Evolving AVEVA’s project execution: Enhancing capital project success

Jeff Bashir, Director Project Execution Portfolio - AVEVA
Agenda

1. CAPEX PROJECTS
2. AVEVA IN PROJECT EXECUTION SPACE
3. QUESTIONS
The capital projects market is on fire

$5.7T
Annual global CAPEX spending

+$3.5T
Additional annual spending to reach net zero

Source: McKinsey Global Institute

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The painful history of major capital projects

20
Months over schedule

80%
Over budget

Source: McKinsey Global Institute
Some of the answers from a survey of 300 large-enterprise capital project and construction professionals, conducted over six weeks in February and March 2021, from the following industries:

Power and utilities, infrastructure, mining and minerals, water and waste, oil, gas, and chemicals.  

Source: LinkedIn
WE ARE HERE TO HELP!
**AVEVA: Delivering a complete digital thread, purpose-built for industry**

Accelerate time-to-value with flexible, scalable, and trusted industrial hybrid SaaS solutions

<table>
<thead>
<tr>
<th>DESIGN</th>
<th>OPERATE</th>
<th>OPTIMIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visualization</strong></td>
<td>Multi-experience engineering and operations visualization across the enterprise</td>
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<tr>
<td><strong>Simulation and learning</strong></td>
<td>Process simulation, operator training, enterprise learning</td>
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<td><strong>Engineering and execution</strong></td>
<td>Engineering, 3D design, project execution</td>
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<td><strong>Operations control</strong></td>
<td>Edge, supervisory, enterprise control</td>
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<td><strong>Asset performance</strong></td>
<td>Asset strategy, asset analytics, maintenance execution</td>
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<td><strong>Production optimization</strong></td>
<td>Operations execution, process optimization, production management</td>
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<td><strong>Planning and scheduling</strong></td>
<td>Feedstock management, supply chain planning and scheduling</td>
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</table>

**Industrial information management**

*Engineering:* Engineering data collection, aggregation, storage and contextualization

*Operations:* Real-time data collection, aggregation, contextualization, events and self-service calculations

**Support your hybrid cloud architecture**

Third-party visualization

Third-party apps and analytics

Third-party data sources, systems, and databases
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AVEVA™ CONTRACT RISK MANAGEMENT (CRM)!
Why are risks undocumented?

- **Contract data silos**: Project manager cannot make sense of incomplete and incompatible contract data sets, no audit trail through the maze.

- **Ownership of contract data**: Contract data maintained in unconnected, disparate systems often means that when disputes arise, the data is not available.

Poor contract management costs companies between 9% – 15% of their bottom line.
How costs can be avoided
Causes for Investment Leakage: Change the text

- Ensuring contract & legislative compliance
- Minimizing commercial impact of changes
- Delays in approvals & reviews
- Avoiding overpayment
- Mitigating claims & disputes

Contractual relationships & obligations protected by best practice governance interwoven into platform

Changes to schedule & cost surfaced early to the right people via platform intelligence

Proactive obligation, milestone and supplier KPI management. RCA of bottlenecks

Streamline payment submission & verification through platform automation

Events, communications and decision-making captured in an immutable manner

Single source of truth for decisions

AVEVA Contract Risk Management
What does AVEVA Contract Risk Management include?

**Solution suite**

<table>
<thead>
<tr>
<th>PRE-AWARD</th>
<th>POST-AWARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor registration</td>
<td>Manage communications</td>
</tr>
<tr>
<td>Pre-Qualification</td>
<td>Control changes &amp; obligations</td>
</tr>
<tr>
<td>Tender management</td>
<td>Track &amp; verify payments &amp; budget control</td>
</tr>
<tr>
<td>Online tendering</td>
<td>Manage claims &amp; disputes</td>
</tr>
<tr>
<td>Audit &amp; award</td>
<td>Lessons learned/feedback</td>
</tr>
</tbody>
</table>

**Contract Risk Management Portals**
Question?

What percentage of CAPEX cost is associated with materials/procurement?
AVEVA™ ENTERPRISE RESOURCE MANAGEMENT (ERM)!
What does ERM provide to address EPC pain points?

- Early identification of change
  - Manage specs with revisions – manage and reduce the impact of change

- Right material, right place, right time, right quality, best price
  - Old adage, but it applies even more today – the integrated solution provides the ability to manage change and impact throughout the full end-to-end process

- Plan the work and work the plan – 5% to 15%
  - Integrating planning with material, labor and other resources gives the ability to reduce wasted craft labor and provide high-level visibility
ERM: END-TO-END MATERIALS MANAGEMENT

**Define**  
Standard catalogue, specs, components

**Engineer**  
Design, list, collect, require & revise

**Procure**  
Supply chain management for both goods & services

**Construct**  
Materials & site execution control

**Collaborate**  
Suppliers & service providers collaboration platform
ERM: END-TO-END MATERIALS MANAGEMENT

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Catalogue - Consistency across all systems

a “neutral” Catalogue product ...

AVEVA systems

SAP MM

MSD MM

Catalogue Manager

... providing highly configurable catalogues

... coupled with rapid production of Piping Specs

Material

ERP PO

CII Digital Threads with Consistent Input

3rd-party systems

S3D

AutoPlant

PDS

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ERM: END-TO-END MATERIALS MANAGEMENT

**Define**
- Standard catalogue, specs, components

**Engineer**
- Design, list, collect, require & revise

**Produce**
- Supply chain management for both goods & services

**Construct**
- Materials & site execution control

**Collaborate**
- Suppliers & service providers collaboration platform

Engineering Material Control for Bulk and Equipment

- Estimate Quantities
- Design Quantities
- Change Orders
- Construction Quantities
- Project Phase 30 / 60 / 90
- 3D Model 30%
- Implied Items
- Sub Items
- Fabricates
- 3D Model 95%
- Fabrication Site 1
- Fabrication Site 2
- Construction Sites
- Module 1
- Module 2

Includes NON-MODELLED Material
ERM: END-TO-END MATERIALS MANAGEMENT

Define
Standard catalogue, specs, components

Engineer
Design, list, collect, require & revise

Procure
Supply chain management for both goods & services

Construct
Materials & site execution control

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Suppliers & service providers collaboration platform

Purchasing Material Delivery Process

1. Bid Analysis
2. Award/Recommendation
3. Buyers Queue
4. RFQ Enquiry Requisition
5. Exediting
6. MMT
7. Warehouse 1
8. Warehouse 2

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ERM 19 Series Covers Full Enquiry Process & Sealed Bids
Starting at Initial Bidder List for the project through to final negotiations

Initial Bidders List -> First RFQ Information -> Short Listed RFQ -> Negotiation -> Award

- Initial Project list of "qualified" Bidders
- Review / Approved or Client driven
- May be in the process of gaining approval
- First RFQ to potential suppliers
- Maybe to 5 to 8 suppliers
- More information / options than final item to supply
- Indicative pricing rather than "contract price"
- Updated RFQ to selected suppliers
- Maybe to 3 to 5 suppliers
- Expect correct pricing for recommended item to supply
- Expect realistic delivery dates
- Supplier identified
- Rounds of negotiation
- Keep history of prices / negotiation
- Determines final price
- Final Contract
- For Prices
- For delivery

Agreement Types with Downstream Processes and Approvals
Allow the correct processes for different types of procurement / contracts

<table>
<thead>
<tr>
<th>Requisition</th>
<th>RFQ</th>
<th>PO /Award</th>
<th>Exediting</th>
<th>Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td></td>
<td>Source</td>
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<tr>
<td>Source</td>
<td></td>
<td>Type of Items</td>
<td>Approval</td>
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<tr>
<td>Source</td>
<td></td>
<td>Type of Items</td>
<td>Approval</td>
<td></td>
</tr>
</tbody>
</table>

- IRP
- "Receipt" of Service Items
- CWP
- Allocated / Assigned to CWP / IWP dependant on Type
- Approval via WorkTasks

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Question?

What percentage of CAPEX cost is associated with construction?
Some of the answers from a survey of 300 large-enterprise capital project and construction professionals, conducted over six weeks in February and March 2021, from the following industries: Power and utilities, infrastructure, mining and minerals, water and waste, oil, gas, and chemicals. Source: LinkedIn
WORKPACKS!
Complementing ERM planning with WorkPacks

WorkPacks is the next-generation SaaS AWP solution for construction management, agile planning, and field-work execution.

Planning

- Integrated with Construction Planning in a Devoted Short Range Production Planning, Workflows based on
time and logic.
- DMA: Dynamic Material Allocation
- AWP Material Visibility

Integrations

- Seamless integration with main CAD and project management systems.
- Change Management platform.

Truly Scalable

- From small to large projects, Workflows are set up to deliver value.
- Portfolio level and Project specific reports and CXMS to optimize productivity, predictability, and safety.
CHALLENGES

Cost overruns and schedule delays
• 15% of total project activities are performed as “out of sequence,” increasing schedule by 33% and cost by 25%

Lack of transparency and control
• 64% of project overruns are due to untracked scope changes
• 56% of project owners linked overruns to lack of effective change control

Inefficient collaboration
• Teams waste up to 50% of their time finding and validating information

Inefficient material management
• 28% of the cost of a greenfield capital project relates to material costs

Environmental pressure
• ESG regulations pressure the construction industry to improve project sustainability outcomes, often by reducing carbon intensity and emissions
AGILE PLATFORM FOR BUILDING WORK PACKAGES

Key components

WorkPacks ADVANCE
- AWP projects
- Constraint management
- Status visualization
- Dashboards

WorkPacks PLAN
- Early development of the path of construction (POC) through work scope definitions, documents, and 2D visualizations

WorkPacks DELTA
- Data integration platform
- Workflow automation
- AI

WorkPacks BUILDER
- Automated work package planning, creation and management
BENEFITS & VALUE

Increased productivity by up to 25%

Reduced total installed cost by as much as 10%

Reduce safety incidents by up to 20%

Reduced time and costs to implement a digital advanced work packaging (AWP) methodology within your organization

Improved field productivity, cost reduction, and schedule predictability in project execution.

A scalable, repeatable, digital AWP solution to be applied to projects of all sizes

Improved alignment of Engineering and Procurement with Construction and Commissioning

Strengthened collaboration

Promote real-time accountability & safety by utilizing real-time data updates for planning, accountability, and adherence to AWP requirements while boosting safety performance
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AVEVA™ ASSET INFORMATION MANAGEMENT (AIM) & ASSAI!
Industry & market pressures

- Time wasted finding information
- Lower asset data quality
- Document-centric, manual approach to configure operational systems
- Lack of data visibility and trust
- Lack of integration between information infrastructure and the physical asset

30-45%  $15M  ~12  6-12  10-30%

Studies show that more than 95% of businesses need to manage unstructured data.\(^1\)

Organizations believe poor data quality to be responsible for an average of $15 million per year in losses.\(^2\)

By 2023, nearly five times as many company executives expect their operating models to run end-to-end digitized processes compared to today.\(^3\)

Companies spend 6 to 12 months cleaning raw and inaccurate data before feeding it into an AI model.\(^4\)

A potential 10% to 30% reduction in engineering hours and up to 20% reduction in operating costs from developing a connected foundation.\(^5\)

The cost of untrusted or unavailable information

<table>
<thead>
<tr>
<th>Department</th>
<th>No. of people</th>
<th>Average manhours per week/person</th>
<th>Total A+B+C+D</th>
<th>Manh\Year (40 wk work yr)</th>
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<tbody>
<tr>
<td><strong>Operations - OPEX</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Offshore – Maintenance and facility integrity</td>
<td>238</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Offshore – Operations engineer</td>
<td>12</td>
<td>1</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Onshore – Maintenance and facility integrity</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>DCS – Document support</td>
<td>30</td>
<td></td>
<td>10</td>
<td>10</td>
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<tr>
<td><strong>Modification - CAPEX</strong></td>
<td></td>
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<tr>
<td>Engineering team</td>
<td>~30</td>
<td>5</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Offshore – Support to engineering</td>
<td>~30</td>
<td>4</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>DCS – Project document controller</td>
<td>~4</td>
<td>10</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Extract from &quot;Digital Maturity Assessment&quot; – Customer operating region</td>
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</tbody>
</table>

Extract from “Digital Maturity Assessment” – Customer operating region

@$50/hr ~ $10m
Bringing data from multiple sources and vendors in one place

Physical asset

CORPORATE STANDARDS

Native formats
Spreadsheet
3D model
Laser scan
Documents
Drawings
Images

Plant structured and unstructured data

Plant sequential data

Maintenance data
Inspections data
Simulation data
Spares data

Link to real-time data

Transaction data
The Assai product in a nutshell

- **Document control & management for projects & operations**
  - Web-based (cloud or on-premises)
  - Out-of-the-box functionality for projects & operations
  - Fit-for-purpose and user-friendly
  - Highly flexible to support standards & procedures
  - Supports all stakeholders, also external/contractors
  - Efficient, automated distribution
  - Strong revision control, action tracking & reporting

- **Asset management**
  - Asset hierarchies
  - Attributes
  - Document-to-tag relations
  - Tree views & 2D graphical drilldown
  - (Pre-)Commissioning checklists

- **Quick and easy implementation**

- **Easy to manage; no dependency on Assai**

- **Integrations with other systems**

- **Highest security standards**
How does document control help?

• Supporting standards & procedures
  • Intelligent numbering structures
  • Standard and custom reference data
  • Super users can easily manage all configuration & access

• Controlled documentation
  • Only DC can create & update documents by default
  • Select engineers/groups could be given update rights (always or document-based)

• Latest information is accessible and used
  • Easy to find required documentation
  • Strong revision control; see latest revision & file by default
  • Restrict access to native/source files
  • Easy to review collaboratively (possibly with externals)

• Efficient distribution
  • Instant e-mail notification with transmittal sheet & hyperlink
  • Distribution matrix (rule-based) or distr. list (document-based)
  • Extensive automation options, saving time and cost

• Stay in control
  • Action tracking, dashboards, reports & reminders
  • Planning module for next-level planning (WBS)
  • Full traceability & audit options
  • (+ Later: digital handover, concurrent engineering..)
Business benefits

• Boost productivity
  • Fully integrated modules & optimized features
  • Extensive process automation, user efficiency
  • Integrated redlining and commenting

• Deliver projects earlier
  • Strong action tracking, reminders, expediting
  • Advanced planning & reporting
  • Digital handovers

• Increase document quality
  • Complete and correct documentation
  • Automatic and manual quality checks & templates

• Puts you in control
  • Assai = document control → project control
  • Reliable planning, dashboards & reports

• Guaranteed security & availability
  • Assai is SOC 2 type II certified
  • Assai Cloud runs on Microsoft Azure; almost 100% uptime guaranteed
  • Highly stable on-premises solution

Plus: proven, powerful integration with AVEVA AIM
CAPEX spending is up, and by one estimate, there will be 100+ trillion worth of projects by 2027

- There are known inefficiencies in the CAPEX project execution.
- Most, if not all, of the CAPEX projects are over budget and schedule

AVEVA offers end-to-end solutions for asset life cycle management

- AVEVA is enhancing current project execution solutions to address the gaps and expanding its portfolio to offer a comprehensive digital project delivery platform
Want to know more?

Please visit the demo center to learn more about CRM, ERM and AIM & Partner booths to learn more about ASSAI and WorkPacks!
Questions?

Please wait for the microphone.
State your name and company.

Please remember to...

Navigate to this session in the mobile app to complete the survey.

Thank you!
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ABOUT AVEVA

AVEVA is a world leader in industrial software, providing engineering and operational solutions across multiple industries, including oil and gas, chemical, pharmaceutical, power and utilities, marine, renewables, and food and beverage. Our agnostic and open architecture helps organizations design, build, operate, maintain and optimize the complete lifecycle of complex industrial assets, from production plants and offshore platforms to manufactured consumer goods.

Over 20,000 enterprises in over 100 countries rely on AVEVA to help them deliver life’s essentials: safe and reliable energy, food, medicines, infrastructure and more. By connecting people with trusted information and AI-enriched insights, AVEVA enables teams to engineer efficiently and optimize operations, driving growth and sustainability.

Named as one of the world’s most innovative companies, AVEVA supports customers with open solutions and the expertise of more than 6,400 employees, 5,000 partners and 5,700 certified developers. The company is headquartered in Cambridge, UK.

Learn more at www.aveva.com