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The Future Of Business Rules Platforms
Customers Are Moving To Event And Decision Management

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EXECUTIVE SUMMARY

Business rules platforms are a mature technology for automating decision and policy logic and for managing fast changes to that logic to keep up with business changes. Now customers are seeking more: capabilities allowing them to employ business rules to help detect and respond to business events hiding in streams of data and to automate decision life cycles. This research reveals how well vendors are responding to these new requirements.

TWO NEW SCENARIOS ARE PROMINENT IN BUSINESS RULES APPLICATIONS

Application development and delivery (AD&D) pros are taking business rules platforms in two new directions. The technology's future will be determined in large part by whether or not customers can successfully apply it to business event processing and decision life-cycle management.

New Scenario No. 1: Business Event Processing

Business event processing applications answer the question "What activities are happening in the business *now* that I need to know about?" by searching for patterns and values within several streams of actively flowing data. The streams almost always represent information about the real world, such as customer activity in a casino, stock prices fluctuating in real time, or the location of transportation vehicles and the goods they carry. AD&D professionals often build business-events applications using complex event processing (CEP) platforms — some of which use rules to define event patterns. Other AD&D professionals use business rules platforms to build business-events applications.[1] These overlapping uses set the stage for the convergence of CEP and business rules platforms (see Figure 1):

- **CEP can notify business rules platforms to take action.** When building a business-events application, business rules platforms can automate actions in response to events. After a CEP engine detects an interesting business event, the business rules engine kicks in to determine the appropriate response to that event — be it starting a fraud-detection process and halting the pending transaction, issuing an alert, or making a specific offer to a customer.

  Bosch Software Innovations, Corticon Technologies, Fair Isaac Corporation (FICO), IBM, and OpenRules prefer this approach to converged business rules and business events.
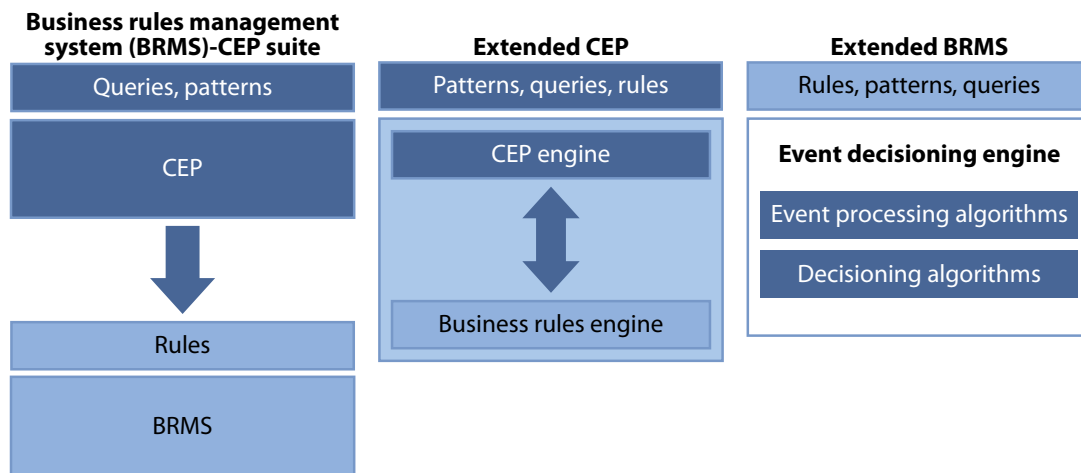
- **CEP vendors already use business rules as a design technique and may expand usage.** The CEP vendors IBM, Informatica, Progress Software, Tibco Software, and UC4 Software provide a rules metaphor to define event handlers. However, only Tibco is in a strong position to expand from use of rules to define event handlers into general business rules applications. Why? As part of its

solution, Tibco employs a Rete rules engine, which can be used for a wide variety of business rules applications.[2] To expand, the other vendors would have to offer customers engines capable of handling a variety of problems beyond just event handling.

- **Business rules and CEP platforms overlap, but CEP engines are more flexible.** Like CEP platforms, business rules platforms can *also* evaluate cases to identify significant business events; however, they have limitations in scale, scope, and complexity in this role. The key technical barrier for use of business rules engines for event processing is figuring out how to efficiently reorganize a rules engine's working memory to accommodate inherently dynamic event data.[3]

Despite the technical challenge, Bosch Software Innovations, InRule Technology, and Red Hat are pursuing features that allow their customers to tackle some business-events applications. Bosch provides an events-collection platform for devices and manages deployment of rules to devices. InRule will do so via strategies for managing dynamic fact bases. Red Hat JBoss Business Rules Management System (BRMS) (and the Drools project upon which it is founded) are incorporating event-processing algorithms and dynamic fact-based management into the business platform itself.

Figure 1 Three Paths To Converged Complex Event Processing (CEP) And Business Rules

60072   Source: Forrester Research, Inc.

New Scenario No. 2: Decision Management Puts Business Rules In A Broader Context

The second emerging scenario for business rules platforms is decision management, an ill-defined term many customers and vendors use in different contexts.[4] The focus of our research is applications that automate the definition, execution, management, and optimization of business decisions using business rules platforms and often business process management (BPM) as well. For example, retail organizations model the propensity of customers to buy certain products and then implement the decisions implied in those models using business rules platforms.

Typically, decision management incorporates four elements:

- **Decision management starts with the data and data warehouse.** Decision management starts with historical data and seeks to find patterns of interest in that data. Thus, reporting and data warehousing is the critical front end of many automated decisions.

- **Predictive modeling tools identify interesting patterns and decisions.** Predictive modeling tools, which create a model of outcomes likely to occur given the presence of a set of conditions, are popular. The predictive models draw conclusions about what to do but don't generate executable software — so they stop short of taking the required actions.

- **Business rules applications and BPM take action on predictive, analytical models.** Business rules take actions based on the conclusions reached by predictive and other analytical models. Some organizations also use BPM software to take action, but in our experience, business rules are a more common method.

- **Integration creates feedback loops.** Modeling pros understand the adage ". . . all models are wrong, but some are useful" — the point being that when models work, they describe reality closely if not wholly accurately.[5] More to the point, as reality changes, the models must also change or become useless. Using business rules to automate the decisions implied by models affords the opportunity to measure results and detect changes in reality — in other words, to optimize predictive and analytical models.

Among the business rules vendors, FICO has been pursuing decision management for many years and continues to do so. Bosch Software Innovations, CRIF, Equifax, and Experian Information Solutions have also pursued decision management for years through their financial services solutions. IBM also entered the market during 2010 with a product that integrates its SPSS Modeler product with ILOG and the WebSphere Decision Server that integrates business rules and CEP.

BETTER TOGETHER: BUSINESS EVENTS, BUSINESS RULES, AND BUSINESS PROCESS

The new business rules scenarios, coupled with consolidation of the business rules platform market, are a harbinger of future environments that will combine business-events, business-rules, and business-process management. These environments won't merely repackage three separate platforms into a suite; rather, they represent a fully integrated application development and deployment platform that captures business events, detects relevant patterns, makes decisions, and implements business processes to act upon business events. Taken as a whole, they spell good news for business agility because they will create dynamic business applications that:

- **Provide authoring tools designed for business experts.** All of these platforms boast they can easily model event patterns, express business rules, and design business processes.

- **Abstract the plumbing of distributed architectures.** These platforms include runtime environments to connect to event sources, execute logic, and initiate and manage business processes.

- **Enable new levels of application and information integration.** These platforms will be adept at integrating conventional enterprise applications as well as emerging applications such as event flows, software-as-a-service (SaaS) applications, and Internet services like PayPal.

We can see the beginnings of this new events-rules-process platform in some of today's products. Pegasystems offers integrated BPM and business rules. Tibco's BusinessEvents and IBM's WebSphere Decision Server integrate business events and business rules. Progress Software's Responsive Process Management (RPM) combines business events and business process management.

No vendor offers the full environment yet, but the die is cast.

SUPPLEMENTAL MATERIAL

Companies Interviewed For This Document

Bosch Software Innovations	InRule Technology
Corticon Technologies	OpenRules
CRIF	Red Hat
Experian Information Solutions	Software AG
Fair Isaac Corporation (FICO)	Sparkling Logic
IBM	Tibco Software
Informatica	WSO2

ENDNOTES

[1] For a detailed comparison of complex event processing (CEP) platforms, see the Forrester Wave™ on CEP completed in 2009. Despite its age, this research still provides a good view of the CEP market. However, for a complete picture of the CEP market, clients should add Informatica, Red Hat, and Software AG to their evaluations. See the August 4, 2009, "The Forrester Wave™: Complex Event Processing (CEP) Platforms, Q3 2009" report.

[2] Rete is the name of a family of rules-processing algorithms invented by Charles Forgy. They are best known for their ability to reach conclusions despite incomplete information, a technique usually called inferencing. Many business rules applications do not employ inferencing but rather process rules sequentially. For more information on this topic, see the July 24, 2008, "The Truth About Business Rules Algorithms" report.

[3] The Java products have the additional constraint of Java's addressable-memory limitations. A Rete network, for example, can quickly occupy huge memory pools when processing dynamic fact sets, spurring performance-killing Java garbage-collection pauses. Business rules platforms must also deal efficiently with sets of data and time to process business events.

[4] Customers' and vendors' understanding of the term decision management depends on their central focus. To customers and vendors focused on analytical modeling, decision management is life-cycle management for analytical models with feedback loops from whatever operational systems implement those models. To customers and vendors focused on business rules and business process management, decision management is life-cycle management of automated decisions implemented in rules, processes, and other logic. Both points of view seek optimization of assets from operating experience.

[5] This quotation is from George Edward Pelham Box, Professor Emeritus of Statistics at the University of Wisconsin and a pioneer in the areas of quality control, time series analysis, design of experiments, and Bayesian inference.