

NOVEMBER 2022

AVEVA Industrial AI Overview

Presented by:

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AVEVA

AI-driven Sustainability

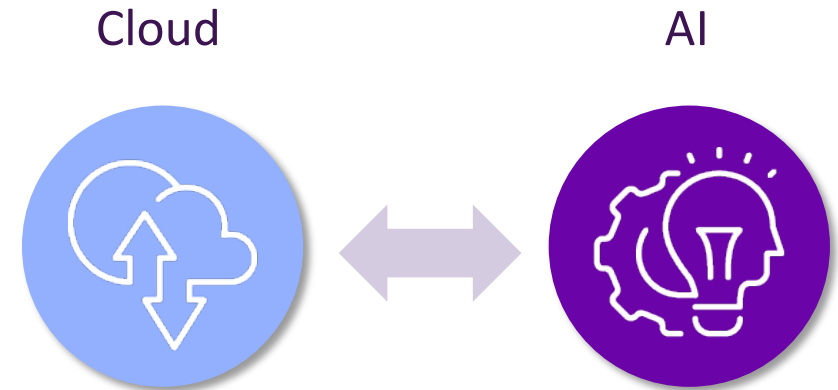
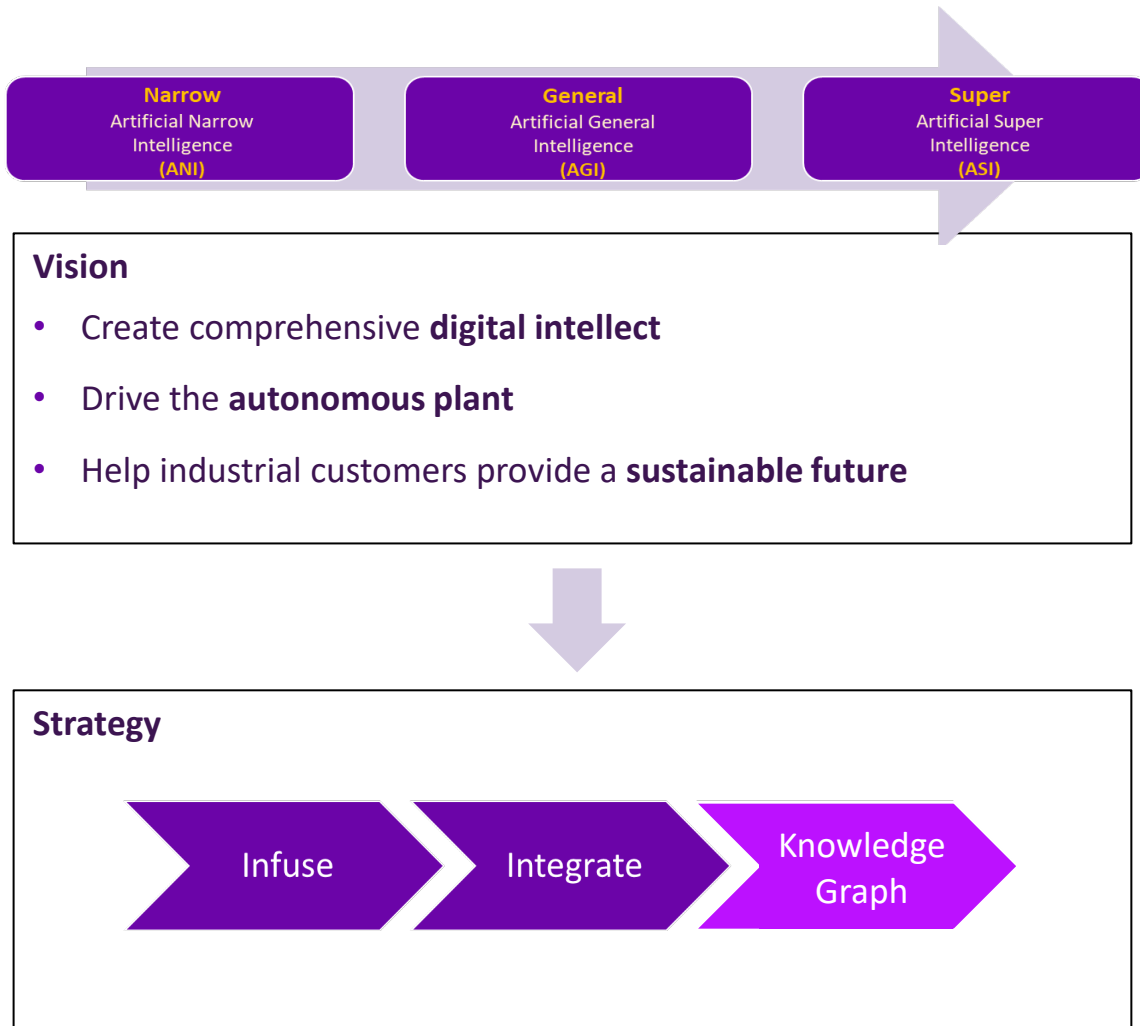


- Increase operational & energy efficiency
- Reduce carbon-based industrial waste
- Identify and improve underperforming assets

Sustainability and Profitability
are not opposing forces



AVEVA AI (Vision & Strategy)

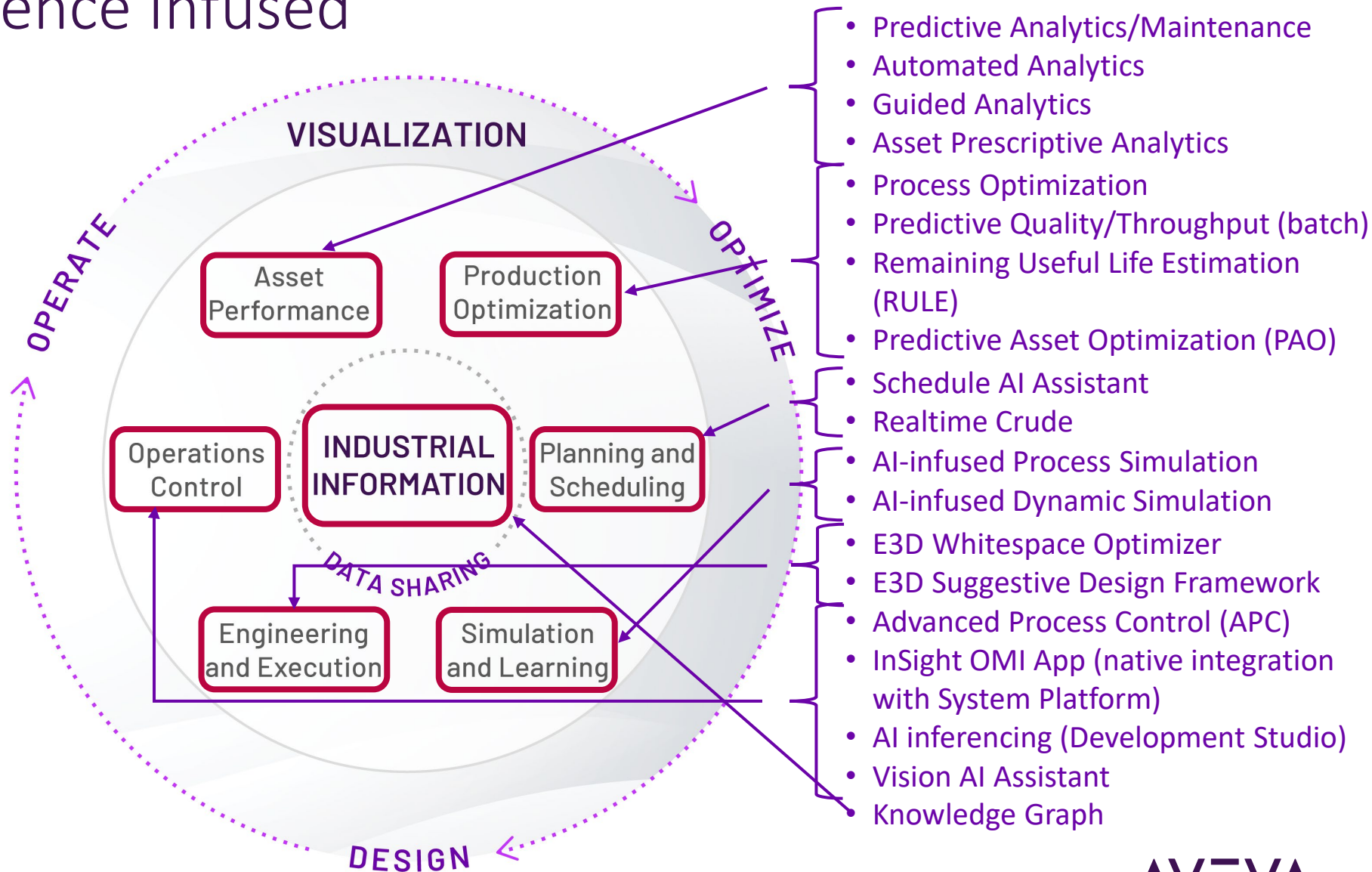


Cloud enables the reach
AI establishes the intellect

Artificial Intelligence Infused

Across AVEVA's broad product portfolio

Predictive
Performance
Prescriptive
Prognostic
Perceptive



Predictive / Prescriptive

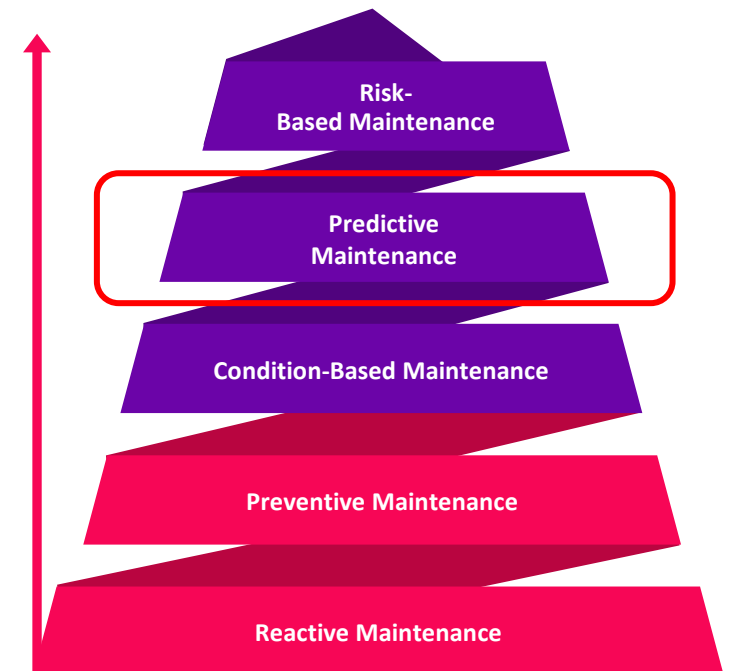
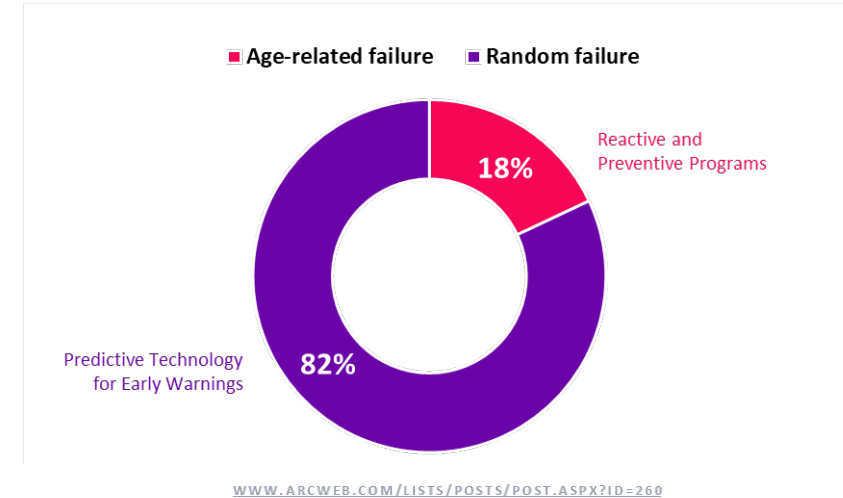
Integrated Predictive/Prescriptive Analytics

Prevent Equipment Failures

- Predictive monitoring of industrial equipment assets
{Compressors, Pumps, Gearbox's, Motors, Turbines, Generators, etc.}
- Early warning detection and diagnosis of equipment problems

Benefits

- Improve asset reliability and performance
- Reduce energy consumption and lost power
- Reduce maintenance costs
- Optimize maintenance planning
- Achieve fast time to value through out-of-the-box predictive monitoring of industrial assets



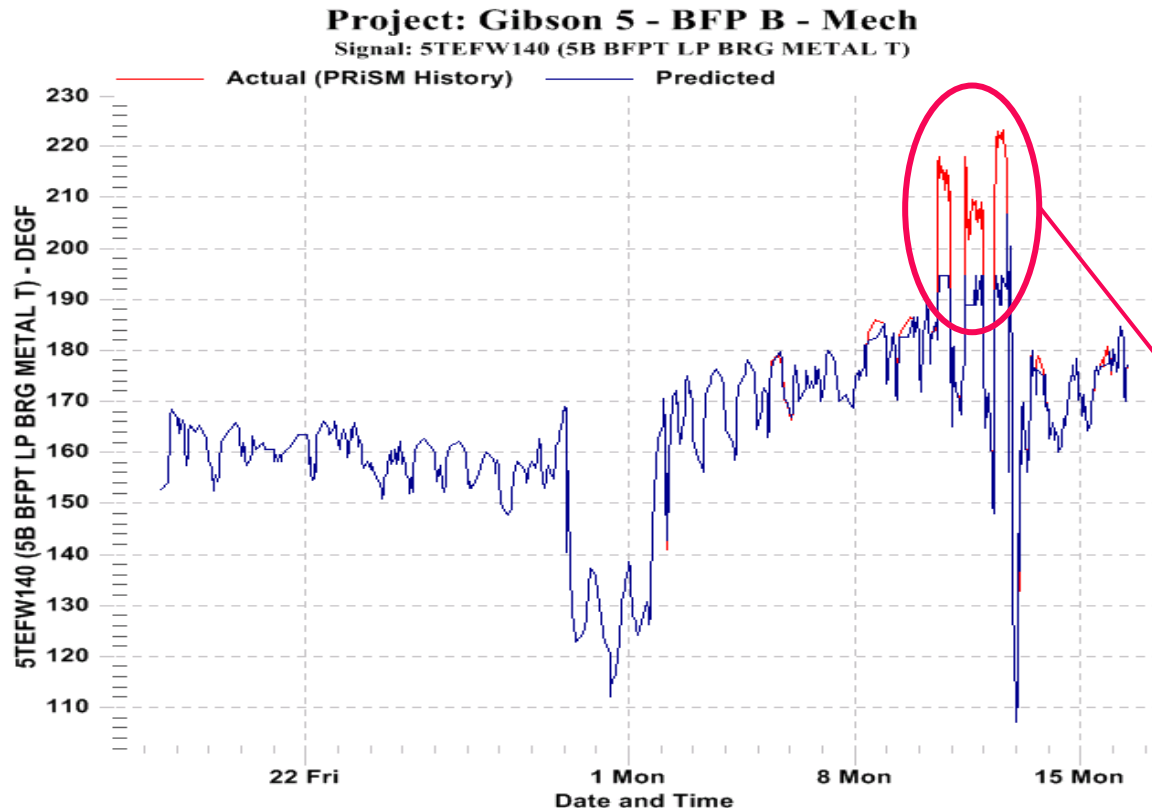
AVEVA Predictive Analytics

How Does it Work?

- Uses historical data to describe how a piece of equipment normally operates and build a model (*patented AI algorithm for optimized results*)
- Continuously monitors behavior in real-time
- Alerts when the operation differs from the historical norm
- Early warning detection of equipment problems
- Advanced analysis capabilities including problem identification and root cause analysis



Case Study: Pumps & Valving



Predictive “catch”

Observation

Bearing metal temperature spikes were observed.

Results

Site investigation found oil reservoir filled with half water and half oil. It was determined that the intricate valving was supplying too much pressure to the seals resulting in water flowing to the bearings.



Case Study: Environmental

Summary

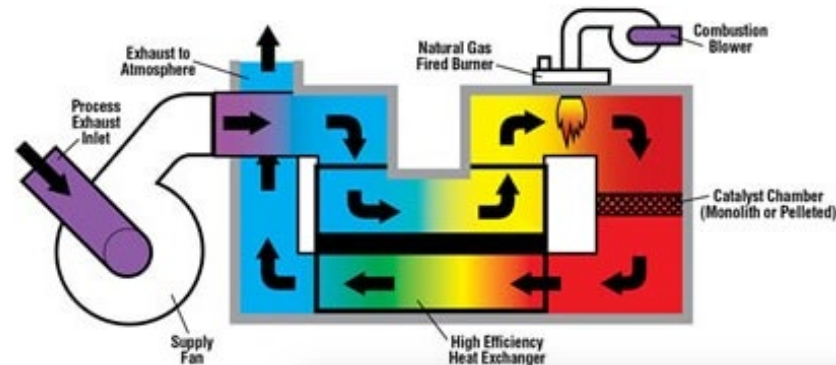
The oxidizer is responsible for reducing the environmentally harmful emissions created during the manufacturing process. This is done by burning the exhaust gases at a high temperature (oxidizing) and then running the hot exhaust over a catalyst to help induce a chemical reaction.

Predictive “catch”

The system identified a higher than expected differential pressure across the catalyst bed, indicating a clog which can disrupt the oxidation process. However, this issue only occurred once in awhile.

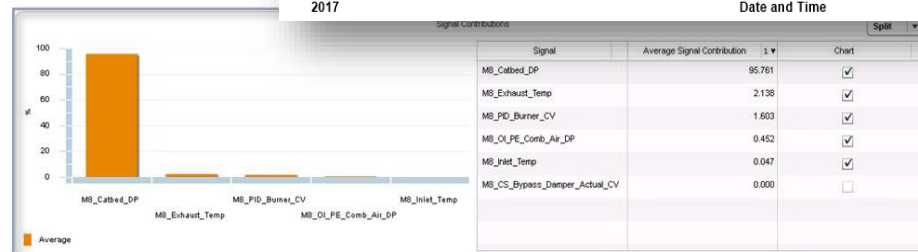
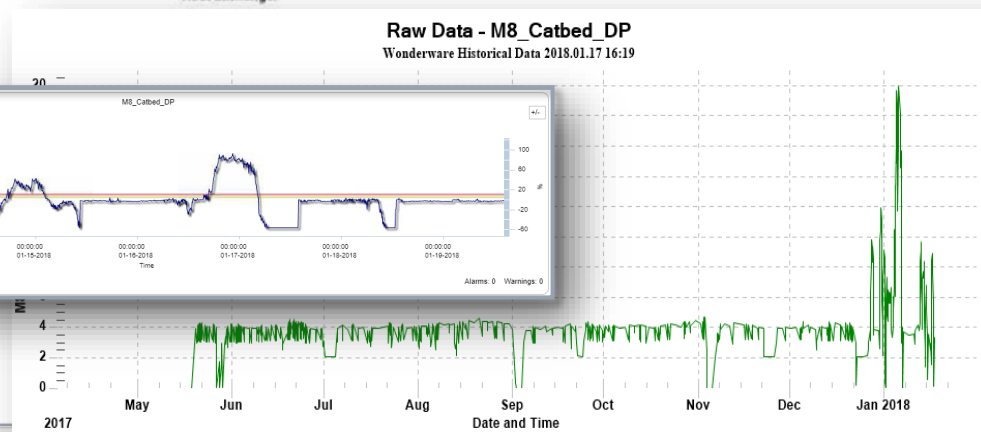
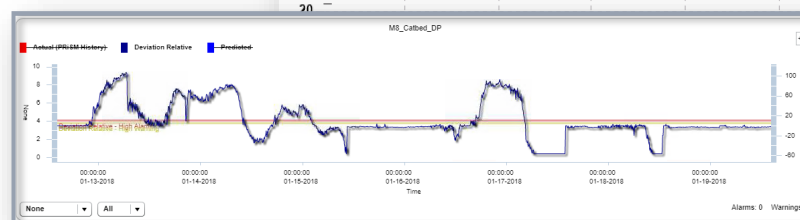
The site determined that this predictive notification only occurred when the weather was extremely cold, causing the lines that bleed moisture to the outside to freeze. Maintenance personnel unthawed the lines, allowing the moisture to dissipate which, in turn, reduced the pressure and eliminated the predictive analytics alarm.

Catalytic Oxidizer Airflow Diagram



Raw Data - M8_Catbed_DP

Wonderware Historical Data 2018.01.17 16:19



PI + Predictive / Prescriptive

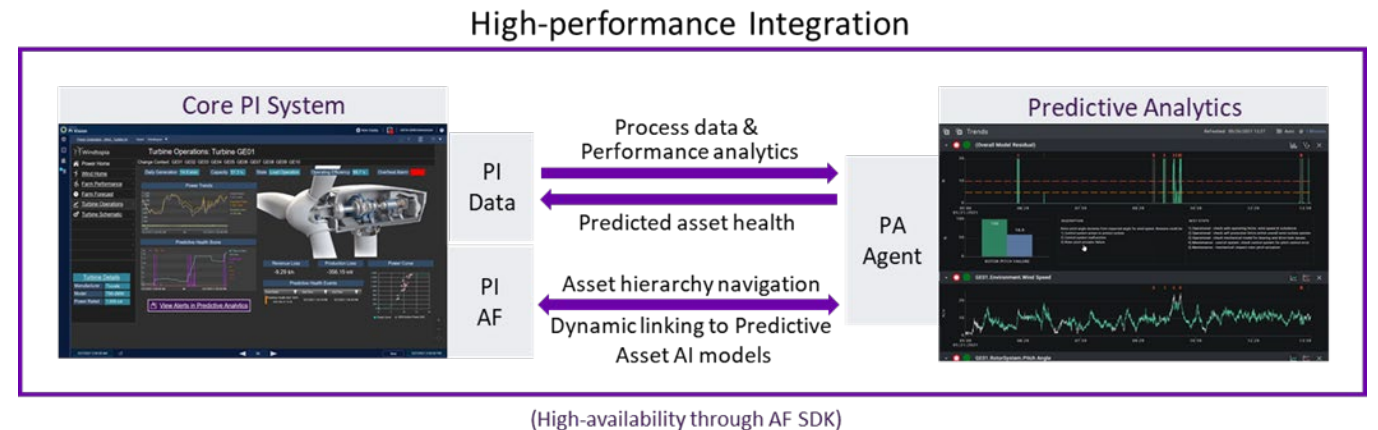
Predictive/Prescriptive Analytics & the PI System

➤ Customer value

- Comprehensive monitoring & analysis through integrated IIoT data, performance calculations, and predictive & prescriptive analytics
- Very early detection of asset and process issues, long before any DCS or SCADA alert
- Ability to manage risk and reduce/eliminate unplanned outages, saving millions of GBP annually in avoided costs

➤ Integration

- High-performance integration of the PI System & Predictive Analytics
- Bi-directional data exchange in context
- Drill-down into predicted asset health from PI to Predictive in-context
- High availability

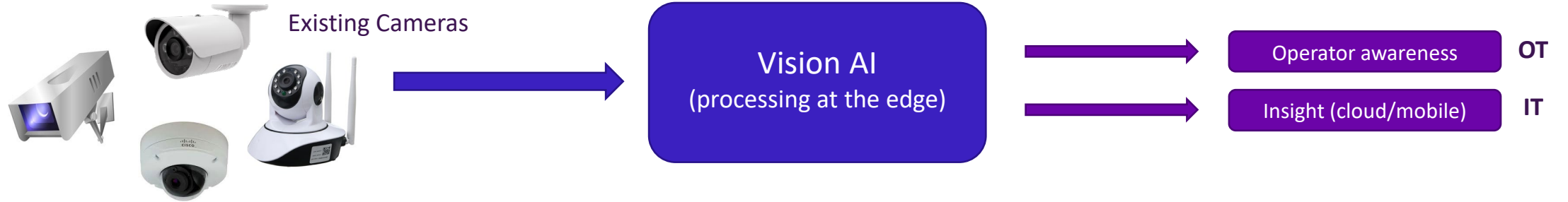




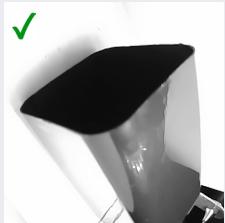
Vision AI Assistant

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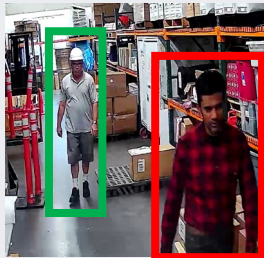
Vision AI Assistant



Product Quality

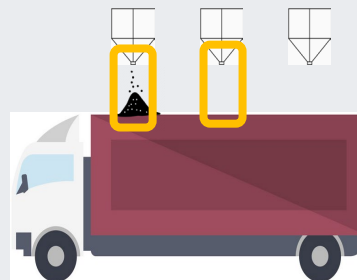


Safety

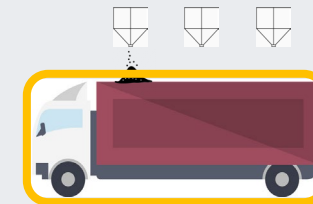
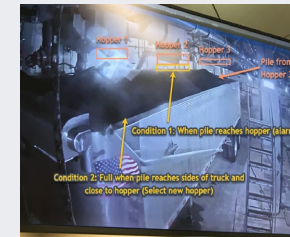


Measurement

Truck fill level



Process Control



Correct truck placement under hopper

Remote Monitoring

Monitor Water Quality

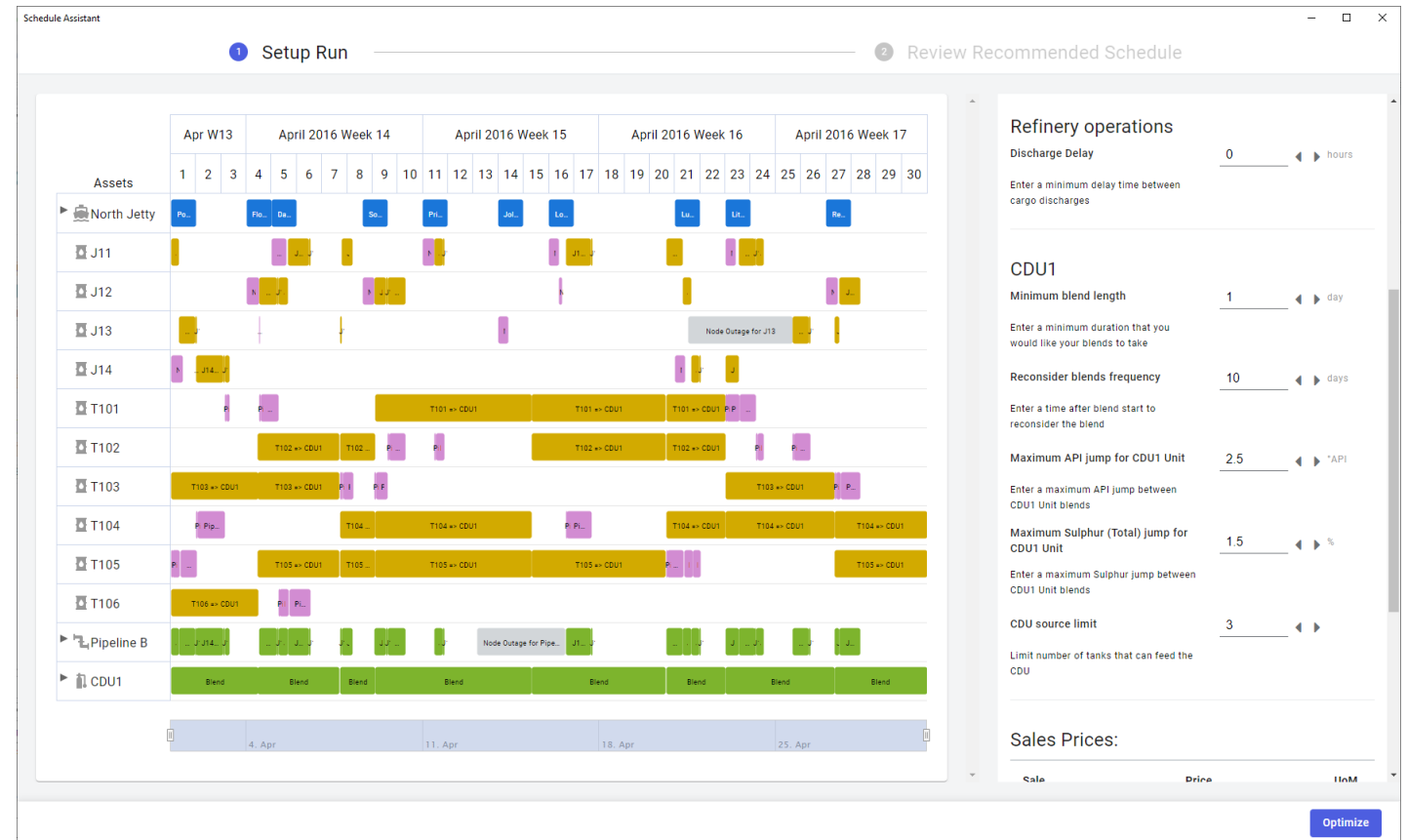


Schedule AI Assistant

Schedule AI Assistant



- **AVEVA Cloud**
- **Captures unique operating variables and constraints** for a site
- **Automatically generates and evaluates many schedules** in line with the objectives and anticipated events within the Supply Chain
- Output is **understandable instructions with actionable implementation**
- What would **take days of work** is completed **in seconds** with increased business agility and **optimised decision making**



Predictive Asset Optimization (PAO)

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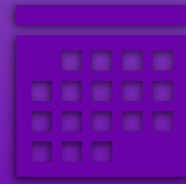
Determining the Best Action when An Anomaly is Detected

Balancing Risk Vs Cost



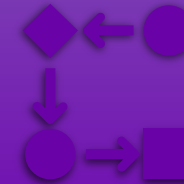
Stop and fix it now?

- Fix immediately to eliminate risk of failure
- Return to standard operations quicker



Wait until planned shutdown?

- Risk of equipment failure during operations
- If no failure, then less cost (...maybe)

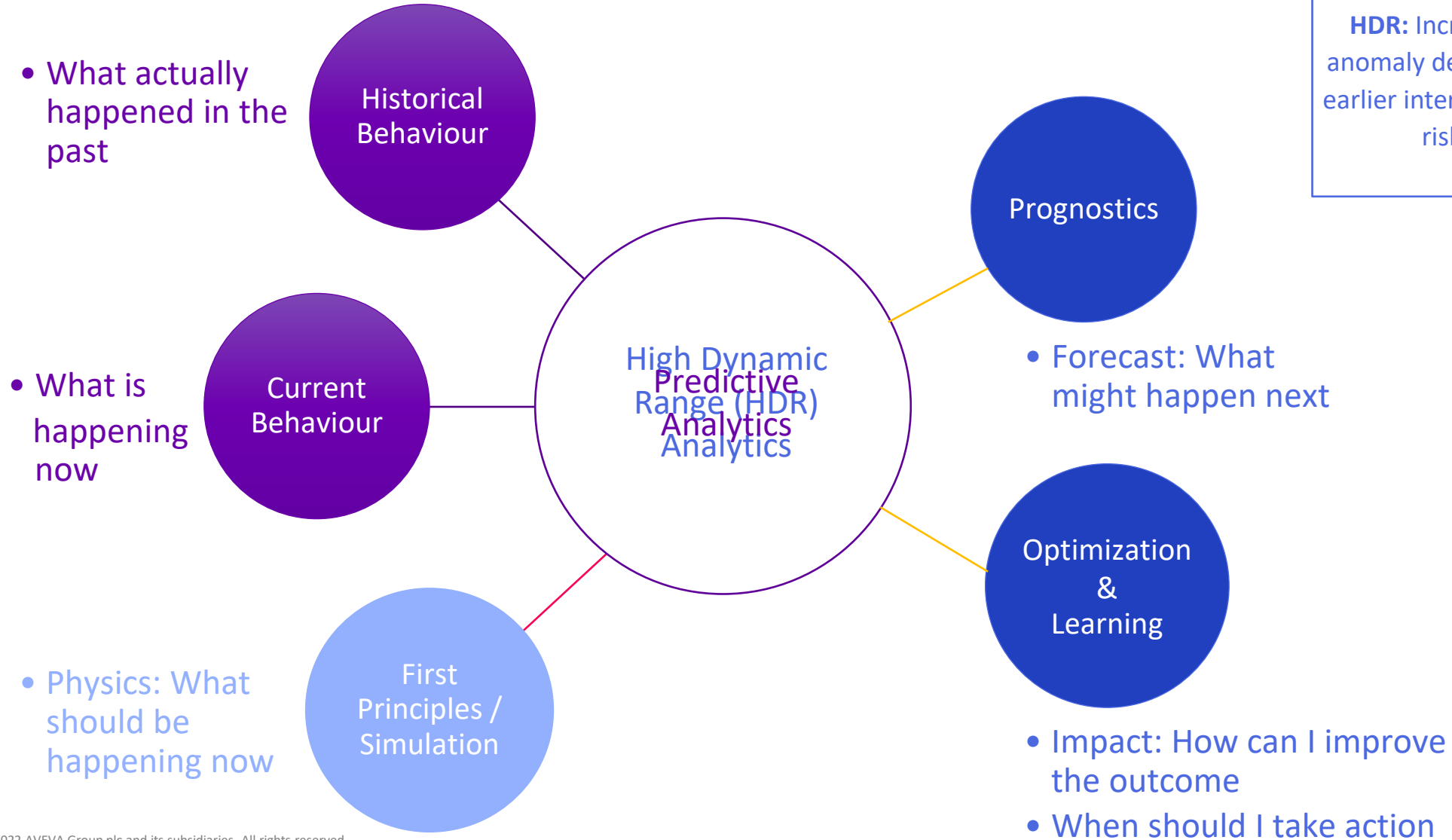


Can I operate differently?

- A change in configuration could reduce the risk of failure while extending the life of the equipment at risk



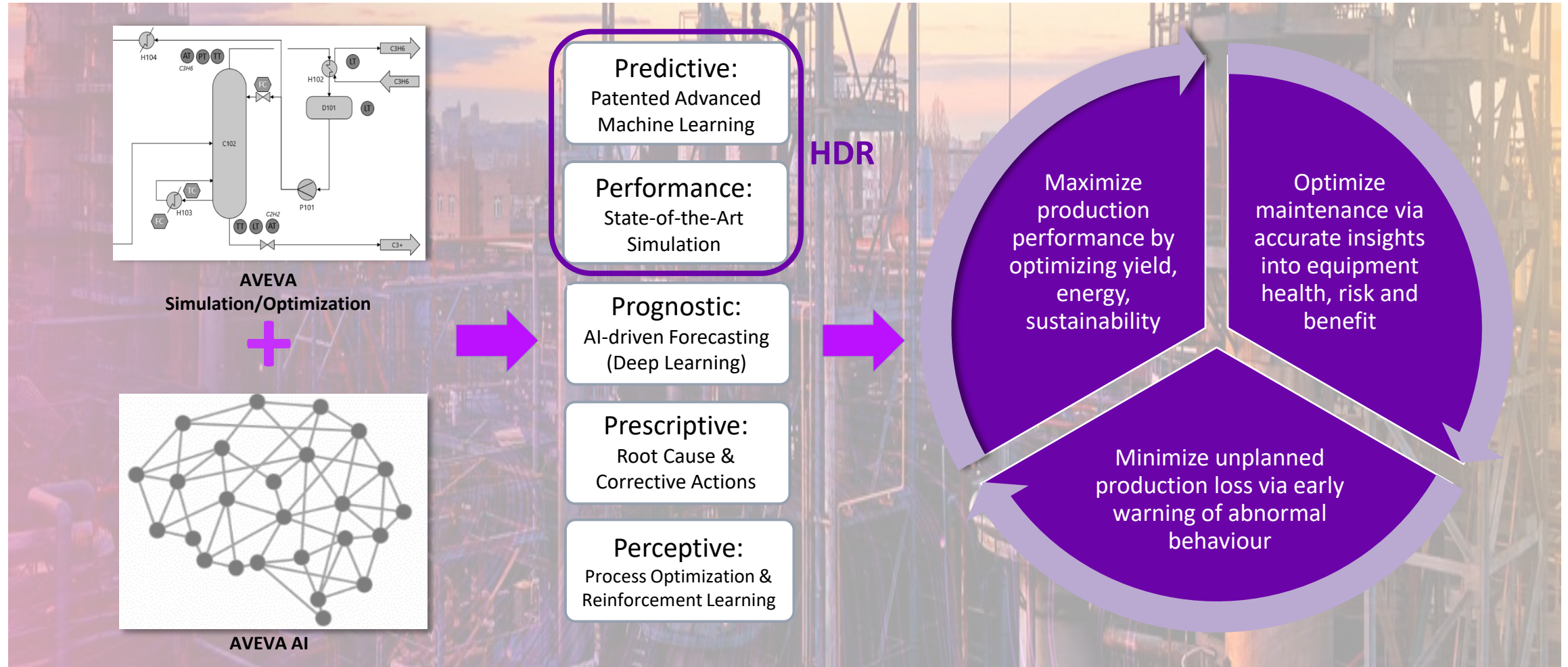
Predictive Asset Optimization (PAO)



HDR: Increase the range of anomaly detection to generate earlier intervention and greater risk mitigation

PAO Summary

Maximizing Assets & Operations through AI + Simulation



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.




Please visit our AI-infused booths in the EXPO!!


Thank you

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