SAP’s Commitment to Interoperability

High North IO Interoperability Workshop
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1. SAP Upstream Perspective
2. We Get It
3. Owner Operators Already Using SAP to Tackle This Problem
4. Summary
Upstream Environment: The Battle For New Resources
Balancing Profitability against Sustainability

- NOC’s
- Independents
- Integrated Majors

Control Resources
Exploit Niche Resources
Harvest Mature Resources
Compete for Resources

Explore
Appraise
Develop
Produce
Dispose

Sustainability vs. Profitability

NOC’s
Integrated Majors
Independents

FOR SALE

SAP
Today, many barriers exist to achieve both profitability and sustainability in the upstream oil & gas industry.

1. **Explore**
   - Difficult to acquire, develop, and manage an aging and tightening industry talent pool.
   - Lack of interoperability across production asset’s design to disposal lifecycle.
   - EH&S requirements disconnected from normal asset operations.

2. **Appraise**
   - Sub-optimal portfolio of competing capital investments.

3. **Develop**
   - Difficult to provide transparency and manage complex ownership and partnership relationships.
   - Challenge to reduce F&D and production costs for assets with increasing complexity & remoteness.

4. **Produce**
   - Unable to efficiently maximize production from existing pools.

5. **Dispose**
   - Difficult to assess assets’ true relative performance to make timely disposal decision.
Upstream Players Can Better Balance Profitability and Sustainability by Providing ...

Ownership transparency, compliance and controls across asset lifecycle

Result: Compliant and managed international relationships with competitive advantage

Integrated operational management of remote assets

Result: Reduced Finding & Development and lifting costs

Employee Lifecycle & Knowledge Management

Result: Improved productivity & safety with less HR cost

Interoperability across lifecycle with all constituents and their systems

Result: Reduced capital & improved asset performance

Integral management of EH&S requirements along the value chain

Result: Improved safety and compliance at lower cost

Full visibility and analysis of capital & productivity improvement projects

Result: Improved ROCE, reduced risk, improved asset portfolio performance

Accuracy and transparency into asset’s relative performance in portfolio
Agenda

1. SAP Upstream Perspective
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We Understand the Interoperability Objectives

- Return on Assets
- Asset Utilization: OEE, Run Time, Availability
- Dashboards & Alerts
- Performance: Quality, Cost, Yield, On-Time
- Energy use
- Safety/Compliance
- 6 sigma, Lean, Reliability Teams
- Profit/Usage per Route, Plane, Media Asset etc
- Inventory Days
We Understand the Key Trends that are Driving Towards Interoperability

1. Business Performance Optimization
   Leveraging of all data sources to improve quality and speed of decision making

2. From Individuals to Communities
   Collaboration accelerates on boarding, improves efficiency and speeds innovation

3. From Businesses to Business Networks
   Focus on core competencies enables maximum productivity
We Understand the Current State
Asset Performance Excellence Remains Elusive

Managing Asset Lifecycle Continues to be a Disjointed, Tedious and Frustrating Process
Manage the entire asset lifecycle, maximize its use and productivity and ensure adherence to enterprise and regulatory procedures.
SAP Maximizes Asset Performance in the Process Industries across Full Lifecycle

- Design, Build and Commission
- Asset Visibility and Performance
- Maximize Asset Uptime
- Asset Safety and Compliance
Asset Safety and Compliance
Closed Loop Management of Key Operational Risks

Chief Compliance Officer (Sponsor)

KPIs:
- Safety Record
- Public Reputation
- Corporate Fines and Penalties
- Cost of Compliance

Keep the Stakeholders Informed and Involved
- Establish safety strategy, risk management, compliance policies & objectives
- Governance & reporting structures
- Management of Change Process
- Provide transparency to all stakeholders

Keep the Environment Safe
- Transparency on worldwide environmental legislations and internal policies
- Cost efficient management of compliance
- Enterprise wide objectives & reporting
- Community advocacy

Keep the People Safe
- Create a proactive health and safety strategy and realize it in daily operations and procedures
- Manage compliance and control exposure to hazardous substances
- Incident management, reporting and learning

Keep the Assets Safe
- Increase reliability of assets while decreasing maintenance costs
- Realization of various maintenance and safety strategies
- Effective prevention of incidents that harm people or the environment

Value Proposition

The COO and Chief Compliance Officer will drive towards a zero incident rate, reducing operational risks and improving public image as a result of providing a closed loop operational risk management system enabled by comprehensive solution that identifies, plans & executes mitigating actions, and monitors all environmental, safety, and mechanical integrity risks in a proactive and compliant manner powered by SAP ERP, SAP Environmental Compliance, SAP EH&S, SAP Learning Solution, SAP GRC Risk Management, Business Objects, SAP MII, SAP Mobile Asset Management and RCMO by Meridium.
## Asset Safety and Compliance

*Enabling Process Safety, Standardization and Visibility*

### Integrates Business Processes Across Stakeholders

<table>
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<tr>
<th>Role</th>
<th>KPIs/Processes</th>
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| Chief Compliance Officer (Sponsor)  | - Corporate EHS KPI Monitoring  
- Corporate EHS Risks Management  
- Corporate EHS Compliance Reporting  
- EHS Audit Management            |
| COO                                 | - Corporate EHS KPI Monitoring for Operations  
- Corporate EHS Risks Management  
- Corporate EHS Compliance Reporting for Operations  
- EHS Compliance Reporting for Operations  
- Operational H&S Risk Analysis for Work Areas  
- Operating Permits Management  
- Risk Analysis for Critical Assets |
| Plant Manager                       | - Task Execution and Reporting  
- Environmental Permit, Risk, Requirement Management  
- Action, Deviation and Response Planning  
- Data Collection for Emissions, Consumption, Measurements  
- Environmental Incident Management and Reporting |
| Environmental Engineer              | - Task Execution and Reporting  
- Environmental Permit, Risk, Requirement Management  
- Action, Deviation and Response Planning  
- Data Collection for Emissions, Consumption, Measurements  
- Environmental Incident Management and Reporting |
| Industrial Hygiene and Safety Officer| - Task Execution and Reporting  
- Operational H&S Risk Analysis for Work Areas  
- Safe Operating Procedures, Certificates and Training  
- Occupational Health Management  
- Occupational Incident Management and Reporting  
- Permit to Work/ Lockout Tagout Management |
| Maintenance Manager Engineering Manager| - Task Execution and Reporting  
- Design/Change Assets for Safety  
- Maintenance Strategy  
- Maintenance Planning  
- Maintenance Work Orders  
- Permit to Work/ Lockout Tagout Management |
SAP has Portfolio, Ecosystem, and Platform to Meet Significant Portion of the Need

Designing, Building and Commissioning Assets
- Primavera Inspire
- Meridium - RCMO
- NRX – Asset Center
- Open Text
- SAP RPM

Asset Visibility & Performance
- Meridium - RCMO

Maximize Asset Uptime
- Primavera Inspire
- NRX – Visual Information for Plants
- SAP MAM
- SAP E-Sourcing/CLM

Asset Safety and Compliance
- Open Text
- Meridium - RCMO
- SAP GRC Risk Management
- Work Clearance Management
- SAP Environmental Compliance

Value Extensions

Infrastructure Options
- Adobe Interactive Forms
- Analytics (BI, Business Objects)
- SAP MII

Foundation
- SAP NetWeaver (PI, MDM, et. al.)
- SAP PLM
- SAP ERP (PM, PS, MM, et. al.)
- SAP EH&S

Note: SAP Learning Solution applicable to all projects

= Partner Solutions
SAP Understands the Power of Community

**Industry Thought Leadership**
- Industry advisory council*
- Set the focus, identify trends

**Co-innovation of Companies**
- Industry Value Network
  - Complete a solution with partners
- Industry standards initiative
  - Define common interfaces
- Enterprise Services Community
  - Define enterprise services for ES Repository

**Collaboration of Individuals**
- Business Process Expert community
  - Compose processes
- SAP Developer Network
  - Technical implementation
- User groups*
  - Connect, learn, influence, grow

*Not a part of the communities of innovation at SAP, but a critical element in an SAP customer’s options to work collaboratively

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PEMEX Gas speeds Information Delivery through connecting Plant and Enterprise Systems

Company | Pemex Gas y Petroquímica Básica
Location | Mexico
Industry | Oil and Gas
Products/Services | Petrochemical Products
Revenue | n/a
Employees | 12,680+
Web Site | www.gas.pemex.com
SAP Solution and Services | SAP xMII

“...the easy access, speed, integration and performance levels of the portal have made this product one of the most important developments, and a world success case in terms of implementation of SAP xMII™ system.”

Manuel Chávez
Manager of Operating Control, Optimization and Safety
Pemex Gas y Petroquímica Básica

Challenge and Opportunity
- Real time visibility to production systems was not achievable

Objectives
- Deliver views of production, environmental, safety and maintenance data in an single integrated dashboard

Implementation Highlight
- Deployed SAP xMII across all their 10 gas complexes with 71 processing units in 4 months providing visibility across all aspects of their operations
- Mobility: Company personnel may access information from processing facilities, and receive operational alerts in their PDAs and cell phones

Why SAP?
- SAP delivered instant connectivity to plant systems and enterprise systems

Benefits
- Customized display: Dashboards and customized information for roles and users, ability of viewing data in different devices and media
- Speeds information delivery and improves decision making - integration between SAP and production systems in a single application
- Improves production totals and reduces operating costs
Asset Safety and Compliance
Success Story: Valero Energy Corporation

HQ: San Antonio, Texas
Total Assets: $38 B USD
Number of Employees: Approx. 21,000
Refining Throughput Capacity: 3.1 mil brls per day
Number of Retail / Wholesale Sites: Approx. 5,800
Number of Wholesale Markets: 44 U.S. states, Canada, Latin America and the Caribbean region

What: Successfully deploying HSE Asset Safety and Compliance solution across all operations to gain greater visibility
Time: Initiated in Q4 2007, to be completed by Q4 2008

Goals and Objectives for Project:
- Greater visibility to operations, safety and compliance
- Sharing of best practices across operations
- Proactive management of leading / lagging indicators
- Improved monitoring of assets, processes, performance
- Increased visibility to portfolio, incidents, risks and operations
Visibility Architecture Deployment Plan for Asset Safety and Compliance

- 17 Refinery-based servers
- 1 Corporate server
- Local data gathering
- Central application deployment
- Central scheduling
- Canonical format
- Enterprise class
Near Real-Time Stakeholder Dashboard for Asset Safety and Compliance
Solution Reduces Losses at the Plant, Shares Best Practices and Increases Visibility

- Deployed at 17 Refineries, integrating:
  - 4 distinct process historians
  - Dozens of other unique legacy systems and databases
  - Proprietary technologies
  - Highly detailed and inconsistent data
  - Distributed environment w/sensitive bandwidth
  - Created visually stimulating UI

- Executive Operations Center
  - Media wall
  - Plasma panorama
  - Graphical, colorful, meaningful display

- Process Control Metrics
  - Volume analysis
  - Inventory control
  - Process safety statistics
  - Energy stewardship
SAP is Committed to Open Standards

Many examples of open platform success....
SAP is Committed to Interoperability

- Already broadest portfolio of “natively” integrated solutions that span the enterprise
- We have a proven SOA platform that is being used for interoperability today
- We have multiple development/delivery approaches that would facilitate delivery of Open O&M standards
- We have the power of community to help drive both development and adoption
Thanks for your attention –
Any questions?

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