Positioning of Process Orchestration and Data Services

Florian Koeller, SAP Consulting
Matthias Allgaier, Product Management, Integration & Orchestration
Sue Waite, Solution Management, Enterprise Information Management
01/2013
The information in this presentation is confidential and proprietary to SAP and may not be disclosed without the permission of SAP. This presentation is not subject to your license agreement or any other service or subscription agreement with SAP. SAP has no obligation to pursue any course of business outlined in this document or any related presentation, or to develop or release any functionality mentioned therein. This document, or any related presentation and SAP’s strategy and possible future developments, products and or platforms directions and functionality are all subject to change and may be changed by SAP at any time for any reason without notice. The information in this document is not a commitment, promise or legal obligation to deliver any material, code or functionality. This document is provided without a warranty of any kind, either express or implied, including but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement. This document is for informational purposes and may not be incorporated into a contract. SAP assumes no responsibility for errors or omissions in this document, except if such damages were caused by SAP’s willful misconduct or gross negligence.

All forward-looking statements are subject to various risks and uncertainties that could cause actual results to differ materially from expectations. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of their dates, and they should not be relied upon in making purchasing decisions.
Scope of this document

Focus
On-premise variants of SAP NetWeaver Process Orchestration and SAP Data Services

Goals
Explain the motivation behind those two platforms
Enable customers to elaborate their usage patterns for both platforms

Not in scope of this document
Delimitation with other related products such as SAP NetWeaver Gateway
Alignment to related methodologies such as Enterprise Architecture, Business Process Management, Information Modeling and Data Governance
Table of Contents

Process and Data Integration with SAP – Overview
The Delineation
Outlook – SAP HANA Cloud Integration
APPENDIX: Use Cases in SAP Integration
Process and Data Integration with SAP – Overview
There are different levels of integrating business applications / parties.

In this document we focus on:
Process Integration*
Data Integration

Both architectural styles differ in their embedding into the application context.

* Remark: this relates to the approach, not the product
SAP NetWeaver Process Integration
Process Integration is now part of SAP NetWeaver Process Orchestration

SAP NetWeaver Process Orchestration helps IT and line-of-business professionals improve business performance by orchestrating the work of people and software systems into automated business processes.

<table>
<thead>
<tr>
<th>SAP NetWeaver Process Orchestration includes:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business Process Management (BPM)</strong></td>
<td><strong>Model and execute</strong> business processes that augment best practices of packaged applications, such as SAP ERP</td>
</tr>
<tr>
<td><strong>Business Rules Management (BRM)</strong></td>
<td><strong>Centrally manage business policies</strong> that can be maintained by business and IT</td>
</tr>
<tr>
<td><strong>Process Integration (PI)</strong></td>
<td><strong>Efficiently integrate processes</strong> across heterogeneous IT landscapes as well as between business partners including a wide range of supported connectivity options (such as the PI B2B Add-On or partner adapters)</td>
</tr>
<tr>
<td>Master Data Quality Process</td>
<td>Integration Centric Process</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td><strong>Data Steward</strong></td>
<td><strong>Start</strong></td>
</tr>
<tr>
<td>Add Credit Limit</td>
<td>DO_CreateMD_D'</td>
</tr>
<tr>
<td></td>
<td>Get Number of Systems</td>
</tr>
<tr>
<td>DO_ConfirmAIC..</td>
<td>Send to Backend Systems</td>
</tr>
<tr>
<td>Start DO_CustomerID</td>
<td>numberOfSystems</td>
</tr>
<tr>
<td></td>
<td>Merge</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>counter := number...</td>
</tr>
<tr>
<td></td>
<td>Wait 4 Reply</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Increment Counter</td>
</tr>
<tr>
<td></td>
<td>counter</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data Quality Manager</strong></td>
<td></td>
</tr>
<tr>
<td>Approve Customer Record</td>
<td></td>
</tr>
<tr>
<td>approved</td>
<td></td>
</tr>
<tr>
<td>rejected</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Send to Backend Systems</td>
</tr>
<tr>
<td>Rework Customer Record</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Requester</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Check Rejection</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

© 2013 SAP AG. All rights reserved.
SAP Data Services
Integrate a variety of data from any data source, enabling high quality results

- **Big Data**
  - Volume
  - Variety
  - Velocity

- **Information Governance**
  - Quality Data
  - Across Processes
  - For Analytics

- **Simplified**
  - Unified
  - Intuitive
  - Flexible
Process Integration - Characteristics

A business process step triggers the integration from inside of the business process

The business process steps involved have agreed on the data structure

The exchanged data is produced with specific business process knowledge

Typically the data is PUSHed from the sending business application

What are the typical units of data exchange?
Business Objects (orders, invoices, …)

Methodology related to Business Process Management (BPM) and Enterprise Architecture Management (EAM) approaches

1 Frequently, batch jobs running within the sending business application are used to generate messages to be processed by the middleware.

2 In addition to the typical PUSH paradigm, process integration also supports PULL scenarios through synchronous interfaces.
Data Integration - Characteristics

The trigger of the integration is from outside of the business process
The access to the source data pool and the target data pool is also from outside of the business process

Data transformation provides a generic (i.e. not a business process specific) processing of the exchanged data

This data transformation requires (static) application knowledge in general, but no respective (dynamic) business process knowledge.

Typically the data is PULLeled out of the business application/database, such as realized by a QUERY/READ pattern

What are the typical units of data exchange?
Databases tables, records

Methodology related to Data and Information Modeling approaches
Further approaches

There are further related and interrelated integration approaches such as
Enterprise Application Integration (EAI)
Service-oriented architecture (SOA)
Extract Transform Load (ETL)
B2B / EDI

We will not discuss all these different approaches in detail in this document
The Delineation
In an on-premise SAP environment…

…process integration, EAI, SOA, B2B and EDI are in scope of SAP NetWeaver Process Orchestration
More information on B2B: https://scn.sap.com/docs/DOC-31685

…data integration, data quality management, and text data processing are in scope of Enterprise Information Management, in specific SAP Data Services

As mentioned above: there is a certain grey area between all these approaches
⇒ Consequently: a grey area between SAP NetWeaver Process Orchestration and SAP Data Services

This means: you can solve certain requirements with both

The delineation between these two solutions is the focus of this document
There are different levels of integrating business applications / parties. Both architectural styles differ in their embedding into the application context. For a given integration requirement, which of the two platforms should be used?
How to decide?

As mentioned above: there is a grey area, an overlap

The delineation depends on various parameters, such as

…the technical and functional capabilities of SAP NetWeaver Process Orchestration and SAP Data Services

…the organizational environment

…the type of integration to be done

…the technical environment (e. g. hardware sizing)

Technical and functional capabilities of SAP NetWeaver Process Orchestration and SAP Data Services are discussed in the following

All other parameters are subject to your environment
Decision Tree Extract (Example)

Recommendation: elaborate a decision tree that considers all these parameters

It can look like this (this is just an extract):
Radar Map

- Process-centric Workflows
- Integration-centric Workflows
- Reliable Messaging
- SOA Capabilities
- Message Level
- B2B/EDI
- Real-Time Processing
- Batch Processing
- Database Connectivity
- Dataset Level
- Basic to intermediate Data Transformation
- Advanced Data Transformation
- Unstructured Text Data Processing
- Big Data
- Data Quality Management

- Process Orchestration
- Data Services
## Capabilities – Details

<table>
<thead>
<tr>
<th>Capability</th>
<th>Capability Detail</th>
<th>Process Orch.</th>
<th>Data Services</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Volume</td>
<td>Small to medium</td>
<td></td>
<td></td>
<td>Data Services moves big data (such as billions of records) in a non-transactional mode. PO processes a large number of messages containing small or medium amounts of data efficiently.</td>
</tr>
<tr>
<td></td>
<td>Big Data</td>
<td></td>
<td></td>
<td>Data latency with DS tends to be larger (minutes rather than seconds). PI offers mechanisms for real-time synchronous transactions.</td>
</tr>
<tr>
<td>Processing Mode</td>
<td>Scheduled / Batch based</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Real-Time to near Real-Time (both synchronous</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and asynchronous)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Event- / Trigger-based</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern for Direction of</td>
<td>Data is pushed out of sender application</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Request</td>
<td>Data is pulled from sender application</td>
<td></td>
<td></td>
<td>Data Services processing is typically scheduled (at a certain point in time, it pulls the data from the source), however, it has capability to receive events via web services or other means and process these events. PO is typically triggered by incoming data.</td>
</tr>
<tr>
<td>Reliable Messaging</td>
<td>Guaranteed Delivery</td>
<td></td>
<td></td>
<td>DS does not support guaranteed delivery in a robust fashion.</td>
</tr>
</tbody>
</table>
### Capabilities – Details (2)

<table>
<thead>
<tr>
<th>Capability</th>
<th>Capability Detail</th>
<th>Process Orch.</th>
<th>Data Services</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Transformation</td>
<td>Basic (Data type conversions, string manipulation, calculations, etc)</td>
<td></td>
<td></td>
<td>Both Data Services and PO apply transformations (Mapping, split, aggregation, ...), with Data Services having a special focus on advanced transformations needed for Data Warehouse or data migration. In addition, Data Services has the ability to cleanse data.</td>
</tr>
<tr>
<td></td>
<td>Intermediate (Lookup/replace, aggregations, summarizations, etc)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Advanced (Slowly-changing dimension management, matching, etc)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Quality Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Process Management</td>
<td>Integration-centric</td>
<td></td>
<td></td>
<td>Both PO and Data Services offer support for integration-centric workflows. Data Services workflows tend to be simple having to do with process sequencing and error handling. PO provides full workflow capabilities for both integration- and process-centric workflows in an SAP environment (through SAP NetWeaver BPM).</td>
</tr>
<tr>
<td>(Workflows)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Process-centric</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Capabilities – Details (3)

<table>
<thead>
<tr>
<th>Capability</th>
<th>Capability Detail</th>
<th>Process Orch.</th>
<th>Data Services</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectivity</td>
<td>File Handling</td>
<td>[ ]</td>
<td>[ ]</td>
<td>Database Handling is the core functionality of BusinessObjects Data Services. It is able to extract tables in a complex manner.</td>
</tr>
<tr>
<td></td>
<td>SAP Applications (Proxy, RFC, IDoc, …)</td>
<td>[ ]</td>
<td>[ ]</td>
<td>PI is able to access databases via JDBC.</td>
</tr>
<tr>
<td></td>
<td>Legacy Protocols (JMS, …)</td>
<td>[ ]</td>
<td>[ ]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Databases</td>
<td>[ ]</td>
<td>[ ]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Industry Standards (e. g. EDI, …)</td>
<td>[ ]</td>
<td>[ ]</td>
<td>* EDI is available as integration content (e. g. SAP B2B Add-on) or as an on-demand solution (SAP Information Interchange)</td>
</tr>
<tr>
<td>SOA (Service-oriented Architecture)</td>
<td>Web Service / Enterprise Service consumption and provision</td>
<td>[ ]</td>
<td>[ ]</td>
<td>SAP NetWeaver PI as part of PO is positioned as the SOA middleware. Data Services is able to act as a service provider or consumer, but does not offer further SOA functionality (e. g. with regards to governance).</td>
</tr>
<tr>
<td></td>
<td>SOA governance and operations</td>
<td>[ ]</td>
<td>[ ]</td>
<td></td>
</tr>
<tr>
<td>Data Processing Level</td>
<td>Message Level</td>
<td>[ ]</td>
<td>[ ]</td>
<td>PO exchanges messages between systems while Data Services rather exchanges data sets.</td>
</tr>
<tr>
<td></td>
<td>Dataset Level</td>
<td>[ ]</td>
<td>[ ]</td>
<td></td>
</tr>
</tbody>
</table>
## Capabilities – Details (4)

<table>
<thead>
<tr>
<th>Capability</th>
<th>Capability Detail</th>
<th>Process Orch.</th>
<th>Data Services</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handling of Unstructured Data</td>
<td>Handling of unstructured and semi-structured data such as Excel, PDF, etc</td>
<td></td>
<td></td>
<td>Handling of Unstructured Data is one of the core functionalities of SAP Data Services. For PI, the Conversion Agent is available; however, it is not released for PI 7.3 and PI 7.31 anymore. For details, please see SAP note 894815.</td>
</tr>
</tbody>
</table>
Outlook – SAP HANA Cloud Integration
Outlook - SAP HANA Cloud Integration
Process and data integration capabilities in one offering

Cloud Integration Technology
Process and data integration capabilities to enable integration of SAP cloud solutions to:
- SAP on-premise solutions
- SAP cloud solutions
- Third-party cloud solutions
- Third-party on-premise solutions

Cloud Integration Content
Prepackaged integration content for SAP to SAP, for example, via rapid-deployment solutions
Customers, ecosystem, and community can extend and create new content

Notes: SAP NetWeaver Process Integration and SAP Data Services will also support integration with SAP cloud solutions.
APPENDIX: Use Cases in SAP Integration
SAP NetWeaver Process Orchestration for various business scenarios

For certain integration scenarios SAP and partners provide Process Orchestration content

<table>
<thead>
<tr>
<th>Manufacturing Industries</th>
<th>Services Industries</th>
<th>Financial &amp; Public Ser</th>
</tr>
</thead>
<tbody>
<tr>
<td>A&amp;D</td>
<td>Airline</td>
<td>WhSal</td>
</tr>
<tr>
<td>Auto</td>
<td>LogSP</td>
<td>Bankin</td>
</tr>
<tr>
<td>Chem</td>
<td>Media</td>
<td>HlhCr</td>
</tr>
<tr>
<td>CP</td>
<td>Postal</td>
<td>HiEd</td>
</tr>
<tr>
<td>EC&amp;O</td>
<td>ProtSr</td>
<td>Insur</td>
</tr>
<tr>
<td>HiTech</td>
<td>Retail</td>
<td>PubScr</td>
</tr>
<tr>
<td>IndMC</td>
<td>Telco</td>
<td>PSecur</td>
</tr>
<tr>
<td>LifeSc</td>
<td>Utility</td>
<td></td>
</tr>
<tr>
<td>MillPro</td>
<td>Oil&amp;G</td>
<td></td>
</tr>
<tr>
<td>Oil&amp;G</td>
<td>RailWy</td>
<td></td>
</tr>
<tr>
<td>Retail</td>
<td>Airline</td>
<td></td>
</tr>
<tr>
<td>Telco</td>
<td>LifeSc</td>
<td></td>
</tr>
<tr>
<td>Utility</td>
<td>Oil&amp;G</td>
<td></td>
</tr>
<tr>
<td>WhSal</td>
<td>Retail</td>
<td></td>
</tr>
<tr>
<td>Bankin</td>
<td>ProtSr</td>
<td></td>
</tr>
<tr>
<td>HlhCr</td>
<td>Media</td>
<td></td>
</tr>
<tr>
<td>HiEd</td>
<td>ProtSr</td>
<td></td>
</tr>
<tr>
<td>Insur</td>
<td>LifeSc</td>
<td></td>
</tr>
<tr>
<td>PubScr</td>
<td>Oil&amp;G</td>
<td></td>
</tr>
<tr>
<td>PSecur</td>
<td>Retail</td>
<td></td>
</tr>
</tbody>
</table>

Enterprise Service
Integration Scenarios
Service Interfaces
Message Mapping
Industry Adapters

SAP Solutions | Partner Solutions | Industry-specific | Non industry-specific Adapters

© 2013 SAP AG. All rights reserved.
SAP NetWeaver Process Orchestration for B2B/EDI (within on-demand SAP Information Interchange offering)

SAP Information Interchange (formerly Crossgate)

Turnkey B2B Content Engine that allows companies to exchange documents electronically

Prebuilt business partner profile and out-of-the-box process integration
SAP Data Services for all kinds of database access

Direct, native access to all kinds of databases is a typical use case of SAP Data Services
SAP Data Services for batch loading into databases (SAP HANA, Sybase IQ, …)

Load into HANA, Sybase IQ or any 3rd party target database
Support for latest versions/revisions of these databases
Optimized for “push-down” to HANA and Sybase IQ, leveraging the power of the target system for E-LT scenarios (*)

(*) E-LT = First Extract from the source and Load raw data into the target, finally Transform inside the target. As opposed to traditional ETL.
(**) Data Integration license for ETL/ELT is bundled with HANA to enable data loads into HANA.
**SAP Data Services for Business Warehouse Integration**

**Non-BW customers**
Now get native access to the Business Suite without having to go through BW, including delta queue support.
Data is streamed, no staging files (no ftp, no shared directory, ...)

**BW customers**
Can now easily apply data quality transformations when loading SAP data into BW.
Can now use one single tool to define all extraction, validation, and cleansing rules to load all data (SAP and non-SAP) into BW.
SAP Data Services for Data Migration (within SAP Rapid Data Migration Solution)

Software
• SAP Data Services for ETL and Data Quality
• SAP BI Platform for reporting
• Migration Services for value mapping

Pre-configuration
• Best Practices
• Mapping-Templates
• Pre-configured mapping and validation jobs
• WebI Reports

Enablement content
• Quick Guide
• Extension Guides

Predefined service
(via SAP or partners)
• Starter Service
• Fixed scope, fixed cost
Thank You!

Florian Koeller
SAP Consulting
florian.koeller@sap.com

Sue Waite
SAP Enterprise Information Management
sue.waite@sap.com

Matthias Allgaier
SAP Integration & Orchestration
matthias.allgaier@sap.com
No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP AG. The information contained herein may be changed without prior notice.

Some software products marketed by SAP AG and its distributors contain proprietary software components of other software vendors.

Microsoft, Windows, Excel, Outlook, PowerPoint, Silverlight, and Visual Studio are registered trademarks of Microsoft Corporation.

IBM, DB2, DB2 Universal Database, System i, System i5, System p, System p5, System x, System z, System z10, z10, z/VM, z/OS, OS/390, zEnterprise, PowerVM, Power Architecture, Power Systems, POWER7, POWER6+, POWER6, POWER, PowerHA, pureScale, PowerPC, BladeCenter, System Storage, Storwize, XIV, GPFs, HACMP, RETAIN, DB2 Connect, RACF, Redbooks, OS/2, AIX, Intelligent Miner, WebSphere, Tivoli, Informix, and Smarter Planet are trademarks or registered trademarks of IBM Corporation.

Linux is the registered trademark of Linus Torvalds in the United States and other countries.

Adobe, the Adobe logo, Acrobat, PostScript, and Reader are trademarks or registered trademarks of Adobe Systems Incorporated in the United States and other countries.

Oracle and Java are registered trademarks of Oracle and its affiliates.

UNIX, X/Open, OSF/1, and Motif are registered trademarks of the Open Group.

Citrix, ICA, Program Neighborhood, MetaFrame, WinFrame, VideoFrame, and MultiWin are trademarks or registered trademarks of Citrix Systems Inc.

HTML, XML, XHTML, and W3C are trademarks or registered trademarks of W3C®, World Wide Web Consortium, Massachusetts Institute of Technology.

Apple, App Store, iBooks, iPad, iPhone, iPod, iTunes, Multi-Touch, Objective-C, Retina, Safari, Siri, and Xcode are trademarks or registered trademarks of Apple Inc.

IOS is a registered trademark of Cisco Systems Inc.

RIM, BlackBerry, BBM, BlackBerry Curve, BlackBerry Bold, BlackBerry Pearl, BlackBerry Torch, BlackBerry Storm, BlackBerry Storm2, BlackBerry PlayBook, and BlackBerry App World are trademarks or registered trademarks of Research in Motion Limited.

Google App Engine, Google Apps, Google Checkout, Google Data API, Google Maps, Google Mobile Ads, Google Mobile Updater, Google Mobile, Google Store, Google Sync, Google Updater, Google Voice, Google Mail, Gmail, YouTube, Dalvik and Android are trademarks or registered trademarks of Google Inc.

INTERMEC is a registered trademark of Intermec Technologies Corporation.

Wi-Fi is a registered trademark of Wi-Fi Alliance.

Bluetooth is a registered trademark of Bluetooth SIG Inc.

Motorola is a registered trademark of Motorola Trademark Holdings LLC.

Computop is a registered trademark of Computop Wirtschaftsinformatik GmbH.

SAP, R/3, SAP NetWeaver, Duet, PartnerEdge, ByDesign, SAP BusinessObjects Explorer, StreamWork, SAP HANA, and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP AG in Germany and other countries.

Business Objects and the Business Objects logo, BusinessObjects, Crystal Reports, Crystal Decisions, Web Intelligence, Xcelsius, and other Business Objects products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of Business Objects Software Ltd. Business Objects is an SAP company.

Sybase and Adaptive Server, iAnywhere, Sybase 365, SQL Anywhere, and other Sybase products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of Sybase Inc. Sybase is an SAP company.

Crossgate, m@gic EDDY, B2B 360°, and B2B 360° Services are registered trademarks of Crossgate AG in Germany and other countries. Crossgate is an SAP company.

All other product and service names mentioned are the trademarks of their respective companies. Data contained in this document serves informational purposes only. National product specifications may vary.

The information in this document is proprietary to SAP. No part of this document may be reproduced, copied, or transmitted in any form or for any purpose without the express prior written permission of SAP AG.