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ACCELERATE INDUSTRIAL INTELLIGENCE

AVEVA WORLD MILAN, MAY 2026

Standards for asset modeling with AVEVA™ PI Data Infrastructure

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Agenda

Standards for asset modeling with AVEVA™ PI Data Infrastructure

Customer Use Cases

Digital twin for AVEVA™ PI Data Infrastructure (PI DT)

Where to download?

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Customer Use Cases

Early detection of failure avoids plant outages and profit loss

Challenge	Solution	Benefits
• A critical process gas compressor and turbine drive failed unexpectedly 18 times in 2020. • Compressor failures resulted in production shutdowns, profit loss and risk of energy to operators.	• Deploy PI DT templates to capture tribal knowledge 24/7 into PI surveillance. • Inform first responders with data/procedures from PI • Monitor controller performance for indicators of machine health and flaws. • Forecast compressor efficiency	• Root Causes found • Unexpected Compressor shutdowns have stopped

PI Monitors large motors and gearboxes to avoid facility outages

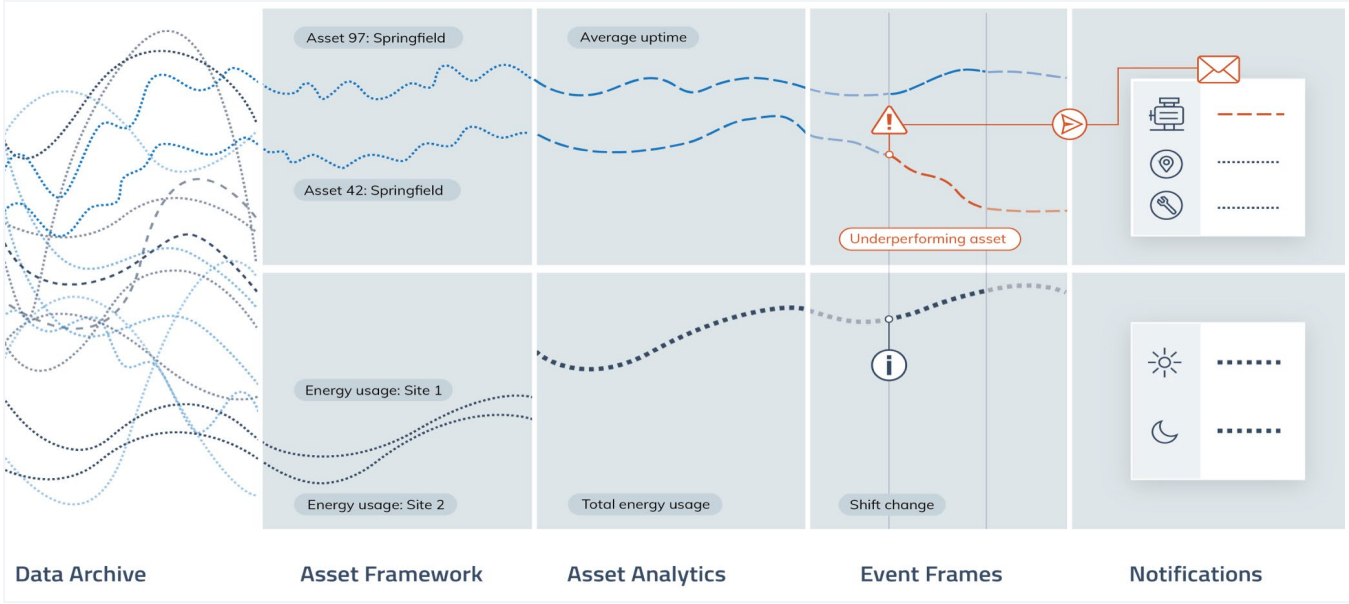
Challenge	Solution	Benefits
• A mining operation suffers devastating failures of large equipment • Failed equipment can take months to repair or replace • Business can't afford spare equipment or large crews to watch equipment.	• Deploy PI DT templates to monitor machine conditions around the clock • Create a proactive culture using PI Event Frames • Use existing labor on-site.	• Production increases due to reduction in facility outages • Lowering maintenance costs by avoiding reactive maintenance • More proactive inspections of equipment driven by data create a safer workplace for mechanics.

Full scale operational twin deployment with minimum efforts and time

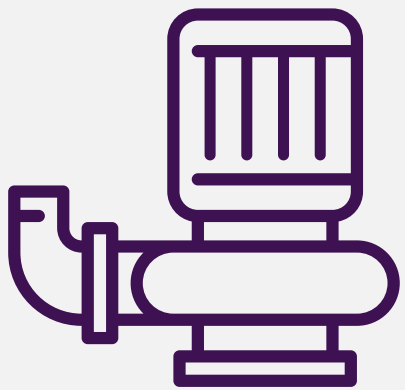
Challenge	Solution	Benefits
• Provide comprehensive visibility into assets, including those with limited monitoring capabilities. • Identify potential issues using the existing equipment and available personnel resources.	• Accelerate deployment of an empty PI AF into full-scale awareness of 44,000 assets in less than 80 hours using PI DT templates • Leverage AIM instance to deploy PI AF containers and assets	• Local personnel focus on operational tasks, not on a system design. • Uncovered ‘hidden’ issues with Relief valves. • ‘Ecosystem’ that allows everyone to track history and record observations, enriching knowledge base.

What is a PI DT?

A PI Digital Twin is a **replica of equipment** that **analyzes time-series data**, **marks** meaningful patterns, **notifies** subscribers, **prescribes** action and **captures** human decisions.



Non-PI DT

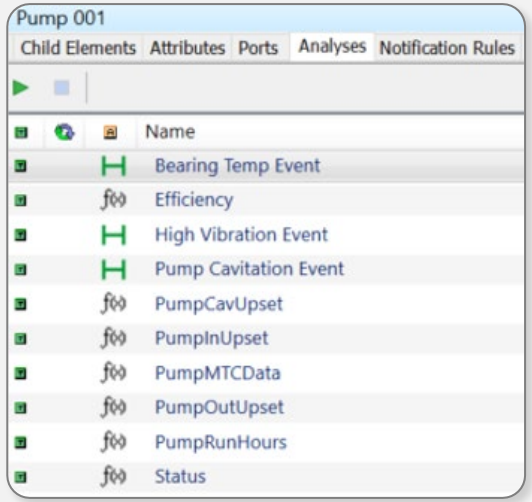


AKS HP Pump 001

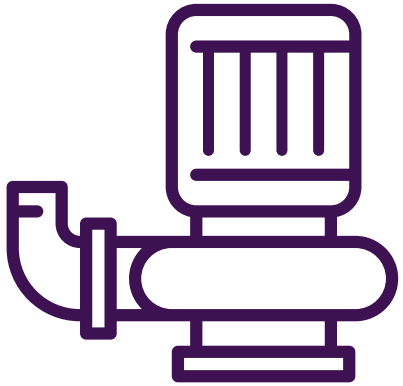
General | Child Elements | Attributes | Ports | Analyses | Notification Rules | Version

Filter

Name	Value
Category: Condition	
Bearing - Inboard Temperature	29.3 °C
Bearing - Inboard X Vibration	2.756 mm/s
Bearing - Inboard Y Vibration	2.796 mm/s
Bearing - Outboard Temperature	29.8 °C
Bearing - Outboard X Vibration	2.779 mm/s
Bearing - Outboard Y Vibration	3.137 mm/s
Category: Equipment	
Installation Date	01/01/2017 06:00:00
Last Serviced Date	05/12/2020 23:00:00
Last Serviced Date UTC	1607209200
Location	Aleksandra
Manufacturer	Ebara
Name	AKS HP Pump 001
Serial Number	5EP33WNC
Troubleshooting Guide	O:\Oil and Gas\Petrolux Demo\Downstream\I
Type	HP
Category: KPI	
Efficiency	97.7 %
Run Hours	41.8 h
Category: Operating Conditions	
Differential Head	1706.8 m
Differential Pressure	92.76 bar
Discharge Pressure	97.46 bar
Discharge Temperature	-154.0 °C
Flow	200.2 m3/h
Motor Amps	90 A
Motor RPM	1662 rpm
Status	Running
Suction Pressure	4.70 bar
Suction Temperature	-159.1 °C
Category: Unit Status	
Category: Upset	
Upset - Cavitation	0
Upset - Inboard	0
Upset - Outboard	0



Digital Twin for AVEVA™ PI Data Infrastructure (PI DT)



18 features

Discharge pressure
Suction pressure
Vibration analysis
…
…
…

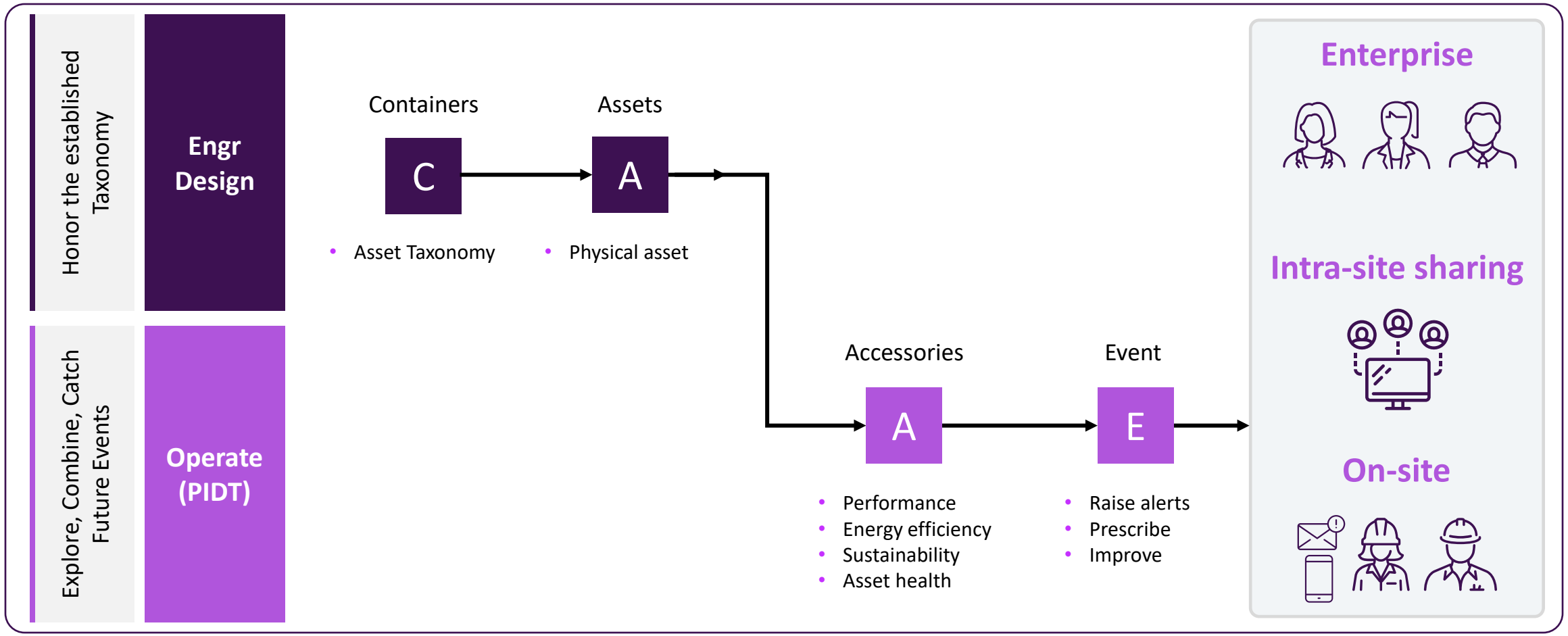
If we assume a pump has 4 features out of 18, the number of unique combinations is:

$$\frac{18!}{4!(18-4)!} = \frac{18!}{4! \cdot 14!} = 3060$$

PI Digital Twin offers an elegant scalable solution where each feature or calculation is represented as a separate module = template

Be **Modular** in implementation

Critical freedom in the architecture that unlocks scalability and integration of Apps



Professional affiliation

PI DT adheres to these international professional orgs

IEC 61970-301 Common Information Model CIM

ISO 14224 2016

ISA 95

CFIHOS Data Model C-DM-001
version 1.5.1

Where to Download?

Inside the PI DT libraries

Base Library

- Containers
- Classes
- Taxonomy

Asset Libraries

- Pump
- Compressor
- Dryer
- Gear Reducer
- Electric Motor
- Valve
- Heat Exchanger
- Filter / Separator
- Turbine
- Piping
- Vacuum

Asset Classes, Super Classes
Accessory Classes, Super Classes
Units of Measure (Expanded)

Accessory Libraries:

- AVEVA Predictive Analytics
- AVEVA Process Simulation
- AVEVA Process Optimization
- AVEVA Asset Info Management (1D, 2D, 3D)
- Vibration Monitoring
- Forecasting
- Weather Live/Forecasts
- PID Controller Diagnostics
- Fluid Composition and physical properties
- Energy Reduction and Management
- SAP PM Drill Across
- Maximo Drill Across
- Asset specification storage (1D)
- Geographic Location
- Statistical Quality Control
- SCADA Alarm History

AVEVA PI Vision:

- Anomaly: Display, Overlay, Annotate
- Asset Displays by class
- Accessory Displays by class
- Asset “HOME” dashboard

AVEVA Unified Operations Center:

- Enterprise Scale KPI Dashboard
- KPI Traceability
- Event URL drill to PI Vision
- Asset URL drill to PI Vision

Microsoft Power BI:

- Enterprise aggregation of events
- Interactive asset health reports

How do I get PI DT standards and libraries

The latest PI Digital Twin Libraries and Standards are publicly available in ShareFile.

For in-depth learning and help with projects contact AVEVA Technical Adoption Services to schedule your PIDT workshop remote or onsite workshops.

Find information about operational reliability.
PI Digital Twin workshops can be as little as a few hours or several days depending on your needs. Greenfield or Brownfield.

Contact AVEVA Learning Services to sign up for PI courses and training environments.
Learn more on our Home Page how AVEVA products and services enable Digital Transformation.

PIDT Workshop Services:

PIDT-L	PIDT Libraries Installation
PIDT-FST	PIDT Full Scale Taxonomy build
PIDT-Ext	PIDT Extended coaching
CLS	PIDT Central Library Synchronization

Summary

Key Takeaways

Have ***visibility*** of all assets in PI System™ from the beginning

Embrace ***AVEVA™'s best practices and International Standards*** with outside-of-the-box functionality

Work by exception: share, analyse and track comments for anomalies widely

Call to action

Download Digital twin for AVEVA™ PI Data Infrastructure (PI DT) Templates, explore and test them

Complete a learning module for Digital twin for AVEVA™ PI Data Infrastructure (PI DT)

Explore the methodology to broaden the range of applicable use cases

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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.

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