

Integration of Org Management from ECC to NW CE



Applies to:

SAP NetWeaver Composition Environment, SAP NetWeaver For more information, visit the [Business Rules Management homepage](#).

Summary

This article provides guidelines on how to integrate an ERP system with SAP NetWeaver BPM. This article explains dynamic assignment of potential owner to BPM task instance. This article also explains step by step configuration for calling a WebService in ERP from BPM and technical implementation of solution. After completion of this article you will understand, dynamic potential owner assignment, implementing and using custom EJB in BPM and integration of ERP system with NW Composition Environment (NW CE).

Author: Songa Venkatrami Reddy

Company: SAP Labs India

Created on: November 2010

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Introduction

In some scenarios, identifying potential owners for BPM tasks at design time is not possible, in these scenarios dynamic potential owner assignment can be done in SAP NetWeaver BPM. This article showcases how a potential owner is determined and assigned to a BPM task at runtime dynamically. It will also showcase how the Org management system of SAP ERP can be integrated with SAP NetWeaver Composition Environment in order to dynamically determine the potential owner of an approval task via Org Management.

Business Requirement

Let us assume that a company is using SAP ERP and this company's organization is implemented in ECC. Following are three employees with their employee IDs and their respective reporting line managers

- Herbert Braunstein, CEO (Emp ID: 1009)
- Bill Fischer, CFO (Emp ID: 1018 and reporting to Braunstein)
- Alexander Nitzsche, VP (Emp ID: 1201 and reporting to Fischer)

Now, the company is planning to implement a solution for Leave Management for employees using NetWeaver CE. In this solution, the potential owner for 'Leave Approval' Task shall be the manager of the respective employee requesting a leave. The employees' data is provided through the ERP system. Identifying the manager of an employee in ERP system and assign him/her as potential owner of the approval task is the goal of this activity.

The organization unit looks like this:

The screenshot displays the SAP 'Organization and Staffing Display' interface. The main area shows a reporting structure for 'IDES Germany' as of 23.09.2010 + 3 Months. The structure is as follows:

- Chief Executive Officer (D) - IDES Germany
 - Dr. Herbert Braunstein
 - Executive Assistant to CEO (D) - IDES Germany
 - Annette Sturm
 - Chief Financial Officer (D) - IDES Germany
 - Bill Fischer
 - Executive Assistant for finances (D) - IDES Germany
 - Vice President of HR & Finance (D) - IDES Germany
 - Alexander Nitzsche
 - Director of Human Resources - (D) - Human Resources (D)
 - Director of Corporate Services - (D) - Corporate services (D)
 - Director Finance and Administration (D) - Finance and Administration - (D)
- Chief Operations Officer (D) - IDES Germany
- Secretary to CEO (Germany) - IDES Germany

On the left, a search panel shows 'Find by' options: Organizational unit, Position, Job, Person, User, Task, Business Partner. Under 'Person', 'Search Term' is selected. Below the search panel is a 'Hit list' table:

Existence	Employee	ID	Valid from
	Dr. Herbert Braunstein	P 00001009	01.01.19

If Bill Fisher requests for leave using the proposed solution, it has to be approved by Herbert Braunstein and if Alexander Nitzsche applies for leave it has to be approved by Bill Fischer.

Technical Solution

Technical implementation for this solution is straightforward,

- a. Create an user interface to capture employee Leave Request details using a supported UI technology(WebDynpro or Visual Composer)
- b. Model Leave Process using NetWeaver BPM with a human activity for approval of the leave request. The potential owner for this task will be determined and assigned at runtime.
- c. Implement a custom EJB function in Process Composer to make a call to an RFC function or to a Service which returns the required information.
- d. Read manager details returned from ERP system and assign it as potential owner for task at runtime.
- e. Please note: UME users should be created in CE system for the employees in ECC system so that when potential owner is assigned to task instance dynamically, it will be accessible for this UME user.

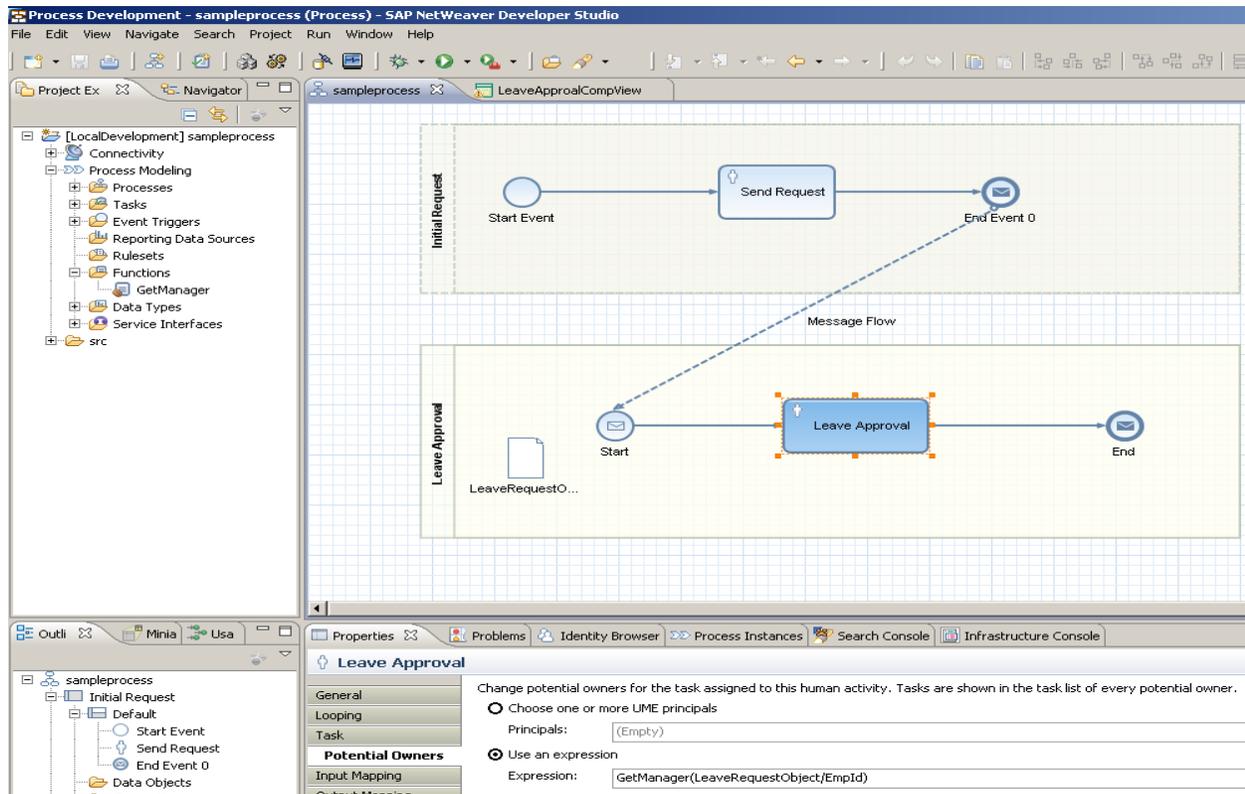
We have several options to invoke a function in ERP system; the first option is to call a WebService of RFC function from automated activity of BPM. The second option would be to call a RFC function module using SAP JCo in custom EJB. For this demo, I am using an **Enterprise Service Operation** ([Find Reporting Line Manager by Employee](#)) available under '**HCM Master Data**' bundles in SAP Enterprise Services Workplace; this Enterprise Service Operation returns manager details for a given employee.

Value Proposition

- a. Customers can easily integrate ERP System into Composition Environment
- b. A static owner is not mandatory; potential owners for a task instance can be assigned dynamically.
- c. Decisions like this can be executed to dynamically determine the right owners for critical business approvals, e.g:
 - I. Order amount is high, assign superior as owner of task.
 - II. Manager is on vacation, manager's manager can approve employee's leave.
 - III. BRM rules may decide the owner of a task instance at runtime based on a set of business rules

Process Model

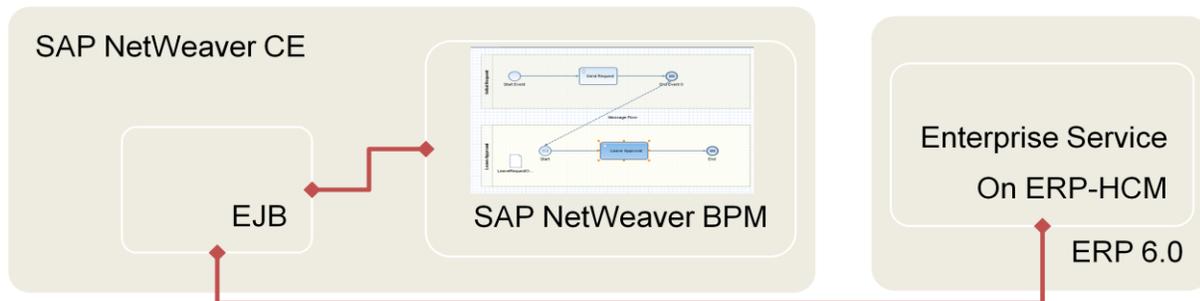
You can see the model of the BPM process below. There is one active pool and one inactive pool, which caters to documentary purposes only. The 'Leave Approval' task will be dynamically assigned to the manager of the requesting employee. The requesting employee is the one who sends the request as documented in the inactive pool. The assumption is that the user ID of the requester is passed in via the payload of the start event.



Technical Implementation

Overview

Owner determination happens in our case via an EJB Function. The EJB calls an Enterprise Service which returns manager details from the ERP backend system. The manager's ID is used to determine the responsible approver for the task in CE. Once Org-Management assignments change, user determination also changes automatically for newly instantiated tasks.



Calling backend ERP system from EJB

1. Create EJB's interface to extend *Function* and *SdoInvoker* interfaces

```
import javax.ejb.Local;
import com.sap.glx.mapping.execution.api.function.Function;
import com.sap.glx.mapping.execution.api.invoker.SdoInvoker;

@Local
public interface OrgManagementLocal extends Function, SdoInvoker{
}
```

2. Read employee ID from input data object

```
String employeeId =
inputDO.getString(typeInput.getProperty(NAME_PROPERTY_INPUT_EMPLOYEE_ID));
```

3. Java classes will be created for Enterprise Service Operation after Importing WSDL into EJB project. Prepare WebService request message with employee details

```
ReportingLineManagerSimpleByEmployeeQueryResponseIn port = mgrService
    .getPort(ReportingLineManagerSimpleByEmployeeQueryResponseIn.class);
ReportingLineManagerSimpleByEmployeeQueryMessage queryMessage = new
ReportingLineManagerSimpleByEmployeeQueryMessage();

ReportingLineManagerSimpleSelectionByEmployee employeeQueryIn = new
ReportingLineManagerSimpleSelectionByEmployee();
```

4. Call Service Operation using generated classes to get manager details

```
ReportingLineManagerSimpleByEmployeeResponseMessage responseMessage = port
    .reportingLineManagerSimpleByEmployeeQueryResponseIn(queryMessage);
```

5. Create output data object from context

```
DataObject outputDO = invocationContext.createOutputDataObject();
```

6. Create Principal object for given manager using helper

```
UMHelper.getPrincipal(UMFactoryLocatorImpl, destinationDO, result
    .toString());
```

Wrap EJB in BPM Process

1. Create a custom function under 'Functions' node of process DC.
2. Configure 'JNDI name' of custom function with JNDI of EJB.
3. Add the input parameters of implemented EJB to custom function parameter list by selecting corresponding elements.
4. Select return type of EJB as return type for custom function.
5. EJB implementation and function definition are loosely coupled; function in process will not validate types at design time.

The screenshot displays the SAP NetWeaver Developer Studio interface. The left pane shows a project tree with 'Functions' expanded to 'GetManager'. The main pane shows the 'Overview' configuration for the 'GetManager' function.

General Information
 Define general information such as the function name and description:
 Name: GetManager
 Namespace: demo.sap.com/sampleprocess
 Documentation:

Signature
 Define the return type and parameters of the function:
 Return Type: Principal - sap.com/glx/!
 Returns a collection
 Parameters:

Name	Type
employeeId	string - http://www.w3.org/2001/XMLSchema

EJB
 Define the JNDI lookup name for the EJB:
 JNDI name: demo.sap.com/test~ceme~orgmgmt~ear/LOCAL/OrgManagement/com.sap.test.ceme.OrgManagementLocal

Configuring and Running Demo.

Please find configuration steps below to run the demo.

1. Import the attached MyComponen00_0.SCA into NWDS.
2. Register a user in ERP system(SAP ERP 6 or higher IDES System is required)
3. Go to the HTTP Proxy tab by navigating in NWA to SOA -> *Technical Configuration* -> SOA *Middleware Global Settings*. Set the following values to the parameters in HTTP Proxy tab:
 - a. Host: proxy
 - b. Port: 8080
 - c. Username:
 - d. Password:
 - e. Exclude List:
 - f. Bypass Proxy Server for Local Addresses: checked
4. Services interface Configuration:
 - a. Go to SOA -> Application and Scenario Communication -> Single Service Administration
 - b. Select Consumer Proxies tab
 - c. Search for Find: "ServicesRegistrySi" Search by: "WSDL Port Type Name" State: "(All)" and click "Go"
 - d. In the search results select "ServicesRegistrySi", a set of tabbed views will be shown below the results table. Now select the "Configuration" tab shown below. There will be another set of tabbed views shown below the current set of tabbed views. In those tabs, select General and click "Edit" button and provide the Web Service Endpoint URL as <http://sr.esworkplace.sap.com:80/ServicesRegistrySiService/ServicesRegistrySiPort>.
 - e. Now select the "Security" tab and select "HTTP Authentication" for Authentication. And select "User ID/Password (Basic)" and click "Details" button.
 - f. Now provide user credentials of ES Workplace.
 - g. Save the changes
5. Line Manager service operation configuration:
 - a. Go to SOA -> Application and Scenario Communication -> Single Service Administration
 - b. Select Consumer Proxies view
 - c. Search for Find: "*Report*" Search by: "WSDL Port Type Name" State: "(All)" and click "Go"
 - d. In the search results select "ReportingLineManagerSimpleByEmployeeQueryResponse_In", a set of tabbed views will be shown below the results table. Now select the "Configuration" tab. there will be another set of tabbed views shown below the current set of tabbed views. In those tabs, select "Security" tab and change the Authentication to "HTTP Authentication" and then select "User ID/Password (Basic)" radio button. Then click on "Details" button and provide the login id and password details of the ERP system in which the WebService is declared/defined. For this demo i have used web service that uses HU2 system and so i have provided my login details for HU2 system`
6. Create UME users in CE server; say **Herbert Braunstein**, **Bill Fischer** and **Alexander Nitzsche** in our scenario. Please note that the userid for the user is last name of user (manager) (e.g, Fisher is userid for user **Bill Fischer**).
7. Deploy all the DCs (except **test/ceme/orgmgmt/ejb** DC) in attached .SCA to CE server
8. Open WebDynpro perspective and run 'LeaveApprovalApp' application in 'emleave' DC. While submitting leave request, provide employee id which is in ERP system. This solution will assign task instance of 'Leave Approval' BPM process to manager of employee for the provided employee id.
9. Manager will be able to see a task for approval in portal after logging into portal using manager credentials of the employee,

Related content

For more information, visit the [Business Rules Management homepage](#).

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