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SAP BusinessObjects Business Intelligence (BI) Solution Architecture

- **Overall Goals**
  - Identify landscape patterns associated with problems customers have today
  - Showcase options for SAP BusinessObjects BI solutions and possible scenarios which can be applied to those landscapes
  - Provide an end-to-end Business Intelligence Solution overview and architecture based on customer landscapes and use cases

- **Impact**
  - Customers can recognize the full potential of the SAP BusinessObjects BI portfolio
  - Consistent approach of deploying SAP BusinessObjects Business Intelligence solutions based on best practices

- **Scope / customer segments**
  - Customers using SAP or non-SAP applications with or without DWH solutions
  - SAP BusinessObjects XI 3.1 Business Intelligence product portfolio
<table>
<thead>
<tr>
<th>Datawarehouse strategy</th>
<th>Non-SAP ERP</th>
<th>SAP ERP</th>
<th>Non-SAP ERP &amp; SAP ERP</th>
</tr>
</thead>
<tbody>
<tr>
<td>No DWH</td>
<td>System Landscape Type 1</td>
<td>System Landscape Type 2</td>
<td>System Landscape Type 3</td>
</tr>
<tr>
<td>Non-SAP DWH</td>
<td></td>
<td>System Landscape Type 4</td>
<td></td>
</tr>
<tr>
<td>SAP NetWeaver BW</td>
<td></td>
<td></td>
<td>System Landscape Type 5</td>
</tr>
<tr>
<td>SAP NetWeaver BW &amp; non-SAP DWH</td>
<td></td>
<td></td>
<td>System Landscape Type 6</td>
</tr>
</tbody>
</table>
SAP BusinessObjects BI Solution Architecture
Customer System Landscapes - System Landscape Type 3

- **ERP System**

  - Non-SAP ERP
  - SAP ERP
  - Non-SAP ERP & SAP ERP

  - **No DWH**
    - System Landscape Type 1
    - System Landscape Type 2
    - System Landscape Type 3

  - **Non-SAP DWH**
    - System Landscape Type 4

  - **SAP NetWeaver BW**
    - System Landscape Type 5

  - **SAP NetWeaver BW & non-SAP DWH**
    - System Landscape Type 6
Customer Segment Details

- Customers using a combination of SAP ERP with non-SAP ERP (e.g. PeopleSoft, Oracle)
- Customers using a combination of non-SAP ERP without SAP ERP

SAP BusinessObjects offerings

- SAP BusinessObjects BI stack for reporting and analysis
- SAP BusinessObjects Data Services
- Rapid Marts for SAP, PeopleSoft, Oracle, and Siebel
- SAP BusinessObjects Integration for SAP, PeopleSoft, Oracle, JD Edwards, and Siebel
- Custom Rapid Mart with SAP BusinessObjects Data Services
- SAP NetWeaver BW Accelerator with SAP BusinessObjects Data Services
System Landscape Type 3: non-SAP & SAP ERP / no DWH
Data connectivity with Rapid Marts
System Landscape Type 3: non-SAP & SAP ERP / no DWH
Cross ERP vendor reporting with Rapid Marts & Data Federator
System Landscape Type 3: non-SAP & SAP ERP / no DWH
Data connectivity with custom data mart

Landscape Type 1
Landscape Type 2
Landscape Type 3
Landscape Type 4
Landscape Type 5
Landscape Type 6

Enterprise Reporting
Ad Hoc Query & Analysis
Data Visualization
Data Exploration
Advanced Analysis

Live Office
Xcelsius

Crystal Reports
Web Intelligence
Query as a Web Service
BusinessObjects Explorer

Universe

Custom Data Mart
SAP Netweaver BW Accelerator

BusinessObjects Integration for SAP, PSFT, JDE, Oracle EBS
BusinessObjects Data Services

PeopleSoft
JD Edwards
SAP ERP
Oracle EBS
System Landscape Type 3: non-SAP & SAP ERP / no DWH

Overall Recommendation (1)

- **Recommended Approach**
  - SAP BusinessObjects RapidMarts combined with SAP BusinessObjects Data Services can enable
    - Enterprise Reporting via Crystal Reports
    - Ad Hoc Reporting via Web Intelligence
    - Dashboarding via Xcelsius
    - Search and Data Exploration via SAP BusinessObjects Explorer
  - Data Federator can provide the capability to establish cross ERP-vendor reporting
    - In cases where cross ERP Vendor is a crucial requirement a custom data mart combining the sources might become a recommended solution
  - SAP BusinessObjects Data Service in combination with SAP NetWeaver BWA can add search and exploration using SAP BusinessObjects Explorer on top of large volumes of data
    - **Tip**: For limited data volume you can enable data exploration via Universes or use SAP BusinessObjects Explorer on-demand

- **Other Options**
  - Use SAP BusinessObjects Integration for SAP to enable Crystal Reports and Xcelsius directly on top of the ERP system (**Shortcoming**: No real cross ERP reporting)
Implementation recommendation

- Rapid Marts are designed for a single ERP vendor – not for a cross ERP vendor solution.
- In case reporting across several ERP vendor solutions is required, a consolidation into a customer data mart or SAP NetWeaver BW is recommended.
Product Components and Versions

- SAP BusinessObjects Explorer, accelerated version 2.0
  - SAP BusinessObjects Explorer XI 3.2
  - SAP NetWeaver BW Accelerator 7.20

- SAP BusinessObjects Accelerator 1.0
  - SAP NetWeaver BW Accelerator 7.20
  - SAP BusinessObjects Data Services XI 3.2 SP1
    - index designer

- SAP BusinessObjects Integration for SAP, Siebel, JD Edwards, PeopleSoft, Oracle XI 3.1 Service Pack 2

- SAP BusinessObjects Enterprise XI 3.1 Service Pack 02

- Crystal Reports 2008 Service Pack 02

- Xcelsius 2008 Service Pack 02

- Live Office XI 3.1 Service Pack 02
# System Landscape Type 3: non-SAP & SAP ERP / no DWH

## Summary

<table>
<thead>
<tr>
<th>Landscape Type 1</th>
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<th>Landscape Type 6</th>
</tr>
</thead>
</table>

### Pros
- Rapid Marts can be deployed and provide a reporting environment in a few days
- Rapid Marts deliver pre-built content and ETL jobs for a large set of ERP modules
- Rapid Marts allow offloading reporting requests from the ERP landscape
- SAP BusinessObjects Integration Kits for ERP vendors offer a simple and inexpensive option for operational reporting using Crystal Reports
- Using SAP NetWeaver BWA with SAP BusinessObjects Data Services provides a very simple, easy to deploy solution for SAP ERP and non-SAP data and SAP BusinessObjects Explorer

### Cons
- Rapid Marts are not designed to combine data from different ERP vendors into a single view (Rapid Marts are not a replacement for a full data warehouse solution)
- Rapid Marts are not a 100% out-of-the-box solution. Rapid Marts are a 80% pre-built solution which requires Field Services involvement for customization
## Integration Point

<table>
<thead>
<tr>
<th>BusinessObjects Integration for SAP, Oracle, JDE, PeopleSoft, Siebel</th>
<th>BusinessObjects Integration Solution provides direct data connectivity to ERP systems and authentication provider for the BI platform to achieve SSO</th>
</tr>
</thead>
</table>

<table>
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<tr>
<th>Custom Data Mart with Data Services &amp; Data Federation</th>
<th>SAP BusinessObjects Data Services is able to extract the data from the ERP systems and create a data mart that can provide cross-ERP vendor reporting solutions</th>
</tr>
</thead>
</table>

| SAP NetWeaver BW Accelerator with Data Services | SAP NetWeaver BW Accelerator allow acceleration of any data source via Data Services |

## Technical Details

<table>
<thead>
<tr>
<th>BusinessObjects Integration for SAP, Oracle, JDE, PeopleSoft, Siebel</th>
</tr>
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</table>

- Direct connectivity towards the ERP system
- Single Sign On based on ERP credentials
- Re-use of ERP credentials on the BI platform

<table>
<thead>
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<th>Custom Data Mart with Data Services &amp; Data Federation</th>
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</table>

- Rapid Marts deliver pre-built schemas based on best practices
- Universes on top of Data Marts enable the complete BI portfolio
- Data Federator provides cross datasource reporting

<table>
<thead>
<tr>
<th>SAP NetWeaver BW Accelerator with Data Services</th>
</tr>
</thead>
</table>

- SAP NetWeaver BW Accelerator allows indexing of any data source
- SAP NetWeaver BW Accelerator provides high performing access to large data volumes

## Technical Benefits to Customer

### Overall Benefit

1. A custom data mart solution allows for cross ERP vendor reporting with a single source for the complete BI stack

2. Customers can use Rapid Marts, SAP BusinessObjects Data Services and SAP BusinessObjects Data Federator to create a quick and simple solution to enable the complete SAP BusinessObjects BI portfolio

3. Customers can leverage the investment into SAP BusinessObjects Data Services and extend the usage to accelerate the data using SAP NetWeaver BW Accelerator to enable data search and exploration with SAP BusinessObjects Explorer
System Landscape Type 3: non-SAP & SAP ERP / no DWH
- Customer Growth Opportunities -

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<td>System Landscape Type 6</td>
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System Landscape Type 3: non-SAP & SAP ERP / no DWH

Customer growth opportunities (1/3)
System Landscape Type 3: non-SAP & SAP ERP / no DWH
Customer growth opportunities (2/3)
System Landscape Type 3: non-SAP & SAP ERP / no DWH

Customer growth opportunities (3/3)
System Landscape Type 3: non-SAP & SAP ERP / no DWH
- Product Background Information -

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</tr>
<tr>
<td>SAP BW &amp; non-SAP DWH</td>
<td></td>
</tr>
</tbody>
</table>
Crystal Reports
Deploy a Common Framework for Enterprise Reporting

The de facto standard for reporting
- Proven world standard for report design
- Ubiquitous reporting assets and expertise for fast implementation
- Chosen reporting solution by over 500 major independent software vendors

Deploy a common framework for all enterprise reporting needs
- Build any kind of report – such as business, financial, legal, and regulatory reports
- Sophisticated report formatting: create multi-page, multi-query, pixel-perfect reports
- Templates and wizards to speed up report creation
- Secure, large-scale distribution of reports over the web
- Connectivity to any data source
SAP BusinessObjects Web Intelligence
Enable Self-Service Access to Information and Analytics

Empower business users with powerful, yet easy to use analysis
- Intuitive, web-based interface with offline capabilities
- Start from a blank slate or use an existing analysis or report
- Multi-source access
- Interactivity with filtering, ranking, sorting, calculations, etc
- Data lineage

Lighten IT workload
- Self-service analysis and reporting
- Controlled and secure access with tight BI platform integration
- Intuitive, business-centric view of information with universes
SAP BusinessObjects Xcelsius Enterprise
Create Interactive Analytics and Dashboards

Consume attractive, personalized dashboards online or offline

- Access to personalized, Flash-based dashboards
- Secure visualizations anywhere – portal, reports, PDF, Office documents

Empower business users with interactive information

- Powerful “what-if” analysis with sliders and other controls
- Ability to drill-down into details
- Pre-built components, skins, maps, charts, gauges, and selectors
SAP BusinessObjects Explorer, accelerated version brings together high-performance in-memory acceleration with intuitive search and exploration.

Users can search and explore large volumes of any enterprise data to answer ‘on the fly’ questions, discover relationships, and uncover root cause.

You can bring BI to all business users with immediate insight at the speed of thought without needing assistance from business analysts or IT.
SAP BusinessObjects Explorer
Architecture overview

Landscape Type 1
Landscape Type 2
Landscape Type 3
Landscape Type 4
Landscape Type 5
Landscape Type 6

SAP BusinessObjects Explorer
Non-accelerated
Accelerated version

Excel
Universe
SAP BusinessObjects Enterprise

Index Designer
SAP BusinessObjects Data Services

BW Accelerator

External Data
SAP ERP

Business Warehouse
SAP NetWeaver BW
Data Integrator: Enterprise-class Data Integration platform

Explore, transform, and move data anywhere, at any frequency

- **Deliver trusted information**
  - Market leading data quality functionality within the data integration environment
  - Built-in features for validating data against business rules and auditing data movement execution
  - End-to-end metadata impact analysis and lineage

- **Agility and ease-of-use**
  - Single easy to use development interface to build, test, and deploy
  - Web-based administration and management
  - Collaboration features for team development

- **Deliver extreme ETL scalability**
  - Parallelized processing down to the transform level
  - Grid computing for high availability and throughput
  - Services-based architecture enabling right-time data delivery
  - Powerful prepackaged transformations
## Data Integrator: Enterprise-Wide Data Access

### Support for structured and unstructured data

Broad connectivity to databases, applications, legacy, file formats, and unstructured data

<table>
<thead>
<tr>
<th>Databases</th>
<th>Applications</th>
<th>Files/Transport</th>
<th>Mainframe (with partner)</th>
<th>Unstructured Data</th>
</tr>
</thead>
</table>
| Oracle
  - DB2
  - Sybase & IQ
  - SQL Server
  - Informix
  - Teradata
  - ODBC
  - MySQL
  - Netezza | JD Edwards
  - Oracle Apps
  - PeopleSoft
  - Siebel
  - Salesforce.com
  - SAP NetWeaver BI
  - SAP ERP
    - ABAP
    - BAPI
    - IDoc | Text delimited
  - Text fixed width
  - EBCDIC
  - XML
  - Cobol
  - Excel
  - HTTP
  - JMS
  - SOAP (Web Services) | ADABAS
  - ISAM
  - VSAM
  - Enscribe
  - IMS/DB
  - RMS | Any text file type
  - 32 languages |
Data Federator is used to build ‘virtual’ data warehouses and marts. It appears to other applications as regular DW, but the data is not pre-fetched; it is retrieved from the source systems on demand and provided to the BI tools.

Benefits of Data Federator

- Build BI apps across multiple systems
- Real-time access to distributed data
- Data integration without physical movement of data, quickly integrate data sources together before enhancing the physical DW
- Non invasive, safe technology – low impact on source systems
- Optimized performance while joining together data from multiple systems
- Wide source support - RDBMS, XML, SAS, Web Services
Packaged ETL solution for SAP, Oracle, PeopleSoft

- Source data identification
- Source to target mappings
- Pre-defined target data model and schema
- Data Integrator jobs
- Extensive application documentation

Production Management

- Change data capture jobs
- Error recovery and check-point restart

Start here with **BUSINESSOBJECTS RAPID MARTS**

- Gather business requirements
- Define data content
- Identify data sources
- Define sourcing strategy
- Design job recovery
- Implement and test

Feedback, Refine, Release
Rapid Mart data model uses star design principle

Information-rich: Content stored in ~50 tables

Pre-build universes included with access to all objects

Pre-build WebI reports

Pre-build Xcelsius dashboards

All ready to use right from the start!

Rapid Marts can be implemented individually, or in any combination, to form a single platform that delivers the infrastructure of internal and external information needed.
SAP BusinessObjects Rapid Marts
Available Rapid Marts for SAP

Landscape Type 1  Landscape Type 2  Landscape Type 3  Landscape Type 4  Landscape Type 5  Landscape Type 6

**Purchasing**
- PO ranked listings
- Cycle times
- Purchasing performance
- PO history
- PO status
- Vendor performance
- Price analysis
- Exception reporting

**Production Planning**
- Bill of material explosion
- Routing explosion
- Where used
- Capacity planning
- Cost analysis
- Lead time
- MRP requirements
- Yield analysis

**Human Resources**
- Employee benefits
- Eligibility and enrollment
- Salary comparisons
- EEO comparable worth
- Employee pay history
- Turnover analysis
- Employee events
- Vacation reporting

**Inventory**
- Daily inventory trends
- Stock turnover/outrages
- Batch management
- Inventory valuation
- Stock level optimization
- Turnover analysis
- Replenishment
- Make-to-order status

**Sales**
- Bookings
- Returns
- Lifetime sales
- Delivery efficiency
- Delivery service levels
- Margins
- Discounting
- Backlog

**Accounts Payable**
- Open payables
- Configurable periods
- Payment history
- PO/Invoice reconciliation
- Checks issued
- Short-term cash outflow
- Department workload
- Financial effectiveness

**Project Systems**
- Project costs
- Plan, actual, variance
- Earned value
- Progress analysis
- Material reservations
- Capacity planning
- Project schedules
- Project elements

**Cost Center**
- Costs
- Allocations
- Plan, actual, variance
- Cost center hierarchies
- Cost element hierarchies
- Internal orders
- Fiscal year
- Reporting periods

**Plant Maintenance**
- Life time performance
- Bad actors
- Maintenance hours
- Planning efficiency
- Material consumption
- Damage analysis
- Downtime
- MTBR and MTTR

**Accounts Receivable**
- Aged receivables
- Configurable periods
- Largest balances
- Customer payments
- Clearing vs. invoices
- Dunning and credit
- Short-term cash flow
- Department workload
# SAP BusinessObjects Rapid Marts

Available Rapid Marts for Oracle, Siebel, PeopleSoft

<table>
<thead>
<tr>
<th>PeopleSoft</th>
<th>Siebel</th>
<th>Oracle Apps</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Ledger</td>
<td>Pipeline</td>
<td>Accounts Payable</td>
</tr>
<tr>
<td>Human Resources</td>
<td>Call Center</td>
<td>Accounts Receivable</td>
</tr>
<tr>
<td>Accts Receivable</td>
<td></td>
<td>General Ledger</td>
</tr>
<tr>
<td>Accts Payable</td>
<td></td>
<td>Sales</td>
</tr>
<tr>
<td>Asset Management</td>
<td>Campaign</td>
<td>Fixed Assets</td>
</tr>
</tbody>
</table>

Oracle Apps:
- Accounts Payable
- Accounts Receivable
- General Ledger
- Sales
- Fixed Assets
- Purchasing
- HR
- Inventory
- Federal Financials
- Service Contracts
- Projects
Overview:
- Operational reporting and ad-hoc analysis directly on top of these applications
- Add-On to BusinessObjects Enterprise
- Available for
  - Oracle E-Business Suite
  - PeopleSoft
  - Siebel
  - JD Edwards

Key Features:
- Tight integration with ERP security
  - Logon to BOE using application credentials
  - Same security access as logging on directly to application
- Single Sign-On
- Native Real-Time data access data
- Sample reports
### Key Messages:

- SAP BusinessObjects BI products are “in-the-box” (OEM) in many different Oracle products.

- Oracle continues to leverage SAP BusinessObjects BI solutions, for example, at end of 2008, PeopleSoft re-signed their OEM agreement to ship SAP BusinessObjects product in their next release.

#### Landscape Type 3

<table>
<thead>
<tr>
<th>Oracle Application</th>
<th>Business Objects Technology Inside</th>
</tr>
</thead>
<tbody>
<tr>
<td>PeopleSoft</td>
<td>BusinessObjects™ XI and over 600 Crystal reports are embedded in PeopleSoft. License is restricted to use with PeopleSoft data.</td>
</tr>
<tr>
<td>PeopleSoft EPM</td>
<td>Prebuilt BusinessObjects integration and content ships with PeopleSoft EPM.</td>
</tr>
<tr>
<td>JD Edwards EnterpriseOne</td>
<td>BusinessObjects XI and Crystal Reports® are embedded in JD Edwards EnterpriseOne.</td>
</tr>
<tr>
<td>JD Edwards World</td>
<td>BusinessObjects XI and Crystal Reports are embedded in JD Edwards World.</td>
</tr>
<tr>
<td>Oracle Retail (Retek)</td>
<td>BusinessObjects XI and Crystal Reports bundle is available for Oracle Retail Store Inventory Management.</td>
</tr>
<tr>
<td>Oracle Governance Risk and Compliance Application Suite (LogicalApps)</td>
<td>BusinessObjects XI with BusinessObjects Web Intelligence® is embedded in Oracle LogicalApps ACTIVE governance solution.</td>
</tr>
<tr>
<td>Oracle LODESTAR (Utilities)</td>
<td>BusinessObjects XI and Crystal Reports are embedded in LODESTAR utilities software.</td>
</tr>
<tr>
<td>Oracle Utilities Customer Care and Billing and Enterprise Taxation Management (SPL WorldGroup)</td>
<td>BusinessObjects XI and Crystal Reports is embedded in Oracle Utilities Customer Care and Billing (formerly SPL Customer Care &amp; Billing).</td>
</tr>
<tr>
<td>Oracle Communications Billing and Revenue Management (Portal Software)</td>
<td>BusinessObjects XI and Crystal Reports are embedded in Oracle’s Communications Billing and Revenue Management (formerly Portal Software).</td>
</tr>
<tr>
<td>Oracle Database</td>
<td>Oracle OEM’s Business Objects Insight LXP is embedded in the search functionality in Oracle Database.</td>
</tr>
</tbody>
</table>
SAP BusinessObjects Integration for SAP Solutions

- SAP ERP Connectivity for Crystal Reports
  - InfoSets, ABAP Functions, SAP Query, Tables, Data Cluster
- SAP NetWeaver BW Connectivity for Crystal Reports, Web Intelligence, Voyager
  - BW query, BW InfoProvider
- SAP Authentication for BusinessObjects Enterprise
  - Allows re-use of SAP users and roles
- Lifecycle Management integration for Crystal Reports
  - Publishing from SAP BW system to BusinessObjects Enterprise
  - Integration into SAP’s transport mechanism
  - Integration into SAP’s globalization mechanism
- Sample reports
Further Information

SAP BusinessObjects Community

SAP BusinessObjects BI Solution Architecture

http://www.sdn.sap.com/irj/boc/bi-solution-architecture
Thank you!