INTELLIGENCE FOR THE CHANGING WORLD OF BUSINESS TECHNOLOGY

Asset Analytics

Hemant Rathod – SAP Labs LLC
Learning Points

The process of transforming data into useful intelligence is not straightforward. However, with the SAP Rapid Deployment Solutions (RDS) for Asset Analytics, SAP provides a simple yet powerful way to achieve your strategic EAM goals by providing the right analytics. The Asset Analytics RDS will provide a range of predefined KPIs (sustainability, maintainability, reliability, availability, and supplies) as well as enhanced BI content to facilitate reporting and monitoring. In this session, we will cover the predefined roles for viewing this content as well as show sample dashboards developed to speed adaptation of the KPIs while also allowing you to embody your specific requirements.

Key Learning

• What does SAP mean by a Rapid Deployment Solution?
• What are some of the metrics for the EAM KPIs?
• How can this key information be distributed to the organization?
What we will Cover

• Overview of the Solution
• Solution in Detail
  1. Gain Full Visibility into Asset Management with Analytics
  2. Improve Supply Efficiency
  3. Manage Risks in Asset Management
• Technical Details
• Introduction to SAP Rapid Deployment Solutions
• Service Delivery
• Summary
• Q&A
Overview of the solution
Global trends and their impact on Enterprise Asset Management (EAM)

**Uncertain markets**

- Globalized competition
- Sustainability

**Maximize return on physical assets to survive with limited investments**
- Constrained budget for investments in new assets
- Prioritization of capital expenditures (CAPEX) portfolio supporting business strategy
- Focus on asset lifecycle cost
- Governance of capital projects to avoid delays and cost overruns
- Reliability of programs to exploit existing assets better

**Drive competitiveness with excellence in operations and maintenance**
- Eroding margins force companies to further reduce OPEX
- Return on assets requires balancing availability with asset utilization
- Companies face pressure to outsource maintenance activities
- Spare parts inventory binds too much capital

**Manage EHS* performance and asset-related risks**
- Monitor key performance indicators (KPI) for EHS
- Deal with increased risks in terms of reputation and compliance
- Reduce green house gas emissions
- Manage energy to reduce costs and emissions
- Analyze and reduce carbon footprint

*Environment, health, and safety
Asset Performance Management Goals

Reduce downtime: 57%
Improve asset utilization: 55%
Reduce maintenance costs: 36%
Minimize safety incidents: 17%
Reduce energy consumption: 13%
Successfully clear internal and external audits: 10%

All Respondents
Percentage of Responders, n=117

Aberdeen Group, October 2010
Increasing Focus on Advanced Asset Management and Analytics

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced operational budgets</td>
<td>67%</td>
</tr>
<tr>
<td>Reduced capital budgets</td>
<td>48%</td>
</tr>
<tr>
<td>Need to maximize Return on Assets (RoA)</td>
<td>44%</td>
</tr>
<tr>
<td>Regulatory compliance is driving focus towards reliability</td>
<td>15%</td>
</tr>
<tr>
<td>Need to adhere to corporate sustainability mandates</td>
<td>10%</td>
</tr>
</tbody>
</table>

Aberdeen Group, October 2010

Percentage of Responders, n=117
The Power of SAP BusinessObjects Asset Analytics

- **Maintenance Manager**
  - Maintenance Plans
  - Planned Maintenance Request
  - Estimated Unplanned Work
  - Forecast and Extract: Capacity, Activity, Cost

- **Maintenance Planner**
  - Maintenance Plans
  - Maintenance Request
  - Plan and Release Order: Capacity, Activity, Cost

- **Supervisor / Technician**
  - Maintenance Orders
  - Maintenance Notifications
  - Execute and Record: Capacity, Activity, Cost

- **Scorecard**, **Dashboard**, **Reports**

- **Planning Group**, **Operational Work Center**, **Plant**, **Construction Center**
Go Live in as little as 12 Weeks

- **What's Included – Solution Scope**

  - **Solution Scope**
    - Pre-configured software to eliminate the guesswork
    - SAP Native Integration: delivered with BW extractors to pull work orders, notifications, task lists, maintenance plans, and Master data from SAP data sources
    - Industry-standard analytics that allow users to manage, monitor, and measure the effectiveness and value of their EAM processes
    - Powerful KPIs* that highlight actionable and operational issues in key areas of EAM
    - Comprehensive Enterprise Asset Management (EAM) data model
    - Pre-configured EAM Analytics based on a robust and scalable BusinessObjects platform
    - Rapid delivery in as little as 12 weeks, using SAP consulting service or extensive SAP Partner Channel
    - An affordable and flexibly priced solution
    - A clear path for you to improve visibility into asset performance
The result: an integrated, holistic view of your business processes

<table>
<thead>
<tr>
<th>Today</th>
<th>Sustainable solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributed information sources</td>
<td>Integrated, insight-driven, and actionable</td>
</tr>
</tbody>
</table>

- SAP EAM
- Shop floor or plant
- Non-SAP CMMS
- Operational risk and environmental compliance
- Supplies management

Silos of EAM information stored in multiple systems
- No central view of EAM-related KPIs to view cause-and-effect relationship

- Use one solution
- Monitor all key areas of EAM performance
- Act quickly on impact-based priorities
**Improve Asset Utilization and Reduce Cost**

**Business Value**

SAP BusinessObjects Asset Analytics provides a holistic approach to review performance of assets, and processes used to manage assets in your organization.

**What SAP BusinessObjects Asset Analytics Provides**

- Better visibility and control over asset performance
- Tools to track improvements

**Benefits of Implementing SAP BusinessObjects Asset Analytics**

1. **Reduced total cost of ownership of your assets**
2. **Improved availability of assets**
3. **Reduced cost of managing the asset**
4. **Improved tracking of benefits offered by asset management to the organization**
Gain full visibility into asset management with analytics
Gain full visibility into asset management with analytics: scope and benefits

What’s included:

- Manufacturing leaders improve asset performance (increased up-time, narrowed process variability, reduced energy and maintenance costs, and faster reaction to process changes) by increasing visibility into asset management and sharing best practices, which leads to greater productivity and improved operational efficiency. Whether your asset-intensive business relies on production equipment, power grids, roads, or facilities, you can improve asset reliability, maintainability, and availability with powerful reporting and analytics functions.

- With improved visibility, companies like yours can support efficient and sustainable management of the entire lifecycle of physical assets in terms of performance, risks, and expenditures.

Business benefits:

- Understand the costs caused by the individual asset, work center, plant, or production site
- Increase asset reliability by addressing the root cause of poor asset performance
- Achieve production goals with more reliable assets
- Reduce the total cost of maintenance through increased emphasis on preventive and predictive maintenance
In the system

- High-level scorecard that can be filtered by organizational units and time dimension
- Powerful KPIs for asset reliability, availability, and maintainability
- Color-coded dials to alert users to problem areas at the level of an individual KPI, perspective, and organization
- Drill-down function to support root cause analysis
In the system

- MTTR, MTBR, and MTBF
- Technical and operational availability
- Capacity for preventive, predictive, and breakdown maintenance
- Percentage work orders for critical equipment and emergency, breakdown, predictive, and preventive maintenance
- Percentage of capacity used for maintenance tasks

Drill-down function enables users to drill down on high-level KPIs to get additional details (actual and target performance) of contributing KPIs
Ad hoc reporting that compares actual to benchmark values at various levels of granularity

Graphical chart that visualizes current performance relative to historical performance

Various perspectives of a KPI report available by dragging and dropping additional data dimensions
In the system

- Collect snapshots of scorecards and dashboards into a briefing book for offline viewing
- Use a briefing book as a tool to present information to a larger audience or to be shared via e-mail
- Use snapshots that enable you to maintain a historic record of information after the latest data has refreshed the system
In the system

- Standard dashboards for notification response time, maintenance cost, breakdown work orders, MTBF, operational availability, and orders delayed due to stock outages
- Graphical charts to show data trends for the past six months
- Comparison of actual and benchmark performance and highlighting of significant deviations with traffic lights
Improve supply efficiency
Improve supply efficiency: scope and benefits

**What’s included:**

- Optimal spares and resource provisioning is a prerequisite for all types of maintenance tasks, such as inspections, preventive maintenance, and repairs. Spare parts and human resources for maintenance tasks are often required at random intervals. The coordination of the demand for spare parts with the supply of spare parts at the required time is an important factor in on-time execution of maintenance work. **Missing materials are one of the most common reasons for delays in maintenance tasks.** Because spare parts for equipment are often of very high quality, the problem cannot be solved by simply increasing warehouse stock.

- With analytics for maintenance supplies, you will be alerted to negative trends in asset management caused by **poor supply management** processes so that you can **take immediate corrective measures** and optimize your process.

**Business benefits:**

- Reduction of waiting times because of missing spare parts or personnel
- Optimization of material stock according to usage
- Streamlined procurement process for the best price
In the system

- Subcontracted work as a percentage of total work
- Number of stock outages
- Work orders delayed as a result of stock outages
In the system

- Support for a holistic approach to problem-solving by identifying the effects and consequences that KPIs have on each other
- Impact analysis diagrams that help you visualize how lagging KPIs affect your bottom line
- Pointers to the root cause of a lagging KPI so that necessary steps can be taken to avoid problems
Manage risks in asset management
Manage risks in asset management: scope and benefits

What’s included:

- If plant equipment is faulty due to poor maintenance, it creates a real risk of injury to personnel and harm to the environment.
- Asset analytics help manage such risks by alerting the maintenance organization to negative trends in worker and environmental safety. Analysis can hone in on the specific problem area for immediate corrective measures and for continuous improvement. Critical equipment must be maintained properly and inspected regularly to ensure that it is in good working condition.

Business benefits:

- Reduced safety and environmental noncompliance
- Larger portion of maintenance budget allocated to preventive maintenance
- Improved corporate image through social responsibility
- Reduced litigation risk from faulty equipment
In the system

- Maintenance requests to correct incidents with reported injuries
- Maintenance requests to correct safety incidents
- Maintenance requests to correct incidents related to environmental compliance
# System requirements

<table>
<thead>
<tr>
<th>Product</th>
<th>Product version</th>
<th>BI content version requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP ERP</td>
<td>SAP ERP 6.0 EHP5 SP06</td>
<td></td>
<td>Data source system</td>
</tr>
<tr>
<td>SAP NetWeaver</td>
<td>SAP EHP2 for SAP NetWeaver 7.0 SPS09</td>
<td>SAP NetWeaver 7.0 BI content add-on 7.06 SP03</td>
<td>BI system</td>
</tr>
<tr>
<td>SAP NetWeaver</td>
<td>SAP NetWeaver 7.3 SPS04</td>
<td></td>
<td>BI system:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Entry point for scorecard in SAP Business Objects Supply Chain Performance Management (The server for deployment of the POASBC-BUINW) component</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Entry point for dashboard (embedded dashboard in scorecard) of SAP Business Objects Supply Chain Performance Management</td>
</tr>
<tr>
<td>SAP Business Objects</td>
<td>SAP Business Objects Supply Chain Performance Management 2.0 Sp01 Patch01</td>
<td>SAP NetWeaver 7.0 BI content add-on 7.06 SP03</td>
<td>BI system</td>
</tr>
<tr>
<td>Supply Chain Performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAP Business Objects Xcelsius</td>
<td>SAP Business Objects Xcelsius 2008 SP3 FP3</td>
<td></td>
<td>BI system</td>
</tr>
<tr>
<td>Enterprise</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
System landscape

- SAP BusinessObjects Asset Analytics
- Dashboard
- SAP BusinessObjects Supply Chain Performance Management
  - Xcelsius 2008 2.0 SP01
  - SAP NetWeaver BW 7.02 SP05 with BI content 7.06 SP03
  - SAP ECC 6.05, SP06

Information for each perspective
- Actual data
- Planned data
- Benchmark data

Queries in SAP Business Explorer

Data source
- Back-end ERP

File with data
- File with data
Some of the restrictions

1. Currently SCPM 2.0 is under Ramp Up
2. Many KPI assumes strong processes to collect and collate accurate operational / maintenance information.
3. Forecasting model does not work with multi-cycle/multi-counter plans
4. Xcelsius dashboards provided with these RDS are examples only, and customer may need to customize for their own needs. Currently these dashboards can not be embedded in Asset Analytics directly. They can be accessed using a portal framework.
### SAP BusinessObjects Asset Analytics: KPIs (1/2)

#### Maintainability
- Maintenance rework
- Notification response time
- Maintenance cost as percentage of replacement value
- Budget utilization
- Number of notifications per clock hour
- Number of work orders per clock hour
- Percentage of work orders resulting from condition monitoring
- Backlog activities
- Completion rate
- Schedule adherence

#### Maintainability
- Total person-hour capacity available for maintenance
- Capacity for preventive maintenance
- Capacity for predictive maintenance
- Capacity for breakdown maintenance
- Percentage of work orders for preventive maintenance
- Percentage of work orders for predictive maintenance
- Percentage of work orders for breakdown maintenance
- Percentage of work orders for emergency requirements
- Percentage of work orders for critical assets
- Percentage of Capacity used for maintenance tasks

#### Reliability
- Mean time to repair
- Mean time between repair
- Mean time between failure

List assumes that the customer source system contains the required data
<table>
<thead>
<tr>
<th>Availability</th>
<th>Supplies</th>
<th>Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical availability of assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational availability of assets</td>
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List assumes that the customer source system contains the required data.
Introduction to
SAP Rapid Deployment solutions
SAP and a global partner ecosystem offer rapid-deployment solutions to meet specific business needs

**Software**
Quickly address the most urgent business processes

**Content**
SAP Best Practices packages, templates, and tools make adoption of the solution easier

**Enablement**
Guides and educational material speed adoption by end users

**Service**
Fixed scope and price provide maximum predictability and lower risk
Delivered by SAP or qualified partners

- Large global partner ecosystem maximizes availability of and choice among SAP Rapid Deployment solutions
- System integrators and value-added resellers provide industry and line-of-business (LoB)–specific capabilities and expertise
- Cloud partners provide deployment options to match your business needs
SAP Rapid Deployment solutions support all use cases along your adoption path

Start

From zero to enterprise resource planning (ERP) baseline in one go
Industry and geography-ready

Grow, extend, and innovate

New business and user functionality that fits with your existing footprint
LoB- or industry-specific, mobile, business analytics, and collaboration
Service delivery
Go live in as little as 12 weeks

**Start**
- Project management
- Kickoff workshop participation
- Preparation of technical infrastructure

**Deploy**
- Implementation
- Testing
- Key-user training

**Run**
- User-acceptance testing
- Onsite and remote support

**Expectations**
- Mutually approved scope document
- Working SAP software

**Results**
- Successful rollout and adoption
- Configuration documentation

Superior support to ensure smooth functioning

Note: This slide represents a typical deployment. Exact details may differ according to each solution.
Project plan and timelines

**Steps**

**Start**
- Prepare project
- Hold kickoff workshop
- Select options
- Check installation

**Deploy**
- Activate solution
- Confirm solution
- Perform acceptance testing
- Train key users
- Set up customer data
- Transport

**Run**
- Hold end-user training and manage organizational change
- Prepare production
- Obtain project sign-off and offer support

**Note:** This slide represents a typical deployment. Exact details may differ according to each solution.
Go live in as little as 12 weeks

What’s included in the service:

- Activation of installed enterprise asset management (EAM) content on your business intelligence (BI) system
- Extraction of standard EAM information from a single instance of the SAP ERP application or a non-SAP source system
- Activation of SAP BusinessObjects Asset Analytics 1.0
- Customer-specific modifications to queries provided in the SAP NetWeaver Business Warehouse component and KPIs to meet EAM process requirements
- Training of trainers or super users
- Rapid deployment accelerator documents

A special step-by-step guide describes each activity during the deployment
Key deliverables

What does SAP deliver?

- Initial list of standard KPIs for asset analytics to be rolled out
- Catalog of customizations required to achieve desired reporting (additional effort specified)
- Installed EAM extractors
- Activated EAM content in customer’s BI system
- Mapping of source system fields to EAM data model
- Configuration of extractors to provide best-practice reporting information
- Configured data model
- Reconciled asset analytics system
- Provide test scripts and perform unit testing
- System and hand-over documentation
- Productive operation

What do you have to do?

- Provide guidance on EAM processes and organization
- Provide the IT infrastructure (server)
- Install release 2.0 of the SAP BusinessObjects Supply Chain Performance Management analytic application on the development and production environments
- Provide detailed guidance on source system configuration and customizations
- Assist with reconciliation and research on data differences
- Be responsible for the installation and administration of asset analytics in the system landscape
- Be responsible for workshops, questions from SAP, end-user training, and system reconciliation
- Perform performance and integration testing
- Provide system administration and maintenance after the project is completed
Project team: SAP

Project lead
Serves as a central contact person, from project initiation to going live and support
Is responsible for functional project management, coordination, support and coaching of the customer’s project manager, and so on from the side of SAP

Consultants
Are responsible for implementation of the agreed-upon scope for the rapid-deployment solution
Project team: customer

**Leading project manager**
- Serves as a central contact person, from project initiation to going live and support
- Is responsible for functional and commercial project management, coordination, overall project controlling, preparation of steering committees, and so on from your side

**Basis staff**
- Is particularly responsible for the installation and administration of the development and productive system landscapes

**Functional department staff and key user**
- Are responsible for workshops, questions from SAP, end-user training, and possibly as a power user for simple configurations

**Specialized staff (optional)**
- Is responsible for further specialized areas such as customization and configuration
Summary
Q&A
Best Practices

- Identify Key Performance Indicators to measure how well asset management strategies are implemented and reviewed by an organization
- Provide visibility of Asset Performance across life cycle of the Asset
- How to create content that drives analytical approach that can be adapted and enhanced without high efforts
- Provide best practices to prepare Xcelsius dashboards
Key Learnings

» SAP BusinessObject Asset Analytics provides holistic view of how Assets are operated and maintained
» RDS modal of solution helps to ensures that a predefined scope of solution could be productively implemented in less than 12 weeks
» Predefined set of KPIs based on the information collected do operational maintenance and master data
» The RDS lays the foundation for SAP's EAM Analytics to enable customers to get started with KPIs related to maintainability, reliability, availability, supplies and sustainability
» Fixed scope / Fixed price implementation to achieve quick implementation within 12 weeks
# SAP BusinessObjects Asset Analytics
## Rapid Deployment Solution

### Description
The SAP BusinessObjects Asset Analytics Rapid Deployment Solution helps maintenance organizations leverage existing plant maintenance data and IT landscape to optimize Enterprise Asset Management strategy.

Ready to run, this EAM analytics application provides preconfigured software, predefined services, packaged content and user enablement at a predictable price that make solution adoption fast and easy.

Preconfigured content such as standard adhoc reports, analytical tools, KPI scorecards and dashboards help customers identify best performers and laggards in your EAM operations so that successes be replicated across the organization as best practices or root causes to drive continuous improvements in maintenance operation.

### Type of Customer / Prerequisite
- Customer runs SAP ERP 6.0 EHP 5+
- SAP NetWeaver 7.0
- Asset Management active

### Industry
- Cross-Industry, but focus on Asset-Intensive Industries

### Country/Region
- Marketing: NA, EMEA
- Globally available

### Business Processes
- Manage, monitor, and measure the effectiveness and value of assets by focusing on actionable and operational process metrics that impact performance
- Overall Performance summary using scorecards in areas of Maintainability, Reliability, Availability, SUPPLIES and Sustainability, with KPI impact mode and Top-down analysis
- This scorecard gives a complete overview of asset performance based on specified Business Dimensions and Time Dimensions.
- Gain Insights into EAM data via reports, dashboards, scorecards, workspaces, briefing books and alerts
- Closing the loop via Simulation using What-If-Analysis and Initiatives via Closed Loop Collaboration between Analytics Users
- Loading historical data from the ERP system or flat file via standard extractors & Benchmarking to populate KPIs

### Predefined Service
- The service covers deploying the pre-defined commonly used KPIs in EAM and related scenarios for a single customer site/ business unit.
- Focused on rapidly deploying the BW enhancements required to enable Asset Analytics – 31 KPIs are provided
- Designed for existing SAP ECC EAM customers who are looking to implement Asset Analytics footprint with BW 7.0 with High ROI & Low TCO
- The RDS lays the foundation for SAP's EAM Analytics to enable customers to get started with KPIs related to maintainability, reliability, availability, supplies and sustainability
- Focus on standard BW 7.0 system with pre-coded, common enhancements
- Includes 3 tier BW landscape (Development, Test, and Production)

### Planned Shipment date
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