GenAI and PI

Supercharging the Operational Digital Twin

Zev Arnold

Accenture Industry X - Principal Director
Zev Arnold is a technology practitioner in Accenture Industry X with a focus in digital manufacturing and operations. In his career, he has helped manufacturing clients make improvements in performance and reliability, and helped secure their license to operate.

He has specialized in IT/OT data infrastructure and analytics, working with integrated operations and digital engineering initiatives across Industry 4.0 enterprises, including utilities, oil & gas, life sciences, mining, and consumer goods. His responsibilities have included digital program delivery, IIoT strategy, and value realization.

He has provided thought leadership on the use of OT data to drive business value and change through industry conference presentations, communities of practice, and project engagements. Within Accenture, Zev is the global lead for the AVEVA Operations Information Management capability.

**Gartner: Operational Technology (OT)**
Operational technology (OT) is hardware and software that detects or causes a change, through the direct monitoring and/or control of industrial equipment, assets, processes and events.

- **Improved Reliability**
- **Safe Operations**
- **Increased Process Performance**
- **Sustainable and Compliant**

**Machine Intelligence Leaders achieve:**

- 10-15% efficiency improvement
- 8-14% cost reduction
- 10% reduction in environment impact

ACCENTURE & AVEVA strategic alliance

Accenture and AVEVA have collaborated as strategic alliance partner for over 10 years, working together across multiple industries and jointly investing to develop and deliver industry leading solution across the asset and operations lifecycle from engineering through to operations and control.

- **600+ AVEVA Practitioners** across the globe
- **2 $M investment annually** to grow the AVEVA Industry X Practice
- **250+ AVEVA projects** successfully delivered
- **Dedicated Capability** Leads for each key offering and region
- **Multiple cloud platforms supported**, including Azure and AWS
- **Dedicated Centre of Excellence, Assets & Accelerators** spanning AVEVA key product suites
- **Key Alliance Campaigns:**
  - Integrated Project Execution
  - Project Control Tower
  - Manufacturing Excellence
  - Data Intelligence Platform
  - Intelligent Asset Management

**Callisto, E80, Oasys, Eclipse, T.A.Cook, Anser & Flutura Acquisitions**

- To accelerate our industry penetration in food and beverages, chemicals, utilities, mining and other process and discrete based manufacturing industries

**Industries** where AVEVA has a strong presence with Accenture:

*No. of AVEVA skills per country*
IT/OT/ET

Supply chain, maintenance data, HR, Etc.

Business Transactions

Context

Drawings, models, diagrams, etc.

State

Machine data, sensors, time series data

YOU ARE HERE
Industry 4.0

The Internet Of Things

Cyber-physical Systems

Smart Factory (Digital Twin)

The Internet Of Services

Operational Digital Twin

...coordinates cyber-physical systems, over the Internet of Things, to enable an Internet of Services that assists people and machines in the execution of their tasks.
Case Study: Digital Twin vs “Just another plant app”

Digital BOP

COMPANY and GOAL
provides well delivery support and wanted to improve the reliability of blowout preventers in their drilling contractor fleet.

CHALLENGE
Manual data reporting provided an incomplete understanding of BOP health and usage.

- Pressures and Temperatures available only via daily readings.
- Usage information limited to best-guess based on time.
- Failures not detected until they exhibited functional symptoms.

SOLUTION
Using the PI System as a data engineering toolkit, Shell implemented a BOP monitoring application.

- Three custom dashboards
- PI CoreSight™ screens for ad-hoc trending
- Significant data processing to derive information from data

RESULTS
First instance of onshore detection of a control fluid leak in the industry.

- Onshore monitoring of regulatory testing
- Collection of previously unavailable usage information
- Organizational awareness of BOP health
Operational Digital Twin

...coordinates cyber-physical systems, over the Internet of Things, to enable an Internet of Services that assists people and machines in the execution of their tasks.

Innovation Cycle
discover
refine
deliver
AVEVA PI is foundational to the Operational Digital Twin today
Use Case Identification

Barriers to Digital Twin Adoption

Outcome  Action  Insight
Use Case Identification  Data Mega Silos  Data Culture
Navigation vs. Solution Hierarchy

The Two Use Cases for OT Conceptual Modeling

**Navigation Use Case**
- Top Down Approach
- Solve for Browsability
- Improvement on Tagnaming Convention
- “Most users can find Most data Most of the time”

**Solution Use Case**
- Addresses a Specific Use Case
- “Fit-for-purpose”
- Foundation for expansion & scale
- Enables Analytics & data transparency
Breaching the OT Mega Silo
PI Asset Framework – Delivering OT Conceptual Models at Scale

KEY BENEFITS
- Functionality encapsulated in layers
- Easy to expand
- Traceable data in steps
- Data into insights via layers of calculations
- Manual overrides built into layers for flexibility
Self-service Solution Development
Let your users find their own use cases

PI Vision + PI Asset Framework = BYO – Use Case

Use Case Identification

Data Mega Silos
Data Culture

© 2023 AVEVA Group plc and its subsidiaries. All rights reserved.
Data culture

Empowers users

Co-opt them as change agents

Scale forever
Generative AI will revolutionize the Operational Digital Twin in the future
Prompt: Draw the Fourth Industrial Revolution (4IR)
Prompt: Draw the Fourth Industrial Revolution (4IR)
Generative AI @ Accenture

FY24 PI System/ OT Data Experiments

**AIOps for IIoT**

Key Takeaways:
- Built on top of AVEVA DataHub
- Use Case: Monitor PI System and identify data real-time
- Microsoft Teams integrated AI Chatbot

**Next-gen Notifications**

Key Takeaways:
- Extend the AIOps for IIoT framework for a general use case
- Relevant to all PI users
- Microsoft Teams Chatbot becomes the preferred PI interface

**Generated Hierarchies**

Key Takeaways:
- Use AI to map tagnames to equipment definitions
- AI to map engineering diagrams to hierarchies

**Generated Data**

Key Takeaways:
- Use AI to outperform previously difficult to simulate OT data
- Automate KPI creation