Increasing Efficiency with AVEVA’s Construction Management Solution

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Why Construction Management?

Source: Ernst & Young – Spotlight on Oil & Gas Megaprojects, 2014
The Goal: Improve Efficiency

Craftsman’s Work Day

- Tool Time
- Idle
- Travelling/gathering material
How can we improve efficiency?

- Work Packaging and Workface Planning

- Early Project Planning that integrates Work Packaging with
  - Engineering
  - Procurement
  - Construction
  - Project Controls

Source: Enhanced Work Packaging: Design through Workface Execution (Construction Industry Institute), July 2011
Construction Management
Building Blocks

- Work Packaging and Workface Planning
- Site Material Control
- Data Access
- Portal

Construction Model
Construction Model

DIGITAL ASSET

1D – 2D – 3D

App

App

App
Building Blocks

- Work Packaging and Workface Planning
- Site Material Control
- Data Access
- Portal

Construction Model
Work Packaging / Workface Planning

- **Improve efficiency**
  - Plan the work and work the plan
    - “Tool time up” alone does not do the trick
    - Do the right thing and not just something
  - Do it right the first time and avoid re-work
  - Collect progress and status, aggregate and reconcile

- **Improve visibility**
  - Status, progress, actuals shall be visualised preferably in 3D as opposed to 1D
Work Packages

- **Engineering Work Packages (EWP)**
  - Construction Work Area Defined
  - Deliverables per Discipline Monitored, i.e. Plot Plans, Drawings, Isometrics, etc.
  - EWP Schedule

- **Construction Work Packages (CWP)**
  - Schedule, Work Scope, Budget, Material, Documents, Drawings, etc.
  - Responsible, Crew, Trade, Contractor, etc.

- **Installation Work Package (IWP)**
  - Detailed and discrete work scope and budget
  - Specific required material and related documents
  - Schedule, sequence, responsible, crew, etc.
Integrated Vertical Planning and Advanced Work Packaging

- **Engineering and Design** – Design for Lean Construction
  - Create Engineering Work Packages (EWP)

- **Project Planning at Highest Level (Levels 1-3)**
  - Create Construction Work Packages (CWP)

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

- **Execution Layer**
  - All tasks are planned and packages created
    - Check constraints
    - Execute work
    - Collect actual data and roll-up progress

- **Optimized Construction Progress Monitoring**
Vertical Planning: Loop in the Loop

- Roll-up
- Feedback
- Execution
- Reconcile
- Rough Cut Planning
- Detail Planning
- Release

Construction Work Package

IWP

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Work Packages - Schedule

- Scheduling of CWPs, IWPs and Jobs
  - Complete scheduling system for any level
  - No need for any external application
  - EVMS built in
  - Integrated with Primavera P6
    - Import of Master Schedule from P6
    - Update of P6 with actuals and progress

- Scheduling of EWPs
Work Packages - Scope and Budget

- **Scoping**
  - Items from 3D Model
  - Non-modelled (bulk-) material

- **Budgeting**
  - Installation rates (norms)
    - Related to model items / material
    - Related to work…

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Work Packages – Resource Management

- Visualize and manage resource
  - Engineering Deliverables
  - Man Power
  - Materials
  - Proactively expedite or modify schedule to accommodate changes
Work Packages - Material Status

Traffic lights indicate material availability.

Drill down to see detailed material list for every work package.
Work Packages – Documents etc.

- Documents
  - Integrated with Document Management Systems
  - Assign documents
  - Pulling documents referring to tags automatically
  - Create documents
## Workface Planning

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Work Package

Schedule

Man Power

2D Material

Isometrics

Drawings

Vendor Manuals

3D Material
AVEVA Construction Management - Visualization
Timeline simulation

Adjust speed to daily, weekly monthly

Timeline running through the schedule
Detailed Timeline Simulation
Project Status
Project Performance
Construction Management Building Blocks

- Work Packaging and Workface Planning
- Site Material Control
- Data Access
- Portal

Construction Model
Key Consumer of Digital Asset

Data Acquisition

Governance And Validation

Digital Asset Hub

Exploit the data within Construction Management

Tag Relationship

Established Data Sets

AVEVA Construction Management
Project & Detail
Planning 3D Visualization
Capabilities

- Gateways are used to convert data from multiple sources into a format which can be used by various products

- Three key capabilities:
  - **Data Extraction** - Includes the identification of objects and their corresponding tags, classifications, associations and characteristics required for the Portal data model.
  - **Data Manipulation** - Includes the mapping of objects tags, classifications and attributes.
  - **Data Rendition** - Transforms data into a format that can be displayed in a web browser, e.g. MHTML, SVG and ZGL. Adds hotspotting.
Portal
HTML5 SVG Viewer
Support for over 300 document types including Office, PDF, web, image and CAD formats
Enhanced 3D graphics

Improved graphical representation adds clarity to the model and aids object identification

Improved rendering performance

Applied automatically to existing models

Simplified navigation controls
Content Cards

Provide quick & easy access to related information about the selected item
Reporting
Recap

Key concepts
Work Package

- Schedule
- Man Power
- Vendor Manuals
- 2D Material
- Isometrics
- 3D Material
- Drawings
Key Consumer of Digital Asset

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Project & Detail
Planning 3D Visualization
Thank you