Seven Tips for Your First Business Rules Project

Applies to:

SAP NetWeaver Composition Environment 7.1.1

Summary

This article provides guidance on planning and preparation for your first business rules implementation project. It is based on seven well-tested real world tips which are a good start with business rules management implementations.

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Created on: 19 February 2008

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Introduction

Business rules represent business behavioral constraints and describe the core business logic of each organization. They guide and control all basic business processes that form the backbone of any business transaction.

Business rules management approach enables organizations to introduce a completely new paradigm into how they build their business software systems.

This article is intended to provide guidance on planning and preparation for your first business rules implementation project. It is based on seven well-tested real world tips which are a good start with business rules management implementations.

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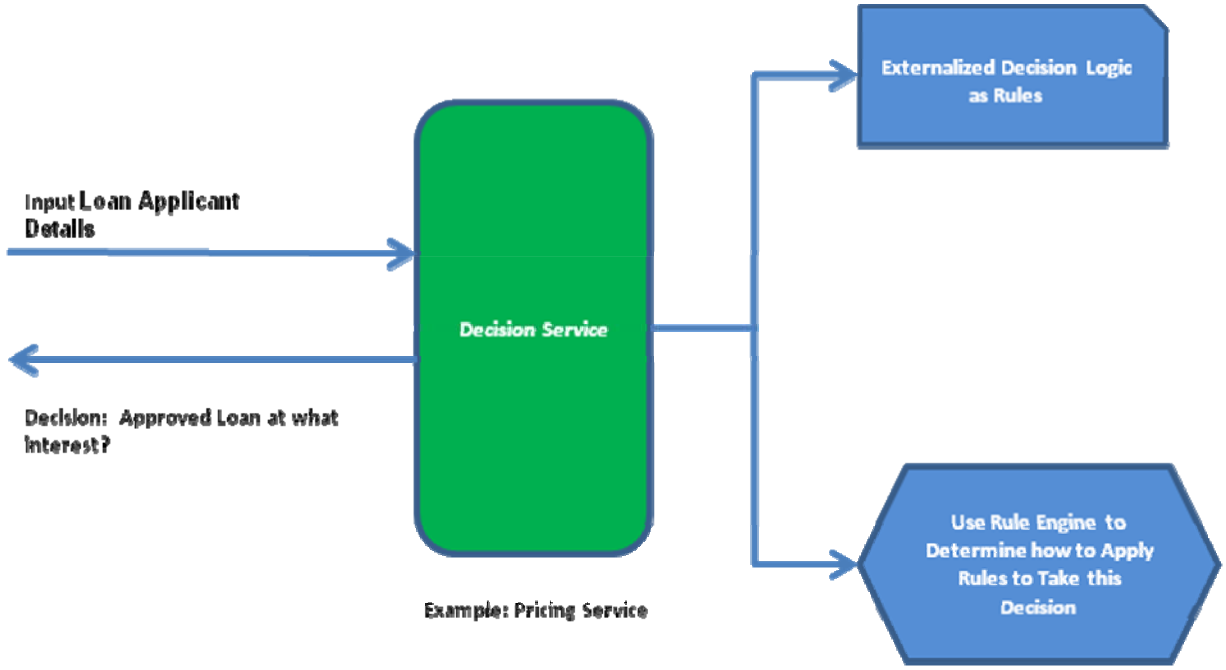
A generic architecture for integrating rule engines

Before we get started with the tips, here is some information on the generic architecture for integrating rule engines. Please note that rule engines are always available as a component to be integrated into an application.

Here is a short description of consecutive processes executed by standard business rules management component. The application calls the integrated rule engine, which at its turn uses rules that are modeled in a rules composer. The rule engine calls rules from a rules repository and rules are deployed from the rules composer into the rules repository.

The following picture illustrates this architecture in the context of a use case where a ‘Loan Pricing Service’ decision should be made for a particular customer applying for a loan.


Externalized Decision Logic as Rules
Input Loan Applicant Details
Decision Service
Decision: Approved Loan at what interest?
Use Rule Engine to Determine how to Apply Rules to Take this Decision
Example: Pricing Service

As represented here, the calling application calls the 'Pricing Service', the service afterwards calls the rule engine, providing to the rule engine information about which 'business rules' have to be applied in order to deliver the required decision.

Important Points to Note:

1. The name 'Pricing Service' is used just for illustration here. The service called can be a web service, a plain Java interface or an EJB interface, etc.
2. The rule engine itself could be a web service or an EJB. How the rule engine is deployed depends on the particular application in use.

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Tip 1: Identify clearly which business decisions have to be automated

The first things that need to be done are to identify, understand and clearly state which business decisions will be automated, as well as what rules are behind and drive them.

Here are some examples of business decision statements:

1. Decide if an applicant is eligible for a particular loan.
2. What are the products that can be recommended to a particular applicant?
3. Compute the compensation for a specified employee using his/her current salary structure.
4. Compute the claim amount that needs to be approved for a particular claimant.

Clarifying goals and setting up desired results up front is very important. If this step is not planned and executed carefully and thoroughly organizations are most probably going to run into the risk of constant analysis and evaluation conundrum.

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Tip 2: Identify integration touch point interfaces, but worry about them last

A business rules engine is the runtime execution part of each business rules management component, which applies all specific business rules in order to deliver automated decisions.

What needs to be done next is to identify all decision service interfaces in the applications in place for the decisions that have been identified as per Tip 1. Integrating a business rules engine is just the easiest step in the process. What you need to be careful about are all involved business rules themselves.

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Tip 3: Rules Capturing - State business rules first. Do not worry about rule formats or formalism too much

Getting business rules design mixed up with rules requirements is causing some of the biggest confusions in an organization which is in the process of implementing business rules projects. Number one objective therefore, should be to determine which business rules form the basis of its business decisions, as per Tip 1.

Rules formats or formal methods of rules representation are nothing to worry about really. Rules can be captured successfully in natural language form, in the form of spreadsheets or simple diagrams.

At this stage it is very important to capture business rules concisely and correctly in a business-wise manner:

- First and foremost business rules should be represented, understood and validated very well.
- Digest all details and information, let it mature and the design will certainly start to take its shape step by step.
- Some areas may not be completely clear of course at this stage yet – use this opportunity to dig into these areas, optimize all present information and set up rules.

Now, an important differentiation is that business rules are externalized already from the application code, therefore they can always be polished and improved at a later stage.

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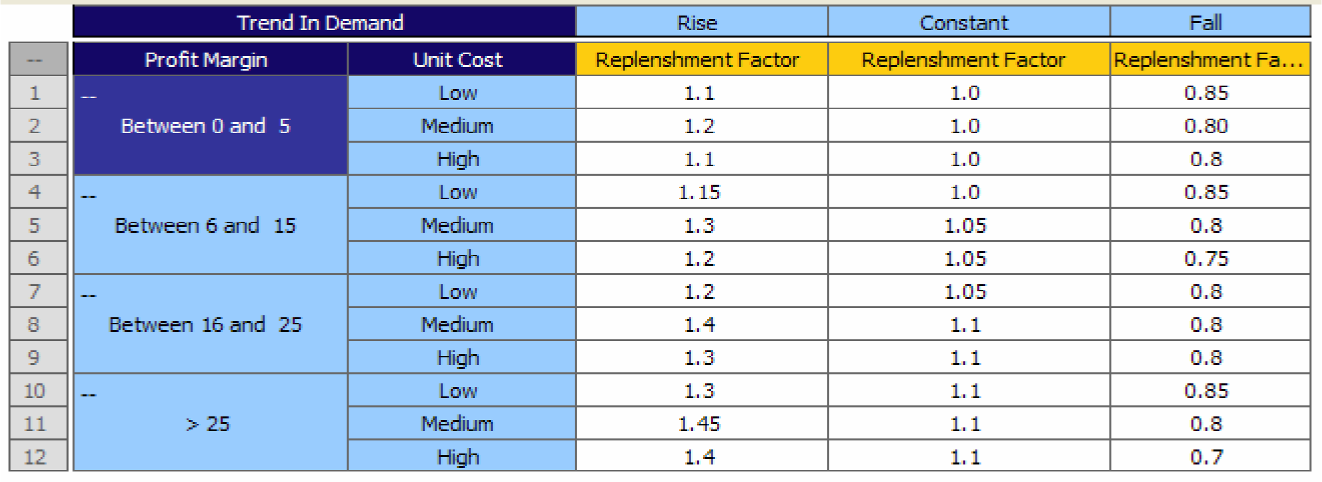
Tip 4: Business rules design. Keep Business users in mind when creating and writing rules

Once business rules are captured and the ways they are applied are correctly understood, it is time to start with business rules design. All different rules formats offered by the business rules management component in place may be used.

1. Identify how business rules may be logically grouped. Identify all ‘rule sets’ first. Sets of logically related business rules are called rule sets. It is very important to keep them modular. When business rules are externalized and managed separately, same rules can be used across different decision services.
2. Afterwards identify the sequence in which business rules are applied in each rule set in order to arrive to a certain decision that this particular rule set applies for. At this stage you have be able to state it very clearly otherwise confusions may arise.

3. Then identify and write business rules down using an appropriate rule format, per example a *decision table*.

Here is an example of a business rules set represented in a *decision table* form:



	Trend In Demand		Rise	Constant	Fall
--	Profit Margin	Unit Cost	Replenshment Factor	Replenshment Factor	Replenshment Fa…
1	-- Between 0 and 5	Low	1.1	1.0	0.85
2		Medium	1.2	1.0	0.80
3		High	1.1	1.0	0.8
4	-- Between 6 and 15	Low	1.15	1.0	0.85
5		Medium	1.3	1.05	0.8
6		High	1.2	1.05	0.75
7	-- Between 16 and 25	Low	1.2	1.05	0.8
8		Medium	1.4	1.1	0.8
9		High	1.3	1.1	0.8
10	-- > 25	Low	1.3	1.1	0.85
11		Medium	1.45	1.1	0.8
12		High	1.4	1.1	0.7

Please note that business rules represent business policies owned by business users/units. When composing and writing rules down, keep in mind that business users who need to see, understand and use these rules are not necessarily technical people. Each business rules management component provides tools for creating business user friendly rule representations. Take advantage of them!

In most organizations, business rules implementations are always carried by IT personnel/departments. Nevertheless, after gaining business rules oriented experience and as rules mature as the organization goes, rules development and maintenance may be handed over to Business analysts or Business units.

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Tip 5: Never forget data models in place. Rules are finally applied on business information

It should be always kept in mind that business rules management functionality is a part of the application software. Also any rule engine is always implemented and used as a component part of a larger application.

If the organization has stable data models, per example MISMO or own in-house object model, then go ahead and write business rules directly on that data model.

In case this data model is evolving and it is necessary to allow rules and data models to evolve independently, therefore:

1. Identify business terms and capture them using business rules management software modeling capability.
2. Write down all business rules that apply based on these business terms.
3. When the data model is ready, it can be mapped to these business terms and then integration is complete.
4. Continue to remap them as needed – per example when a milestone testing is necessary.

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Tip 6: Request business scenario test cases from business users

Remember that business rules are always introduced to be executed by business users. Here are some extra tips in this regard:

1. Source test cases for all business decision(s) that are being automated.
2. Even better suggestion is to capture test cases in the form of spreadsheets and teach business analysts / business users how to run tests using their own data.
3. The best scenario is to work with test cases for each rule set identified previously.
4. Testing is a must. Do not rely only on application level testing which is already late in the cycle. Test early and upstream (do not downstream).

Here is a sample test case set for a ‘mortgage loan approval’ decision. Columns in white color contain data inputs and columns in green represent respective decisions. Each row in this table represents an individual test case.

Annual Income	Credit Score	Debt to Income ratio	Loan amt	bankruptcy	Loan Amount Approved	Risk Index
20000	690	0	350000	0	0	3.6
35000	404	0.2	200000	0	0	10
45000	690	0	500000	0	500000	1
70000	600	0.1	700000	1	0	10
54000	630	0.3	670000	0	670000	3.5
90000	700	0.25	450000	1	0	10

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Tip 7: And finally, start simple. Do not overestimate rules in the beginning

This is just the beginning. As with every start, it is best to conquer step by step instead of running into challenges right away and spend more time and effort than needed. Remember the following:

- There is no necessarily a business rule behind every ‘If – Then’ statement. A rule is a business rule if and only if it describes a business policy statement.
- Keep in mind the main reason for adopting business rules approach. Is this the need for visibility for business users, higher ease of change or better centralizing policy management and administration, or may be all of the above?
- Business rules offer a structured approach to capture business policies. Do not over-use them. To begin with, only the most volatile business rules may be captured.
- There may be ‘core’ business rules for each organization that never change. If that is the case these may be hard-coded in the application itself.

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