Integrating BRM with BPM

Applies to:
SAP NetWeaver 7.2 Composition Environment.

Summary
In this end-to-end guide you will be learning about how decision logic, modeled using BRM, can be integrated with the process logic modeled using BPM. It makes use of investment approval process use case scenario, where a requestor makes a investment request which based on certain business policies and constraints, is either accepted or rejected.

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Overview

The investment approval process involves involvement of three entities – the requestor, the approver and the system.

In this process –

1. The investor enters an investment proposal and quotes the total amount of investment.
2. Based on certain policies and constraints of the organisation at that point of time a decision, whether or not a superior officer’s approval is required is considered.
3. Once the investment proposal has been approved by the superior an entry is made at the system level for the investment process to continue further.
4. If the proposal is rejected at any level, the proposal is sent back to the requestor for changes.
5. Once the investment is approved and the entry made into the system, a notification is sent to the requestor for follow-up from his side.

In this particular process the decision logic of whether or not an approver is required needs to be implemented. For this purpose, we maintain a set of rules using BRM. The rules to be managed are -
1. The investment is proposed by a requestor.
2. A check is made to find whether or not the investor is from any of the following regions – EMEA; APJ; AMER.
3. In case the requestor is not from any of the specified regions, the approval of the supervisor is required for any investment to be made.
4. Based on information regarding the investment request made, like the total cost of purchase; region; etc., it will be decided whether or not a supervisor's involvement is required.

This section helps integrate BRM with BPM.
Prerequisites

Knowledge Required

- You have basic knowledge in rules modeling and process modeling
- You are familiar with Business Rules Management System and Business Process Management System
- You should have first completed the steps mentioned in the document “Modeling Flow Rules using XSDs” and modeled the required rules.
- The investment approval process as described before should have been already modeled using BPM.

Software Requirements

- You work in the SAP NetWeaver Developer Studio
- You should have a running instance of SAP AS, and should have configured the SAP NetWeaver Developer Studio with this instance

Note:
In the SAP NetWeaver Developer Studio, choose Window -> Open Perspective -> Other. In the dialog box that appears, choose Rules Composer and choose OK.

Learning Objectives

At the end of this section you will be able to:

- Model rules using BRM
- Model process using BPM
- Integrate decision logic with process logic
- Run and test the process flow created
- Understand how the process flow can be diverted at runtime, based on a set of conditions/rules.
- Adjust service group configurations
Introduction

In this module you will be looking at how NetWeaver Business Rules Management Component will help you in automating business decisions. Business Rules are defined as the policies or constraints which are applicable to any business.

Here, you will be integrating the already modelled Business Rules with your Business Process

For this purpose –
1. The process should have been modelled using BPM
2. The rules should have been created and managed using BRM
3. The web service for the rules should have been generated and deployed into the application server.

Note:
The end-to-end steps for modeling these rules have been provided in one of the learning map documents – “Modeling Flow Rules using XSDs”

In this exercise you will be automating the step to find whether or not the Approver is required in the workflow to accept the purchase order request based on a set of conditions. To do this we will be making use of Rules.

Importing WSDL into the Process

First step in integration is Importing the Rules Service WSDL into the process

1. The rules service has already been created.
2. To get the WSDL, open http://<server>:<port>/nw
3. Open the SOA Management > Application and Scenario Communication tab.
4. Select Single Service Administration
5. In Find text field enter approvalneededruleset* and click on Go.
6. In the details about the service definition provided at the bottom of the page, select WSDL tab.
7. Copy the URL provided.
8. Check the WSDL by opening the file in an internet explorer, by making use of the URL copied.
9. To import this WSDL into BPM, navigate to process `investment_approval_process > src > wsdl`.

10. From the context menu of this folder click on **Import**.

11. In the dialog box opened, enter wsdl in the filter.

12. Select WSDL and click on **Next**.

13. Select **Remote Location/File System** and click on **Next**.

14. In the **Import Wizard** opened paste the URL in the field provided and click on **Finish**.
15. In the Project Explorer you can now observe that the WSDL has been imported into the wsdl folder of the process DC

Creating Automated Activity

The decision whether or not an Approver is required for a particular case will be decided soon after the Requestor places the Purchase Order Request.

1. Remove the step connecting the human activities – Enter Purchase Request and Approve Purchase Request.
2. Introduce Exclusive Choice Gateway in between these two steps.

3. Connect the Human Activity Enter Purchase Request to Exclusive Choice 0

4. Create two gateways from Exclusive Choice.

5. One connecting to the next step in the workflow – Approve Purchase Request – human activity.

6. And the other connecting directly to the step of creating order in ERP – Create Purchase Order Request.
7. Select Properties of Alternative 1 from its context menu.

8. Rename Alternative 1 to Approval Required.

9. Similarly select Properties of Alternative 2 and rename it to Approval Not Required.

10. Also, select Properties of Exclusive Choice 0 and rename it to Check Approval Requirement.

11. Open Condition Evaluation tab to Edit Condition Gateways and set Approval Not Required gateway as the default gateway.

12. Select Approval Required gateway and click on Edit.
13. In the Condition Expression wizard opened set the condition as - 
   DO_InvestmentApprovalProcess/approvalNecessary = true and click on OK.

14. Save the process modelled.

15. After these changes are made the new process diagram will be similar to the diagram on the right hand side.
16. The next step is to add decision automation. This step will be in between the human activity step – **Enter Purchase Request** – and the Exclusive Choice Gateway – **Check Approval Required**.

17. Name the activity as – **Approval Needed Activity**

18. Open Properties of this Automated Activity.

19. Go to **Interfaces** tab.

20. Set the **Service Interface** as ApprovalNeededRulesetPortType.


22. To set the Service Reference, select **New**.
23. In the New Service Reference wizard opened, enter the **Name** as `ApprovalNeededRulesServiceRef` and the **Description** and click **Finish**.


<table>
<thead>
<tr>
<th>New Service Reference</th>
<th>Create Service Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Create Service Reference</strong></td>
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<tr>
<td>Create a Service Reference in the specified Project. Create or select a Service Group in the specified Project or in referenced Project.</td>
<td></td>
</tr>
<tr>
<td>Services:</td>
<td>veex0devbg3_05_40.sap.corp</td>
</tr>
<tr>
<td><strong>Choose existing:</strong></td>
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<tr>
<td><strong>Create new</strong></td>
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<tr>
<td>Package:</td>
<td>(default)</td>
</tr>
<tr>
<td><strong>Name:</strong></td>
<td><code>ApprovalNeededRulesServiceRef</code></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td><code>ApprovalNeededRulesServiceReference</code></td>
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<tr>
<td>Create in project:</td>
<td><code>[LocalDevelopment]</code> assessmentday/jprjpm</td>
</tr>
<tr>
<td><strong>Finish</strong></td>
<td><strong>Cancel</strong></td>
</tr>
</tbody>
</table>

25. In the **Project Explorer**, you can observe that a new Service Group has been created in **Connectivity > Service Groups folder**.

![Project Explorer](image)

26. The input and output mappings are to be done to complete the process implementation.

27. Open the Properties of the Automated Activity – Approval Need Activity.

28. Open the Input Mapping tab.
29. Now, drag and connect the elements in the input side to the elements in the output side, as required. The RHS figure shows a sample.

30. Similarly for the output mapping – select the Output Mapping tab in the Properties of the Automated Activity.

31. Map the respective elements.

### Build and Deploy Process

1. Select the Process DC. From the context menu of Process DC select Development Component > Build.

2. In the Build DCs dialog box opened click on OK.

3. If there are any errors in the Building process, the messages will be displayed in the Infrastructure Console.

4. Before deploying the DCs check if SAP AS Java has been set.

5. Open Window > Preferences.

6. In the wizard opened, enter SAP AS Java in the filter.

7. The view to Add or Remove SAP Systems can be seen on the left hand side of the page.
8. Click on Add.

9. Enter the:
   - **Instance Hostname**: , **Instance Number**: ,
   - **Add to Domain**: Default.

10. Click on OK.

11. The SAP System is now added. Click on OK.

12. Select the context menu of the Process DC. Select Development Component > Deploy.

13. In the Deploy DCs dialog box opened click OK.

14. If authentication is required, enter:
   - **username**: administrator
   - **password**: abcd1234

15. Click on OK.

16. Once the DC has been deployed, the status can be checked in Infrastructure Console.
### Adjust service group configuration for rules web service

1. To check if the service group has been configured correctly, open nwa portal – http://<server>:<port>/nwa
2. Enter the credentials
   - Username: administrator
   - Password: abcd1234

3. Click on the SOA Management Tab
4. Select Application and Scenario Communication tab.
5. Select Application Communication icon available in the page displayed.

6. In Application Communication page, you can observe the names of the created rules and process DCs - demo.sap.com/iap_rules and demo.sap.com/investment_approval_process
7. Select demo.sap.com/investment_approval_process

8. In the table displayed below, you will be able to observe the list of Consumed Services and Provided Services.
9. Select Consumed Services tab.
10. Select the Service Group and click on Edit.
11. The Assign Provider System button is now visible. Click on this button.
12. In the Assign Provider System dialog box opened, select the required Provider System Name and click on OK.
13. Click on Save and save the changes made to the Consumed Service.


15. In the table displayed below, you will be able to observe the list of Consumed Services and Provided Services.
16. Select Provided Services tab.
17. Select the Name of the Provided Service and click on Edit.

18. Click on Assign Profile
19. In the dialog box opened, select `SAP_DEFAULT_PROFILE` and click on `OK`.
20. Click on `Save` to save the changes made to the Provider System.

21. Wait few minutes for the changes made to get reflected.
22. After some time you will see that the `Consumed Service` of the Process DC and the `Provided Service` of the Rules DC are now `Processed`.
Running the Process

To test the running of the process, in this step we will be looking at how the process can be started from nwa portal of the Application Server and check if the process runs as expected.

2. If Credentials are required, login using -
   Username – administrator
   Password – abcd1234
3. Navigate to Configuration Management > Processes and Tasks
4. Select Process Repository
5. In the Process Repository Overview page opened, enter in the name of the process in the filter. Here, investment_approval_process
6. Select the process from the list and you can observe two tables displayed. One containing the list of versions of the selected component and the other table listing the details, such as -processes, tasks, resources – of the component selected.
7. Select the Latest Version of the Process from the list provided.
8. Select the Process – Investment Approval Process from the list provided
9. Click on Start Process.

10. In the BPM Process Startup page opened, click on Start Process.

11. The process gets started and the information message is displayed in the page. "Process Investment Approval Process started with process instance ID - "

12. The first step in this process is a human activity with Requestor set as the Potential Owner of the task.

13. In the previous step we had started the process, so a task activity – Enter Purchase Request - would be now available in Requestor’s UWL to be completed.


15. Open the work area of the user.

16. In the Universal Work List displayed, select the task newly created – Enter Purchase Request.
17. In the Task Application displayed, enter the details – region, price, quantity, comment, productID and click on Approve.
18. This will prompt you to close the window. Click on OK.

19. Now, the process reaches the next level the automated activity – rules service – and sets whether or not the approval of the superior officer is required.
20. If the approval of the officer is required, the approver will have a Task- Approve Purchase Request - pending for him in the UWL.

21. Here the approver needs to check the Approved box provided, to approve the purchase order request raised.
Related Content
For more information, visit the Business Process Modeling homepage.
For more information, visit the Business Process Expert homepage.
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