Welcome, Track Introduction & AVEVA O&G Vision

Oil, Gas & Energy Industry Track

Craig Harclerode, Stan Devries
Oil and Gas Industry Principals, AVEVA
Welcome!
Thank you for attending!

150+ Oil and Gas Companies
600+ Oil and Gas Attendees
50+ Countries Represented
THANK YOU TO OUR SPONSORS
The Role of the O&G Industry Principals

- Providing “art of the possible” value and use case visioning to enlighten and enable
- Positioning the AVEVA O&G digital framework to help provide context for discussions and use cases
- Assisting in the realization of synergy value across the AVEVA portfolio
- Providing ‘industry voice’ to AVEVA product roadmaps to address key gaps in capabilities
- Engage in strategic business and digital transformation discussions
Housekeeping

- Presentations are being recorded – these will be made available on-demand on the AVEVA World website
- Please be back in your seats >5 minutes before the start times
- Use the opportunity to network and visit the exhibit areas
- Consider presenting at future AVEVA World conferences
- If you need help, please reach out to members of the AVEVA staff – we are here to make your conference experience better!

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1. Download mobile app (swapcard)
2. Log in with the same email/PW used to register for AWC2023

- Easily browse and navigate sessions
- Build a **personalized agenda**
- **Connect and network** with peers and presenters
- **Set up meetings** in dedicated meeting areas
- **Fill out surveys for each presentation** to help us drive continuous improvement
- Quickly access maps, logistics, FAQs and reach out for emergencies – our team is ready to help
Oil, Gas & Energy Track At-A-Glance

Craig Harclerode
Oil, Gas and Energy Track Overview

Use the event app to explore session information and build your personalized agenda

Tuesday

Wednesday

Thursday

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Introduction and Context for the O&G Sessions

Stan Devries
The Energy Industry is still facing a very complex market, and geopolitical situation with the need to balance all the dimensions of the trilemma...

Security

Affordability

Sustainability
The Trilemma...

digital technologies are key enablers to achieve the required industry & business transformation...

**Industry business priorities**

1. Engineer faster & better
   - Streamline capital project execution
   - Accelerate process design and innovation
   - Minimize Carbon Intensity & GHG

2. Operate reliably
   - Manage the “great turnover”
   - Increase asset health and performance
   - Lower carbon Intensity & GHG

3. Manage the value chain
   - Manage “resiliency”
   - Optimize production, CII and value chain

Enable full visibility and awareness
Build your industrial information infrastructure
The Trilemma...

...but vision & continued digital evolution are complex & multifaceted

Strategic, not tactical, use of digital technologies is key to addressing the energy trilemma
AVEVA Overview

AVEVA agnostic framework that simplifies and accelerates “digital”

Built from 40+ years of strategic acquisition, integration and digital evolution
The Trilemma...

treats Information as a Strategic Asset and digital foundation

Digital thread across the engineer – operate – optimize life cycle
Leverage a holistic portfolio purpose-built for O&G
Redefining the Digital Twin

Craig Harclerode
The Digital Twin across a hybrid cloud architecture

Digital thread across the engineer, operate, and optimize life cycles – enabling the path to net zero
The “Green” Digital Twin – Integrating Carbon Intensity and CO$_2$e

Digital thread across the engineer, operate, and optimize life cycles – enabling the path to net zero

“Layers of bi-directionally Integrated Asset, energy, performance & GHG Analytics”

Engineering/Process Sub-Twin (SOR) $+$CO$_2$e

Operational Sub-Twin (SOR) w/self-serve streaming visualization & analytics including CO$_2$e: Proxy & molecular

Predictive Analytics Simulation/Modeling Advanced analytics/AI $+$CO$_2$e Analytics system

Simulation and learning Engineering and execution

Asset performance Production optimization

Financial Sub-Twin (SOR) $+$CO$_2$e

CO$_2$e sub-Twin (SOR) Based on CO$_2$e emissions at the molecular level – Layers of CO$_2$e

Maintenance Management System Asset sub-Twin (SOR)

HR sub-Twin (SOR) Data Governance/Ownership

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Enterprise Data Management with the “Modern PI System”

Challenge
AVEVA PI System used as a “tag-based historian across TotalEnergies operations creating “Excel hell”

How to share local knowledge?
How to democratize the data?
How to digitize assets and add value to data?

Solution
Implemented strong operational data management with governance
Engaged sites and SMEs to migrate to the modern PI System/PI AF

Benefits
Significant improvement in data management and migration to a data-driven culture with proactive, exception-based operations

Our Development Process
All generic use cases pass through a unique process

To deliver our AF use cases:
• A dedicated team made of process engineers and AF developers
• Agile approach = Quick delivery
• Use of Azure DevOps platform to manage our projects:
  • Easy to follow and track any changes
  • Lifecycle of AF objects / PI Vision displays
• 1 Use case = AF templates + PI Vision displays

Concretely...

Today at TotalEnergies (RC Branch):
• 400 master AF element templates covering several needs: Energy, Environment, Process, Maintenance, Data Quality...
• Templates already used and instantiated by sites
  Ex: 50 boilers / furnaces
  400 streams digitalized in AF
  7 package units, 3 HDS, 3 reformers
• 160 master PI Vision displays
  • Full control of site objects = Autonomy

AVEVA World 2022 Link

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Digital Decarbonization: GHG Molecular Determination for Combustion Sources

Challenge
Lack of accurate GHG determination for combustion globally
GHG determination was disconnected to energy management and asset performance management

Solution
Developed PI AF GHG templates for combustion sources using the molecules as “assets” with stoichiometry and thermodynamics

Benefits
Rolled out globally
Foundational to TotalEnergies “layers of GHG” strategy with more accurate baselines and operationalization via AVEVA PI System streaming analytics and decision support
Digital Twin Representations

Customer presentations throughout 3 days to reinforce value of AVEVA PI System & the Digital Twin

**Tuesday**

- AVEVA
- YINSON Production
- Ovintiv
- TotalEnergies
- BR PETROBRAS

**Wednesday**

- eNBRIDGE
- Cameron LNG
- SoCalGas
- Schneider Electric
- Petrobrises
- Petrobytes
- PERTAMINA
- PETRONAS

**Thursday**

- bp
- EOT
- bpx energy
- OXY
- PETRONAS
- RADIX Engineering and Software

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Opportunity to unlock power of the “modern PI System” to support transformative business value

AVEVA & our Partner Ecosystem are here to help

Achieving PI AF full potential has been problematic

Redefining the OT-IT Partnership to support and empower the SMEs

“Layers of Analytics”

PI AF Acceleration Options

AVEVA Operational Digital Twin Success Services

PI System/PI AF Partner Ecosystem
Key Themes to Note in the Presentations

Enabling the use of digital technologies to address the energy trilemma with the AVEVA portfolio

- Treat Information as a Strategic Asset
- Value Chain Visibility and Collaboration
- Various “Sub Twins” of the Digital Twin
- Synergy Value Between AVEVA Offerings
- Importance of PI AF and Layers of Analytics from PI AF to AI
- Flexible and Agnostic To Enable Business Value
Feel free to reach out if you saw anything of interest or had any questions

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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