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Research

Comparing Operational Decision Management from TIBCO, Oracle and IBM

A high-level review of solutions from three leading vendors

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Executive Summary

Operational Decision Management (ODM) is a new area in name, although the underlying technologies of business rules and business events are familiar. Lustratus has written in detail about ODM in the past, and this report is not intended to replay the ODM story in general. Rather, this is a more focused assessment of how three of the leading vendors - TIBCO, Oracle and IBM - are addressing this rapidly growing market need. But as a reminder, in simple terms ODM is about using business events and business rules technologies to deliver a formalized approach to implementing operational decision making such that it can be directly updated and managed by business users within a clear business context.

Each vendor has a different story to tell, based largely on its particular heritage. For instance, TIBCO has a long history in events-based processing and therefore found it natural to extend this capability by introducing more formalized actions based on rules, although it has struggled to shake off a technically-based approach to the problem. Oracle initially saw business rules as an ideal adjunct to its Fusion Middleware SOA philosophy, providing a mechanism for formalizing the decision points in the business process flow, but its events knowledge stemmed from its database area and as yet does not integrate very smoothly with the rules component and the overall need for a business user context; however its specialized Oracle RealTime Decisions (RTD) and Oracle Policy Automation standalone offerings may perhaps indicate that at least for specific business needs it is starting to understand the value of ODM. IBM also started with different solution components, both developed internally and acquired, but in its latest WebSphere Operational Decision Management offering it has succeeded in melding rules and events into one seamless package, coupled with a strong business user context for authoring, changing and inspecting operational decision making.

The analysis presented in this report assesses each offering based on the time to value for particular projects, TCO implications, how the solution affects risk and what the broader value potential might be. The table below provides a high level summary of the comparative strengths of each solution.

	Time to value	Lower TCO	Risk mitigation	Value potential
TIBCO	■■■■■■□□□□	■■■■■□□□□□	■■■■■□□□□□	■■■■■■□□□□
Oracle	■■■■■■■□□□	■■■■■■□□□□	■■■■■■■□□□	■■■■■■■■□□
IBM	■■■■■■■■□□	■■■■■■■■□□	■■■■■■■■□□	■■■■■■■■□□

Figure 1: Competitive summary of ODM solutions from TIBCO, Oracle and IBM

In the final analysis, Lustratus sees IBM's ODM solution as the most complete and best integrated to date, with the capabilities to support the widest range of ODM needs. The Oracle Fusion Middleware solution has all the right components, while the standalone RTD and Policy Automation offerings provide interesting options for specialized ODM opportunities, but the disjointed nature of Oracle's support for ODM makes it complex and less effective as a business user tool. As a result, the Oracle ODM solution is probably best suited for use within BPEL-style decision flows in a Fusion middleware environment. The TIBCO ODM solution is really just an extension of its event-driven architecture (EDA) middleware with some rules functionality, and struggles to fit within the ODM market definition. It is probably only of interest to users with TIBCO BusinessEvents applications who are looking for some basic rules functionality to hook into the event architecture.

Introduction

In the recent Lustratus report, "Operational Decision Management", Lustratus described operation decision management (ODM), what it does and how it can bring value to business operations. Having set the scene, this paper takes a high-level look at three of the leading vendors of ODM solutions; TIBCO, Oracle and IBM. The methodology for this review follows the same approach as used in the popular Lustratus BPM competitive reviews, providing a factual summary of each vendor's offerings against a common frame of reference and then reviewing each offering against a backdrop of buyers' wants and needs.

What is ODM?

The Lustratus report referenced above provides a full description of ODM, but in essence ODM is all about providing the ability to formalize and automate business decisions in the operational IT environment, ensuring greater repeatability, accuracy and speed with corresponding improvements in business outcomes. ODM solutions should provide the ability for business rules and events to be authored and maintained by business domain experts rather than technically-skilled personnel. These govern the behaviour of the IT systems by controlling decisions based on individual business transaction criteria combined with enterprise-wide visibility and awareness of business status in both historic and point-in-time dimensions. By placing control of these rules and events in the hands of business users, ODM delivers business agility and visibility as well as better decisions and outcomes.

Why ODM now?

The analysis of vendor offerings that follows must be set against the current market wants and needs in order to offer the most insight. As such, looking at market conditions it is clear that many companies are still finding business challenging; there are worldwide pressures on levels of spending, and investment is hard to come by. From an external perspective, there is also considerable pressure on operational compliance due to extensive regulatory changes coupled with increased levels of inspection. The result is that companies are very focused on gaining new customers, serving existing customers with maximum efficiency and effectiveness and doing so while clearly adhering to industry regulations and individual country legislation.

Some of the drivers to achieve these goals can benefit substantially from an ODM solution that makes operational decision-making repeatable, predictable, fast and transparent:

- Improve operational efficiency and effectiveness. Automate decision-making to deliver faster, more accurate decisions while reducing costs.
- Deliver an enhanced customer experience. Rapid, accurate and repeatable decisions promote customer confidence and speed customer service, leading to better prospecting, improved competitiveness and shorter sales cycles.
- Increase business agility. Enable the business community to change operational decision-making quickly in response to market changes and opportunities.
- Deliver better business insight. Provide business-context visibility of decision-making policies and procedures as implemented in the operational systems, to enable continual improvement and compliance validation

What makes ODM particularly attractive is that it can be very targeted in its application, reducing the overall investment required to deliver benefits, shortening payback times and mitigating risk. Instead of having to understand the whole of a particular process or operation, ODM can focus on the key decisions affecting operational performance, delivering value quickly for relatively minimal investment. In the current economic climate, this is a powerful factor to take into account.

Assessment approach

This assessment follows the standard Lustratus approach for competitive evaluations. The first task is to provide a factual summary of what each competitive solution offers. Once this is done, it then becomes possible to contrast the different solutions on a level playing field, having 'normalized' the capabilities and characteristics of each offering.

In order to achieve the first step, a frame of reference is required within which the offerings can be described. Lustratus takes the view that this should not just be a functional checklist; it is also important to consider what characteristics the offering has, such as its reliability and ease-of-use, and what additional measures the vendor has taken to broaden the solution or add more value. The frame of reference for the comparative assessment that forms the second part of the review is dictated by the set of generic buyer wants and needs such as time-to-value.

ODM offerings – frame of reference

The elements of the frame of reference will form a backdrop to describing what each vendor offering does in comparison to each other. There are really three key areas to be considered:

- Functionality: What ODM functionality does the vendor offer?
- Characteristics: What characteristics are delivered as part of this functionality?
- Solution extensions: What has the vendor put in place to fill out the offerings into broader solutions?

A summary of the key categories in each area is included below. Each area will then receive a little more explanation.

Functionality	Characteristics	Solution Extensions
• Rules development • Events specification • Collaborative design • Save/Browse/Load of decision components • Test and Simulation • Deployment • Integration with other components • Operational monitoring and feedback	• Usability • Range of supported inputs • Time-to-value • Import / Export • Samples • Scalability • Performance • Security • Versioning • Dynamic deployments • Governance	• Business Analytics • BPM support • Ruleset templates • Professional services • Partner ecosystem • Collaboration community

Figure 2:- Reference framework for outlining vendor ODM offerings

Functionality

The twin cornerstones of ODM are business rules and business events. Rules describe the decision-making process for particular business scenarios, such as calculating the loan interest rate to be offered to a client, and events provide the ability to trigger particular rules and other activities based on pre-set patterns of operational activities, such as a sudden surge in orders for a particular product line across a range of stores. It therefore

follows that all ODM offerings must provide a way to develop these rule and event specifications. However there is a key aspect of ODM that must be taken into account when considering rule and event development and maintenance; much of the value of ODM comes from putting the ability to author and edit these specifications in the hands of the business community. This is where much of the agility and visibility comes from. The rules and events need to make sense in a business context, and then business users need to be able to change them to respond to new market developments as quickly and easily as possible.

Therefore there is considerable focus for ODM tools on how well they cope with this need to offer a non-technical interface to rules and events development. But the task is made harder by the fact that as part of deploying these rules and events, a more technical level of development will need to be done. Therefore it is up to the vendor to ensure that the needs of both the non-technical business community and the technical IT community are addressed effectively.

Collaboration is an area that is gaining increasing attention. The business rules and events are a distillation of knowledge about business operations and how decisions should be made, and as such they potentially embody the skills and experience of a number of different individual domain experts. By enabling these experts to collaborate in the development phase, a company can ensure the best possible results, and there have been many improvements in collaborative techniques over the last few years, encompassing tools such as wikis, chat-based event streams and document tagging. How each vendor addresses this need will be an interesting comparative point.

Following the successful creation of the rules and/or events, these 'artefacts' that form the building blocks of each decision need to be saved and made available to others for browsing and use. At this stage, they will also need to be tested, either against manufactured data or even historic snapshots of operational data. Once this has been carried out, the rules and events need to be deployed for general usage. This brings up another potential area of differentiation – the ability to hook the rules and events into other components. For example, Business Process Management (BPM) provides the ability to formally define the flow of an entire business process and then execute based on that flow. This flow will probably contain multiple decision points where the subsequent flow will change depending on the decisions made. This is an ideal entry point for ODM to provide the decision-making logic to work within the BPM flow, but this of course requires some sort of integration between the ODM offering and the BPM one. Another important integration area is with applications; in order to influence application behaviour to control the decisions made, it will be necessary to hook the ODM tool into the target applications, whether they be home-grown ones or commercial packages.

Once the rules and events are deployed, a key element of being able to continually improve decision accuracy and effectiveness is the ability to monitor decisions and track the results they deliver. Each offering is likely to have some sort of support for feeding back this type of information; whether in the form of reports, executive dashboards or detailed online monitoring, and this will be another important assessment factor.

Characteristics

Having looked at basic ODM solution functionality, the second area covers the characteristics of the ODM offerings. A critical one has already been touched upon – the usability of the rules and events development task. The importance of usability for ODM tools stems from the need to present the functionality to non-technical business users as well as technical IT staff. How this is handled in the different offerings is likely to be a key area of differentiation. However this is not the only aspect of usability that is important; users will need to be able to browse collections of rules and events definitions to reuse existing ones, and will also want to be able to test and simulate potential changes easily and within a business context.

Another key characteristic that will heavily influence the accuracy and effectiveness of ODM-controlled decisions is the ability to handle a wide range of inputs to the decision-making process. Decision quality is almost always governed by the amount and accuracy of available data, and the ability to bring in multiple different sources of information will therefore improve decision outcomes. While business rules will probably be focused primarily on

contextual information geared to the transaction being executed, business events may take a much wider view of operational status, analysing information from many other systems on both a point-in-time and historical basis.

The time-to-value characteristic is obviously closely linked to usability, but there are other aspects that should be considered when reviewing ODM solutions. For example, sample rulesets based either on industry-specific or cross-industry 'generic' decisions can really speed up development, while import/export facilities may also help in the sharing of rules and events definitions with other environments.

Once in production, the scalability, performance and security characteristics will come to the fore. These rules and events will be controlling operational decision-making, potentially affecting every aspect of business performance, and therefore it will be critical that introducing these automatic rules does not jeopardize system responsiveness or inhibit volume and growth. Also, the critical nature of decision-making makes security imperative.

Other characteristics that will be relevant refer to the overall manageability of the ODM implementation. This covers aspects such as versioning, allowing rulesets and associated events to be modified and developed with the requisite level of control, dynamic deployment to put new changes into production as needed and governance capabilities to ensure proper approval cycles for changes and the appropriate measurement and reporting facilities on ODM performance.

Solution extensions

As is often the case with software-based solutions, vendor offerings are likely to differ in the area of overall solution extensibility and breadth beyond the basic software products. An important example for ODM is the ability to deploy business analytics as part of the decision-making process. As has already been discussed, decisions will be improved by enabling the process to bring in information from multiple different parts of overall operations, but these gains can be enhanced further by offering analytical capabilities to make sense of all the available information. While business events processing already offers the ability to analyse and correlate situations across a range of incidents, Complex Event Processing (CEP) technology can ratchet this up to another level, providing the ability to process much higher volumes of data and perform more complex filtering and matching. Continuous information streams pouring in from RFID sensors is just one example where CEP technology will be a vital add-on to standard business event processing. But it is important to note that while standalone CEP tools provide the mechanics for handling demanding situations in terms of information gathering and correlation, the business events layer is still required to put all this information into the proper business context.

Business Process Management (BPM) integration is another relevant extension area for ODM. While ODM can be deployed standalone, it has a natural affinity to BPM since BPM process flows frequently have decision points along the way where the subsequent flow will depend on specific business rules and events. Therefore another possible area of differentiation across vendors is how well their ODM offering integrates with BPM.

It is also the case that there will be some industry or cross-industry use cases where the decision-making is relatively well understood at a generic level. Some vendors may work to provide templates of event and rule definitions for specific industry needs, such as provisioning in the telecommunications industry for instance. These templates would then need to be customized by companies for their own usage, but provision of these templates would significantly speed up value delivery. In order to facilitate this further, some vendors may offer support for industry-based user communities where domain experts can collaborate on the development of these templates.

Another aspect of a broader ODM solution approach that could speed up delivery and make it more effective is the provision of professional services resources that can bring the benefit of past experience with ODM deployments, combined with a partner network that can augment the vendor-provided resources by providing local support and specialized industry expertise.

Taking a look at the ODM offerings

This report looks at three specific vendors of ODM offerings; TIBCO, Oracle and IBM. Each offering can now be summarized against the frame-of-reference detailed in the previous section. The intention is to pull out salient points rather than to provide an exhaustive, in-depth analysis of each solution. It is expected that prospective users will carry out their own due diligence analysis of the details as part of the RFP process.

TIBCO Software

TIBCO Software started out as a provider of message-oriented middleware in the early days of messaging as a form of business connectivity. From there, it expanded to offer various types of middleware around the general area of business integration and optimization. This history is particularly relevant when considering TIBCO's products and offerings in the ODM area; the inaugural TIBCO product, Rendezvous, was a publish/subscribe based messaging product that proved popular in the Finance industry, and it is this product's legacy that has influenced the TIBCO approach to ODM. It led TIBCO to start thinking in terms of 'events' at a very early stage, and it became a leader in events-based processing. In this terminology, an 'event' was not quite the same thing as a business event in ODM parlance, since it could be any asynchronous activity, but it is for this reason that the TIBCO ODM capabilities are provided from within its TIBCO BusinessEvents offering. However, as business events and rules have become of more interest, TIBCO has been quick to adapt its offerings to align more closely with the ODM definitions.

Functionality

TIBCO BusinessEvents is a business events processing (BEP) platform that includes complex event processing (CEP) analytics. The main design tool is BusinessEvents Designer, but for decision management support TIBCO provides a tool called Decision Manager to adapt Studio to address the needs of business rules. Decision Manager is an Eclipse-based development tool for defining business rules and events, and works in conjunction with the Rule Management Server (RMS) which is the runtime server for controlling the Decision Manager client. But TIBCO's heritage has resulted in its approach being rooted in events that lead to rules as opposed to the other way around. This is an important point to bear in mind – it influences the rest of TIBCOs functionality heavily. So in the TIBCO model, TIBCO BusinessEvents is where the user defines and models the events of interest and how they relate to each other, and then the rules support is provided as a way to specify what actions to take when specific sets of events occur.

Business events are developed in the TIBCO BusinessEvents environment using Designer. When a rule is required, a 'virtual' rule step is put in place by an IT specialist, and the environment information such as relevant events and other information sources are passed across to the RMS. The technical user then builds the environment and permissions for the Decision Manager instance, allowing the business user to now specify the rules through the Decision Manager tool. TIBCO BusinessEvents is essentially a model-driven complex event processor (CEP), with UML-based models describing the relationship between different business objects in the operational environment and how they interact with each other. There are two forms of relationships covered by BusinessEvents; conceptual models that deal with the inherent static relationships between these business objects, and state models that cover the dynamic point-in-time relationships as dictated within the operational execution context. So for example, a loan request might trigger a supervisory approval step based on the amount and credit rating of the client, which would be a static relationship, but the dynamic relationship might invoke an extra approval step if current exposure levels have moved beyond a certain limit.

Decision Manager is the key tool for TIBCO rules management. It runs as a Windows client on the RMS, and offers a non-technical interface for business users to author and modify business rules. The TIBCO approach is unusual, and to some extent a product of its heritage of looking at rules from an event-driven context. Rather than offering natural language mechanisms for business users to specify rules, it instead adopts the decision table approach, with complex rules being broken up into a set of simple rules that each become a row in the decision table. The overall rule model can be created using drag and drop features, allowing event occurrence

details and other rule definitions to be brought in from the repository and slotted in to the new rule as required, but the end result is a decision table structure which specifies the required actions as well as relevant information such as threshold data points. Decision Manager also provides some testing capabilities so that the rule author can validate that the rule works correctly. The rules are called up from TIBCO Designer, the main TIBCO environment for developing process and application flows. TIBCO Designer and TIBCO Decision Manager share a common repository.

TIBCO does not offer any specific support for collaborative design, other than offering a common repository for all ODM artefacts. It does however offer role-based personalization within Decision Manager, recognizing a business user, a developer or a rules administrator. This role-based option enables TIBCO to conceal some of the development tool complexities from the business users, but this is still all within the relatively complicated Eclipse environment.

As far as integration with other components is concerned, TIBCO supports event capture across messaging middleware / ESBs such as its own offerings, other JMS products and IBM's WebSphere MQ family. However it has little support for integrating its decision-making capabilities into other applications and environments beyond those supported directly by TIBCO BusinessEvents.

Characteristics

TIBCO has tried to make Decision Manager easy to use, offering drag and drop capabilities and palettes of available business objects, event sources and libraries of existing definitions. The role-based personalization provides another mechanism to conceal complexities from the business user, but not all business users will find the decision tables easy to understand, and the lack of a natural language form of rules authoring and editing is a major drawback. As for the rest of the ODM process, the different steps are rather disjointed, with the Business Events, Rules Management System and Decision Manager tools all involved. However, the TIBCO CEP is sophisticated and well tried and tested. As a result, as long as the ODM project stems from the collection of events then the process should work reasonably smoothly.

Input sources are limited to TIBCO's own product set and events coming in via other middleware such as JMS-based ESBs and IBM's WebSphere MQ family. The TIBCO rules engine implementation is RETE-based, which gives a certain amount of standards support, but import and export is difficult because TIBCO Decision Manager rules are so heavily intertwined with BusinessEvents applications. TIBCO offers little in the way of sample rulesets, again because of its focus on rules as serving events rather than the other way around.

TIBCO has a good reputation for performance, and its CEP is scalable and efficient. However the TIBCO approach to ODM involves holding all state information related to an event or collection of events in-memory for the life of the events. While this is good for performance, it can affect scalability, especially when dealing with decisions that govern a long-running process as opposed to relatively immediate program-to-program interactions. Security is handled through the involvement of technical specialists that control what the business users can and cannot see in their Decision Manager environment, and role-based personalization. TIBCO BusinessEvents also supports versioning of all its artefacts together with dynamic deployment.

Solution Extensions

The TIBCO BusinessEvents CEP component offers powerful filtering, correlation and analytics functionality to enable it to handle high-volume streams of inputs, for example RFID streams. This functionality is the heart of the CEP component, and its in-memory implementation ensures a high degree of performance. TIBCO also offers various historical and management-based analysis tools, but these are not directly linked to the ODM solution.

TIBCO has its own BPM software, and this has been specifically designed to be able to integrate with TIBCO BusinessEvents. As a result, it is relatively easy to hook ODM decision-making logic into BPM flows as needed. On the professional services front, TIBCO's resources are almost entirely focused on product installation and

usage, rather than higher level project design and planning. However TIBCO does have a range of partners across the world that can provide higher level support.

The table below summarizes the salient points regarding TIBCO's ODM support:

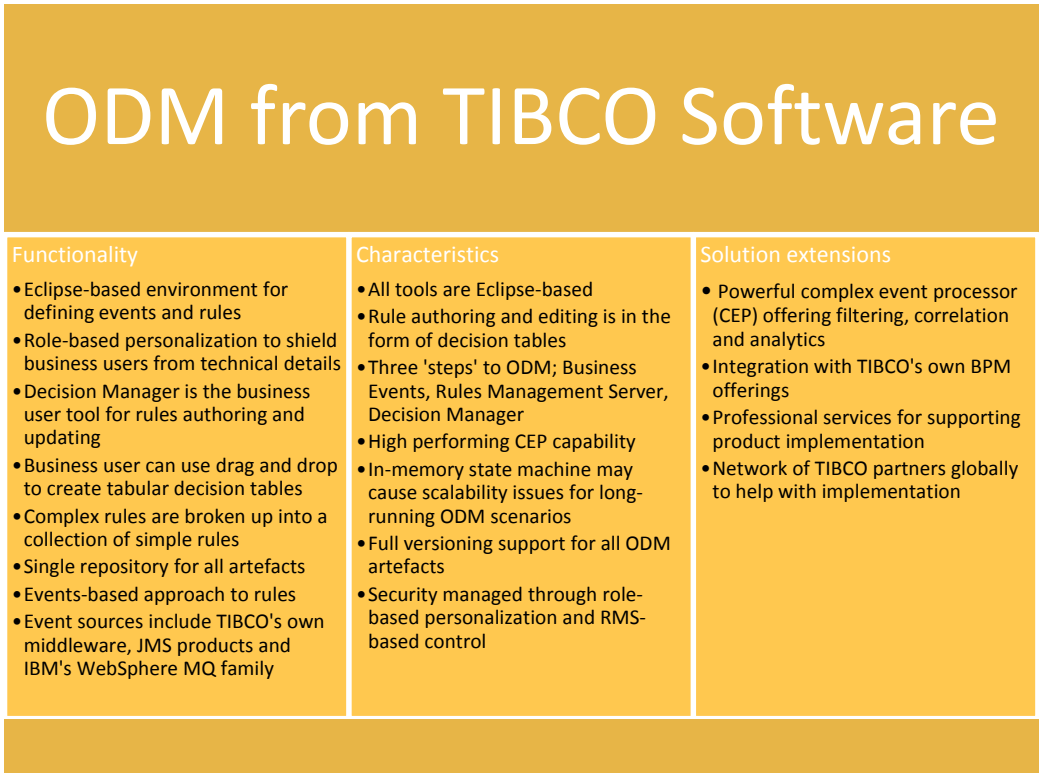

Figure 3: Summary of TIBCO Software ODM support

Oracle

To be frank, Oracle currently has a rather confusing selection of options for decision management support. The 'traditional' business rules capability is provided with Oracle Business Rules, shipped in both its SOA and BPM Suites. However, it also has a rules capability within its complex event processing (CEP) feature of the Oracle 11g database, although these rules are more targeted to data analytics operations. In addition, Oracle also has a couple of standalone, specialized options for decision management; Oracle Real Time Decisions (RTD), an offering targeted at specific data mining/analysis opportunities in the CRM space, and Oracle Policy Automation, a Windows-based tool for building decisions from policy documents. All four options have different interfaces and functionality, in both development and runtime scenarios.

As far as this assessment is concerned, the prime focus in terms of base ODM capability will be the general-purpose Fusion Middleware-based Oracle Business Rules (OBR) offering, but the other three will be discussed as part of the section on solution extensions. As far as OBR is concerned, it is worthwhile reflecting on its history as this will affect much of the subsequent positioning. OBR has always been focused on Oracle's SOA and BPM capabilities. As a result, it is closely entwined with BPEL and higher level BPM flows. The business events part of the ODM equation is provided through the Oracle SOA Fusion Middleware toolset.

Functionality

Oracle offers both the business events and business rules capabilities that make up an ODM solution, although these are offered separately. Events are supported through the Fusion Middleware support for SOA composite applications, while Oracle Business Rules (OBR) is the offering for defining and deploying business rules. The rules development environment, Rules Designer, is an extension of the Oracle JDeveloper development environment, and is an Eclipse-based tool supporting role-based access. Through this role-based filtering,

Rules Designer can ensure that business users can edit and update rules without being exposed to the technical complexities that need to be handled by IT staff. Events are also created in JDeveloper.

The technical OBR Rules Designer interface is used to define the data classes and models within which the ruleset will operate, as well as creating the initial rule definitions. Once this is done, the business user can now use the simplified Rules Designer view to adjust the rules as desired. Rules are either described in the 'IF / THEN' model, or for more complex rules that operate differently depending on thresholds of relevant values, in decision table mode. The inputs to the ruleset can be imported from XML documents, Java, the Oracle ADF Business Components environment or direct from Java EE applications through a Java-like proprietary language called RL. In Oracle terminology, the combination of rulesets and their associated input definitions is called a dictionary. OBR stores all rule-related artefacts in a repository, providing an array of search and browse capabilities to enable users to find the related rules to their projects. Filters can be set up to ensure only the relevant rules can be seen. Event definitions by contrast are not made within OBR but are instead defined within the Fusion Middleware SOA environment, although still under JDeveloper. However, for broader system events, these can be defined within the Oracle BAM environment, which can also trigger a call to an OBR decision service.

Rule testing is somewhat limited at the moment. Oracle OBR provides a testing capability, but whereas rulesets can be created to operate with inputs from XML schema, Java, Oracle ADF Business Components and Java-based RL language sources, only XML inputs/outputs are supported in the test environment. Rule deployment is carried out from within Rules Designer. A 'decision function' is developed which is essentially a callable service that can be invoked from Java applications via the Oracle OBR SDK, Oracle SOA Composer or BPEL flows. The OBR Rules Engine, running in the Java application server, provides runtime services to execute the decision service and return the response. Oracle events can call the decision function through the SDK, as can the Oracle ADF Business Components environment.

The Oracle BAM product provides monitoring and feedback on business rules and events activity, and includes various customizable dashboards and reporting mechanisms.

Characteristics

The Rules Designer interface makes use of personalized role-based views to help make it easier to use for non-technical business users. Once the tricky operations of creating the data model and putting initial definitions in place has been done by the developers, business users are presented with an easy-to-use IF / THEN structure of visual rule specifications. These are created and modified through a menu-driven approach, and the ability to filter the OBR artefacts ensures the business user is only presented with the artefacts the project needs. For more mechanical and repetitive rules that are dependent on input value thresholds, business users can also operate with a decision table structure. However there is little or no support for any sort of collaboration in building the various rulesets.

At the developer level, the Rules Designer tool guides developers through the necessary processes reasonably smoothly, and the RL Language offers a way for developers to invoke rules-based decisions from Java EE applications. It is easy to hook the rules into the main Oracle environments such as Oracle BPM and SOA, but access is limited to the world of Java-based applications. Events are designed in JDeveloper using Oracle's Events Definition Language (EDL), or through the use of the Oracle BAM tool for SOA-based applications. The BAM tool makes event specification fairly straightforward, but the native EDL route is more complex and technical.

Oracle ODM support is very much oriented to the Oracle Fusion world, but within Oracle's domain time to value is helped by the usability and model-based approach. Oracle does offer some samples to help, but these are extremely limited. However time to value could be impacted by the rather disjointed nature of Oracle events and rules support. Events support is very much offered as part of SOA and BPM implementations, while the rules

specifications are kept rather separate. Admittedly, the rules can be invoked through the Oracle OBR SDK, but ODM implementation feels very much like two completely separate domains of events and rules.

The OBR Rules Engine is a high performing, scalable implementation with a thread-safe architecture to allow analysis and execution operations in parallel. Rules Engine can leverage the Oracle application server technology in this area, and can also leverage Oracle CEP if required. Versioning is supported in that Oracle uses a standard XML repository for storing information, allowing users to implement versioning through a standard repository control system.

Solution Extensions

The first and perhaps most obvious extension for Oracle Business Rules is the integration with the Oracle BPM and SOA offerings. OBR can be used to provide the BPEL-style decision making that controls the linkage and flows between the various steps in the process or composite application. Beyond this, Oracle provides various levels of business analytics to help add value to its ODM offerings. The Oracle BAM tool can be configured to monitor decisions, tracking frequency and results for instance, feeding the information back in detailed reports or high-level executive dashboards. Also, Oracle Data Mining capabilities can be used from within the Rules Designer to investigate such questions as how often a particular rule would have been called based on historical data, and what decisions it would have taken.

Three specific solution extension areas, however, are Oracle Real Time Decisions (RTD) which is Oracle's branding of the Sigma Dynamics offering, Oracle Policy Automation and the Rules Manager CEP feature of Oracle 11g. While these are not actually extending the OBR form of Oracle ODM, since they are all implemented differently, these three offerings do provide ODM capabilities from different bases. Oracle RTD is an advanced and sophisticated approach to building a self-learning, intelligent form of decision management. However it is very limited in its applicability, and has really been designed for CRM scenarios. Oracle RTD offers its own design environment, Decision Studio, and is built around the concept of 'inline services' that will gather real-time and historic information based on certain resource specifications. This data is then analysed and can be used to feed back recommendations for particular decisions. An example might be a set of promotional offers that are available for call centre agents to make to customers. By tracking such information as the number of times each promotion is offered and the number of times they are accepted, as well as the subsequent flow of business from the customer, Oracle RTD can be called by the Call Center client application during the customer contact process to recommend which offer to make in real time. The model is self-learning, since it changes its decisions based on historic data gathered continuously. However implementing this capability for other types of decisions will be hard due to the focused and specialized product design around the specific areas of offers and choices.

Oracle Policy Automation (OPA) is a Windows-based tool for mapping policy documents into ODM-style decisions. The product is essentially an outgrowth of the applications side of Oracle's business; as such, it has connectors for Siebel, Oracle CRM on Demand and SAP through an ABAP interface. The main components are a design-time toolset, Oracle Policy Modelling, for mapping Microsoft Word and Excel-based policy document into decision-making rulesets, and Oracle Policy Automation which encompasses the runtime components for deploying the ruleset execution across different platforms. Within its specialized set of use cases, OPA offers ODM-like productivity benefits. However it must be understood that these environments are completely separate from Oracle Business Rules; rulesets created with OPA can only be run in the OPA execution environment, and vice versa.

The Rules Manager CEP feature of Oracle 11g is also an ODM system of sorts, in that a set of events can be defined that are then detected by the CEP engine, with various different rules being implemented based on the results. However, this has been designed for use at the database level, and is not really suitable for more general ODM applications. While Oracle RTD and the CEP-based Rules Manager capabilities do offer extensions, the fact that they are all completely separate from Oracle OBR can be quite confusing.

Oracle offers a range of professional services and a network of partners, but these are all largely focused on product support rather than higher level planning.

The table below summarizes the salient points regarding Oracle's ODM support.

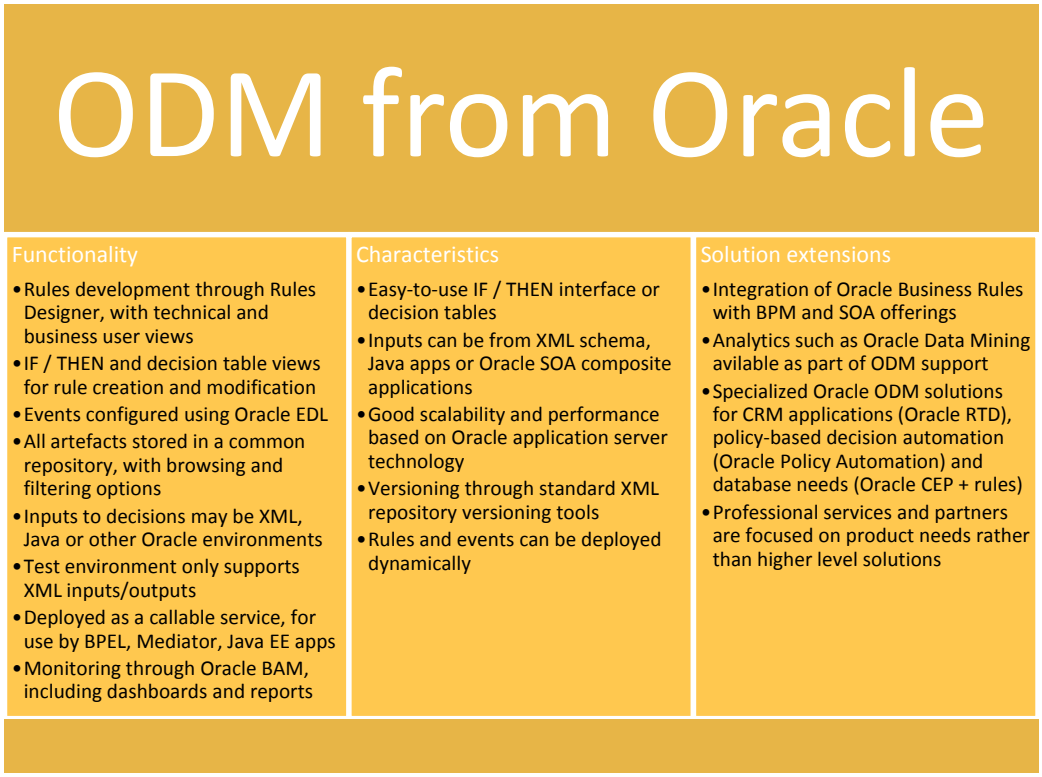

Figure 4:- Key characteristics of Oracle's ODM support

IBM

IBM built some events and rules capabilities into its WebSphere product line as part of its service-oriented architecture (SOA) and Business Process Management (BPM) support, but it has expanded its portfolio with a number of acquisitions. IBM has now merged a number of these offerings into a single product, IBM WebSphere Operational Decision Management (WODM). WODM combines the functionality previously available in WebSphere Business Events and WebSphere ILOG Business Rules, providing a combined rules and events facility for building ODM solutions.

Functionality

IBM WODM is actually split into two parts; Decision Server, the design and runtime tool for setting up and executing ODM projects, and Decision Center, the business-user oriented tool for authoring, editing and managing the sets of rules and events that make the decisions.

The Designer tool for setting up ODM projects is part of IBM Decision Server. The procedure starts with a developer defining the basic artefacts that will be part of the project; Designer is Eclipse-based with explorer-style trees of artefacts. Classes are defined and models are built. There is a visual drag-and-drop style of interface too. Once completed, the assets can be made available in Decision Center, the non-technical, web-based business user tool for authoring, viewing, editing and publishing rules and events changes. The business users can now define and modify the required rules and events specifications in Decision Center, which offers an easy-to-use subset of guided menus and filtered lists of assets on a project basis. A fundamental feature of Decision Center is it combines the business event specifications that describe a particular event or combination of events with the business rules definitions that describe how particular decisions will be taken. These artefacts

are listed together in the project view used by the business user in exactly the same way, with an icon determining if the artefact is a rule or an event. In this way, the business user can view the decision logic all in one place.

Selecting a rule artefact will put the user into an IF/THEN style of rule specification in plain language. If the user has a set of decisions that vary based on certain thresholds, then a decision table approach can also be selected to describe the decision-making differences. The same natural language approach is supported for the events specifications. The user builds tree structures of rules and sub-rules in order to manage and navigate projects inside the repository, and the same with events. All rule and event assets are stored in the same Decision Center repository, and can therefore be shared between other users, although there is no other specific collaboration support. The events panel is slightly different because it can also have a rule embedded in it, or a call to an external rule. So an event specification might use IF/AFTER/THEN language to describe a simple rule to be executed if the event occurs, or it might call out to a rule artefact already developed.

IBM also offers an optional add-on component to Decision Center for enabling rules and events authoring and editing from Microsoft Office environments like Word and Excel; IBM Rule Solutions for Office. This makes use of a Microsoft Office plug-in to export rulesets from Decision Center into a special 'Ruledocs' file format that can be accessed from Microsoft Office tools. Rules can be edited directly from Microsoft Word, using a 'Rules' tab, and Decision Tables can be edited through Microsoft Excel through a 'Decision Tables' tab. Once the business user has finished making changes, the Ruledoc files can be resynchronized with the Decision Center repository for versioning and governance.

Browsing and loading rules is all carried out through the Decision Center interface, with the ability to filter and group rules and events as needed. WODM also comes with a range of test and simulation options, where for example the user can review the results a particular rule would deliver against historical or created data, and then compare that side by side with the results from the proposed modifications. This allows business users to quickly validate and enhance their ODM changes.

Deployment can be carried out from Decision Server or Decision Center, although of course the right level of authorization is required. This offers flexibility in the assignment of decision lifecycle responsibilities across line-of-business and IT organizations. As well as supporting versioning, IBM WODM also allows multiple versions to be compared and merged. Versioning does not have to be sequential either. Events defined in WODM can access inputs from a range of different environments, such as Databases, Java applications, BPM, BAM or COBOL applications. When the rules/events combination is ready to be deployed, it can also be given start and expiration dates. Rules and events can be deployed in a range of different forms, such as a Web Service, JavaBean or message-driven component.

Measurement and feedback is provided at two different levels. WODM provides the Decision Warehouse tool that is used for detailed queries about decision execution. Decision outcomes can be inspected within a range of different scoping factors such as specific date ranges and individual transaction instances. The report can include details such as which rules were called, when they were actioned, the version of the rule at that point in time and the outcome of the decision. WebSphere Business Monitor provides the higher level feedback environment, allowing executive dashboards and business metric tracking at the operational level incorporating decisions feedback.

Characteristics

The ability for business users to use natural language specifications to create rule and event definitions, as found in all ODM solutions, is enhanced in the IBM case by two major additions. The first is that Decision Center combines rules and events, simply indicating the artefact type by a different icon. There is no need to step from one tool to another to define the rules and events that make up the decision functionality. The second is the provision of the ruledocs interface which greatly increases usability for business users who prefer to work with Microsoft Office products such as Word or Excel.

Time to value is improved through the enhanced usability, particularly for business users. The ability to merge versions rather than have to operate with sequential versioning will also speed up time to value, and deploying business rules in the form of web services means that they can be consumed from a wide range of different environments and applications. Additionally, for IBM mainframe users there is specific support for integrating the ODM solution with existing COBOL applications.

The IBM WODM solution uses the IBM WebSphere Application Server (WAS) as its host for running rules and events, and as such the ODM solution inherits a lot of the scalability, security and performance attributes of WAS. This includes support for clustering, recovery, failover and other high performance options. Role-based security enables IT to offer business users more autonomy while maintaining control over system integrity, and the extensive testing and simulation capabilities acting against either historical site data or created input streams help to improve the quality of project delivery and service. Deployments can be made dynamically, provided of course that the right authorizations are in place.

Solution extensions

IBM offers a range of solution extensions. IBM Process Manager provides full business process management (BPM) capabilities, and ODM artefacts created with Decision Center can be utilized in these BPM process flows to make decisions in-flight. In a similar fashion, the ODM artefacts can also be consumed by the IBM Case Manager product. IBM also offers analytics capabilities within products like Process Center but also through the COGNOS and SPSS suites. Analytic needs for decision-making where heavy-duty streams of information need to be analysed quickly is provided by the complex event processing capabilities of IBM WODM, while SPSS brings predictive analytics into the decision-making process. In all cases, the analytics can be used to decide on the desired rules to be executed. Business activity management (BAM) is also integrated with the ODM solution through WebSphere Business Monitor, ensuring that decisions taken by event/rules combinations can be monitored and reported through the normal BAM dashboards and report-based feedback mechanisms.

At the moment, IBM has little in the way of industry-specific ODM samples or templates, but the IBM BlueWorks community is already turning its attention to ODM, and it seems likely that the same sort of library of industry ODM templates might emerge as already exists for business processes. However IBM has invested significantly in ODM-trained professional services teams across the world, with thousands of specialists available to support customer projects from planning to delivery. These teams not only provide skilled ODM resources, but their experience has been distilled into IBM's ISIS (IBM Solution Implementation Standard) methodology for reference. Beyond the IBM fulfilment of resource needs, IBM also has a wide range of local business partners that can assist in specific geographical locations and with particular industry vertical challenges.

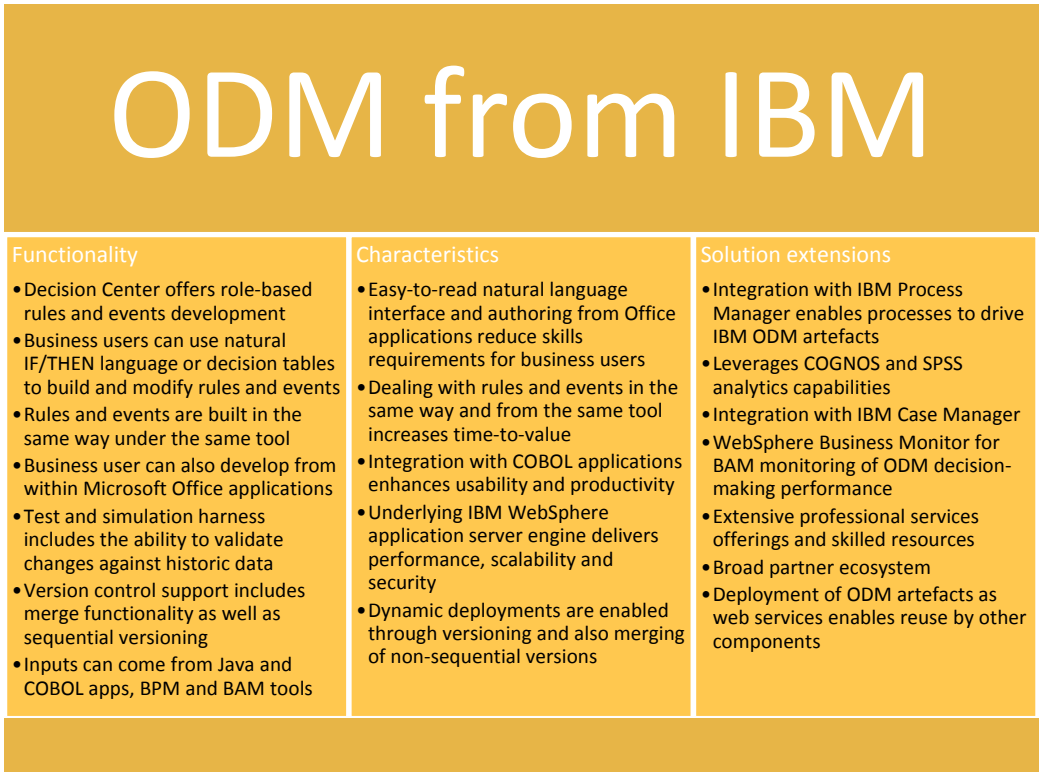

Figure 5: Summary of IBM's ODM support

Contrasting the different ODM solutions

High level assessment

ODM in its own right is a relatively new market. Events processing and business rules engines have been around for a long time, but ODM brings these together within a business context to deliver decision-making within the operational production environment. As a result, each vendor has tended to approach this area from their own historical position. The TIBCO offerings are heavily influenced by its background as one of the early purveyors of event-driven solutions that started with its Rendezvous publish/subscribe messaging product. Regardless of any marketing spin, the TIBCO offerings come across as an extension of events-based processing, where rules are added to formalize the actions to take when detected events occur. This is very much an infrastructure starting point and as such leaves TIBCO struggling to achieve the business user focus and business context required by ODM.

Oracle has come at the problem from a typically ambivalent viewpoint. With its heritage in providing middleware, reinforced through its acquisition of BEA, it has focus on an SOA architecture on which it has built BPEL and BPM solutions. This has led it to adopt rules on top of BPEL as an assistance to handling BPM flows, and this is provided through Oracle Business Rules. However, the application package side of the organization sees rules and events in much more of an ODM sense, as can be seen from the Oracle Real Time Decisions offering which offers a business context solution for a specific set of industry-based business challenges. Oracle also acquired a complex event processor (CEP), which it packages with its 11g database. This approach results in Oracle technically having all the bases covered but in a very disjointed fashion.

IBM initially suffered a little from the same problems as Oracle, having acquired a set of different products that seemed to operate independently. However, in WebSphere Operational Decision Management (WODM) IBM has brought rules and events together so that the two types of artefacts are almost indistinguishable, being two artefact types in the same tool that work in the same fashion but with slightly different layouts and inputs. In addition, the Microsoft Office access for business users will undoubtedly help with getting the business context right and enabling business users to interact with the operational decision-making process more effectively.

Summarizing, the high-level differentiation between these three ODM offerings is

- TIBCO BusinessEvents with Decision Manager offers a natural extension to TIBCO event-driven applications, providing a mechanism for formalizing decisions to be taken in particular events and BPEL flows. The product is probably best suited to more technical users as an adjunct to BPM or event-driven projects
- Oracle Business Rules provides an easy-to-use interface for developing business rules that can be deployed in Oracle Fusion Middleware-based applications, although the JDeveloper interface may frighten off some business professionals. However events support is less easy to factor in unless using the Oracle BAM product offering. This limits the applicability of the Oracle offering for ODM, but rather centres it as a rules engine. For specific business needs, the Oracle RTD and Oracle Policy Automation offerings provide a stronger business context.
- IBM WebSphere Operational Decisions brings rules and events together into one integrated package providing comprehensive operational decision support, with a lot of attention paid to the business user environment for authoring and modifying these decisions.

The buyer's perspective

The framework provided for describing the salient points of each offering was developed in a vendor-oriented context. However, for the competitive assessment of these offerings against each other, it is now important to switch to a more buyer-oriented perspective to give maximum value. Therefore, the detailed assessment will be done based on four main criteria:

- Time-to-value: How long will it take to complete an ODM project with this offering? When will the benefits start to flow?
- TCO: How will the total cost of ownership compare across the offerings? How much effort will be required to deliver, modify and maintain ODM projects?
- Risk: Can the required service levels be delivered and maintained? Will the project meet its business goals? How will exceptional situations be handled?
- Value potential: How much can be done with this ODM platform? How wide is the range of scenarios where it could help? Can functionality be extended to drive additional value? Can business value be optimized?

These areas will now be considered in turn, with the three vendors being assessed against each one.

Time-to-value

With the current worldwide economic conditions, companies are under enormous pressures to reduce costs and deliver more value – 'do more with less' is the mantra of today. As a result, all projects need to focus very closely on both time-to-value and the total cost of ownership. This section considers the three vendor offerings being assessed in the light of the former, with the latter being covered in the next section.

ODM projects provide a number of different sources of value, but the most important are the business agility delivered by enabling business communities to quick and easily author and edit decisions, and the intrinsic value in having decisions formalized in such a way that they are clearly visible for inspection. While technical activities are indeed required to set up ODM projects, the time-to-value focus is largely about the ease of use of the ODM offering in a business context together with the ability to validate new decision specifications and

changes. A major issue here is that for many companies the area of operational decision management will be quite new, and employee maturity in the area is likely to start off low. This is one reason ease of use in a business user context is so key; minimizing education and training needs will greatly enhance delivery times.

The three vendor offerings being considered differ markedly in this area. Dealing with TIBCO first, Lustratus believes the focus on decision tables is a drawback. While decision tables are a natural fit with some decision-making procedures, such as those where a set of events is correlated and actions taken depending on where these events fall within various different bands and tolerances, in many other cases decision tables are rather heavy-handed. Granted it is possible to express any decision in decision-table form, but they are not particularly easy for a third party to read, for instance when being inspected for compliance, and creating them is a relatively complicated process. Contrast this with simple IF / THEN expressions and it is easy to see which one is more likely to feel natural and more obvious. In TIBCO's defence, however, it does at least offer some drag and drop capabilities to make building the decision tables more productive, but this still does not help to make inspecting the decisions easier.

Then there is the problem that everything about the TIBCO implementation is built around the event-driven model. The fastest business returns are likely to come from the focus on one particular decision-making part of an overall process, where the current thinking done manually can be encapsulated in a visible and editable simple rule, and having to put this in an events context and create a decision table seems overkill to say the least.

Oracle attacks the issue of decision authoring/modifying/inspecting by offering a choice of different approaches. Once the standard technical activities have been carried out to set up the environment for the business user, decisions can be built with language-based statements in the IF/THEN style and/or decision tables. This ensures business users can choose the most familiar and appropriate means to specify the rules to be executed. Rules filtering can ensure that business users are only presented with the rules that concern them, which helps to reduce complexity and speed delivery. However when business events are brought into the picture, time-to-value is impacted. The problem is that Oracle has not really crossed the bridge yet of recognizing that ODM is more than just providing a rules and an events capability; instead, it is about combining these two capabilities within the business context for the business user. So although Oracle rules and events support are both provided through the JDeveloper development toolset, they are quite clearly different components. Events are usually developed as part of the Oracle SOA-based composite application support, while Rules are deployed as part of BPEL flows or for more general usage. This separation is likely to confuse the business user trying to create or modify decisions. Testing and simulation is also rather weak, further impacting time-to-value. Despite supporting a number of different sources of inputs into the decision-making process, the testing environment is currently limited to XML-based inputs and outputs only.

There are a couple of exceptions to the Oracle problem of not really embracing the ODM concept; the Oracle Real-Time Decisions (RTD) and Oracle Policy Automation (OPA) offerings. RTD has been designed specifically to deliver rapid time-to-value for projects that match its narrow scope. For projects where it can be applied, it provides a business-context interface that accommodates rules and events together, enhancing time-to-value. Similarly, OPA enables companies to map an existing policy document into a set of rules that can now be applied automatically, although as in the RTD case the resulting rules are incompatible with the wider OBR environment. As well as the drawback that these solutions only applies to a narrow subset of user scenarios, these different and incompatible solutions add to the overall confusion over how to use the Oracle offerings for corporate-wide ODM.

Initially, IBM suffered from some of the same problems as Oracle, with distinct offerings to handle rules and events and a rather complicated integration between the two. However with the arrival of its converged ODM offering, it has leapt ahead of the other two vendors in ease of use terms. Events have now been well and truly integrated with rules as part of the ODM tooling, so the business user is now presented with a palette of components that lists all the relevant rules and events specifications making up the decision logic. Interaction

with these components is in the same format with the same look-and-feel, presenting the business user with a consistent interface for dealing with both the events and rules aspects of the operational decisions being addressed. This fact, combined with the ability to use either language-based IF/THEN/WHEN constructs or decision tables, reduces the complexity and learning curve for the business users and speeds time to value. For many business users, the ability to interact with these decisions from Microsoft Office tools such as Excel and Word will also greatly increase their confidence and the speed with which they can become productive.

On top of this, the testing and simulation capabilities offered by IBM, such as the ability to validate rule changes against historic data streams and view comparisons of the results, will also reduce the time taken to deliver new ODM projects and start the benefit streams running.

TCO

When comparing Total Cost of Ownership (TCO) factors between the different ODM solutions, the main focus will be on the training and skills costs, the ease of maintaining and updating the ODM implementations, any accelerators and templates to reduce on-going project costs and the ease of integrating the ODM offering with the rest of the IT environment.

As already mentioned a number of times, of the three vendor solutions being considered the TIBCO solution is probably the least business-user friendly. The approach of regarding business rules as simply add-ons to business events, the two different tools interfaces and the focus on decision tables rather than simple language-based rules all add to the complexity and skills requirements. For example, it is not enough for a business user to understand the decision tables and the Decision Manager interface – to properly understand how decision-making is carried out and make any necessary changes the business user must also have at least an appreciation of the event-driven concept, which is quite complex. The result is that either a significant amount of training and education will be required, or perhaps more likely it will be necessary to hire in specialist skills. Both of these factors increase the TCO costs of the TIBCO ODM solution. Once the event and rule specifications are in place, the decision tables represent the decision-making business logic, and can be edited and maintained relatively easily. Integration options are more limited though, and for anything other than integrating with TIBCO's own product stack or third party ESBs, a significant amount of development work will be required, further impacting TCO.

Oracle provides support for business rules in simple language form or decision tables, depending on the specific project needs. As a result, it will be reasonably straightforward for non-technical business users to adapt to the business rules interface. For the technical users, basing the toolkit within the JDeveloper framework maintains the same look and feel for the ODM tools as other Oracle developer tools. Both these characteristics help to keep TCO down. Oracle also provides some testing and simulation assistance which will help to keep the costs of on-going maintenance and editing down, although this is limited to XML flows at the moment. Once the business rules have been built, the rulesets are deployed as decision services that can now be called by other Java applications. But when the ODM picture moves from business rules to encompass events the situation becomes more complicated. Oracle events are defined and developed in a different environment to the rules, and not only can this be confusing for a non-technical business user but also the events portion is more complex. The Oracle EDL (Event Definition Language) is very likely to be beyond the average business user, although some higher level events can be created through the Oracle BAM tool which might be a little less daunting.

The Oracle Real Time Decisions component deserves a special mention, however. This component has been developed to handle a specific set of business problems on the sales side, such as presenting clients with a selection of special offers depending on their characteristics. Within the narrow confines of the needs it addresses, Oracle RTD provides lower TCO by packaging up the ODM capabilities in a business context, reducing training and skills requirements across the whole project. But of course the applicability of RTD is very limited, and if the user wants to also develop ODM solutions in other business areas then the confusion over ODM assets that are part of the RTD solution versus those handled by Oracle Business Rules or Business

Events will greatly increase complexity. Similarly, Oracle Policy Automation offers TCO improvements for projects that fit within its narrow area of applicability, but its incompatibility with OBR and other Oracle ODM solutions tends to negate these improvements.

Perhaps the biggest advantage IBM has on the TCO front is that it has brought rules and events together under the ODM banner. This is not just a cosmetic change; the business user sees rules and events artefacts listed the same way, and on selecting either one is faced with the same style of interface. Obviously there are differences, but the look and feel is the same. Rules and events are created with a natural IF/WHEN/THEN style, making it relatively simple for business users to become acquainted with the tools and reducing skills and training costs. The powerful testing and simulation capabilities make maintaining decisions less costly and time consuming, and in particular the support for rule editing from within Microsoft Office applications really helps to keep training and skills needs down. The average business user is likely to feel much more at home in a familiar Word or Excel environment, even if there are new tabs to handle the ODM specification needs.

Another function that is likely to help reduce complexity and hence TCO costs is the ability to handle / merge versions of decisions out of serial sequence. While most ODM tools allow versioning of artefacts, the assumption is that installation progresses through the versions sequentially. The IBM solution allows different versions to be developed in parallel, and then merged before deployment as required using modern library management techniques. In terms of integration, since the IBM decisions can be deployed as web services they can be driven from many other different applications, and IBM has also included special integration with mainframe assets such as CICS COBOL applications. All these measures will help to keep TCO under control.

Risk

Part of any product selection process is an evaluation of risk. The main focus is usually operational risk, although some elements of financial and strategic risk to come into the equation, for example when the likely longevity of a vendor is considered. When considering ODM solutions, the focus is usually on elements such as how well the delivered project will fulfil business expectations, whether service levels will meet criteria, what mechanisms are offered to preserve these service levels and how restrictive the solution is in terms of future product and technology flexibility. However there is another aspect to risk that needs to be considered in the case of ODM solutions, and that is compliance. Decision-making within operational execution provides an ideal viewpoint to ensure that industry regulations and corporate policies are being implemented correctly, ensuring required levels of corporate governance and thereby mitigating risk.

As far as meeting expectations is concerned, to a large extent this depends on what the user expects of an ODM solution. As discussed previously, the three vendors considered treat ODM with varying degrees of maturity and completeness. As far as TIBCO is concerned, provided ODM is viewed as being a formalized approach to describe decisions to be taken when a set of events occurs within an overall event-driven framework then the TIBCO offering is adequate. However in the broader view of ODM as bringing together rules and events to implement operational decision making in such a way as to allow business users to interact with these decisions directly, the TIBCO solution is likely to seem rather limited. Oracle addresses the wider ODM requirements rather better, and its RTD offering in particular provides a good fit to ODM needs that are limited in scope to the intended usage scenarios. However the IBM ODM solution has the broadest fit to ODM needs, encompassing rules and events equally as shared partners in delivering operational decisions while at the same time preserving a business user-friendly interface to decision authoring and updating.

All three vendors offer monitoring facilities to track and report on decision-making, either through the use of a Business Activity Monitoring (BAM) component or through ODM-based reporting mechanisms. These will help to keep ODM performance under review, alerting the user of any issues and helping to preserve service levels. This is fine for watching for operational systems behaviour, but maintaining service levels is about preventing disruptions to service too, and on this front decision testing and simulation will be critical. TIBCO only offers basic testing support, but both Oracle and IBM offer the ability to model proposed changes and simulate them against manufactured data, which will be invaluable in ensuring service levels are maintained. The Oracle

support is currently limited to simulating decision outcomes based on different XML flows, but the IBM simulation support allows proposed decision changes to be applied against historical data streams and then the results to be compared with and without the changes, providing a powerful means of avoiding unintended service level impacts.

Performance, availability, scalability and security are all key areas of risk mitigation. However in the case of the three vendors concerned, there is little differentiation in their ODM solutions. This is not surprising, since in each case the decision-making components run on the vendor's respective application server, and these application servers each offer similar services in all of these areas. However when looking at how 'open' each solution is, there are differences. Of the three ODM solutions being considered, the TIBCO solution is probably the most 'closed'; it is designed to operate primarily within the TIBCO product family. Both the Oracle and IBM solutions can deploy rules as callable services that can be reused by other Java applications, and as such there is the potential for more sharing and leveraging of assets.

However in the area of compliance there are marked differences between the three offerings. The key point in terms of risk mitigation is that by formalizing decision-making through an ODM solution, it is now practical to inspect the current operational implementation and therefore confirm that this implementation meets any regulatory or corporate policy requirements. How well each solution supports this goal is largely dependent on how easy it is for a business specialist to understand how the decisions as implemented work. In the case of the TIBCO ODM offering, a business user who understands decision tables can easily inspect those tables to validate compliance of the implementation. However if the decision involves a set of events too, the interface is not as easily understandable for the non-technical user. The Oracle and IBM ODM implementations both offer decision tables and also the more readable IF/THEN styles of rule specification, making it easier for a business user to inspect the decisions. If the decision combines rules and events, however, Oracle's use of different interfaces to describe these two artefact types makes the inspection task more complex. Because IBM's ODM solution implements rules and events together, under one tool and in the same format, both with simple IF/WHEN/THEN style language, the inspection task is much easier and requires less technical knowhow.

Value potential

This section looks at the overall value potential of each vendor's ODM offering beyond basic ODM functionality. The first point to note is that all three vendors considered offer SOA and BPM solutions, and the ODM capabilities are a natural fit with these environments. Rules and events can be used to decide on the operational flow within the particular process or composite application instances. Beyond this, each vendor also offers complex event processing support as part of the events technology portfolio, allowing events to be triggered based on high volumes of information gathered, filtered and correlated from multiple different sources. Admittedly, the Oracle CEP capability is more closely aligned to the database than to the ODM solutions, but it can still be used in a more general scenario.

All three vendors also offer analytics solutions to extend the decision-making capabilities to take in more intelligence, although IBM and Oracle have stronger and more comprehensive analytics integration with ODM than TIBCO. Oracle has its Oracle Data Mining facility that is more closely related to database analytics, while IBM offers its COGNOS and SPSS suites for historical and predictive analytic needs. Each solution also offers BAM tooling to allow decisions to be monitored and tracked.

In terms of specific ODM industry solutions and templates, the only vendor to offer anything concrete to date is Oracle, with its Oracle Real Time Decisions (RTD) product offering for CRM scenarios. For users needing ODM solutions in this specific area, Oracle RTD is an important capability, but the problem is it is not really an extension of its ODM offerings; it is more of a completely different solution, with different tools, artefacts and interfaces. It is therefore very useful in the scenario for which it was intended, but it causes complexity and confusion in conjunction with broader ODM projects.

Because IBM has taken the approach of allowing its ODM components to be made available as web services, it has also been able to integrate the ODM solution with IBM Case Manager, the case management solution. In a similar way to the integration with BPM, this allows Case Manager applications to call ODM rules to decide upon which paths to take in process execution. In addition, for mainframe users IBM offers another important solution extension in the form of its integration with CICS COBOL applications. These applications can make calls to IBM Decision Manager components to make decisions, with the rules being deployed either as COBOL components in their own right or as web services running in the ODM environment on WebSphere.

The area of services and general ecosystem support is essentially a reflection of how each vendor tends to view ODM. Since ODM is a relatively new market area, ODM communities are immature currently although interest is growing rapidly. However, as is typical with emerging areas of interest there will be a general need for guidance, planning assistance and support when developing ODM projects, until companies have increased their own maturity and skills base. TIBCO offers a range of services around event-driven architecture and applications, but is light on expertise to turn this into full ODM solutions. Oracle provides a wider ecosystem of Oracle and partner resources, but these are generally deployed as product-related assistance rather than ODM planning and design. The exception is the Oracle RTD offering, where services are available at more of a business level. IBM seems serious about ODM and has trained a large number of professionals in its services arm, augmented by a range of partners, to help with ODM project planning, design and deployment.

Summary

Operational Decision Management may be a young field in name, but the underpinning technologies of rules and events management are well known. The key elements of a successful ODM project are the ability to meld events and rules together to ensure the right decisions are made both within a point in time and also based on enterprise-wide operations, and the provision of business-user access to these decision procedures within a business context. By placing the power to author, modify, inspect and validate operational decision-making directly into the business user's hands, agility is greatly enhanced and business productivity and effectiveness will increase.

Major software vendors have been quick to move in on this new but attractive market, and given their heritage in operational systems it is no surprise that TIBCO, Oracle and IBM are all participants. However the approaches differ markedly. TIBCO appears to have adopted an almost 'bottom up' approach to the problem, linking business rules to its BPEL flows and its event-driven architecture in a master-slave relationship. Oracle has a multi-pronged approach to ODM, offering a rules capability, a complex event processor and a couple of specialized but incompatible ODM solution for specific business needs. While the products are good, this approach introduces much confusion when trying to adopt Oracle for general purpose ODM solutions. IBM has worked hard to combine rules and events together while simultaneously providing a business-user friendly environment for decision authoring, maintenance and governance, with the result that it is able to satisfy the widest selection of ODM solution needs.

	Time to value	Lower TCO	Risk mitigation	Value potential
TIBCO	■■■■■■□□□□	■■■■■□□□□□	■■■■■□□□□□	■■■■■■□□□□
Oracle	■■■■■■■□□□	■■■■■■□□□□	■■■■■■■□□□	■■■■■■■■□□
IBM	■■■■■■■■□□	■■■■■■■■□□	■■■■■■■■□□	■■■■■■■■□□

Figure 6: Competitive summary of ODM solutions from TIBCO, Oracle and IBM

About Lustratus Research

Lustratus Research Limited, founded in 2006, aims to deliver independent and unbiased analysis of global software technology trends for senior IT and business unit management, shedding light on the latest developments and best practices and interpreting them into business value and impact. Lustratus analysts include some of the top thought leaders worldwide in infrastructure software.

Lustratus offers a unique structure of materials, consisting of three categories—Insights, Reports and Research. The Insight offers concise analysis and opinion, while the Report offers more comprehensive breadth and depth. Research documents provide the results of practical investigations and experiences. Lustratus prides itself on bringing the technical and business aspects of technology and best practices together, in order to clearly address the business impacts. Each Lustratus document is graded based on its technical or business orientation, as a guide to readers.

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Lustratus REPAMA is the marketing consultancy and competitive marketing intelligence division of the analyst firm Lustratus Research Limited. Whilst Lustratus Research provides detailed technology analysis, reports, insight and advice aimed specifically at end users of technology; Lustratus REPAMA helps technology vendors to better compete in their markets.

The REPAMA research methodology is central to Lustratus' consultancy services and provides a detailed map of the go-to-market strategies of the vendors in a particular market segment. We represent these strategies and tactics graphically as well as textually which makes it simpler to compare vendors' strategies and to identify strengths and weaknesses.

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