

AVEVAWORLD
PARIS

OCTOBER 2024

Operations on-ramp to AI and advanced industrial analytics

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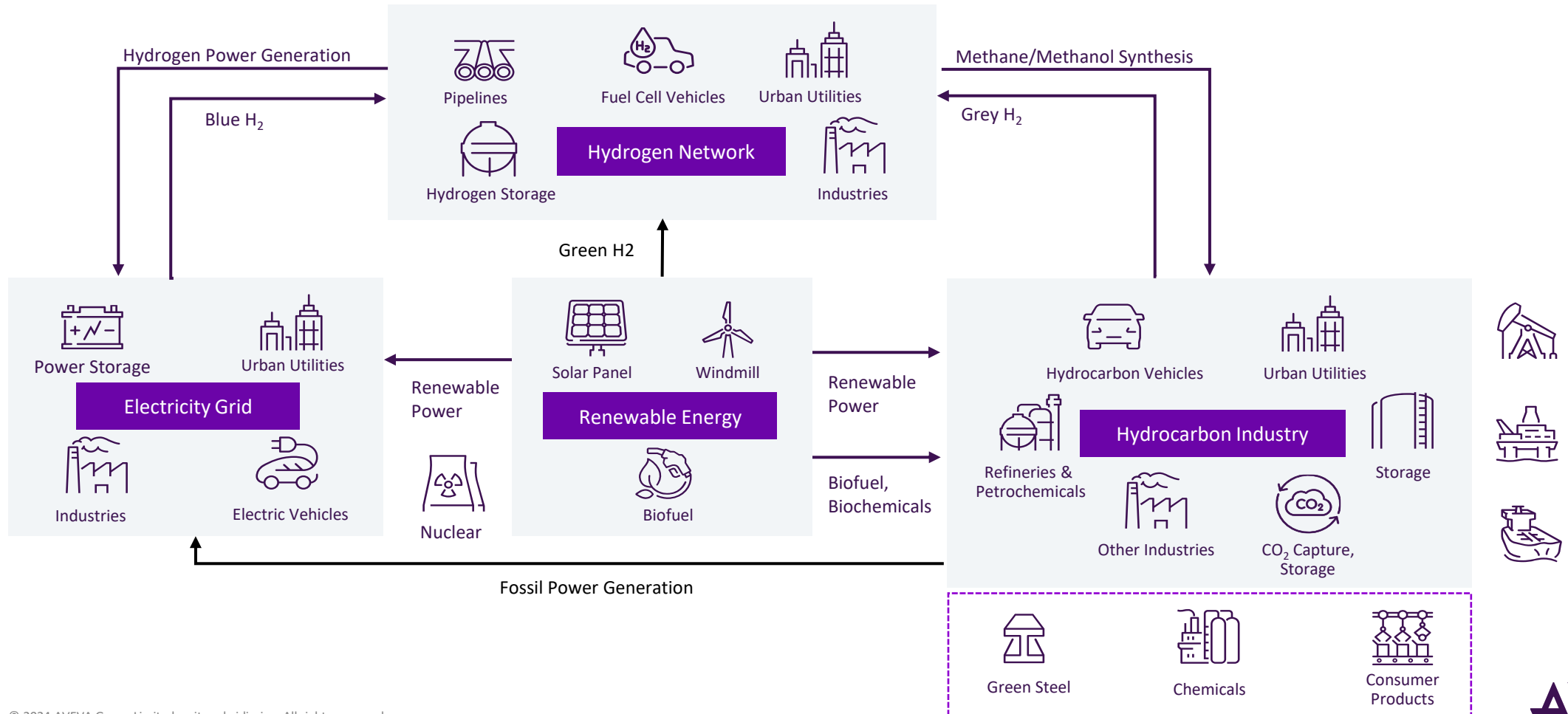
AVEVA

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At AVEVA, we believe the industrial landscape needs to be reshaped...

“ Fewer than 10% of enterprises are advanced in their insights-driven capabilities. [Forrester](#) ”



...in this context, what AI can do for me?



1. Predictive maintenance



2. Process optimization



3. Energy management



4. Quality assurance



5. Supply chain optimization



6. Waste reduction and recycling



7. Automation and robotics



8. Data-driven decision-making

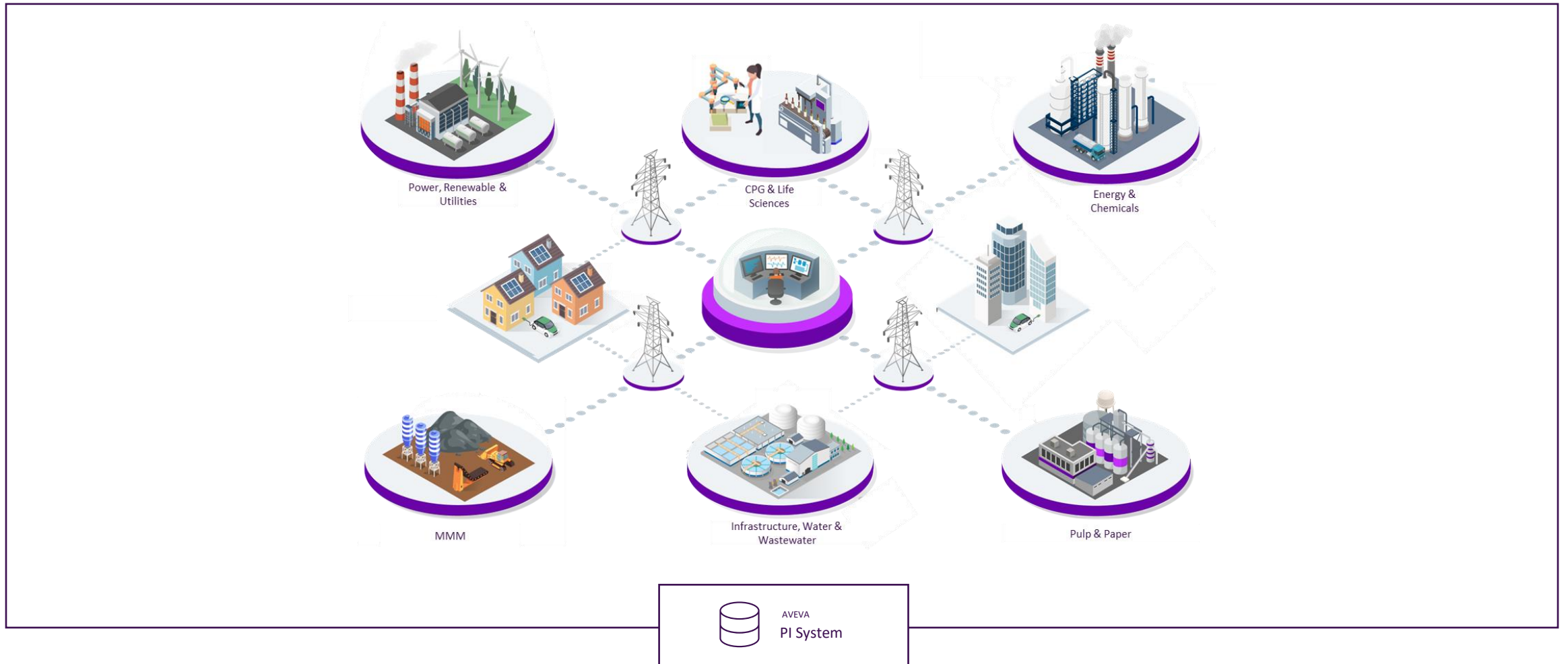


9. Process safety and risk management



10. Environmental & regulatory compliance

... AVEVA PI System is the foundation for cutting-edge data intelligence...





Speaks to your data sources

No IT expertise needed

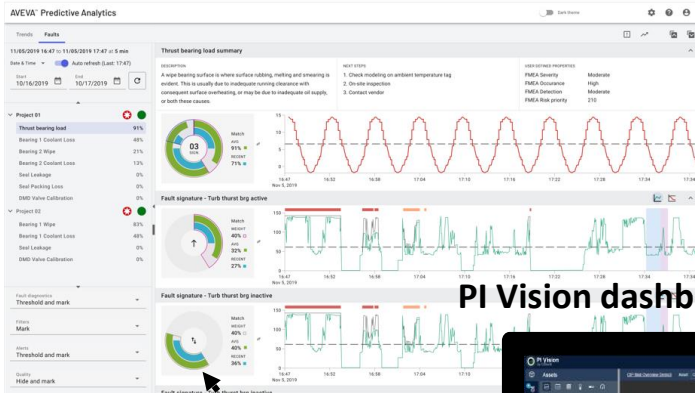
Built for operations, maintenance, sustainability...



Asset-specific solutions driven by industrial information

Leverage AVEVA PI System to accelerate AI outcomes

AVEVA Predictive Analytics



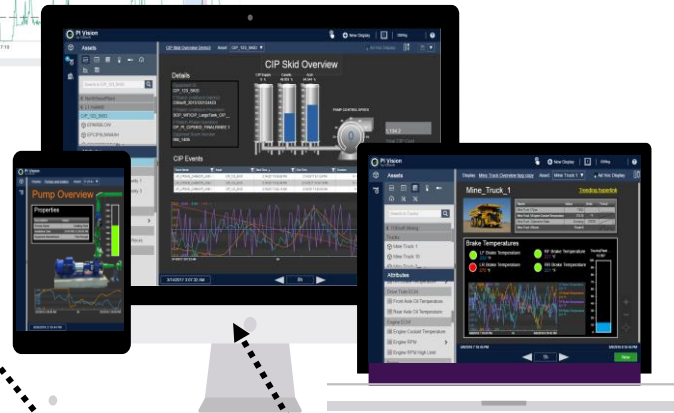
Integration with 3rd-party solutions like Apollo Energy Analytics



CONNECT including Industrial AI Assistant



PI Vision dashboards for real-time operations

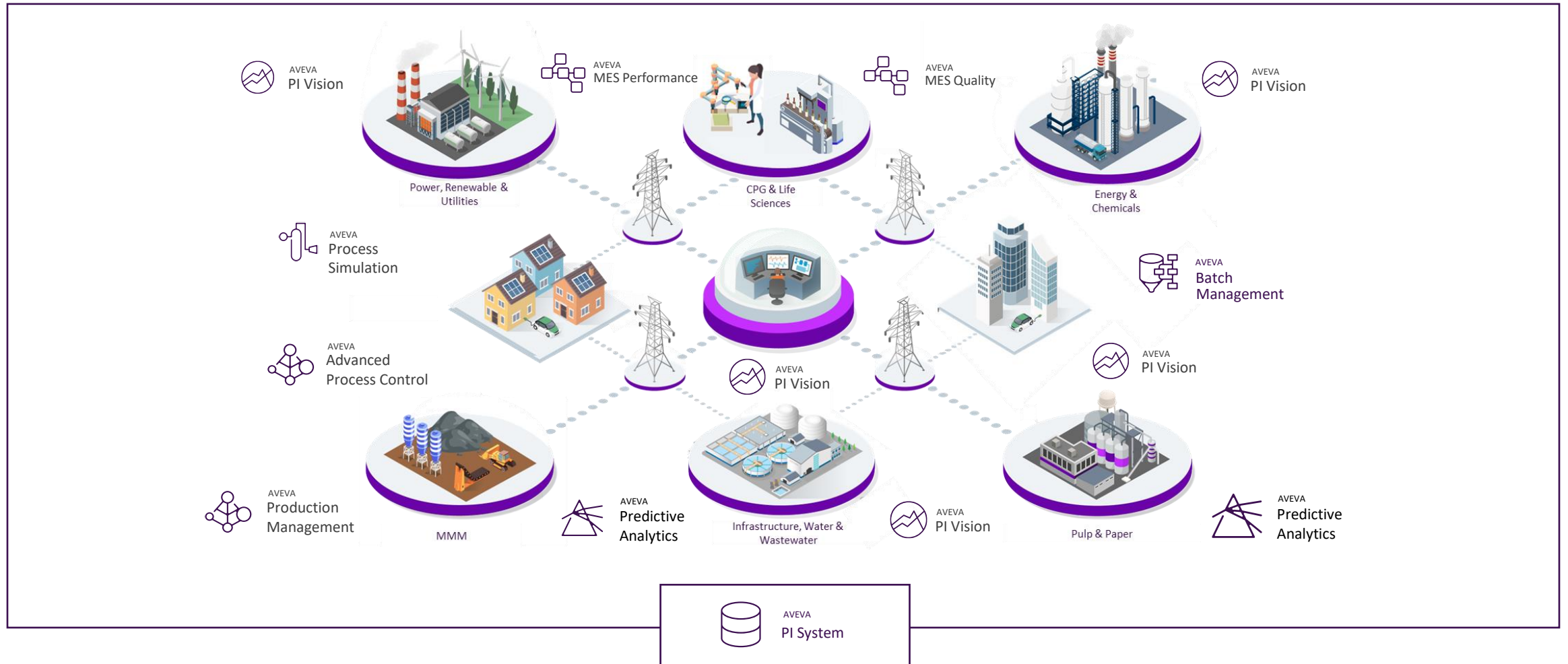


Advanced analytics on CONNECT platform

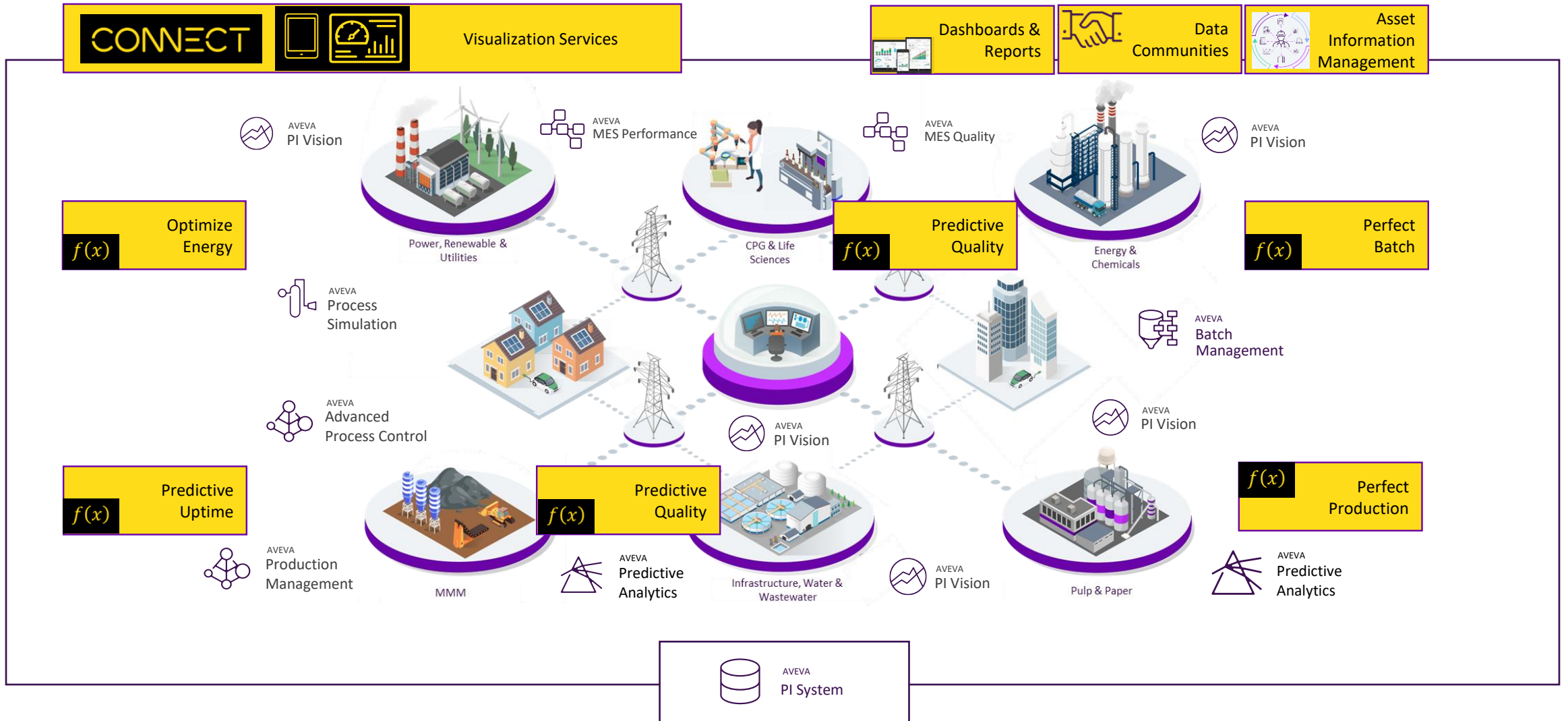


AVEVA PI System data

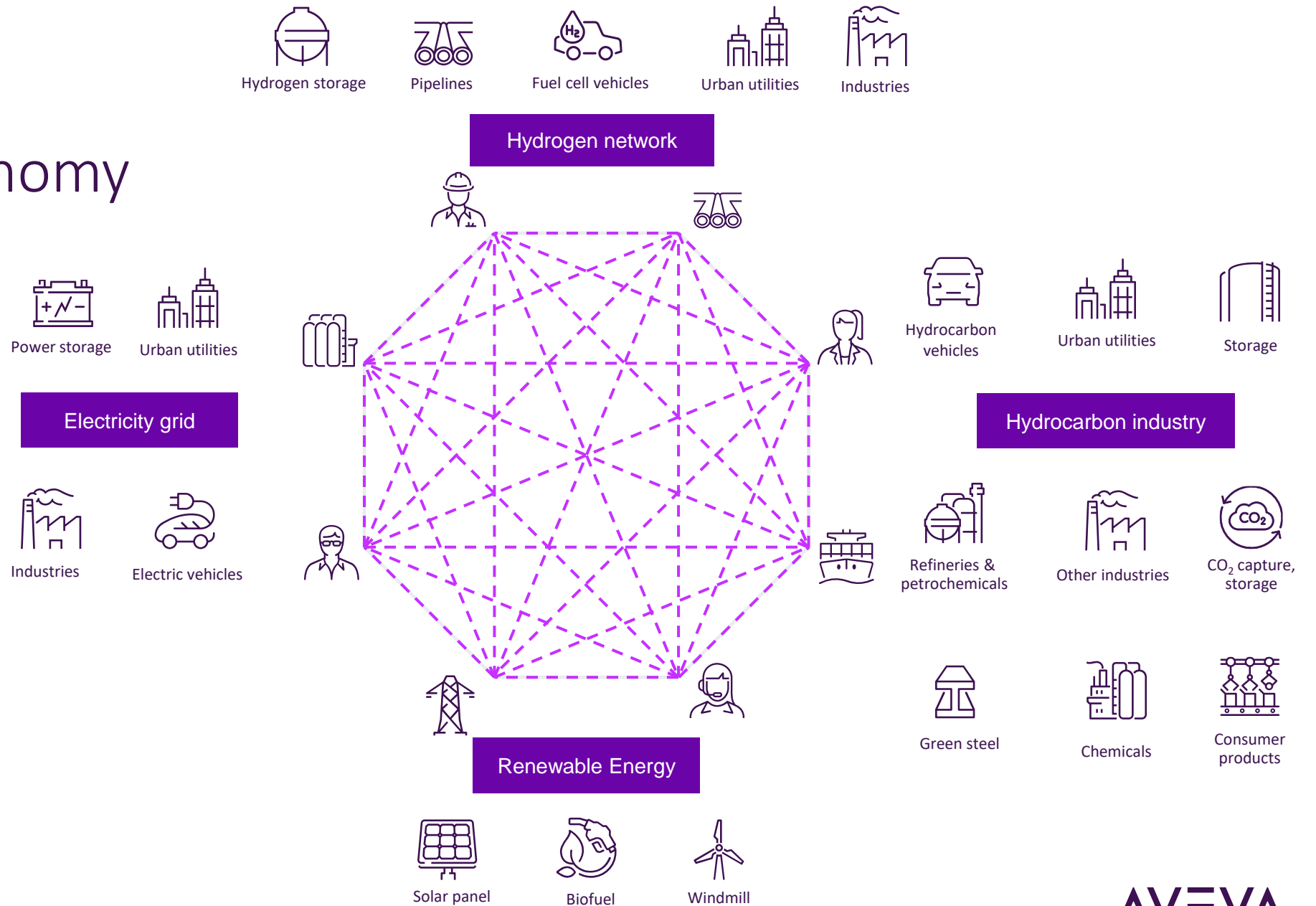
...to unlock additional value from new use cases...



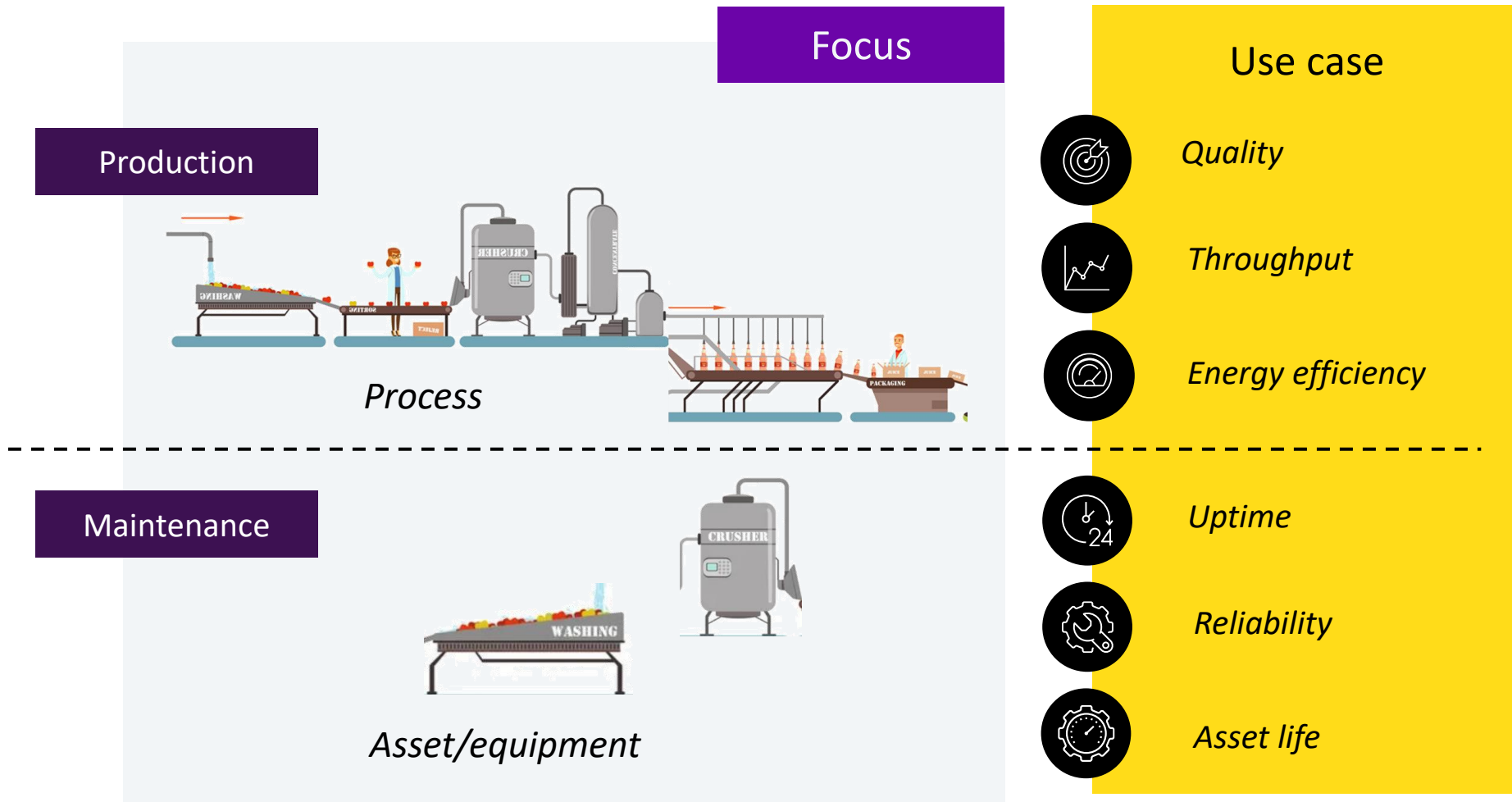
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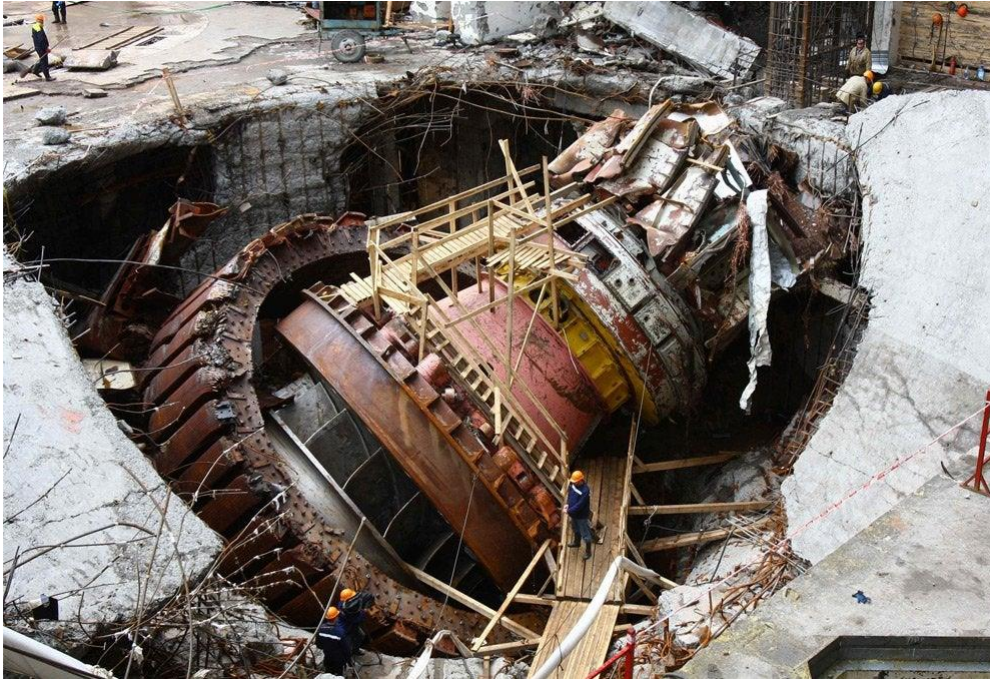


...through a connected industrial economy



AVEVA AI solutions bring improvements across the enterprise





What were the signs
this might happen?
How much will it cost
your organization?

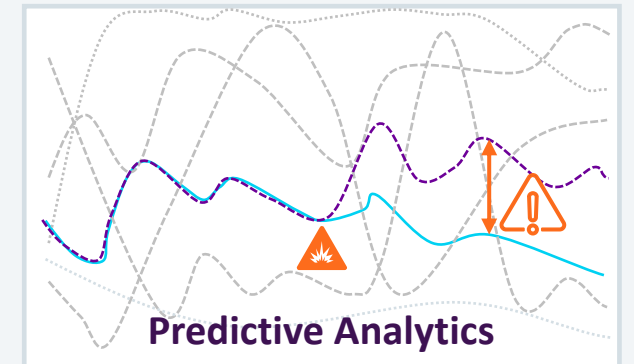
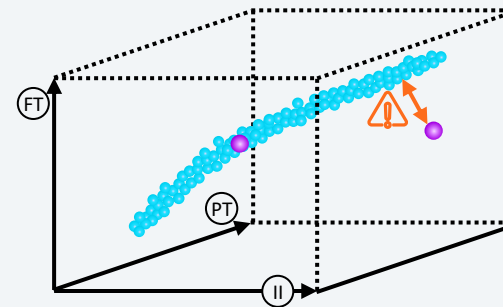
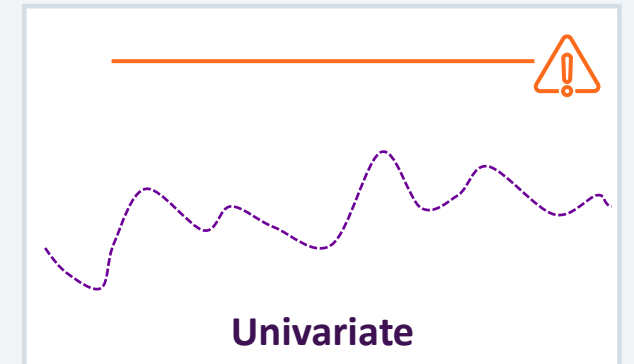
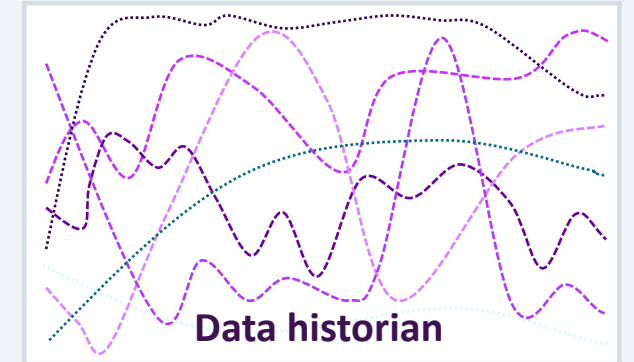
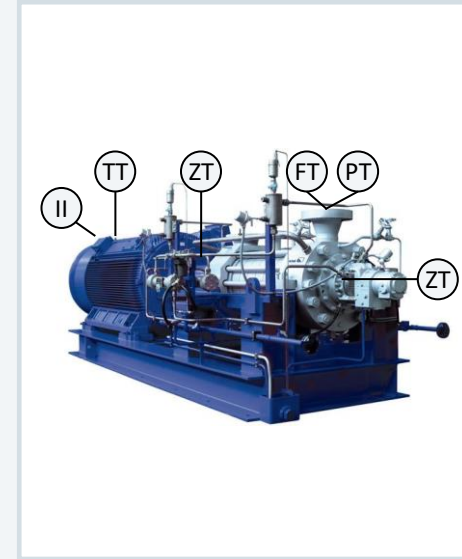
Do not wait until the
next failure.

Solution: AI-driven analytics and risk mitigation

Predictive failure detection for business-critical equipment

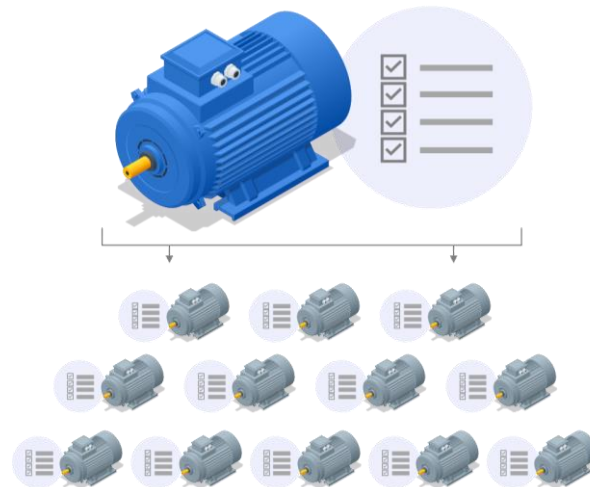
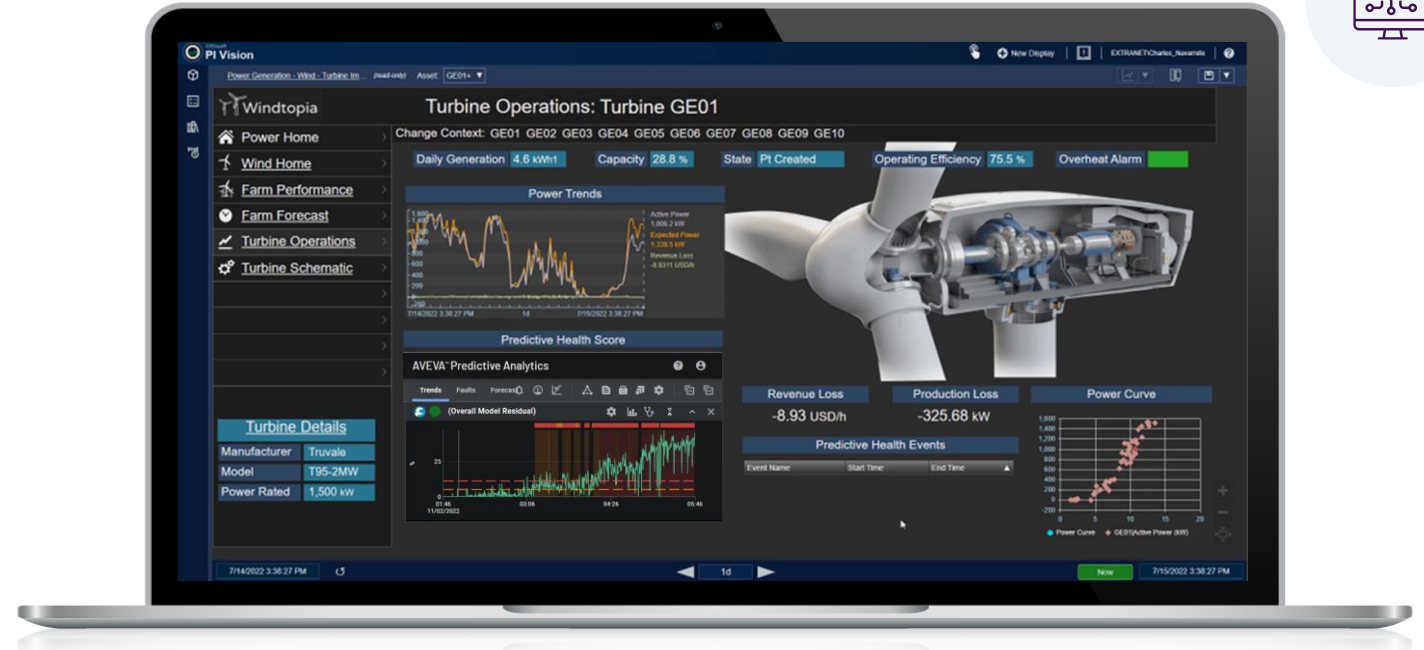
- No-code AI and machine learning
- Advanced alert and case management for knowledge capture and reporting
- Data playback capability for testing models
- Templates accelerate configuration, deployment and scale-up

It's the way you operationalize and scale AI for industrial operations.



Deep integration with AVEVA PI System

- Visibility to more people and integration of content with AVEVA PI Vision
- AVEVA Predictive Analytics results integrated with AVEVA PI system for contextualized insights
- Integrated with AVEVA PI System asset framework, enabling more efficient model building
- Leverage AVEVA PI System as archive



Native AVEVA PI System integration

Bulk model building

Solution: AI-driven analytics and risk mitigation

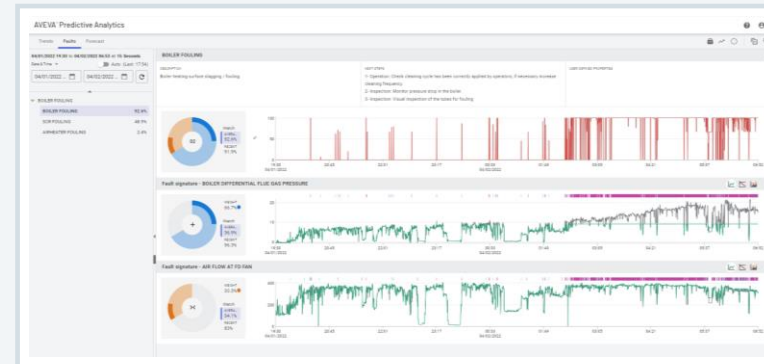
- Monitor health in real time – early identification of anomalies via anomaly index and drill-down to contributing signals
- Rank and diagnose faults based on anomaly deviation signature
- Obtain prescriptive guidance for remediation
- Forecast and track burndown of time until failure



Anomaly index



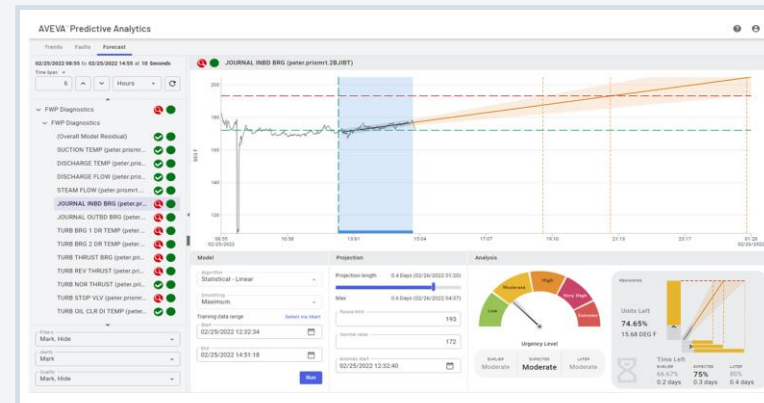
Sensor contributions



Fault diagnostics



Prescriptive actions



Forecast



Case management



First principles



Transient analysis



AVEVA PI System Integration



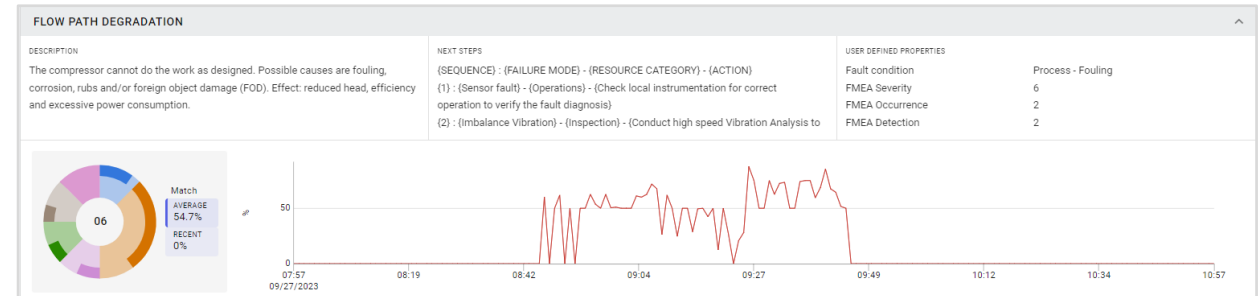
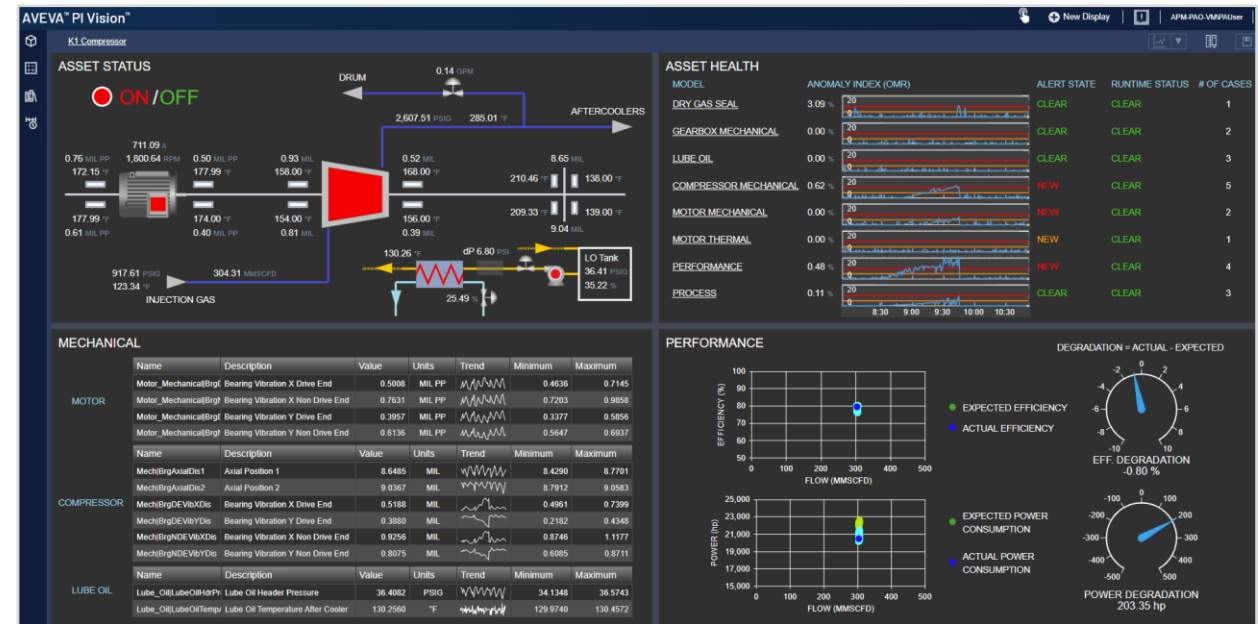
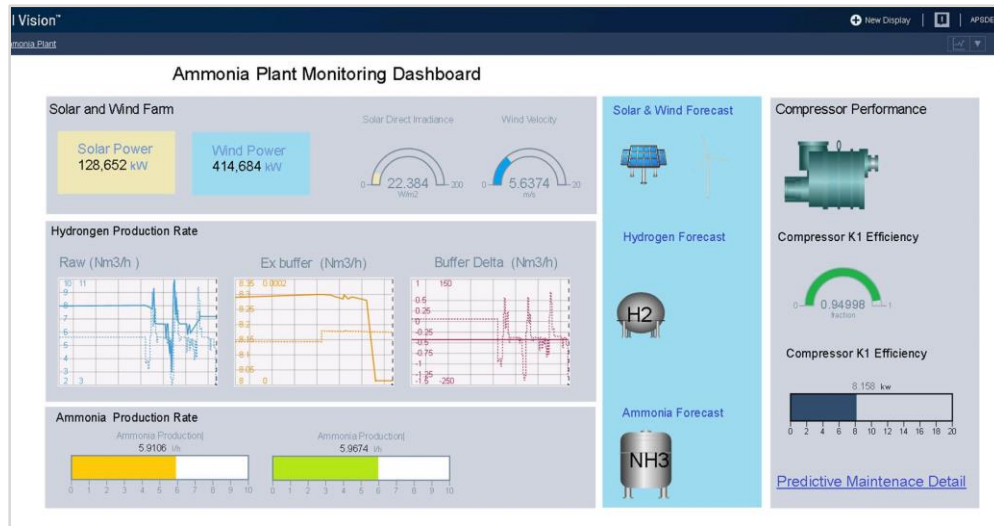
Custom algorithms



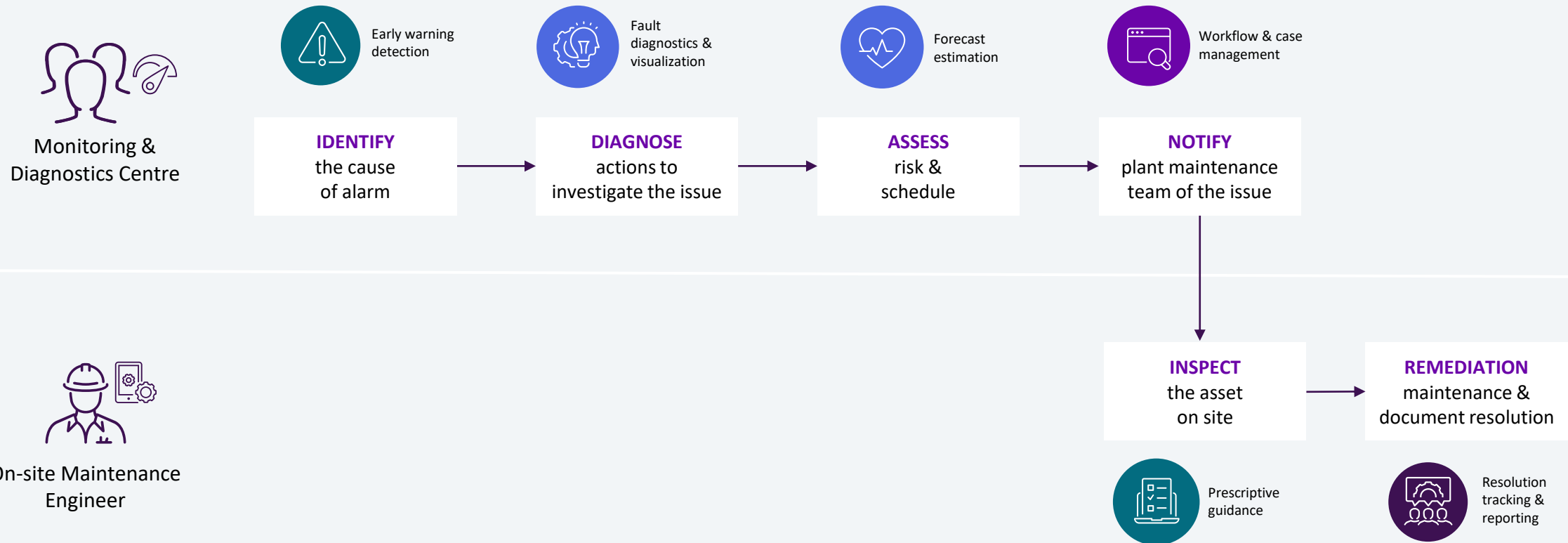
Model Templates

Multi experience visualization

From KPI visualization -> Predictive fault diagnostic -> AI-driven fault diagnostics guidance

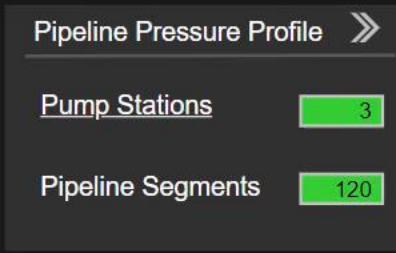
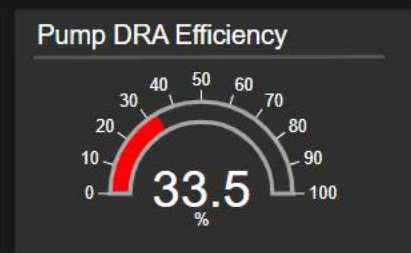
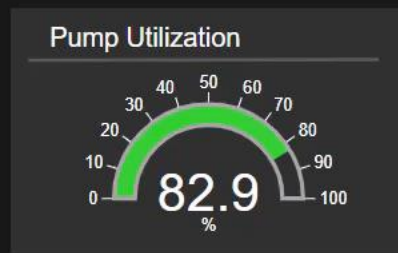
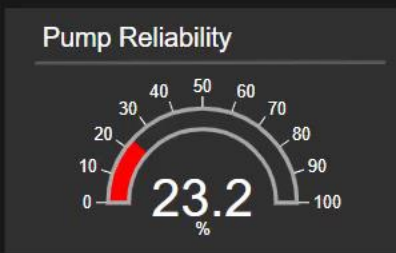
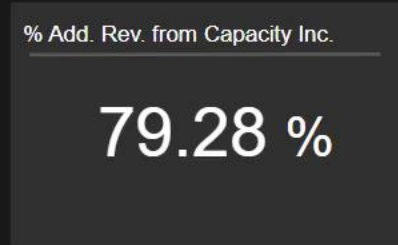
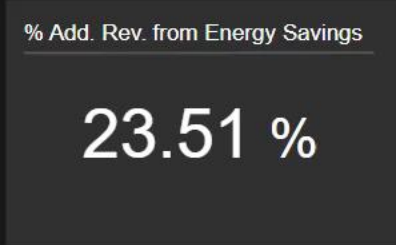
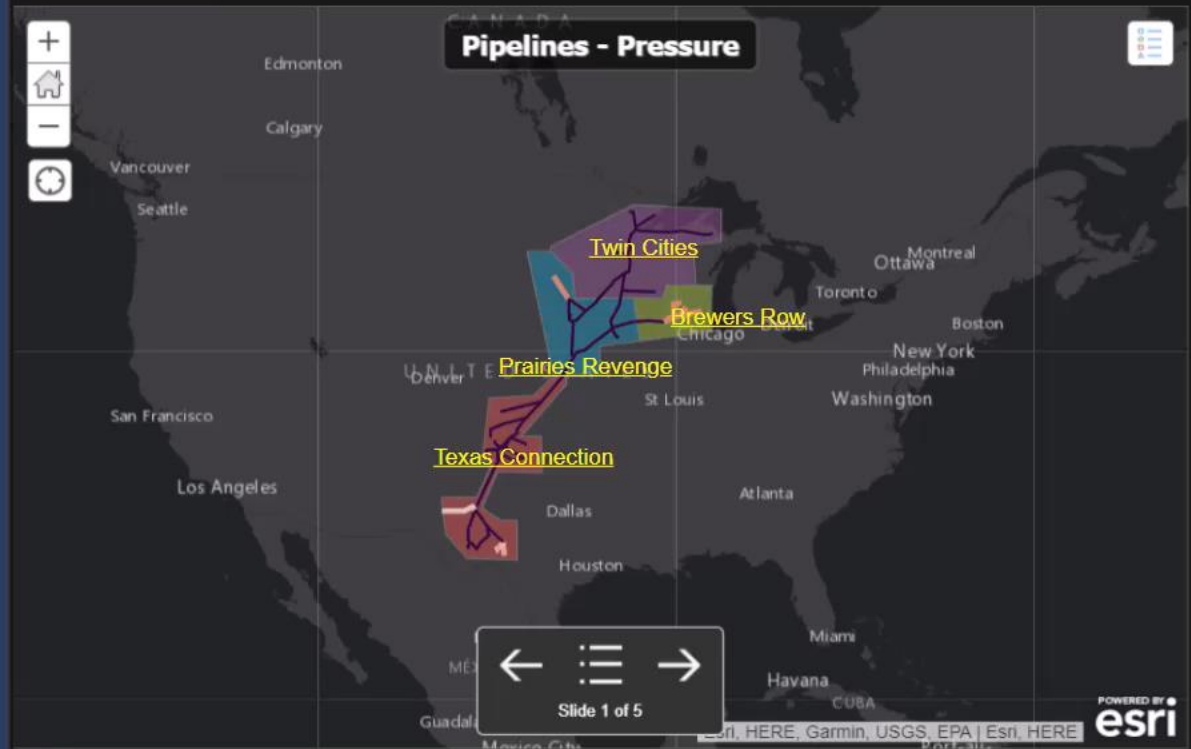


AVEVA PI System + AVEVA Predictive Analytics for pumps



Petrolux Midstream - Great Eagle Crude Pipe Network

[Explore in Esri ArcGIS](#)



What happens upon asset performance/reliability deviation?

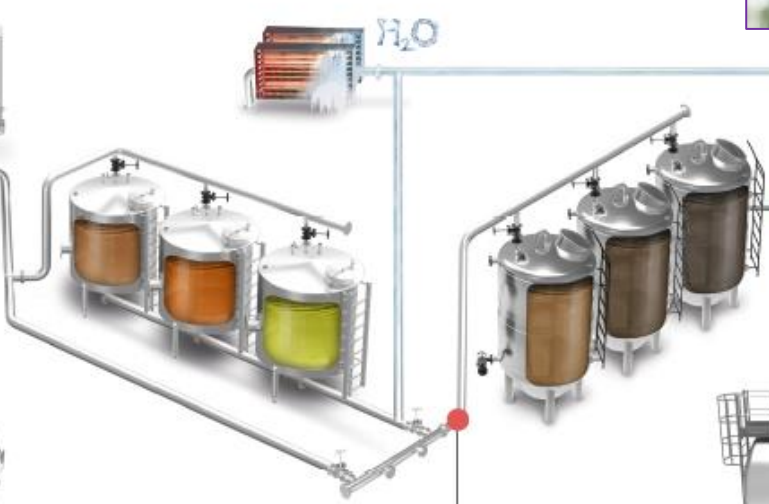
Soft drink production process

Sugar/Sweetener Dissolving Monitoring | Syrup Room
Density ($^{\circ}$ Brix), Density and Sound Velocity (Sugar Inversion), Refractive Index



Raw Material Monitoring
Refractive Index, Density ($^{\circ}$ Brix), Optical Rotation ($^{\circ}$ Z), Purity, Color Classification, Elemental Impurities

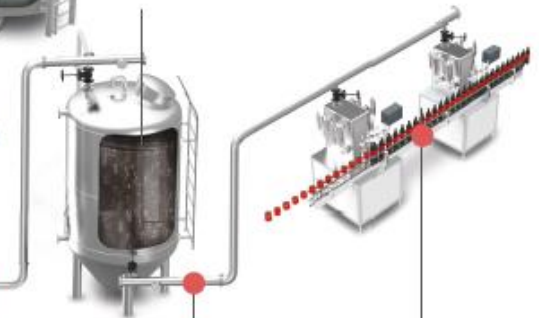
Syrup Monitoring
Density ($^{\circ}$ Brix), Density and Sound Velocity (Sugar Inversion), Refractive Index



Soft Drink Monitoring | Blending Carbonation
Density ($^{\circ}$ Brix), Density and Sound Velocity (Sugar Inversion), Diet concentration, Dissolved CO₂, Dissolved O₂



Soft Drink Monitoring | Pre-Filler and Final Package
Density ($^{\circ}$ Brix), Density and Sound Velocity (Sugar Inversion), Refractive Index, Diet concentration, pH, Dissolved CO₂, Dissolved O₂, TPO

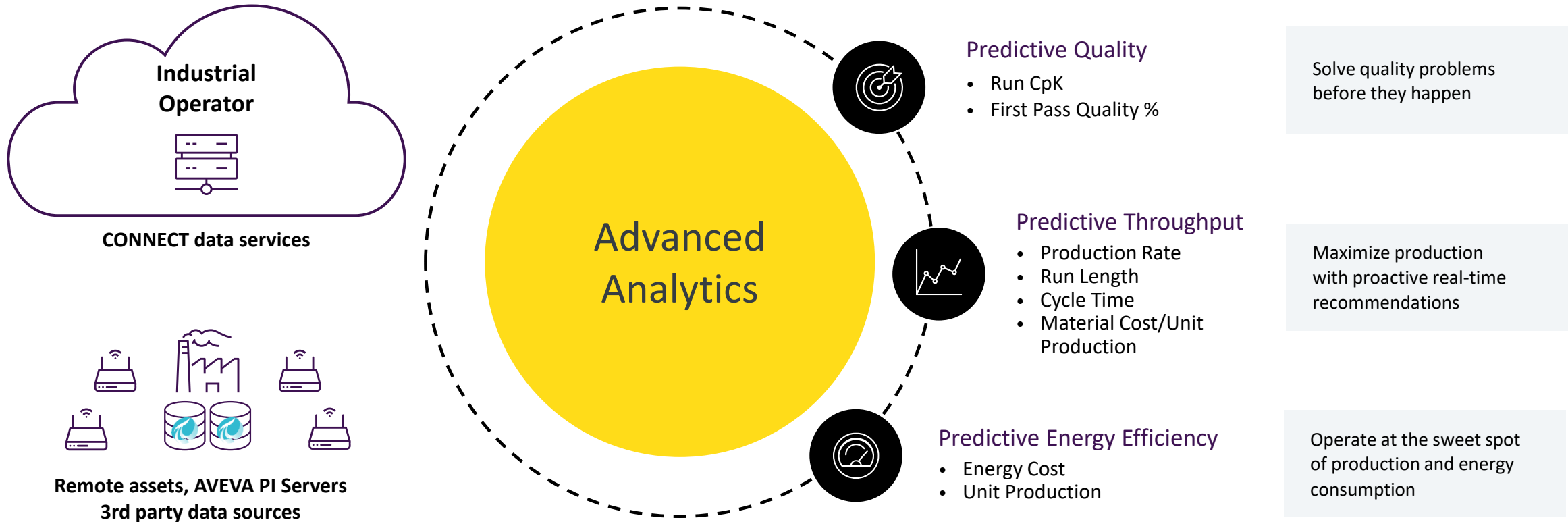


**Information
must be
delivered faster**

AVEVA
We'll take you there™

CONNECT modeling & analytics

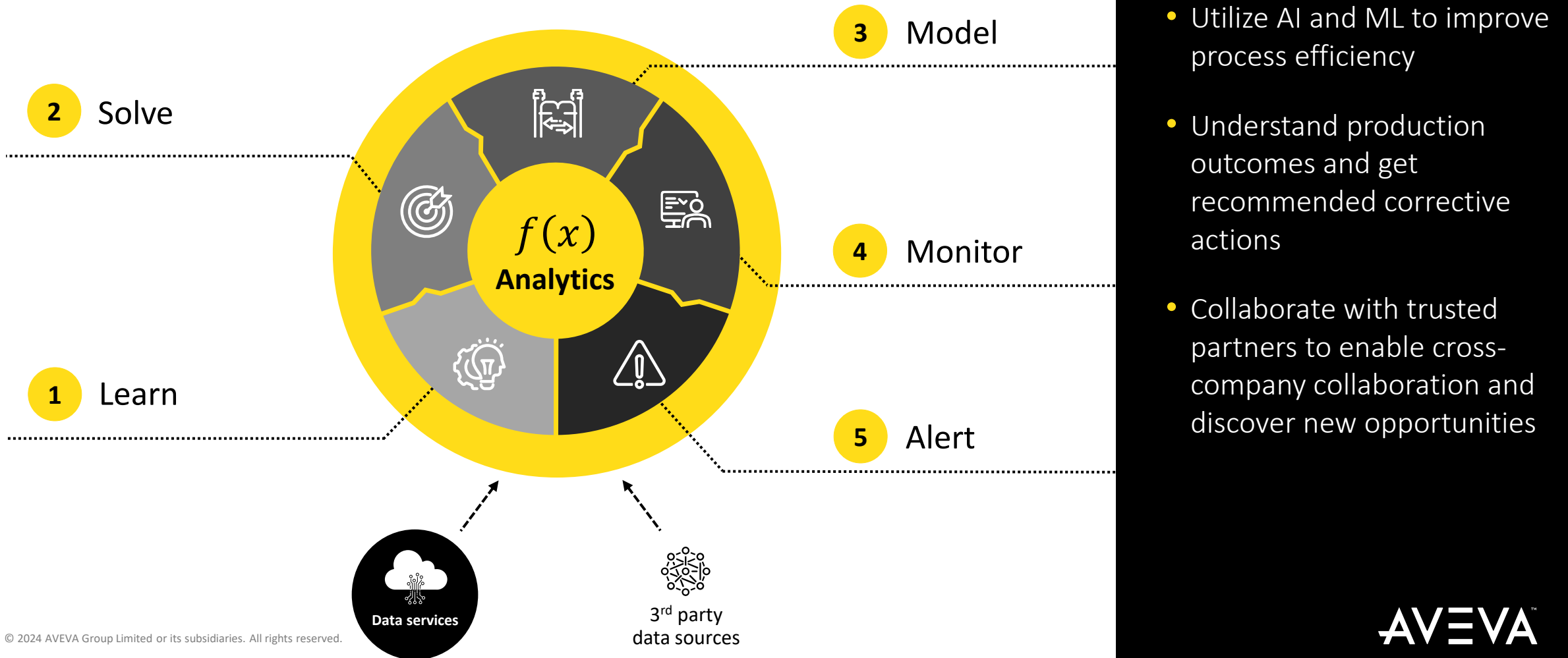
(AVEVA Advanced Analytics)



CONNECT modeling & analytics

(AVEVA Advanced Analytics)

Combine existing data with AI for faster and smarter decisions



Required capabilities



Increase productivity

Equipment optimization

Production management

“Increased production by **33%**. Decreased downtime by more than **50%**”



Improve quality & compliance

Production execution

Compliance

“Product consistency, quality and delivery improved by **125%**.”

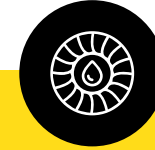


Minimize environmental footprint

Energy management

Transparency and traceability

“**9%** reduction of energy usage.”



Waste and losses reduction

Increase asset performance

Reduce operational and environmental risk

“**Improved** waste reduction.”

Predictive quality – Monitoring quality parameters



Operations team

NOTIFY
on predictive quality issue on Mixer

IDENTIFY & INVESTIGATE
the cause of predictive sugar quality deviation

COMMUNICATE
on recommendations of process set-points

UPDATE
production process or scrap



Data in context



Operator

TAKE ACTION
on appropriate process adjustment



Workforce connectivity

Anomaly Score detected

N no-reply@twinthread.com
To: Charles Navarrete

Mon 8/21/2023 9:19 AM

CAUTION - This message originated outside AVEVA



Anomaly Score detected on Mixer1Demo.

AgitatorSpeed.Value Normal	1030 rpm 1029 rpm	1030 1029	FillingFlow.Value Unprecedented High	10.1 210.1	10.1 210.1
LastSyrupFlow.Value Normal	26.4 26.9	26.4 26.9	MixVolume.Value Unprecedented High	7996.2 8000.6	7996.2 8000.6
ProductTemp.Value Normal	26.0 26.0	26.0 26.0	SyrupFlow.Value High	1.3 26.5	1.3 26.5



Comprehensive platform drives innovation

Combine your existing data with AI-enabled applications for faster and smarter decisions



AGNOSTIC TO ANY DATA SOURCE with CONNECT

DIGITAL TWIN – Linked to AVEVA PI System asset framework and CONNECT data services assets

AI-ENABLED APPLICATIONS

SCALE EFFORTLESSLY

CONNECT data services is the system of record for Advanced Analytics – direct read/write data in/out

Calculations
First principal models
Machine learning models
Alerts & recommendations

No-code fit-for-purpose:
Predictive quality
Predictive throughput
Predictive energy efficiency

Create “classes” that can apply calculations and models to tens, hundreds, or thousands of assets or processes

Customer achievement with AVEVA analytics

Typical deployments enjoy 10x ROI on subscription investment

↑ 12%
Improvement in line performance

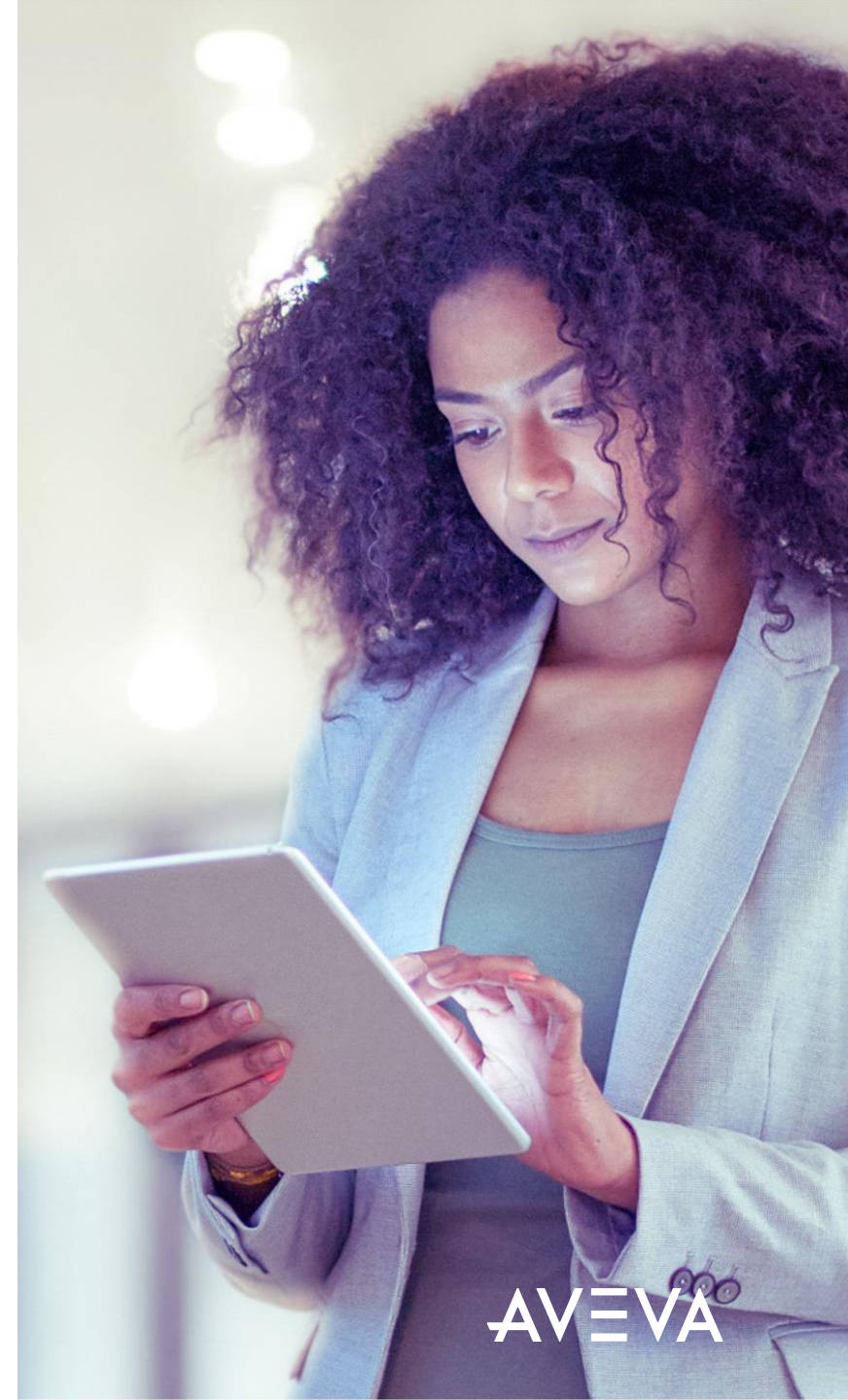
↑ 100%
First-pass quality

↑ 30%
Reduction in maintenance costs

↓ 4%
Reduction in energy costs

↓ 90%
Reduction in hardware, development, and consulting costs

↓ 25%
Reduction in in unplanned downtime

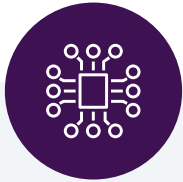


AVEVA

Conclusions

“Operationalizing artificial intelligence at scale is the difference between success and failure.”

Start small
and think big



Keep in mind your final
goal and vision

Preparing your **data** for accelerating **successful scale deployment** starts with how you handle them.

Start digital transformation with your **future** in mind.

Prioritize use cases
with AVEVA PI System
for quick ROI



Drive quick time
to value

for equipment & processes having
easy to understand patterns through
CBM, OEE and KPIs visibility

Leverage calculations easy to
configure and deploy at scale to start
**reducing operational & maintenance
expenditure**

Advanced analytics
accelerate reliability
and sustainability



Artificial
intelligence

is not just a trend for technology's
sake, it can help you **solve complex
problems** that are not easy to identify
by knowing behaviours.

Keep in mind: **easy to use tools** are
those your experts will adopt

Your data can drive
efficient and agile work



Close the asset
strategy loop

An optimized asset strategy
enhanced by **AI** intelligence should
also be **actionable**.
Connecting your data to **proven
remediations** will empower efficient
and agile **connected workers** with
insightful information

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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.

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