Business
Process Management
with SAP NetWeaver

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Senior Product Manager
SAP NetWeaver BPM & BAM
SAP AG
Motivation
Why Business Process Management?

**Process Design/ Modeling**
- Enable model-driven innovation

**Process Standardization/ Governance**
- Reduce costs through efficiency

**Process Configuration**
- Streamline customizing efforts

**Process Integration**
- Integrate heterogeneous applications
1 PAIN POINT Process Design & Modeling

- Business owner and IT expert do not speak the same language, do not share the same concepts of processes or use the same tools
- Plethora of tools without linkage of views & objects
- Project time lost due to internal alignment needs – projects running out of budget
2 PAIN POINT Process Configuration

- Disruption between business logic and technical implementation – missing methodology
- No navigation from model to process configuration
- Missing transparency & documentation
- No re-use, standardization & governance possible
3 PAIN POINT Process Integration

- Hard-coded cross-component integration with a patchwork of solutions for A2A, B2B and industry specific processes
- No common process repository
- Missing process management and control across applications and enterprise boundaries
Companies Process Reality

4 PAIN POINT Process Ownership

- No technical skills at business department to automate processes
- No flexibility and autonomy for local business departments and individuals to supplement processes
- Central IT department cannot support all process requirements
BPM with SAP NetWeaver today

Model-driven service orchestration

**DESIGN TIME**
- Business View Modeling
- Guided Procedures
- Executable Process Modeling
- Workflow Modeling

**Portal**
- Universal Worklist
- Collaboration Tasks
- Guided Procedures

**BPM Runtime**
- SAP
- SAP
- Non-SAP

**RUNTIME**
What SAP NetWeaver offers:
Manage and Execute Business Events and Tasks

Providing business and technical users with event-driven work items, alerts, business context and guided procedures to effectively react upon process exceptions and tasks.

Supporting different users and roles concerned with process modeling of a process architecture, configuration and execution models

Supporting model-driven configuration for all process types. Additionally supported by SAP Reference content

Supporting model-driven process automation for both system-to-system as well as system-to-human interaction

Supporting technical & business level monitoring
**Service Orchestration** is the arrangement of services to enable or enhance a business process loosely coupled across multiple user contexts, systems, business partners.
Resolving Process Exceptions and Managing Tasks

**Resolution**
Process Exceptions & Tasks

**Context**
Enterprise Search

**Events**
trigger tasks
Integrate processes within and across systems
- Enable service-based integration end-to-end today
- Endorse composite applications
- Provide central orchestration – loose coupling of legacy systems

Enable model-driven process flexibility
- Model-driven process automation
- Usage of pre-defined content
- Reduce adaptation time by changing models (zero coding approach)

Typical use cases
- B2B scenarios with request/response interaction of business partners (RosettaNet)
- Service Orchestration for composite applications
- Synchronous-asynchronous mainframe integration
Key Benefits of Business Process Management

GAIN ADAPTABILITY
- Usage of pre-defined reference content
- Change graphical process models rather than source code
- Guide solution definition and implementation from high-level business models to callable Enterprise Services

REUSABILITY
- Business Process patterns can be re-used in various processes

REDUCE COSTS
- Faster creation of industry flavor of processes
- Lower cost of adaptation
BUSINESS PROCESS MANAGEMENT

IT Scenarios
# SAP NetWeaver Technology Map

## IT Practices

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<td>Data Unification</td>
<td>Master-Data Harmonization</td>
<td>Master-Data Consolidation</td>
<td>Central Master-Data Management</td>
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<td>Business Information Management</td>
<td>Enterprise Reporting, Query, and Analysis</td>
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<td>Enterprise Data Warehousing</td>
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<td>Enterprise Service Architecture – Design &amp; Deployment</td>
<td>Enabling Enterprise Services</td>
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## IT Scenarios

On the concept of IT Practices and IT Scenarios...
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<th>IT Practices</th>
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<td>Enabling Application-to-Application Processes</td>
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## End-to-End Process Integration

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<td>Business Partner Integration</td>
<td>Usage and Adaptation of Predefined Content</td>
<td>Enabling Coexistence of Several Portals</td>
<td>Central Access to Tasks</td>
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<td>Using Industry Standards</td>
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<td>Managing Heterogenous System Landscapes</td>
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<td>Developing Applications Compatible with SAP NetWeaver</td>
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**SAP Product Available**

**SAP Product Available with Future Releases**

**Future Focus**

**Partner Product Available**

**Partner Product Available with Future Releases**

**Collaborative Business Map Available**

**Sxx, Vxx, Bxx**

**SAP Product & Service**

**Pxx**

**Partner Product**

For more information see: [http://www.sap.com](http://www.sap.com)

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Scenario Variants:

- Usage and Adaptation of Predefined Content
- Process Automation
- Combining Embedded with Unbounded Processes

IT Processes:

- Discovering Processes
- Changing Processes
- Implementing Processes
- Executing Processes
- Operating Processes
### Scenario Variant

**“Usage and Adaptation of Predefined Content”**

<table>
<thead>
<tr>
<th>ARIS for SAP NetWeaver</th>
<th>SolMan</th>
<th>PI BPE</th>
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<td><strong>Discovering Processes</strong></td>
<td><strong>Changing Processes</strong></td>
<td><strong>Implementing Processes</strong></td>
</tr>
<tr>
<td>(1) Create company process map</td>
<td>(7) Change reference model in project namespace</td>
<td>(11) Configure application components via SAP Solution Manager</td>
</tr>
<tr>
<td>(2) Analyze processes</td>
<td>(8) Define integration strategy in a model</td>
<td>(12) Use Metadata</td>
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<tr>
<td>(3) Scope project</td>
<td>(6) Load reference model and synchronize with ARIS</td>
<td>(13) Configure integration scenario and process</td>
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<tr>
<td>(4) Search SAP scenario list and choose scenario</td>
<td>(5) Create and synchronize project with ARIS</td>
<td>(9) Create integration scenario based on scoping</td>
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<tr>
<td></td>
<td></td>
<td>(10) Search for process patterns and use them in a process model</td>
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</tbody>
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### Scenario Variant “Process Automation” Unbounded

<table>
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<th>Executing Unbounded Processes</th>
<th>Monitoring Unbounded Processes</th>
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<tr>
<td><strong>ARIS for SAP NetWeaver</strong></td>
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<tr>
<td>(1) Define integration strategy in a model</td>
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<tr>
<td>(13) Import BPEL scenario and process models to document the integration strategy</td>
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<tr>
<td><strong>PI Integration Repository</strong></td>
<td>(2) Model integration scenario based on scoping</td>
<td>(5) Configure integration scenario</td>
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<tr>
<td>(3) Create metadata</td>
<td>(6) Configure integration process</td>
<td>(7) Activate change lists</td>
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<tr>
<td>(4) Model integration process</td>
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<tr>
<td><strong>PI BPE</strong></td>
<td></td>
<td>(8) System instantiates process</td>
<td>(11) Monitor XML messaging</td>
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<td></td>
<td></td>
<td>(9) System correlates</td>
<td>(12) Monitor Process Engine</td>
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<tr>
<td></td>
<td></td>
<td>(10) System executes process steps</td>
<td>(13) Monitor throughput/ performance</td>
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</tbody>
</table>

(1) Define integration strategy in a model
(2) Model integration scenario based on scoping
(3) Create metadata
(4) Model integration process
(5) Configure integration scenario
(6) Configure integration process
(7) Activate change lists
(8) System instantiates process
(9) System correlates
(10) System executes process steps
(11) Monitor XML messaging
(12) Monitor Process Engine
(13) Monitor throughput/ performance
### Scenario Variant “Process Automation” Embedded

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<th>Executing A Task</th>
<th>Monitoring Embedded Processes</th>
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<tr>
<td>(1) Define workflow strategy in a model</td>
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<tr>
<td><strong>EP Work Center</strong></td>
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<td>(2) Model workflow based on scoping</td>
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<td>(13) System presents task in the UWL</td>
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<td>(3) Use workflow templates</td>
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<td>(14) Execute step by selecting task</td>
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<td>(4) Define organizational structure</td>
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<td><strong>AS Workflow Management</strong></td>
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<tr>
<td>(5) Configure responsibilities and people linkage</td>
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<td>(14) Monitor workitems</td>
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<td>(6) Define deadlines</td>
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<tr>
<td>(7) Configure task descriptions</td>
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<td>(15) Analyse workflow log</td>
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<td>(8) Activate event linkages</td>
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<td>(9) System changes state</td>
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<td>(10) System triggers event</td>
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<tr>
<td>(11) System creates process instance</td>
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<tr>
<td>(12) System creates work item/ task</td>
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**AS**

Workflow Management
### Scenario Variant

**"Combining Embedded with Unbounded Processes"**

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<th>Handling Messages</th>
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<th>Executing A Task</th>
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<td>(6) System receives message</td>
<td>(14) System presents task in the UWL</td>
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<td>(2) System triggers event</td>
<td>(7) System determines receivers</td>
<td>(15) Executing step by selecting task</td>
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<td>(3) System creates process instance</td>
<td>(8) System sends message</td>
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<td>(4) System creates work item/task</td>
<td>(9a) System instantiates process</td>
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<tr>
<td>(5) System sends message</td>
<td>(9b) System correlates</td>
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<td>(13) System creates work item/task</td>
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<td>(10) System executes process steps</td>
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<td></td>
<td>(11) System handles exceptions &amp; deadline</td>
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<td></td>
<td>(12) System sends message</td>
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<td><strong>PI</strong> Integration Engine</td>
<td><strong>EP</strong> Work Center</td>
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<td><strong>Application AS</strong></td>
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<tr>
<td><strong>BPE</strong> Integration Engine</td>
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Business Level Modeling

- Analyze and design the company process architecture
- Usage of SAP pre-defined content (SAP Solution Maps, SAP Business Maps)
- Reduce complexity of process modeling with EPC modeling methodology
- Usage of SAP pre-defined content (Business Scenarios, Business Processes)
From eEPC to BPEL Service Orchestration Models

Today: Process-oriented Implementation & Execution
Process Configuration Modeling
- Synchronize ARIS process models with SAP Solution Manager project
- Extending the Business Level Model to a Process Configuration Model
- Use the Process Configuration Model for business configuration
XI Integration Scenario – Process Configuration Model

Process Execution Modeling – Integration Scenario
- Usage of Integration Scenario for process configuration on integration level
- Automatic configuration based on integration scenario model
- Extending the Process configuration model

ARIS for SAP NetWeaver
Company View
Component View

SAP Solution Manager
Business Process

SAP NetWeaver
SAP XI
Integration Scenario
Integration Process

Component View Name | Sales Order Integration Scenario
--- | ---
Order Entry | SAP ORDER Entry
Planning | SAP PRO Planning
Ded. Credit Check | SAP Credit Check
Reckoner Sales Order | SAP Sales Order
Send Confirmation to Customer | SAP Confirmation to Customer
Sale Order Split | SAP Sale Order Split
Merge Confirmations | SAP Merge Confirmations
Book and Confirm | SAP Book and Confirm
Order Execution | SAP ORDER Execute
SAP XI Executor | SAP XI Execute

powered by SAP NetWeaver

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Process Execution Modeling – Integration Processes

- Process execution model for unbounded processes (orchestration)
- Embedded within the integration scenario
- BPEL interfaces from/to ARIS for SAP NetWeaver
Process Execution Modeling – Integration Processes

- Process execution model for unbounded processes (orchestration)
- Business BPEL model designed in ARIS for SAP NetWeaver
- BPEL/WSDL export from ARIS and import into SAP Exchange Infrastructure
**Service Orchestration** is the arrangement of services to enable or enhance a business process loosely coupled across multiple user contexts, systems, business partners.
ARIS Process Platform (7.0) - from eEPC to BPEL

PO_Processing

ReceivePO

Invoke Price Calculation
Assign Customer Info
RequestShipping
ReceiveShippingSchedule
SendShippingSchedule

ComputePrice

RequestSchedule

Invoice

ReceiveInvoice

Notify

ProcessEnd

Triggering Event

Integrate SAP CRM, SAP R/3, and Sales Order Processing.

Sachbearbeiter/-in

System checks availability, schedules...

Sales Team Manager

Monitor status of order

System replicates sales order

SAP CRM

Quotation confirmed by customer
Allocate Sales Order
Product not available
Product available

Inform customer about availability

System performs credit check

Perform credit check

Credit Check is okay

Credit Check is not okay

Sales Order completed

Notify customer about sales order...

Customer informed

Approve Sales Order

Sales Order approved

Customer informed

Sales Order rejected

Inform customer about scheduling

Customer informed

Quotation Processing (Configure-to-Order)

Production

System receives sales order

Create sales order

System checks availability, schedules...

Sales Team Manager

Monitor status of order

System replicates sales order

SAP CRM

Sachbearbeiter/-in

System checks availability, schedules...

Sales Team Manager

Monitor status of order

System replicates sales order

SAP CRM
Business Process Execution Language (BPEL)
From ARIS to SAP Exchange Infrastructure

ARIS for SAP NetWeaver
Create BPEL Process Description

Import BPEL File

Declare container data, correlation handling, exception, deadline handling, and deploy process to execution in SAP NetWeaver
Definition of BPEL Process Patterns

BPEL (Business Process Execution Language) process patterns describe best practices for message-based service orchestration using standard web service interfaces, adapters for 3rd party and legacy integration as well as process-to-process-communication.
BPEL Process Patterns with SAP NetWeaver 2004

**Process Pattern**

**Container**
- A: type AIF1
- AT: type AIF1*
- B: type AIF2
- C: type int

**Correlations**
- MyCorrelation
  - ID: type int

**Process Interface**
- AIF1 in
- AIF2 out

**Loop**
- Receive message on A
- Add 1 to C
- Append A to AT
- While \( C \neq A\.number \)
- Transformation
  - Merge AT into B
- Send message on B

**Serialization**
- S_FL1: single message trigger
- S_FL2: multi message trigger

**Request/Response**
- ReqRespAlert
- ReqRespTimeOut

**Collect (same IF type/ different IF type)**
- C_FL1.1: payload-triggered end
- C_FL1.2: time-triggered end
- C_FL1.3: message triggered end
- C_FL2.1: collect all
- C_FL2.2: collect some (condition based)

**Multicast**
- M_FL1: send in a sequence
- M_FL2: send in parallel

**SyncAsyncBridge**
Predefined Content by SAP and Partners

Business Reference Content
- Industry Solution Maps

Business Configuration Content
- Content for mySAP Business Suite
- All processes of ERP, CRM and SCM process variants
- Upgrade content (application and process level)

Process Integration Content
- Pre-defined “out-of-the-box” Integration Scenarios
- Pre-defined “out-of-the-box” Integration Processes
- Pre-defined integration process patterns as best practices

Preview to Enterprise Services Inventory
- 500 Enterprise Services published at SAPPHIRE 2005

Partner Content
- Certified content provided by 3rd party vendors
RosettaNet PIPs supported out of the box

Pre-configured content

- Executable processes required for the two action PIPs
- Handles the orchestration of business messages as defined in the RosettaNet processes
Business Process Management

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SAP Service Marketplace
http://service.sap.com/bpms

SAP Developer Network
http://sdn.sap.com