrast, BAM is more real-time and concerned with business execution and historical performance. BEP refers to the ability to specify business occurrences of interest and then either be alerted or take action when these events are detected. BAM solutions require a very tight linkage between business monitoring and business events technology, because not only does event detection underpin the monitoring of defined business measurements, but it is the event processing technology that provides the ability for BAM solutions to take action based on specific occurrences. In essence, a particular combination of

business metrics requiring action will be defined as an event, and the event processor will then detect any occurrence and take the predefined action. This action may be a question of alerting someone to the need to do something, or could be to automate the business response.

The relationship between BAM and BPM is more confusing. While BAM technologies are often focused primarily on providing real-time business level visibility into processes running on BPM runtimes, this restrictive view limits the overall value delivered by BAM. To be most productive, BAM needs to be able to have visibility and a business context for all business operations, whether covered by BPM, SOA, message brokers, transactional systems or databases. The more complete the coverage, the more accurately BAM will be able to support operational effectiveness and efficiency.

For the purposes of this review, a BAM solution will be taken to encompass events processing (BEP) as well as the actual monitoring and reporting. In summary, the major areas of BAM solution functionality are depicted below.

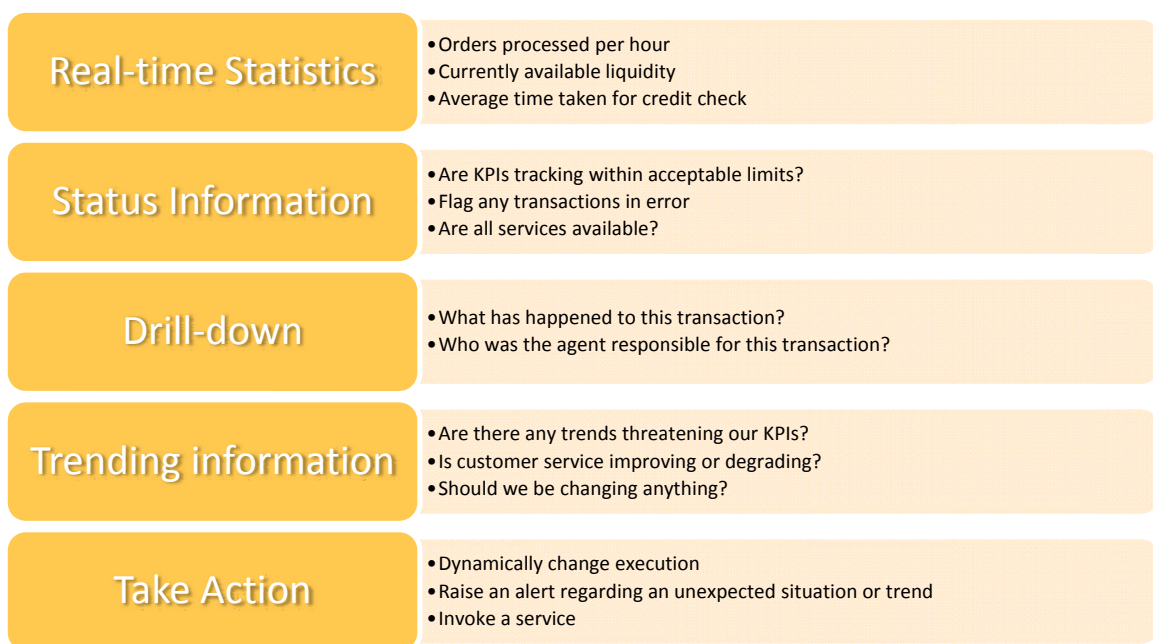


Figure 2: Functions supported by BAM solutions

One important aspect of BAM functionality not covered directly by this list is correlation. Much more so than in the systems form of monitoring, BAM has to be able to put information together from multiple sources across the system to get an accurate picture of what is happening. For example, evaluating a key performance indicator (KPI) may well mean assimilating information from a selection of different systems and correlating them together in real time to get an accurate result.

IBM WebSphere Business Monitor

IBM's BAM solution is built around WebSphere Business Monitor, although other products are also involved such as WebSphere Business Events, WebSphere Process Server, WebSphere Portal Server and IBM Mashup Centre. WebSphere Business Monitor functionality falls into four main areas:

- Defining the business measurements to be gathered
- Gathering the information
- Displaying the information
- Taking action (combined with WebSphere Business Events)

Perhaps the most fundamental point to understand about the way WebSphere Business Monitor works is that desired information to be monitored has to be defined before any monitoring is done. In a systems monitoring example, it is easy to simply measure IT behaviour – storage usage is x, disk response time is y, transaction rate is z and so on. The technical user can then interpret this basic level of information and understand if there is a problem. A business monitor has a different problem to address; the consumer of the business monitoring information is not likely to be able to put the raw execution data together and interpret the meaning, so instead the desired business measures are predefined. WebSphere Business Monitor includes a component specifically for this task, the Monitor Model Editor. Using this editor, the user can build the desired business measures in terms of the particular events that contribute to it. The run-time server portion of the WebSphere Business Monitor can now filter, correlate and measure these events and translate the information into the respective business measures for display.

However, IBM WebSphere Business Monitor V7 offers a number of ‘fast-track’ ways to build these business measures definitions that will save users a lot of time and effort and contribute to a much quicker delivery of at least a preliminary BAM solution. For example, if the IBM Business Process Management solution is being used, WebSphere Business Monitor offers an out-of-the-box view of all executing processes and available process metrics for those processes already implemented under WebSphere Process Server. This enables technical staff to quickly assemble the required business measurement definitions. WebSphere Business Monitor also has a mechanism for passing live business measurement information directly back to the simulation engine of WebSphere Business Modeler to make simulations more reflective of real operations, enabling better process optimization and testing. Another short-cut IBM offers is a direct link between its strategic planning environment and WebSphere Business Monitor. Business users can use the business leader widgets supplied by WebSphere Business Compass to map strategic goals directly to key business measures, and these are then exported to WebSphere Business Monitor ready for use. At the industry level, IBM also offers its WebSphere Industry Content Packs which include sample business measurements definitions that are relevant to the particular industry. Sectors covered include Insurance, Banking, Telecommunications, Health and Industrial.

Once the business measurements have been defined, WebSphere Business Monitor tracks them and not only records them for historical analysis but also passes them to its display component to make them visible to end users – typically business managers or executives. A key point here is that WebSphere Business Monitor offers the information in a range of different views depending on the needs of the particular consumer. The views offered by IBM WebSphere Business Monitor include:-

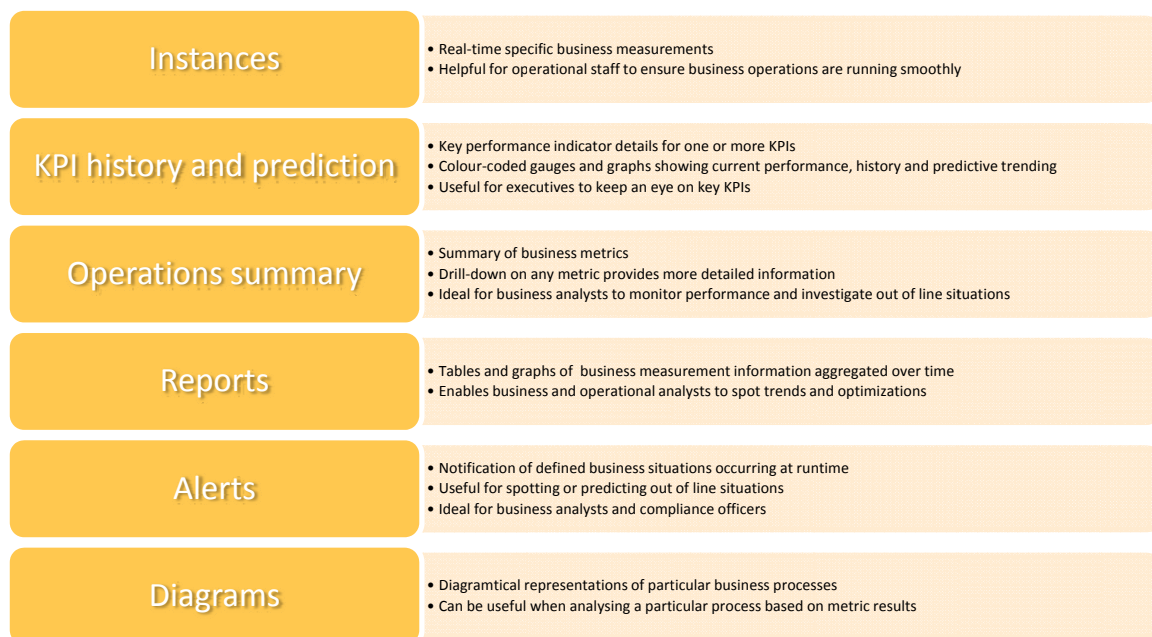
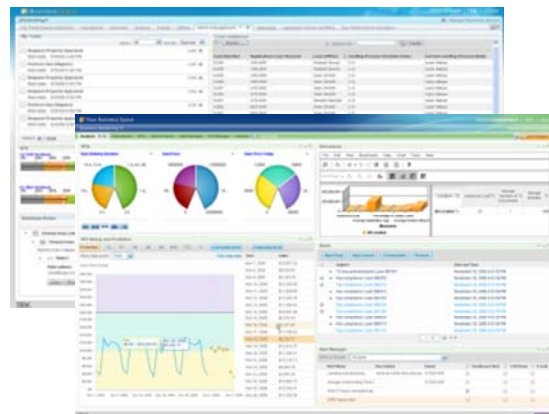
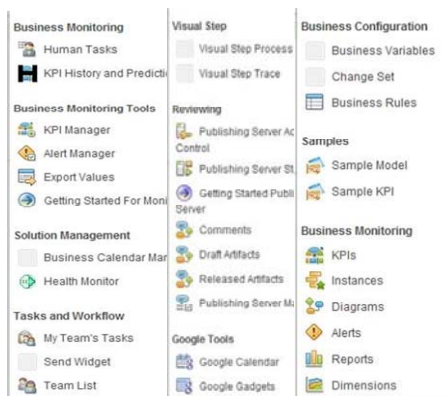


Figure 3: Some of the views of business operations offered by WebSphere Business Monitor

These views can be displayed as portal pages or portlets through use of IBM WebSphere Portal, or included as widgets in personalized displays through use of the IBM Mashup Centre technology. By breaking up the information into these views and offering the end user control over which views to display, WebSphere Business Monitor can enable individuals to see only information relevant to them, thereby improving ease of use and productivity. For example, an executive might want to include a KPI chart on his personalized workspace, while a compliance officer might be far more interested in alerts and transaction reports. The diagram below shows the IBM widget palette that users can select from, with the business monitoring widgets in the bottom right part of the list. IBM also offers sample templates out of the box for common use cases.

Widget Palette For Users to Customize their Business Spaces

Out of the Box Templates Support Common Use Cases



Role-based business space templates span multiple products ... all based on the on iWidget standard

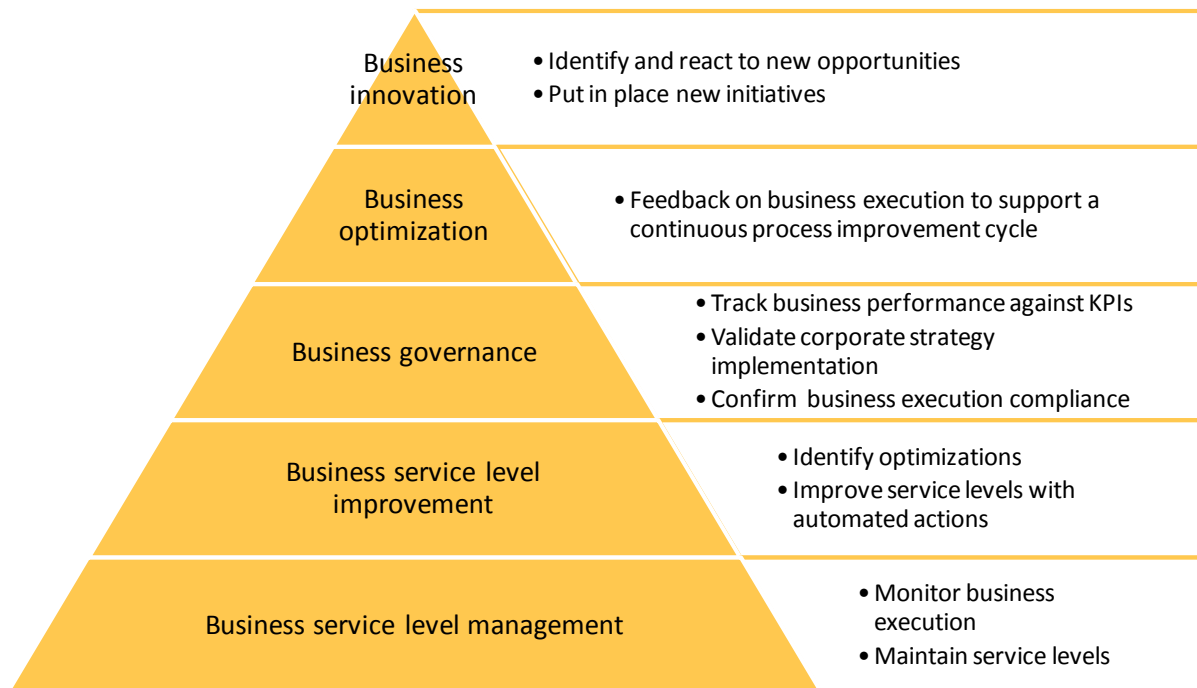
Figure 4: Personalizing the user workspace with WebSphere Business Monitor widgets

Of course, there may be times when the business measurements collected by WebSphere Business Monitor point to a situation that requires immediate action. The Action Services component of WebSphere Business Monitor provides the mechanism for taking action based on simple events occurring, such as customer response time exceeding an allowable limit. For more complex events that might involve correlation over a number of different active processes or systems, such as needed to detect likely fraud, WebSphere Business Monitor leverages the greater power of the WebSphere Business Events Processing product. An important point here is that the action taken once WebSphere Business Monitor detects an event is not limited to a passive alert such as an email or text message, but may also involve changing execution flows or driving another IT service or routine dynamically. This events-based action mechanism provides a real opportunity for generating additional business value, by enabling actions to be taken based on a specific business situation happening or even predicted to happen. For example, an event is triggered if the business metrics indicate that a particular KPI is trending down unexpectedly, instead of waiting for an executive to spot this on his or her dashboard a warning can be sent to the relevant department or a new program can be started attempt to automatically correct the situation.

Delivering value with BAM

The BAM functionality discussed previously offers many different ways of creating new or additional business value. Before looking at specific considerations regarding IBM's solution, it is worth looking at the more general picture of BAM benefits. BAM benefits all flow from the foundation of business-oriented visibility of IT-based operations. That is, the ability to put IT-based execution in business terms, at the present time, historically and

even in the future to a limited extent. At its simplest, BAM allows business users to get an accurate picture of business execution and performance. This firm foundation yields a range of benefit areas, but realization of these benefits will depend to some extent on the maturity of the organization in BAM application and usage. While some benefits can be delivered quickly, others will require a higher level of BAM experience, understanding and planning. The Lustratus BAM Maturity Model shown below summarizes the key benefit areas of BAM in terms of the maturity level required to access these benefits.



Source: The Lustratus BAM Maturity Model

Figure 5: BAM benefits in terms of required level of maturity

The first two levels of benefits are focused on individual aspects of business service, while the others are more business-wide in nature.

Business service level management

The first area of benefits is in managing and maintaining service levels of individual business services. BAM makes it possible to view real-time execution in a business context, allowing any problems to be identified and resolved before their impacts are felt. It also offers historic reports and trends to help detect growing areas of concern so they can be addressed. An important element here is not just monitoring to spot emerging problems but the analysis tools for drill-down and problem diagnosis. Just seeing a problem does not in itself maintain service levels – it is necessary to be able to diagnose it and take corrective action. But the big difference between this business-oriented monitoring and traditional systems monitoring is that because the context is in business operations terms rather than technical execution, benefits tend to be a lot more outward facing than IT monitoring can deliver, affecting areas such as customer service and product delivery times for example.

Business service level improvement

Once organizations have got used to monitoring business execution, it is a relatively simple step to start analyzing performance with a view to improving service levels. Optimizations in the way a business transaction behaves may lead to ways to make it run more efficiently, but the most fruitful area for generating new value is probably in the area of automation. Instead of relying on business operations staff to observe the business metrics and take the necessary actions to maintain or improve service, by building automated actions to be taken in the event of particular business situations being identified the business performance and efficiency can

be greatly improved. Reaction is much more immediate and predictable than relying on operations staff to make the right decisions.

Business governance

Once the mechanism of defining and tracking business metrics and processes is understood, BAM tools enable these metrics to be combined into an overall picture of business operations. It is this area that is often seen as most attractive by executives – the ability to specify key business health indicators and to then have them available at a glance so executives can be aware if there is anything that needs their attention. These KPIs (key performance indicators) might be tracking key business operations measures such as average days to payment, or could be aligned directly to key strategic initiatives such as percentage of sales made in emerging or high-growth regions. The benefits here can be enormous in terms of giving control of the business back to the senior management team. It can mean the difference between looking for a way out of a major business crisis and being made aware of the problems before they really start to bite.

Another aspect to this benefit is that this type of real-time and statistical monitoring can help organizations to manage compliance to external regulations and legislation. For example, following the recent problems in the finance industry, most institutions are now required to keep a very close eye on capital ratios to meet stringent regulatory guidelines. A real-time indicator of the current level of capital reserves would give plenty of warning if the danger level was getting close.

Business optimization

The optimization of individual operations in terms of execution performance has already been discussed, but more sophisticated companies may decide to take the information gathered by the BAM tool and make it part of a continuous improvement feedback loop to deliver world-class processes and operational execution. The idea is that the only way analysts can continually enhance business operations is by having a constant feedback of how the existing operational design is working. This then allows new enhancements to be identified, modelled and evaluated before being deployed into live operations. This results in more feedback, and so the loop goes on. The benefits here can be to generate market-leading operations that drive the company ahead of competition, but the approach requires a good degree of awareness of the important business metrics and processes, and how to interpret the monitoring results.

Business innovation

Business innovation is often a key focus area for C-level executives, but the challenge is often to identify and seize the opportunities for business innovation. A vital cornerstone of innovation can be a clear understanding of the way the business works today, and how that has changed over time. Not only can this lead to business optimization as discussed above, but it can also point out areas of new opportunity. For instance, one major US-based manufacturing company learnt from its BAM-provided business metrics that production times were heavily influenced by technology partners and the way that their operations interacted with the company's own. This led to major changes in both the structure of its partnerships and joint operations, resulting not just in shorter delivery times but also reduced costs.

Assessing BAM from IBM

While most BAM solutions provide similar functionality on the surface, it is worth looking at some of the underlying considerations to judge the suitability of the particular vendor. The focus in this case is the IBM BAM solution mentioned earlier, based around WebSphere Business Monitor.

By definition, BAM solutions offer some level of business activity monitoring, on both a historic and real-time basis. However, the areas of most differentiation between BAM offerings from different suppliers tend to be

- What sort of business activities can be monitored?
- How easy is it to implement?
- How well does it accommodate the non-technical user audience of the business community?
- What analytical capabilities does it provide?

The basic functionality provided by IBM's BAM has already been discussed earlier, but this section highlights the key aspects of this functionality in the light of these areas of interest.

Business activities coverage

This is a major consideration for many organizations. BAM providers often associate their offerings with BPM, or perhaps SOA. The reason is that because of the structured nature of these two architectures, it is relatively easy to be able to develop a map of IT activity against business functionality. After all, in BPM the business process is extracted and governs the operational execution, while in SOA execution is made up of services that relate to individual business activities. So it is simple for a BAM provider to offer monitoring for processes and services that have been built with its own BPM and SOA tools.

The problem is that few organizations have had the luxury of being able to convert all existing business operations into BPM or SOA. Business transactions might span legacy systems, databases and the general integration infrastructure. The wider BAM can spread its net, the more accurate and complete the business metrics will be. As mentioned earlier, IBM WebSphere Business Monitor V7 provides the ability to build business metrics that include information from WebSphere MQ, WebSphere ESB, JMS, Web Services, RESTful services, WebSphere Message Broker, WebSphere Adapters, WebSphere MQ Workflow, CICS and IMS. The consequence is that the IBM BAM tool offers a much more comprehensive and relevant picture of business operations across SOA and web-based deployments, legacy systems and application packages.

Ease of implementation

The crucial issue here is not so much the ease of product installation, but more the ease of defining the business metrics to be monitored and the related actions to take when defined events occur. IBM has a strong story in this area, with a number of innovations that can result in a much condensed time-to-value and reduced effort/cost.

As mentioned earlier, for processes implemented through IBM's BPM tool, WebSphere Process Server, it offers an out-of-the-box view of all executing processes and available metrics. It is therefore a relatively quick exercise to build an initial set of business metrics definitions to be monitored and tracked. The direct feed into WebSphere Business Monitor from the executive's strategic goals or WebSphere Business Modeler specifications also contribute to making the business measurement specifications easier to create.

The IBM WebSphere Industry Content packs provide another ready-made source of potential measurement definitions, allowing sample ones to be automatically imported for customization. Once again this reduces the time to value and the effort needed to start realizing the BAM benefits for those industries covered, such as Insurance, Banking, Telecommunications and Health.

The other key aspect of implementing the desired business measurement monitoring is to specify what actions to take when pre-defined circumstances occur, and as covered previously, WebSphere Business Monitor's Action Service component handles this need. Using this component, events such as a particular business measurement crossing a predefined threshold can be easily defined, together with corresponding actions which might include alerting someone or automatically kicking off a new service to take action dynamically. If support for complex events that need the added power of WebSphere Business Events is required, such as fraud detection, the events definition interface provided by this product is very non-technical, making it accessible to business analysts and other non-technical staff.

Ease of use for business users

The consumers of BAM-generated business metrics information will typically be business users with a relatively low level of technical skills. There will probably be a range of these business users, from business operations analysts all the way to senior corporate executives. As such, it is vital that the BAM tool provides as much help as possible for these users, ensuring that they see only what they want to see and presented in a way that they can quickly understand.

As discussed earlier, IBM WebSphere Business Monitor has addressed this issue by providing a range of different information views, depending on whether the user wants to see top level KPI performance, general business operations throughput information, business performance trends or individual operations tracking. Because these different views can be plugged into whatever personalized workspace the user wishes, the IBM solution offers a great degree of flexibility at a role-based level, ensuring that business users get the information they need when they need it without the need for technical skills. This information can be provided to the users in a variety of familiar ways, including on Blackberrys, iPhones and within Excel. Consequently time to value is reduced while training costs are cut, and the BAM benefits can be made available to the widest possible audience.

There is another area where business users are likely to be heavily involved, which overlaps the previous section on implementation, and that is the area of events and metrics definition. As mentioned above, IBM offers a number of ways to speed up this process, but some of this work will have to be done by business analysts rather than technical staff. Therefore it is important that these users are presented with an interface that offers a business rather than technical context. IBM addresses this requirement by offering a relatively non-technical environment where the key variables are all defined in business terms. The mapping of these business terms to the technical implementation is carried out separately by IT. The result is that business users are able to work in an authoring environment where they have the building blocks they need in a business context, enabling them to productively define the required metrics to be monitored and associated actions to be taken.

Analytics

WebSphere Business Monitor offers a number of analytics facilities that can be applied to the business measurements being collected. At the simplest level, these can be used to produce the reports displayed in that particular business monitoring view. Analytics include not just showing a particular business metric such as a KPI, but being able to display its historical performance and a predictive view of likely performance in the future. Directly from the dashboard, users can compare business process performance across time and different departments to gain additional insight. If more complex analytics are required, then IBM Cognos Business Intelligence offers a comprehensive set of analytics capabilities that can be applied to the data gathered by the WebSphere Business Monitor, enabling BAM data to be integrated and cross-referenced with historical transactional data.

Summary

IBM offers a full function BAM solution with WebSphere Business Monitor to enable organizations to get a better picture of what is happening throughout business operations. Understanding these business interactions, combined with the ability to turn this insight into action, provides the opportunity to maximize business value. The IBM WebSphere Business Monitor also leverages other members of the IBM product portfolio to extend this value, such as IBM Cognos Business Intelligence, for getting the most information out of the gathered metrics and technologies, WebSphere Portal Server or the IBM Mashup Centre to enable business metrics to be displayed in a personalized, user-friendly, role-based fashion and WebSphere Business Events to handle complex business events. But on top of this, the IBM BAM solution is not limited to monitoring business activities related to processes running in its BPM run-time as other BAM solutions tend to be. Instead, it can gather information on business performance from other sources and applications such as the CICS and IMS mainframe application systems and popular application packages too. The result is that IBM offers a truly comprehensive set of BAM capabilities.

But perhaps the most appealing part of the IBM approach to BAM is the efforts it has made to make BAM easy to access and use. The quick-start capabilities IBM offers, such as the Industry Content Packs containing sample metrics and definitions for different industry, can really speed up time to value. IBM has also paid significant attention to the fact that the target consumers of the business metrics information are business users who are likely to have little in the way of technical skills. IBM has tried very hard to ensure that the displays, and indeed the authoring environment for specifying new metrics to track and associated actions to take, conceal the technical implications and simply concentrate on putting the information in the most accessible form for the business user to understand.

BAM has a lot to offer. There are quick benefits to be had, but also the benefits become more extensive as company maturity grows in the whole area of Business Activity Monitoring. Perhaps, at last, the IT industry has delivered the technology that finally lets business managers visualize business performance and identify key situations as they occur, coupled with the ability to take the appropriate action.

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