Technical Session
Integrated Project Execution

Rainer Lamping
VP Enterprise Resource Management
EPC Stage - From FEED to Pre Handover

We provide required capabilities to support an end to end process

EMC* = Engineering Material Control (MTO, REQ)
Project Business Process lifecycle
AVEVA Catalogue Manager
Consistent Coding

- Client Code
- ERM Catalogue Manager
- PDMS
- E3D
- ERM Material
- Oracle ERP
- Auto
- S3D
- 3rd-party systems

... providing highly configurable catalogues
... coupled with rapid production of Piping Specs
AVEVA Enterprise Resource Management

AVEVA Material

Catalogue & Specification Management

EMC

Purchase

Exp/Site Mat.

Construction Management

Material Management

FEED

Engineering

Procurement

Construction

Handover
AVEVA Material

Material Control in ERM – Purchase according to design and plan

- Specs
- Manage MTO
- Planning
- Expediting
- Requisitions
- Procurement
- Sites
## AVEVA Material Status List

**Latest Requisition vs. latest Requirements** is easily identified

- **red** – Under Requisition
- **amber** – Over Requisition
- **green** – Requisition = Required

### Example Table

<table>
<thead>
<tr>
<th>S.I.</th>
<th>Description</th>
<th>Status</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1” (25mm) x 4.5m Thk Spiral Wound Gasket CS OR 316 IR GRPH CL 150 ASME B16.20 SW Gsk B16.47 Series B</td>
<td>Under Requisition</td>
<td>11/08/2015</td>
</tr>
<tr>
<td>2</td>
<td>GASKETS SPIRAL WOUND 01-005</td>
<td>Over Requisition</td>
<td>11/08/2015</td>
</tr>
<tr>
<td>3</td>
<td>GASKETS SPIRAL WOUND 01-005</td>
<td>Requisition = Required</td>
<td>11/08/2015</td>
</tr>
</tbody>
</table>
AVEVA Enterprise Resource Management
Construction Management
Work Packages – Putting it all together

Schedule

Budget

Resources

Materials & Equipment

Instructions

Engineering Deliverables
Construction Management

Key Concept #1 – Vertical Planning

- Project Planning at Highest Level (Levels 1-3)
  - Create and schedule Engineering Work Packages (EWP)
  - Create and schedule Construction Work Packages (CWP)
  - Link CWP to EWP

- Workface Planning at Lower Level (Levels 4-5)
  - Create Installation Work Packages (IWP)

- Execution Layer (Level 5 and Job cards)
  - All tasks are planned and packages created
    - Check constraints
    - Execute work
    - Collect actual data and roll-up progress
Construction Management

Key Concept #2 – 4D Planning

- Link Schedule with the 3D model
- Simulate construction sequence
  - to verify correct planning
- Visualize installation and completion status
  - by color-coding objects in 3D model
Construction Management

Key Concept #3 – Integrated Materials Management

▲ Visualize material, resource and engineering deliverables availability

▲ Proactively expedite material

▲ Modify schedule to accommodate material shortages
Contracts everywhere

FEED → Engineering → Procurement → Construction → Handover

- Design Contractors
- Vendors
- Construction Contractors
The AVEVA Solution for Contract Management

PRE-AWARD
- CONTRACTOR REGISTRATION
- PRE-QUALIFICATION
- TENDER MANAGEMENT

ANALYTICS
- TENDER PERFORMANCE ANALYSIS
- CONTRACT AWARD

POST-AWARD
- MANAGE COMMUNICATIONS
- CONTROL CHANGES & OBLIGATIONS
- TRACK & VERIFY PAYMENTS & BUDGET CONTROL
- MANAGE CLAIMS & DISPUTES
- LESSONS LEARNT & FEEDBACK

ProCon Portals
Problems We Solve

- Difficulty locating contractual documents
- Minimal integration between systems
- No secure, shared working space
- Inconsistent reporting formats
- Point in time data
- Varied document templates
- Complex, unclear, manual processes
- Poor controls & compliance tracking and visibility
- Uncontrolled supplier interactions

RISK EXPOSURE INCREASED
- Non-compliance of government regulation
- Mixed messages to suppliers
- Poor visibility of new and ongoing engagements

PRODUCTIVITY REDUCED
- Additional resource (time and cost) requirements
- Document rework
- Work completion timeline increases

VALUE DIMINISHED
- Effort focussed on non-value-add work
- Decisions informed by inaccurate or insufficient data
- Manual tasks resulting from poor application integration
Analytics capability

Dashboard

**Tenders**
Tender status, performance, risk and delays

**Contracts**
Variations, cost breakdown, obligation performance

**Compliance**
Reporting of contract details, local content and variation costs
Contract Management benefits

- **$22M SAVED**: ProCon replaced 10 lawyers at Arrow responding to a claim for a week; estimated savings of 1680 lawyer hours and $22m in avoided claims.

- **54% SAVED**: Oil major’s capital over-runs reduced from 157% to 103% of forecast budget.

- **$1BN**: BP Angola recovered $1bn from JV partner for valid project changes.

- **+$1M PER DAY**: ProCon is saving $1m daily at Woodside - 3% of the Woodside capex.

**AVERAGE**: $6-$12m bottom line savings on a $2bn capex project.