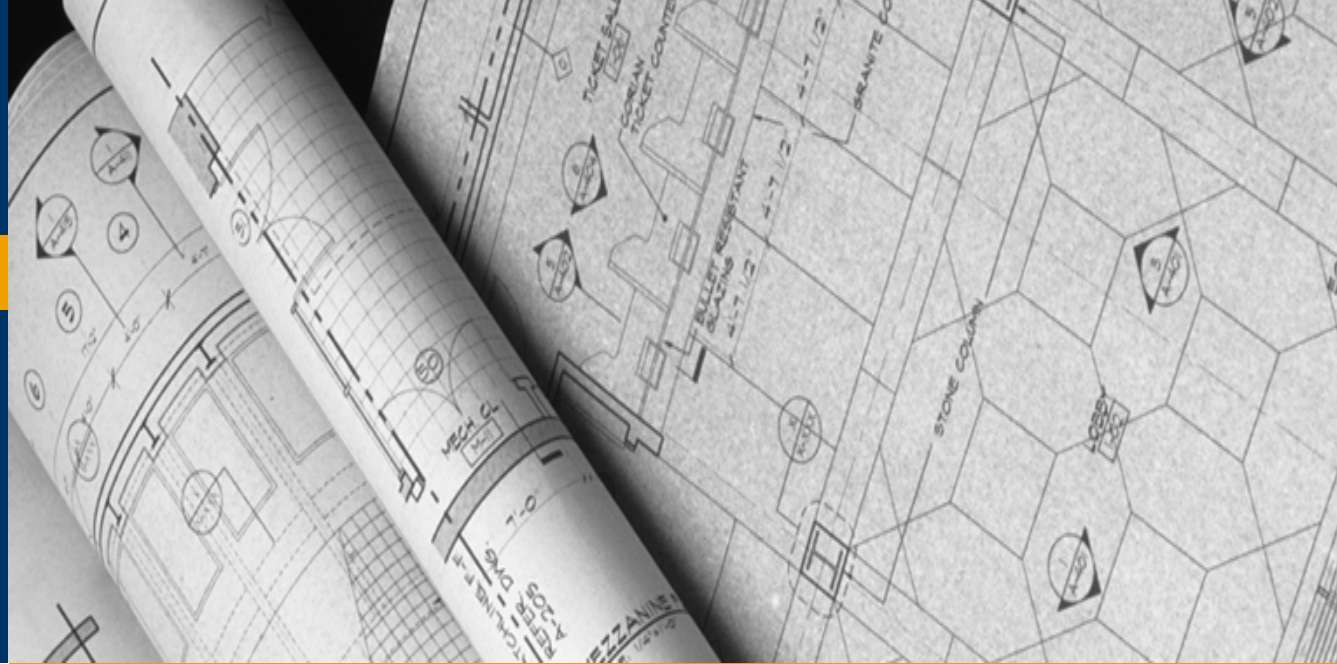


# SAP NetWeaver Process Integration 7.1 – Overview

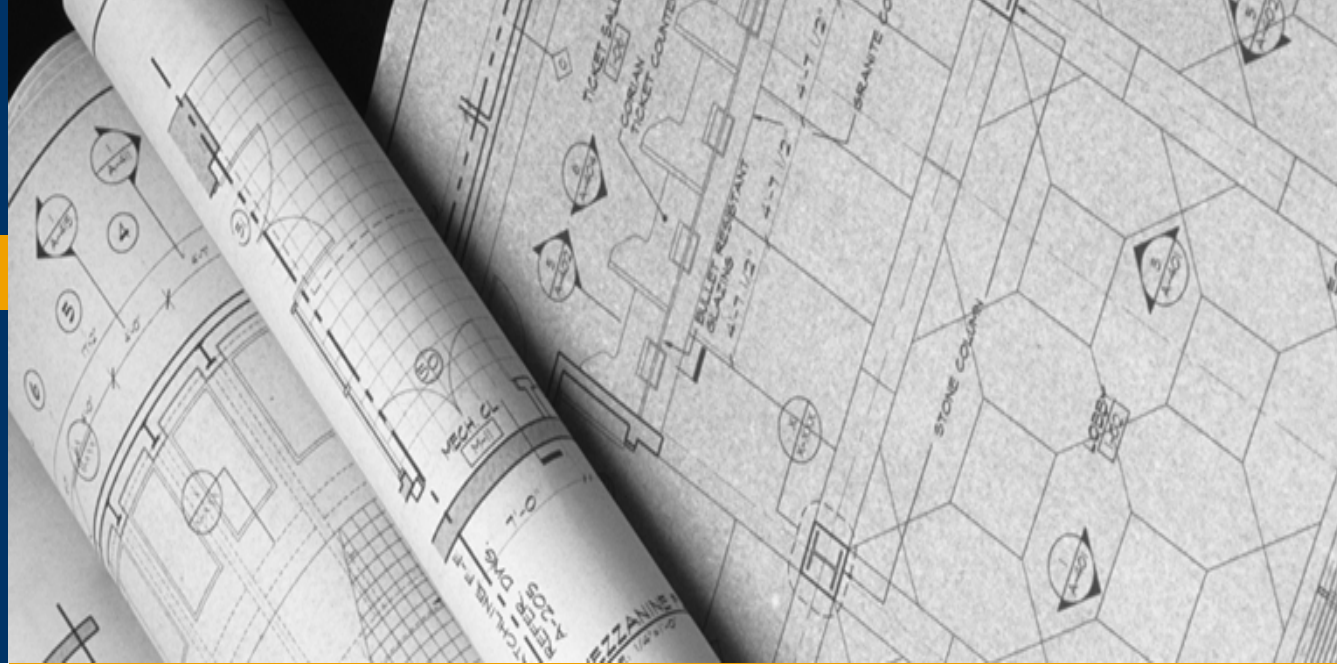
**SAP NetWeaver Product Management, SAP AG**  
**October 2007**

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## SAP NW PI 7.1: Major Enhancements

### Summary and Further Information

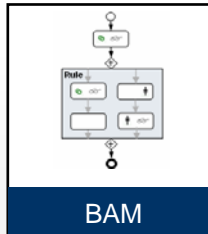
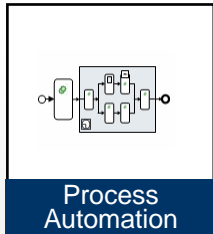


# SAP NW PI 7.1: Major Enhancements

## Summary and Further Information

# New Capabilities of SAP NW PI 7.1 – Part 1

## User Interaction (for example, Business Task Management)



### Service Bus

Dynamic Routing

Transformation

Connectivity

Reliable Messaging and Queuing

### Infrastructure Services

### Java EE5 / ABAP

Software Lifecycle  
Security  
User Management

Scalability  
High Availability  
Archiving

Configuration  
Monitoring  
Administration

### Process Integration

B2B Partner

SAP

3rd Party  
Application

3rd Party  
Middleware

## Enterprise Services Repository

- Enhanced Design Capabilities
- Service Enabling
- Services Registry – UDDI V3.0

## Additional WS Standards

- WS Reliable Messaging
- WS Policy
- WS Security and SAML

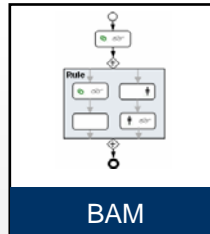
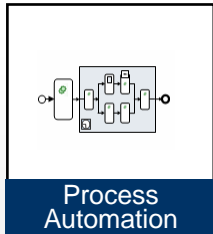
## High Volume Support

- Local processing in Adapter Engine
- Message packaging
- Improved performance for ccBPM
- Reduced sizing



# New Capabilities of SAP NW PI 7.1 – Part 2

## User Interaction (for example, Business Task Management)



### Service Bus

Dynamic Routing

Transformation

Connectivity

Reliable Messaging and Queuing

### Infrastructure Services

Software Lifecycle  
Security  
User Management

Scalability  
High Availability  
Archiving

### Java EE5 / ABAP

Configuration  
Monitoring  
Administration

## Process Integration

B2B Partner

SAP

3rd Party  
Application

3rd Party  
Middleware

## Event provisioning and consumption for BAM

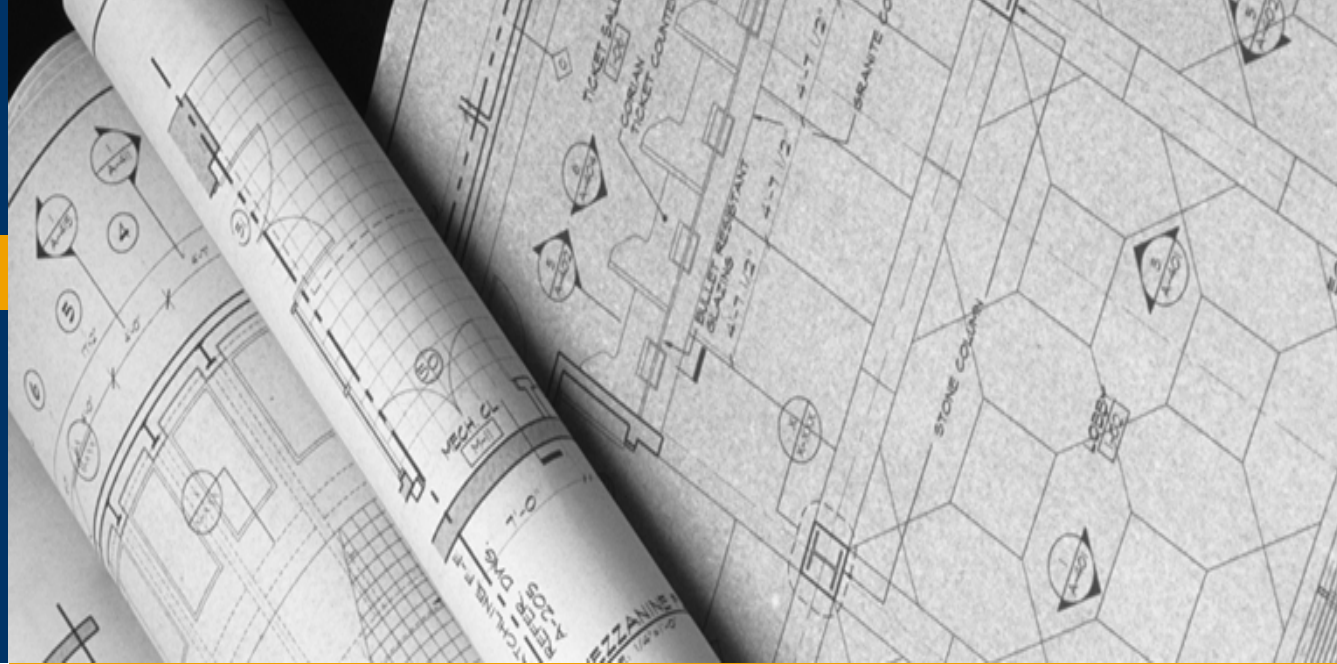
- Local container
- Subscription and handling of business process events
- Milestone Monitoring

## Next steps towards central configuration and administration

## Functional Enhancements

- XML payload validation
- BPEL modeling enhancements

.....



**Enterprise Services Repository**

**Additional WS Standards & High Volume Support**

**Business Process Management**

**Further Enhancements**



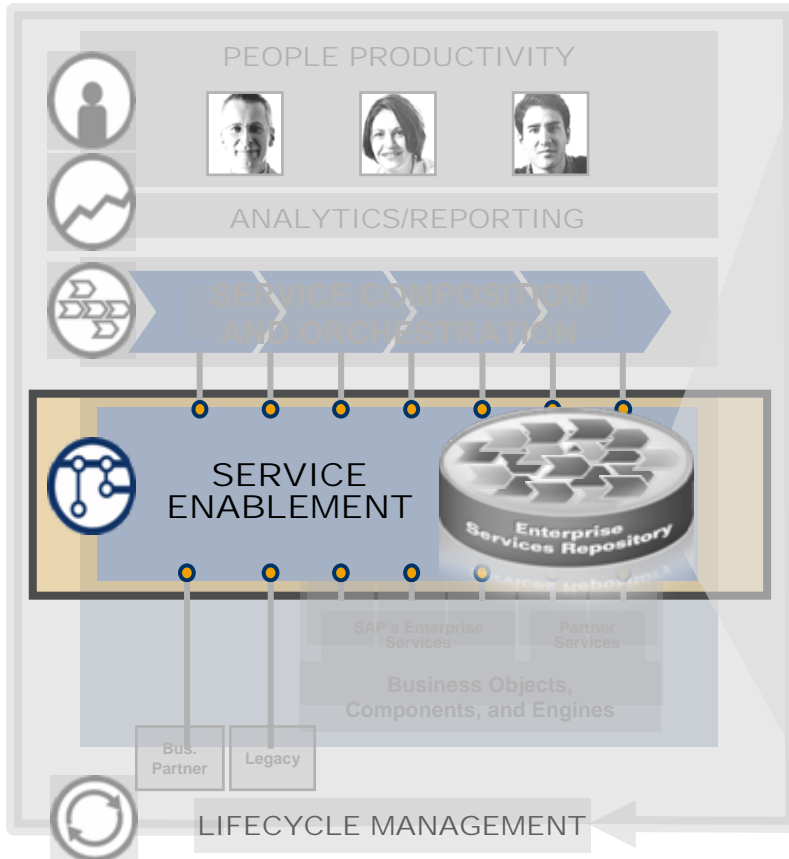
## **Enterprise Services Repository**

**Additional WS Standards & High Volume Support**

**Business Process Management**

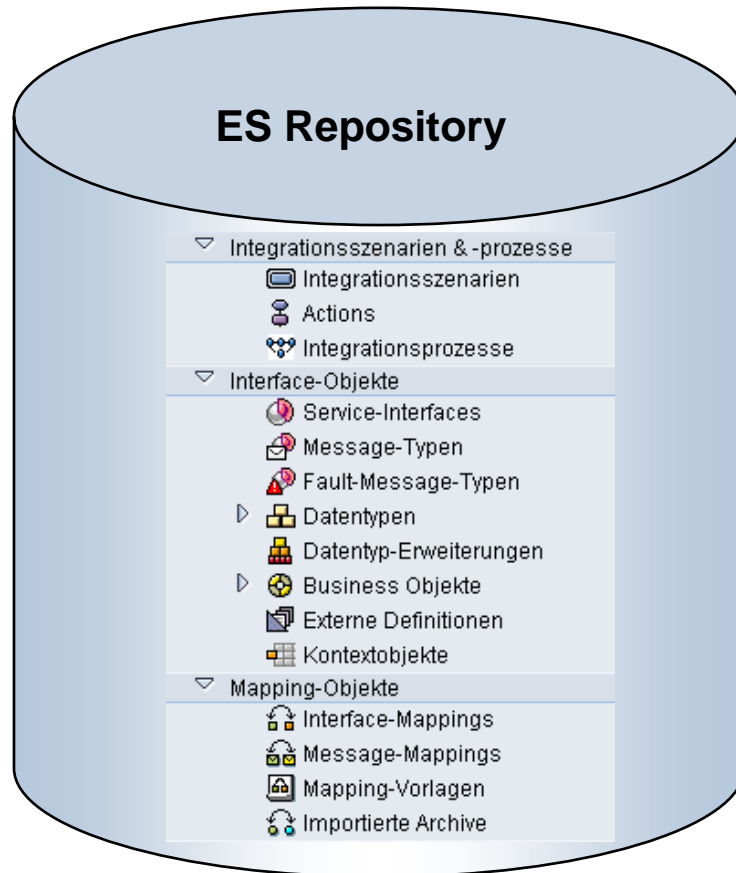
**Further Enhancements**

## Enterprise SOA



- The ES Repository is based on the Integration Repository
- The ES Repository stores objects, such as GDTs and message interfaces
- Re-use existing data and leverage existing investment
- New and enhanced objects in the ES Repository include
  - Process Component Models
  - Service Interfaces

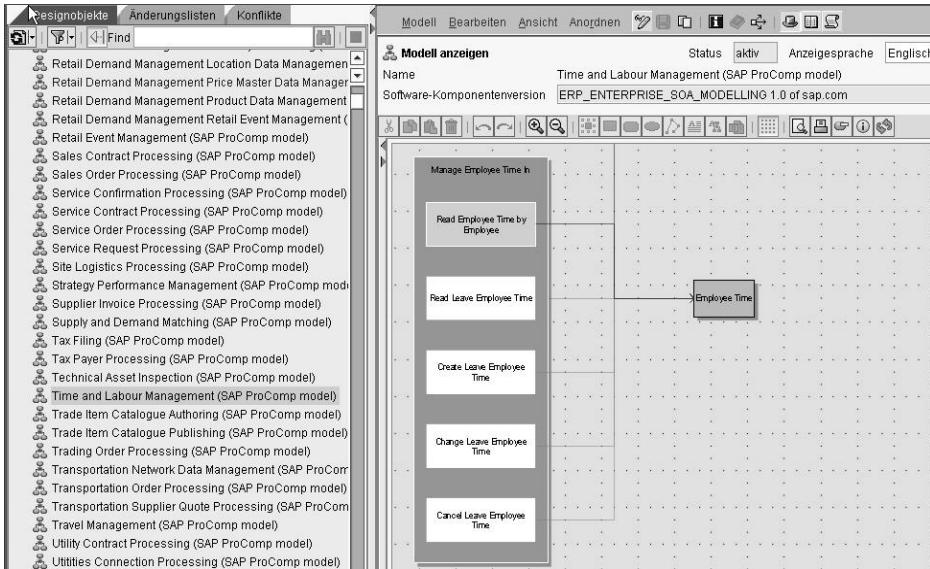
The ES Repository provides a comprehensive metadata repository that can be used for SOA provisioning



Objects in the ES Repository include:

- Integration Scenarios
- Process Component Models
- Service Interfaces (Enterprise Services)
- Global Data Types (CCTS based)
- Interface Mappings
- Executable Integration Processes (BPEL)

# Process Component Models in the ES Repository



You Are Here: Home > Sales Order Processing

## Sales Order Processing

Process Component In ERP

### Definition

Sales Order Processing handles customers' requests to a company for delivery of goods or services at a certain time. The request is received by a sales area, that is then responsible for fulfilling the contract.

### Use

The process component Sales Order Processing enables the provision of applications that a seller can use to create, display, and change sales orders. The seller can also run trend analyses for customers and get an overview of sales orders that are blocked for delivery.

### Enterprise Service Interfaces

Manage Sales Order In	The inbound service interface ManageSalesOrder contains the operation that the sales clerk can use to process sales orders in sales and distribution.
Query Sales Order In	The inbound service interface SalesOrderProcessingQuerySalesOrder comprises operations that sellers can use to search for sales orders and sales order items according to different criteria.

- SAP Product Available
- Partner Product Available
- ▶ SAP Product Available with Future Releases
- ▶ Partner Product Available with Future Releases
- Future Focus

Based on SAP's process component architecture methodology

References to

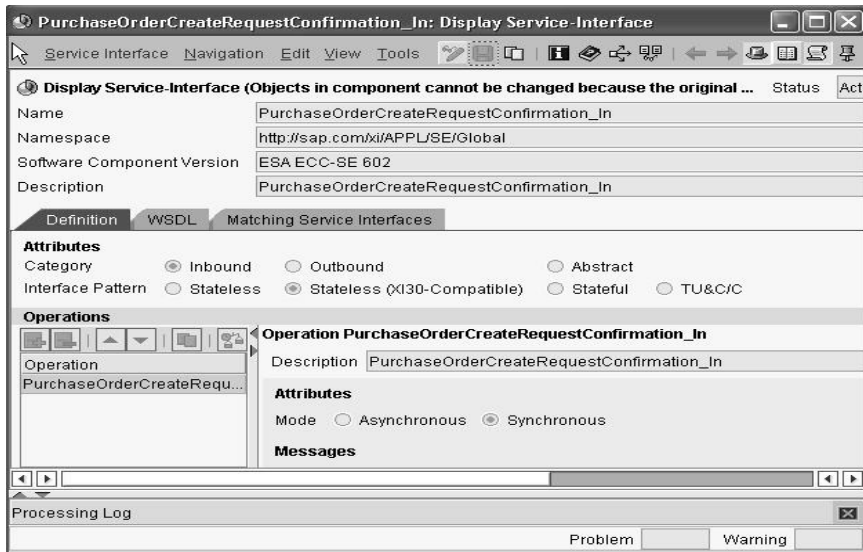
- Integration Scenario Models
- Process Components
- Business Objects
- Service Interfaces
- Global Data Types

Functionality of Process Components exposed through enterprise services

The Process Components in the SAP Business Suite are described in SDN

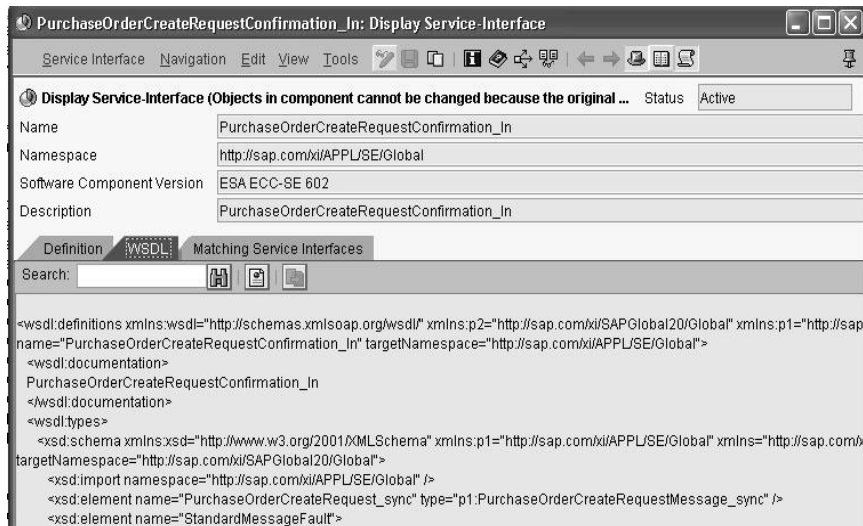


# Enterprise Services built in the ES Repository

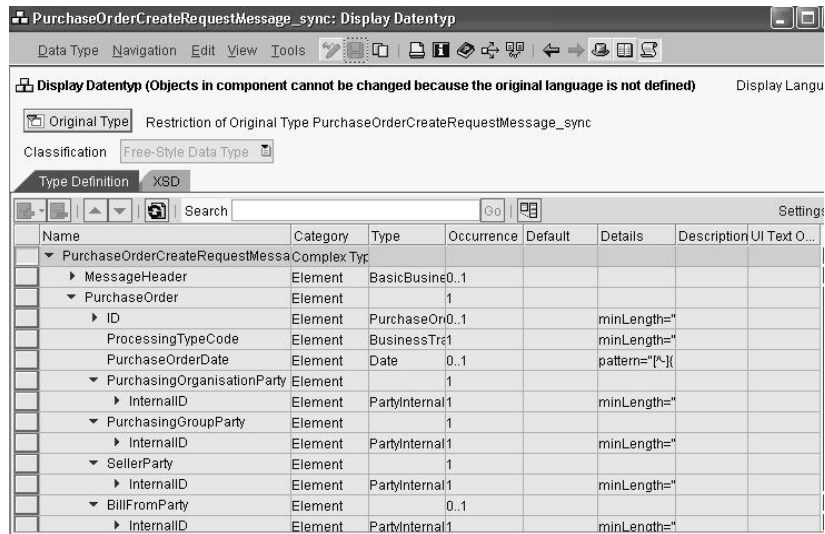


## Enterprise Services:

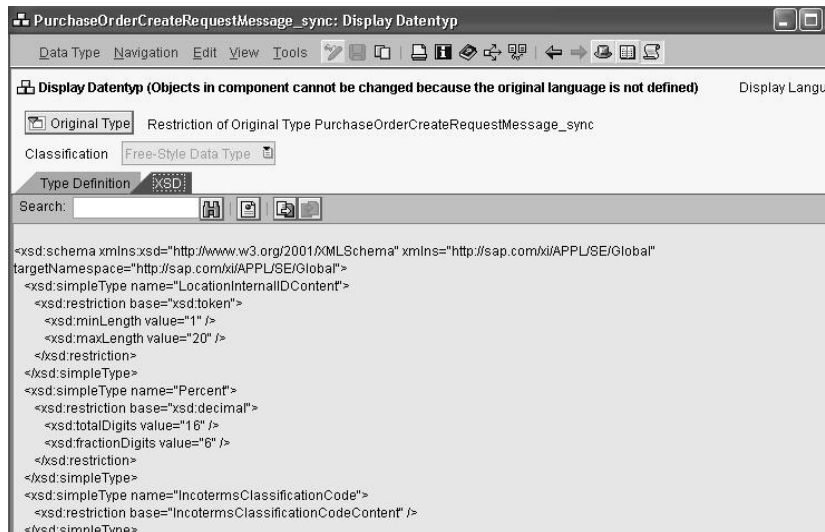
- Are mapped to the Service Interface object in the ES Repository
- Are built using a consistent enterprise model based on
  - ◆ GDTs
  - ◆ Process Components
  - ◆ Business Objects
- Ensure quality and stability
- Are based on open standards
- Are well documented



# Global Data Types – Building blocks for Service Interfaces



Name	Category	Type	Occurrence	Default	Details	Description UI Text O...
PurchaseOrderCreateRequestMessage	Complex Type					
MessageHeader	Element	BasicBusine0..1				
PurchaseOrder	Element		1			
ID	Element	PurchaseOrn0..1			minLength=	
ProcessingTypeCode	Element	BusinessTrc1			minLength=	
PurchaseOrderDate	Element	Date	0..1		pattern="[- ]	
PurchasingOrganisationParty	Element		1			
InternalID	Element	PartyInternal1			minLength=	
PurchasingGroupParty	Element		1			
InternalID	Element	PartyInternal1			minLength=	
SellerParty	Element		1			
InternalID	Element	PartyInternal1			minLength=	
BillFromParty	Element		0..1			
InternalID	Element	PartyInternal1			minLength=	



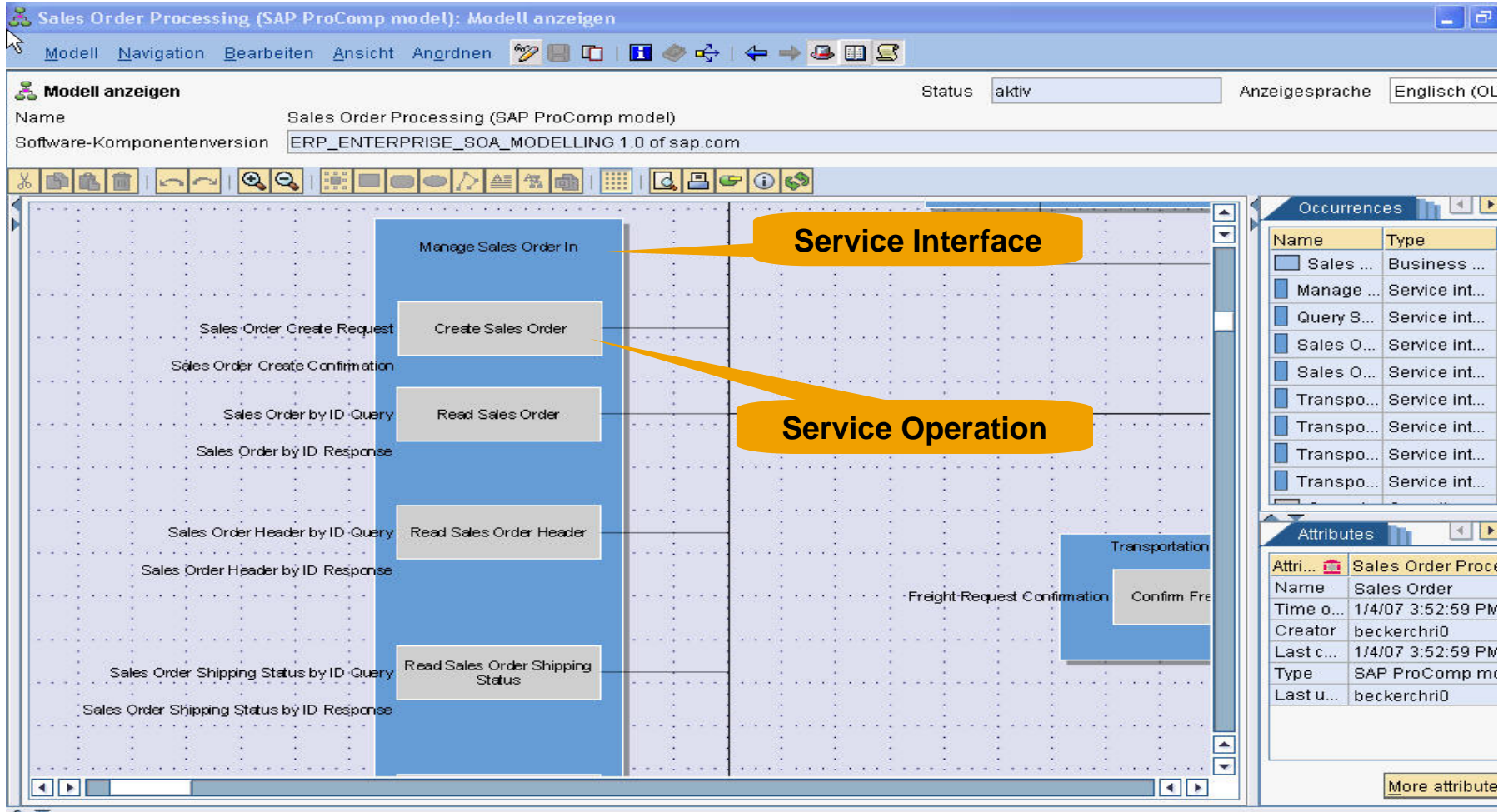
```
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="http://sap.com/xi/APPL/SE/Global"
targetNamespace="http://sap.com/xi/APPL/SE/Global">
<xsd:simpleType name="LocationInternalIDContent">
<xsd:restriction base="xsd:token">
<xsd:minLength value="1" />
<xsd:maxLength value="20" />
</xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="Percent">
<xsd:restriction base="xsd:decimal">
<xsd:totalDigits value="16" />
<xsd:fractionDigits value="6" />
</xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="IncotermsClassificationCode">
<xsd:restriction base="IncotermsClassificationCodeContent" />
</xsd:simpleType>
</xsd:schema>
```

## Global Data Types are:

- Defined company-wide based on open standards (ISO 15000-5, UN/CEFACT CCTS)
- Defined in the ES Repository
- Approved SAP-wide using the Governance process
- Reusable semantic building blocks for service interfaces and message types

# Process Component Models

- Process component architecture models enable SOA governance
- Drill down from high-level models to service interfaces and operations



The screenshot displays the SAP Services Registry interface. At the top, there are navigation tabs: Enterprise Services, Search, Browse, Browse Groups, Classify, and Management. Below this is a search criteria section with fields for Service Name (containing 'Purchase'), Service State (set to 'All'), and Deployment Units on Physical System (set to 'All'). There are buttons for 'Find' and 'Clear Filter'. The main area shows '12 Service Definitions found:' with a table listing services. The first row is highlighted in yellow.

Name	Namespace	Description	Physical System Name
PurchaseOrderByIDQueryResponse_In	http://sap.com/xi/APPL/SEGlobal	PurchaseOrderByIDQueryResponse	FU2
PurchaseOrderBySellerAndProductAndOrg...	http://sap.com/xi/APPL/SEGlobal	PurchaseOrderBySellerAndProductAndOrgDet	FU2
PurchaseOrderChangeRequestConfirmation...	http://sap.com/xi/APPL/SEGlobal	PurchaseOrderChangeRequestConfirmation	FU2
PurchaseOrderCreateRequestConfirmation_In	http://sap.com/xi/APPL/SEGlobal	PurchaseOrderCreateRequestConfirmation	FU2
PurchaseOrderItemByAccountAssignmentQR...	http://sap.com/xi/APPL/SEGlobal	PurchaseOrderItemByAccountAssignmentQR	FU2

Legend: - Implemented - With Endpoints - Modeled - Modeled in ESR

Details for service definition: PurchaseOrderByIDQueryResponse\_In

Details | Endpoints | Classifications

WSDL: [http://erp.es-workinplace.sap.com:80/sap/oc/srt/xi/sap/ecc\\_purchaseorder002qr?sap-client=800&wsdl=1.1&mode=sap\\_wsdl&scope=design-time](http://erp.es-workinplace.sap.com:80/sap/oc/srt/xi/sap/ecc_purchaseorder002qr?sap-client=800&wsdl=1.1&mode=sap_wsdl&scope=design-time)

Name: PurchaseOrderByIDQueryResponse\_In

Description: PurchaseOrderByIDQueryResponse

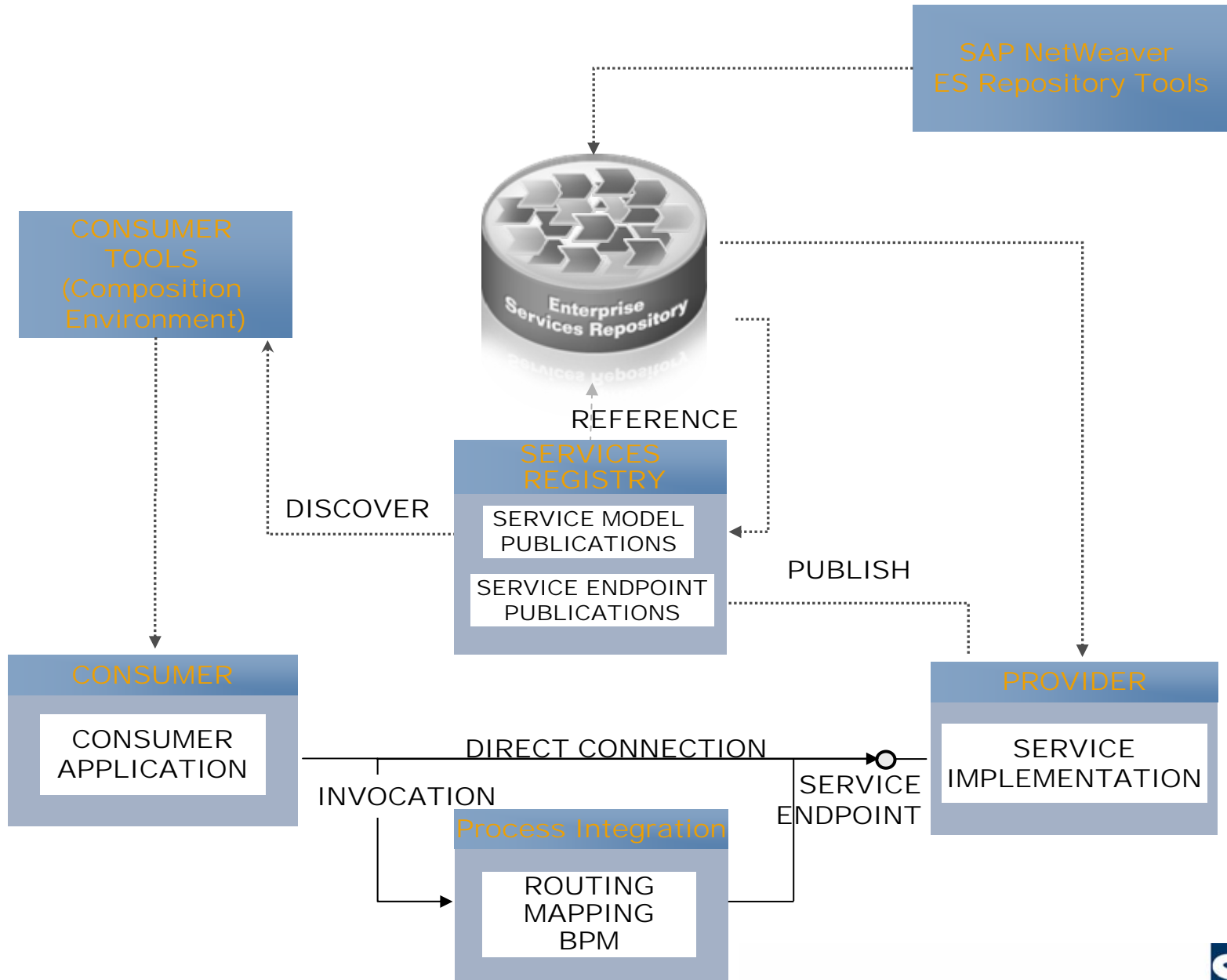
Technical Name: ECC\_PURCHASEORDER002QR

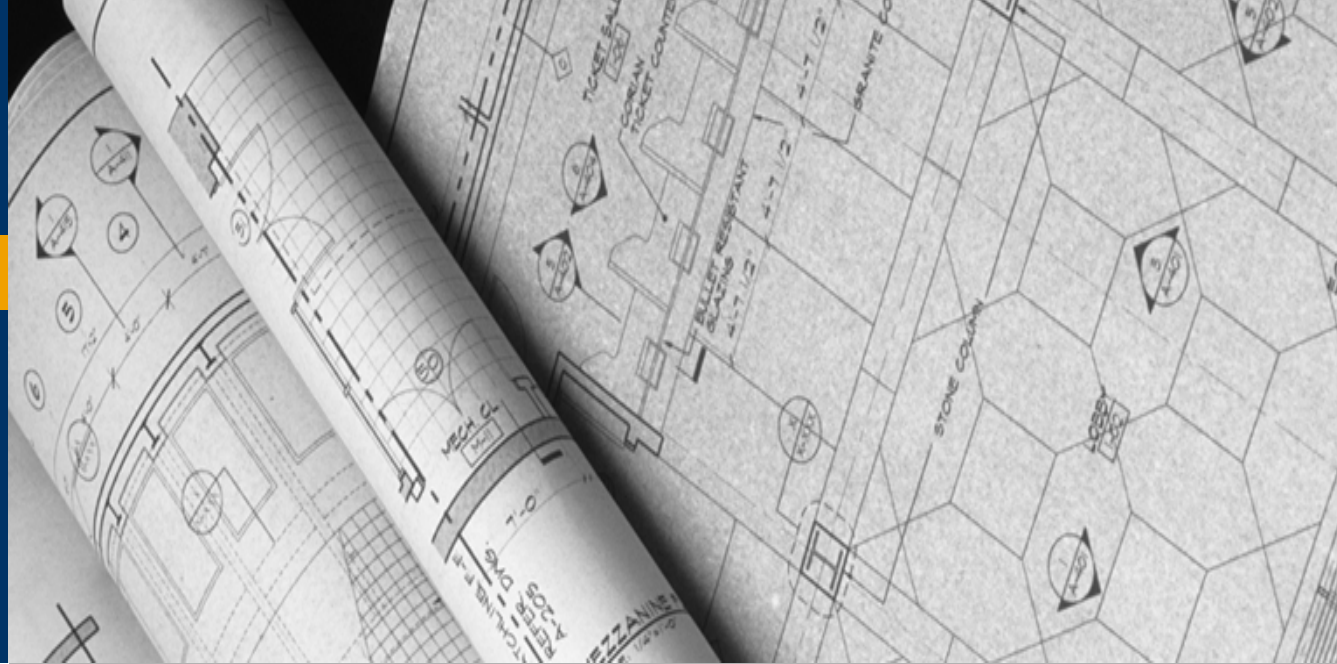
Documentation URL:

## Services Registry – Key Benefits

- Based on UDDI 3.0
- Naming standards and classifications
- Service evolution and versioning
- Classification system search
- Keyword search services
- Service management and governance
- Procedures for backend publications
- Procedures for client development
- Service configuration
- Documentation

# Enterprise Services Repository and Registry





**Enterprise Services Repository**

**Additional WS Standards & High Volume Support**

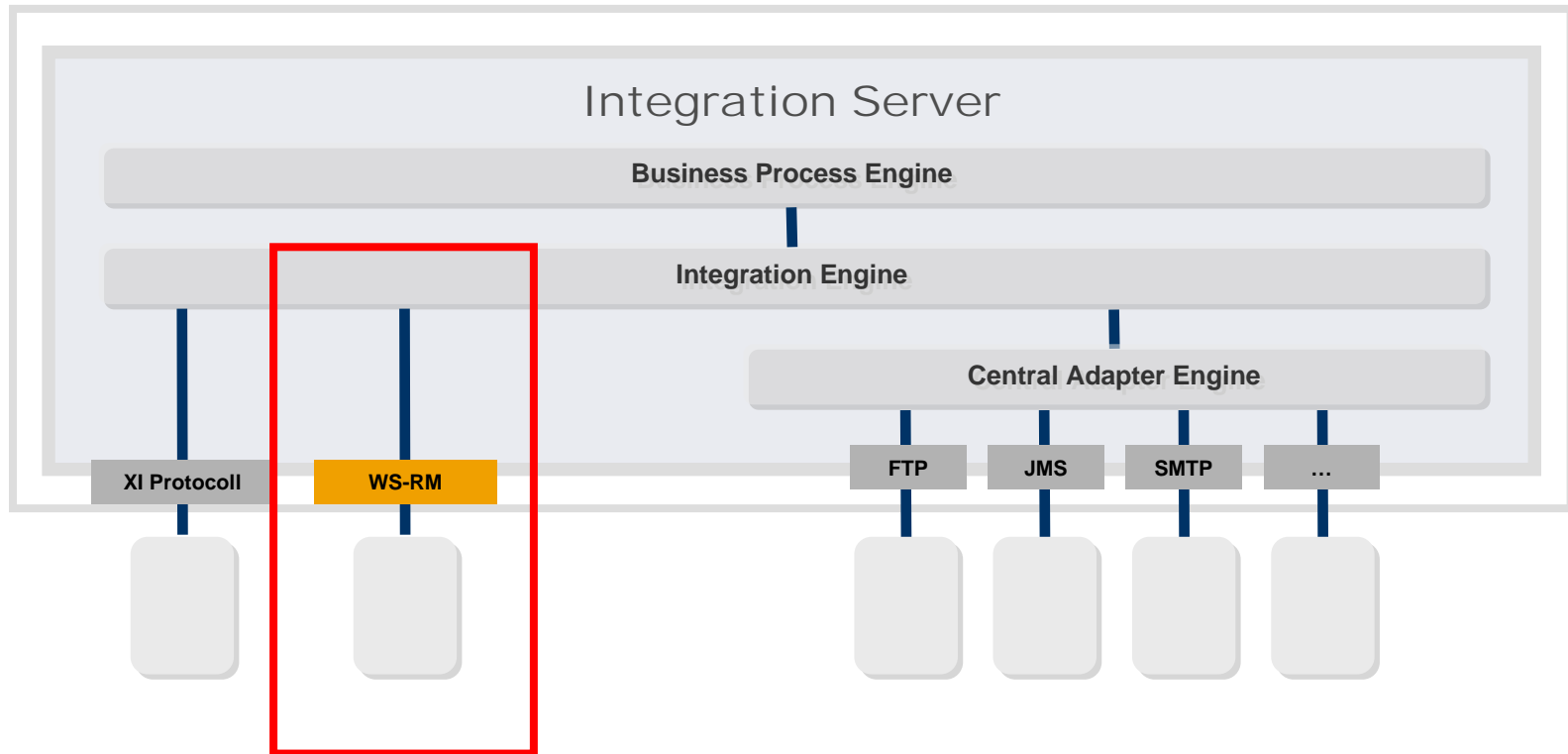
**Business Process Management**

**Further Enhancements**

# Web Services Reliable Messaging

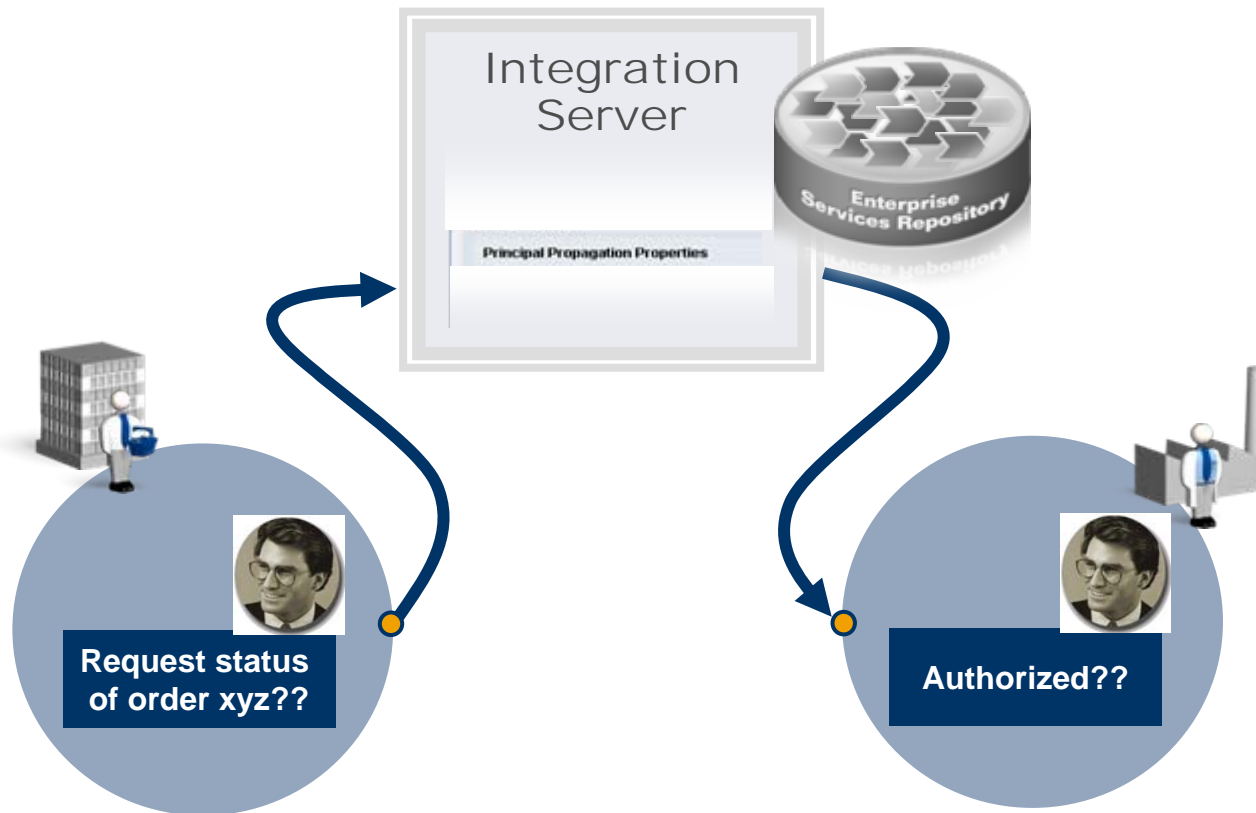
## Web Services Reliable Messaging (WS-RM)

- **Asynchronous messaging (EO, EOIO) based on open WS standard**
- **Native support through Integration Engine (w/o adapter)**



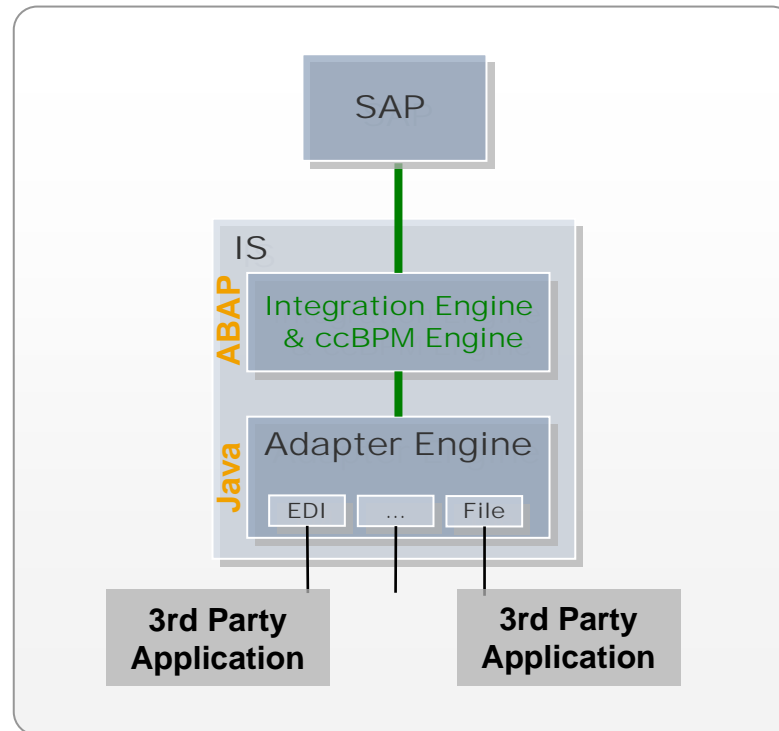
## Principle Propagation based on SAML

- Forward user context from sender to receiver
- Authorization check in receiving system based on original user



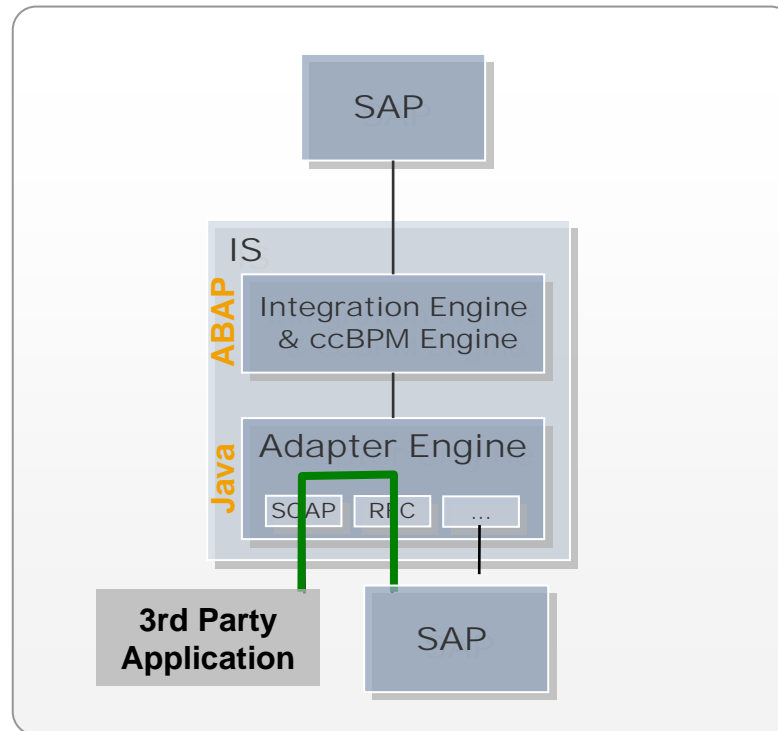
## Message Packaging

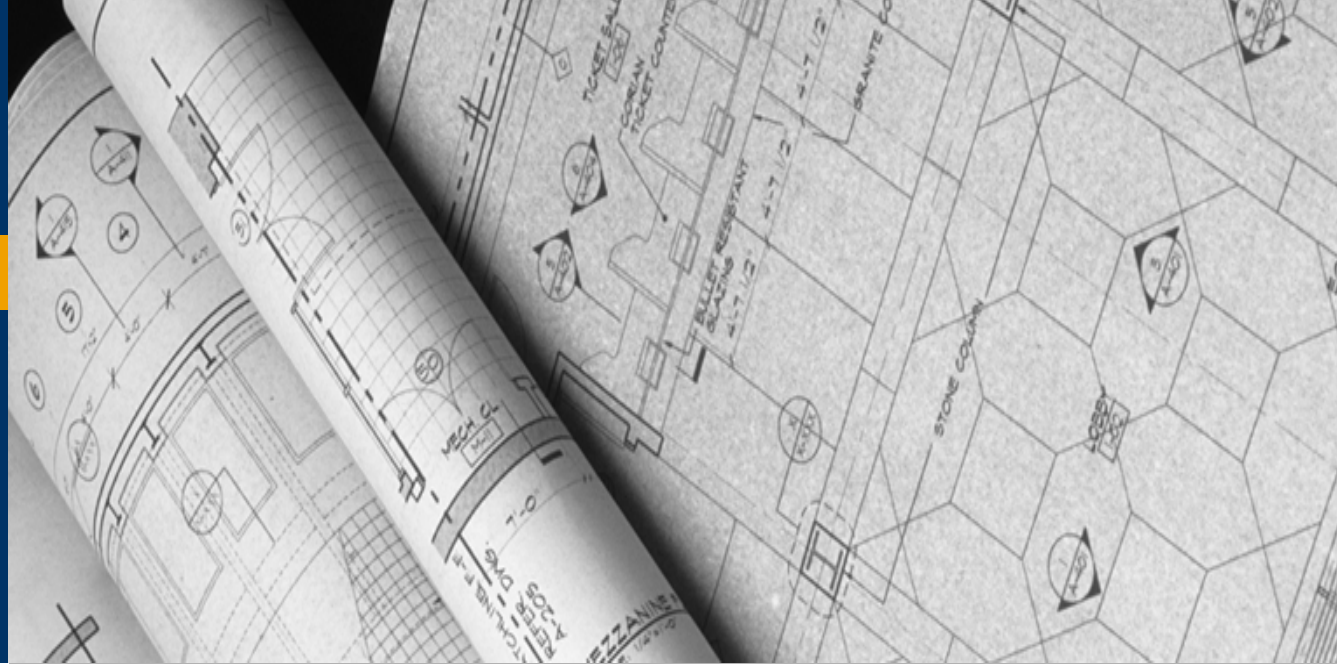
- Process bulk of messages in one service call (mapping, routing, ..)
- Reduce context switches
- Enable mass operations on database
- For async scenarios



## Local Processing in Adapter Engine

- **Natural evolution of adapter engine**
- **Provides mapping, routing to by-pass Integration Server**
- **Adapter to adapter communication**
- **For sync and async scenarios**





**Enterprise Services Repository**

**Additional WS Standards & High Volume Support**

**Business Process Management**

**Further Enhancements**

# Major Enhancements for Process Automation

The screenshot displays the SAP NetWeaver Process Automation Designer interface. The main window shows a process diagram titled 'Integrationsprozess bearbeiten' with a flow from 'start' to 'stop' through three parallel tasks labeled 'Leer1', 'Leer2', and 'Leer3'. The 'Properties' panel on the right is expanded to show configuration for a decision node, including fields for Name, Schrittname, Beschreibung, Bearbeiter, Titel für Anzeige, and Beschreibung für Anzeige. It also lists three 'Entscheidungsalternative' (decision alternatives) with their respective descriptions and outcome labels (Approve, Approved, Reject, Rejected, new, new requested). Below the main window, the 'Tasks' panel shows an 'Alert Category' configuration with priority and expiry time settings. A 'Text Editor' dialog is open in the foreground, displaying a message: 'Please verify the amount of Purchase Order # &po\_nr& and choose approve or reject|'. The dialog includes a 'Text Container' table with a single entry for 'po\_nr' of type 'xsd:integer' and a default value of '99'. The dialog also features 'Apply' and 'Abbrechen' buttons.

## Human interaction

- Generic user decision
- Language dependent texts for end-user display, enriched with variables
- Integration paradigm (design/ configuration)

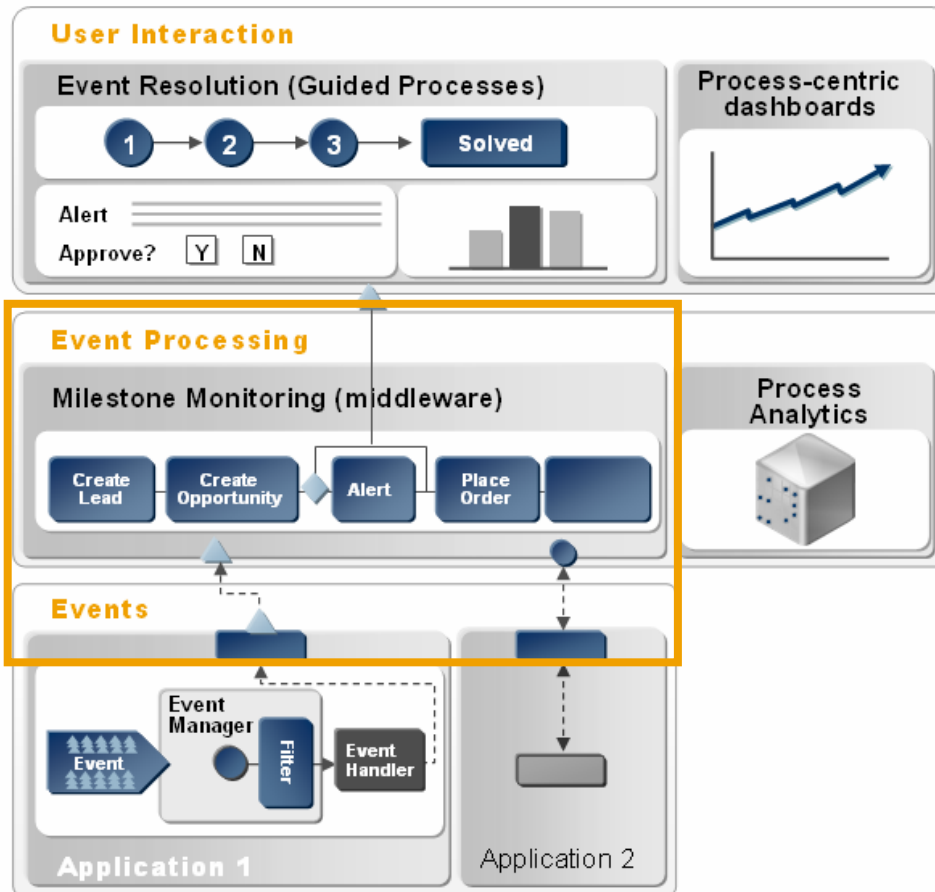
## Step groups (modeling enhancements)

## Configurable parameters

## BPEL adoption

- BPEL4WS 1.1
- WS-BPEL 2.0 Preview and implementation
- BPEL4People planned

# Event Provisioning and Consumption for BAM



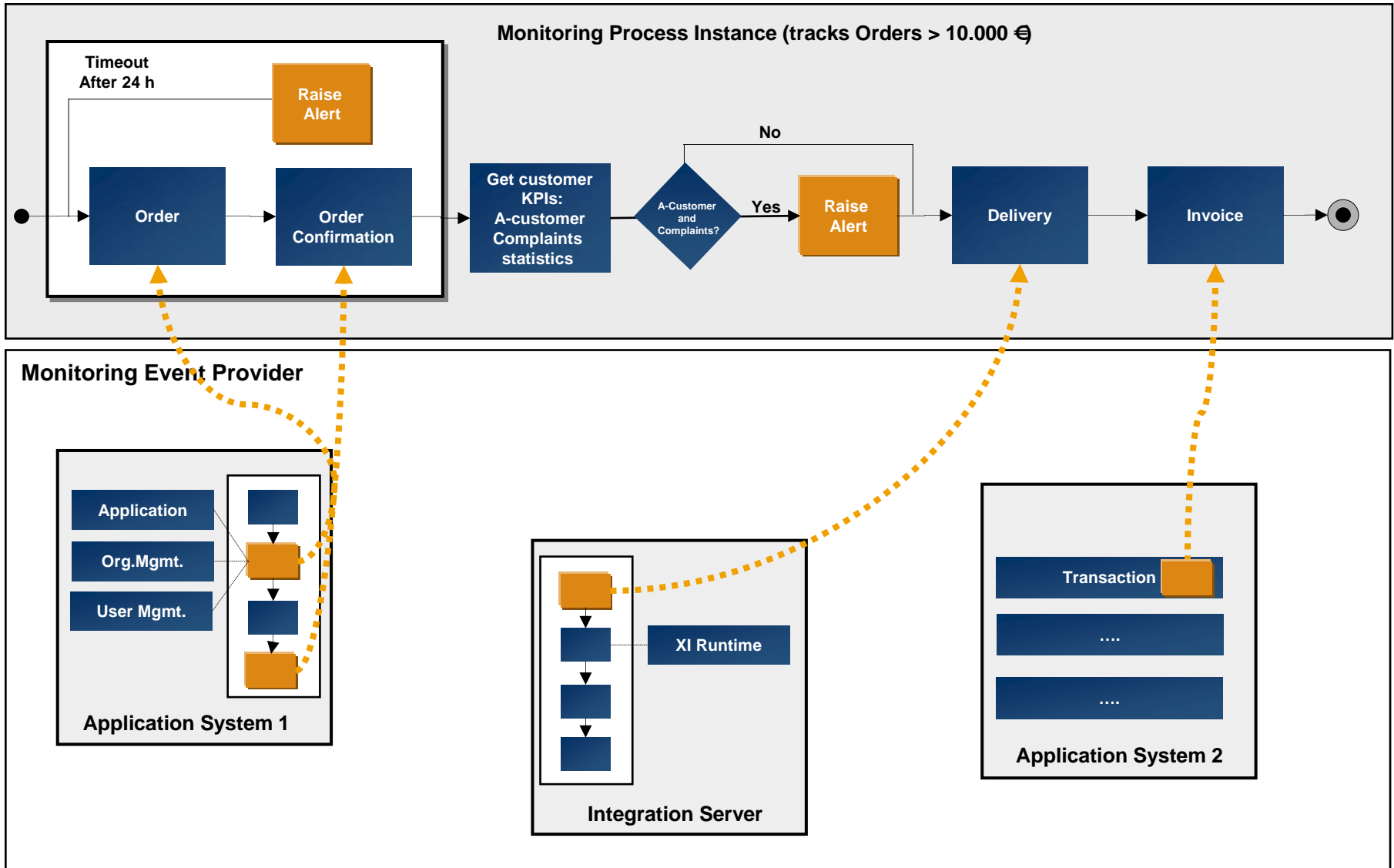
## Event Correlation

- Subscription and handling of business process events
- Milestone Monitoring Process Definition

## Embedded Event Infrastructure

- Collecting, pre-filtering and publication of events across SAP and non-SAP systems

# Example: Multi-backbone Order Handling



# BAM Milestone Modeling (BPEL)

**BAM\_Sales\_Order\_Monitoring: Edit Integration Process**

Integration Process Navigation Edit View Tools

**Edit Integration Process** Status: Active

Name: BAM\_Sales\_Order\_Monitoring  
 Namespace: http://ides.com/netweaver/bam  
 Software Component Version: ZDEMO\_NETWEAVER, 1.0 of ides.com  
 Description: BAM Sales Order Monitoring

**Graphical Definition**

**Process Outline**

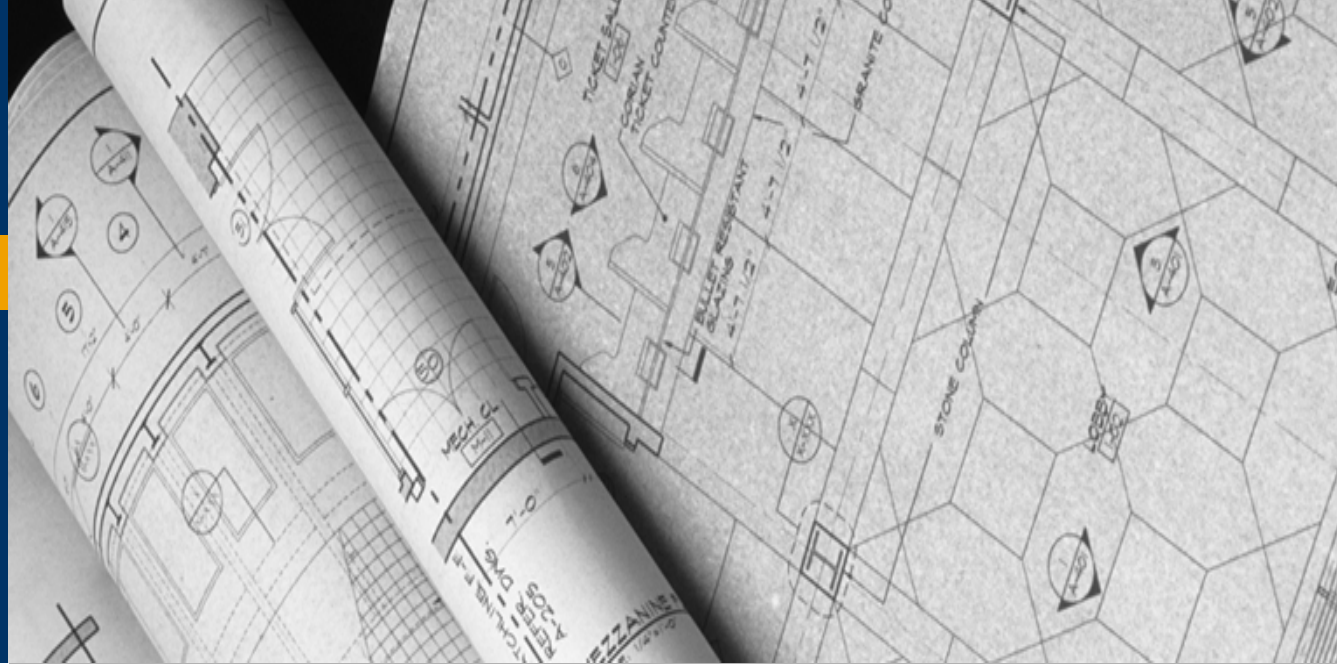
- BAM\_Sales\_Order\_Monitoring
  - SalesOrder
  - PurchaseOrder
  - PurchaseOrderItem
  - GoodsReceipt
  - BusinessRule

**Properties**

Name	Value
Step Name	SalesOrder
Message	SalesOrder
Start Process	<input checked="" type="checkbox"/>
Mode	Asynchronous
Activate Correlati...	SalesOrder

**Container**

Name	Category	Type	Multiline	Container
BAMAlert	Abstract Interface	BAM_Alert_Event	<input type="checkbox"/>	Process
GoodsReceipt	Abstract Interface	ERP_Goods_Receipt_Event	<input type="checkbox"/>	Process
PurchaseOrder	Abstract Interface	ERP_Purchase_Order_Event	<input type="checkbox"/>	Process
SalesOrder	Abstract Interface	CRM_Sales_Order_Event	<input type="checkbox"/>	Process



**Enterprise Services Repository**

**Additional WS Standards & High Volume Support**

**Business Process Management**

**Further Enhancements**

# Major Enhancements for Mapping

The screenshot displays the SAP NetWeaver mapping tool interface. The top part shows the 'Design' tab with a message type 'PurchaseOrderRequest' and its structure tree. The tree includes 'PurchaseOrder' with fields 'ID' and 'SellerID'. The right pane shows the 'IDoc: CRMXF\_ORDER\_SAVE\_M.CRMXF\_ORDE...' structure with fields 'OBJECT\_GUID', 'OBJECT\_ID', 'PROCESS\_TYPE', 'OBJECT\_TYPE', and 'POSTING\_DATE'. The bottom pane shows a mapping diagram with the following flow: 'BuyerPost..' connects to 'exists', which connects to an 'if' node. Another 'BuyerPost..' connects to 'substring (0..10)', which connects to 'transform', which also connects to the 'if' node. The 'if' node has a 'then' branch that connects to 'POSTING..'. The bottom status bar shows a list of functions: substring, concat, equalsS, indexOf, lastIndexOf, cc.

## Function libraries

- Re-usable user defined functions

## Synchronous DB/RFC look-ups

- Use graphical function to model look-ups

## Parameterizable mappings

- Specify mapping parameters at configuration time

## Functions with multiple results

- Look-up function reads multiple fields

## XML Payload Validation

- **Validate incoming/outgoing messages against XML schema**
- **Forward/Backward error handling**

**Edit Sender Agreement** Status:

**Sender**

Partner:

Service:

Interface:

Namensraum:

**Receiver**

Partner:

Service:

Description:

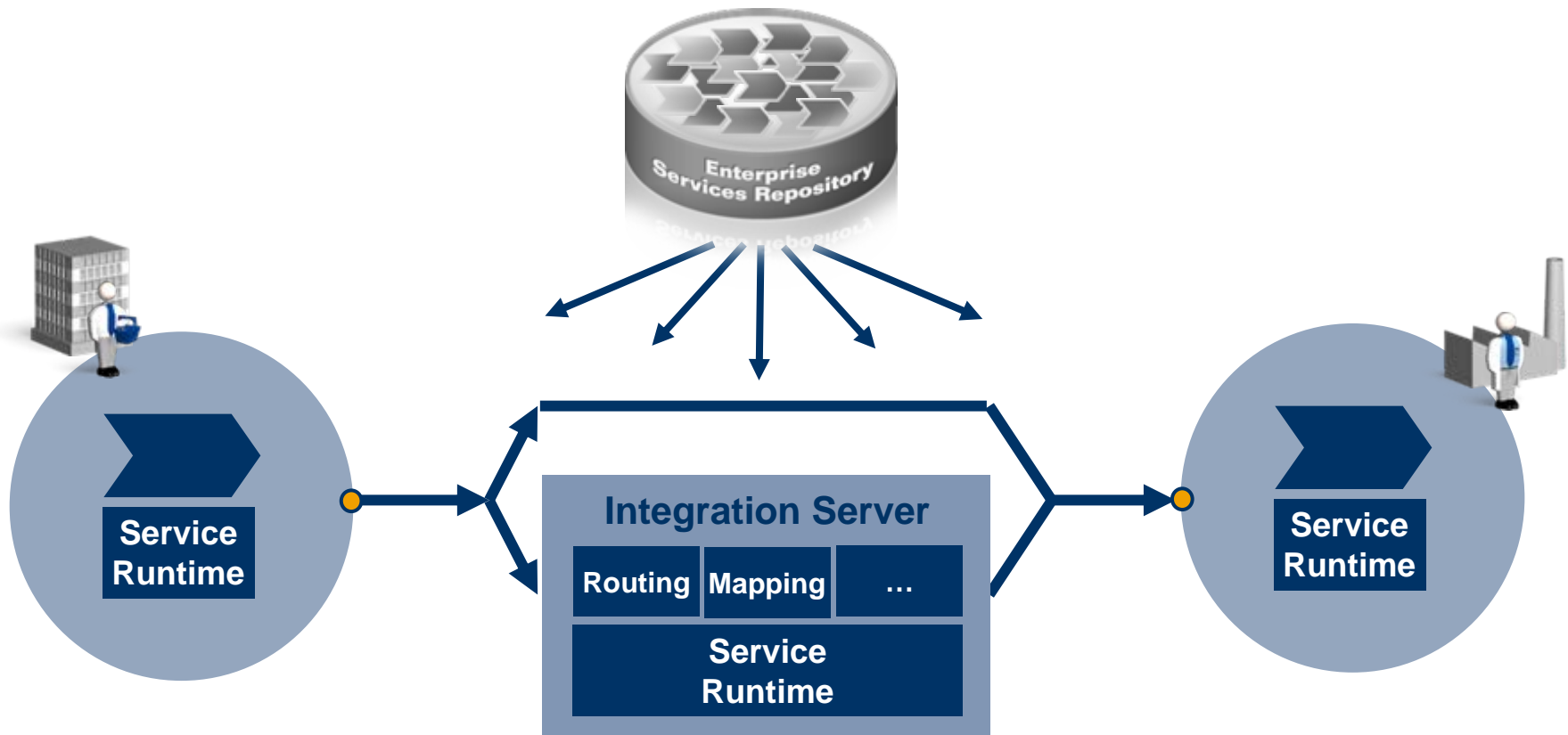
**Parameters:**

Sender Communication Channel \*

Software Component Version:

Validation Mode:  No Validation  Validation by Adapter  Validation by Integration Engine

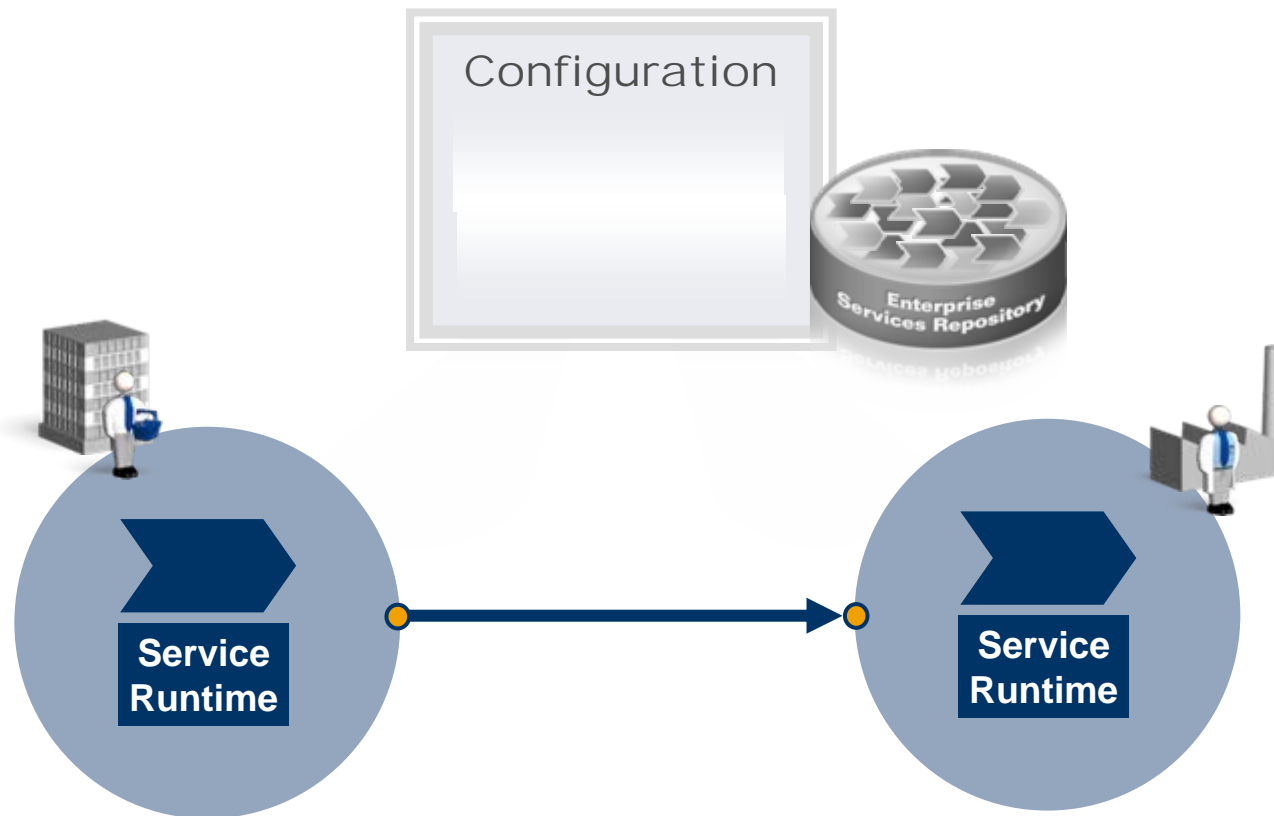
One service runtime for point-to-point and 'brokered' communication



# Centralized Configuration of Services

## Centralized Configuration of Point-to-Point Connections

- Optimize message processing through de-centralized runtime
- ... but keep control through centralized configuration



# First Steps Towards Centralized Monitoring

## Unified Administration

- Key monitoring functionalities integrated in SAP NW Administrator
- One place to monitor and administrate SAP NetWeaver

**Selection Criteria**

Component Type: XIIntegrationServer  
Component Direction: Both  
ProcessingMode: Asynchronous  
Aggregated Interval: 1 Hour

Time Interval: Free selection  
Date Time from: 7/6/2006 12:00:00 AM  
Date Time to: 7/7/2006 12:00:00 AM

**Result List (Aggregate)**

Time Interval	Number	Size(Bytes)	ProcessingTime(Seconds)	Rate(Mg/H)	Receiver
2006-07-05 01:00:00 - 02:00:00	7	7,426	470.73	0.3	ALL
2006-07-05 08:00:00 - 10:00:00	7	7,426	460.8	0.3	ALL
2006-07-05 17:00:00 - 18:00:00	7	7,426	428.17	0.3	(test)
2006-07-06 07:00:00 - 08:00:00	5	112	48.35	0.2	ALL

**Callouts:**

- Filter criteria to search
- Ability to drill-down into individual messages
- Aggregated Performance Monitoring data
- Configuration values from Exchange profile (read only)
- Component Details (from SLD)
- Availability & Alerts (RZ20)
- Link to jump to other monitors
- Component Monitoring

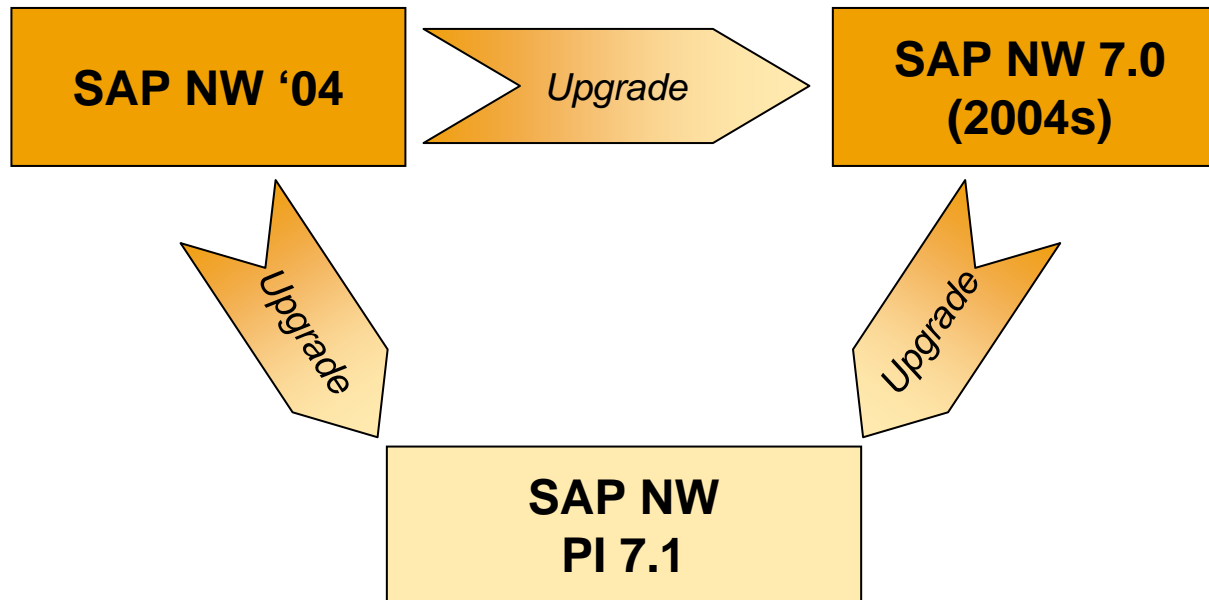
# Upgrade paths to SAP NW Process Integration 7.1

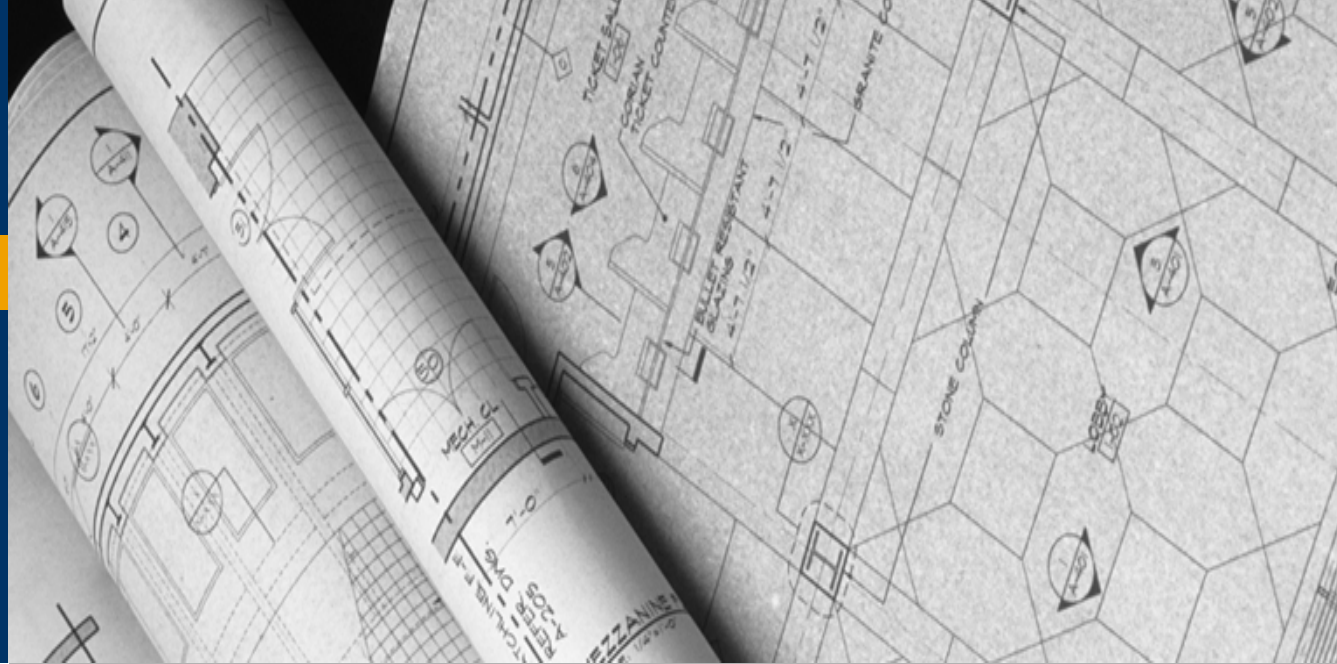
Upgrade paths will be offered for

**SAP NW '04** and

**SAP NW 7.0 (2004s)**

to go to **SAP NW Process Integration 7.1**.





## SAP NW PI 7.1: Major Enhancements

### Summary and Further Information

# ■ Why use SAP NetWeaver Process Integration 7.1?

## 5 Reasons for using SAP NetWeaver Process Integration 7.1

- **Use Process Integration as an SOA backbone**
- **Establish ES Repository as the central SOA repository in customer landscapes**
- **Leverage support of additional WS standards such as UDDI, WS-BPEL and tasks, WS-RM**
- **Enable high-volume and mission-critical integration scenarios**
- **Benefit from new functionality such as principal propagation, XML validation and BAM capabilities**

# Further Information

## → Public Web

<http://www.sap.com/platform/netweaver>, <http://www.sap.com/icc>

<http://www.sdn.sap.com> → IT Practices and IT Scenarios →  
End-to-End Process Integration, Business Event Management,  
ESA Design and Deployment

<http://www.sdn.sap.com> → Enterprise SOA, SAP NetWeaver,  
Partners and ISVs, Forums

## → SAP Service Marketplace

<http://service.sap.com/xi>

<http://service.sap.com/bpms>

<http://service.sap.com/esa>

<http://service.sap.com/netweaver>

<http://service.sap.com/swdc>

<http://service.sap.com/icc>

## → Training <http://service.sap.com/education>

**BIT400 (SAP XI)**

**BIT430 (SAP XI – BPM)**

**BIT450 (SAP XI Development)**

**BIT460 (SAP XI Mapping)**