“Project Information Management Challenges...Solutions”
• Project handovers are not just documents anymore....

• Owner/Operators are looking for tagged item data handovers to support virtual asset management during a project and after.

• Eg. Chevron’s Mafumeira Sul project
• The Mafumeira Sul Project /offshore Angola:
  • design, fabrication and installation of five new platforms,
  • project highlights a continued effort to expand the capabilities of Angolan fabrication yards,
  • increase the knowledge of Angolan engineers,
  • adds skilled employees to the Angolan workforce.

• Located 15 miles (24 km) offshore Cabinda province in 200 feet (60 m) of water.
• $5.6 billion Mafumeira Sul project is the second stage of development of the Mafumeira Field located in Block 0.

• scope includes 50 wells, two wellhead platforms, a central processing and compression facility and approximately 75 miles (121 km) of subsea pipelines.

• Online in 2015, the project will build to a production capacity of 110,000 barrels of crude oil and 10,000 barrels liquefied petroleum gas per day.
Why is Data so important to MSP?
Information Management

• Information Management Contractual Requirements
  • Information Management Requirements Spec

• Deliverables Management
  • Vital Documentation and Data (VDD) Deliverables Requirements Spec
  • Document Requirements Schedule (DRS)
  • Project Document Schedule (PDS)
Information Management

• Document Management Requirements
  • Document Numbering and Coding Spec
  • Document Control and Exchange Requirements Spec
  • Transmittal Management

• Data Management Requirements
  • Vital Data and Documentation (VDD) Deliverables Requirements Spec
  • Facility Engineering Data Requirements
Topsides Handover for MSP

Tag Count by Type - Chart

<table>
<thead>
<tr>
<th>Tag Type</th>
<th>Tag Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELECTRICAL CABLE</td>
<td>8,318</td>
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<tr>
<td>ELECTRICAL EQUIPMENT</td>
<td>801</td>
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<tr>
<td>INSTRUMENT</td>
<td>22,015</td>
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<tr>
<td>INSTRUMENT CABLE</td>
<td>16,311</td>
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<tr>
<td>MANUAL VALVE</td>
<td>452</td>
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<tr>
<td>MECHANICAL EQUIPMENT</td>
<td>1,409</td>
</tr>
<tr>
<td>PIPING LINE</td>
<td>10,290</td>
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<tr>
<td>PIPING SPECIALTY ITEM</td>
<td>2,170</td>
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<tr>
<td>TELECOMM CABLE</td>
<td>1,757</td>
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<tr>
<td>TELECOMM EQUIPMENT</td>
<td>1,655</td>
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<tr>
<td><strong>Total:</strong></td>
<td><strong>65,178</strong></td>
</tr>
</tbody>
</table>
PIM Challenges for OO

• **Data Development** – *When should an EPC start developing the data handover?*

• **Data Surveillance** – *How do we monitor data development when the standard topside has 60,000+ tags?*

• **Data Consistency** – *Data is being pulled from multiple sources...how does the EPC ensure consistency?*

• **Data Completeness** – *How do we know we have a complete handover?*

• **Data Status** – *How do we know the maturity of the data?*
PIM Challenges.....Solutions

- Wood Group Mustang Project Strategy
- Consolidation database integrated with all standard applications
- Establish role of Data Manager as a discipline
- Data Management - Early implementation with detailed up-front planning
- Roll out standard procedures
- Buy in from Engineering
- Data Visibility through Engineering Information Portal
- People Processes and Technology
Data Management Application

Engineering Info by Discipline
- Mechanical Equipment List
- Cables, Elec Equip List
- Piping Line List
- Instrumentation SPI/INtools
- Manual Valves, Specialty Items, etc.
- PACESETTER Vendor Docs Data
- Req/PO Data
- PRIMAVERA Requisition and Schedule Dates

AVEVA NET Portal
- View-Only (cannot add/change data)
- XML-based
- Built on Microsoft SQL Server database platform
- Application comes with easy-to-customize gateways for many source applications

2D and 3D Design Information
- PDMS, PDS/SP3D AutoPlant CADWorx
- Intelligent P&IDs AVEVA P&ID SPPID
- 2D Drawings AutoCAD Microstation
- McLaren/Citadon CW Eng, Vendor, 3rd Party Docs

Other Source Applications
- Adobe PDF
- XML
- RTE
- ORACLE
PIM Challenges.....Solutions

– Data Development:
  • Setting expectations with a Data Matrix
– System set up during early detail design
– Implement data management organization
– Progress reporting

– Data Surveillance:
  • Engineering Portal providing access to model, data sets etc.
  • Dashboards
PIM Challenges.....Solutions

– Data Consistency
  • Consolidation database reporting – clash management
  • Data Manager working with Engineering and Vendors
  • All fixes in native applications

– Data Completeness:
  • Upfront definition of attributes based on class libraries
  • Reporting
PIM Challenges.....Solutions

• Data Status:
• Work in progress – Developing a phase based maturity model
• Derived status from information in the system
Success

– Data management based on intelligent tools provides additional quality and accuracy to delivered data.

– Data mining info risks of manual interpretation and collection

– As early as FEED, collection of tags and tag attributes based on intelligent design tools provide validation of standards and specification via Asset Register (especially tagging taxonomy)
Success

• Tag-to-Document associations provide quick tag look up for information during design, fabrication, and installation (provided the data is solid)

• Commissioning is driving Asset Register quality and completeness further toward the beginning of the project.

• Increases the need for early start and understanding of Asset Register requirements

• Accurate upload of data to Operational systems
  • CMMS – Computer Based Maintenance Systems
  • RBI – Risk Based Inspection
Lessons Learned

• Theory vs Reality of Data Management

• Value of Reporting and Change Management

• Early Implementation

• Contracting Strategies and Organizational Support

• Progressive Handovers vs Single Data Dump
  – O&M, HUC and BU involved early

• Introduction of a Transition and Startup Engineer

• Partnership in Definition and Execution
Questions?