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Module 2: Process Innovation

Mediating Services

Process Composition

Process Innovation

Service Consumption

Services Discovery

Service Provisioning

enterprise SOA Operations

enterprise SOA Lifecycle Management
Module 2: Process Innovation

Target:

- Understand the basics of the Business Process Modeling Notation (BPMN)
- Understand the concept and the usage of the Process Composer of SAP NetWeaver BPM
- Understand the Advantages of Business Rules
- Understand the basics of Rule Modeling within SAP NetWeaver Business Rules Management
Agenda

1. Business Process Modeling Notation (BPMN)

2. The Investment Approval Process

3. Business Rules

4. Summary
Introduction to BPMN

“The primary goal of BPMN is to provide a notation that is readily understandable by all business users, from the business analysts that create the initial drafts of the processes, to the technical developers responsible for implementing the technology that will perform those processes, and finally, to the business people who will manage and monitor those processes. Thus, BPMN creates a standardized bridge for the gap between the business process design and process implementation.”

OMG, BPMN 1.1 Specification

- First published in 2002
- Official standard of the Object Management Group (OMG) since 2006
- Current Version: BPMN 1.1
**Activity:**
- A step in the process
- Represents work or action performed

**Gateway:**
- Controls flow branching, merging and parallel actions
- Pure logic – does not do the decision itself

**Event:**
- A signal that „something has happened“
- Can start, pause and resume or interrupt and redirect a process or activity
Business Process Modeling Notation - Activities

Human Activity:
- Activity that has to be processed by a natural Person

Automated Activity:
- Activity that is processed by a system

Sub-Process:
- A compound (decomposable) Activity that holds a sub-process modeled with BPMN – can be shown collapsed or expanded
Business Process Modeling Notation - Gateways

Exclusive Choice:
- Only one path can be taken
- Each Gate has a boolean data expression

Parallel Split (also AND gateway):
- Splits sequence flow in parallel stream

Event based Choice:
- Only one path can be taken
- Decision is based on events, not data condition

Uncontrolled Merge:
- Merge exclusive alternative incoming sequence flows to one outgoing sequence flow

Parallel Join:
- Merge parallel alternative incoming sequence flows to one outgoing sequence flow
### Business Process Modeling Notation – Events

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start Event:</strong></td>
<td>Creates new process instance or indicates start of a sub-process</td>
</tr>
<tr>
<td><strong>Intermediate Timer Event:</strong></td>
<td>Pause the sequence flow of a process or a sub-process for/until a specific time</td>
</tr>
<tr>
<td><strong>Intermediate Message Event:</strong></td>
<td>Wait for and receive a message</td>
</tr>
<tr>
<td><strong>Intermediate Error:</strong></td>
<td>Aborts activity on error</td>
</tr>
<tr>
<td><strong>End Event:</strong></td>
<td>Ends a sequence flow in a process or a sub-process</td>
</tr>
<tr>
<td><strong>Termination:</strong></td>
<td>Stop the process or sub-process immediately</td>
</tr>
</tbody>
</table>
Pool:
- A Pool contains a single „BPMN- Process“
- A sequence flow is constrained in exactly one pool
- A Process diagramm may contain several pools
- Differentiation between „active“ and „inactive“ (descriptive) pools
- Only one active pool per model
- A pool generally represents a logical collection of roles, organizational units and systems

Lane:
- A pool may be divided into lanes
- A lane generally represents a role or an organizational unit

Orchestration:
- Modeling a process **flow of control** in a single internal (active) pool
- Representation as **sequence flow**

Choreography:
- Modeling interaction between pools (not flow of control!)
- Representation as **message flow**
1. Business Process Modeling Notation (BPMN) – Sequence Flow

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4. Summary
Business Rule Web Service:
- Modelling the decision table – SAP NetWeaver BRM

Process Model:
- Modeling the Process – SAP NetWeaver BPM
Investment Approval Process in BPMN:

- **Two Pools:**
  - one internal (active) pool (own company)
  - one external (inactive) pool (supplier)

- **Four Lanes within internal pool:**
  - one lane for purchase requester role
  - one lane for external IT equipment prov.
  - one lane for purchase approver role
  - one lane for purchasing system

- **Five Human Activities:**
  - enter requirements (Requester)
  - derive product from requirements (IT eq. prov.)
  - review purchase request (Approver)
  - review Approver’s decision (Requester)
  - view PO confirmation (Requester)

- **Two data inductive (automated) Activities**
  - check necessity of Approval

- **Two data inductive (automated) Activities**
  - create purchase order
  - save change history
Modeling the process in SAP NetWeaver BPM

- Graphical modeler based on BPMN
  - Eclipse-based
  - Support key process concepts (workflow, event, task, context, roles, UI) throughout their lifecycle
  - Combine human interaction and system integration in one model

- Embedded in SAP NetWeaver CE
  - Integrated composition experience
  - Common UI technology
  - Service-based connectivity
- Modeling the process -

Process Composer (NWDS)
Agenda

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## Business Rules Overview

### What are business rules?
- Business rules represent the policies, guidelines that drive operational business decisions
- Business rules are owned by Business, not by IT

### Common Kinds of Business Rules:

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validation Rules</td>
<td>Claim Validation, Loan Application Validation</td>
</tr>
<tr>
<td>Rate Calculation Rules</td>
<td>Computation of Taxes, Interest Rates, Sales Commissions, Premiums, Bonuses, Duties</td>
</tr>
</tbody>
</table>
| Decision Rules                   | Is Applicant Eligible for a Loan Product
Can this good be cleared by Customs? |
| Recommendation Rules             | Marketing Promotions, Medical Recommendations, Online Product Chooser    |
| Personalization Rules            | Website Personalization, Product Personalization, Relationship Personalization |
| Internationalization and Localization Rules | International Products e.g. Maintaining similar Insurance products across countries
Cross border Custom Duties         |
| Exceptions and Special Rules     | Exceptions, Special Accounts, Special Arrangements, etc.                |
| Optimization and Configuration Rules | Product Configuration, Deal Configuration                              |
Why Business Rules Management?

- Management and monitoring of rules is a critical component of BPM
- Externalize business rules from application code
- Encapsulate rules as re-usable services
- Increases flexibility, efficiency and control
- Serving business and IT

Why NetWeaver BRM?

- Robust tool for central business rules management
- Integrated path from process to rule
- Perfect fit into SAP NetWeaver Composition Environment
- Eclipse based rule composition

Many Ways to Model Rules

- Model Rules in the Context of a Business Process using the Process Composer
- Model rules as an independent rules project using the Rules Composer

Many Ways to Integrate

- Use Rules through an Automated Activity
- Model Functions driven by Business Rules
- Use rules based mapping transformations in a process
- Use rules based functions for Gateway decisions
Investment Approval Process: 
Rule: Necessity for Approval

**Requirement:** Automated decision if an approval for the purchase order is needed or not based on the amount of the order and the country of the requestor.

**Rule Logic:**

1. Check the country of the requestor.

2. Based on the country of the requestor:
   - Check if the order amount is below or above a country specific max. value.
   - If it is below: Return „false“.
   - If it is above: Return „true“.

This rule is a company wide defined business rule that should be used for EVERY purchase order in every possible scenario. Therefore this rule should not be a direct part of this specific process. Instead it should be exposed as a reusable component.
DEM0

- Modeling a Business Rule -

Rules Composer (NWDS)
1. Business Process Modeling Notation (BPMN) – Sequence Flow

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4. Summary
Business Process Modeling Notation is an easy way of modeling Business Processes from different perspectives (Business/IT)

The Process Composer of SAP NetWeaver BPM offers a very fast and easy possibility to create detailed process models

Business Rules are important and often needed elements within business processes

SAP NetWeaver Business Rules Management (BRM) offers an easy and integrated way to model Business Rules, without hardcoding – securing reusability of rules
Thank you!