

2023-10-25

Get more of your data with AVEVA™ Advanced Analytics

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AVEVA

50%

of all industrial data
was created in the
last 2 years. In 2024,
that will still be true.

Source: Statista, Sept 2022



A photograph of several wind turbines on a hillside at sunset. The sky is a mix of purple, blue, and orange. The turbines are silhouetted against the bright light of the setting sun. The overall mood is serene and futuristic.

38%

of new operational data
will be stored and
processed in the cloud.
This is an increase of 16%
since just two years ago.

Source: IDC, "Worldwide IT/OT Convergence Survey, 2022", Jonathan Lang, Sept 2022.

Artificial Intelligence (AI) Market Acceleration



\$17.2 Billion

The market for AI in manufacturing alone is projected to grow by nearly 50% per year, to hit \$17.2 billion by 2025.¹



430%

IDC predicts that global data usage will vastly increase from 33 zettabytes in 2018 to 175 zettabytes by 2025 – an increase of 430%.²

Sources: 1. [Markets & Markets](#) 2. [Statista](#)

80%

Data scientists spend most of their time to gathering, cleaning, and preparing data.

Source: Analytics Insight, Sept 2022

Industry & market pressures

\$3.7 T



Industry 4.0 for operations

The value created by the potential of manufacturers and suppliers implementing Industry 4.0 in their operations is estimated at 3.7 trillion USD in 2025.¹

\$280 B



Investments in digital twin

The application of digital twin technology is to play a pivotal role in future urban planning, construction and operations as it is expected to save the sector some \$280bn by 2030.²

70%



Digital improvement potential

70% of surveyed companies remain at the level of individual use cases and have not been able to impact at scale from their digital program.³

82%



Asset performance optimization

82% of asset failures are Random.⁴

Sources: 1. [McKinsey](#) 2. [Investment Monitor](#) 3. [BCG](#) 4. [Processing Magazine](#)

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.”



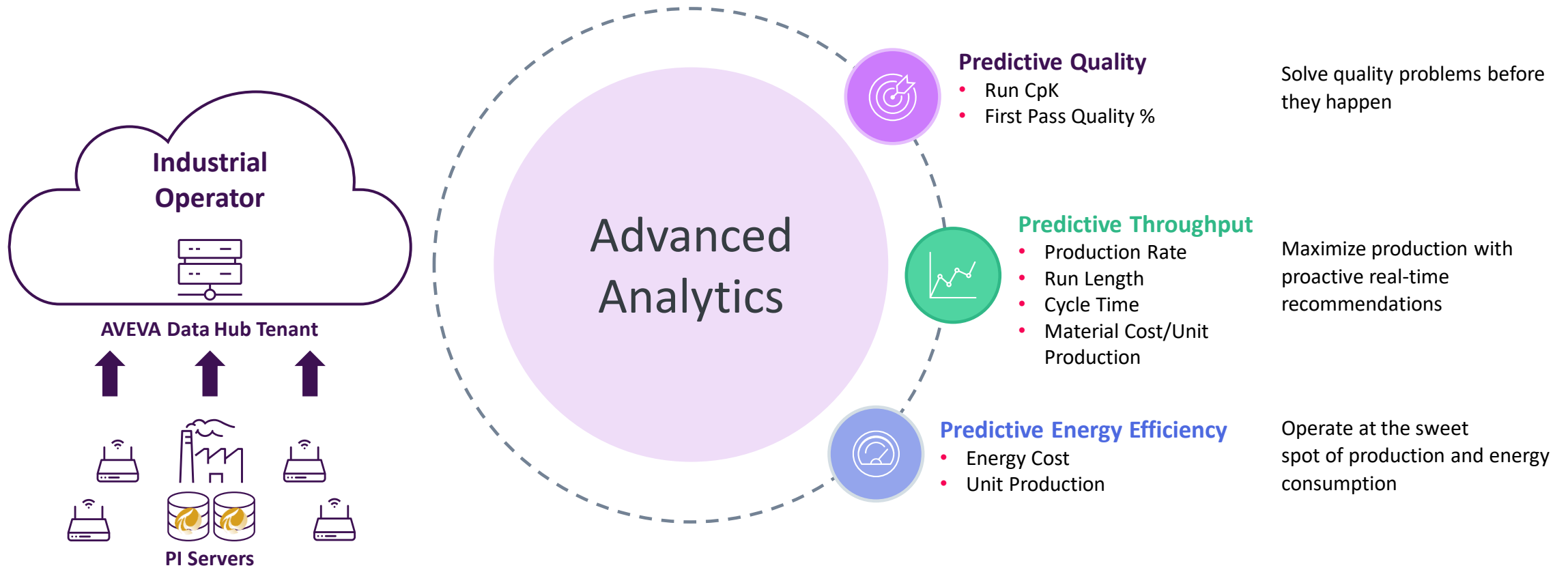
Waste and losses reduction

Increase asset performance

Reduce operational and environmental risk

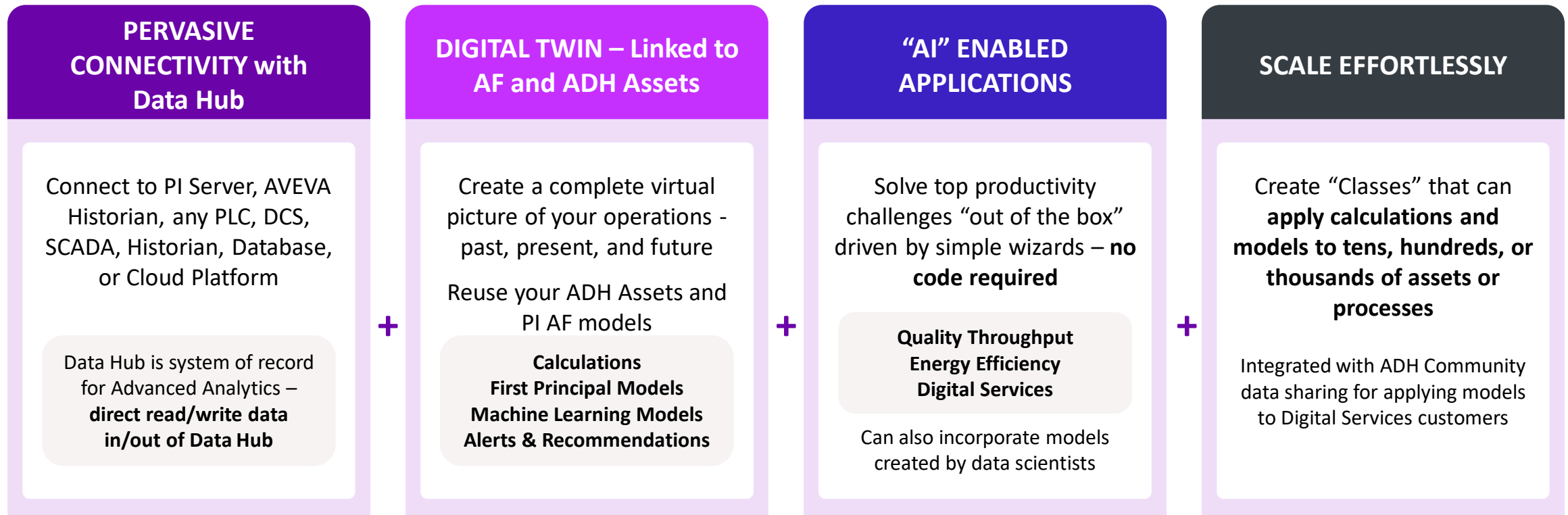
“**Improved** waste reduction.”

Introducing: AVEVA Advanced Analytics



Comprehensive platform drives innovation

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



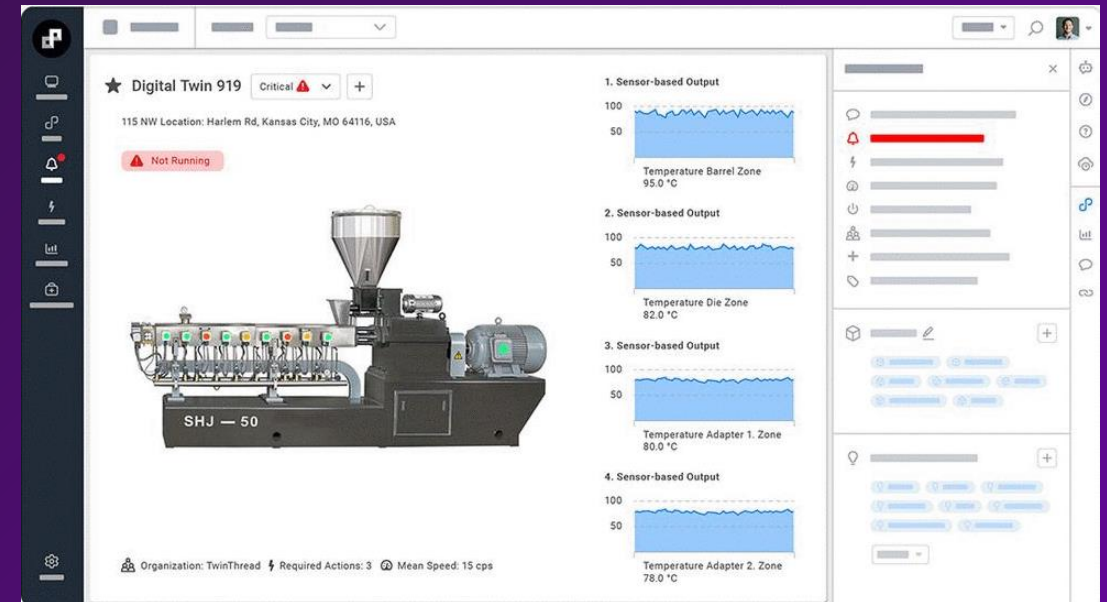
Digital Twin

Visibility into all aspects of industrial assets and operations

- Classes for scaling twins
- Parent-children hierarchy
 - *Site, Plant, Department, Line, Machine*
- Linked Sensors for receiving data
- Timeline of key twin properties
- Visual Dashboard with key information
- Opportunities - possible issues to be addressed



Provides the structure and context to automate insights across all assets, production lines, and plants



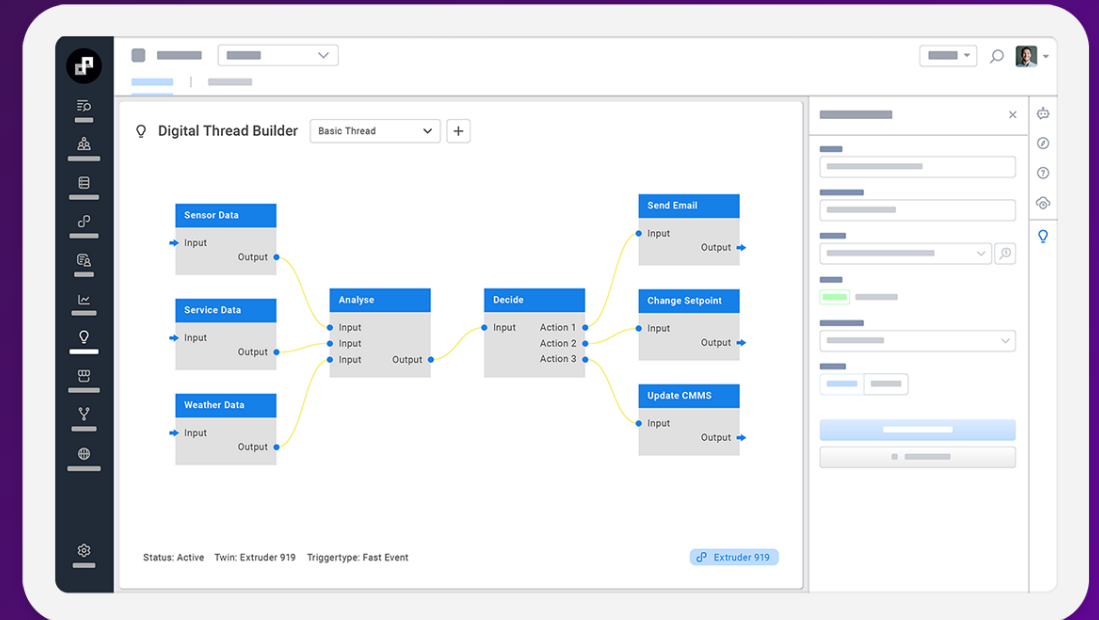
Digital threads

Logical workflow to support operations

- No-code logical workflows
- Automate calculations
- Operationalize actions
- Trigger specific actions or activities
- Sending notification via email/SMS
- Automatically and continuously running



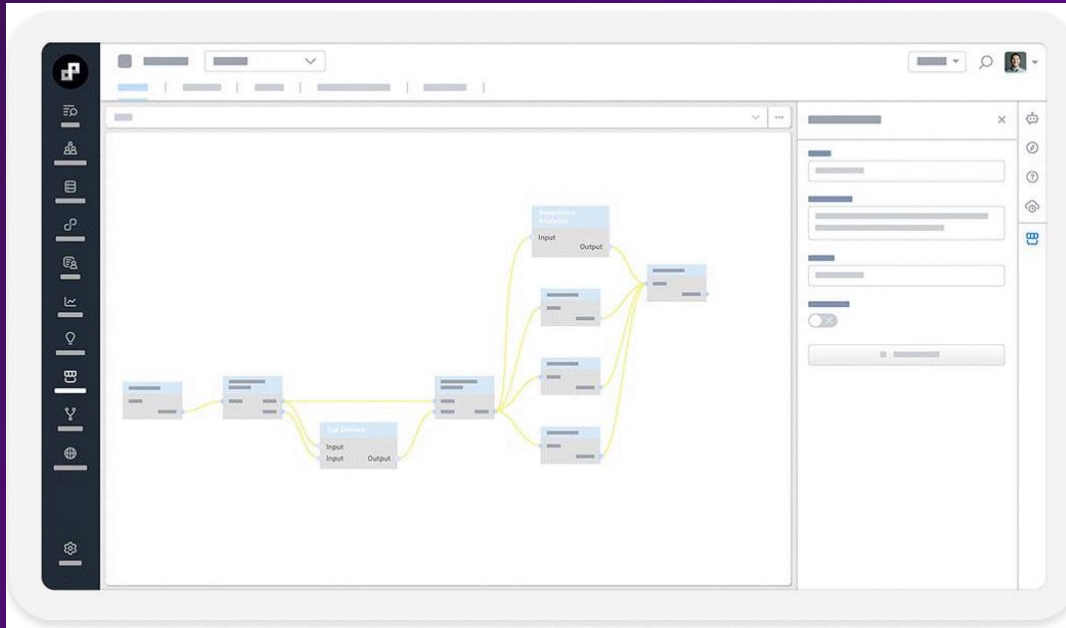
The actions represented by a digital thread could trigger specific actions or activities



Model factory

Templates to solve fundamental manufacturing problems

- Use cases templated model selection
- Automate Machine Learning (ML) model creation
- Easy-guided twin configuration steps - product segmentation, operational state, rate
- Automatically evaluates and selects the best performing algorithm
- Visualized model creation process

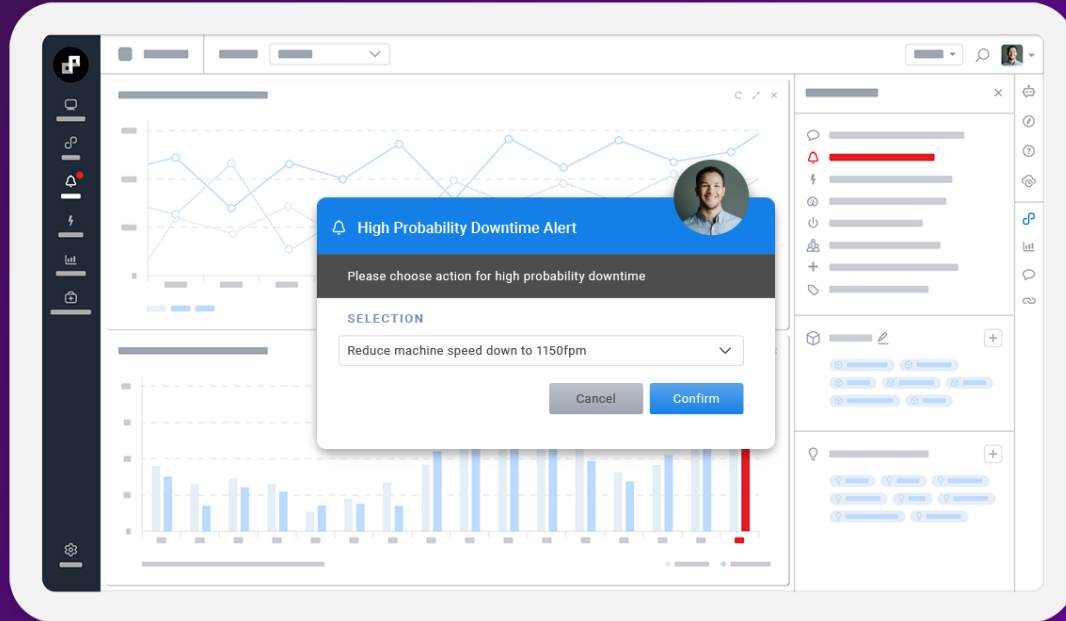


A digital assembly line for automating machine learning (ML) model creation and deployment

Intelligent alerts & actions

Notify when condition is abnormal


- Create intelligent alerts
- Create logical workflows
- Automate actions
- Action awareness views



Intelligent alerts and automated actions each time a process is operating outside of normal conditions.

Demo











 **Watch the TwinThread Intro video to get a 2-minute overview of our system and terminology**
Your guide below may look different than the one shown in the video if you haven't completed your initial set up.



☰ Filter by entity, tab, or action

Expand Guide ↗

👤 Organization

-  My Account
-  Org Account
-  Users
-  Roles
-  Customers
-  Groups
-  Attributes
-  Subscription Management

📄 Data

-  Add Data Source
-  Sources
-  Agents
-  Integrations

📄 Digital Twins

Twins

List | Map | Hierarchy

Custom Search Search twins APPLY 6 RESULTS

Actions


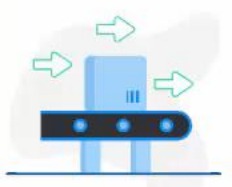



<input type="checkbox"/>	<input type="checkbox"/>	Twin	Organization	Address	Alert Types	Classes	Labels	Comments
		Filler 1	AAPresalesSandbox					Add comment
		Mixer 1	AAPresalesSandbox			Mixer Class Promoted		Add comment
		Mixer 2	AAPresalesSandbox			Mixer Class Promoted		Add comment
		Mixer 8	AAPresalesSandbox					Add comment
		Packaging Line 1	AAPresalesSandbox					Add comment
		Wind.Turbine1	AAPresalesSandbox					Add comment



- ☆ Favorites
- ☰ Launchpad
- 📺 Monitor
- 🔔 Alerts
- 👤 Twins
- 📊 Analysis

Threads 4 threads running + Detect Product Change for Mixer 1 Detect Twin State for Mixer 1 Detect Product Change for Mixer 1 class Detect Twin State for Mixer 1 class	Models 2 models + MixerQualityModel MixerQualityModel class
Labels No labels defined	Classes 1 classes + Mixer Class Promoted

Properties: **17 Total** Active Product: **Configured** Production State: **Configured** Active Alerts: **None**

<p>Connect Twin to Data Source's Sensors</p>  <p>Connect Sensors</p> <p>15 properties connected</p>	<p>What products does this Twin produce?</p>  <p>Segment by Product</p> <p>Configured</p>	<p>What operational states can this Twin be in?</p>  <p>Indicate States</p> <p>Configured</p>	<p>At what rate does this Twin operate?</p>  <p>Select Rate</p> <p>Skipped</p>	<p>Create a Machine Learning Model for this Twin.</p>  <p>Create Model</p> <p>Complete</p>
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Model Factory

Models | Templates

Models

Show Inactive Models + Actions

Name ↑	Twin	Instances	Template	Training Status	Last Training	Execution Status	Last Execute	Retraining Interval	Execution Interval
FillerUptimeModel	Filler 1		Predictive Uptime	Completed	Oct 13th, 2023 at 10:46	Completed	Oct 16th, 2023 at 15:22		Executes every 15 minutes
Gearbox Anomaly	Wind.Turbine1		Detect Asset Anomalies	Completed	Oct 9th, 2023 at 13:25	Completed	Oct 16th, 2023 at 15:14		Executes every 15 minutes
MixerQualityModel	Mixer 1		Predict Quality	Completed	Oct 9th, 2023 at 14:24	Killed	Oct 16th, 2023 at 15:45		Executes every 15 minutes
MixerQualityModel class	Mixer Class Promoted	2	Predict Quality						
PackLineEnergyOptimization	Packaging Line 1		Optimize Energy Efficiency	Completed	Oct 9th, 2023 at 14:00	Completed	Oct 16th, 2023 at 15:23		Executes every 15 minutes
Predict Quality	Mixer 1		Predict Quality						
Turbine Anomaly	Wind.Turbine1		Detect Asset Anomalies	Completed	Oct 9th, 2023 at 13:25	Completed	Oct 16th, 2023 at 15:14		Executes every 15 minutes
WindTurbineUptime	Wind.Turbine1		Predictive Uptime	Completed	Oct 9th, 2023 at 13:26	Completed	Oct 16th, 2023 at 15:24		Executes every 15 minutes

- Favorites
- Launchpad
- Monitor
- Alerts
- Twins
- Analysis

Advanced Analytics applications

Key application details



Predictive Quality

Predicts a quality parameter

Some use cases:

- There is no quality measurement
- Offline measurement with delayed lab results
- Get an early indication of quality in production line

Application provides:

- Predicted Quality value
- Ideal operating conditions
- Anomaly timeline and breakdown
- Recommendations on controllable parameters



Predictive Throughput

Computes measures of production rate

Some use cases:

- There is no direct measure of production
- Identify optimum operating conditions to maximize production
- Identify measures of production by product or rate

Application provides:

- Predicted production rate
- Ideal operating conditions
- Anomaly timeline and breakdown
- Recommendations on controllable parameters



Predictive Energy Efficiency

Provides normalized measures of energy consumption

Some use cases:

- There is no direct measure of energy
- Normalized measures of energy use by product
- Identify optimum operating conditions to minimize energy consumption

Application provides:

- Normalized energy use
- Predicted total energy consumption
- Ideal operating conditions
- Anomaly timeline and breakdown
- Recommendations on controllable parameters

Case study: Predictive quality

Problem

Premium Pet Food Manufacturer wanted to reduce scrap from frequent line startups / formulation changes and reduce reliance on in-process testing. Due to 30-60min process lag times between key unit operations and finished product quality tests, the potential for scrap from off-quality product was very high.

Solution

Implement predictive models for “middle of line” quality for finished product Density, Moisture, Fat, and Protein content. Monitor more than 75 process variables from across the production process to make accurate predictions for all four quality parameters in real-time, plus provide recommendations to operators to keep quality on-target.

Payback

Payback periods between 15-60 days (implementation + 1yr subscription).

Innovation and Value Streams

CONTINUOUS LEARNING



Connect Digital Twins



Train Models



Analyze Models

- Top quality drivers
- Best recipe / centerlines
- Automation opportunities
- Recipe simulation



Deploy Models



Monitor Twins



Analyze & Act

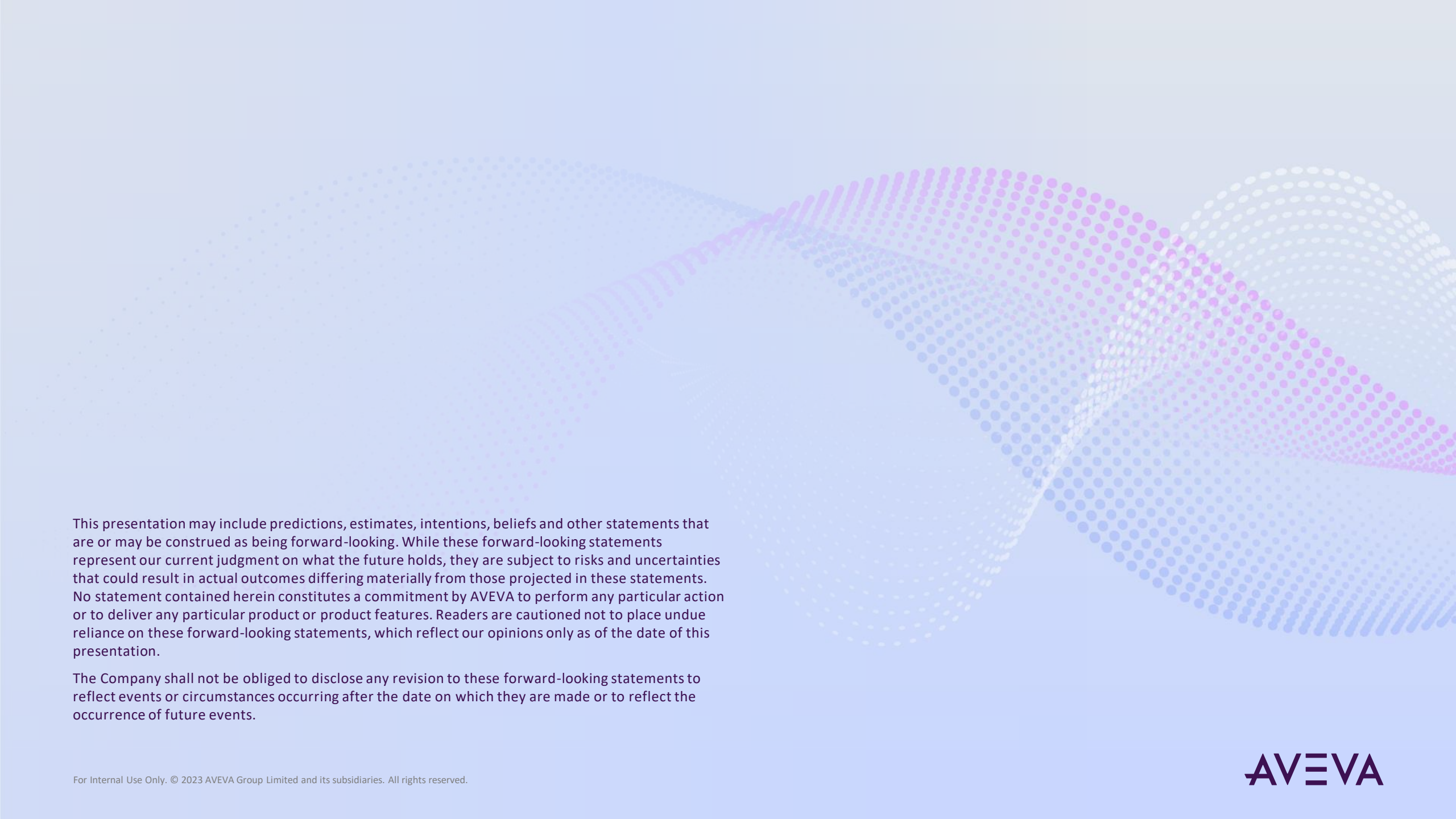
- Soft Sensor / Real-time Prediction
- Real-time Anomalies
- Real-time Recommendations



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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.

Learn more at www.aveva.com