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Business rules and decisioning for process experts

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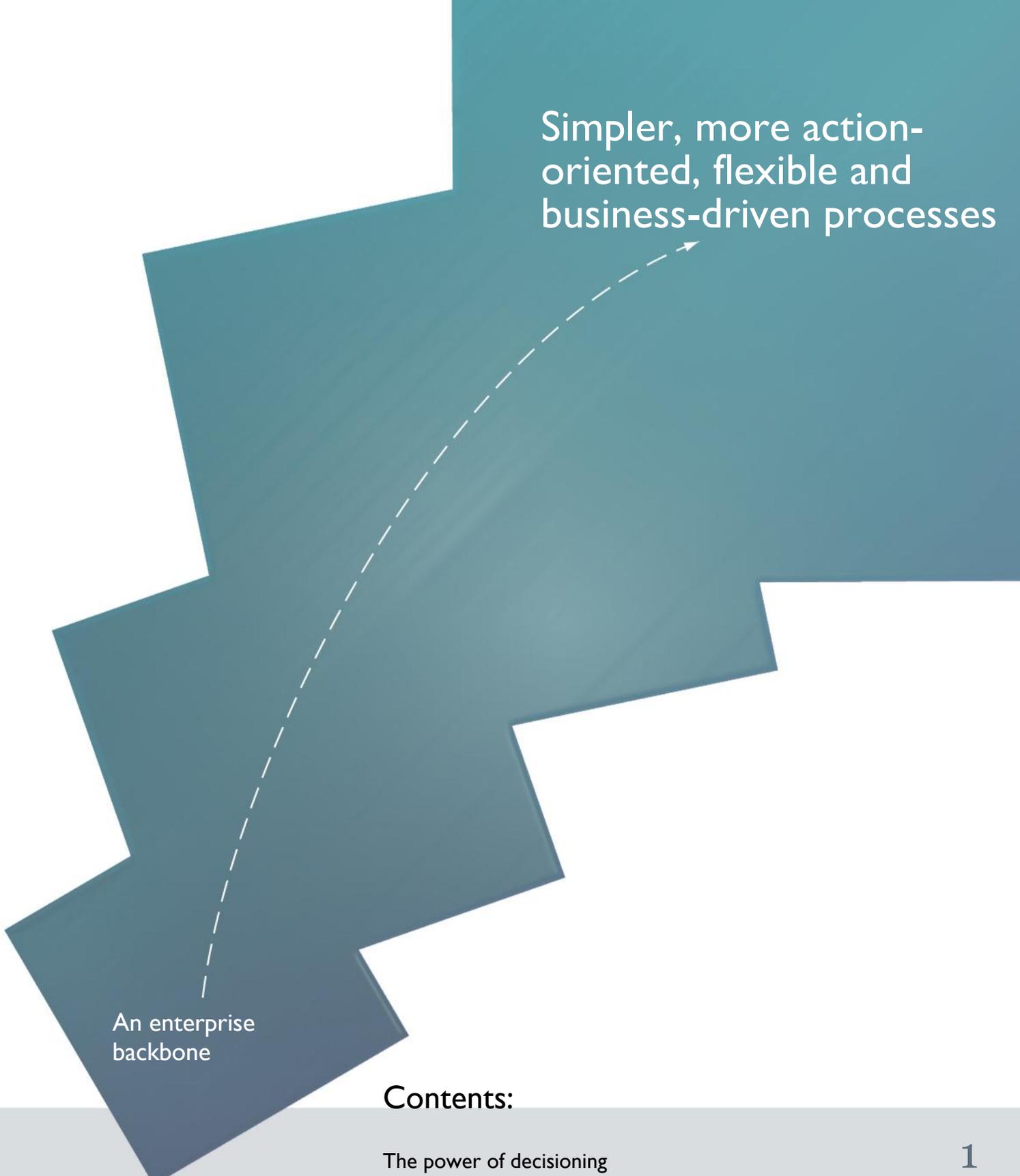
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The role of decisioning
and SAP's business rules
technology in building
your capacity for change

SAP customers applying business process-oriented thinking can create simpler and more agile processes, and more flexible business applications, by externalizing decisions and applying business rules to effectively manage those decisions. Integrating SAP's business rules technology in the most dynamic parts of a business process improves visibility, builds in a capacity for change and helps ensure business/IT alignment.

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Simpler, more action-oriented, flexible and business-driven processes

An enterprise backbone

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The power of decisioning

Simpler, flexible, agile processes and systems

“It is not the strongest of species that survives, nor the most intelligent, but rather the one most responsive to change.”

Charles Darwin

“The essence of strategy is choosing to perform activities differently than rivals do.”

Michael Porter

The increasingly real-time, distributed nature of most businesses means that no organization can be more effective than its systems. These systems must be aligned with the organization, its goals and its people. Many organizations are focusing on end-to-end business processes rather than functional silos and applications to achieve this alignment. Such a business process orientation gives visibility into how an organization really operates and positions it for continuous improvement.

A business process orientation can be applied to both adapt and extend core processes and to develop new, innovative process extensions. Leveraging service-enabled business applications designed to support specific business functions, and composing those services into new processes, allows organizations to take advantage of best practices and standard functions while still delivering unique products and services.

A business process orientation positions an organization to build its capacity for change. Enhancing this with decisioning simplifies processes, eliminates rigidity in business applications, increases the capacity for change of an organization and delivers business control and alignment.

The power of decisioning

Simpler and more agile processes

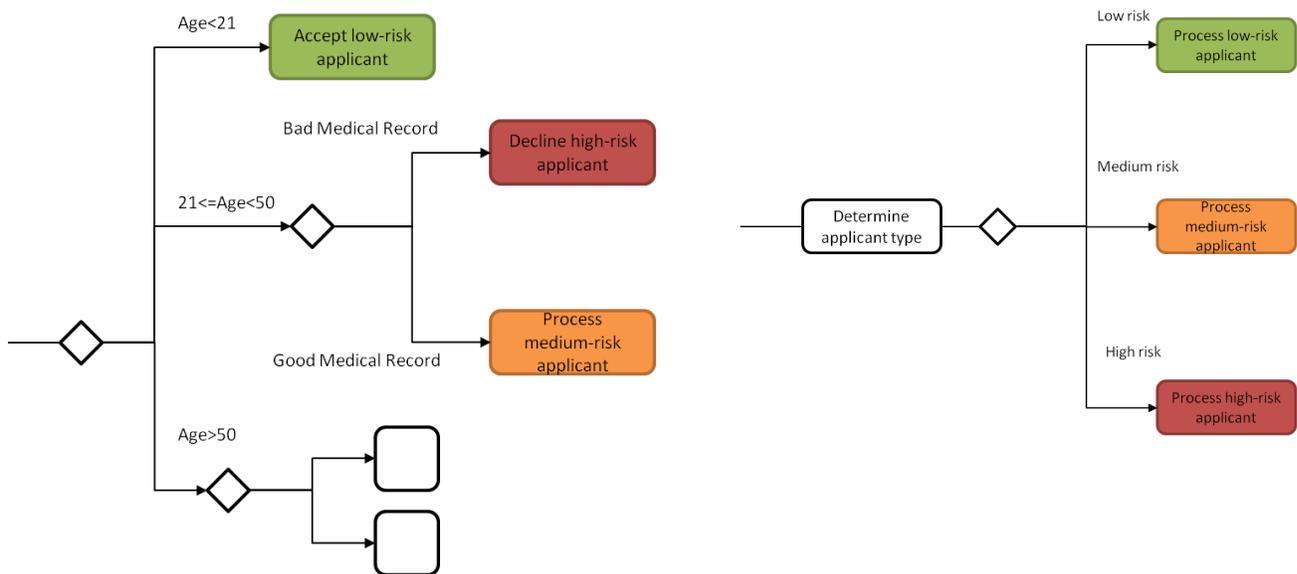
Making decisions explicit and managing them in concert with processes ensures an effective separation of concerns and a more streamlined design. Specifically, combining process management and decisioning will decrease process complexity and increase straight through processing while making measurement and continuous optimization easier. Decisioning also increases an organization’s capacity for change and the degree of business user engagement in managing processes.

Part of being business process-oriented is understanding your “as-is” processes to see how your business is truly operating. This understanding improves visibility and allows optimization of the process—the creation of an effective “to-be” process. Most, if not all, business processes require decisions to be made: claims must be approved or rejected, cross-sell offers must be selected, and product discounts must be calculated. Explicitly modeling the decisions that happen in your business process ensures that the as-is model is closer to reality.

Especially when a process must handle multiple scenarios, modeling the decision-making in a process with branches and steps only can become very complex. Replacing a nest of branches and steps with a single, explicit decision point clarifies the behavior of the process, makes it easier to see if the process or the decision must change, and allows for changes in the decision-making approach to be independent from process change. Rather than handling all of the different subtypes of a particular transaction with branches and exception handling, the first step in a process can identify the particular scenario and essentially “assemble” the right process from standard components resulting in a much simpler, yet more flexible process design.

Explicit decision handling also increases the rate of straight through processing (STP) and reduces the number of process instances that wait while items are put on worklists or in queues. This marriage of explicit decisions and process management keeps transactions moving with only exceptions ending up on worklists or in an inbox. With human experts expensive and hard to

Illustration of externalizing a decision to simplify a process (after Vanthienen and Goedertier)



The power of decisioning

scale, capturing the know-how of experts in explicit decision logic and making it available everywhere focuses scarce expert resources on exceptions and high-value cases and customers. Staff can then focus on value-add activities that require their expertise, adding further value. The number of exceptions can also be systematically reduced by developing new rules as process execution is observed—observing process performance, identifying new rules to handle particular cases, and automating those rules results in continuous improvement and process optimization.

More flexible business applications

Business applications are rich sources of functionality for new and extended processes. Modern business applications become service-enabled, exposing critical functionality as reusable services, and a business process-oriented approach focuses on rapidly automating or improving a process by integrating this functionality. While including these services within an explicit and easy to change process will increase agility and flexibility, this can be undermined if the exposed functionality cannot also be easily changed. When bringing application functionality into processes, it is essential that the behavior of these functions is accessible to business users so they can change it, and so that it can be shared between multiple processes and applications. It does no good if the functions are opaque—if only the IT department can understand or change them.

The agility and flexibility of the process, and of the underlying business applications, is constrained by the flexibility of the components being shared. Yet the components of a business application most useful to business processes are often decision-making components such as pricing engines, product configurators or eligibility determinations. And these decision making components must change often—they are among the most dynamic parts of the application. Such functionality should be developed so that the

component is flexible as this will increase the agility of both the processes that use it and the applications that include it.

Even when a process is hard-coded into a business application, decisioning can make it more flexible. Exposing those parts of the process, the decisions that must change most often, can increase the capacity for change and the flexibility of the overall process.

For example, a core business application for order processing must be able to price products accurately. For an organization with lots of options or configurations, pricing can be very complex. If the pricing component is coded or even managed using database tables, the degree of flexibility and the ability of the business users to define new pricing models, or new configuration options that require different pricing, will be limited. Furthermore, if this component is embedded in a new process such as one designed to help customers price out and consider various options as part of a move to self-service, say, then the flexibility and agility of this new process will be compromised. It won't matter how easy it is to change the lists of products that a customer sees or how easy it is to change the process, the pricing model will act as a drag or limiting factor – no change can be made faster than the pricing model can be recoded.

Externalizing these decision-making components cannot compromise the business application itself, however. The business applications must be able to integrate them tightly, ensuring maximum throughput and performance in production. If a decision is exposed for integration into a new process, it must perform well in that environment also. Now when new pricing is required it, can be quickly added, ensuring that both the core application and the extended process are as easy to change as they need to be.

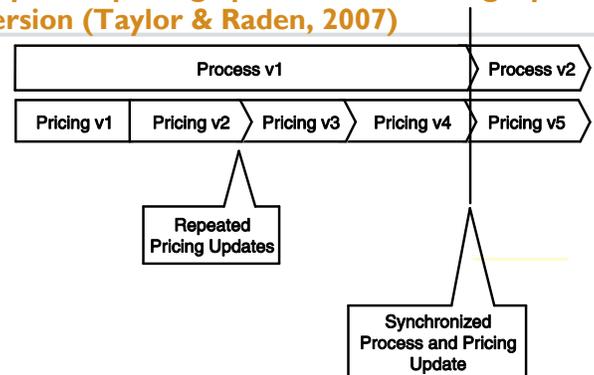
The power of decisioning

Increased capacity for change

Organizations cannot change more quickly than their systems—when systems are hard to change organizations cannot react quickly or effectively to new opportunities, new regulations or new challenges. Manual processes are no better as updating policy manuals and retraining staff is time-consuming and expensive. To be responsive to change, organizations need to keep their key business parameters visible, understandable and changeable. Flexible systems and processes cannot keep these critical parameters buried in software code or company manuals where the business has zero visibility into the behavior they represent. Explicitly identifying decisions and describing the logic behind them allows this logic to be parameterized and managed separately from the process itself, dramatically increasing the capacity for change of an organization.

Business users like business process management software because it allows them to change their workflow easily—it increases the capacity for change of the process. Decisioning further increases this capacity as business changes often involve updates to business decisions—to pricing, eligibility or risk assessment decisions, for example. These decisions are often the most dynamic part of a process, the part that changes most often. For instance, a company's pricing rules are likely to change far more often than its order-to-cash process. If business users can only change the process, then they will not be able to respond to the far more numerous pricing changes without changing the process, an unnecessary step. Adding decisioning allows business users to control processes *and* the critical decisions within them. This increases the capacity for change built into a process and allows for a stable process even when decision-making is constantly changing and evolving.

Repeated pricing updates within a single process version (Taylor & Raden, 2007)



Improved alignment

Given the importance of systems and processes to today's organization, business and IT professionals must be aligned. While the IT department plays a critical role in developing, managing and assuring the systems an organization requires, it cannot specify the behavior of those systems. Business owners must be able to effectively collaborate with their IT department to define and manage the behavior of their systems and processes. Processes and systems are aligned when the business and IT have a **shared** understanding of the workflow and the logic in a system, and where the business has the right access, the right level of control, of their systems. Explicitly managing decisions as well as processes allows for this alignment.

In each case—simpler processes, more flexible business applications, an increased capacity for change and improved alignment—decisioning enhances a business process orientation to deliver greater value to the business. Focusing also on the decisions within processes and applications, making them explicit, giving the business control over how those decisions are being made, is critical.

In the next section we will discuss the decisioning technologies SAP customers can use to add decisioning to their systems and processes.



SAP's decisioning technologies

Bringing business rules to processes and applications

“Things change constantly. You need to choose technologies, architectures, and processes that enable you to respond to change”

Mike Gualtieri, Senior Analyst Forrester Research

“Putting decision automation into the hands of business decision makers is a key element of SAP's strategy to help our customers increase business process agility. Our rules architecture is integrated both with SAP Business Suite and SAP NetWeaver BPM to maximize reusability between enterprise applications and end-to-end business processes.”

Wolfgang Hilpert, SVP NetWeaver Business Process & Event Management, SAP AG

Decision-making logic, how a decision is made, must be managed if decisions are to be managed. Decision-making logic, the rules for a decision, can come from many sources. Regulations and legislation, internal policies and procedures, expert know-how and the logic of legacy applications can all define the rules that drive a decision. Making decisions explicit in process and application design offers many benefits regardless of how the rules within those decisions are implemented.

Organizations can manage these rules in several ways. The rules can be explicitly coded within application components or database-stored procedures. This is familiar territory for IT departments and simplifies both development and testing processes. However, this will mean that the IT department must be involved in any change to decision making, decreasing the capacity for change, and will make it harder for the business to be involved, and reducing alignment. Re-use of rules across multiple decisions can also be complex.

Sometimes simple rules can be parameterized and the parameters stored in database tables, decreasing the cost of change but not necessarily improving the engagement of the business. Neither approach works well if a decision has many rules, if those rules change often, if the rules are complex or interact in complex ways, or if the rules require business domain know-how to understand. In these cases, and any time rules need to be reused across multiple decisions, the most

SAP's decisioning technologies

effective way to manage decisions is to define those decisions in terms of business rules. Business rules, individual statements or fragments of business logic consisting of a set of conditions and an action to take if those conditions are met, are best managed using a business rules management system.

A Business Rules Management System or BRMS is a set of software components that support the creation, testing, management, deployment and ongoing maintenance of business rules in a production environment. At the core of a BRMS is a business rules engine that determines which rules need to be executed in what order at run time. A BRMS supports the development and testing of rules, linking business rules to data sources, measuring and reporting on rules, and deployment of business rules into production. A BRMS also gives business users and analysts the ability to make routine changes and updates to critical business systems while freeing IT resources to concentrate on higher-value initiatives.

A BRMS typically consists of a rule repository with audit trails and versioning, design tools for technical users, intuitive rule maintenance applications for business users, verification, validation and testing tools for both technical and business users, and a high-performance business rules engine.

SAP has developed a pair of business rules management systems to deliver the decisioning power needed by its customers: The SAP Netweaver Business Rules Management component allows business rules to be added to custom business workflows and Java-based composite applications, and supports the development of decision services—web services that answer business questions for other services by applying known business rules—to make those processes simpler, smarter and more agile. For the SAP Business Suite, the BRFplus business rules management system executes business rules in the ABAP environment, allowing the development of more flexible business applications and the extension of the SAP Business Suite.

SAP NetWeaver BRM

SAP NetWeaver Business Rules Management is a component of the SAP NetWeaver Composition Environment. SAP NetWeaver Composition Environment allows explicit modeling of business process, user experience and business rules in a single, integrated environment. A business process expert can work collaboratively with IT using rapid development capabilities such as executable models and application generation. Supporting agile, iterative methodologies, the environment allows process experts and IT to spend more time in the design phase, and less in development and testing, helping ensure close alignment with the needs of the business.

SAP NetWeaver BRM is a 100% Java solution that is tightly coupled with SAP NetWeaver Business Process Management and designed for use in heterogeneous SOA environments. SAP NetWeaver BRM provides end-to-end support for managing business rules in an Eclipse-based environment for developers as well as a web-based collaborative tool that allows role-based access to business rules for non-developers. The Eclipse-based tools, part of the SAP NetWeaver Composition Environment, give a developer an integrated environment for defining processes and rules including support for versioning, testing, verification and validation of rules. Verification and validation of rules includes checks for overlaps, missing ranges, etc. as well as rule set comparison. Rule execution can be logged to support audit and traceability requirements.

Rule Manager—the web editor for business users—allows non-technical users to manage, review and change business rules and decision tables. Version comparison and deployment, report generation and usage reporting are all available and the user can check a decision table for consistency after making edits. Access is managed using the SAP NetWeaver Administrator and business users can be given read-only or editing access. The Rules Manager is a standard SAP web application and allows in-place editing of rule

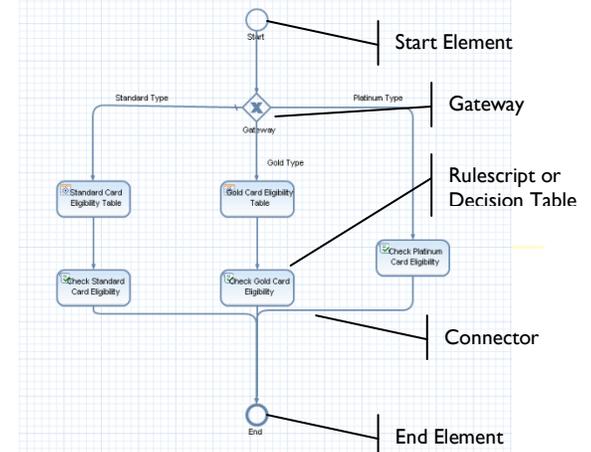
SAP's decisioning technologies

conditions and actions for users that have appropriate permissions.

Three core artifacts are used to define business rules in SAP NetWeaver BRM—Flow rule sets, If Then rules and Decision Tables. The Flow rule set, a diagram representing the flow of a decision or a decision process, allows a start and end element to be connected through a series of decision tables, rule scripts and gateways. This flow defines the execution sequence of the rule artifacts and uses a subset of BPMN for the diagram, ensuring consistency with process models. The rule scripts support If Then rules, allowing a set of rules to be defined in simple English-like statements. Decision tables use a spreadsheet-like tabular format to define a set of similarly structured business rules. The rules can be edited in Microsoft Excel if desired or by using a tabular layout within the development or web-based environments.

SAP NetWeaver BRM rules can be built into composite applications, exposed as web services or tightly coupled

A flow rule set in SAP Netweaver BRM



with business processes. SAP NetWeaver BRM allows business rules to be integrated into the BPMN process layer, to handle complex routing or mapping logic, for instance, into the user experience layer to support human activities, or as Java objects. This last allows for the construction of reusable decision services that use business rules to essentially answer business questions for other system components.

A rule and a decision table being edited in SAP Netweaver Rule Manager

Rules Navigator

Rule: Disapprove Gold Card

Decision Table: "Gold Card Eligibility Table"

Annual Income Of Applicant		Total Assets Of Applicant		GOOD	MODERATE	BAD
				Credit Score	Credit Score	Credit Score
< 100000	< 500000	41	34	21		
	Between 500000 and 1000000	52	45	32		
Between 100000 and 150000	> 1000000	59	52	39		
	Between 500000 and 1000000	48	41	28		
Between 150000 and 200000	> 1000000	68	59	38		
	< 500000	55	48	35		
> 200000	Between 500000 and 1000000	66	59	48		
	> 1000000	75	68	53		
	< 500000	62	55	42		
	Between 500000 and 1000000	73	66	53		
	> 1000000	82	73	60		

SAP's decisioning technologies

For example, consider claims processing in the insurance industry. Many insurance companies adopt a process-centric approach to claims, defining the steps in creating, validating, approving and processing a claim using SAP NetWeaver BPM. Eliminating hand-offs and re-work in such a process delivers a strong ROI and a more efficient process. If the validation of a claim is defined in the process directly, however, it can become overly complex with branches for different sub-classes of claims, different kinds of policies, etc. Replacing this tangle of process steps and gateways with a single “validate claim” decision and then automating that decision with business rules using SAP NetWeaver BRM, simplifies the process and makes it easier to quickly update validation rules, such as when a new kind of policy is launched. Similarly, the rate of straight through processing will be low if the process handles approval as only the most straightforward claims will be approved automatically with most, if not all, being placed on a worklist. Placing an “approve claim” decision into the process allows the rules for automated approvals to be defined and continually refined and expanded. Each claim approved by this step avoids being placed on a worklist, focusing manual

reviews on dubious claims and increasing the rate of straight through processing and so improving customer service and reducing costs. Claims are worked more consistently and more claims are handled faster.

BRFplus

SAP BRFplus is part of SAP NetWeaver, a 100% ABAP solution that is designed to run in an ABAP Server environment. BRFplus provides a browser-based rule composition, testing and management environment suitable for business users and developers, a rule repository and a 100% ABAP rule engine for execution.

BRFplus stores all the rule artifacts in a repository. The repository can be organized into various catalogs that act like folders to organize all the rule artifacts for easier access and to allow a user to focus on their particular responsibilities. Business rules are grouped into rule sets. Each rule set is a collection of flexible If Then rules, allowing a rule set to include rules with any combination of conditions and action types. These rules can invoke decision tables and decision trees as well as formulas and custom expressions. Decision tables often replace a large number of rules of similar structure—the same condition elements and actions being

combined in different rules. The decision table editor in BRFplus has features for managing condition columns and actions as well as some tools to handle completeness and consistency. Decision trees can replace a set of rules that share common conditions and build on these systematically, such as in customer segmentation. The rules in a rule set can be extended using BRFplus' support for custom expressions and action types.

Rule editing in BRFplus

SAP's decisioning technologies

Fraud detection rules, for instance, are often very different from each other so a collection of If Then rules would work best. Eligibility rules, in contrast, often have very similar structure with all the rules using similar conditions—attribute comparisons—in different combinations. A rule set designed to allocate customers to one of many segments, however, would be best represented by a decision tree where each branch of the tree assigned someone to a specific segment.

Functions are defined that combine one or more rule sets to make a business decision and these functions are exposed to ABAP. Access to these functions is through a simple, 6-line program that does not need to change when the rules change. These functions represent decision services available to other ABAP functions. The engine generates ABAP code for execution and has an API that is convenient for ABAP as well as an ability to deploy as a decision service (a web service that makes decisions) when access from outside the ABAP environment is required. The rules can be run on a single, central ABAP server instance or distributed for local execution.

The web-based environment can be configured to deactivate some of the functionality for different users, to allow IT and business users to have different views, for instance. Users can get “where used” information on rules and rule sets and can test a function and simulate how it would execute for a specific set of values and a proposed rule change. BRFplus thus allows business users to find the rules that matter to their business, explore and understand the rules, change and simulate/test them, and ultimately manage the rules.

The repository supports documentation and change tracking for all the rule artifacts and can use the ABAP Server for change and access control. It supports versioning and “time travel” to allow a user to execute the rules that were in effect for a particular moment in time. Execution logs and change management are also included.

BRFplus is already being used in many SAP business applications, including Product Lifecycle Management (business context viewer), Customer Relationship Management (loyalty program, territory assignment and real-time offer decisions), Business By Design, Transportation (freight cost calculations), Government (benefit entitlement decisions) and others, like tax and revenue management and the advanced metering infrastructure.

For example, in SAP Social Services Management for Public Sector, BRFplus is used to manage Monetary Social Benefits. Rules are managed in BRFplus for benefit determination and deduction calculations. This decision making takes place early in the process, allowing the rest of the process to be executed directly from net calculations to billing documents, accounting, invoicing and payment, and account management follow-up when necessary. BRFplus rules handle validation of applications for benefits, case assignment, entitlement determination and all the various calculations. The end result combined a front-office decision making processes with an automated back-office solution that leverages functionality in the Social Case Management component in SAP CRM as well as the Public Sector Collection and Disbursement component in SAP ERP.

SAP's two business rules management systems are already licensed together to make it easy for organizations to adopt both technologies in parallel. In addition, both support deployment as web services allowing decisions automated with them to be shared across multiple processes and applications. Over time, SAP plans to bring the two systems together and deliver an increasingly integrated decisioning capability.

SAP has developed two robust business rules management platforms, supporting both its Java and ABAP environments. In the next section we will see how using these platforms to deliver decisioning can improve systems and processes.



Applying decisioning

Building smarter, simpler, more agile processes and applications

“The many country-specific requirements make it difficult to consolidate supplier master data governance globally. Ecenta’s clever use of business rules to guide users through these requirements made this project possible”

Ericsson Employee

A process-oriented mindset links services exposed within existing enterprise applications with new process components into end-to end processes. These processes can be new and unique “edge” processes or extensions to core processes. But these processes can become over-complex if rules are woven into the process, lessening agility, and can fail to deliver straight through processing if decisioning is omitted. Equally, if a step in a process is an opaque enterprise application component, then agility is lost even if the process itself is flexible.

Using business rules to build decisioning components delivers simpler and more agile processes as well as more flexible business applications. The power of business rules can be seen in many domains across many industries—from manufacturing to insurance, logistics to financial services.

Organizations getting started with decisioning and adopting business rules need to focus on finding the right decisions to automate, picking the right technology and managing the organizational implications of the changes they make.

Applying decisioning

Examples

The best way to show the power of decisioning and of business rules is to use real-world examples. These customers have all adopted SAP's decisioning technology and used it to change critical business processes and applications.

Ericsson

Ericsson, a global supplier of telecommunications equipment, has been engaged in a multi-year program of continuous improvement of its master data processes. In this latest project, Ericsson incorporated business rules into their process automation to guide correct user input of supplier data as specifically needed for the countries where the suppliers are located. Ericsson is a truly global company and, as such, the sourcing organization is global with interaction and agreements made with suppliers to Ericsson at all levels. The scope of the agreements varies, from agreements made with suppliers globally applicable for all of Ericsson, to agreements made in a local Ericsson company with a very limited scope.

Accurate supplier master data and supplier master data with high quality is key, to ensure that the business processes run smoothly and that accurate reporting can be performed. It is also crucial that suppliers can be identified across the global sourcing systems, in order to ensure this quality in processes and reporting. The Global Master Data Management group handles around 3000 requests monthly for supplier master data updates. It is anticipated that the new solution will reduce handling time per request by up to 50%. This project is expected to speed up the master data process by over 50% and with a high business user acceptance rate.

Previously, requests for master data changes for supplier master data were handled by emailing back and forth between the business user requesting the change and the responsible person at the Global Master Data

Management Group. Once the request was validated the responsible person at the Global Master Data Management group had to enter the data manually in up to four different systems depending on the type of request. Many of the business rules related to what information in the supplier master data had to be entered were scattered around in different work instructions and in the heads of the staff. Many of these business rules are dependent on in which country the supplier is located, or in which country the supplier is to be used.

The new approach combines NetWeaver BPM to manage the workflow and Netweaver BRM to manage decisions about new supplier information. Forms guide business users to enter all data correctly depending on scenario and other key selection criteria like country. The rules that determine a valid supplier request are enforced automatically as data is entered. The request is routed through a workflow and assigned to someone who completes the process, still guided by the rules, storing the result so it can be automatically distributed to all relevant consuming systems.

Data integrity and data quality are ensured and business users enter the correct data from the beginning, significantly reducing the overall lead time for processing requests. The use of SAP NetWeaver BRM allows for a very efficient development model, with lots of interaction between the developers and business users in rapid design-prototype-test cycles. In addition, all the business scenarios share the same basic workflow structure with only the rules varying. The business rules state which information/attributes should be captured, if the information is mandatory or optional, default values and validation rules to check the input. All business rules are centrally defined, maintained and executed in the SAP NetWeaver BRM component.

Applying decisioning

Truck Engine Manufacturer

This truck manufacturer had a warranty claims process that took 1 week to process a warranty claim thanks to the complexity of the warranty arrangements with suppliers. In addition many claims were not even made on the parts supplier as it was simply too difficult to match claims, parts and agreements. Replacing this manual process with one based on business rules reduce the time to process a claim from 1 week to just 6 hours.

Combined Insurance

In this insurance company, claims decisioning was a manual process wrapped around a legacy system that was hard to change when the rules for claims adjudication changed. With a rules based approach, auto-adjudication rates rose from 20% to 99%, dramatically reducing the cost of processing claims. In addition, rules –based cross-sell and up-sell decisions improved the success rate of the call center in this important area.

Health Insurance

A large Healthcare funder and medical scheme administrator in South Africa adopted business rules in their Medical Event Management System. The old system allowed staff to abuse the emergency admission procedures, increasing costs, and the process for deciding on the right approach for determining hospital stays was not obvious to staff. The new rules-based system allowed Hospital overstay to be decreased by an average of 0.8 days for a cost savings of over US\$70,000 per month. The system also resulted in a more than 20% increase in discharging patients on time

Mortgage

A subsidiary of an online lending company with billions of dollars in loans approved struggled with manual processes. Underwriting mortgages could take 4 days, a very uncompetitive length of time. In addition pricing changes took 2 days to make, exposing the company to

losses, while new investors took months to add. The new rules-based system dramatically improved a number of key metrics:

- Time to close loans (key metric) reduced from 22 days to 19 days, leading to retaining revenues in a market with a 30% downturn
- Reduction in training costs for loan agents by 30%
- Reduction in managerial oversight by 50%
- Improved quality of loans
- Investors added in a week

Logistics

A logistics company struggled with manual processing of parts in its repair and maintenance business. High numbers of staff were required to process parts and policies were inconsistently applied, resulting in errors and re-runs. The cross-verification of parts between departments, part of the manual process, was particularly time consuming. Using business rules the company was able to get automated decisioning of over 75% from an almost entirely manual process before. Fewer errors, less re-work and reduced staffing were the result.

Getting started

Becoming decision-centric as well as process-oriented has real value. It reduces the complexity of processes, increases the rate of straight through processing and creates more flexible business application components ready for integration. Organizations that want to adopt decisioning and become more decision-centric, as well as process-oriented, need to find the right decisions to apply to the approach and need to understand how business rules technology fits in their overall technology architecture. Adopting decisioning and business rules also has organizational implications that must be considered so as to maximize the value of business rules.

Applying decisioning

Organizations can maximize the value of becoming decision-centric and adopting business rules technology by considering those points in applications or processes where large numbers of policies or regulations must be applied, where those policies or regulations change often, or where the policies and regulations are complex and require real domain expertise to understand. These decision points will benefit the most from using business rules as they allow business users a more direct role in the definition, management and evolution of the rules that implement these policies and regulations. Compliance and audit requirements can also be good drivers as business rules offer much better support for explicit tracing of outcomes and much more accessible descriptions of behavior than traditional code. As a result, business rules-based functions or decisions are easier to audit and demonstrate compliance.

Organizations can also find, name and manage the decisions that matter to their business: the decisions that drive business results and matter to customers. These decisions are those that make a real difference by increasing profit, decreasing cost or better managing risk. Process-oriented organizations can find decisions in their existing process models. For instance:

- Points in the process where transaction or customer information is used to change data or drive routing: price this order, cross-sell this customer.
- Processes with gateways leading to gateways to choose between alternative paths or activities.
- Points in the process where you make a decision without realizing it, where you treat every transaction, every customer the same and where doing so leaves money on the table.
- Related sets of processes that share a key business decision.

Becoming decision-centric means building a more explicit and more complete understanding of the decisions that are part of your business processes and

applying business rules technology to better manage these decisions.

Picking the right technology

SAP customers have two different business rule management systems from which to choose. In addition, business logic and decisions can also be implemented outside these rule environments—as ABAP code or as process definitions, for example.

In general, business rules management systems have most to offer for decisions that involve lots of rules, rules that change a lot, rules that are complex or interact in complex ways and rules that require deep business domain experience to understand. While any one of these can be a justification—a decision involving thousands of rules, for instance, can be justified on that basis alone—many decisions will be good candidates for the use of a BRMS thanks to a combination of characteristics. For instance, a decision that only has a few hundred rules might not be a candidate purely because of the number of rules involved, but if those rules change reasonably often (say, monthly) then the use of a BRMS will likely have real benefits.

Having decided on a BRMS, SAP customers must decide which of SAP's products to use. Performance of a BRMS is always a consideration and a BRMS that is tightly integrated with the execution environment will generally perform better. For a pure ABAP use case, BRFplus will be the best suited while SAP NetWeaver BRM should be used for pure Java use cases. A customer wishing to extend or enhance a component of the SAP Business Suite will thus use BRFplus while a customer building a new composite application using the SAP NetWeaver Composition Environment will find the SAP NetWeaver BRM a better choice. Some cases will require interaction with both an ABAP application and the Java-based environment. In these cases, the engine choice can be driven by the primary use case and

Applying decisioning

the capability that both have to deploy web services can be used to share the decision logic across the platforms.

It should be noted that there are some differences today—BRFplus supports decision trees, for instance, while SAP NetWeaver BRM supports flow rules. The web-based editing environments are also different, but both products are under active development and it is reasonable to expect any significant differences to be closed, and a common level of functionality to be shared between them. Longer term, the ability to manage business rules centrally and use them across both products would be very powerful, though SAP has given no concrete dates for such capability. In the meantime, the ability to use either product to generate well-formed decision services means that all aspects of your SAP environment can use either product.

Managing the organizational implications

A decisioning approach and a business rules management system enable and require IT and business users to come together more closely than ever before, to dramatically change the alignment of these two groups. Business decisions are intensely important to business management—they are central to how the business operates—yet they must be embedded into high-volume transactional systems and processes. Although a BRMS helps business and IT people to collaborate, there is also a cultural aspect to aligning the two groups. Some business departments simply don't trust their IT departments, and some IT departments return this suspicion.

Decisioning can also cause organizational change. Roles can change—for example, some people will go from making many simple decisions to considering the overall patterns of decisions. Underwriters might stop spending their days manually approving individual policies and spend far more time analyzing the overall book of business. This change will benefit some, who will perform better in the new role, but not all. Someone

who was adept at handling the transactions rapidly could find this skill less in demand. Successful adoption must manage the implications of this kind of change. Decisioning can also be used to drive staff reductions, with the attendant organizational change issues. Even when this is not, in fact, the plan, staff may well be concerned that the computer will replace them when previously manual decisions are automated.

Organizational issues also come up when decisioning is used in a customer-facing environment. Staff may be reluctant to trust the system when dealing with their customers, especially if commissions or bonuses are on the line. Giving small groups the opportunity to trial a system, and showing everyone how much better they did as a result, can be very effective in changing this mindset—nothing succeeds like success. Good tools for analyzing and reporting on the improvements will be critical in driving adoption.

When customers are impacted by decisions, they may appreciate the improved response time or increased self-service that is possible but they may feel aggrieved if they don't get what they want because “the computer said so.” Ensuring that the system can explain its decisions, to staff and potentially to customers, will be critical and this is something greatly enabled by the ability of a BRMS to record exactly which rules fired in each decision. It is also easier to get customers to accept decisions that try and say “No, but...” rather than just “No.” A system that says “You are not eligible for this product but we can offer you this other one instead” will get less resistance than one that simply declines an application.

Finally, beware of counterproductive incentives. Sometimes decisioning systems overwhelm performance and reward structures. For example, a marketing department might be rewarded for the number of leads generated. Using decisioning to find which leads would be more useful, and excluding those that will not, might improve business results while penalizing the marketing department by reducing their

Applying decisioning

lead totals. To be adopted, decisioning cannot be good only for the company; it must also be good for those who use it.

Successfully adopting decisioning and BRMS technology requires the resolution of these issues.

Selected checklist items for readiness assessment (Taylor & Raden, 2007)

Criterion	Action
Trust between business and IT	If there's a lack of trust between these departments, you must take specific, deliberate steps to rebuild it. Rebuilding trust is best done as part of a small initial rules project.
Proof for collaboration	If there's proof that collaboration results in better systems or more productive projects, emphasize it. Using a previously successful group for the first project also helps.
Business users' involvement in systems	Ensuring that business users have development management practices that allow and reward them for participation helps keep them involved. Most business users know they need to participate in systems development that affects them, but often lack time in their schedules and management support to do so. Work with management and perhaps human resources to address this problem.
Work habits	When business users are assigned to IT projects, how do they work with IT staff? Would pairing a business user with a programmer work? Can business and IT resources be located in the same place?
Maintenance projects	How maintenance work is specified for systems and handled by IT is important. If the approach is adversarial, with IT defending the system and business users complaining, try a different approach. In particular, business users must become part of the maintenance-budgeting process.
Decreased authority	Decisioning is about giving your information systems some decision-making authority. Yes, decisions are still controlled and managed, but some decisions are made without a person reviewing them. Organizations with a history of central control and micromanagement need to address this issue.
Organizational change program	Many decisioning systems cause organizational realignment and job changes. If your organization lacks a program or expertise for this outcome, allow extra time for decisioning adoption.
Regulatory environment	A complex regulatory environment is often viewed as an inhibitor of change. Decisioning is unique in that it's a change that can make regulatory compliance easier. Nevertheless, organizations worried about regulations need to allow for review time.



Conclusion

“Taking control of operational decisions is increasingly a source of competitive advantage”

James Taylor and Neil Raden, Smart (Enough) Systems, Prentice Hall 2007

No organization can be more effective than its systems. Systems must be aligned with the organization, its goals and its people. A business process orientation shows how an organization really operates and positions it for continuous improvement. Adding decisioning to business process-oriented thinking creates simpler and more agile processes, and more flexible business applications. Externalizing decisions and applying business rules technology to effectively manage those decisions improves visibility, builds in a capacity for change and helps ensure business/IT alignment.

In each case —simpler processes, more flexible business applications, an increased capacity for change and improved alignment— decisioning enhances a business process orientation to deliver greater value to the business. Focusing also on the decisions within processes and applications, making them explicit, giving the business control over how those decisions are being made, is critical.

SAP has developed two robust business rules management platforms, supporting both its Java and ABAP environments. These technologies can be used to ensure that decisions are effectively managed and integrated throughout an SAP enterprise backbone.

This white paper can be found at decisionmanagementsolutions.com/learnmore along with links to other articles and materials on the topic.

Other good sources of information, examples and guidance include:

Davenport, T., & Harris, J. (2007). *Competing on Analytics: The New Science of Winning*. Boston: Harvard Business School Press.

Taylor, J., & Raden, N. (2007). *Smart (Enough) Systems: How to Deliver Competitive Advantage by Automating Hidden Decisions*. New York: Prentice Hall.

About Decision Management Solutions

Decision Management Solutions provides consulting and implementation services in all aspects of Decision Management. Decision Management improves business performance by identifying the key decisions that drive value in your business and improving on those decisions by leveraging your company's assets: expertise, data and existing systems.

Our end-to-end, decisions-based approaches and methodologies address key business priorities—such as cost competitiveness, differentiation, customer retention and growth. We offer a range of consulting services for companies ranging from strategic advice about adopting Decision Management to tactical support for successful implementation projects.

Decision Management Solutions is led by James Taylor, one of the leading experts in decision management. James has over 20 years experience in developing software and is the foremost thinker and writer on decision management. In addition, Decision Management Solutions has an extensive network of industry and implementation partners. James has experience in all aspects of the design, development, marketing and use of advanced technology and has consistently developed approaches, tools and platforms that others can use to build more effective information systems.

More information is available at <http://www.decisionmanagementsolutions.com>. To engage us or request information, email us at info@decisionmanagementsolutions.com.

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