NOVEMBER 2022

Ending unplanned downtime in heavy industry

with AVEVA™ PI System™ and AVEVA™ Predictive Analytics

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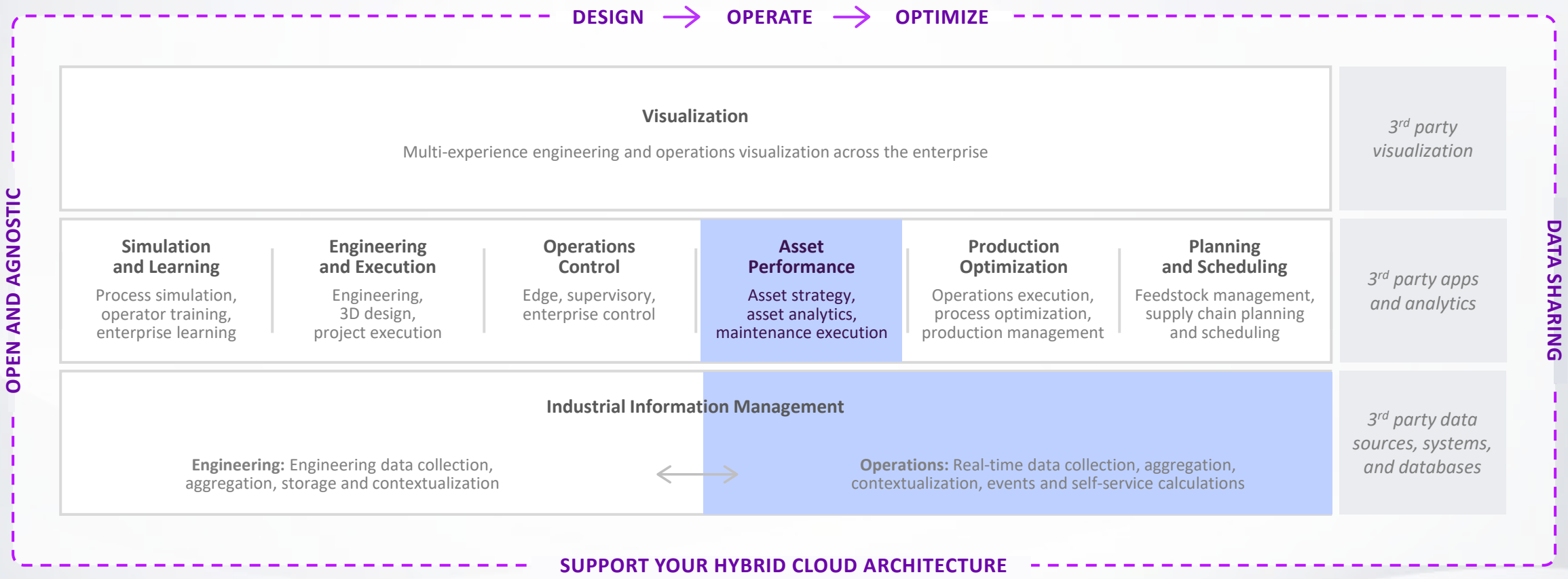
Delivering a complete digital thread, purpose-built for industry

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



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Industry challenges

"$200 billion lost in annual revenue across the Energy industry due to operational efficiency"

Maintenance optimization

70%

Operators are unaware of when to replace, upgrade or maintain assets [3]

Asset failures

82%

82% of asset failures are random[1]

Unscheduled downtime avoidance

$260K

Average cost of industrial asset downtime/hour [2]

Safety risk management

Major accident hazards

Failure to address major accident hazards leads to injury, loss of profits and reputational damage

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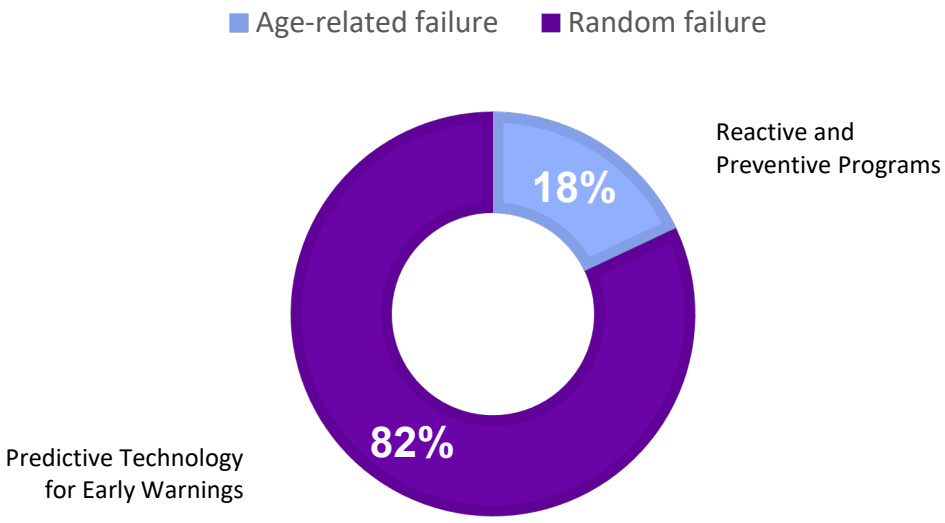
Sources: 1. Arcweb.com, 2.Aberdeen 3. Vanson Bourne

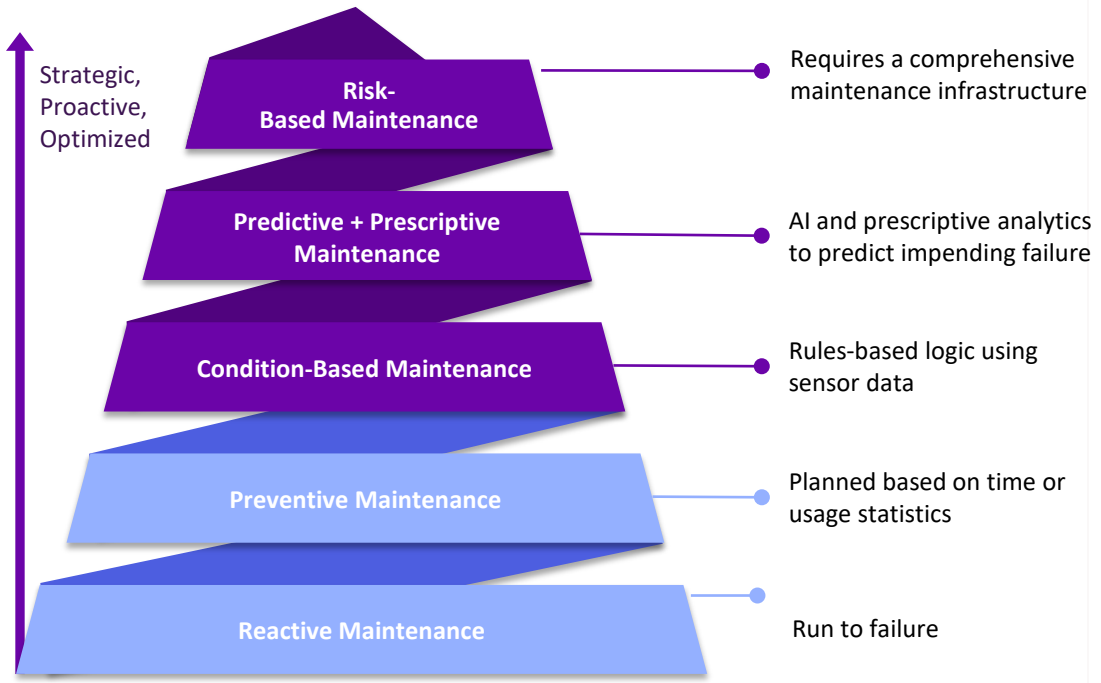
AVEVA APM connects asset strategy to corporate objectives

Failure patterns



ARC studies show only 18% of asset failure is age-related. Based on these data, preventive maintenance provides a benefit for just 18 percent of assets and monitoring for predictive maintenance is a recommended option for the rest. www.arcweb.com/lists/posts/post.aspx?id=260

It's a journey



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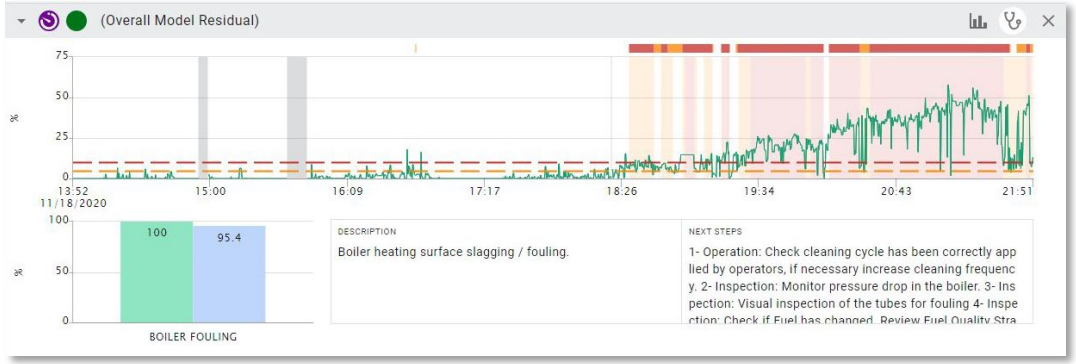
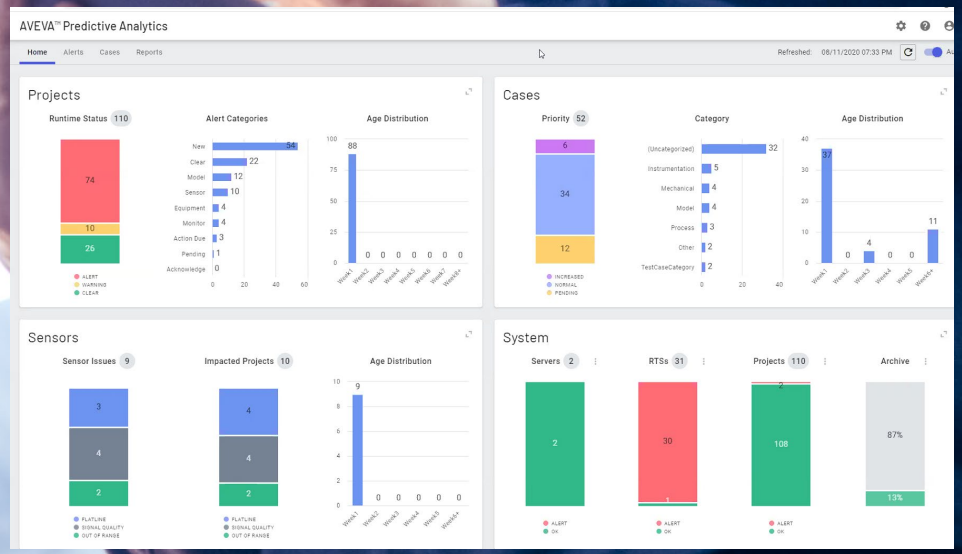
AVEVA predictive analytics

Anomaly detection for business-critical equipment

- Advanced pattern recognition with sensors contribution, failure modes and prescriptive actions for reliable troubleshooting
- Advanced alert and case management for knowledge capture and reporting
- Data playback capability for testing models
- Templates for scale-up configuration/deployment





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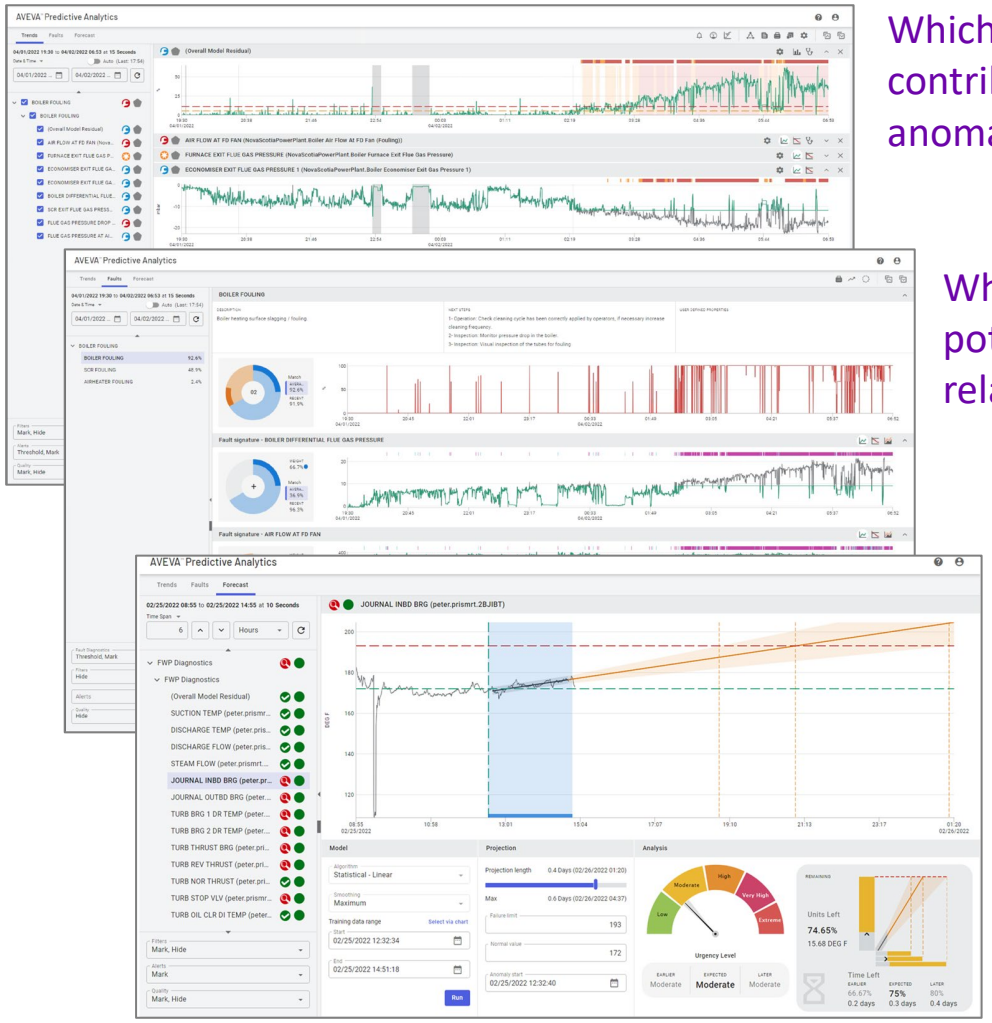
Best-in-class anomaly analysis

An anomaly was detected!
OK, but what are the next steps?

- Overall anomaly score trending
- Individual sensor deviations trending
- Sensor contribution score to anomaly
- Diagnostics based on sensor deviation signature
- Ranking of potential faults
- Fault match trending
- Prescriptive guidance on inspections to perform
- Forecasting of sensors



Which sensors are contributing to the anomaly?

What are the potential faults and related inspections?

What is the urgency level before breakpoint?

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Experience matters - mature APM install base

Air Liquide

Air Liquide uses AVEVA for SIO Predict digital transformation program

Artificial Intelligence based predictive analytics for early warning notification and diagnosis of equipment and process problems

SCG Chemicals

SCG Chemicals Thailand partners with AVEVA to create their Digital Reliability Platform

Single platform for integrated, real-time visibility of operations and drive decision support

Visualize operational information and KPIs to coordinate APM

ROI of 9X achieved within six months

Southern Company

Selects AVEVA for Predictive Analytics

Close the loop across the entire asset lifecycle

Gained Millions in Performance efficiencies

Uninterrupted service is key

Total

Total uses AVEVA for centralized predictive asset health and performance monitoring of assets

Artificial Intelligence based predictive analytics for early warning notification and diagnosis of equipment and process problems

Votorantim

With AVEVA Predictive Analytics, Brazil's leading mining operation cut maintenance costs by 10% and boost reliability by 6%

Millions savings across 16 factories

Improved collaboration

Enabled comparative analysis between plants and best practices

ADNOC

Abu Dhabi National Oil Company (ADNOC) implemented the Panorama Command Center

Enabling $100's millions saving per year

Improved visibility for faster decision making

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AVEVA predictive analytics benefits

Off the shelf solution: no programming or data science knowledge required. Model building is a point and click operation.

Unparalleled breadth and depth of analyses with a proven approach.

Prescriptive actions provide guidance, reduce uncertainty and errors.

Operationalize AI at scale by leveraging templates and deploying models in minutes instead of weeks or months.

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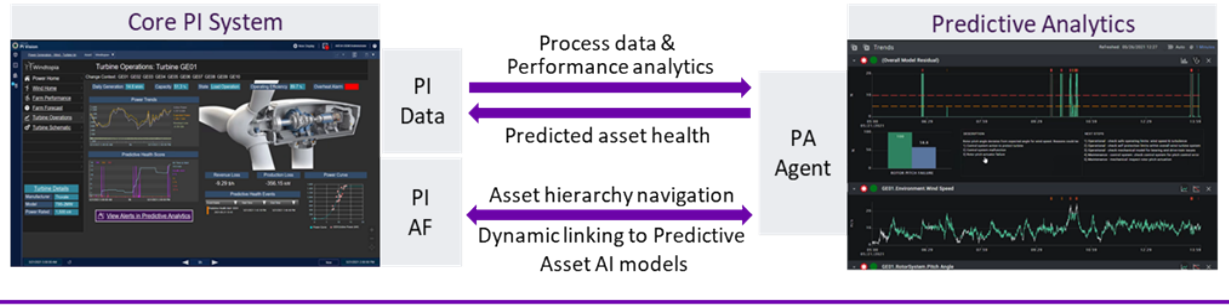
Predictive Analytics and PI System

From proven integration patterns towards a native integration

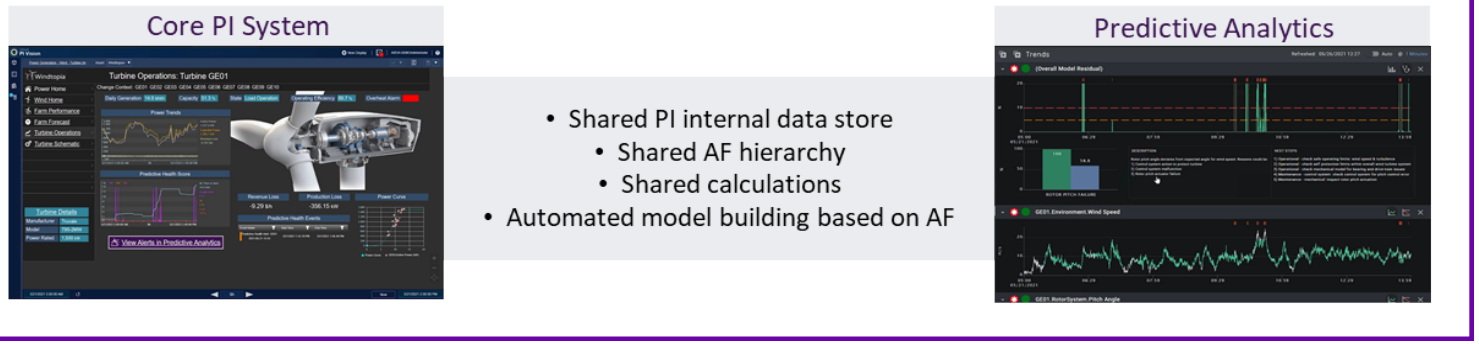
High-performance Integration



(High-availability through AF SDK)

Native Integration

Future



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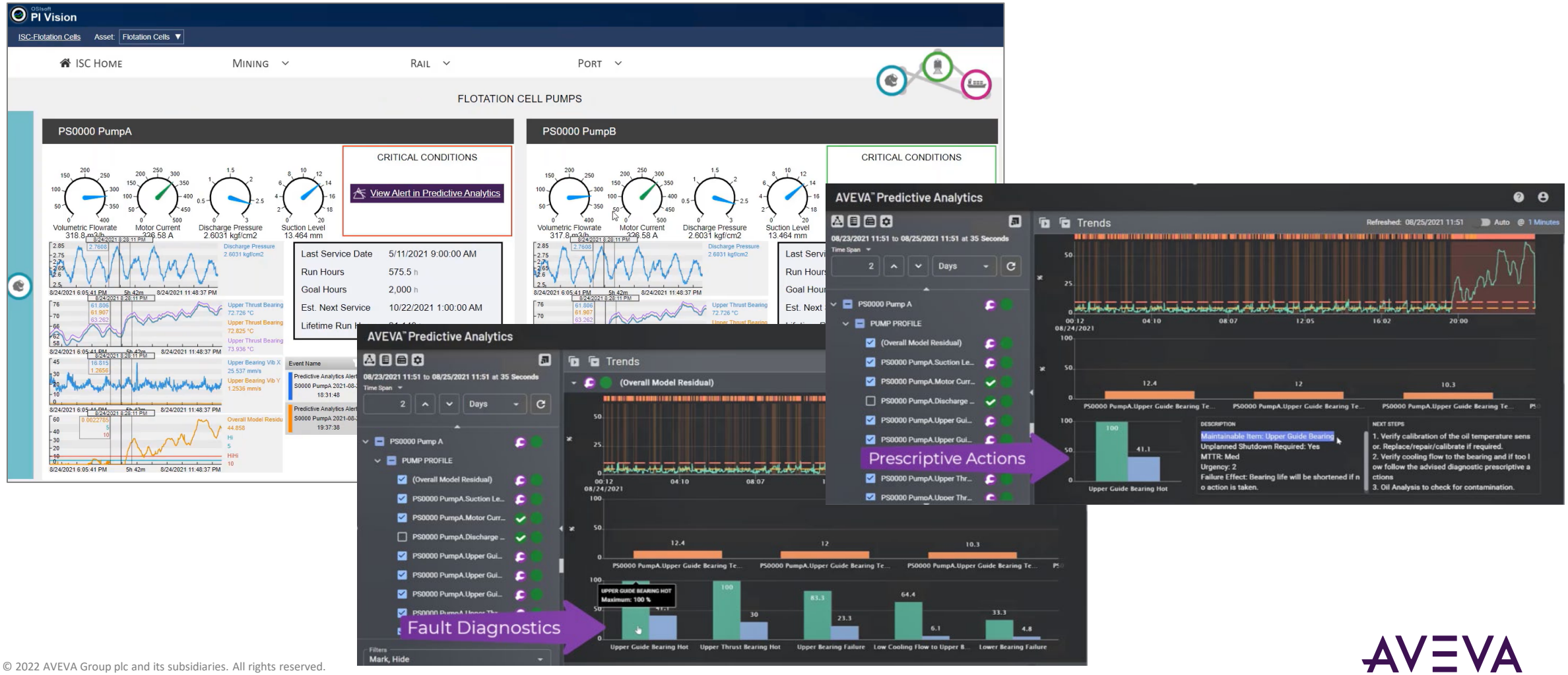
Holistic monitoring approach of asset health through PI Vision

From KPIs Visualization -> Predictive Fault Diagnostic -> Prescriptive Actions



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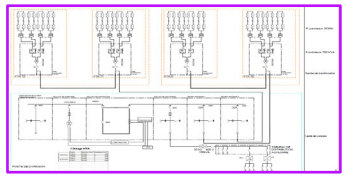
APM predictive solution implementation steps

Without PI Asset Framework

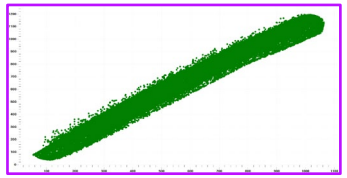
Model Design

- Line diagrams
- Sensor tag list
- Template adaptation



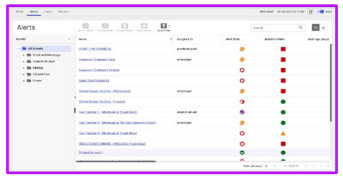
Model Building

- Historical data import
- Model creation
- Replication + scale-up



Monitoring

- Model tuning
- Go-live / monitoring



With PI Asset Framework

Template mapping

- Template per asset type
- Map template metrics to AF attributes

	A	B	C	D
1	Simple PA Steam Turbine	Exclude From Profile?	Template Calc?	Simple AF Steam Turbine
2	ASSET FOLDER NAME			
3	RTS NAME			
4	GROSS LOAD			Power
5	SHAFT SPEED	yes		Speed
6	INLET STEAM FLOW			Steam Flow
7	INLET STEAM TEMP			Inlet Steam Temperature
8	INLET STEAM PRESS			Inlet Steam Pressure
9	EXH STEAM TEMP			Exhaust Steam Temperature
10	EXH STEAM PRESS			Exhaust Steam Pressure

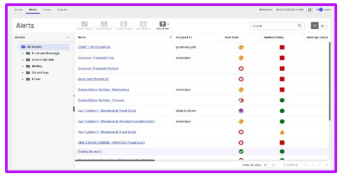
Automated Model Building

- Automatically creates models for all assets

Execute!

Monitoring

- Model tuning
- Go-live / monitoring



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Achieve Asset Excellence

100s

of Millions Saved in Early Warning Catches

30%

Reduction in Maintenance Costs

25%

Improvement in Workforce Efficiency

25%

Reduction in Unplanned Downtime

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Check out these great presentations!

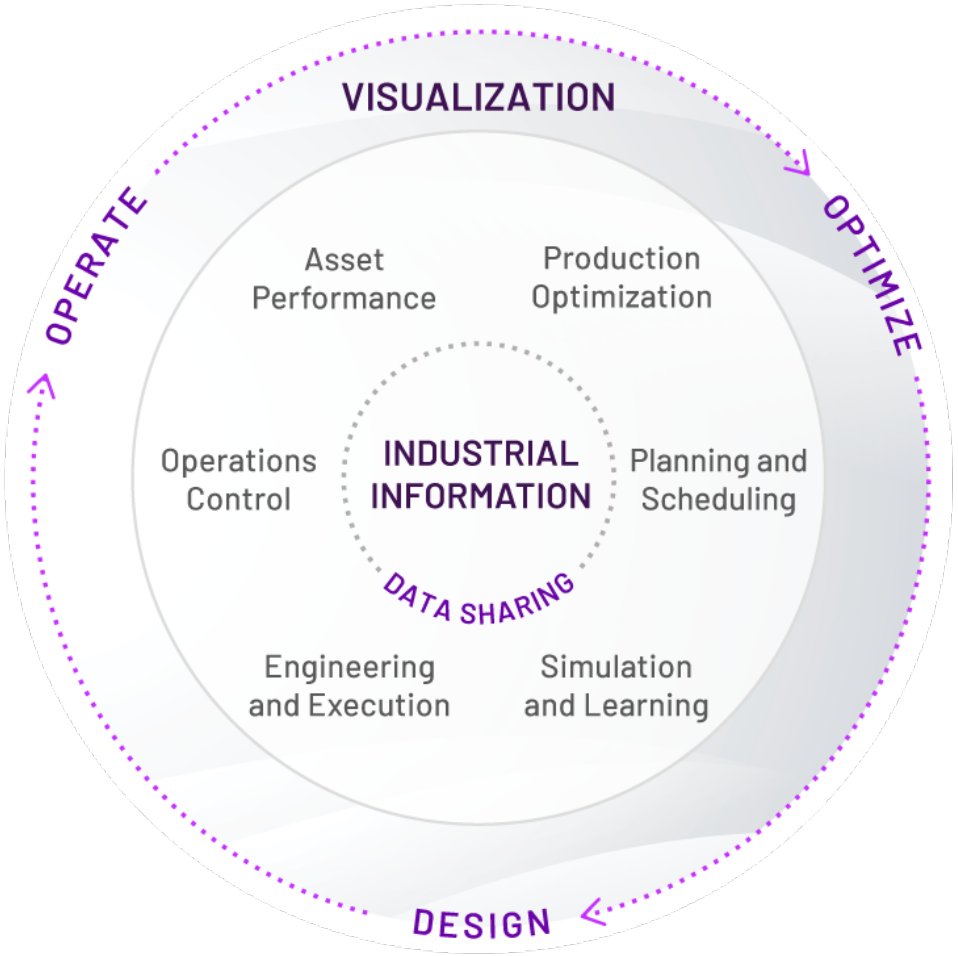
Underscoring the value and driving into the details

Wednesday:

- ENEL Remote Predictive Diagnostic Center and cutting-edge technologies in AI with AVEVA
- AI-enabled Online Monitoring and Diagnostics of ENEL's Geothermal Power Plants
- Renewables monitoring with PI and Predictive Analytics at Southern Company
- Predictive On-Line Monitoring of Co-Generation Plants at Suncor
- Building a Winning Business Case for Predictive Asset Analytics at Saudi Aramco

Thursday:

- Going Beyond Condition-based Maintenance with Predictive Analytics and Prescriptive Guidance
- Integrating AVEVA Predictive Analytics with AVEVA PI System



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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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AVEVA is a global leader in industrial software, sparking ingenuity to drive responsible use of the world's resources. The company's secure industrial cloud platform and applications enable businesses to harness the power of their information and improve collaboration with customers, suppliers and partners.

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. With operations around the globe, we are headquartered in Cambridge, UK and listed on the London Stock Exchange's FTSE 100.

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