Maximizing Your Business Rules Investment

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Business rules technology projects consistently deliver on their promise of costs savings, agility and happy customers. Business rules technologies improve business decisions and it's the decisions that create the value. By helping you understand which decisions matter to your organization – which ones affect your business drivers and measures – Decision Management simplifies business rules design and implementation and accelerates expansion of business rules technology where it has the highest impact.

Using Decision Management to improve business results

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www.decisionmanagementsolutions.com/rules

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Acknowledgements

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References

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

Sources with good examples and guidance include:

Evelson, B., Teubner, C., & Rymer, J. R. (May 14 2008). *How The Convergence Of Business Rules, BPM, And BI Will Drive Business Optimization.* Forrester Research.

Gualtieri, M., & Rymer, J. R. (October 3, 2008). *Best Practices in Implementing Business Rules.* Forrester Research.

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

Introduction

Business rules technology projects consistently deliver on their promise of costs savings, agility and happy customers. Business rules technologies improve business decisions and it's the decisions that create the value. By helping you understand which decisions matter to your organization – which ones affect your business drivers and measures – Decision Management simplifies business rules design and implementation and accelerates expansion of business rules technology where it has the highest impact.

Decision Management (also known as Enterprise Decision Management or Business Decision Management) is the framework that ties business rules to business objectives and KPIs. A Decision Management approach to business rules begins by looking at business performance drivers, identifying the decisions that are impacting them, and analyzing what decisions will have the biggest return. Decision Management streamlines implementation, ensures business ownership of the business rules, agility and continuous improvement of the decisions driving KPIs.

This paper defines Decision Management, discusses how to deliver it and shows how it maps to business objectives to help you show the value of broader, more systematic use of business rules in your organization.

Decision Management

Decision Management focuses on the *decisions* that create value in your business, recognizes these decisions as reusable assets, and makes them widely available via Decision Services.

Companies adopting Decision Management use Decision Discovery to find the decisions that matter to their business and drive results. They create Decision Services that replace decision points in processes and systems to make those processes and systems simpler, smarter and more agile. These Decision Services are built using business rule technology and enhanced with the results of data mining and analytics. Finally they close the loop with Decision Analysis, ensuring that the way decisions are made is monitored and constantly improved.

Decision Discovery

Without an understanding of which decisions matter to your organization – which ones affect your business drivers and measures – it will be hard to show a strong ROI. Decision Discovery is thus the first step in applying Decision Management. Decision Discovery identifies the high value decisions that will provide the biggest pay-off for your business. Decision Discovery externalizes the operational decisions in your processes and systems. This allows the decisions to be understood and owned by the business and allows decision-making to be linked explicitly to performance measures and KPIs. With this done it will be clear what changes to decision-making will be required to improve any given measure. And the decisions that have the greatest impact on the most critical measures will be the place to start.

Having discovered the decisions that run your business and contribute to your KPIs you should prioritize them for the application of Decision Management. You need to know how likely it is to show a strong ROI. Good candidates include:

- Manual decisions made by supervisors because automating them will empower others to make those decisions directly, reducing referrals and increasing first call resolution.
- Manual decisions where more than seven factors must be considered as people are not good at handling complex trade-offs.
- Contradictory decisions where the website gives one answer while the call center gives another or where different call center representatives give different answers - are good candidates as the management of those decisions can eliminate the inconsistency.

For example, one company automated the process of checking materials masters for its ERP systems, previously a manual decision, and reduced elapsed time to create a new materials master by 95%.

Decisions embedded in existing systems can be good candidates too when the existing system implements regulations, has requirements that change frequently or has many maintenance projects. One company moved a hard coded decision into a decision service (calculating the cost of a license involving some 2,000 rules derived from constantly updated regulations) from its legacy system and was able to save 13,000 hours in maintenance work in the first year alone.

In general there are a number of characteristics of a decision that make it likely to show a high ROI from Decision Management. Any of these characteristics is enough, though decisions with combinations are more common and will show higher ROI. These include:

- Rapid or frequent change required
- Multi-channel
- Highly dependent on outside factors
- Demonstrating compliance
- Risk management
- Potential for personalization
- Reasonably high volume

> Decision Management Solutions has two offerings for decision discovery – the Decision Discovery Process and the Decision Audit. The Decision Discovery Process focused on a single, critical business process and identifies the decision within that process to find the high ROI opportunities. This fixed price service helps focus when the first target business process is clear. The Decision Audit is a broader, if slightly shallower, look across the whole organization to find the opportunities for Decision Management to make a difference. For more information, email
> info@decisionmanagementsolutions.com

Case Study: Customer Retention at B2C Inc.

We'll call this Business-to-Consumer B2C Inc. It has an objective to improve its customer retention this year and has established several KPIs including "Percentage of customers who renew when their contract expires" and "Save rate – the percentage of customers who are persuaded to stay when they call in to cancel". I will call these collectively the Retention KPIs.

While the efficiency of B2C Inc's process for handling customer renewals and the steps it takes when someone cancels contribute to these KPIs, it is more helpful to consider the **action** taken by a call center representative in each case. Specifically the retention offer chosen at that moment is critically important. The retention offer decision is a key operational decision impacting the Retention KPI.

Identifying the retention offer decision enables B2C Inc to discuss how they want to retain customers, how they might determine the value of retaining different kinds of customers, which departments should have a say in the retention approach and more. Making the decision explicit gives a focus for these business discussions.

A typical retention scenario involves making retention offers across multiple channels each with different systems and platforms. These platforms are optimized for supporting a specific channel – a website or a call center for instance. This means a high risk of inconsistency – the retention decision B2C makes is likely to be inconsistent across channels. B2C makes thousands of retention decisions every day and how effective a retention decision will be is highly dependent on our competitors. Multi-channel, high-volume and dependent on outside forces – clearly the retention offer decision is a good candidate for high ROI use of business rules.

Decision Services

Decision Services are the implementation of a decision – how **systems** will find out what the decision is. A decision service also makes the decision reusable and widely available.

Decision Services are essentially business services in a Service Oriented Architecture (SOA) that deliver an answer to a specific question. These services generally do not update information – they just answer questions. Because they don't make any permanent changes, they can be used to answer questions whenever they come up without worrying about potential side effects.

The usual SOA infrastructure is used to access a decision service. The decision service can access enterprise resources and other services (using the same SOA infrastructure) and can make various business-level

Decision Management Solutions and its implementation partners can help you design and build the Decision Services you need. Decision Management Solutions can get a new project started right or help put a project back on track. Decision Management Solutions can take an advisory role, provide architectural guidance or actually develop the whole service. For more information, email info@decisionmanagementsolutions.com

interfaces available for other services to use. Decision Services are built primarily using business rules managed using a business rules management system. They also support the integration of data mining and predictive analytics.

Business Rules

Having found high ROI decisions, the next step is to define the business rules that support them. Business rules represent the expertise, tribal knowledge, regulations and policies that drive a business. Mining business rules from software code, reviewing regulations and policy manuals, interviewing experts and many other techniques can be used to find the rules that support the decisions. Business rules are the core building block of decision services. Business rules create a language the business and IT can both understand – essential for effective Decision Management. Business rules are maintained in a repository or catalog that is updated by both business and technical users.

AdjustIncome RuleSet (newApplicant)
Name: Six months or less on the job if newApplicant's monthsInCurrentJob is less than or equal to 6 then decrement newApplicant's income by 5600
Name: About 1 year if newApplication's monthsInCurrentJob is between 6 and 13 then increment newApplicant's income by 1000
Name: Greater than 1 year if newApplicant's monthsInCurrentJob is greater than 12 then increment newApplicant's income by 2500
Name: Computer Total Income if newApplicant is married and newApplicant's spousalIncome is greater than 0 then newApplicant's totalIncome is equal to newApplicant's income plus newApplicant's spousalIncome else newApplicant's totalIncome is equal to newApplicant's income
Name: Minimum Income if newApplicant's totalIncome is less than 40000 then newApplicant is not eligible

Figure 2 Example Business Rules (Taylor & Raden, 2007)

Income	25,000 - 34,999	25,000 - 34,999	25,000 - 34,999	35,000 - 44,999	35,000 - 44,999
Card Type	Poor	Good	Excellent	Poor	Good
Credit Limit	2,500	3,000	4,000	3,000	3,500

Income	Card Type	Credit Limit
25,001 - 35,000	Student Bronze	2,500
25,001 - 35,000	Student Gold	3,000
25,001 - 35,000	Student Platinum	4,000
35,001 - 45,000	Student Bronze	3,000
35,001 - 45,000	Student Gold	3,500
35,001 - 45,000	Student Platinum	4,500
> 45,000	Student Bronze	4,200
> 45,000	Student Gold	4,700
> 45,000	Student Platinum	5,200

← 1-Axis Vertical   1-Axis Horizontal   2-Axis Grid

Card Type	Student Bronze	Student Gold	Student Platinum
Credit Rating	Poor	Good	Excellent
Home Owner?	false	true	true
Income	Credit Limit	Credit Limit	Credit Limit
25,001 - 35,000	2,500	3,000	4,000
35,001 - 45,000	3,000	3,500	4,500
>45,000	4,200	4,700	5,200

Figure 1 Various Decision Tables (Taylor & Raden, 2007)

Using rules technology to encode business rules, even when the equivalent software code would be simple, has a number of advantages that are critical to managing decisions:

- The syntax is clearer to a non-programmer so that decisions built with them can be managed by non-programmers
- The rules can easily be reused across multiple systems that use the decisions
- The rules are independent. No sequence is implied making it possible to edit them, and thus change decisions, to respond to changing business circumstances, without unintended consequences.

Business rules can also be controlled by customizable rule templates, as shown in Figure 3, to incorporate organization-specific terms, make them easier for non-technical users to understand and edit and also lend themselves to graphical representations such as the decision table shown in Figure 2.These representations further ensure that the decisions can be managed by those who understand the business context of those decisions.

Figure 3 Business Rules based on a template (Taylor & Raden, 2007)

Business rules are also used in workflow, to manage data quality in a database or to control a user interface. These are effective uses of business rules but are different than the business rules that are built into a Decision Service. The rules used for a Decision Service are truly about the business and how it should act. They are not dependent on a company's current databases, systems or processes.

Focusing on the business rules for a specific decision helps avoid a common problem in business rules implementations. Business rules are everywhere in an organization. 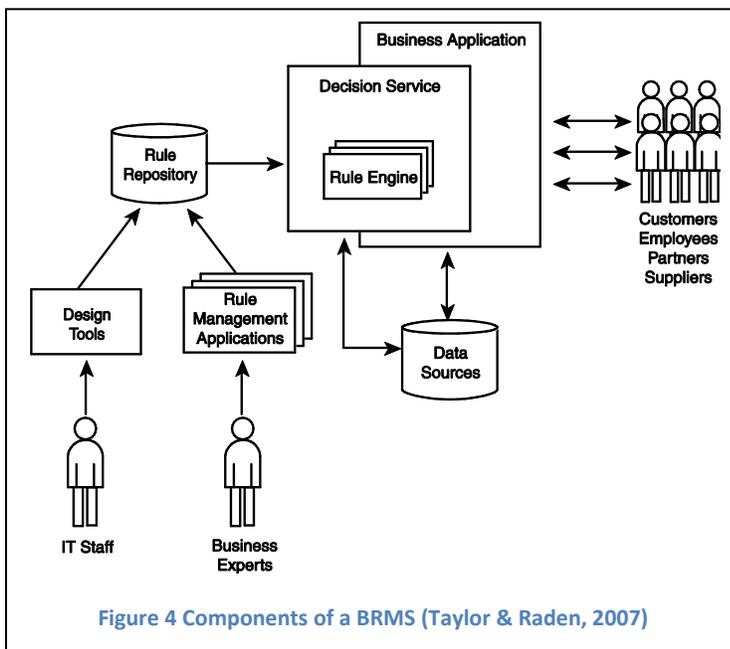Collecting and managing those rules without an organizing driver can result in lots of rules being managed for relatively low business impact. Certainly everyone understands the rules better and it is easier to find and update them but the company will not maximize the return from this investment unless decisions and thus business performance has improved as a result. Focusing on the decisions ensures that this will be the case. A focus on decisions increases the value of a rule repository and of an effective system for managing rules.
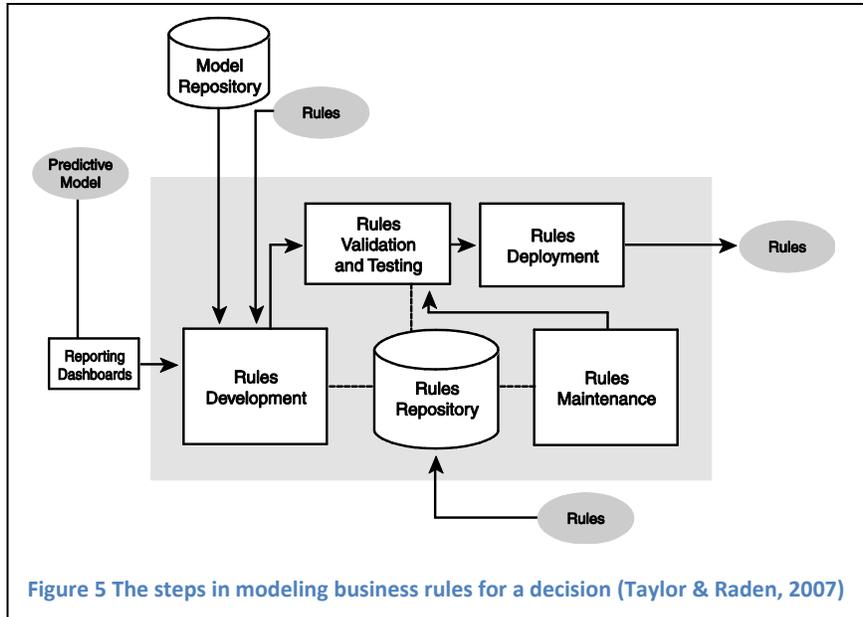

Figure 4 Components of a BRMS (Taylor & Raden, 2007)

Figure 5 The steps in modeling business rules for a decision (Taylor & Raden, 2007)

Decision Management simplifies business rules design and implementation. The basic components of a BRMS are shown in Figure 4 and the steps in modeling the rules for a decision in Figure 5. Design tools, business user rule management applications, a rule repository and an execution environment. Decision Services are generated from all of these other elements. Designing the repository, giving business users rule management capability, verification, testing and deployment will all be simplified by focusing on specific decisions.

Case Study

Once B2C Inc recognizes that a retention decision is required and makes it explicit they are ready to automate it consistently across their various channels. They develop a Decision Service that is used by each channel. For example, instead of the website making its own retention decision, it will use the Retention Decision Service to determine the appropriate offer for a specific customer when it is needed and deliver that through the web channel. The call center, outbound marketing and other channels will also use the Retention Decision Service.

Having identified their retention decision B2C want to specify it with rules to make it flexible, agile and business-centric. Rule technology enables them to specify the decision in a way that is easy to update, easy to manage and accessible to the business users who understand retention. This ensures their retention offers will reflect their business strategy, best practices and the know-how of their most successful agents.

For this retention decision B2C gathers rules from the customer service representatives with the best history of cost-effectively retaining customers, from the head of customer service, from existing policy manuals and from existing customer service scripts. Collecting, normalizing and reviewing these rules give them a first cut rule set for retention decisions.

Data Mining and Analytics

Although many rules are written based on judgment, tribal knowledge, regulations and policies, this information can be augmented by using data mining and analytics to find or refine business rules. This approach can be more effective for some decisions. Decision Management is the framework that links business rules to analytical and data mining insights and uses those insights to improve operational decisions.

Business rule management systems often support a Decision Tree metaphor, such as that shown in Figure 6. In a decision tree, each branch represents a rule with each leaf being an action or collection of actions. Many data mining techniques create decision trees to divide populations as, for instance, in customer segmentation. Representing these models in a BRMS allows them to be seen, managed and potentially updated by business users.

Business rule management systems can also use decision tables to implement the models that result from data mining and analytics techniques as score cards. These represent a collection of rules that "score" a particular customer or transaction depending on the value of specific attributes.
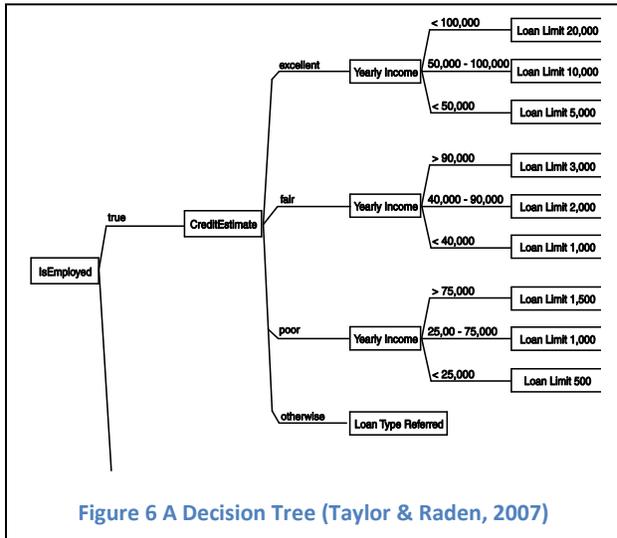

Figure 6 A Decision Tree (Taylor & Raden, 2007)

In Figure 7 the scorecard shows that spending two or more years at your current employer adds 50 to your risk score. The total score can easily be calculated from the various elements of the score card. Business rules execute these score cards quickly and effectively while the data mining and analytic tools and techniques find out which attributes make a difference and what values for those attributes predict behavior. Implemented as a score card, the predictive model is easily used in any decision based on rules.

YEARS AT EMPLOYMENT	
0	30
1	40
2 or more	50
No information	42
NUMBER OF BOUNCED CHECKS	
None	50
1	40
2 or more	30
No information	39
YEARS AT CURRENT ADDRESS	
0-3	15
4-7	20
8-9	25
10 or more	35
No information	26
Score	105

Figure 7 An Additive Scorecard (Taylor & Raden, 2007)

Case Study

B2C could do a better job of making retention offers if it knew who was a retention risk. This would allow them to spend on retention offers for customers who are at risk not those that will stay anyway. But to be effective they must make retention offers before a customer decides to leave, when their decision to quit is in the future.

Using data mining techniques B2C uses historical data about which customers left to estimate the probability of a particular customer failing to renew (their retention risk). This results in a scorecard that weights and totals these predictors into a risk score. Implementing this scorecard in the rule technology means the score is used by rules to target customers who are a risk more precisely. This allows B2C to write rules that focus their most expensive offers on profitable customers who are at high risk of leaving.

Decision Analysis

Decision Analysis – the application of performance management techniques and technologies to the monitoring of decisions – is critical. With a Decision Management approach, the business understands how specific decisions create or destroy value. These decisions are linked to the business and individual performance metrics being tracked. To continuously improve business performance, a Decision Management approach monitors decision performance, throughput and basic statistics. How many decisions are made to approve, reject or refer is a measure of decision effectiveness. Too many referrals will increase the burden on staff doing manual reviews. Too many rejections, thanks to false positives for instance, will impact customer service or sales. Similarly, decisions that take too long or that cost too much (because they use data that must be purchased, for instance) may have a negative overall impact. Tracking and reporting on this information will help the business owners understand and thus manage their decisions more effectively.

Decision Management Solutions can help you identify the monitoring, simulation, scenario testing or adaptive control infrastructure you need to continually improve operational decisions. With our implementation partners we can build Decision Analysis frameworks or complete solutions. For more information, email info@decisionmanagementsolutions.com

Case Study

B2C Inc. manages the performance of its retention decision by tracking which customers are, in fact retained as well as the offer made and its cost. Business users see what specific offers cost relative to their effectiveness so they can improve the cost-effectiveness of the decision.

B2C tests out new ideas for renewal rules to see how a particular approach –say a more expensive and aggressive one – would affect results. If the additional customers retained would be worth the additional cost they can deploy the new approach, improving the decision. The monitoring and analysis of the decision, along with its mapping to key company KPIs, allows them to continuously improve it.

Conclusion

It's not your information that creates value, but the decision-making processes that use it. By focusing on the decisions that create value, companies become more profitable, more agile and more focused.

Decision Management works systematically through identifying these decisions, with Decision Discovery, and mapping these decisions to your business objectives. Decision Services are designed and implemented using rule technology to ensure accurate decision-making and business agility. The effectiveness of decisions is constantly monitored using Decision Analysis so that the decisions can be continuously improved.

The end result is a set of priorities for applying business rules technology for maximum ROI, a clear objective for each project in terms of the KPI and the associated decisions to be improved and a robust monitoring and improvement framework to keep those decisions competitive over time.

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/rules
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