

# Oracle SOA Suite – Oracle Business Activity Monitoring

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## EXECUTIVE OVERVIEW

Changing markets, increasing competitive pressures and evolving customer needs are placing greater pressure on IT to deliver greater flexibility and speed. In response to these challenges, leading companies are adopting Service-Oriented Architecture (SOA) as a means of delivering on these requirements by overcoming the complexity of their application and IT environments. SOA represents a fundamental shift in the way new applications are designed, developed, and integrated with legacy business applications, and facilitates the development of enterprise applications as modular business services that can be easily integrated and reused.

Within a SOA environment it is critical to be able to monitor services and events and provide real-time visibility into the state of the enterprise, business processes, people and systems. Oracle Business Activity Monitoring (BAM) provides the ability for aggregating service metrics and delivering actionable information on critical business service parameters to users. Oracle BAM pushes information to users via visual dashboards and alerts thereby helping improve effectiveness of operations and helps end users take informed decisions. Oracle BAM also gives users the ability to change the business processes and take corrective action when the business environment changes. Oracle BAM is a complete solution for building real-time operational dashboards, monitoring and alerting applications over the Web.

Oracle SOA Suite is a standards-based best-of-breed suite that enables you to build service-oriented applications and deploy them to your choice of middleware platform. It consists of (i) an integrated service environment (ISE) to develop services; (ii) a multi-protocol Enterprise Service Bus (ESB) to integrate applications; (iii) a services registry for discovering and managing the lifecycle of services; (iv) a BPEL-based orchestration engine to tie services into business processes; (v) a business rules engine to enable business policies to be captured and automated; (vi) a Web Services management and security solution to enforce authentication and authorization policies on services and to monitor services and processes for compliance to SLAs; (vii) a Business Activity Monitoring (BAM) solution to gain real-time visibility into business entities and their interactions, and enable services to be optimized, and, (viii) an enterprise portal for employees, customers, and partners to access content, access relevance performance metrics, collaborate and take actions via interaction with business processes.

Oracle SOA Suite can help you achieve greater organizational flexibility better than any other solution in the market. It can reduce your costs and middleware complexity better than any other solution. Finally, it can help you to achieve the best total value of opportunity.

## INTRODUCTION

Today, every organization is faced with the need to predict changes in the global business environment, to rapidly respond to competitors, and to best exploit organizational assets to prepare for growth. Your enterprise application infrastructure can either help you meet these business imperatives or it can impede your ability to change. To help you, your infrastructure must:

- Improve your ability to predict and respond to change
- Enhance organizational productivity
- Simplify your information technology environment
- Leverage existing investments

In order to deliver on these requirements and overcome the complexity of their IT environments, leading companies are adopting Service-Oriented Architecture (SOA). SOA represents a fundamental shift in the way new applications are designed, developed, and integrated with legacy business applications, and facilitates the development of enterprise applications as modular business services that can be easily integrated and reused.

A very important capability within a SOA environment is the ability to effectively monitor services and events. Oracle BAM provides users with an event aggregation and correlation platform that allows for building a state model defining relationships between various events that impact the operations business KPIs. The Oracle BAM architecture utilizes messaging, data integration, advanced data caching, analytics monitoring, alerting, and reporting technology to deliver requested critical information within seconds of an event or change in status. Because the primary source of data is messages, Oracle BAM is able to update reports and generate alerts at speeds that traditional architectures simply can't match. Oracle BAM can accept tens of thousands of updates per second into a memory-based persistent cache that is at the center of the Oracle BAM architecture. Oracle BAM is a component of Oracle SOA Suite.

Oracle SOA Suite is a standards-based best of breed suite that enables you to build Service-Oriented Application and deploy them to your choice of middleware platform. It consists of:

1. An Integrated Service Environment (ISE) to develop services
2. A multi-protocol Enterprise Service Bus (ESB) to integrate applications
3. A Services Registry for discovering and managing the lifecycle of services
4. A BPEL-based orchestration engine to tie services into business processes
5. A Business Rules Engine to enable business policies to be captured and automated

"BAM defines the concept of providing real-time access to critical business performance indicators to improve the speed and effectiveness of business operations"

—Bill Gassman, Analyst  
Gartner Group

6. Web Services management and security solution to enforce authentication and authorization policies on services and to monitor services and processes for compliance to SLAs
7. A Business Activity Monitoring (BAM) solution to gain real-time visibility into business entities and their interactions, and enable services to be optimized
8. An Enterprise Portal for employees, customers and partners to access content, access relevance performance metrics, collaborate and take actions via interaction with business processes.

This paper outlines the types of operational analytics and real-time visibility challenges that organizations face and ways in which Oracle's Business Activity Monitoring product helps address these challenges and optimize business processes.

## **BUSINESS CHALLENGES**

### **Improve Your Ability to Predict and Respond to Change**

Most enterprise applications provide some form of application data level alerting and monitoring features to make users get proactively aware of problems so they can respond in a timely manner. While individual application level alerting features work well for certain basic alerting needs, they fall short of the alerting needs of operations users who monitor enterprise business processes and their impact on business KPIs. Such users need smarter alerts that can get context from related data or events that could emanate from other related enterprise applications. For example, users demand smarter alerts from applications that can detect an order being placed by a customer who has just been sent a delinquent payment notice. Customers expect discounts that are in effect after their order being placed to be applied to their in-flight orders. Business users also need to monitor their business processes to be able to analyze and predict trends that could lead to SLA violations.

### **Enhance Organizational Productivity**

The need for getting real-time business information as it effects business KPIs just gets greater every day in a fast paced global economy. Analyzing information thus obtained can tremendously help enhance organizational productivity. For example, organizations that run distributed global supply chain operations with Just-in-Time inventory practices have the need to continually monitor their inventory levels and to correlate them to the bill of materials and replenishment requests they have sent to their suppliers and logistics partner to continually ensure that they have a balanced flow of parts and inventory throughout their entire supply chain. Similarly, telecommunications companies who are provisioning new services and new customers want to continually monitor their provisioning processes that touch

"Business activity monitoring (BAM) is a key combination of technology and process that must be deployed by enterprises seeking to operate their businesses as real-time enterprises (RTEs)."

—Bill Gassman, Analyst  
Gartner Group

hundreds of operational systems to ensure that they have an up-to-the minute view of the status of outstanding customer service requests.

### **Simplify your Information Technology Environment**

Operations dashboards that compute impacts of happening events on related business KPIs and showcase the results in visually appealing environments help business users cut through the myriad of deployed IT infrastructures to monitor the health of their businesses.

### **Leverage Existing Investments**

Monitoring existing IT applications with the goal of extracting business metrics information from them should require having to make zero to minimal changes to the source systems. The monitoring tools need to integrate easily with existing production applications, business process management (BPM) tools Enterprise Application Integration (EAI) system, JMS queues and applications that communicate via Web services.

BAM has also emerged as a critical component of solutions that address the operationally focused business intelligence (BI) challenges. This is a convergence of the real-time functionality of BAM and a BI infrastructure, targeted at the business operations staff. Unlike traditional BI users, such as business planners and executives who monitor more-slowly moving indicators and trends, users of operationally focused BI applications cannot afford to make decisions based on "stale" data. Instead of understanding the past, they must understand the present. For example, a national chain of retail stores uses operationally focused BI applications to monitor the relationship between point-of-sale data and inventory. When an under stock warning occurs, users research the history of the product and suppliers, and react within hours to schedule inventory shifts. Although operationally focused BI applications are only a vision for most companies, they can be built today using a combination of BI systems that provide historic context and BAM systems that augment them with real-time information feeds.

Some use cases in which BAM technology is applicable include:

- **Improving Operations Visibility and Efficiency** - A major U.S. automobile insurance company wanted to improve the efficiency of its claims adjustment process. The amount of time it takes an agent in the field to evaluate a claim varies greatly based on conditions that are unpredictable in advance. For this reason, on any given day some agents were behind schedule while others were sitting idle, waiting for their next assignment. The challenge in creating a software-based expert system that can interpret certain sporadic happenings and alert appropriate business users with minimal false positives to situations that might indeed benefit from their intervention is significant.
- **Better Manage Service Level Agreements** - A leading retail financial services bank in the UK competes with other banks for high-risk and high-

interest auto-loans business from various car dealers and needs end-to-end loan provisioning process analytics to better service its customers (i.e. the car dealers) and to manage related SLAs. The loan provisioning process is complex involving a series of straight through processing and manual arbitration steps before the final decision to either approve or reject the loan is made. In order to stay competitive, the bank needs to take a decision under 5-minutes from the loan order comes into the system. Loan underwriters need to be kept abreast of how they are performing at any time of the day individually and/or as a group so they make more informed decisions that in turn help the bank better manage its SLAs with its partners. The bank needs to detect fraud situations in real-time across multiple loan application processes that some of its partners or underwriters might be engaging in.

- **Fixed Income Trading Analytics: Real-time deal performance** - An independent financial services applications services provider (ASP) offers online syndication involving relatively large deals (\$500M - \$2B) of many different types. When deals placed by a syndication manager “go live” they are broken into sub-sections (“tranches”), for which bids (“indications”) arrive in real time. Managers offering deals need real-time (<5 second) analytics such as total demand per deal, total demand per tranche, total number of indications, maximum indication, latest indication, and more.
- **Order-to-Cash Cycle Operations Monitoring** - A software services company executives need to better manage their “Order-to-Cash” operations cycles. Orders come into the order processing systems via various channels including the web, phone, by mail and direct sales and each such channel uses different application systems to provision the orders. Orders placed such are then processed via various different applications including Oracle Financials for fulfillment, shipping and billing via manual and/or automated business processes. The corporation processes over 30 million orders per year and up to 1 million orders per day during peak times. The operations managers would like to continuously monitor overall order flow and escalate any scenarios where orders are ‘stuck’ for a period of time exceeding a predefined duration. They would further like to generate reports based time, age of transactions to enable the internal order control team to expedite delayed orders.

## ORACLE BUSINESS ACTIVITY MONITORING VALUE PROPOSITION

Oracle BAM enables enterprises to benefit from real-time information affordably. Oracle delivers an integrated BAM strategy across its applications and technology platform. The BAM technology allows Oracle's customers to leverage pre-designed personalized operational dashboards that can analyze data in real-time from existing Oracle and other business applications. The analyzed information enables operational managers to continuously monitor performance against the goals of the enterprise, analyze exceptions and take corrective action for immediate impact. Such operational dashboards deliver on Oracle's strategy to help companies achieve greater business insight by embedding actionable intelligence within transaction system. These dashboards provide pre-defined key metrics, analysis and actions directly to front-line managers to help them execute informed and proactive business decisions, without having to rely on the IT department to run reports or query customer information. The result is relevant, real-time and actionable business insight that helps increase revenue, improve efficiency and reduce costs in the enterprise.

"The BAM functionality puts Oracle ahead of IBM, Microsoft, and BEA, and on par with pure plays such as TIBCO and webMethods" – Current Analysis, December 2004"

—Bill Gassman, Analyst  
Gartner Group

By deploying the SOA framework and using BAM for monitoring the services, business users can derive actionable timely intelligence on their business operations by monitoring the flow of data, service requests, and process invocations. All the components of Oracle SOA Suite including Oracle BEPL Process Manager (Oracle BPEL PM) and/or the integration adaptors can be configured to send Oracle BAM information emanating from the various integrated application processes using the JMS protocol. With Oracle BPEL PM this can be achieved by leveraging the built in "sensor" technology wherein a part or the entire state of an instance transaction at a process node can be sent to Oracle BAM as a JMS message for further analysis. Oracle BAM can then correlate disparate events that it received, as messages, within the context of pre-defined monitoring models and rules that can relate to business process KPIs to alert business users of process problems and opportunities.

Some BAM dashboards screenshots are displayed below in Figure 1.



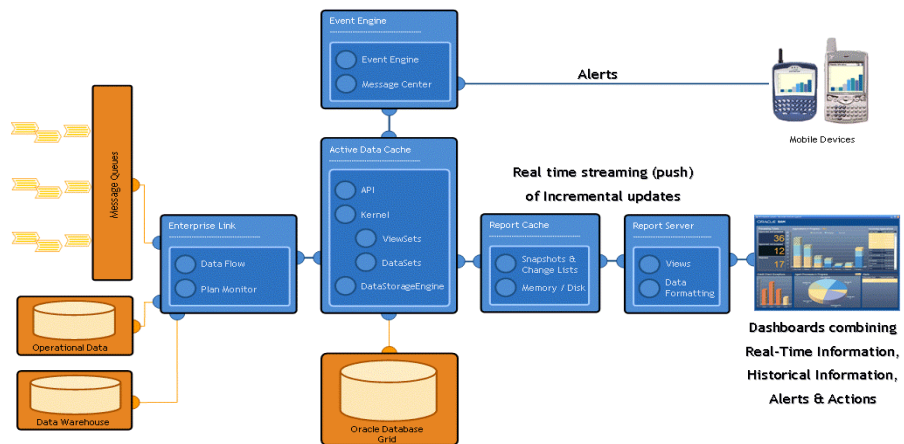
**Figure 1: BAM Dashboards in Oracle BAM**

### Component Overview

The Oracle BAM architecture utilizes messaging, data integration, advanced data caching, analytics monitoring, alerting, and reporting technology to deliver requested critical information within seconds of an event or change in status.

Because the primary source of data is messages, Oracle BAM is able to update reports and generate alerts at speeds that traditional architectures simply can't match. Oracle BAM can accept tens of thousands of updates per second into a memory-based persistent cache that is at the center of the Oracle BAM architecture. Any application can send events using Web services or over any JMS-based messaging protocols. Legacy application can integrate with Oracle BPEL PM using custom created adaptors and can in turn integrate with Oracle BAM via the Oracle BPEL PM native sensor architecture. Oracle BAM can additionally also send alerts to external web services when specified threshold conditions within the analytics engine are met.

The architectural components for Oracle BAM are shown in Figure 2.



**Figure 2: Oracle BAM Architecture**

**Enterprise Link** is a full-blown ETL tool, and as such it connects Oracle BAM to enterprise information sources such as database servers, flat files, and XML sources. EnterpriseLink is also capable of reading messages from all of the major message queue providers, and then run that data through real time data integration plans, which can cleanse the data, aggregate it, filter it, correlate it and so on. At the end of the real time message processing plan EnterpriseLink updates the Active Data Cache with the real time information.

**Active Data Cache (ADC)** is designed and optimized to provide access to current business information for event based reporting and alerting. It offers real time intelligent analytical data cache capabilities. Using Active Viewsets technology the ADC can monitor and detect changes on the specific view that the user has on the data (including groups, aggregates, filters, calculations, lookups from dimensions and more). The Active Viewset detects the change it sends it either to the dashboards as an XML message (to update the real time visualizations in the reports) or to the EventEngine, to take all of the actions that are listed with an alert.

**Report Cache** offloads the Active Data Cache from the viewsets' snapshots, so the Active Data Cache does not have to maintain them in memory, while providing random access to them for the reports. The Report Cache also caches the change lists that are sent to the reports, to allow for recovery from losing internet connectivity, without reloading the report.

**Event Engine** can monitor for changes in data, time or data. It can detect changes in complex data conditions, as defined by the users. Rules can include a series of conditions and actions attached to an event. The Event Engine continuously monitors the information in the Active Data Cache for certain conditions and executes the related actions defined in associated rules. The list of possible actions that are taken when the event happens can be extended using a public API.

**Message Center** tracks the presence of users so that reports and alerts are reliably received. Messages and reports are delivered to the reports, to the users' email, or cell phone.

**Reports Server** transforms the data it retrieves for the views in the reports according to their definition to generate thin and rich reports. It maintains the open connection to the reports, on which it streams down the change lists it is getting from the Report Cache.

**Active Studio** is the thin and rich web application for the business user to build reports with alerts and to share them with other users. Reports include one or many views, that can monitor one of many different data objects (in the Active Data Cache). View types include various lists, charts, columnar reports, crosstabs, arrows and KPIs, spreadsheets, and more.

**High Performance, Scalable Architecture:** Oracle BAM can scale to handle large amounts of complex, real-time enterprise data and messages by running more than one instance of the Oracle BAM EnterpriseLink. Oracle BAM Enterprise Link uses data flow technology to select the correct raw data and then transform and perform calculations and correlations on it. The transformed data is delivered to the Active Data Cache where additional real time calculations and aggregations can be performed on the data in memory. The Oracle BAM Report Cache can scale out to accommodate for a large number of concurrently opened reports, to offload the Active Data Cache. The Oracle BAM Web Applications: Active Viewer (that hosts the live real time reports), Active Studio, Architect and Administrator, are all completely stateless and require no cookies or sticky sessions to be implemented, therefore the entire Oracle BAM Web Tier can be perfectly load balanced.

The Oracle BAM Report Cache module allows for Viewset sharing, which is a unique scalability offering from Oracle BAM, which will open only one Active Viewset in the Active Data Cache for all of the views (in the reports) with the same query information.

## Using Oracle BAM

One of the first things to do after installing Oracle BAM is to define the users and roles hierarchy using the Administrator module. The next logical step is to define a data model and related ADC data objects using the BAM Architect, in light of the reporting and alerting requirements that were defined by the business users. The Data Objects can be linked to one another using “lookups” to create Star Schemas.

Using the Active Studio module, reports/dashboards and alerts can be created that help end users perceive their related KPIs on the captured data. Each of the reports can contain multiple views each of which can collect data from one or more data objects and display them using various visual elements like graphs, gauges, pivot tables, spreadsheets etc.

There are three different ways to integrate event data into the ADC Data Objects.

1. The ADC exposes public APIs and interfaces in Java and C# which an external application could invoke in order to insert/update/delete data within the ADC data objects.
2. The ADC exposes a web services interface that includes a WSIL interface to explore the ADC's Data Objects hierarchy, to choose a Data Object and perform any of the above-mentioned operations.
3. Messages published to a JMS message topic can be read using the Enterprise Link module of Oracle BAM, to keep BAM in sync with the backend enterprise systems. To enable this facility of data integration, Enterprise Message Source have to be defined in the Architect module to define the protocol for mapping message fields from the message queue and to map it to enterprise link Data Flow Plan columns.

The last option of integrating data via the Enterprise link component is the most used option of the available three in the product. Enterprise Link Data Flow Plans allow for advanced event analytics and correlation capability that enables complex event processing (CEP) to be performed within Oracle BAM. CEP can also be performed at the Data Object level using calculated columns, or at the individual views' level, using the calculated fields.

For example, consider a financial services trade settlements use-case where a complex service level agreement (SLA) performance needs to be monitored in real-time using Oracle BAM. The SLA states that 75% of the largest value trades executed every hour have to be settled within 300 seconds of their initiation. The trade data per currency is placed in a data object within the ADC and is checked every 5-minutes to analyze the set of open transactions and to sort them by the trade value using an Oracle BAM Enterprise Link Data Flow Plans to find possible SLA violation situations to which business users are then alerted using the Oracle BAM Event Engine functionality.

Similar CEP functionality can be achieved within the ADC Data Objects or within the views using calculated columns or fields (respectively), which dynamically

recalculate their value if one or more of the fields that is used in computing their value changes. For example, a business user of the above mentioned use-case might want to get alerted when a trade with a value of over \$1M does not get settled within 150 seconds in order for him to take proactive action before the SLA potentially gets violated. In such a case, the user could potentially define a calculated field in the trade Data Object filtering for rows based on his personalized logic, and then base an alert on the value of that field.

Oracle BAM has the ability to implement correlation sets between transactional message sources like queues and RDBMS table data from any commercially available major database vendor. This assimilation of transactional and database specific content is facilitated using a feature called External Data Objects. This feature allows Oracle BAM to load any external database tables into the ADC, at the time the dashboard loads, and perform and cross Data Objects calculations necessary using lookups, to compare real time KPIs to historical KPIs, for example.

### **NEW FEATURES IN 10G R2 & R3**

**Additional Platforms and RDBMS Support:** The Oracle BAM offering has been certified on both Windows 2003 and Windows XP operating systems in addition to Windows 2000. The backend database of choice has been extended to both Oracle 9i and 10g. The platform further supports both the Oracle Application Server JMS and Oracle Advanced Queues as JMS based message formats.

**Active Data:** Oracle BAM has the ability to provide users with real-time access to data and its business impact using a unique patented technology called “Active Data”. Using Active data, the system can provide streaming updates via a patented data pushed technology to the browser without page refresh. The technology allows for incremental calculations at very low data latency rates – 2-4 second interval from update to browser access.

**Rules-Based Active Delivery Architecture:** In an event-driven solution, the information finds the target users instead of requiring users to query for the information on their own initiative. The reports are initially designed for delivery to end users based on data changing or events triggering. For the end user, the result is zero-click reporting that is always relevant.

**Newer Rich Visualizations:** Oracle BAM now has a library of 38-different view types that could be used to represent data in a graphical format on the screen. The notable new additions to the view types have been the Funnel Chart, 3D Charts (Bar, Line, Area, Combo, Pie, Stacked Bar), SPC Charts, Market arrow, Matrix Cross-tab, Summary Cross-tab, Action List (radio buttons), Collapsed List and Action-form.

## MICROSOFT INTEROPERABILITY

Oracle BAM integrates seamlessly with Microsoft Server System and .Net Web services, and Office applications. Oracle BAM provides:

- *Data and Message Integration* – The enterprise link component of Oracle BAM can fetch data that resides within the SQL Server database and applications that expose their data via the MSMQ messaging interface. The BAM ActiveDataCache can point to “external data objects” that can include data from a table or star schema residing within SQL Server database.
- *Event Integration* - The analytics engine in Oracle BAM exposes a set of Web services APIs that can be used to route events to BAM from C# applications and .Net Web services, and, could also be potentially used by Biztalk developers to integrate business process data with other BAM data sources. In addition, the analytics engine of BAM exposes a set of C# APIs that can be leveraged by developers to write data into the ActiveDataCache or read data, and ActiveData (the continuous stream of changes to the given view) from it.
- *Sharepoint Portal Integration* - The reports generated by Oracle BAM can be viewed within MS Sharepoint portal using iFrame portlets as each report has a unique URL associated with it. In addition, Active Directory can be used as the identity store for Oracle BAM.
- *Microsoft Office Integration* - The event engine within Oracle BAM allows users to receive email alerts within Microsoft Outlook. Oracle BAM provides real-time dashboards and analytics utilizing application data, as well as information originating from data warehouses. This data can be served directly into Microsoft Office documents.

## WHY ORACLE?

Oracle SOA Suite is the only comprehensive and integrated SOA suite in the industry. While other vendors claim to have similar platforms, Oracle SOA Suite provides several unique differentiators over other products.

### Realize Greater Organizational Flexibility

Oracle SOA Suite can help you achieve greater organizational flexibility better than any other solution in the market in four important ways:

- *Service-Oriented Applications* – Oracle SOA Suite enables rapid development of service-oriented applications that can be deployed and managed on a robust SOA platform. It also allows you to wrap existing applications and legacy systems as services without rewriting them.

- *Business Process Optimization* – Oracle SOA Suite provides you with visibility to business events across your enterprise and allows you to optimize your business processes to respond to events.
- *Unified Workplace* – Oracle SOA Suite improves employee productivity with an enterprise portal that provides unified access to organizational information, to services and to business processes, and to business intelligence, allowing employees to find information rapidly and to collaborate effortlessly with one other.

Oracle BAM enhances organization productivity and enables business processes to be optimized in the following key ways:

**Provide accurate and timely Decisions**

Front-line managers need information to make decisions on the fly, but traditionally do not have access to relevant information without the help of IT, decreasing data timeliness and increasing the IT backlog. With Oracle BAM based operational dashboards, business managers can easily define and modify their own dashboard pages to monitor key business activities with real-time operational insight across multiple business applications. From a standard Web browser, they can access and monitor business performance using rich data visualizations, drill-down on performance metrics for transactional details and leverage seamless, real-time integration into business applications to turn analysis into action.

**Reduce cost of ownership with proven architecture**

Using Oracle BAM business users can reduce cost of ownership with a proven architecture that supports enterprise-level users with superior usability, performance and scalability - critical elements that business managers need to make more informed, faster and effective operational decisions. The Oracle BAM platform provides a rich, dynamic and completely thin-client interface for viewing, defining and managing real-time operational dashboards. Unlike traditional query-based analytic applications, the event-driven architecture of Oracle BAM enables dashboard deployments to thousands of users with more efficient utilization of the hardware investment and ensures dashboard users view real-time operational information.

**The power of getting information in real-time**

- *Timeliness . . . Information that is Always Current* – In order to take effective action and enhance business performance, decision makers require information in real-time, right at the point of decision. Oracle BAM provides real-time alerts and access to live data that is based upon up-to-the-second information—enabling decision makers to be proactive rather than reactive. The streaming data delivery also ensures that real-time reports automatically and continually update themselves as changes occur in the underlying data.
- *Reach . . . All the Right Decision Makers* – Unlike traditional query-based solutions, Oracle BAM combines information from multidimensional and

relational data sources, web services, enterprise application data, and presents it in an intuitive browser-based user-interface to any device, driving enterprise-wide availability of real-time information.

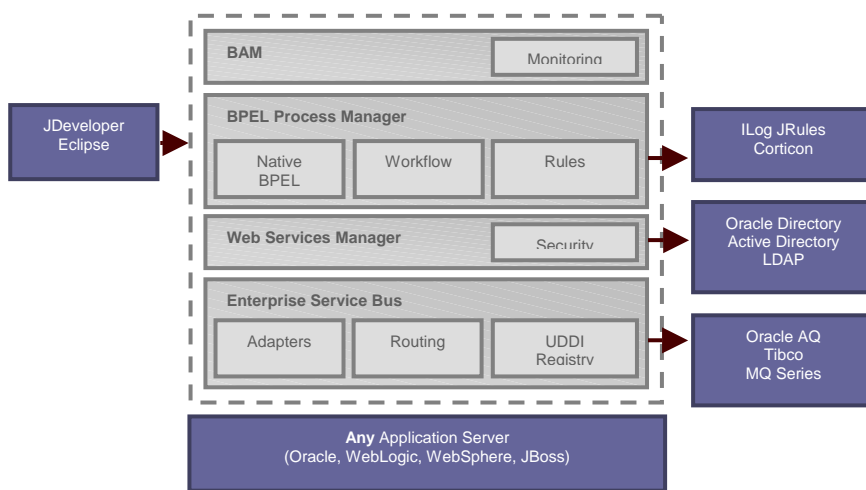
- *Relevance . . . Information Delivered the Way People Work* – To be useful, real-time information need to work the way people work. With Oracle BAM, information is personalized so each user gets the information they need in the exact format at the exact time they prefer. Oracle BAM real-time reports also support real-time pen-based group collaboration and closed-loop decision-making, allowing for immediate problem discussion and resolution.
- *Usability . . . Effective, Efficient and Easy-to-use* – Oracle BAM is built to work smoothly with existing information infrastructures and supports just about every messaging system. Oracle BAM is affordable and can be fully customized and personalized to the roles, responsibilities, and skills of each user. Both power users and business users find that reports are as easy to design, share and view as PowerPoint slides.

### **Eliminate Middleware Complexity**

Oracle SOA Suite can reduce your costs and middleware complexity better than any solution available from any other vendor. It is the industry's only SOA Suite technically engineered to be a single product. Oracle SOA Suite differs from other market solutions in four key areas:

- *Single Development Framework* – Oracle SOA Suite is the only SOA suite that provides a single integrated design time environment to develop enterprise applications, to compose Web services, to create enterprise portals, and to orchestrate business processes. You learn one tool to target the entire platform.
- *Single Deployment Architecture* – Oracle SOA Suite is the only SOA suite that provides a common architecture for scalability, availability, workload distribution, resource management, security, and metadata management. You spend less time integrating your middleware infrastructure.
- *Single Management Architecture* – Oracle SOA Suite is the only SOA suite that has a common identity management and systems management architecture. You monitor and manage users and systems centrally, lowering cost and improving security.
- *Single Metadata Management System* – Oracle SOA Suite is the only SOA suite that leverages a common metadata management system across all components, speeding up application development and leading to more maintainable applications.
- *Easy to Adopt* – All of the SOA Suite components are built upon and support industry standards, to ensure that they can be incrementally adopted and easily integrated into an organization's existing information

technology infrastructure. Oracle SOA Suite integrates seamlessly into your existing IT environment. This “hot-pluggable” architecture is shown in Figure 3.



**Figure 3: Oracle SOA Suite, Hot-Pluggable Architecture**

### Achieve Best Total Value of Opportunity

Oracle SOA Suite can help you achieve the best total value of opportunity by means of three reduction strategies:

- *Develop and Deploy Applications Faster* – As the market’s only integrated SOA Suite, Oracle SOA Suite greatly reduces the overall cost of architecting, developing, deploying, and managing applications. Applications are built faster, they can be put into production sooner, and their associated benefits can be realized sooner. You save money, and you can more quickly reassign software engineers and R&D funds to other projects.
- *Reduce Application Deployment Costs* – SOA Suite is the only SOA Suite designed to leverage grid computing to lower costs by deploying enterprise applications on modular, low-cost hardware and storage.
- *Reduce Maintenance and Management Costs* – Oracle SOA Suite lowers management costs by automating software provisioning across groups of systems and by centralizing systems monitoring and administration. It lowers security administration costs by centralizing identity and access management.

Oracle SOA Suite can help you achieve the best total value of opportunity by reducing your development costs, by reducing your deployment costs, and by reducing ongoing maintenance costs, thus providing you with the fastest return on your investment.

Oracle SOA Suite supports:  
a range of application servers including IBM WebSphere and JBoss;  
leading business rules engines such as Ilog Jrules and Corticon; any LDAP V3 compliant directory such as Active Directory, iPlanet and Novell; leading messaging services such as IBM MQ, SonicMQ, Tibco as well as Oracle AQ.

## CUSTOMER PROOFPOINTS

### Discrete Manufacturing

Silverline Windows is a leading U.S. manufacturer of standard and custom windows for residential structures producing 10,000 customer orders a day. They had an ongoing problem managing the distribution (by truck) of finished goods from its five geographically dispersed factories. Under the old system, manifests were drawn up for each truck two days in advance, after which individuals within the factory had to physically verify that standard items listed on the manifests were actually in stock, and that custom items had been built. When items were missing, line managers had to be notified so they could expedite production. These constant small problems had a significant disruptive effect on overall manufacturing operations. Oracle BAM scans for exceptions in the company's operational systems and triggers real-time alerts to operational personnel that give up-to-the-second visibility into all critical aspects of the manufacturing process for expediting orders from factory floor to loading dock to customer delivery. When products scheduled to ship are not available, the system sends an alert to the appropriate line manager for immediate attention. The alert escalates to another pre-defined contact if the manager does not respond. The system also provides information on the progress of custom items through the various stations in the manufacturing process.

The drivers of the delivery trucks are equipped with Blackberry PDAs that enable them to check off items from the manifest once delivered, as well as to report breakage or other problems that will require further action. This instant confirmation of delivery means that the company can invoice its customers immediately, rather than waiting two or three days for the delivery truck to return. The result is a reduction in time-to-invoice from 4 days to 1 day and a reduction in manufacturing cycles by 7—10 days.

### Financial Services

An FTSE 200 company, one of the largest providers of financial services products to the non-standard consumer credit market in the UK has problems managing its service level agreements (SLAs) with partners and brokers. These SLAs are very time-sensitive and in some cases require actions like loan decision to be taken in less as 30-minutes. The company has 5 call centers and over 400 branches supporting 2,000 users processing 25,000 applications a day. Before the Oracle BAM solution was included in APS, managers would react only after applications had violated SLAs.

The bank has incorporated Oracle BAM into their Consumer Credit Lending package (APS) in order to monitor and manage correlated events to give improved visibility into the operations of business processes, business rules and human workflow. Oracle BAM now allows managers to monitor the ongoing SLA throughout the application lifecycle and react immediately. Empowering the business users to monitor this SLA and other key performance indicators in real-time has minimised the separation between issue identification and resolution. The

system allows managers to supervise workload and performance of both manual and automated processes, alerting key business users of bottlenecks, exceptions and unusual trends. The banks Credit Quality department constantly examine the performance of their lending policy rules to facilitate ongoing fine-tuning and instant agility in reacting to business needs.

The ROI of the Oracle BAM solution has been immediate, Oracle BAM ensures internal and partner SLAs are not only met but exceeded, with customer service now being proactive. The increased visibility into all aspects of the loan-provisioning pipeline has supported superior decision-making throughout the business from end users through to senior executives enabling the improvement of process and the cutting of costs.

## **CONCLUSION**

Oracle BAM augments provides end users a versatile process monitoring and analytics tool that helps analyze the emanating business process information in real-time. Once the said analytics have been processed, Oracle BAM provides for real-time, multi-channel delivery of the analyzed information and a platform to enable joint-collaborative problem resolution that aids business process optimization.



Oracle SOA Suite – Business Activity Monitoring  
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