15-16 MAY 2025

AVEVA DAY

BRISBANE

The Industrial Intelligence Event 2025

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The Industrial Intelligence Event 2025

Themes

- Why Digital Reliability. Challenges & Opportunity
- Setting and Industrial Information Management Foundation
- Running Applications: Asset Performance & Asset Management
- Enabling Advanced Analytics & Data Science
- Enterprise Visualization & AI-Assistants

Industry challenges

Predictive maintenance can enable **10-20% reduction in OPEX**

Maintenance and performance 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

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

Today’s industry is facing multiple challenges

Spiraling O&M costs & ageing assets

+74%[1]

Nonfuel power generation O&M costs in the US have risen by 74% in the past 20 years.

35-50 years[2]

Nuclear and fossil-fueled generating plants are 35 to 50 years old on average.

Changing demand & disruptions

+10%[3]

Renewable energy consumption will grow at an average annual rate of 10% over the next decade.

62%[4]

of power utilities have experienced recent loss of production due to supply chain disruption.

Reporting demands

ESG[5]

Stricter rules on ESG reporting likely to come into force in the US following 2022 SEC proposal.

Planning challenges

Profit flux[6]

caused by unpredictable political and environmental factors and requiring agile planning.

One strategic opportunity

Sources: 1, 2. Deloitte, *Digital Utility Asset Management*, 2021; 3.Economist Intelligence Unit, *Global Energy Outlook*, 2023; 4. Deloitte, *Electric Power Supply Chains*, 2022; 5. Deloitte, *Power Utilities Outlook, 2023*; 6. Engineering, vol. 7 2021.

You need to unify, contextualize and transform your data

> *Most electricity providers are not approaching digital transformation with the comprehensive, holistic view that could make it a game changer.* Deloitte

> *The electric power sector is uniquely positioned to harness the power of Gen AI to transform its business.* McKinsey

What if…

…you could correlate data from every stage of an asset's lifecycle

to inform maintenance and remediation decisions in light of design, operation and asset performance data.

What if…

…you could deploy advanced analytics to predict issues before they occur

to prevent outages, secure consistent supply, and ensure the most efficient and effective approach to fault mitigation.

What if…

…you could fully utilize all related asset information to aid decision making

to provide stakeholders with all the information they need to make informed, optimized decisions.

UNIQUE BREADTH & DEPTH OF INSIGHT

What if…

…you could access any piece of information in under 3 minutes

to empower staff with the complete, relevant information they need for effective plant operation.

What if…

…you could use natural language to ask complex questions

to enable staff at all levels to get to insights faster, reducing dependency on technical language and enabling collaboration.

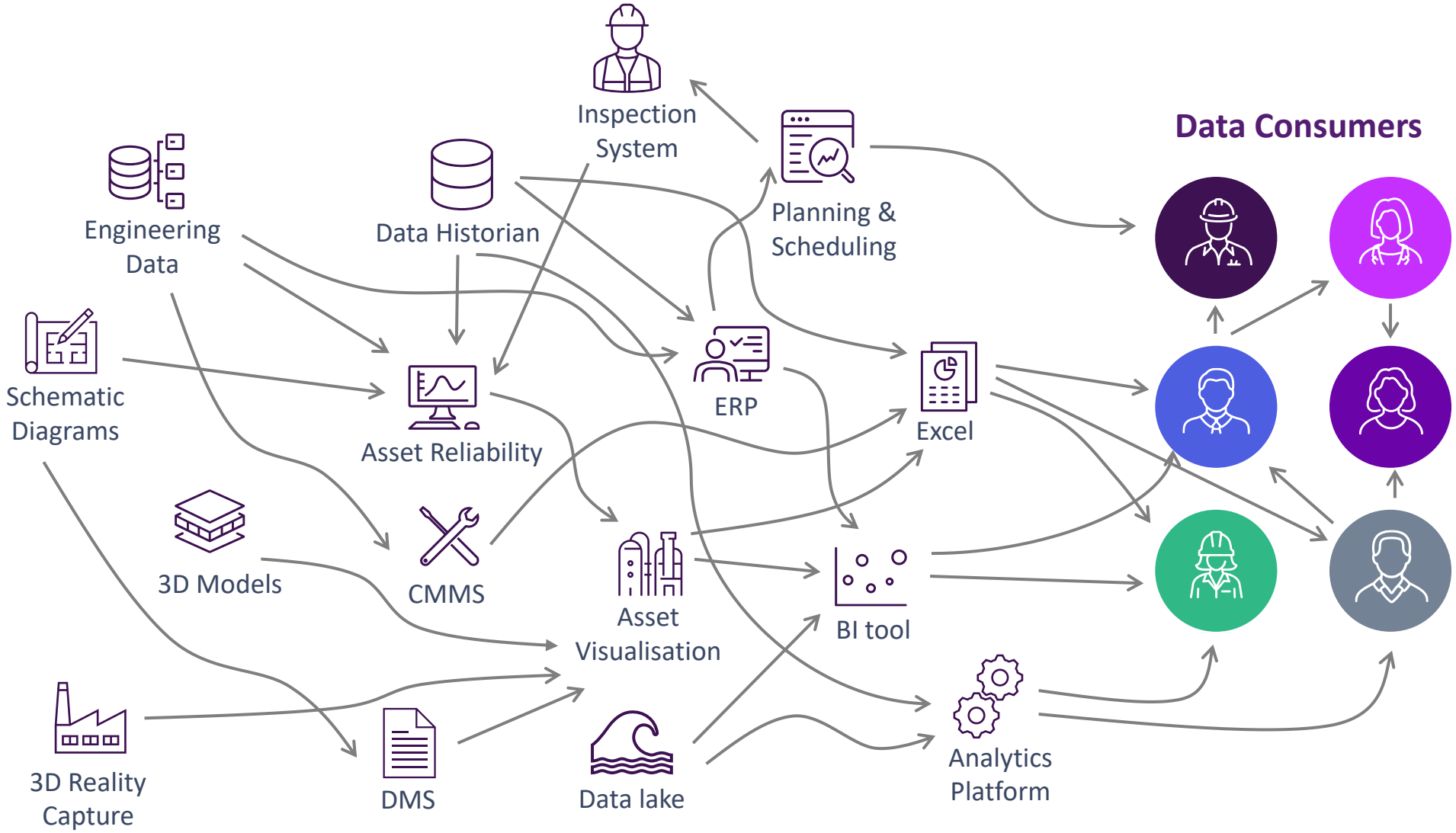
What if…

…you could act with confidence guided by Industrial Generative AI

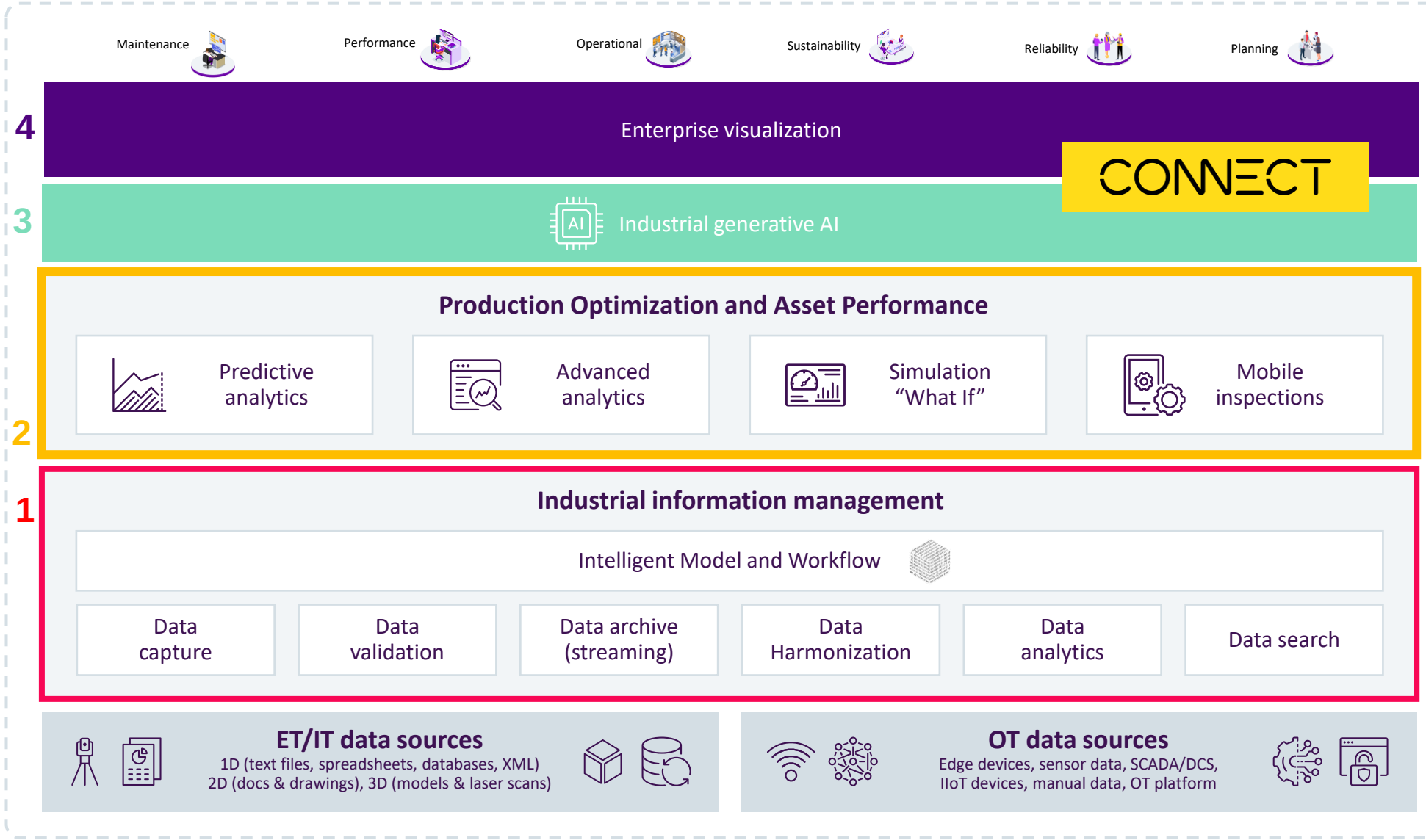
to give staff clear, easy to follow guidance about the best course of action, based on complete data relating to their specific query.

FAST, INTUITIVE & ACTIONABLE

The data challenge – extract value from the data



AVEVA Digital Reliability Centre



AVEVA

Cutting edge data-intelligence could save you millions

Additional average earnings[1]

+20-30% EBITDA

Incremental economic impact of new Generative AI[2]

15-40%

Maintenance costs reduction[3]

30%

Increase in operational efficiency[4]

50%

Time saved on searching for information[5]

60%

Increase in worker productivity[6]

18%

Reduction in unplanned downtime[7]

25%

Sources: 1. McKinsey, *The Digital Power Plant of the Future,* 2021 cites this level of increase resulting from end-to-end digitalization in Power; 2. McKinsey; 3. AVEVA APM; 4. AVEVA UOC; 5. AVEVA AIM; 6. AVEVA UOC; 7. AVEVA APM

And help everyone do their jobs better

C-Suite CEO/CFO

WHAT IF you could:

- Have a clear vision of current and future profitability and asset health across multiple sites
- Understand your emissions and their impact on your sustainability commitments
- Have a clear long-term view of changes in OPEX and profitability
- Enable your teams with the latest in industrial AI-powered decision making

Operations Manager

WHAT IF you could:

- Make informed maintenance and remediation decisions based on holistic analysis of asset health and performance
- Ask questions and trouble-shoot in real-time, quickly identifying best action
- Spend time on higher value tasks instead of endlessly searching for information
- Provide advice on optimal operating conditions to your operators

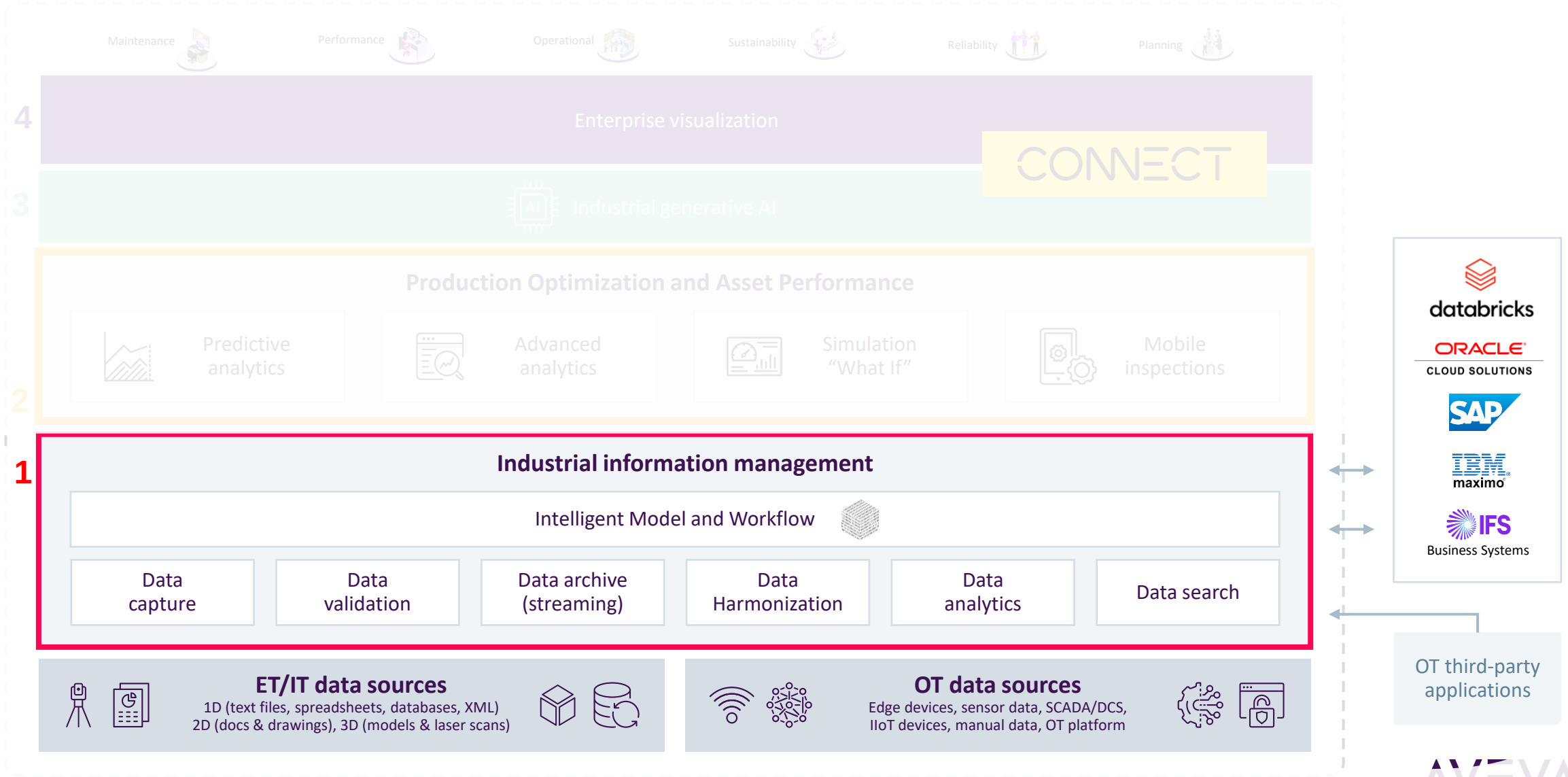
Reliability & Performance Engineers/Analysts

WHAT IF you could

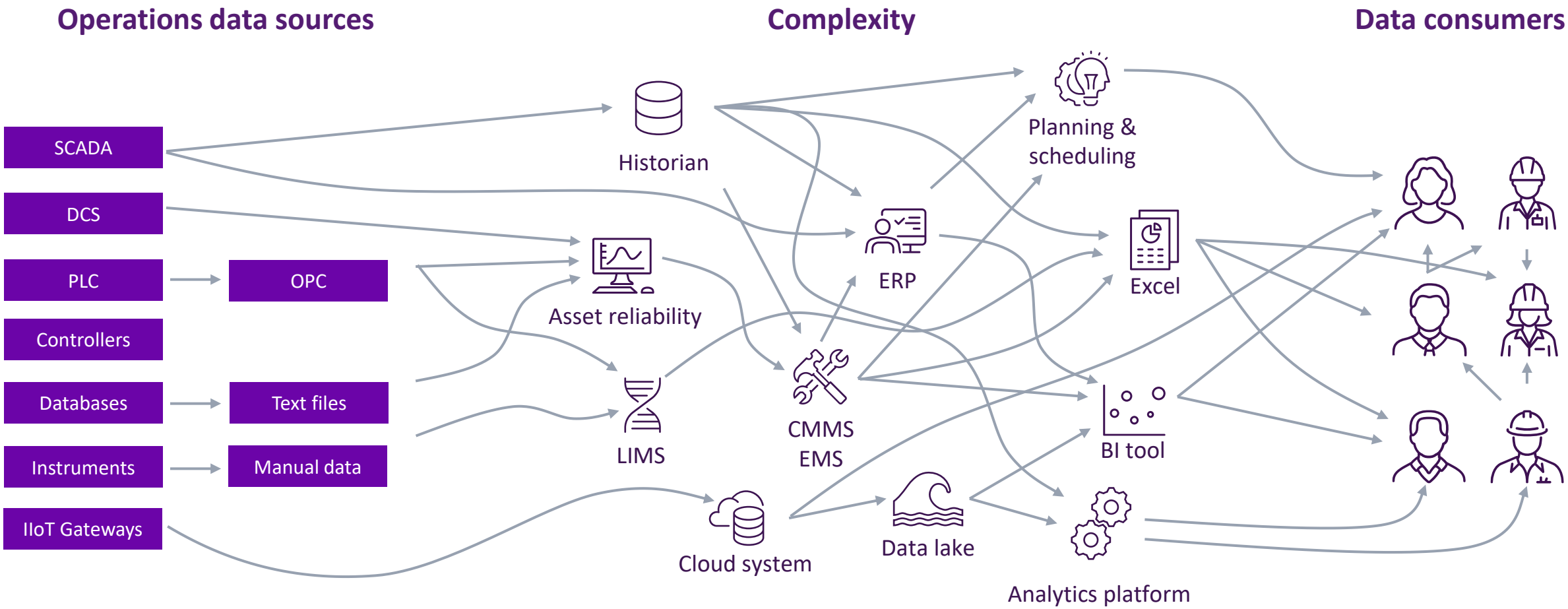
- Evaluate potential issues in the context of overall asset health and performance
- Have the ability to predict time to failure and identify potential impacts
- Predict, diagnose and remediate asset reliability and performance issues before a failure occurs
- Instantly provide asset remediation guidance and related workflows

With fully contextualized information across the entire asset lifecycle, easily accessible using Generative AI.

AVEVA Digital Reliability Centre

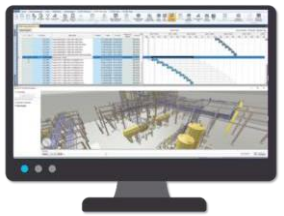


Managing operations data is complex



Managing asset information is complex

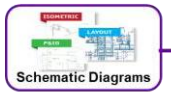
Unified Engineering



Unified Project Execution

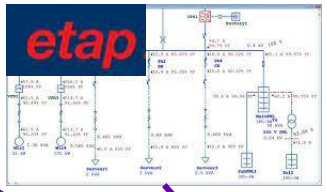
Structured Data

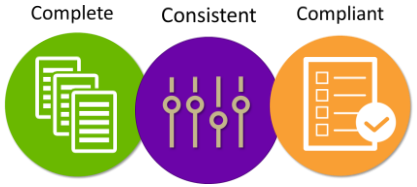
Unstructured Data

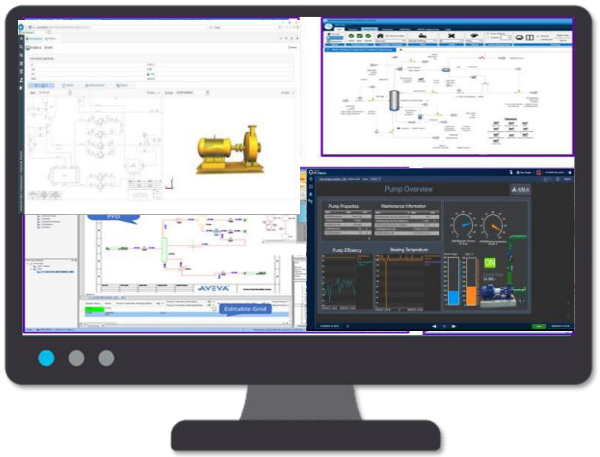


Schematic Diagrams

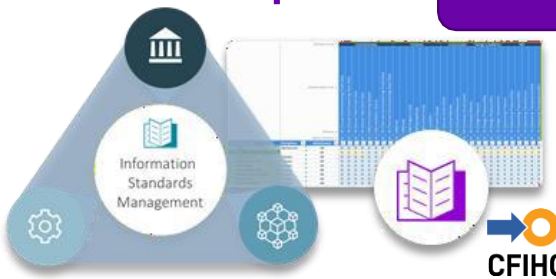
3D Models



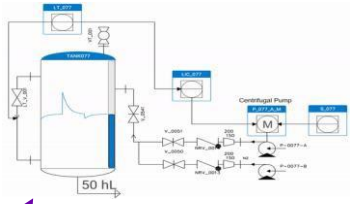




Asset Information Mgt



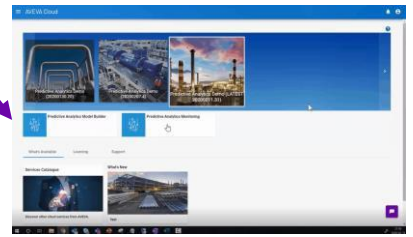
CFIHOS



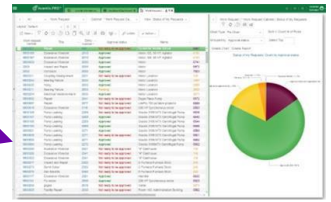
SCADA

Workforce Enablement

Operations Center



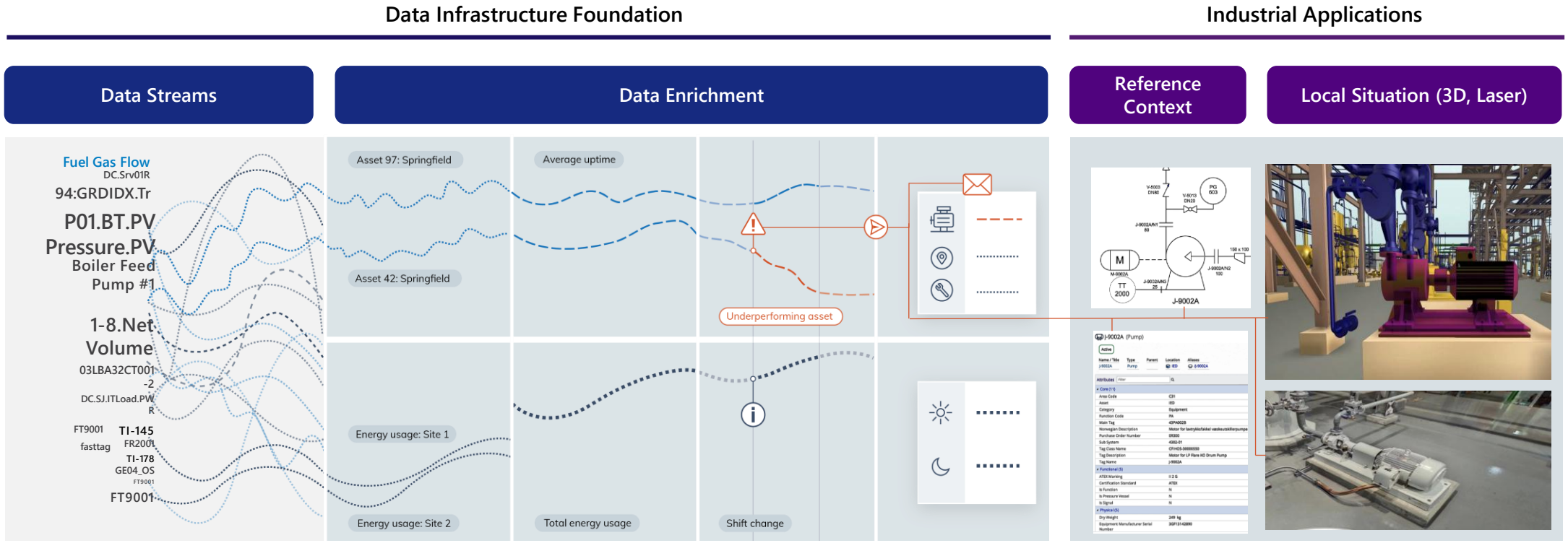
Predictive Analytics



Enterprise Asset Management

AVEVA

Connecting the digital thread between engineering and operations, creating the industrial information backbone.



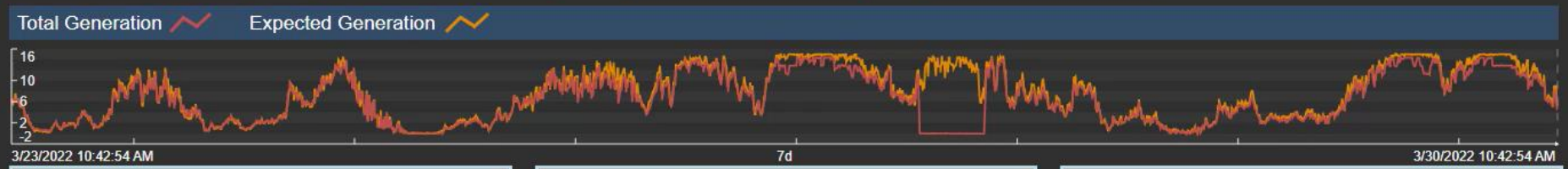
Windtopia

Wind Home

Power Home
Wind Home
Farm Performance
Farm Forecast
Turbine Operations
Turbine Schematic

Total Generation	Turbines in Production	Percentage Available	EAF - MTD
4.57 MW	10	100 %	91.5 %

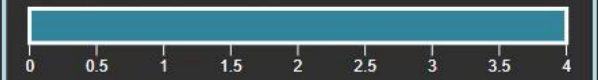
Revenue	
Cumulative Today	$ 2,708.65
Total Yesterday	$ 7,585.26



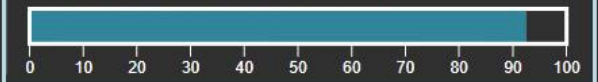
Big Buffalo Wind Farm

Revenue	
Cumulative Today	$ 983.69
Forecasted Today	$ 1,288.99
Total Yesterday	$ 2,643.50

Turbines In Production



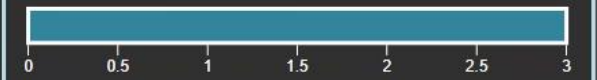
Equivalent Availability Factor



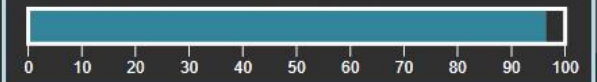
Black Mesa Wind Farm

Revenue	
Cumulative Today	$ 657.07
Forecasted Today	$ 586.89
Total Yesterday	$ 1,542.00

Turbines In Production



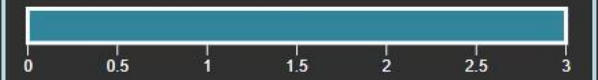
Equivalent Availability Factor



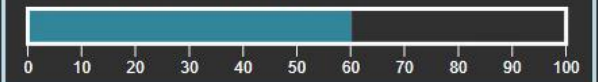
Black Wolf Wind Farm

Revenue	
Cumulative Today	$ 1,067.88
Forecasted Today	$ 2,037.78
Total Yesterday	$ 3,399.77

Turbines In Production



Equivalent Availability Factor



Pump Overview

PID AIM-A 3D Model

Pump Properties

Name	Value	Units
J-9002A|Manufacturer	PumpsXStream	
J-9002A|Serial Number	Pump01	
J-9002A|Pump Type	Centrifugal	
J-9002A|Total Head	140	ft
J-9002A|Horsepower	5.5	hp

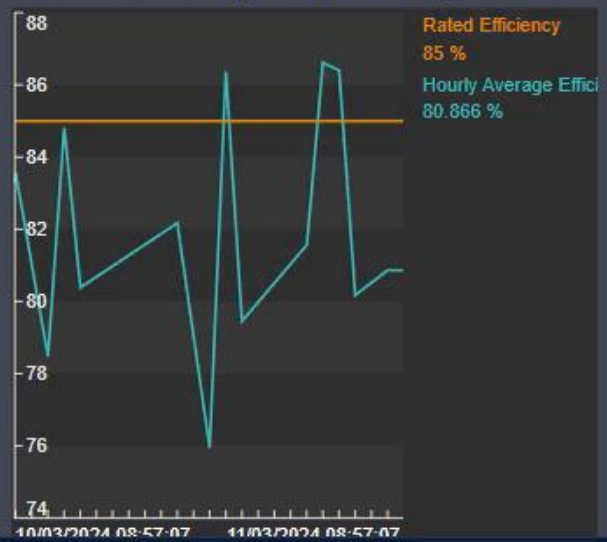
Maintenance Information

Name	Value	Units
J-9002A|Operating Time Since Maintenance|M	1,000	
J-9002A|Operating Time Since Maintenance	19,095	h
J-9002A|Operating Time Since Installation	50,547	h
J-9002A|Maintenance Date	17/10/2021 05:54:33	
J-9002A|Installation Date	06/11/2017 14:00:00	

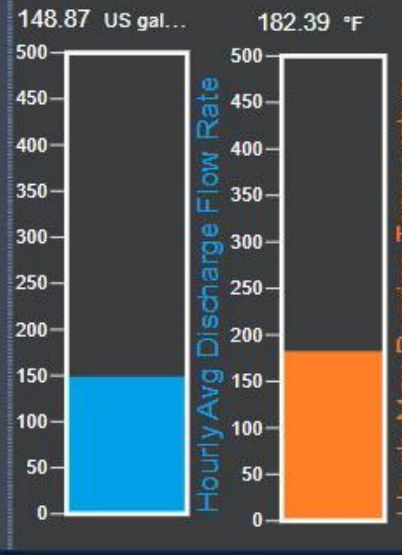
J-9002A|Suction Pressure
148.76 psi

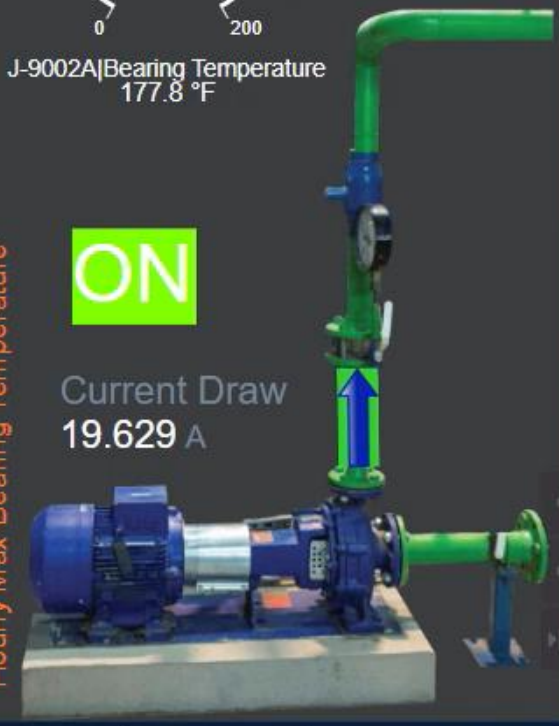
J-9002A|Bearing Temperature
177.8 °F

Pump Efficiency

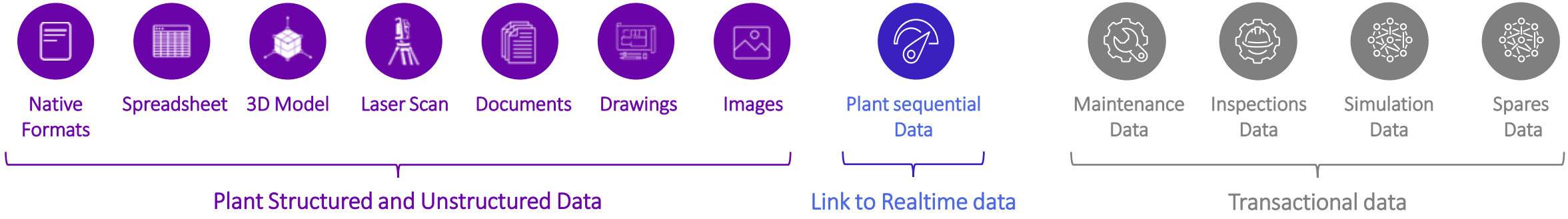


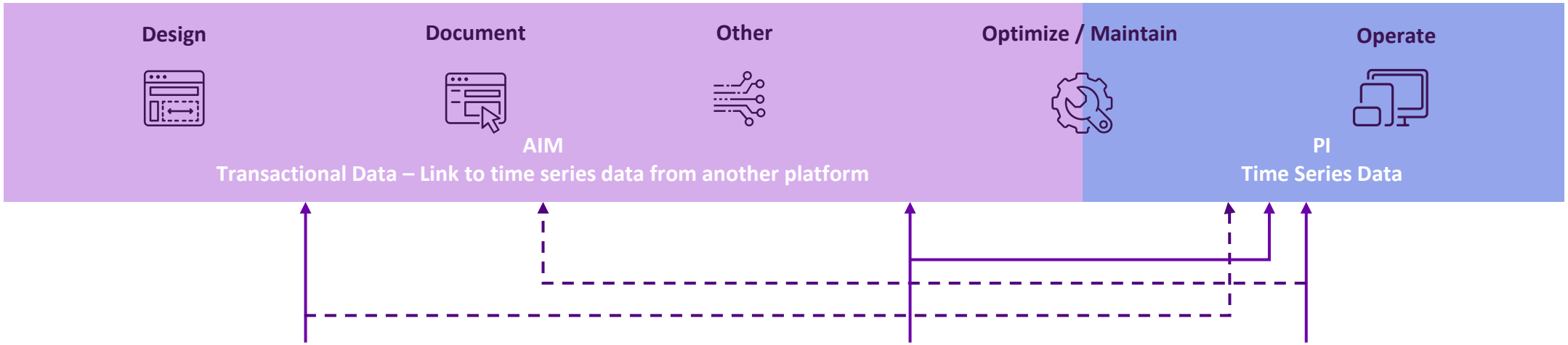
Bearing Temperature





AIM and PI – Type of data managed and accessed





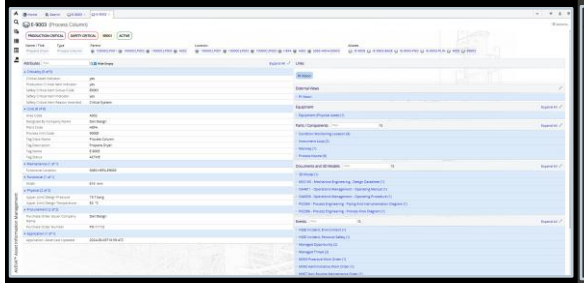
AVAILABLE TODAY

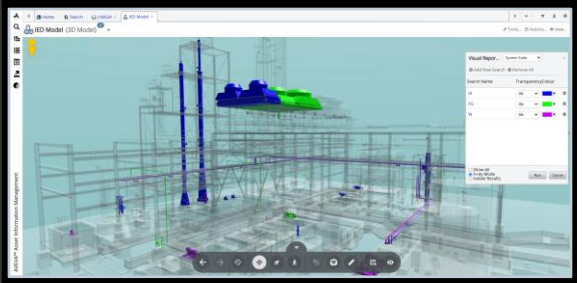
CONNECT Industrial digital twin roadmap journey

Leverage your existing investments today

CONNECT

Visualization services



AIM-A

1D Data | 2D Data | 3D Models

Data services

Streams | Assets | Events

AIM-A

Inspection | Maintenanc | Spare

PI, AVEVA Historian, EDS, MES / APM / Sys Platform / HMI / SCADA

Engineering Use Cases | **Realtime Use Cases** | **Operations Use Cases** | **Maintenance Use Cases**

AVAILABLE 25Q4 / 2026

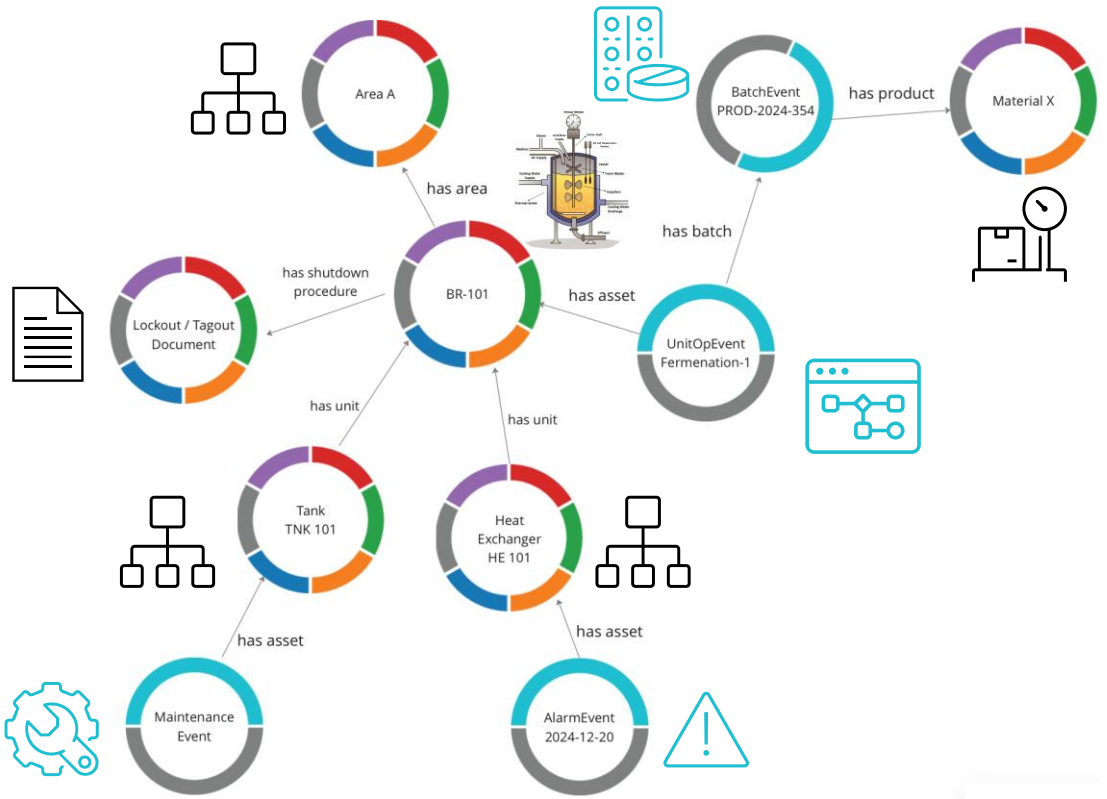
CONNECT: Industrial knowledge graph

CONNECT

Industrial Knowledge Graph

Enhanced Data services

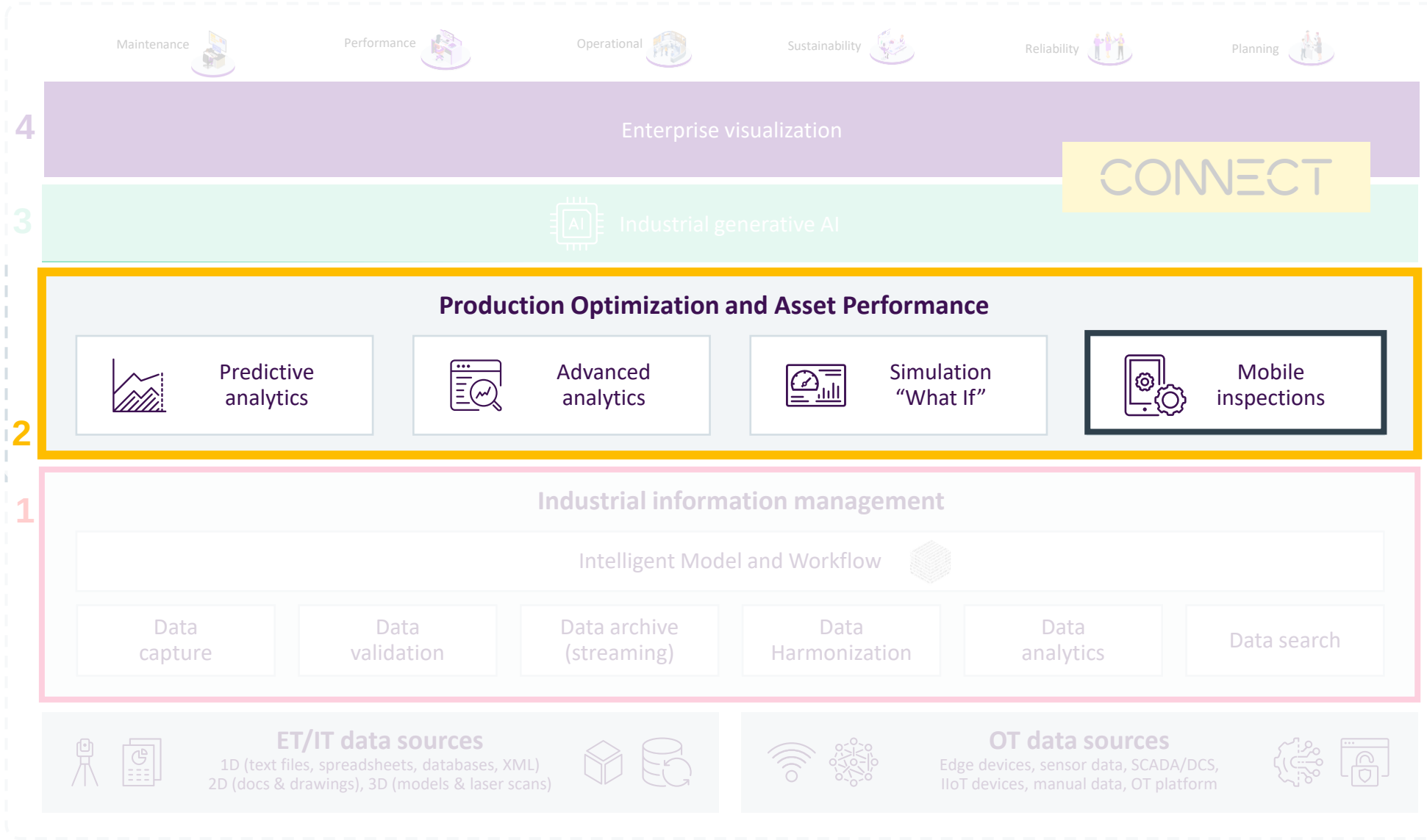
Entity Types, Composition, Entity Instances, Relationships, Scale, Knowledge Graph



Example knowledge graph questions

- What are the alarms for all assets and sub-equipment where my batch PROD-2024-354 was running on?
- What are the streams reporting data from the Heat Exchanger HE-101?
- What Piping & Instrumentation (P&ID) documents related to this Heat Exchanger?
- What Isolation does this Heat Exchanger have?
- What are the Safety instructions and any Lockout/Tagout procedures for the Heat Exchanger for Bioreactor 101?
- What batches and equipment had Material X running through it?
- Which equipment across my enterprise do I have maintenance events for Lubrication Oil Pumps and Hydraulic Pump seizures?

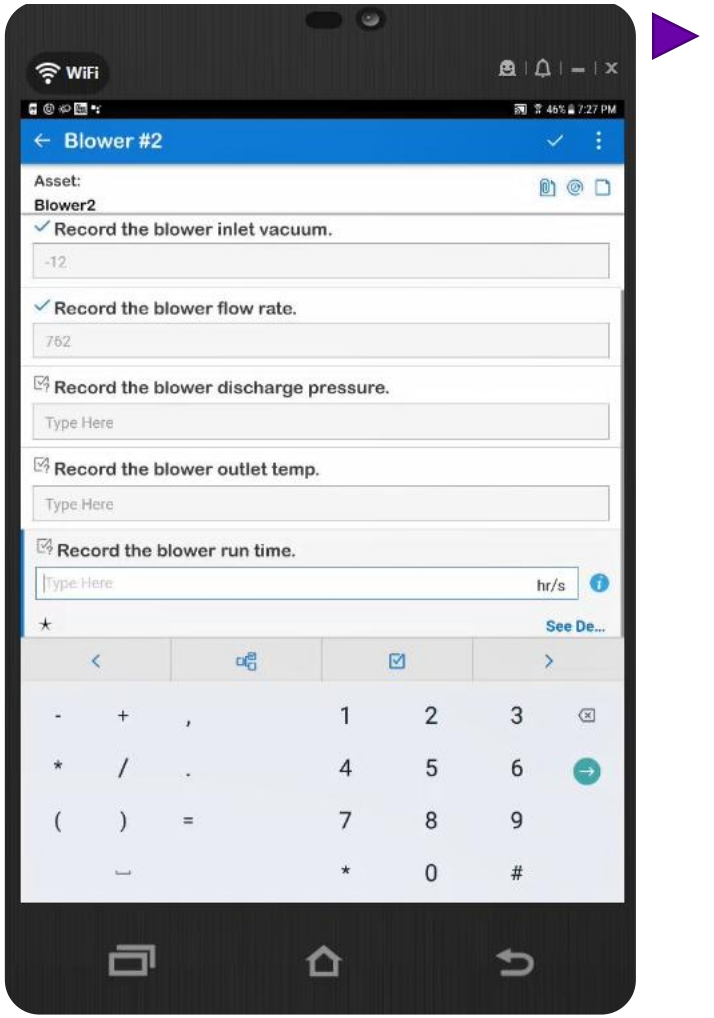
AVEVA Digital Reliability Centre



AVEVA Mobile Operator

Digital workforce enablement

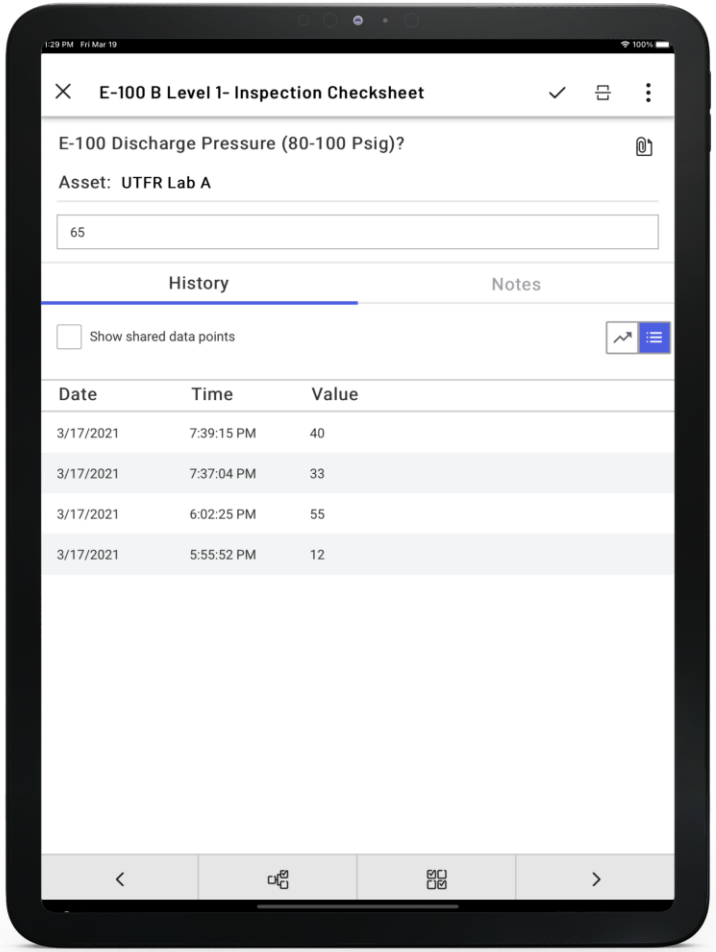
- Enables cultural change and best practices to drive reliability at the front line
- Reduces maintenance costs by improving asset reliability and availability.
- Ensures workers execute all field tasks required to achieve reliable operations and maintenance
- Prevent potential “Critical” failure of assets
- Mitigate risk of intolerable economic, safety, and/or environmental consequences
- Eliminates lost data and reduces entry errors when capturing key asset and operational information.
- Provides a holistic operations and maintenance view by integrating with your existing OT/IT infrastructure.



Mobile Decision Support and Standardized Execution System

Mobile history

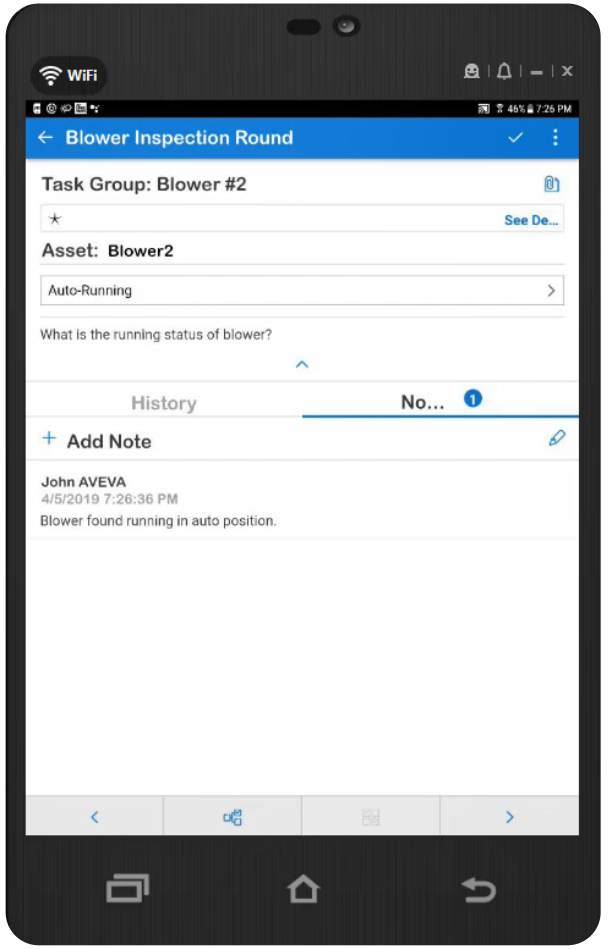
- Available at the task view
- Includes notes
- History details
- Historical trends
- Pan & zoom

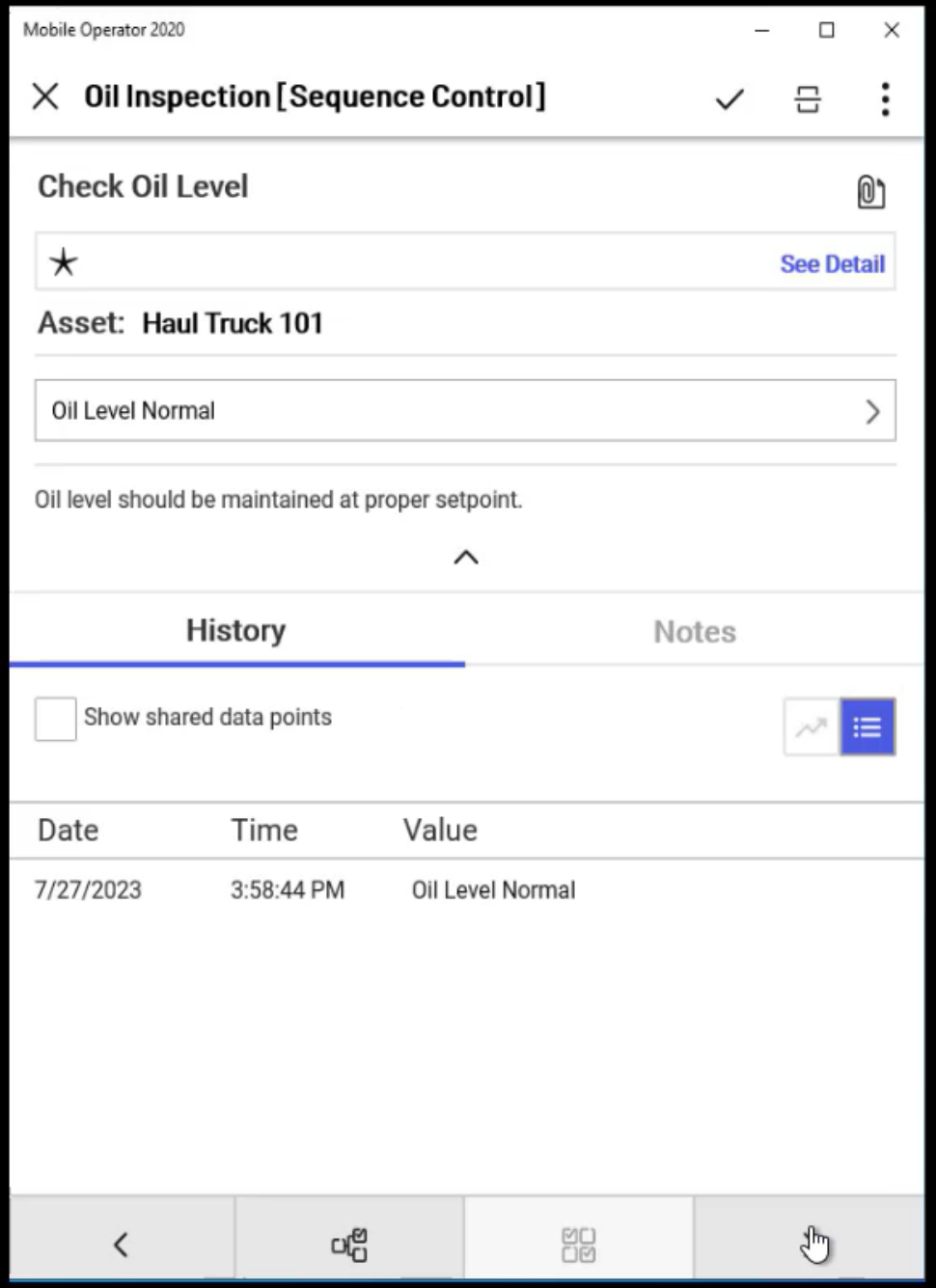


Mobile Decision Support and Standardized Execution System

Mobile – Free Text Notes & Logbook

- Free Text notes may be added at any time
- Or…triggered by an Action
- Enter free text or select a default note
- Default Notes can be edited
- Note is also available as a Log Entry




Mobile Operator 2020
Oil Inspection [Sequence Control]
Check Oil Level
See Detail
Asset: Haul Truck 101
Oil Level Normal
Oil level should be maintained at proper setpoint.
History
Notes
Show shared data points
Date
Time
Value
7/27/2023
3:58:44 PM
Oil Level Normal

Cameron LNG – Digital / Business Context & Drivers

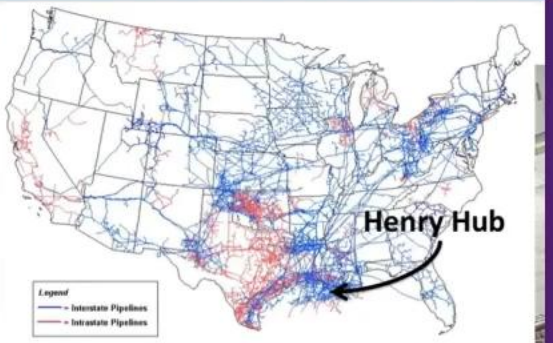
Cameron LNG

OPEX Business Model : POWER + PEOPLE + PRODUCTION

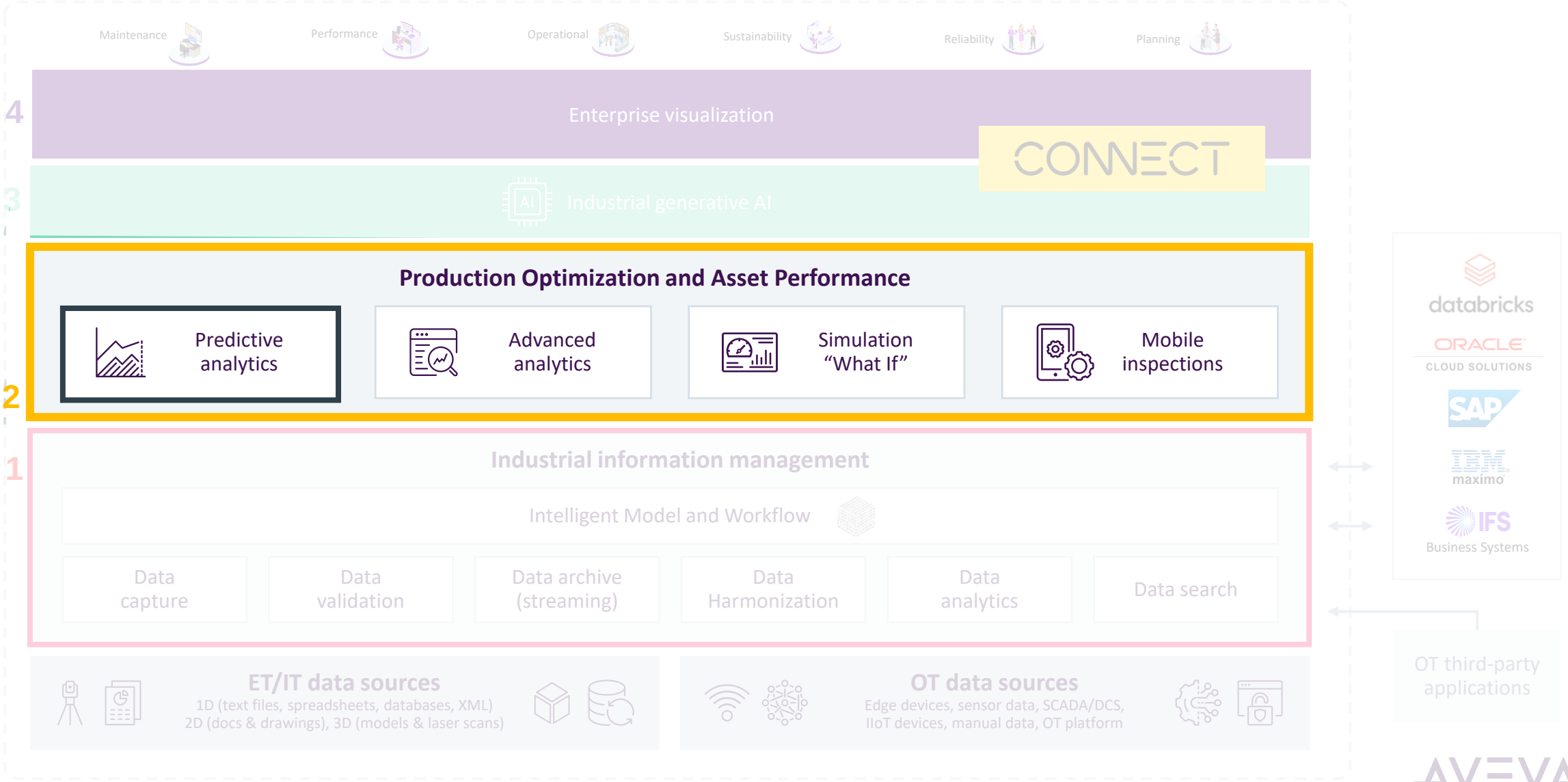
- Optimal Pipeline **gas supply** – options and interconnectivity
- Reliable GRID **Power**
- Modern LNG Facility – **instrumented for control**
- Plant Fiber communications infrastructure; **fiber connection to internet**

- Focused Business Model – Molecules from pipeline to LNG loading arms; Controllable OPEX.
- **Skilled** / Small workforce
- Resilient / Open / Friendly **Culture**

- Single Tenant / Cloud-first Business & Production IT Systems Infrastructure
- Right-sized **proven** LNG/Energy core application systems
  - SAP, Energy Components, UniSim, **PI System, Mobile Operator** (Intelatrac)
  - SmartPlant Instrumentation, P&ID, PDS 3D, SDx



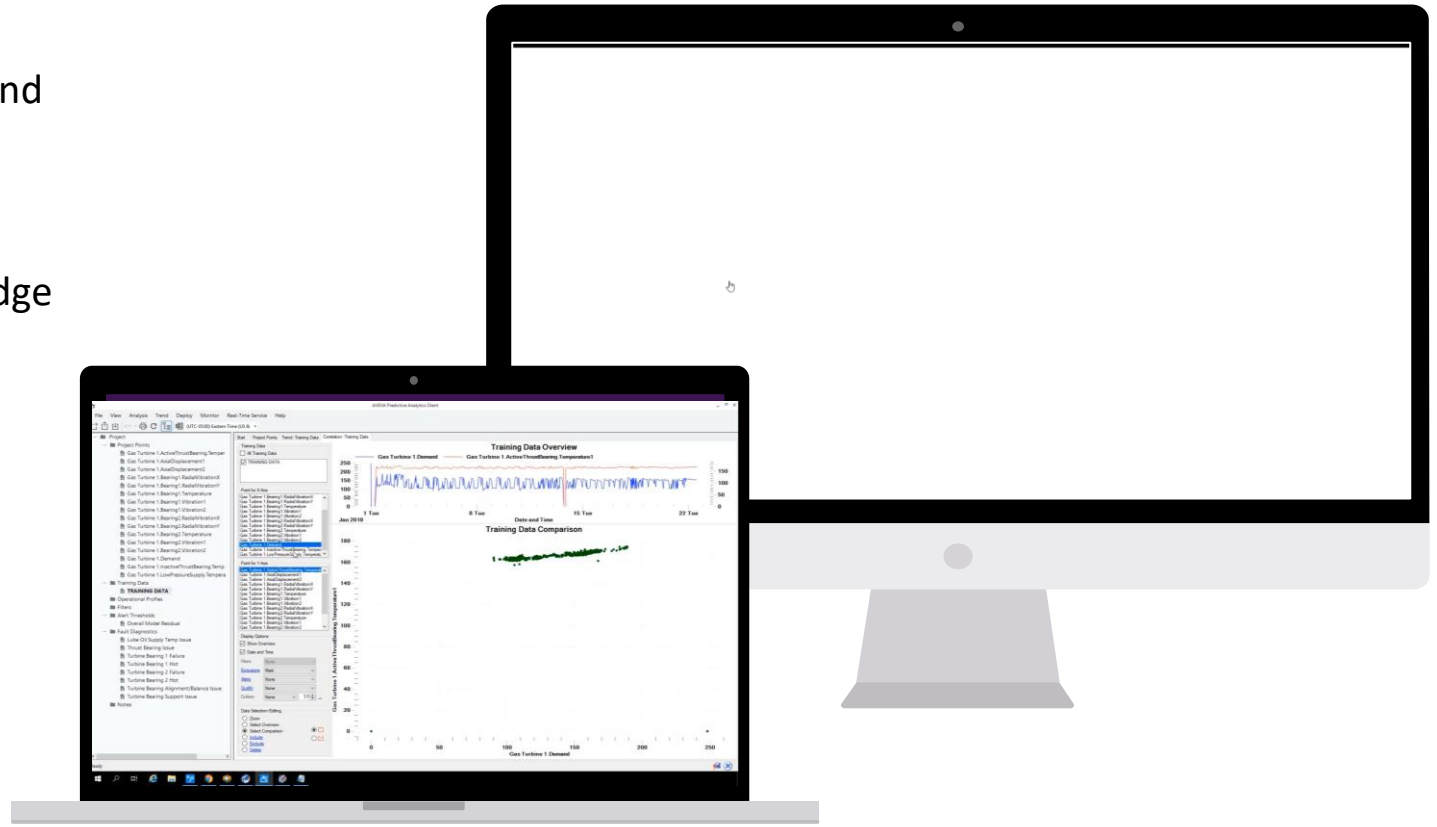
AVEVA Digital Reliability Centre



AVEVA Predictive Analytics

Predictive anomaly detection for business-critical equipment

- No code AI and machine learning
- Templates accelerate configuration, deployment and scale-up
- Data playback capability for validation of models
- Advanced alert and case management for knowledge capture and reporting
- Fault diagnostics + prescriptive actions
- Remaining time until failure forecast
- Automated Model Building
- Bring your own algorithm



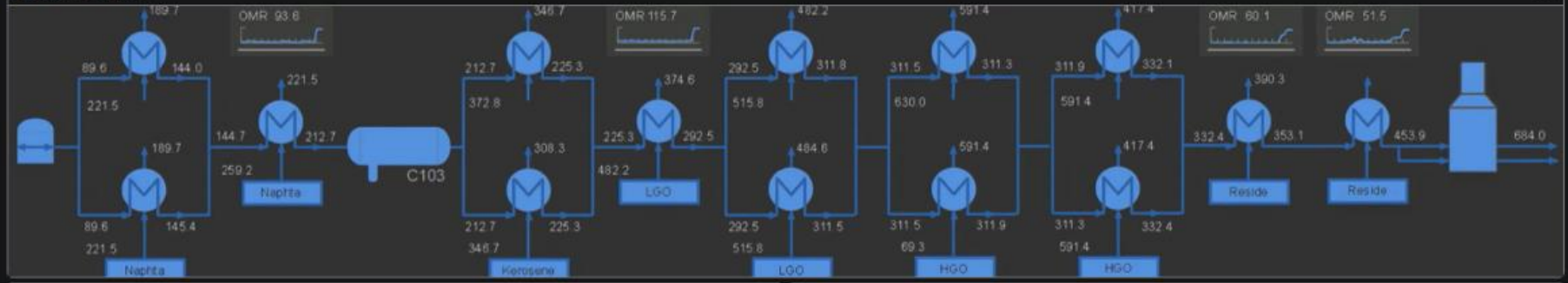
Predictive Asset Optimization

Save instance

Operations

Asset health

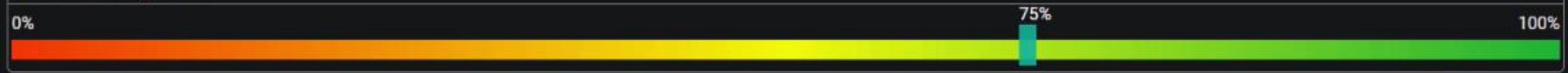
Performance



Risk

Cleaning schedule

Sustainability index



Industrial AI Assistant

Industrial Assistant 10:05 AM

Hi Chaitanya Immadi. How can I help you?

Enter your message...

Send

[Prototype Demonstration]

Hybrid AI Modeling

Native integration of PI Asset Framework, Process Simulation and APM turns PI Data into a strategic tool

#1: PI Asset Framework attribute configuration

PI Data Archive (real-time and historic process data)
PI Asset Framework (data contextualization)

#2: Simulation model development

First principles simulation and optimization

- **Optimization** — Best efficiency/ lowest emissions
- **Soft sensing** — Compressor efficiency and degradation versus OEM performance
- **KPIs & KOPs** — Sustainability metrics, process and economic indicators

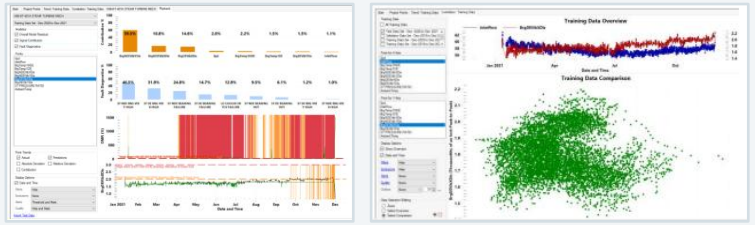
Model libraries

Thermodynamics

#3: APA model development

Predictive analytics

- **Anomaly detection** — 360-degree view of asset health process and mechanical
- **Fault diagnosis** — Pattern matching of anomalies for rapid diagnosis
- **Forecasting** — Urgency of intervention, burndown to reach operational limits



Analysis and strategic decision making

Optimized operation and business outcomes

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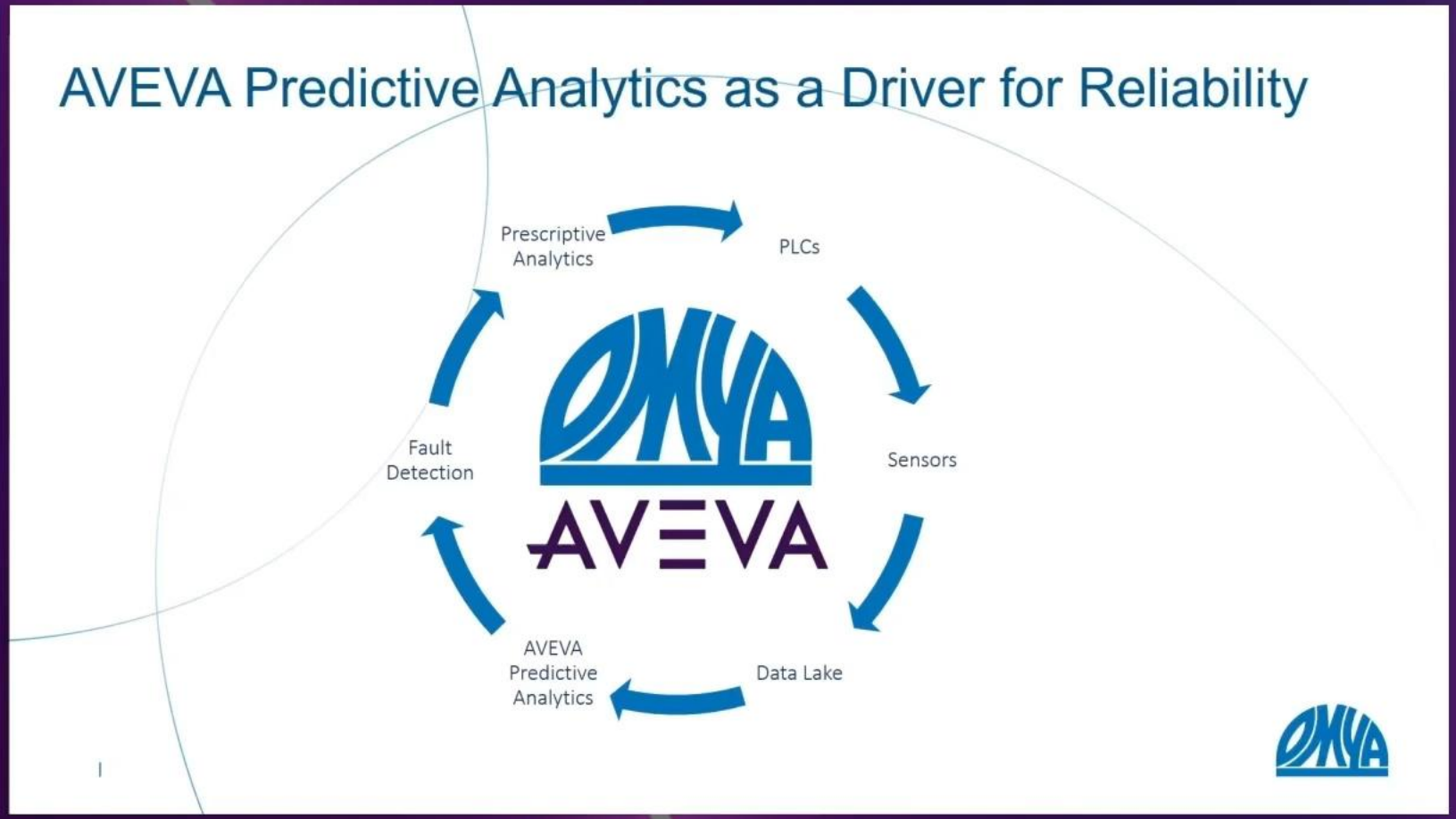

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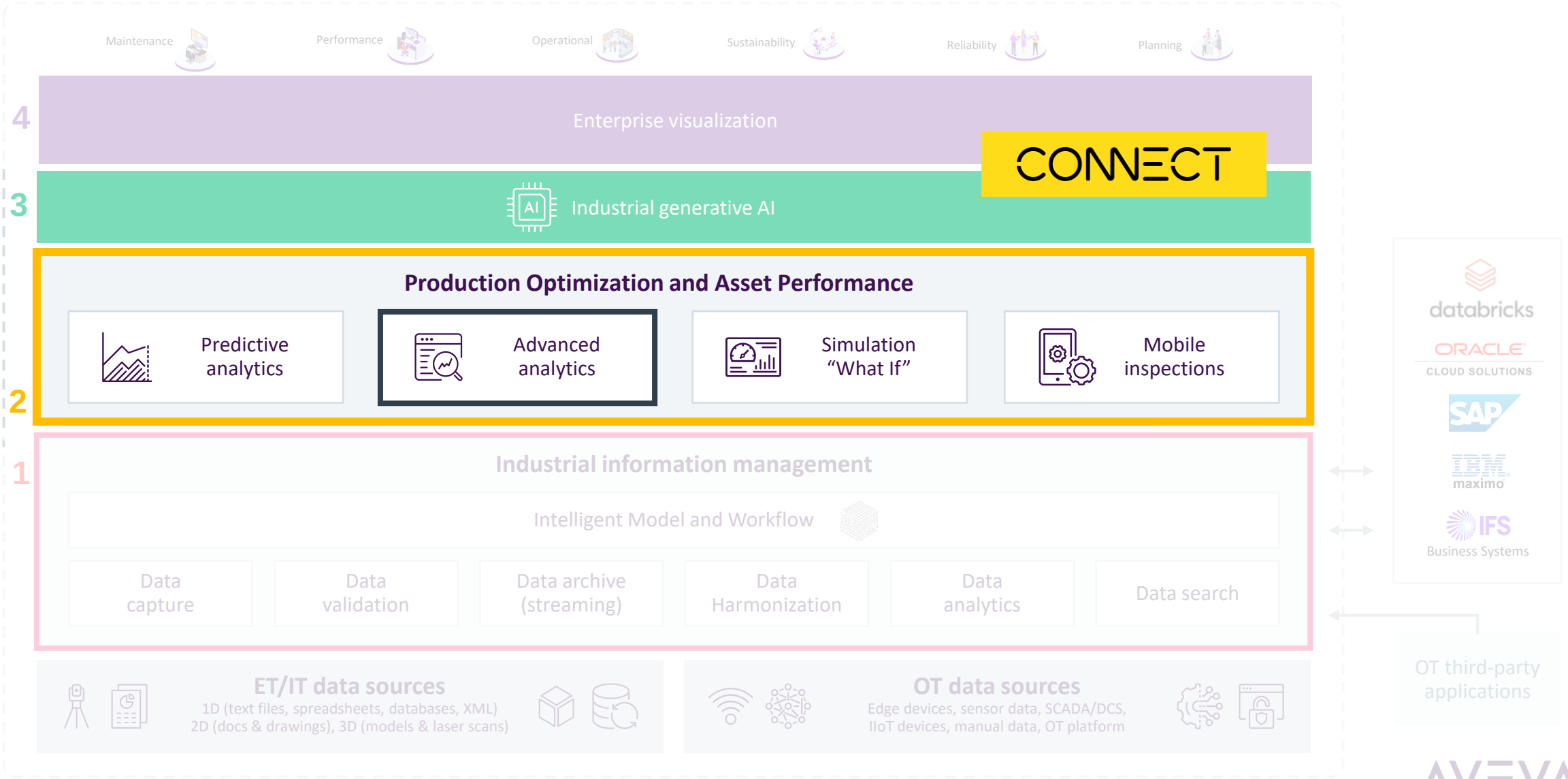
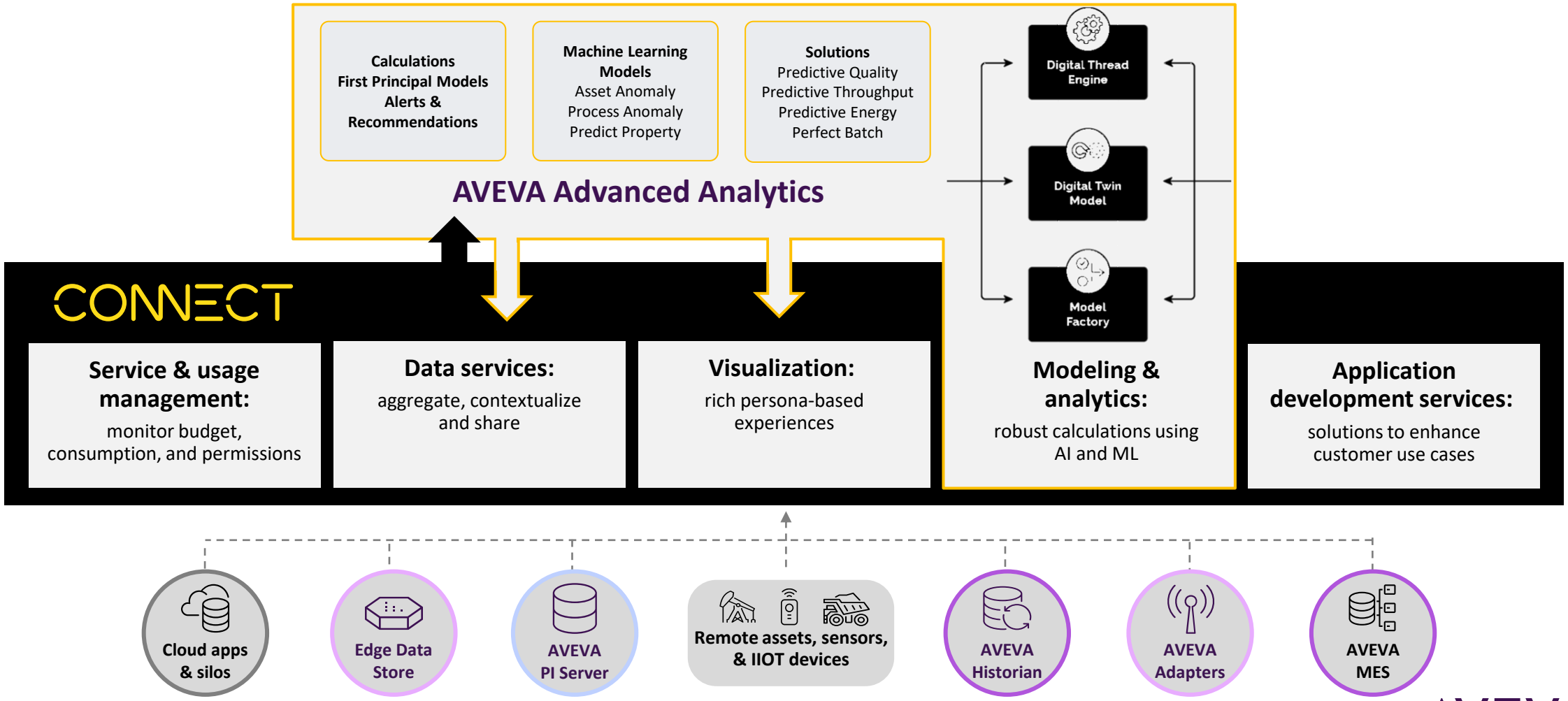
AVEVA Digital Reliability Centre



Connect AI with all industrial data and visualization

Open and neutral, providing rich data insights for your unified industrial ecosystem



AI-driven optimization for industrial excellence

Process Optimization

Perfect Energy

Operate at the sweet spot of production and energy consumption

Perfect Production

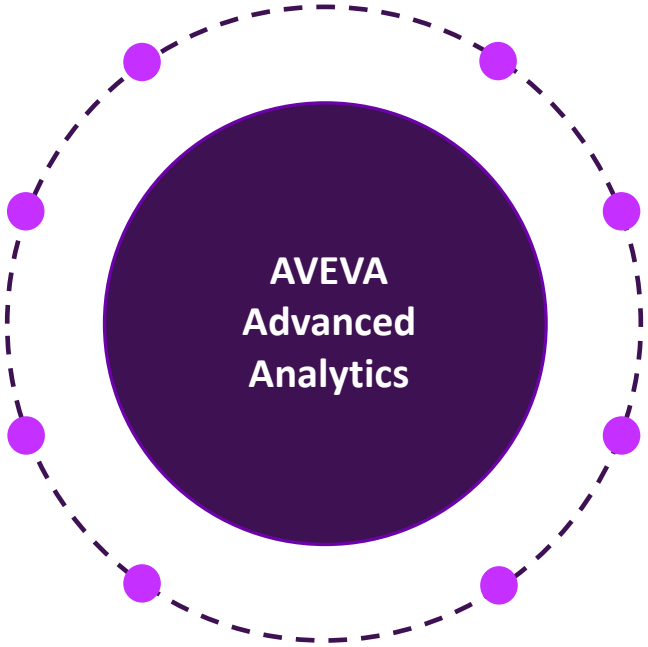
Automate investigations and understand performance drivers with ML

Perfect Quality

Reduce variability, eliminate losses, and improve operational flexibility

Perfect Batch

Continuously evaluate batch performance and automate actions



Asset Optimization

Uptime Optimization

Real-time alerts and recommendations to avoid downtime events

Throughput Optimization

Maximize production output on a per-product and per-asset basis

Asset Reliability

Predict and prevent common failure modes at scale

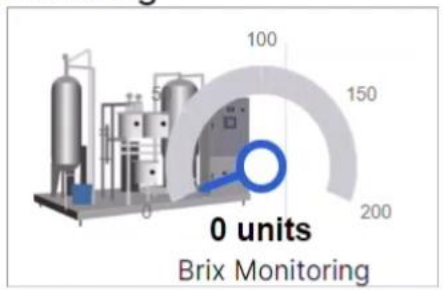
Asset Life

Maximize serviceable life and proactively manage failure risks at scale

Overall Status Board

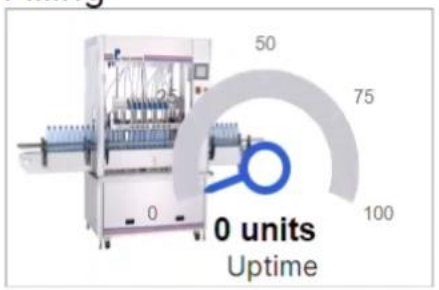
Overall Status Board

Blending



Carbonation Station

Filling

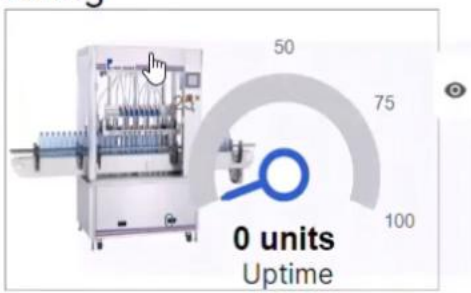


LINE 1
Athletic
Transfering

Blending

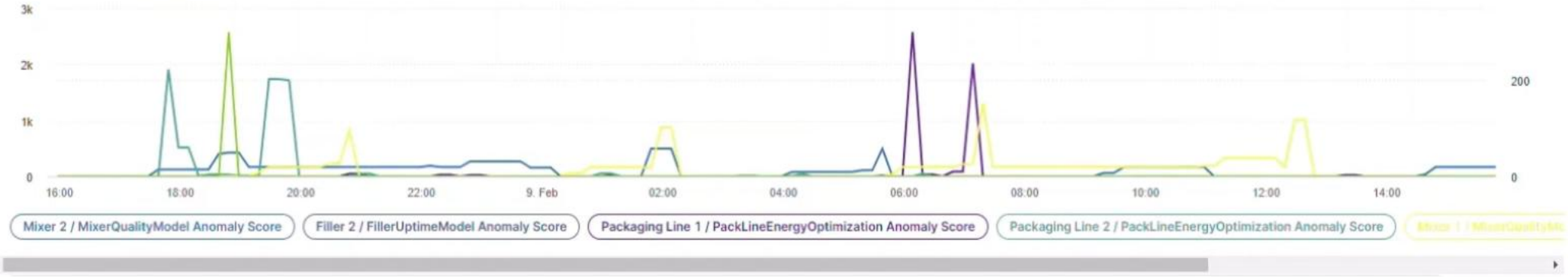
Carbonation Station

Filling



LINE 2
Memory
Filling

Model Deviations



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F. Hoffmann-La Roche requires a reliable cloud-based data platform

Roche

Pharma & Life Sciences | Switzerland - Global

Challenges

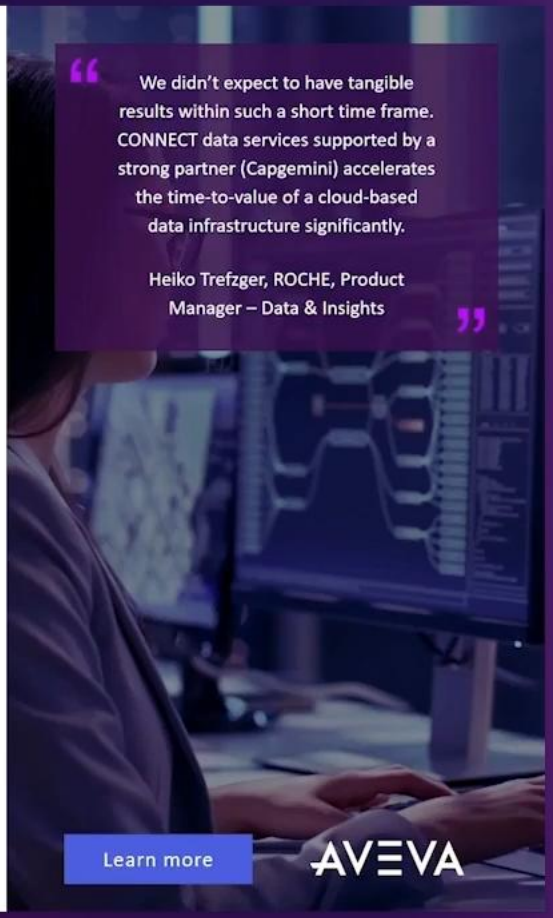
- **Availability** of relevant data for business analysts of ROCHE
- Terabytes in the PI System become petabytes in a commercial datalake
- **Complex** server **landscape** to aggregate data at global scale
- **High skill set** and expertise **required** to work with data
- Demonstration of project results in **less than 3 months** (target milestone: Hannover Messe)

Solution

- Leverage CONNECT Data Services (aka AVEVA Data Hub) as **industrial** data enablement infrastructure
- Leverage **AVEVA Advanced Analytics** for rapid implementation of **self-service data analytics**
- **Partnership approach:** Client – Vendor – Integrators

Results

- End-to-End data availability
- Major reduction of data consumption cost (petabytes become terabytes again ☺)
- Potential reduction by approx. up to 70 servers within the entire system landscape
- accelerated time-to-market for industrial data-products



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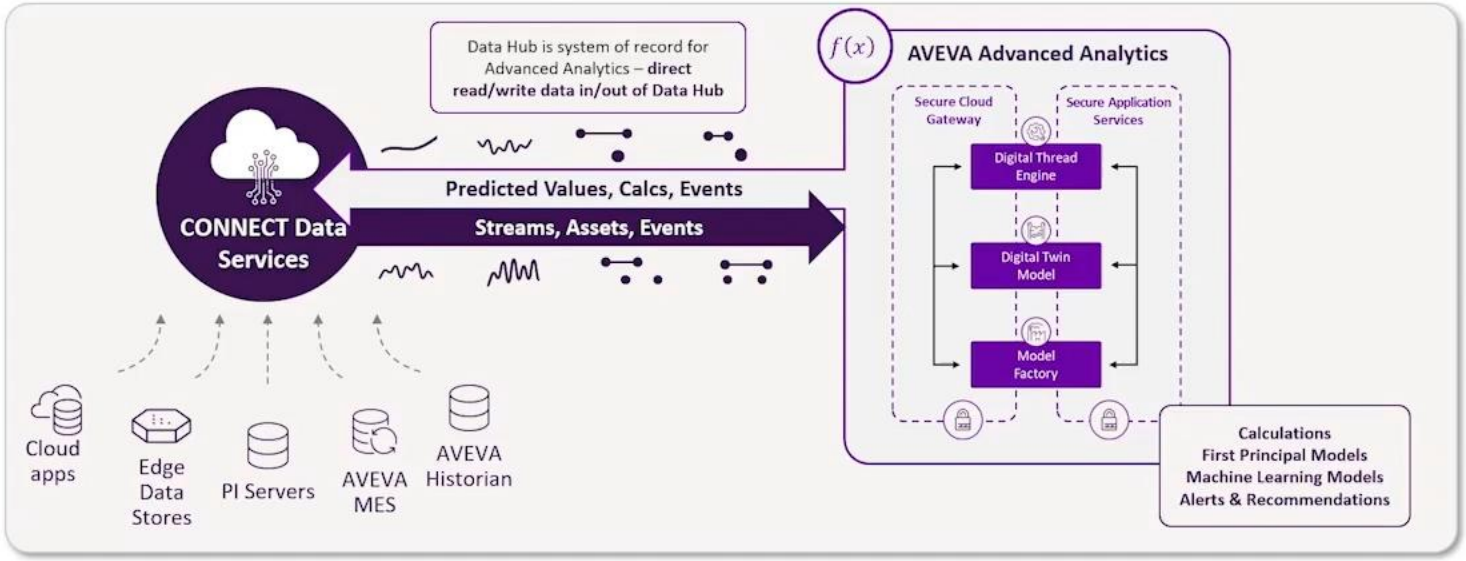
Use case 2 - Digital maintenance

From calendar-based maintenance to predictive as an afterwork experience



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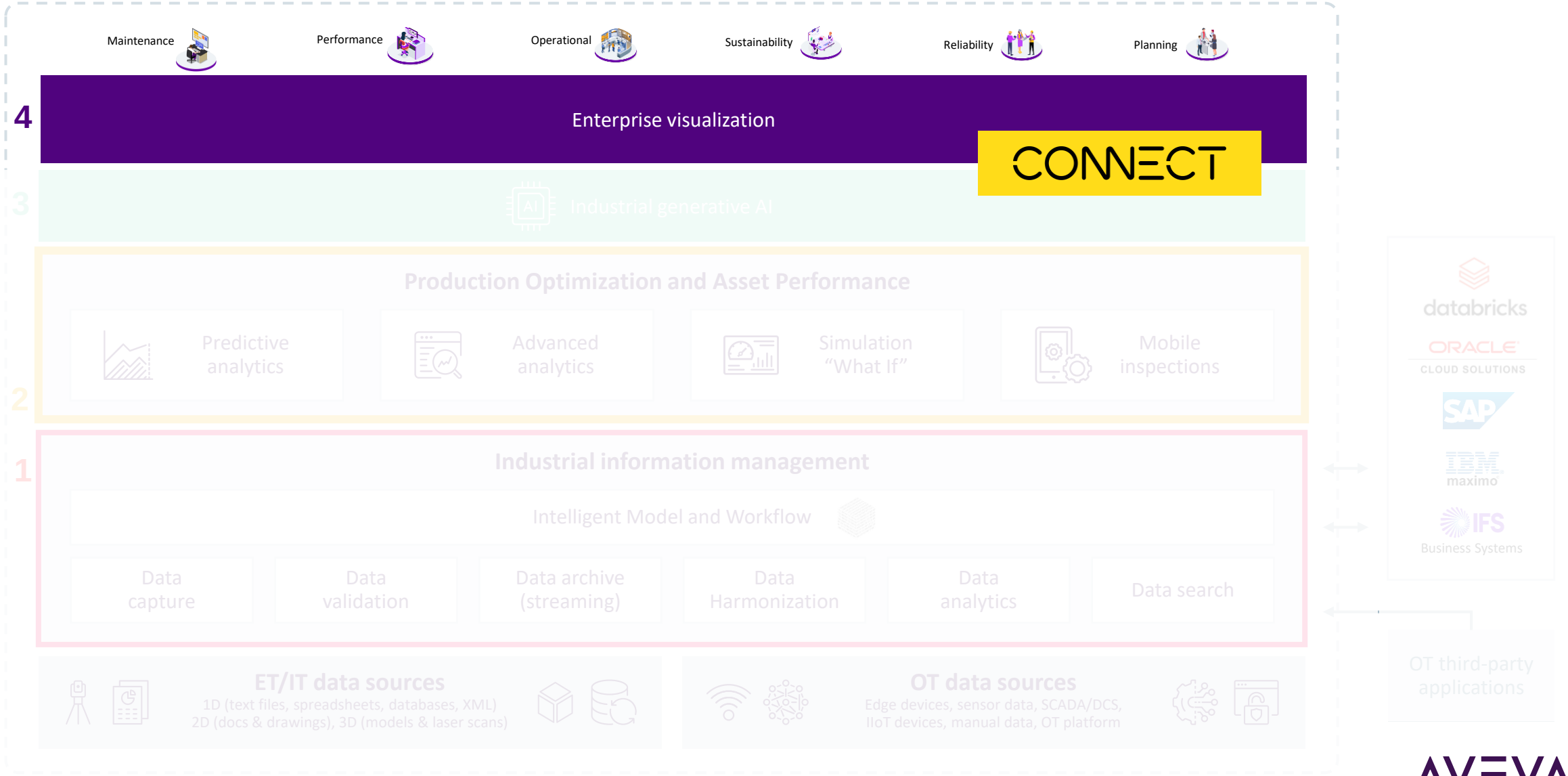

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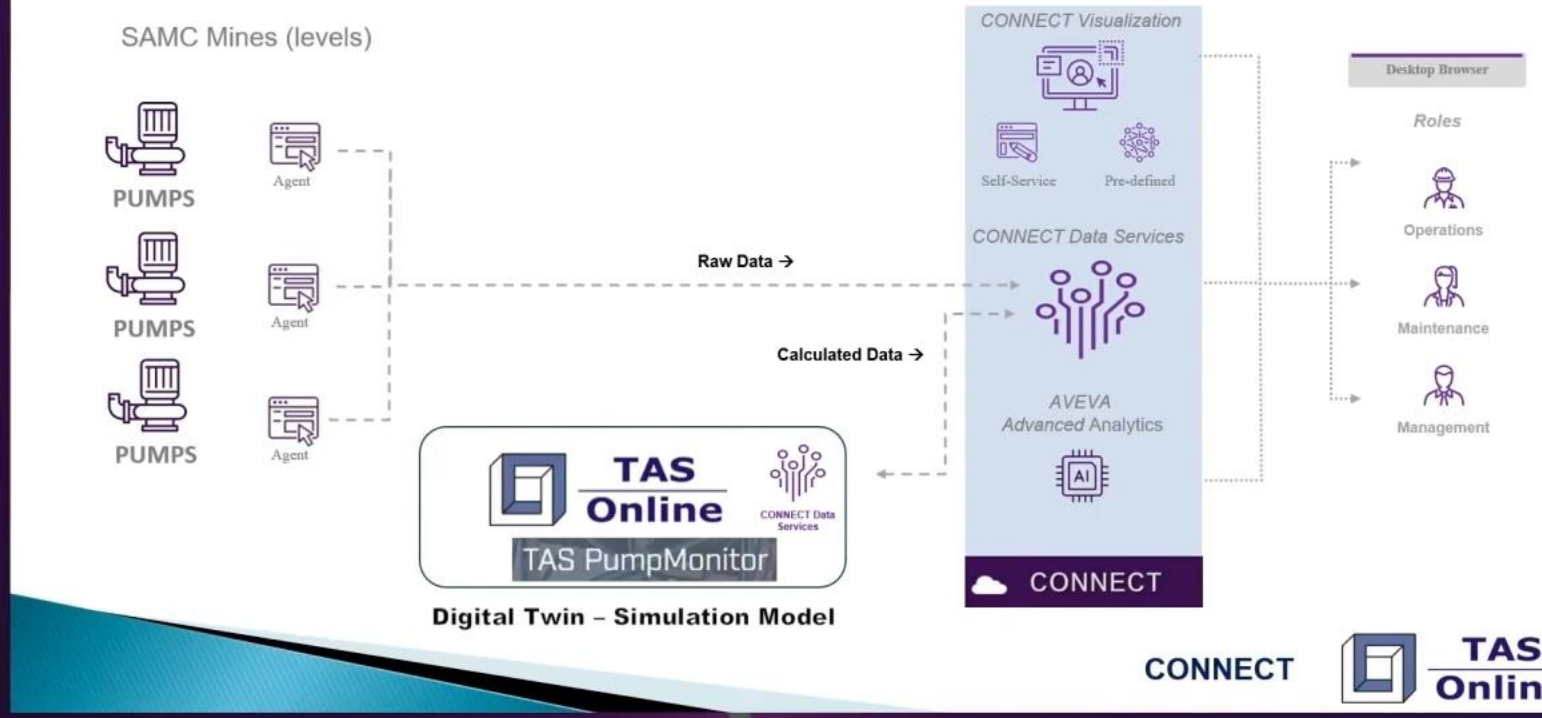
Optimise SAMC's Pumping in Real Time

LIGHTHOUSE SOLUTION ARCHITECTURE (high level)



CONNECT TAS Online

Shift from siloed data to the smart way

CONVENTIONAL APPROACH

Disconnect between operational and asset design data

Time-consuming data retrieval and correlation

Lack of context to inform urgent strategic decisions

Data retrieval requiring high levels of technical expertise

Teams working in silos due to lack of shared information

Limited system integration and data exchange

CUTTING-EDGE DATA INTELLIGENCE

HOLISTIC	360° view of data relating to the entire asset life-cycle: from design to operation to maintenance and optimization.
FAST	Instant access to contextualized information for timely, informed and accurate decision making.
AGILE	Instant internal and external contextualization to facilitate informed response to market, environmental or asset events
INTUITIVE	Ask questions using natural language to get instant, insight-rich answers to complex questions with Generative AI
COLLABORATIVE	Single source of truth enabling cross-functional decision making and collaboration.
CONNECTED	Integrated software across design, operation and optimization. Vendor agnostic connectivity to third-party systems.

AVEVA DAY

BRISBANE

AVEVA Digital Reliability Center

Resources

- AVEVA World 2025 Customer Presentations:
  - Challenges, opportunities and best practices in 'Digital LNG’
  - APM | OMYA: from independent reliability management to centralized success with global predictive maintenance
  - APM | SCG Chemicals: comprehensive condition-based and predictive-based maintenance with a digital reliability platform
  - CONNECT data services for a data analytics platform at F. Hoffmann-La Roche
  - TAS Online: How a South African Mining company uses CONNECT to enhance operational efficiency and reduce energy.

- Other relevant AVEVA World Presentations
  - Visualizing industrial data with CONNECT

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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.

Learn more at www.aveva.com

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