

The Instantly Responsive Enterprise: Integrating Business Process Management and Complex Event Processing

An Oracle White Paper

Updated August 2008

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Put BPM and CEP together and you get intelligent business processes that react to changing business conditions in real time, providing continuous visibility—in short, an instantly responsive enterprise.

INTRODUCTION

Over the last several years, business process management (BPM) has evolved from a mysterious alchemy of arc-and-bubble graphics to a mainstream tool of the trade that integrates IT technologies for business advantage. In parallel, complex event processing (CEP) has expanded beyond being applicable only in the isolated domain of foreign exchange trading and is now improving a broad range of processes—from transportation logistics to customer relationship management. Put BPM and CEP together and you get intelligent business processes that react to changing business conditions in real time, providing continuous visibility—in short, an instantly responsive enterprise.

The goal of CEP is to discover information contained in the events detected throughout all layers of the organization, understand the information at the macro level as comprising a “complex event,” determine its impact, and then act upon it in real time. BPM helps organizations ensure that business processes are optimally defined, managed, executed, and monitored.

BENEFITS

An event-driven BPM solution offers the following benefits:

Real-Time Sense and Respond

An event-driven BPM solution enables each step in a business process to be informed not only by the previous step, but also by any other step, data, and pattern of behavior deemed relevant to that step. This gives the business the ability to “sense and respond,” which is the default operating mode for all businesses. Because CEP operates in the real-time domain, an event-driven BPM solution can respond and operate in real time.

Real-Time Visibility with Business Activity Monitoring

An event-driven BPM solution generates and executes events and business processes in real time, thus it supports business activity monitoring (BAM), which gives users complete visibility of business processes in real time. According to an

Oracle customer survey,¹ such visibility is the second most common driver of return on investment.

Real-Time Process Monitoring and Control

Companies can manage events to better monitor progress, track performance, meet service-level agreements (SLAs), manage exceptions, and issue alerts to automated operations or employees when a process is not functioning properly.

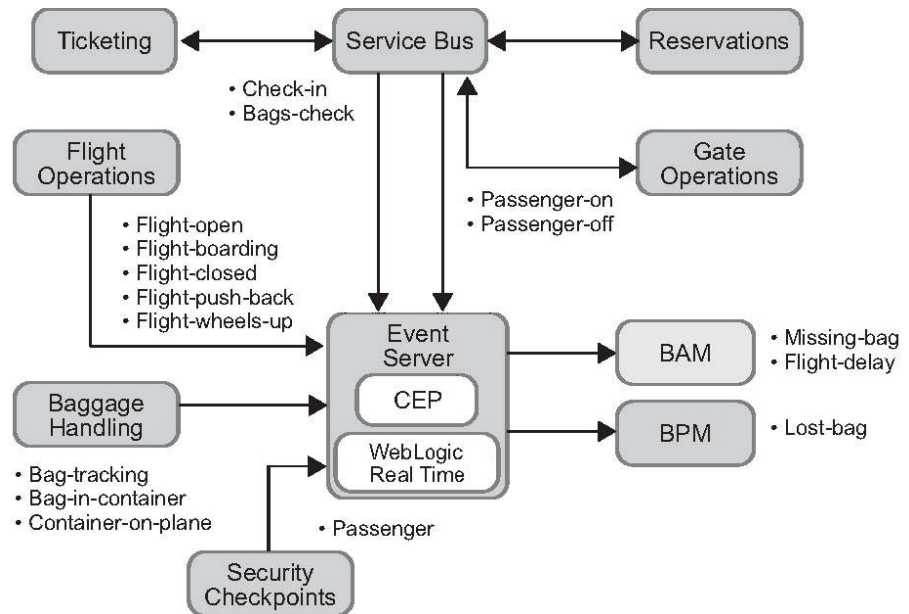


Figure 1: This figure illustrates the high-level architecture for integrating a CEP system, including Oracle WebLogic Real Time, as an upstream trigger for BAM and BPM systems.

BUSINESS SCENARIOS: INTEGRATING CEP AND BPM

The following business scenarios highlight the synergy between CEP and BPM. These examples capture the interaction and integration points of these processes.

Scenario 1: Create a New Business Process

There are myriad examples of CEP generating a composite business event that has significant and immediate consequences for the business. One example that affects many consumers is the loss of baggage during air travel. According to *USA Today*,² U.S. airlines lost 10,000 passenger bags per day in 2005.

CEP technology enables airlines to draw on events from the event clouds of various disjointed operations to discover that a passenger bag is lost as soon as it

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¹ Oracle survey of more than 200 Oracle Business Process Management Suite customers worldwide—multiple responses possible (November 2007).

² Marilyn Adams, "Airlines Lost 10,000 Bags a Day in '05," *USAToday.com* (February 6, 2006), http://www.usatoday.com/money/biztravel/2006-02-16-lost-bags-usat_x.htm (accessed July 30, 2008).

happens. As a result, they can update the BAM dashboard to show that the bag is lost. In parallel, the system could trigger a BPM process to do one or more of the following:

- Alert customers through their communication device of choice that their baggage has been lost. This will save the customer hours of aggravation waiting in baggage claim.
- Send an alert to baggage operations to locate the bag and determine the fastest way to get it to the traveler's destination.

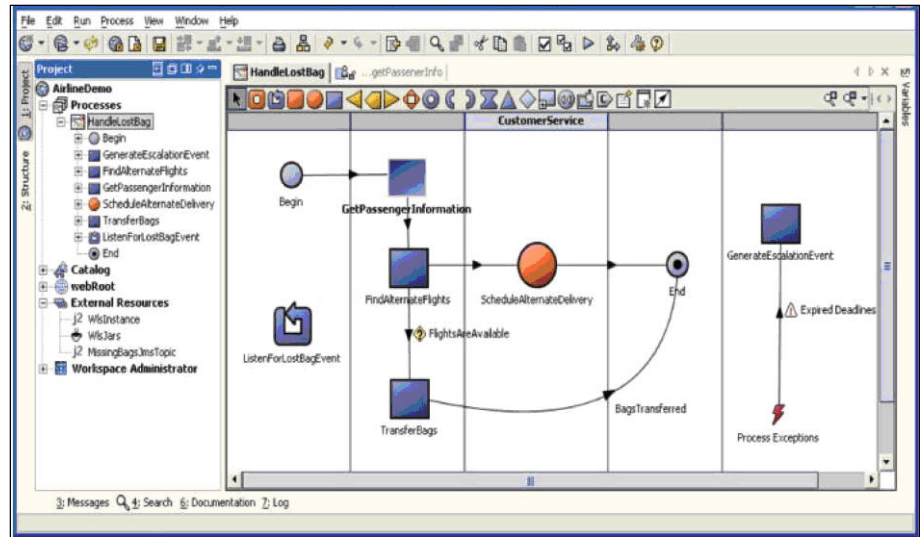


Figure 2: Oracle Business Process Management Suite shows the route that the business process takes when a lost bag event is received.

Scenario 2: Take an Alternate Business Process Route

Consider a business process representing the interactions between the telesales representative at a communications service provider and its customers. A CEP-enabled BAM dashboard shows the representative, in real time, the various parts required to fulfill an order. If the provisioning date is not acceptable to the customer, the representative can send out an alert to the provisioning department responsible for the delay. The representative then takes an alternate route and searches for and finds a backup supplier who can provide it much sooner. Consequently, the business process follows this alternate path to provide the necessary part and fulfills the customer order on time.

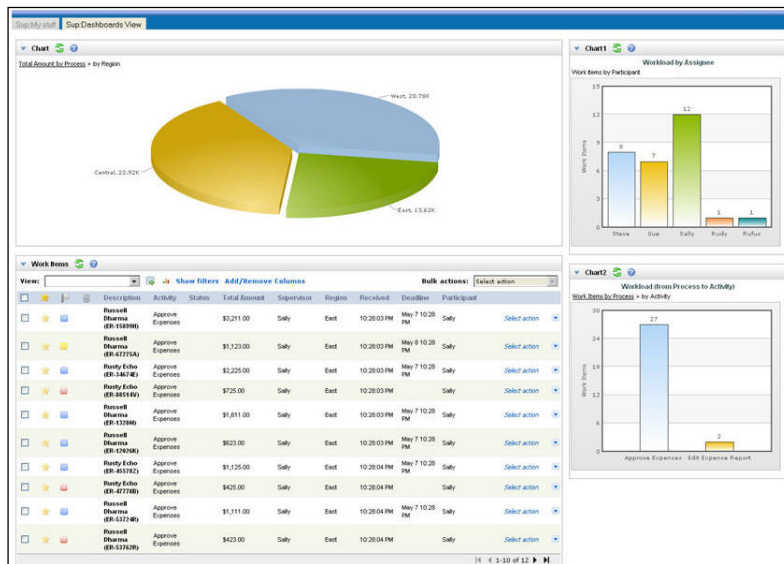


Figure 3: The Oracle Business Process Management Suite BAM dashboard provides real-time visibility into the number and state of lost bags.

Scenario 3: Prevent Service-Level Agreement Violations

The CEP engine has an event pattern trigger that responds when the income review, credit check, and house appraisal steps for the same loan are completed.

Consider that when a new loan application is made, it initiates a loan origination process that sends request events to three services: income review, credit check, and house appraisal. There are hundreds of these loan applications in the system at any one time. CEP can be used to monitor the process instances to detect loan amounts of more than US\$1 million. The CEP engine has an event pattern trigger that responds when the income review, credit check, and house appraisal steps for the same loan are completed. If the time it takes to complete these three events exceeds a preset limit, then the overall process instance for that loan is judged to be in danger of violating the SLA. An alert is triggered and an action is taken: the priority for executing the risk assessment is raised.

Scenario 4: End a “Rogue” Business Process

Consider a straight-through business process for a credit card transaction. Again, there are millions of such transactions going through the system at any given time. CEP can help detect patterns that identify potentially fraudulent behavior in real time, and instances of business processes that are suspected to be fraudulent are paused immediately (but not canceled). The processes are sent for manual review and can only proceed following managerial approval.

In a world where large enterprises are bombarded with a million events per second, CEP is the only technology that can filter out unnecessary data; recognize patterns; and aggregate, process, and derive composite events that have an impact on business processes.

CONCLUSION

The synergy possible by integrating CEP and BPM makes it possible to process business events optimally. And yet, in the marriage of these two technologies, the complex processing component is critical. In a world where large enterprises are bombarded with a million events per second, CEP is the only technology that can filter out unnecessary data; recognize patterns; and aggregate, process, and derive composite events that have an impact on business processes.

According to the article “SOA, EDA, BPM and CEP Are All Complementary,”³ the easiest way to build a new event-driven process is to use technology based on event-driven service-oriented architecture (SOA), which offers event-driven services necessary for new processes. The synergy of BPM and CEP can be fully realized by using the power of CEP technology built on event-driven SOA to design business processes—and ultimately to become an instantly responsive enterprise.

³ David Luckham, “SOA, EDA, BPM and CEP Are All Complementary,” http://complexevents.com/wp-content/uploads/2007/05/SOA_EDA_Part_1.pdf and http://complexevents.com/wp-content/uploads/2007/07/Soa_EDA_Part2.pdf (both accessed July 30, 2008).



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