Creating BPM Process with Human and Automated Activities

Applies to:
SAP enhancement package 1 for SAP NetWeaver Composition Environment 7.1
For more information, visit the Business Process Modeling homepage.

Summary
This article describes creation of a sample BPM project with a human activity and an automated activity. It also gives an insight to how the service consumption is achieved and the configurations that needs to be done for consuming services.

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Introduction

In this article we will create a process for adding an employee to the database. We will have a human activity which gets employee details an automated activity to create the user in the database using a webservice.

Creation of the Process in BPM

Creating BPM project

First we will create the BPM process project. First go to the process composer perspective. Click Window ➔ Open perspective ➔ Other ➔ Process Composer. Create a new project in it via the following steps.

1. Right click on the contextual panel.
2. Select New ➔ Project

3. Click Next.
4. Choose a software component.
5. Click Next.
6. Name the development component. Let us name it as **employee management**.

7. Click **Finish**.
Creating the Process:

We will now create the process by forming the process diagram.

1. Select **employeemanagement** → **Processes**.
2. Right click and select **New**.
3. Name the process as **EmployeeCreationProcess**.
4. Click Next.

5. Check the Create new pool option. Leave the other default settings as such.

6. Click Finish.
Creating the process flow

1. Select the pool and select the Properties tab.
2. Rename the pool as Employee Creation Process.
3. Select the Sequence Flow Connection between Start and End and delete it.

4. Create a Human Activity from Start using quick button.
5. Create an automated activity from Human activity.

5. Create a **Sequence Connection** between **Automated Activity** and the **End**.
6. Rename the Human Activity as Create Employee by selecting the activity and editing in the General Properties.
7. Similarly rename the **Automated Activity** as *Create Employee WS* and save the process. The process will look like the following diagram.

Having formed the process we have to assign a task to the human activity and service interface to the automated activity.
Creation of Webdynpro application for Human Activity

Now we will create the webdynpro application for human activity.

1. Go to the webdynpro perspective.
2. Create a webdynpro development component createemployee.
3. Create a component CreateEmployee with default settings.
4. In the Context of the component controller create 3 String attributes namely name, age and designation.
5. Right click on the context and select Copy.

Context

7. Open the Interface Controller.
8. Go to the Context tab and paste the copied contents on the Context.

This procedure is to make sure that these three attributes are available as data elements in the process context.

9. In the Component Controller, create a method namely complete.

10. As did earlier in steps 5, 6, 7 and 8, copy the method to Interface Controller.

11. Then create an event in component controller namely InputComplete.

12. As did earlier in steps 5, 6, 7 and 8, copy the event to Interface Controller.

13. In the component controller's java editor, go to the complete() and paste the following code for firing the InputComplete Event.

   ```java
   wdThis.wdFireEventInputComplete();
   ```

14. Open the view CreateEmployeeView.

15. Go to the Context Tab.


17. Click Next. Select the Controller and click on Next.

18. Then select name attribute and click Finish. Similarly create age and designation attributes.
19. Delete the **Default Text View**.

20. Right Click on the **Root Element** and click **Apply Template**.
21. Select *Form* and click *Next*.
22. Check the three attributes and click *Finish*.

Optionally edit the form properties like alignment, labels etc.

23. Add a button namely *Create*. In the *Properties* tab of the button, for *onAction* create an action with name *Create*.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
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</table>

**Specify Action Properties**

Enter the properties for the new action

- **Name**: Create
- **Text**: 
- **Icon**: 
- **Validation**: 

**Event Handler**

- **Use default**: onActionCreate
- **Use existing**: 
- **Adapt parameters to fit event handler parameters**: 

**Fire Plug**: <None>
24. Go to the `onActionCreate()` in the view and paste the following code for invoking the `complete()` of the component controller.

```java
wdThis.wdGetCreateEmployeeController().complete();
```

25. Finally we have to add this component `CreateEmployee` to the public part so that we can use it in the process component. Right click on `CreateEmployee` and click `Add To Public Part`.

26. Click `Next → New` and then in `Name` enter `EMPLOYEE_COMP` and let the `Purpose` to be `COMPILATION`.

27. Click `Finish`.
Creation of service for Automated Activity

We will create a CAF-application, `employeebpm` with a business object namely `Employee` and an application service namely `EmployeeBPMAS`. Employee will have 3 attributes namely `name`, `age` and `designation` of type `String`. `EmployeeBPMAS` will have one operation namely `createEmployee()`. The following code will be present inside the `createEmployee()`.

```java
Employee employee = getEmployeeService().create();
employee.setAge(createEmployeeReqMsg.getAge());
employee.setName(createEmployeeReqMsg.getName());
employee.setDesignation(createEmployeeReqMsg.getDesignation());
getEmployeeService().update(employee);
return null;
```

Here `createEmployeeReqMsg` is of type `CreateEmployeeReqMsg` which is a complex type with three `String` attributes namely `age`, `name` and `designation`.

Save the application. Expose the application service as a `Web-service` with the name `EmployeeBPMWS` that will have `createEmployee()` exposed. Save, generate, build and deploy the application.

Once deployed, we can see the `EmployeeBPMWS` in the `WebserviceNavigator`.

We can consume this application service in process in two ways. First, using the service groups option and the second is through creating logical destinations.

For using the service groups we need to publish our service in the service registry under a physical system (representing the provider system).

Creating a Physical System

Now we will create a physical system which will have our service. This physical system will act as the provider with appropriate runtime settings and will be referred in the business scenario communication for enabling the consumer of the service to know the runtime settings of the provider system.

2. Select `Provider Systems`.
3. Click `New` button.
4. Select `System Type` to be `Java`. 
5. Using the value help select the System Name and Host (name of the provider system in which our service resides on).

6. Click Next and provide the authentication details for accessing WSDL.

   [Image of a system connection with a System Name and Host selection dialog]

   Enter the credentials of a service user for the system that has the permissions to access service metadata like WSDL.

   Username: [Redacted]
   Password: [Redacted]
   Confirm Password: [Redacted]

7. Click Next.
8. In the service search settings, select Multiple Services and Service Registry. Click Next.

This setting is to specify that the service should be searched in the service registry among other services.

9. Click Finish.

Creating a communication profile and assigning it to provider system

Now we will create a communication profile without any authentication.

1. Go to Communication Profile tab.
2. Click on New.

3. Enter a Profile Name (CUSTOM_PROFILE_WITH_NO_AUTHENTICATION) and a description. Click Next.
4. In Security, for Authentication Method check None (default setting).

5. Click on Finish.
6. Go to Provider Systems. Select the provider system, we just created and click Edit.

7. Click on the value help near Profile Name and select the CUSTOM_PROFILE_WITH_NO_AUTHENTICATION for communication profile.

8. Click ok and click Save.

Publishing service to the service registry

1. Go to the webservice navigator using the link http://<host_name>:{port}/wsnavigator
2. For Search Type, select Provider System and in Search For give *EmployeeBPMWS*. Click on Search.
3. Open the Service Information collapsible tray and copy the WSDL url.
4. Go to the service registry via the url http://<host_name>:{port}/sr.
5. Go to the Publish tab and paste the wsdl url in WSDL input field.
6. Click Next and again Next.
7. Select the Existing System radio button and select the provider system we now created.
8. Click on Finish and again Finish and confirm that you want to publish the service.

For checking whether you have done all the settings properly, you can go back to the System Connections → Provider Systems(http://<host>:<port>/nwa/systems), select the system we created and click on Ping System. This will retrieve all the services under that system and hence it should also list the service you published now into the service registry.
Integration with the process

Now we will integrate the webdynpro application and the application service with the process we created earlier.

Setting up dependency

The dependency towards the webdynpro component createemployee should be created for process component employeemanagement.

1. Go to the Development Infrastructure perspective.
2. Select the employeemanagement dc and in the Component Properties select the Dependencies tab.
3. Click on Add button.
4. Go to MyComponents and check the createemployee dc.

5. Click Next, check all the three dependency options and click on Finish.

Creating Dependencies
- Configure details of new dependencies

Creating and assigning task to human activity
Go to the process composer perspective and open the process diagram of EmployeeCreationProcess.

1. Right click on the Tasks and select New.
2. Enter name as CreateEmployeeUI and click Finish. The task will be opened.
3. In User Interface, click on Choose.
4. Select the Dev. Component \( \rightarrow \) createemployee and then select the public part \( \rightarrow \) EMPLOYEE_COMP and click on Next.

6. Similarly select the component \( \rightarrow \) CreateEmployee and select the Interface View \( \rightarrow \) CreateEmployeeInterfaceView and click Next.
7. For completion event, select the event we created in webdynpro, *InputComplete* and click *Finish*.

8. Select the *Roles* tab and click on *Choose* under the *Potential Owners*.

---

**Select a UI Component**

**UI Component**
Select a Completion Event and Error Event (optional)

- **Dev. Component:** createemployee
- **Public Port:** EMPLOYEE_COMP
- **Completion Event:**
  - **Name:** InputComplete
- **Error Event:**
  - **Name:**

---

**Potential Owners**

Define the default list of potential owners for this task:

- **Choose one or more UME principals**
  - **Principals:** (Empty)
- **Use an expression**
  - **Expression:**

**Excluded Owners**

Define the default list of excluded owners for this task:

- **Choose one or more UME principals**
  - **Principals:** (Empty)
- **Use an expression**
  - **Expression:**
9. Under *Principal name* select *user* and enter a valid portal logon id and search (Authentication required).

![Image of Principal name selection](image1)

10. Once the search is over select the user and click on *Add*.

![Image of Add button](image2)

11. With this we have created the task and assigned a user who has permissions to execute it. Save the task.

12. In the process diagram, select *Create Employee* and in *Properties* select *Task* tab.
13. In the Task dropdown, select CreateEmployeeUI.

Next we should map the output of the activity to the process context. First we have to form the context.

14. Go to Data Types in the context and navigate to CreateEmployee type. Drag the Context and drop it into the pool in the process diagram.
15. Select the human activity and in properties, select Output Mapping. Drag UIResponse in Outputs of CreateEmployee and drop it to DO_Context of the Process Context so that the link will be formed.
Assigning interface to the automated activity

First we have to import the wsdl url.

1. Right click on employeemanagement ➔ process modelling ➔ service interfaces ➔ WSDL Files and select Import WSDL. Select the Remote Location option and paste the WSDL url (EmployeeBPMWS' wsdl url). Click Next.
2. Choose the option Create New. In Name field give EmployeeGroup and give some description.

3. Click Finish. With this we have created a service group which will be created in server after deployment. We have to assign a provider system for this service group at runtime in the nwa. In this case the provider system will be the one we formed earlier.

4. Select the automated activity and in Properties, select Interface.

5. Select the following from Service Interface dropdown and operation dropdown. Select Use Service Group.

   - **Service Interface**: EmployeeBPMWS
   - **Operation**: createEmployee
   - **Use service group**: EmployeeGroup
Note: We can also use Logical Destination. In that case, we should have created logical destination for the service previously. If we use logical destination we need not create Provider Systems and need not go for Business scenarios. We need not publish the service in service registry if we go for logical destinations. We just need to give the name of destination we created in the input field Logical Destination.

6. Select Input Mapping and map the elements of DO_Context to that of createEmployee ⇒ createEmployeeReqMsg by dragging and dropping.

7. Go to development infrastructure perspective. Build and deploy the employeeManagement component.
Running the process

If we are using service groups instead of logical destinations we need to do one more configuration in netweaver administrator. The service group we formed in the design time would have been created after deployment. We have to assign a provider system to the service group. This can be done in two ways. One via Application Communication (http://host:port/nwa/appcomunication) and second is through Business Scenario Communication (http://<host>:<port>/nwa/businesscfg). In this article we will proceed with second type.

2. We can use existing scenarios also. But here we will create a new one by clicking on New button.
3. Enter the following details and click Next.

Business Scenario Communication:

Name: * Employee_Business_Scenario
Description: Business Scenario for employee management

4. Now in the Consumer side, we will assign, who will be the consumers in this particular business scenario. The consumers will be identified via the service groups created by them. So using Add button, create a consumer. On searching, we can find the EmployeeGroup we created during design time. Select it and click OK.
5. We have to assign a provider system for this consumer. Click Assign Provider System and select the provider system we created already.

6. Click Next and click Add. Search and select the EmployeeBPMWS service.

7. Click Finish.

With this you can start the process and test the application giving appropriate input and employee created can be tested in the service browser. For more information on webdynpro application development for bpm, starting and executing the process, please refer to SAP NetWeaver Business Process Management – End-to-End Process Implementation Sample.
Related Content

- **SAP NetWeaver Business Process Management – End-to-End Process Implementation Sample**
- For more information, visit the [Business Process Modeling homepage](http://business.processmodeling.com).
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