The Extended Oil & Gas Supply Chain

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The Ecosystem and the Oil & Gas Supply Chain

- **Upstream**
- **Midstream Supply**
- **Refining**
- **Primary Supply**
- **Secondary Distribution**
- **Service Station & Convenience Retailing**

**Roles**
- Producer
- Distributor
- Refiner
- Distributor
- Retailer

**Products**
- Crude
- Refined Products
- NGL / LPG
- Lubricants
- Natural Gas
What is Downstream Oil & Gas Supply Chain Management?

What is Supply Chain Management? A few definitions ...

- “Integrated Supply Chain Management (ISCM) is a process-oriented, integrated approach to procuring, producing, and delivering products and services to customers.” [M.I.T]
- Supply chain management involves coordinating, integrating and executing these flows both within and between companies.
- SCM’s aim is to optimize the activities occurring along the supply chain to maximize asset usage, minimize costs and drive maximum revenue from the activity.
- Within the Oil and Gas Industry, we typically describe SCM stages of planning, scheduling and execution as taking place, with constant and ongoing tracking parallel to these.

Key Characteristics in Oil & Gas

- Large quantities of products managed on a global basis
- Typically long lead times for transportation
- Highly fungible market, both in terms of products and partners
- Long term contracts the normal basis for business
### Key Issues for Supply Chain Management

<table>
<thead>
<tr>
<th>Key Issues</th>
<th>Observations</th>
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<tbody>
<tr>
<td>Rationalizing Supply Chain network</td>
<td>Lack of visibility and lack of integration of supply chain</td>
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<tr>
<td>Lack of global industry wide standards</td>
<td>Lack of central source of mission critical data</td>
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<td>Lack of ability to rapidly respond to real world scenarios</td>
<td>Need for real time data visibility and ability to perform “what if” scenarios to quickly adjust operating plans</td>
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<td>Lack of collaboration between supply chain partners</td>
<td>Creates imbalances and inefficiencies along supply chain</td>
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<td>High occurrence of M&amp;A</td>
<td>Creates disruptions to company operations and management</td>
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<td>Lack of Risk Management</td>
<td>Creates possibility of distress spot contracts</td>
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A Fully Integrated, Closed-Loop Process

All Steps of the Process are Integrated and Seamless

1. Planning & Optimization
   - Demand Planning
   - Refinery planning
   - Upstream planning
   - Crude supply planning
   - Product supply planning
   - Trading Plan

2. Operations & Scheduling
   - Schedule Building
   - Schedule Balancing
   - Schedule updates
   - Inventory Management
   - Trading Operations

3. Execution & Settlement
   - Custody Transfer
   - Event management
   - Back Office Updates
   - Invoicing / Payments

4. Evaluation & Analysis
   - Profit Loss Analysis
   - Optimization of Inventory
   - Risk Management
   - Performance Monitoring

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THE BEST-RUN BUSINESSES RUN SAP
A Collaborative Approach to Solution Development

- SAP APO started
- Network Planning
- Event Manager
- Production Planning
- Inventory Hubs
- SCM Integration
- 1st release
- Demand Planning
- TSW started
- Global Industry Advisory Council
- Pilot case: CITGO live
- TSW Focus Group
- Saudi Aramco
- Major 4.6c
- BHPBilliton / TOTAL
- Industry Experience
- mySAP SCM Components
- Oil & Gas Components
- Industry Experience

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THE BEST-RUN BUSINESSES RUN SAP
Major Roles in the Supply Chain - Pipeline

- Marine Carrier
- Partner Trader
- Pipeline Operator
- Partners

- Refinery Manager
- Crude Pipe Scheduler
- Crude Marine Scheduler
- Terminal Manager

- Products Trader
- Colonial Pipeline Scheduler
- Crude Trader

- Demand Manager
- Exchange Manager
- Supply Manager

Greensboro
Doraville
Baton Rouge
St. James
Offshore / Offshore Wells

NWE Rotterdam
What’s happening? Supply Chain Management

- Bulk transfers
- Bulk contract sales
- Rack exchanges
- Rack sales
  - Partner
  - Own
- Bulk transfers
- Bulk contract sales
- Rack exchanges
- Rack sales
  - Partner
  - Own

- Greensboro
  - Rack exchange
  - Rack sales
    - Partner
    - Own
- Doraville
  - Rack exchange
  - Rack sales
    - Partner
    - Own

- Baton Rouge
  - Rack exchanges
  - Rack sales
    - Partner
    - Own

- Customer Nomination
- Own Scheduling and Nomination
  - Own statistical Forecast
- Partner Supplied forecast
Mapping the SAP Solution

1. Planning & Optimization
   - Demand Planning
   - Refinery planning
   - Upstream planning
   - Crude supply planning
   - Product supply planning
   - Trading Plan

2. Operations & Scheduling
   - Schedule Building
   - Schedule Balancing
   - Schedule updates
   - Inventory Management
   - Trading Operations

SAP Solution

- SAP Advanced Planning & Optimization (SAP APO)
  - Demand & Supply Planning & Forecasting
  - Collaborative Planning
  - Supply Network Planning & System Balancing
  - Global Available to Promise
  - See also overlapping area below …

- SAP Traders’ & Schedulers’ Workbench (SAP TSW)
  - Planning to Operations and Scheduling Cycle
  - Nomination Management
  - Inventory Planning
  - Custody Transfer Handling

- SAP Event Management (SAP EM)
  - Integration into Real World events
  - Monitoring & Alerting
### Mapping the SAP Solution

#### Supply, Transmission & Trading

**Bulk Supply Chain Execution and Settlement**

#### 3. Execution & Settlement
- Custody Transfer
- Event management
- Back Office Updates
- Invoicing / Payments

#### SAP Solution

- SAP IS-Oil Downstream (**IS-Oil**) including…
  - Exchanges
  - **Commodity Pricing** (formula / average pricing)
  - **Quantity Conversion handling**
  - Tax and Duty Handling
  - Silo Management
  - TAS Interfacing
  - Transportation Execution & Settlement
- SAP Event Management (**SAP EM**)  

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#### Supply, Transmission & Trading

**Bulk Supply Chain Reporting and Analytics**

#### 4. Evaluation & Analysis
- Profit Loss Analysis
- Optimization of Inventory
- Risk Management
- Performance Monitoring

#### SAP Solution

- SAP Business Information Warehouse (**SAP BW**)  
  - Standard Reporting
  - Flexible definition reporting
  - Supports KPI analyses
- Strategic Enterprise Management (**SAP SEM**)  
  - Linking in data from the overall solution set and external data sources

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Reservoir to Terminal – The Solution(s)

- Marine
- Crude Pipeline
- Product Pipeline

Greensboro Prod. Terminal

Doraville Prod. Terminal

Baton Rouge Refinery

St. James Crude Terminal

Onshore / Offshore Wells

NWE Rotterdam

Off Galveston

APO – Advanced Planner & Optimizer

TSW – Traders’ & Schedulers’ Workbench

EM – Event Manager

IS-OIL – Industry Solution Oil
Introduction & SCM Business Overview

SAP Solution Overview

### Extending the SAP SCM Solution

Next Steps
Introducing Trading for Oil & Gas

Supply, Transmission & Trading
Physical Oil and Gas Commodity Trading

SAP Solution

• SAP Global Trade Management (SAP GTM)
  • Trading Contract
  • Contract Management
  • Trade Expense Management
  • Position Reporting

Supply, Transmission & Trading
Oil and Gas Paper Trading and Risk Management

SAP Solution

• SAP Treasury & Risk Management (SAP TRM)
  • Paper Deal Capture
  • Risk Management
  • Hedging
  • Reporting
NetWeaver for Integrated Trading & Operations

Trading Office

Operations Office

Accounting

Portal

Collaboration

BI

Position Planning
Deal Capture
Nomination
Shipment
Settlement

MDM

Process Integration

NetWeaver

XI

Trading (external)
Trading (internal)
ERP
Inventory
Supply / Demand Planning
Scheduling
Terminal (external)
Trading & Operations Business Landscape

- Market Tracking & Analysis
- Deal Capture
- Trading Decision Support & Optimization
- Physical Trade Management
- Paper Trade and Risk Management
- Complex Risk Management and Modeling
- Logistics Operations Management
- Financial Execution and Management
- Enterprise Reporting and Analysis
SAP Oil & Gas Integrated Trading, Risk Mgmt & Operations Initiative

Integration
SAP Oil & Gas Integrated Trading, Risk Mgmt & Operations Initiative

Integration

mySAP BI (BW and SEM)

TSW and IS-Oil / mySAP ERP

SAP GTM

SAP BW Basis

SAP Deal Capture

SAP BW / 3rd Party Solution

xITRO

Financial Execution and Management

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Introduction & SCM Business Overview

SAP Solution Overview

Extending the SAP SCM Solution

Next Steps
Next Steps

- Industry Workshops to Gather Requirements
- Develop Industry Momentum
- Quantify Industry Support
- Finalize Development Business Case (SAP)
- Develop Collaborative Buildout/Rollout Plan