



AVEVAWORLD
PARIS

CONNECT

CONNECT

OCTOBER 2024

CONNECT Industrial Intelligence Platform Vision and Roadmap

Gregg Le Blanc – SVP, CONNECT industrial platform Portfolio

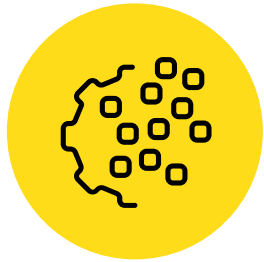
Brian Bostwick – VP, Operations Portfolio

Agenda

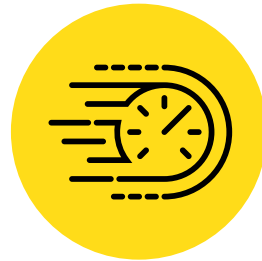
- CONNECT vision
- CONNECT customer scenarios and use cases
- Available now
- Upcoming innovations: In development
- Resources

Industrial business leaders face several critical challenges

The journey to digital transformation requires scalable and flexible expansion into the cloud



Embracing emerging technologies (like AI) to stay ahead of the curve



Fostering innovation and encouraging teams for sustainable growth



Attracting and developing skilled employees to adopt these changes

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

Service & usage management

Unified experience to manage cloud and on-prem apps



Modeling & analytics

Combine existing data with AI for faster and smarter decisions



CONNECT

Industrial intelligence platform

Data services

Aggregate, contextualize, and share real-time industrial data



Application development

Expand your ecosystem with solutions that bring added value



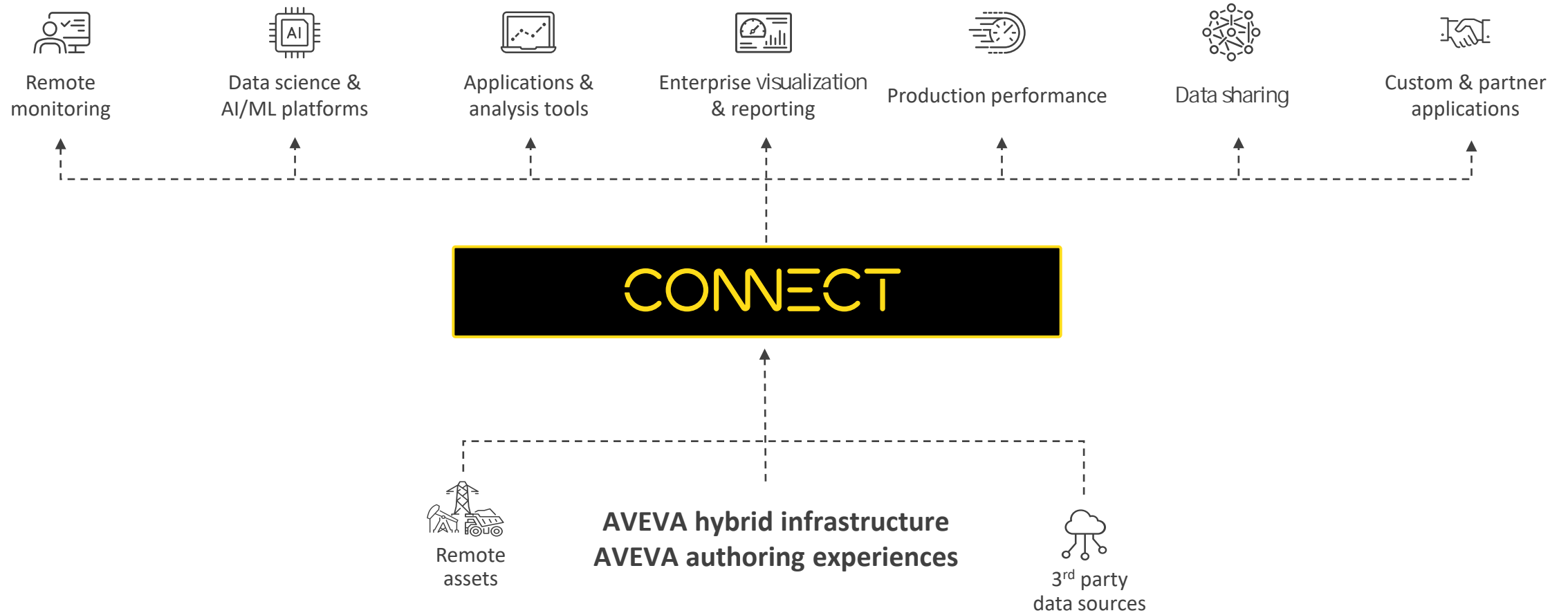
Visualization services

Visualize industrial information with customizable dashboards



Industrial intelligence platform

Providing hybrid solutions to accelerate new value creation for AVEVA customers





CONNECT roadmap themes

Hybrid: extend the value of AVEVA infrastructure & authoring

Secure, rapid connectivity – powerful new use cases

System of record for industrial data, apps, & data science capabilities

Flexible: from edge to community, from data to AI insights

Connect and manage everything from edge devices to data sharing

Powerful analytics and visualization from edge to cloud

Industrial digital twin: bridge engineering & operations context

Shared version of the truth for analytics, visualization, and AI

Enhance visibility, consistency, and insights across operations

Ecosystem & enterprise: drive digital transformation

Leverage a network of partner applications and services

Flexibly use, monitor, and provision AVEVA SaaS and PaaS capabilities

Many use cases across the asset lifecycle & operations

Capital Project

Continuous Handover

Universal Search and Knowledge Sharing

Maintenance Work Planning

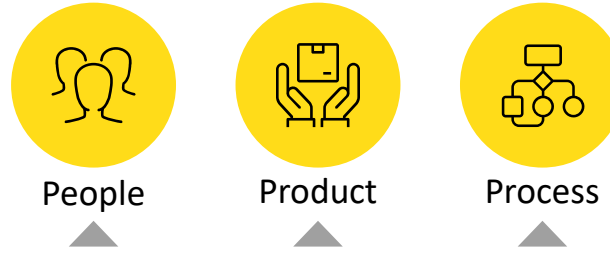
Maintenance Work Execution

Remote Operations Support

Situational Awareness

Workforce Training

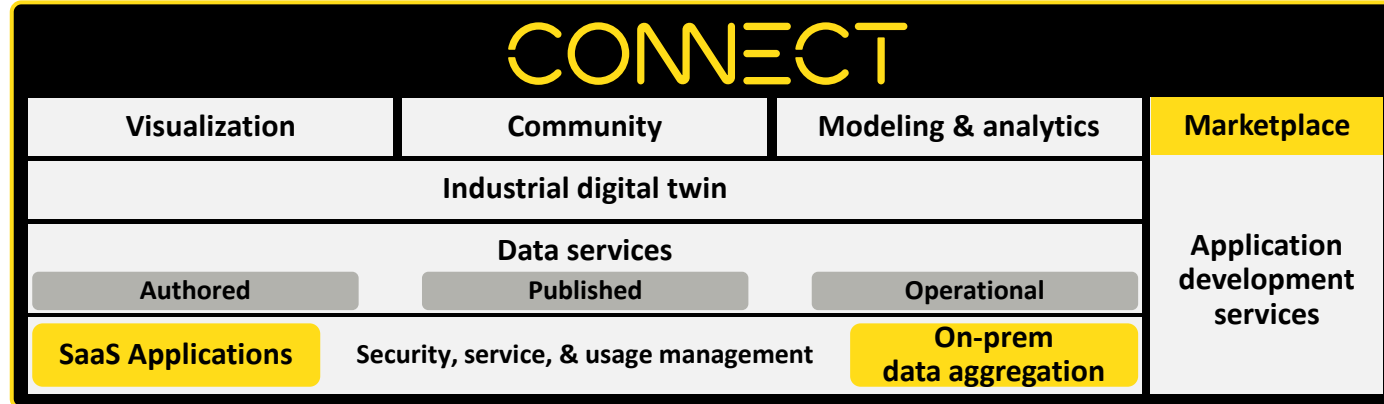
Brownfield Engineering



People

Product

Process



Process Troubleshooting

Process Optimization

Process Change

Product Quality

Product Release

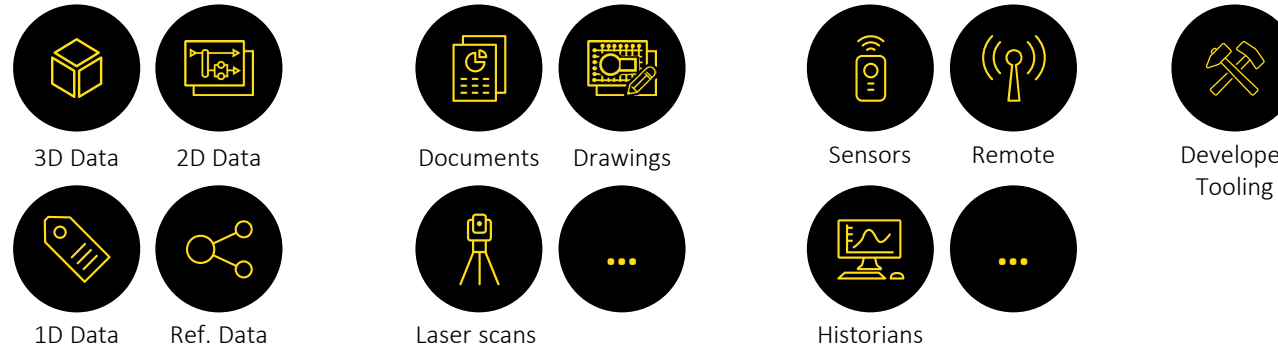
Product Genealogy/Recalls

AI/ML Projects

Shift Reporting & Handover

Visualization Dashboarding, Reporting & Insight

OEE



3D Data

2D Data

Documents

Drawings

Sensors

Remote

Developer Tooling

1D Data

Ref. Data

Laser scans

Historians

Extending customer value with hybrid and ecosystem capabilities

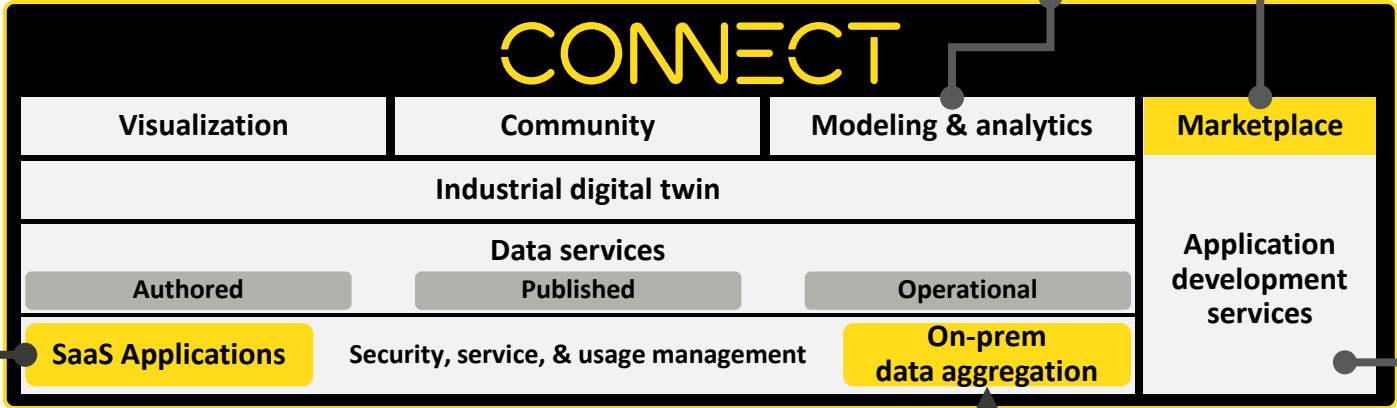
AVEVA SaaS applications

- AVEVA Unified Engineering
- AVEVA Point Cloud Manager
- AVEVA AIM-A
- AVEVA ERM
- AVEVA Unified Supply Chain
- ...more

AVEVA Modeling & analytics

- AVEVA Advanced Analytics
- AVEVA Simulation
- ...more

CONNECT Ecosystem SaaS applications



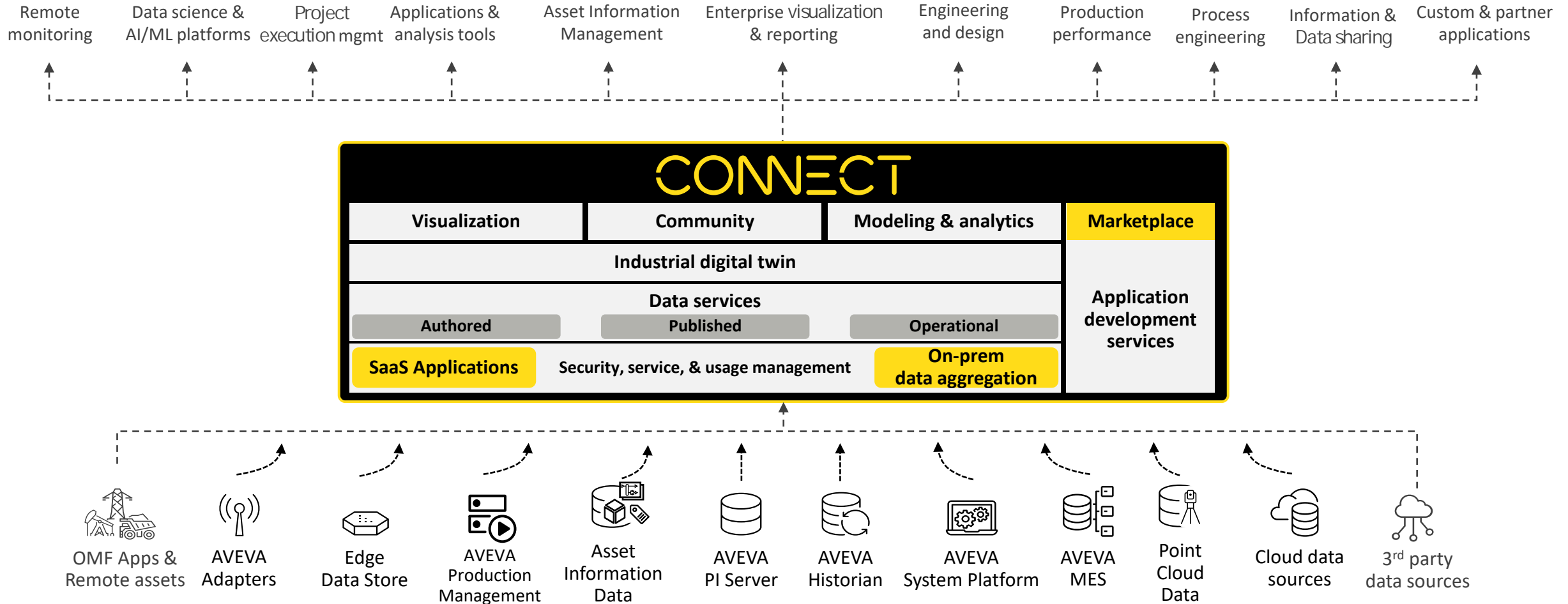
3rd party SaaS integrations

AVEVA on-prem applications

- AVEVA PI System
- AVEVA System Platform
- AVEVA AIM (1D, 2D, 3D data)
- AVEVA Unified Operations Center
- AVEVA MES
- AVEVA Production Management
- AVEVA Historian
- ...more

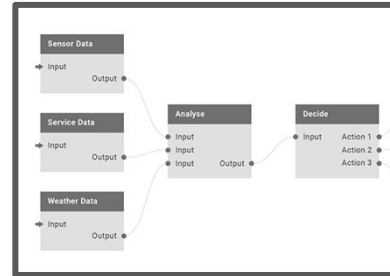
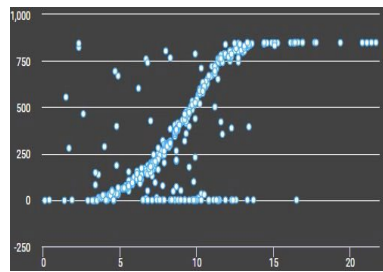
Industrial intelligence platform

Providing hybrid solutions to accelerate new value creation for AVEVA customers

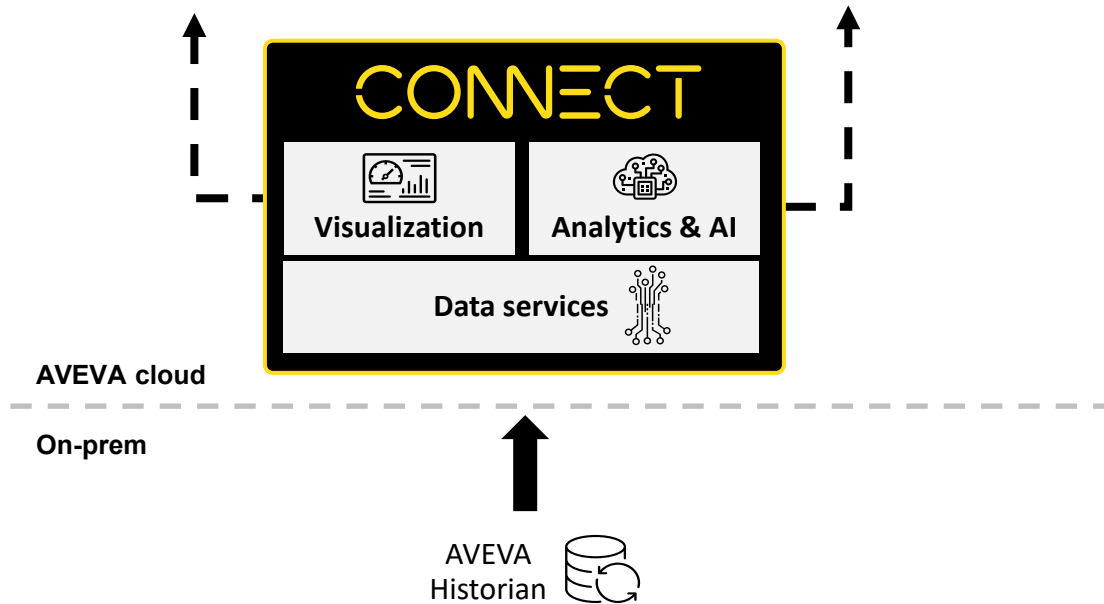


CONNECT for AVEVA Operations Control

Rapid time to value with connectivity to CONNECT in a safe, secure, robust manner

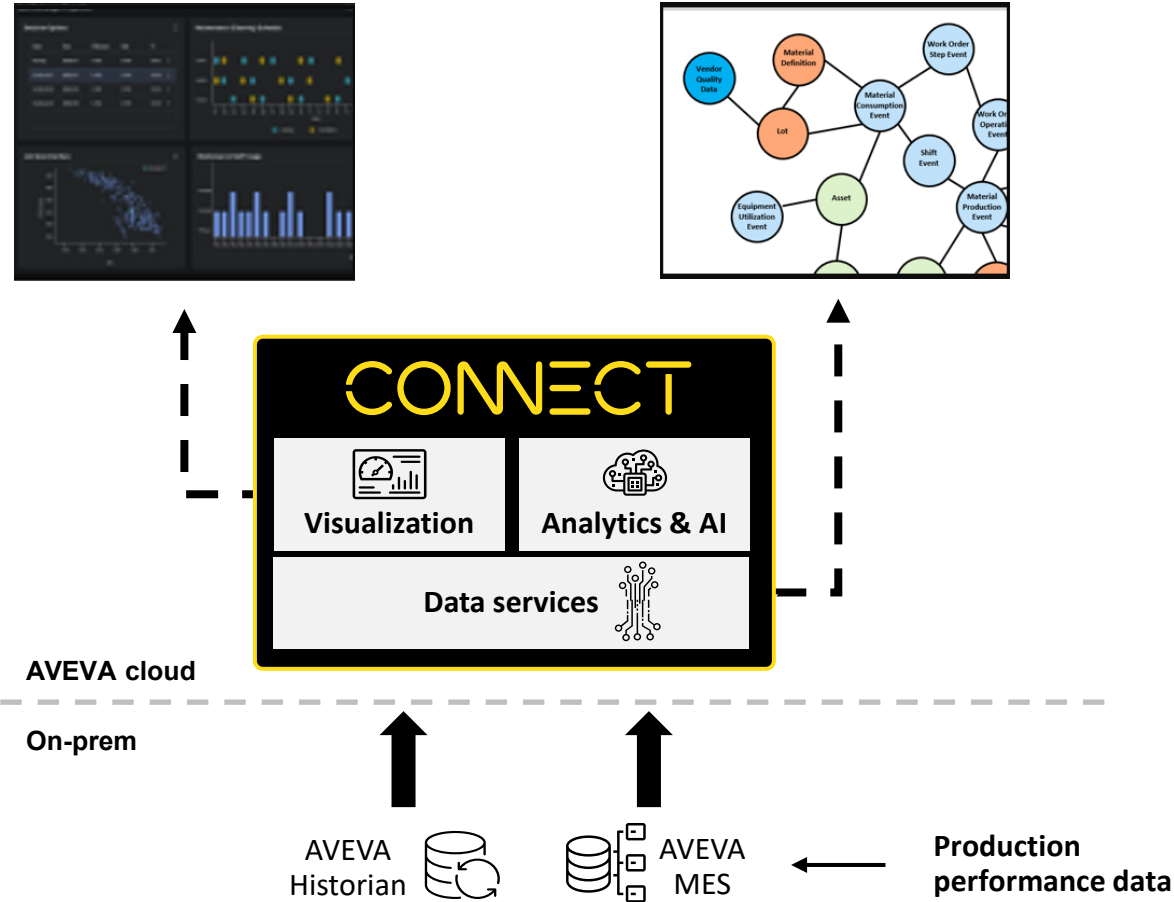


- Predicting quality and throughput



CONNECT for AVEVA Operations Control & AVEVA MES

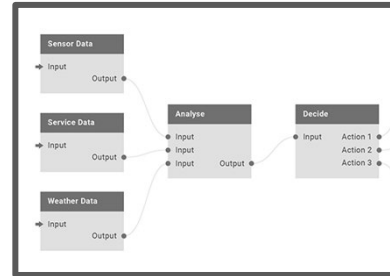
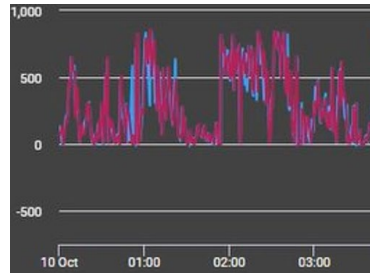
Integrate operations and production data in context



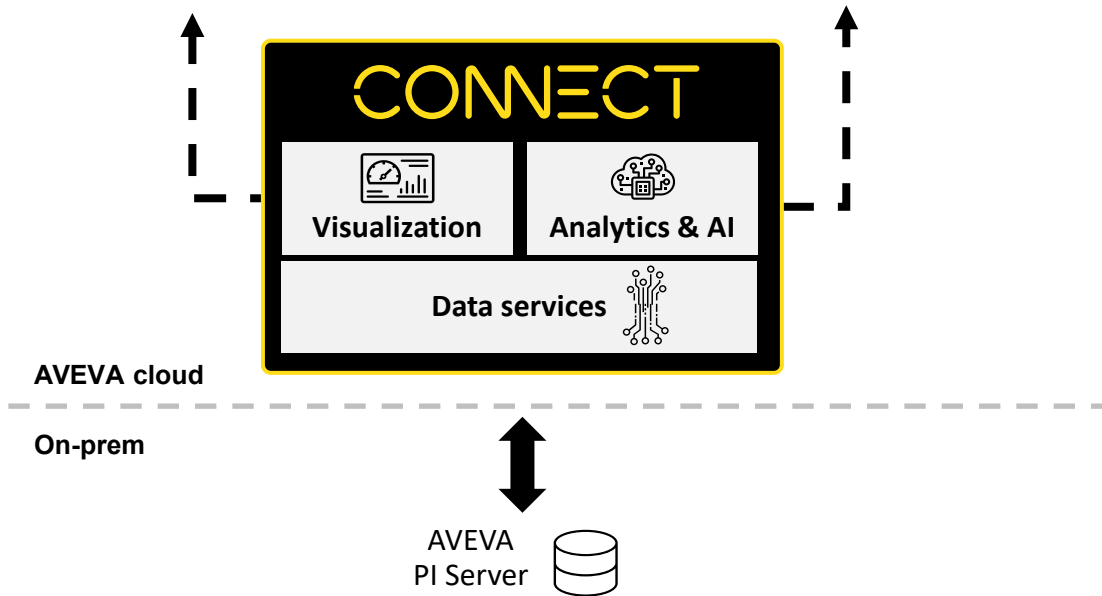
- Predicting quality and throughput
- Optimizing production in real time
- Optimizing for energy efficiency

CONNECT for AVEVA PI Data Infrastructure

Results back on-prem from CONNECT in a safe, secure, robust manner

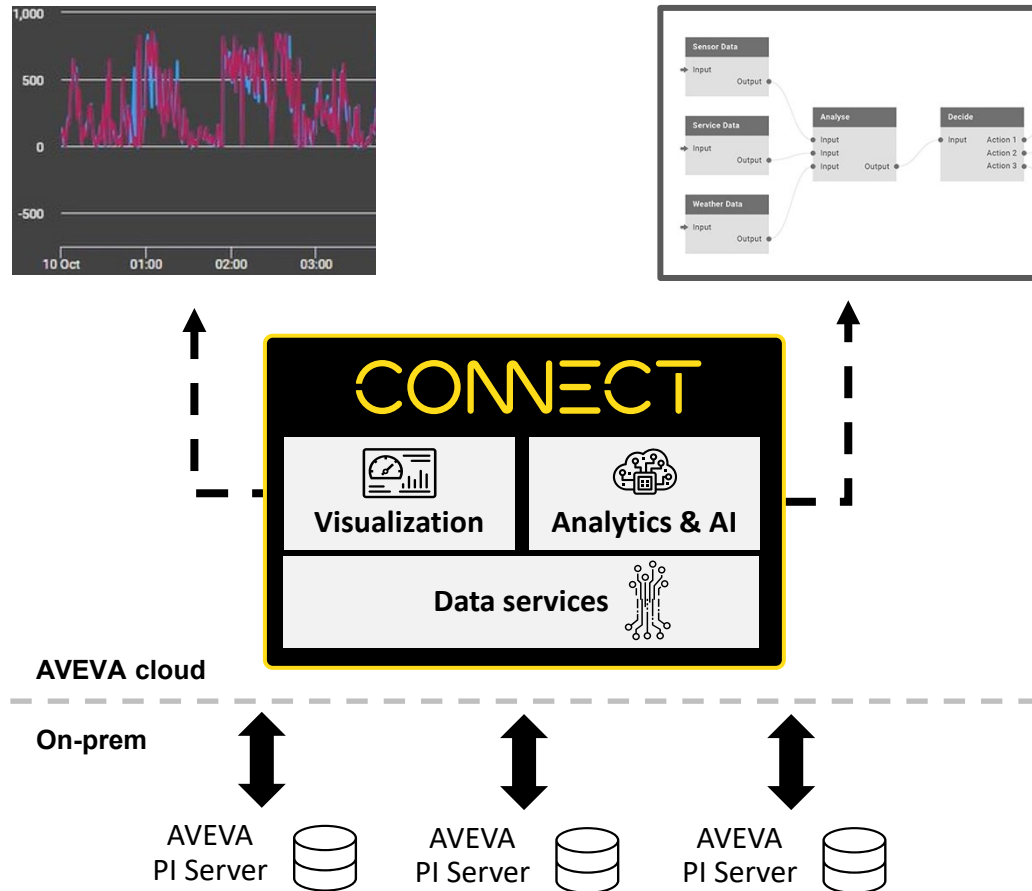


- Predicting quality and throughput
- Optimizing production in real time
- Optimizing for energy efficiency
- Results on-prem in operational context



CONNECT for AVEVA PI Data Infrastructure

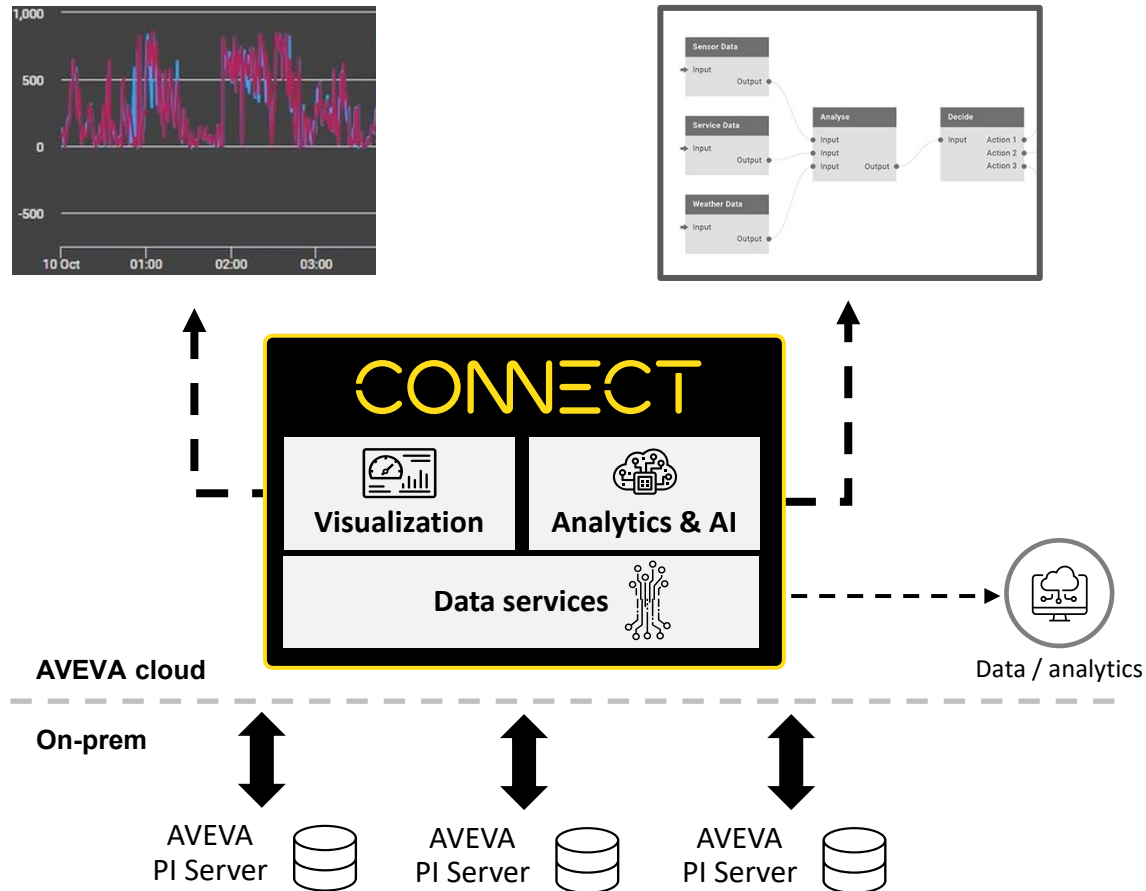
Easily integrate multi-site data at scale



- Predicting quality and throughput
- Optimizing production in real time
- Optimizing for energy efficiency
- Results on-prem in operational context
- Reducing TCO by replacing regional servers

CONNECT for AVEVA PI Data Infrastructure

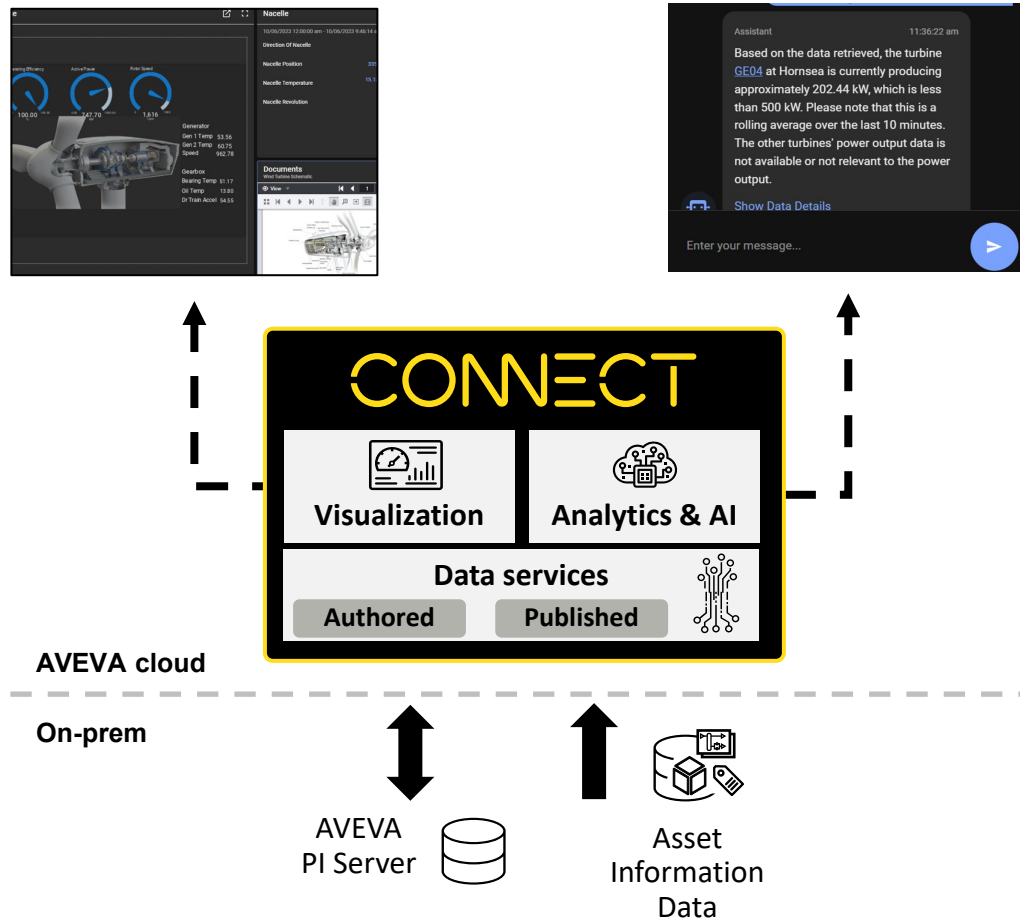
Curate data in context and share with 3rd party analytic and data vendors



- Predicting quality and throughput
- Optimizing production in real time
- Optimizing for energy efficiency
- Results on-prem in operational context
- Reducing TCO by replacing regional servers
- Easily curate data in context at scale

CONNECT for AVEVA PI Data Infrastructure & AIM-A

Easily integrate operations and asset information



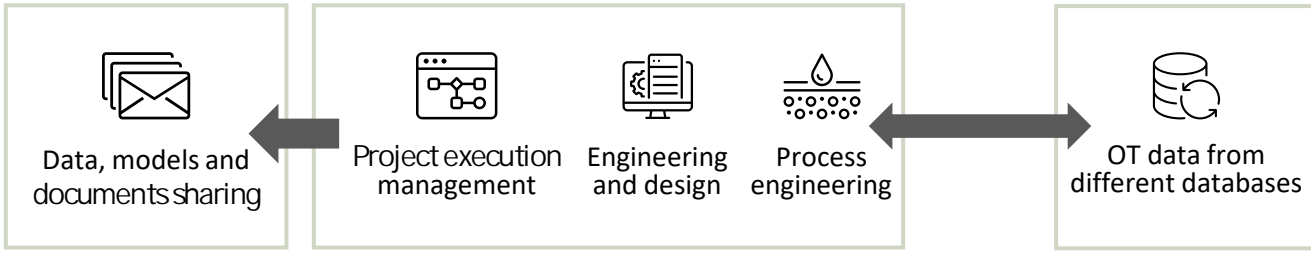
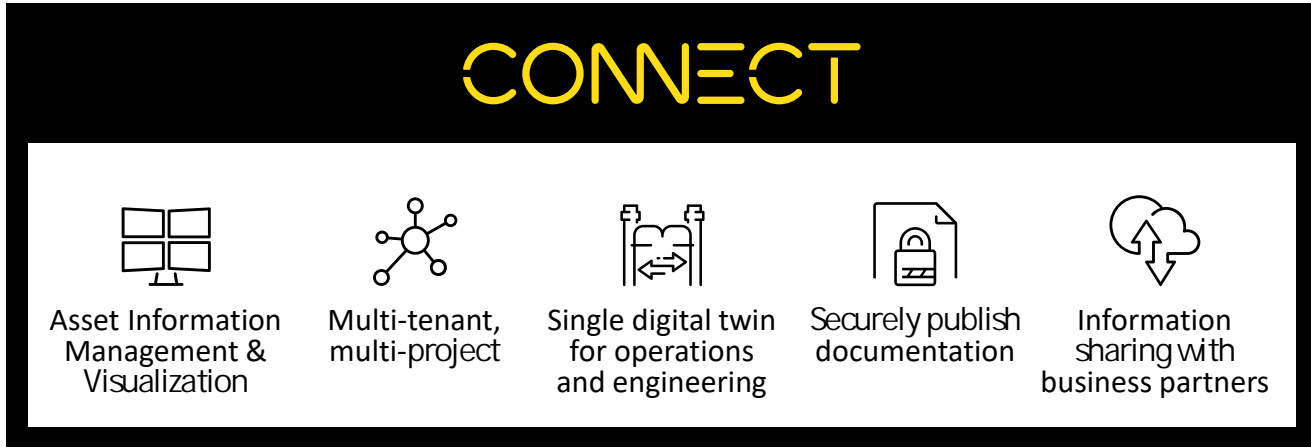
- Predicting quality and throughput
- Optimizing production in real time
- Optimizing for energy efficiency
- Results on-prem in operational context
- Reducing TCO by replacing regional servers
- Easily curate data in context at scale
- Answering questions offering new insights across information boundaries

CONNECT

Available now!



CONNECT extends value for our **engineering customers**

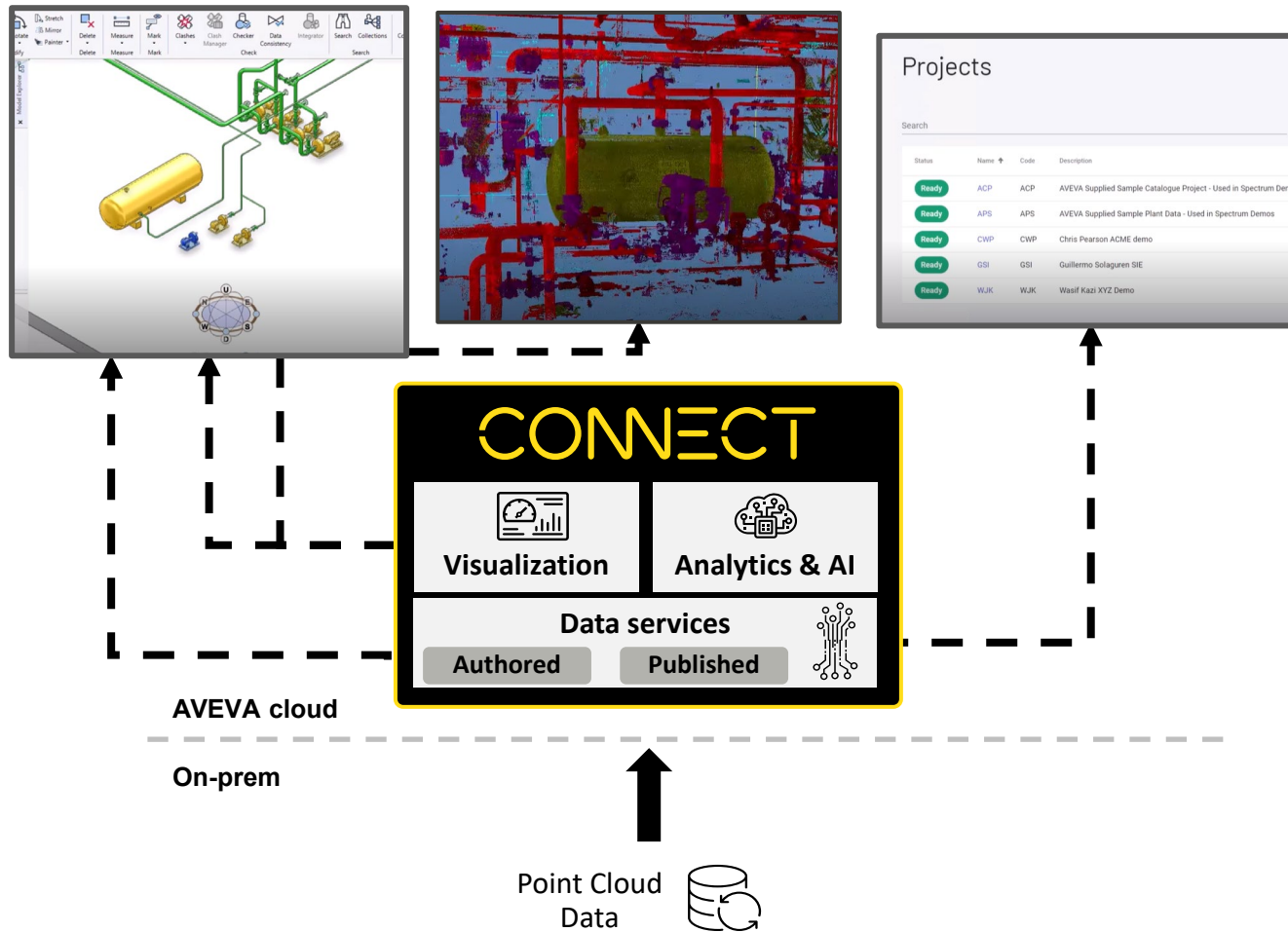


- Drive time to value - reduce complexity for setup and maintenance
- Collaborative - making data-sharing easy, while meeting security demands
- Dynamic - adjust configurations as projects, facilities, and businesses mature
- Scale - manage megaproject workflows across global teams
- Living digital twin - bridge operations and engineering data



CONNECT for AVEVA reality capture

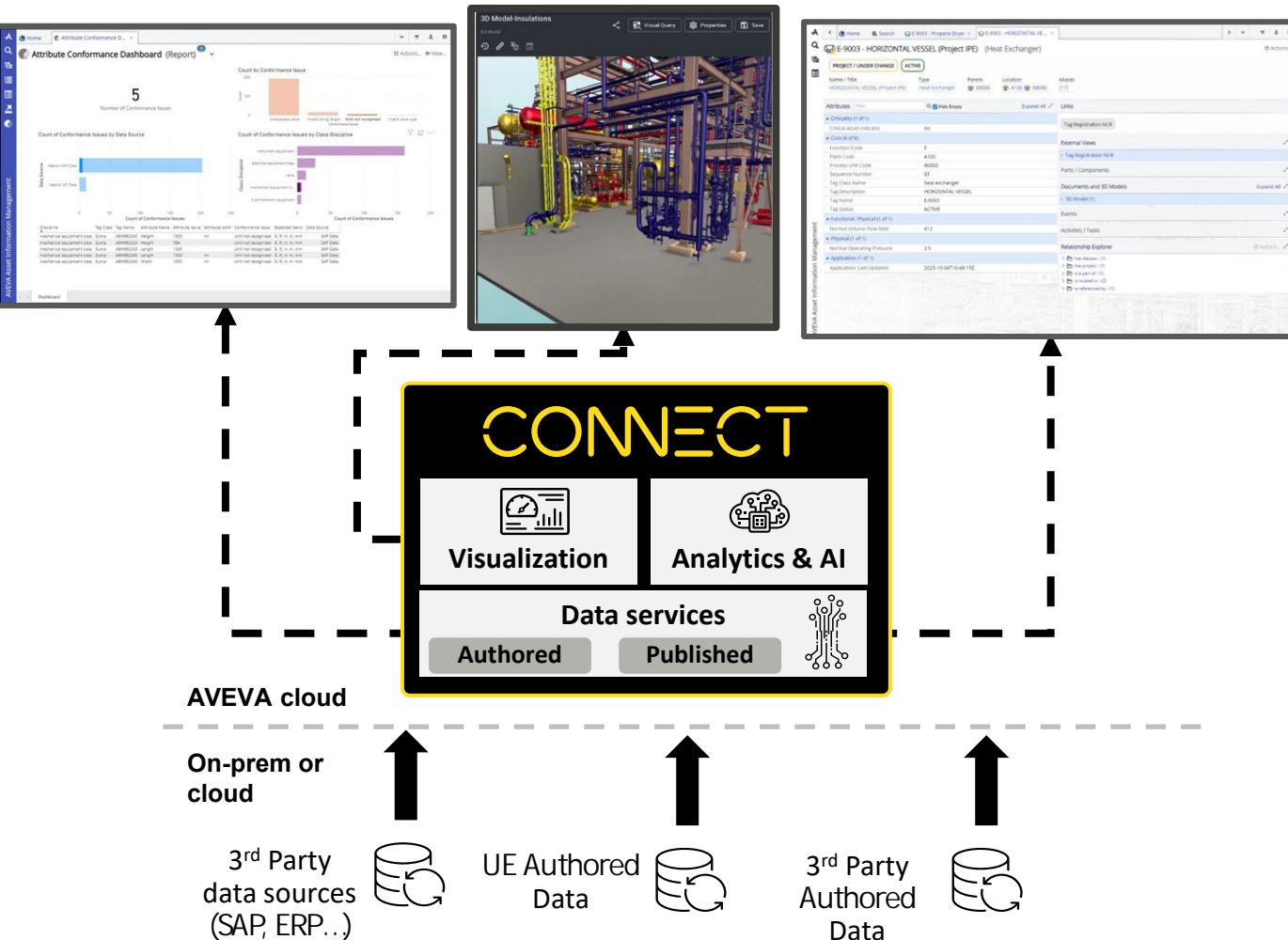
Rapid time to value with connectivity to CONNECT in a safe, secure, robust manner



- As built 3D rendering of Point Clouds
- Large file point cloud active data store and archive
- Intelligent objects in Point Cloud
- Visualization in context to other CONNECT data in CONNECT Visualization Service

CONNECT for AVEVA Asset Information

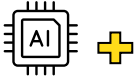
Rapid time to value with connectivity to CONNECT in a safe, secure, robust manner



- Aggregating and contextualizing engineering data with multiple other sources
- Combines 1D/2D/3D engineering data in context
- Dashboarding & reporting of Engineering data
- Configurable to support Projects and Operations
- Data quality reporting

CONNECT Data services in 2024


Remote monitoring



Data science & AI/ML platforms


Applications & analysis tools


Enterprise visualization


Reporting & dashboards

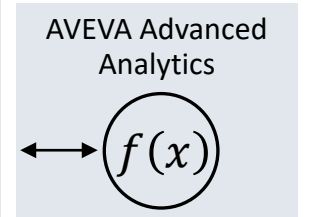
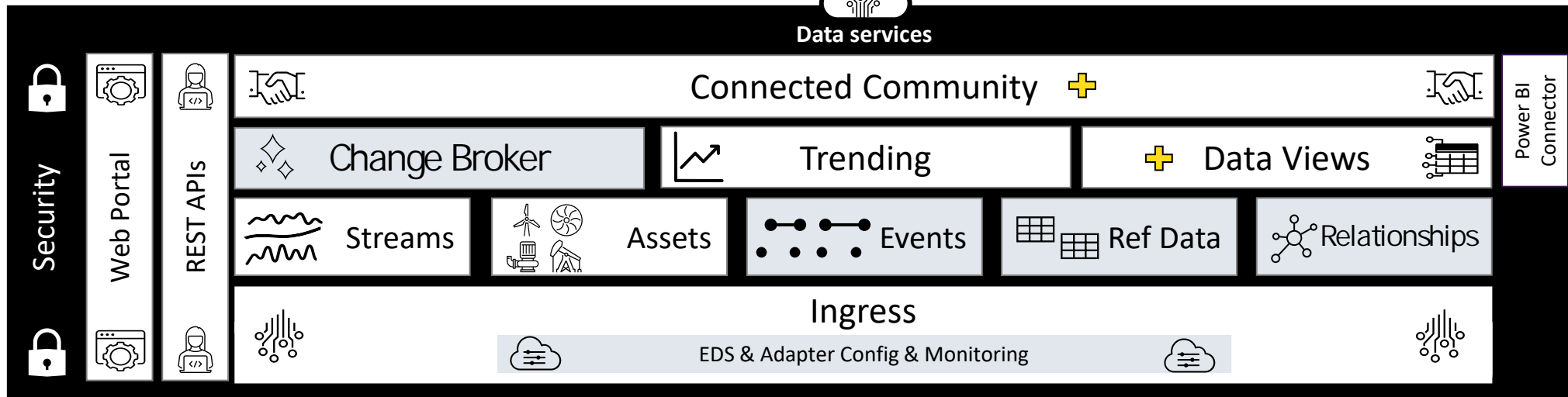

Production performance


Data sharing


Custom & partner applications


New & Underway
+ Enhancements

CONNECT




OMF Apps & Remote assets


AVEVA Adapters


Edge Data Store


AVEVA Production Management


AVEVA PI Server


AVEVA Historian


AVEVA System Platform

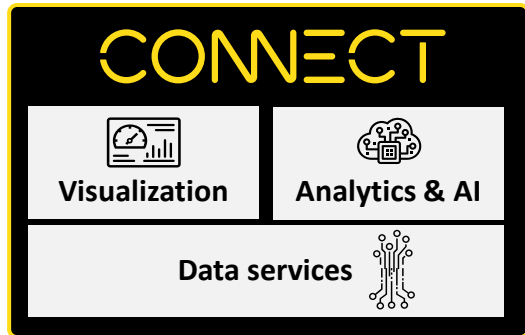
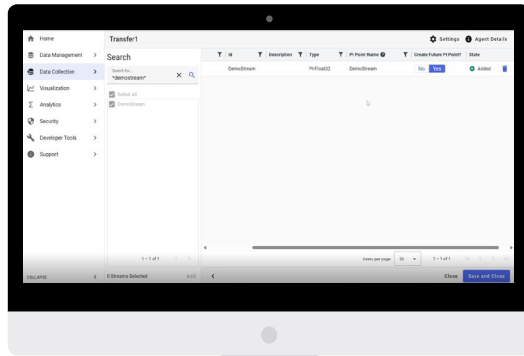

AVEVA MES


Cloud data sources

CONNECT write back to AVEVA PI Server

CONNECT to PI Agent: Write back from CONNECT to AVEVA PI Server

CONNECT to PI Agent



Data engineers Data scientists



AVEVA PI System

Operators Operations SMEs

Features

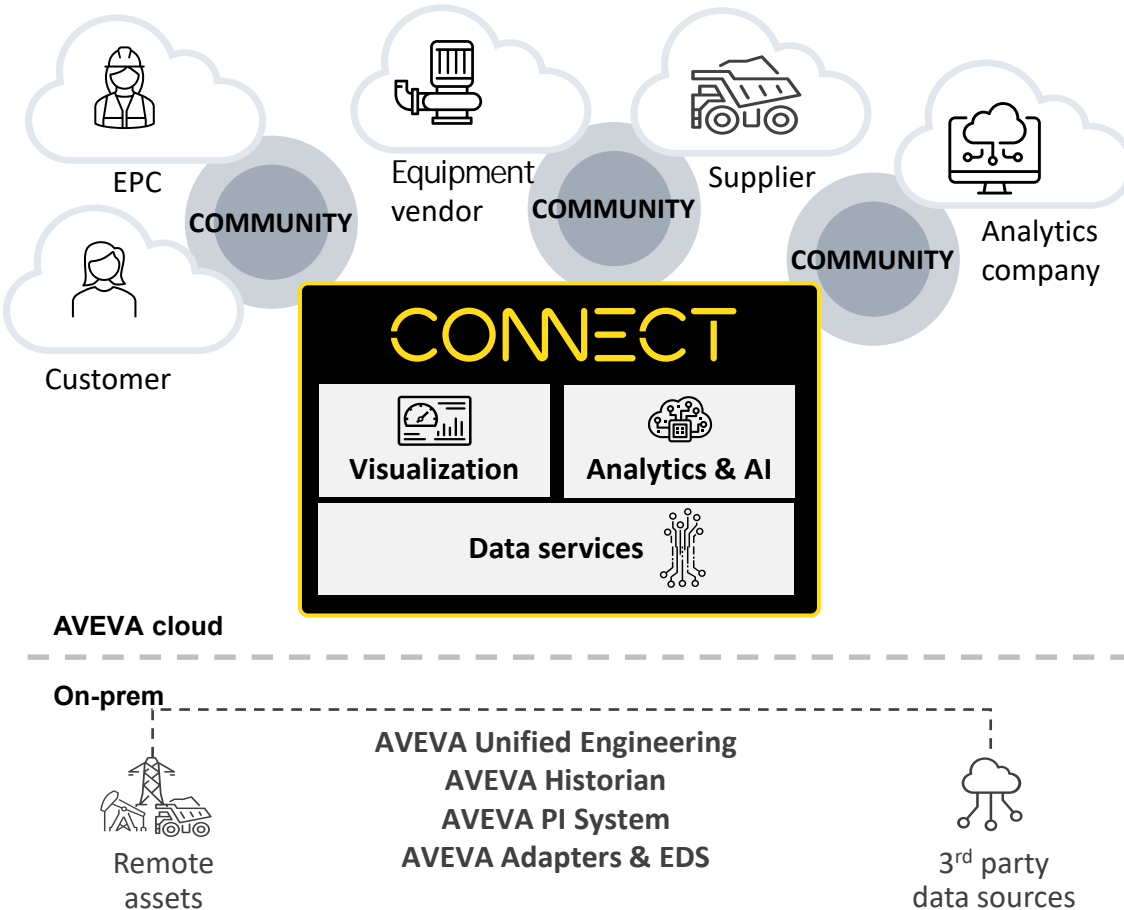
- Transfer CONNECT data streams to tags in PI Server
- Works with real-time, historical, and future data streams
- Supports backfilling and transfer to high availability collectives
- Manage CONNECT to PI Server data flows centrally from cloud

Benefits

- Use advanced analytics capabilities in the cloud and bring the results and insights back on-premises
- Enhance collaboration between operations domain experts and data scientists
- Empower operations with advanced analytics insights using their familiar tools and existing workflows

CONNECT for Community data & project sharing

Securely share data in context with your trusted business partners



Features

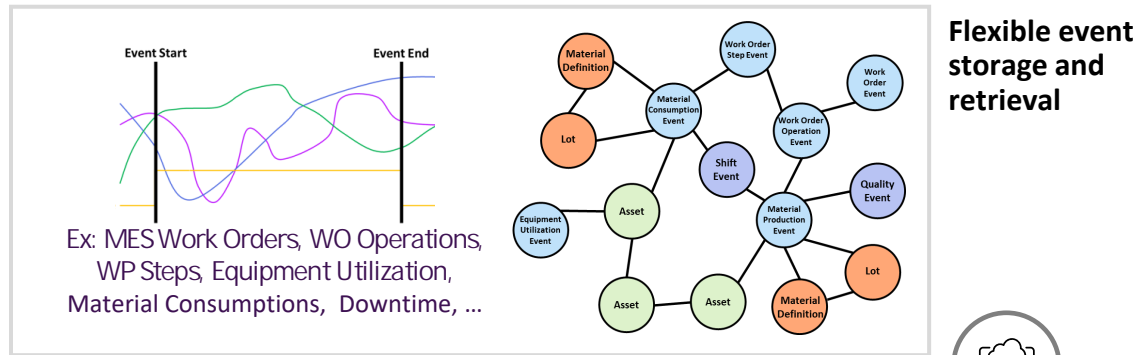
- Bi-directional and secure data sharing across tenants
- Granular control over your data and what data each partner sees
- Data is always up to date

Benefits

- Share Engineering projects without copy/sync operations
- Shared operational data can be:
 - Trended in CONNECT data services
 - Shaped and leveraged in data views and REST APIs to drive machine learning and AI projects
 - Visualized in Power BI using our Power BI connector
 - Shared across custom applications, AI/ML platforms, or third-party analytics tools, like Grafana, via REST APIs
 - Queried for changes with our new data change broker

CONNECT Data services – Event data store

Store events in CONNECT and provide a rich contextual search GraphQL API for retrieving the information

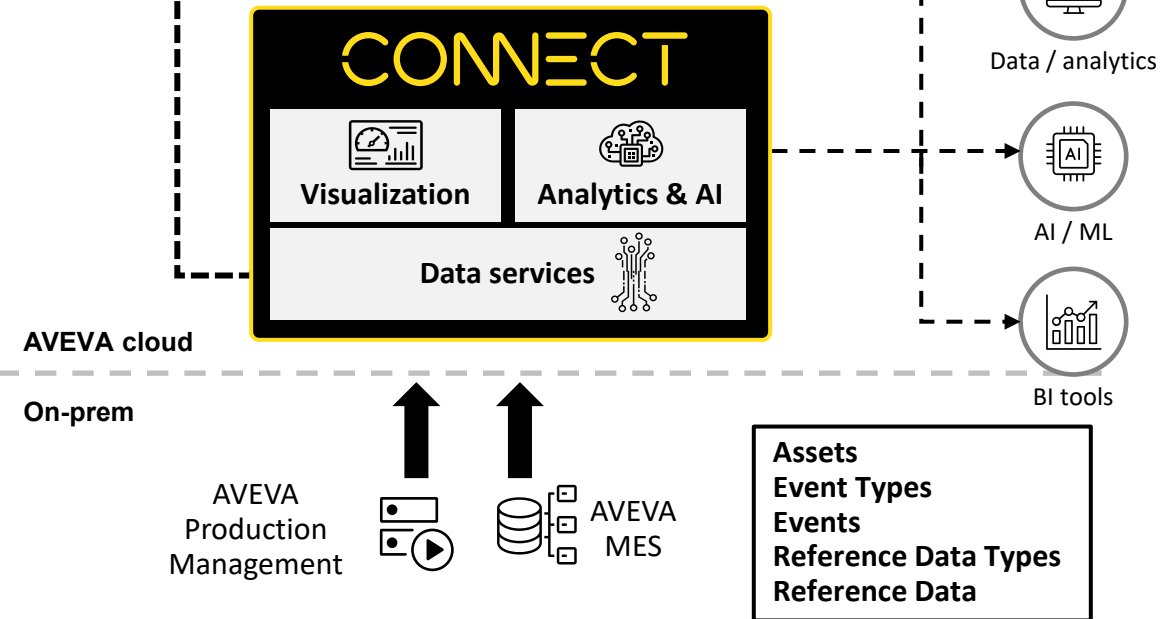


Features

- New data historization and retrieval for industrial *events*
- Flexible schema for events and reference data
- Rich GraphQL API for querying event relationships

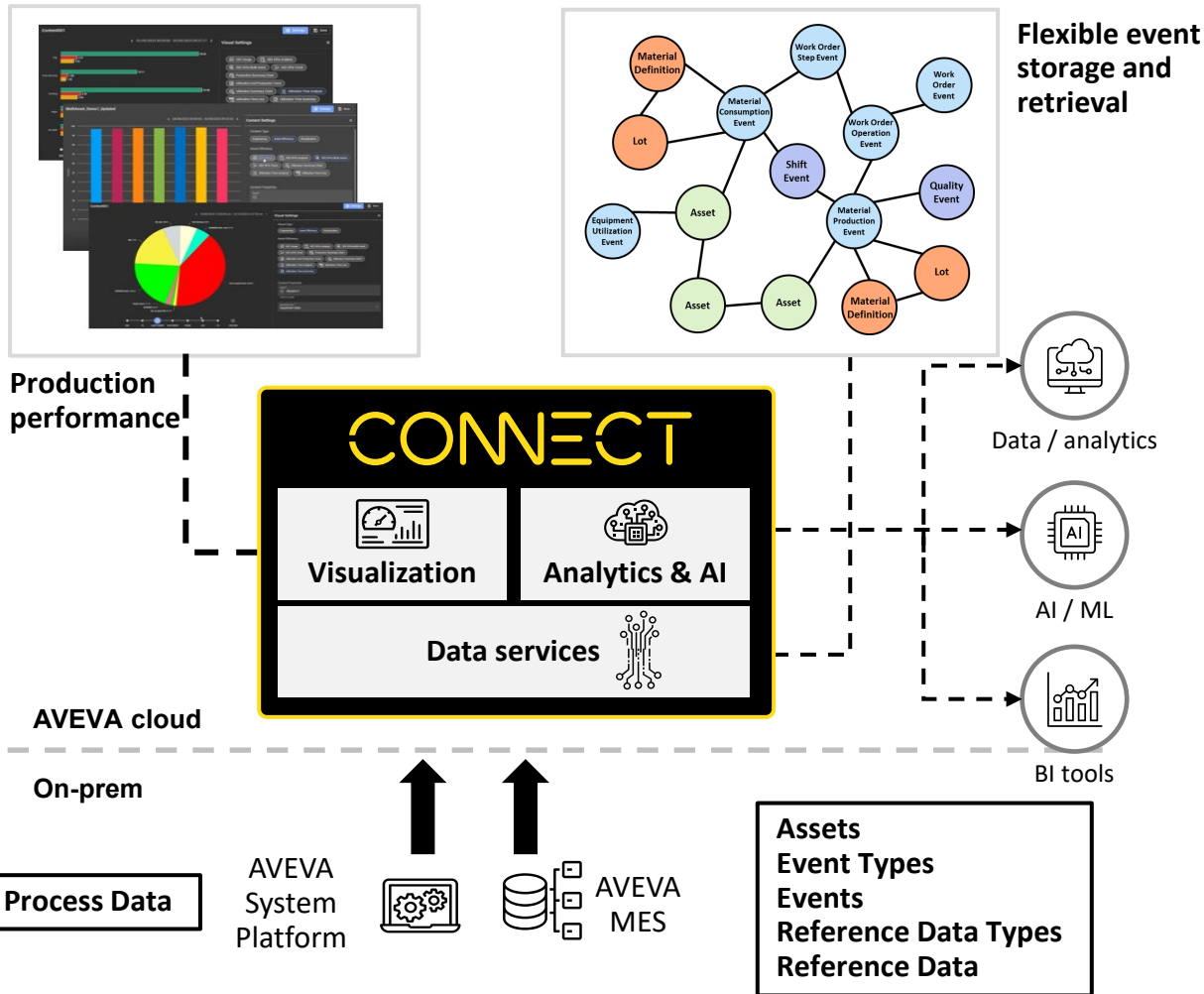
Benefits

- Manages industrial events in a single repository across a network of plants
- Provides enterprise-wide visibility into manufacturing operations
- Connects operational data with advanced analytics services



CONNECT for AVEVA MES

Integration with CONNECT enabling enterprise production dashboards and analytics across sites



Flexible event storage and retrieval

Features

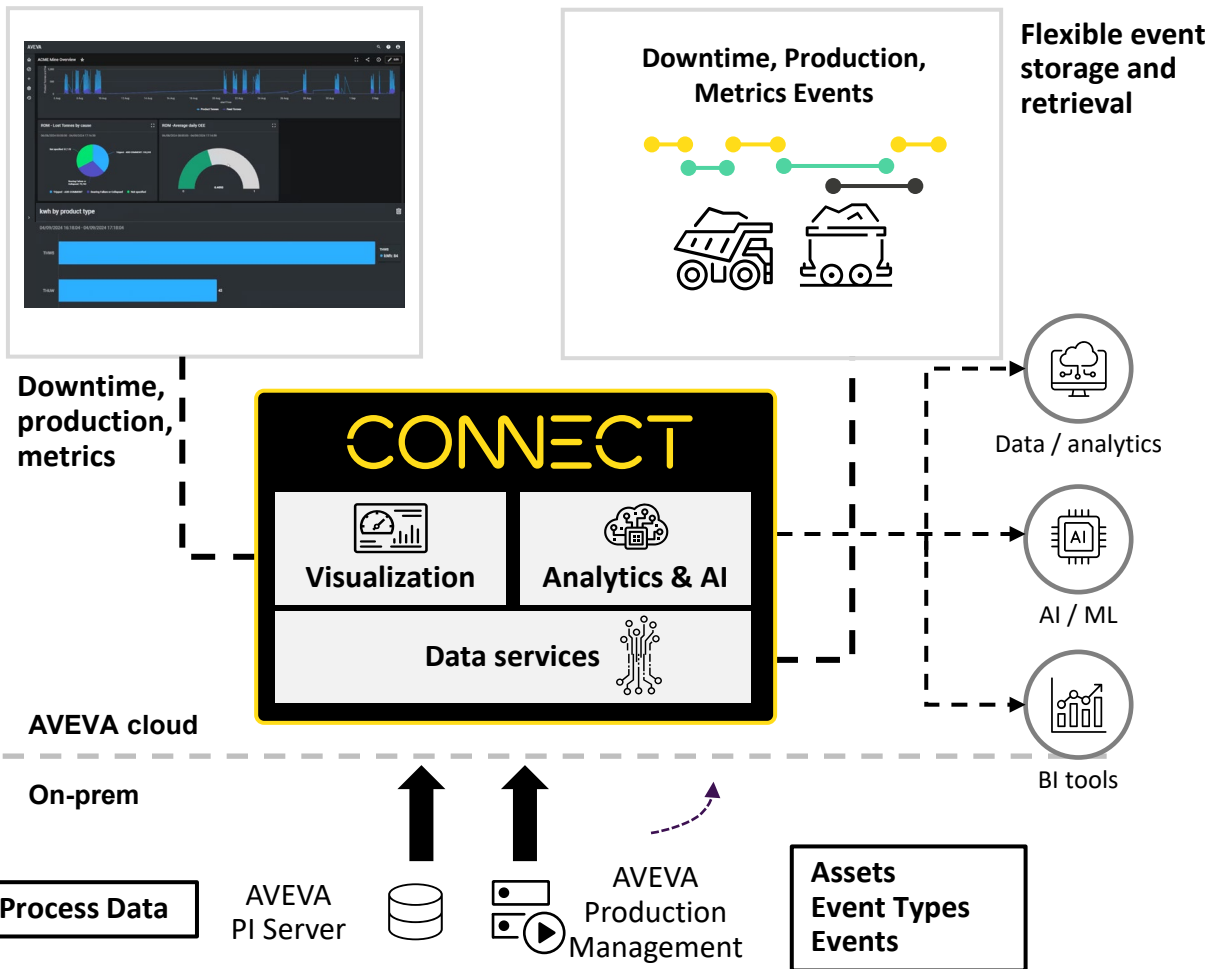
- Native AVEVA Manufacturing Execution System integration
- Store MES assets and events (production, utilization, shift, etc.) and associated reference data in CONNECT
- Visualize event data and other operational data together in a single plane of glass using CONNECT visualization.
- Rich GraphQL API for querying event relationships

Benefits

- Manages production data in a single repository across a network of plants
- Brings MES data and process data together
- Provides enterprise-wide visibility into manufacturing operations
- Connects operational data with advanced analytics services

CONNECT for AVEVA Production Management

Store and visualize event data such as downtime, production, & metrics data in dashboards



Features

- Native AVEVA Production Management integration
- Store equipment hierarchy information including application, site, area, and equipment stored as assets in CONNECT.
- Store downtime, production, and metrics modules as events in CONNECT.
- New generic event-based visualization widgets.

Benefits

- Visualize event data and other operational data in a single pane of glass.
- Provides enterprise-wide visibility into manufacturing operations
- Connects operational data with advanced analytics services

Data change broker: Sign up for and query changes to stream data | Data views supports Parquet

Industrial operations data is always changing...



Live data



Uploads of manual measurements



Recalculations



Edits of incorrect readings

... and there are consequences downstream



Less accurate predictions



Inaccurate BI reporting



Remotely monitoring
without the full data set



Service provider recommendations
based on incomplete data

Features

- Added ability to query change data from streams, eliminating challenges associated with changes in data
- Supports streams shared via community
- Capture changes to data (update, insert, replace, delete)
- Ability to query data sets in Parquet (format familiar and common to data scientists)

Benefits

- Streamline code management for obtaining data updates
- Avoid cumbersome queries for ensuring a complete and up-to-date dataset in BI reports
- Eliminate the hassle of handling duplicate data when out-of-order data arrives
- Minimize or eliminate cloud service costs associated with queries returning no data and processing duplicate data



Build robust dashboards in CONNECT



Composite views of information shown in context

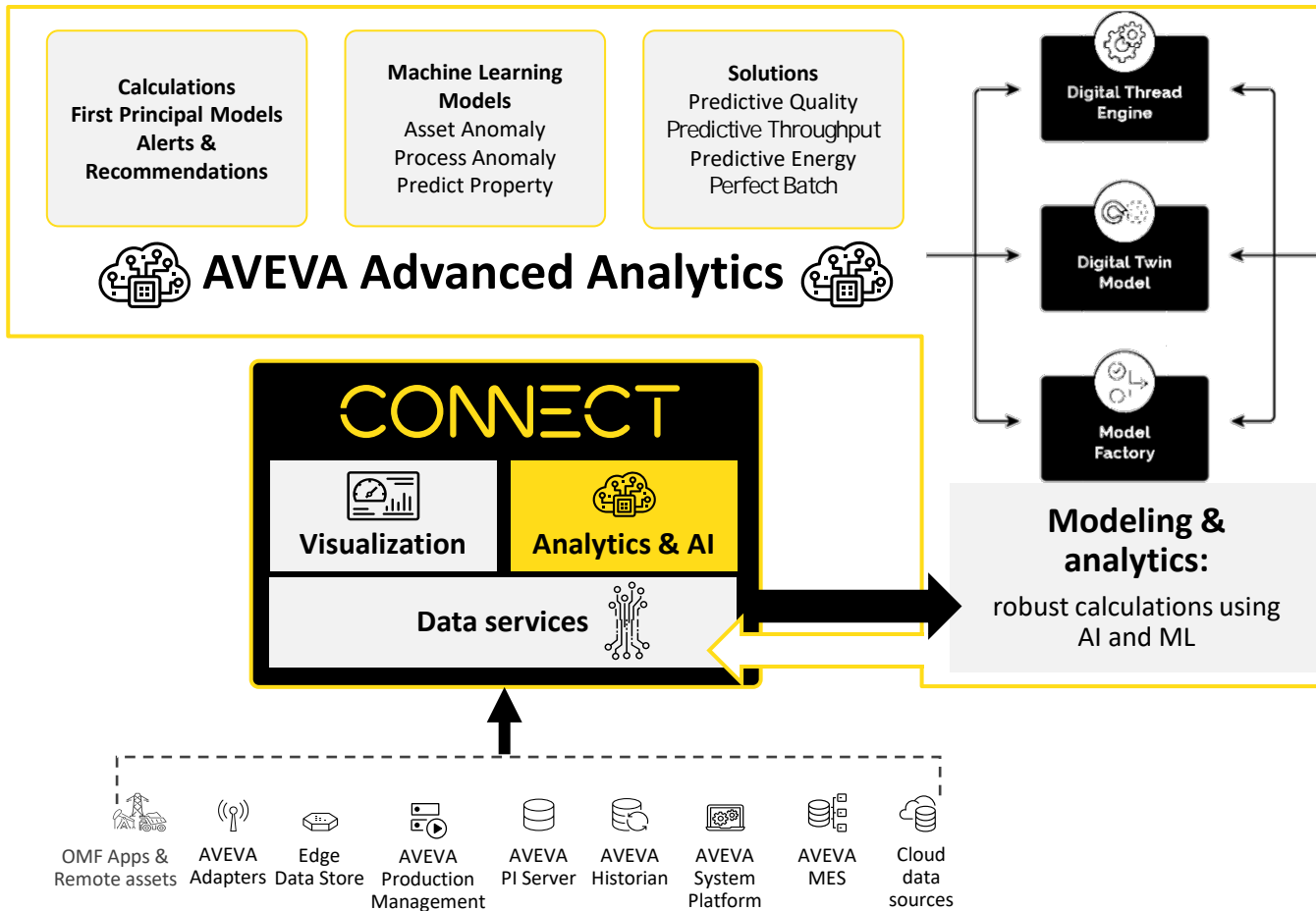
Features

- Discoverable, configurable visuals and dashboards, created using managed content libraries
- Use time-based and asset-driven navigation to set/change context across visuals within a dashboard
- Ability to access content using recently viewed/most viewed content, content favorites or search
- Visual and dashboard link sharing

Benefits

- Data accessibility across an organization's ecosystem, focusing on remote specialist teams
- Supports situational investigation, drives performance, coordination and responsiveness
- Share actionable information with reliability, business, and other teams (from anywhere through a browser)
- No coding experience needed

Transform operational data with AI for actionable insights



Features

- No-code, AI solution
- Pre-built machine learning models & solutions for process and asset optimization
- Create custom analytics logic and calculations, including event triggers, and alerts
- Natively writes data back to CONNECT data services

Benefits

- Predict asset behaviour and optimize processes
- Identify patterns and predict equipment performance
- Drive efficiency by improving process workflows
- Accelerate analytics initiatives through CONNECT
- Rapid time to value – empowers all users with actionable insights in real time.



AI-driven optimization for industrial excellence



Boost process and asset performance with autonomous insights from pre-built AI models

Process Optimization



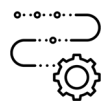
Perfect Energy

Operate at the sweet spot of production and energy consumption



Perfect Batch

Continuously evaluate batch performance and automate actions



Perfect Production

Optimize production performance across your enterprise



Perfect Quality

Reduce variability, eliminate losses, and improve operational flexibility

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

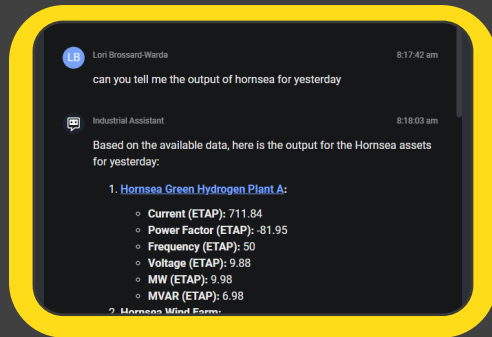


Asset Life

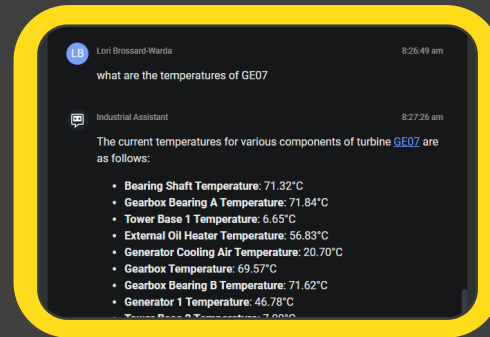
Maximize serviceable life and proactively manage failure risks at scale

Industrial AI Assistant

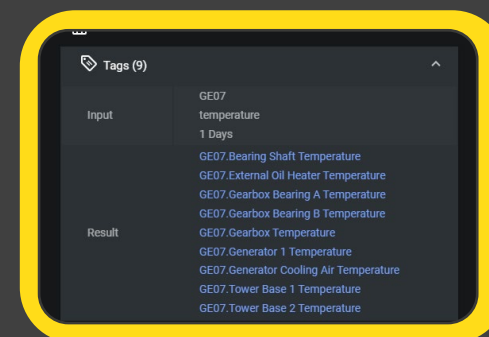
Human speech interface to your data in CONNECT



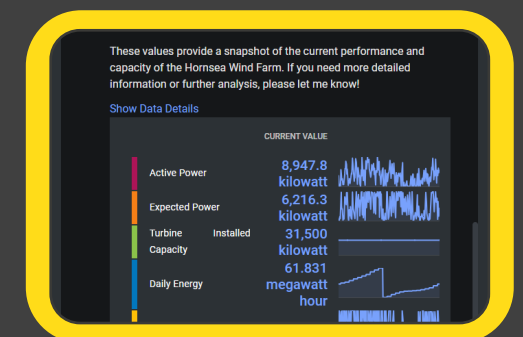
Natural Language Interface



Content Search and Summarization



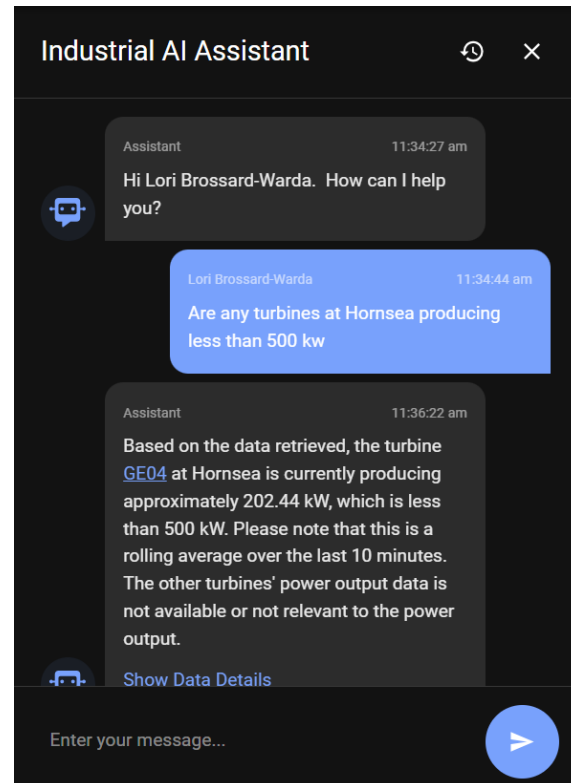
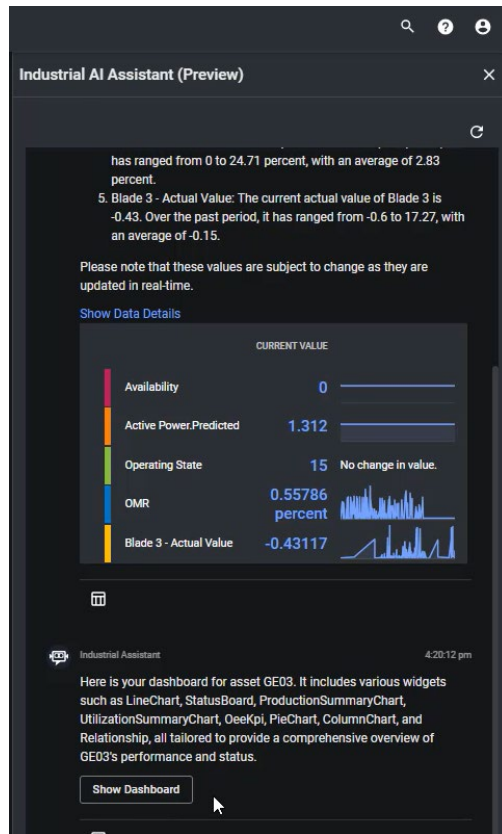
Citations to show our work
(Transparency and Traceability)



Generate charts inline

Industrial AI Assistant

Leveraging the power of generative AI in CONNECT



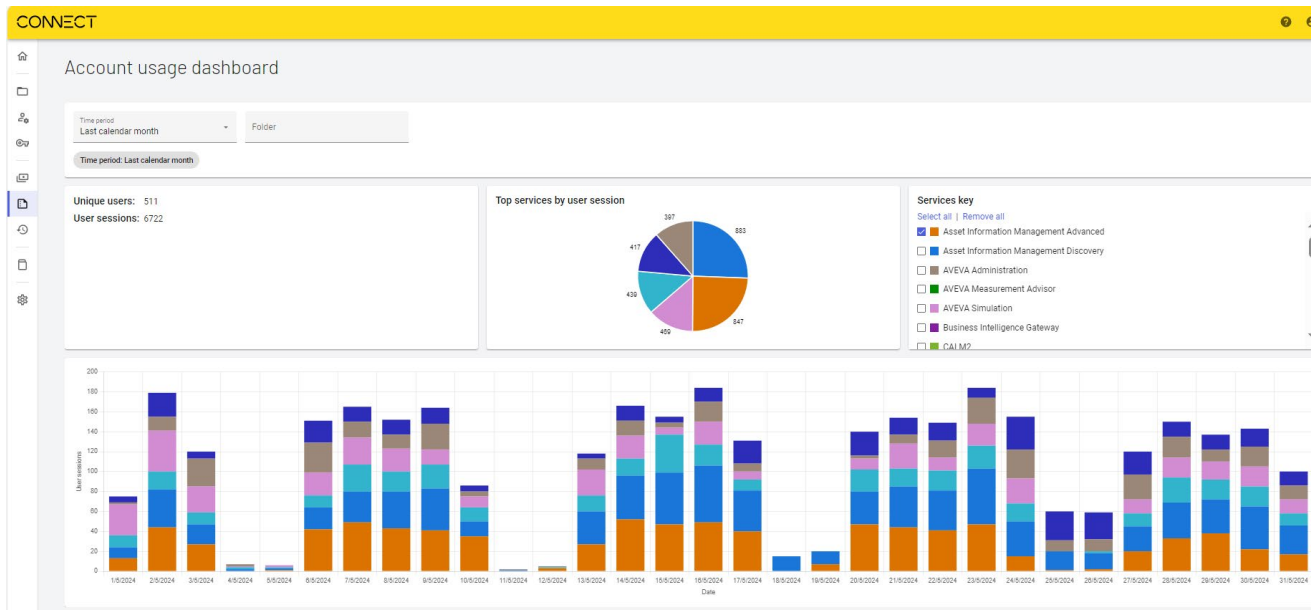
Features

- Integrate the power of generative AI with your industrial data, so you can quickly find and summarize the information you need
- Query using common language statements through a chat interface
- Build relationships using inferencing, no need to pre-build an extensive knowledge graph

Benefits

- Fast onboarding - data inferencing finds relationships without a hierarchy or structured entity relationships
- Objective-driven queries - break down complex queries into multiple sub-tasks to get a consolidated response
- Supplement SMEs and non-SMEs alike with a digital intellect

A single interface for both cloud and on-premises applications



Features

- Third party access to CONNECT data reports
- Access up to 12 months of CONNECT user and usage data

Benefits

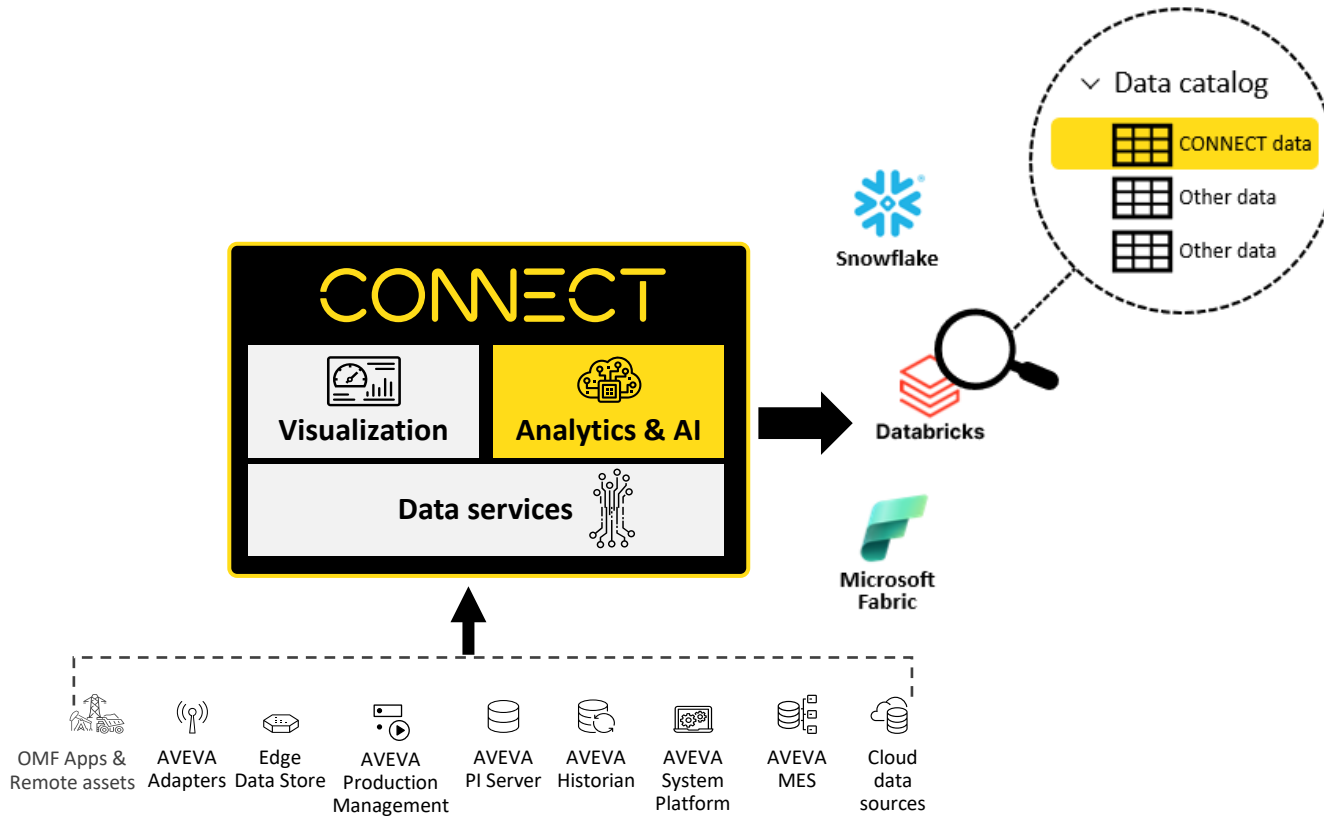
- Analysing CONNECT user data in context with business reports
- Access to more historical usage data, enables you to better understand product usage and optimize your industrial software investments

CONNECT

Upcoming innovations: In development

CONNECT Data science with third-party data platform integrations

Direct connectivity, no data replication



Features

- Storage efficiency, designed for industrial data volume and velocity for performance
- Data synchronization
- Native contextualization for manufacturing and industrial process (assets and metadata)
- Native robust cyber-security standard design
- Streamlined development with built-in resources optimization

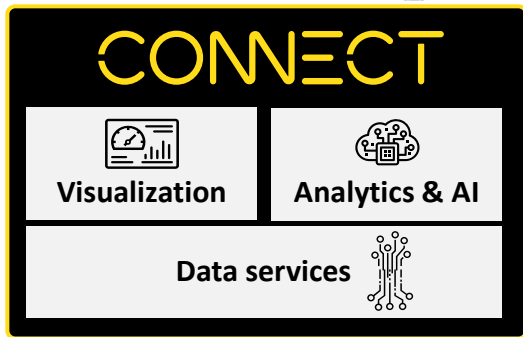
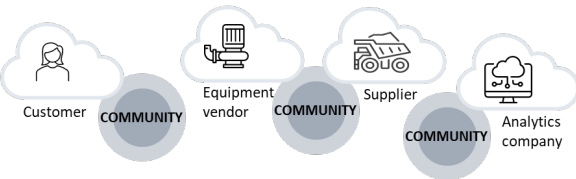
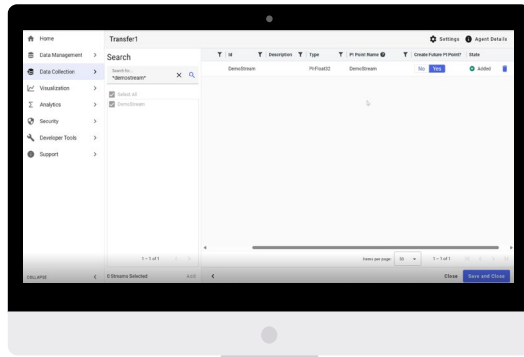
Benefits

- **Data integrity:** Keep systems updated for timely, data-driven decisions
- **Storage efficiency:** Reduce data duplication for cost savings and better resource use
- **Native contextualization:** Provide data with context for accurate interpretation
- **Streamlined development:** Save time and resources with pre-built integration

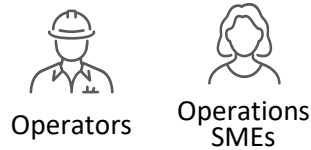
CONNECT Communities write back to AVEVA PI Server

CONNECT to PI Agent: Write back from CONNECT shared data to AVEVA PI Server

CONNECT to PI Agent



AVEVA PI System



Features

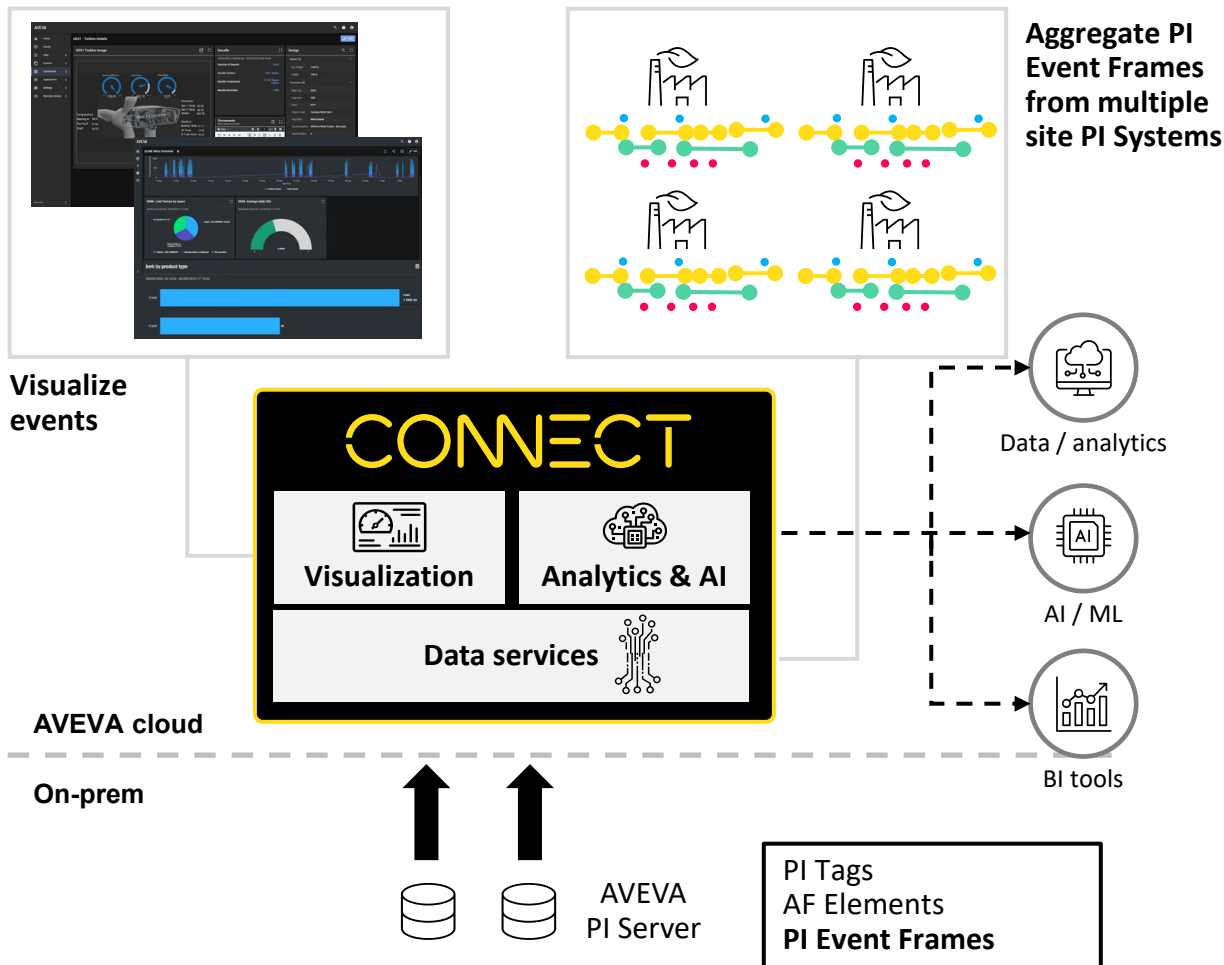
- Transfer data streams shared through CONNECT communities to PI Tags.
- Works with real-time, historical, and future data streams
- Supports backfilling and transfer to high availability collectives
- Manage CONNECT to PI Server data flows centrally from cloud

Benefits

- Use advanced analytics capabilities in the cloud and bring the results and insights back on-premises
- Enhance collaboration between operations experts and data scientists and trusted business partners.
- Empower operations with advanced analytics insights using their familiar tools and existing workflows

CONNECT Stores PI Server Event Frames

Elevate AVEVA PI Server event frames for expanded enterprise use cases



Features

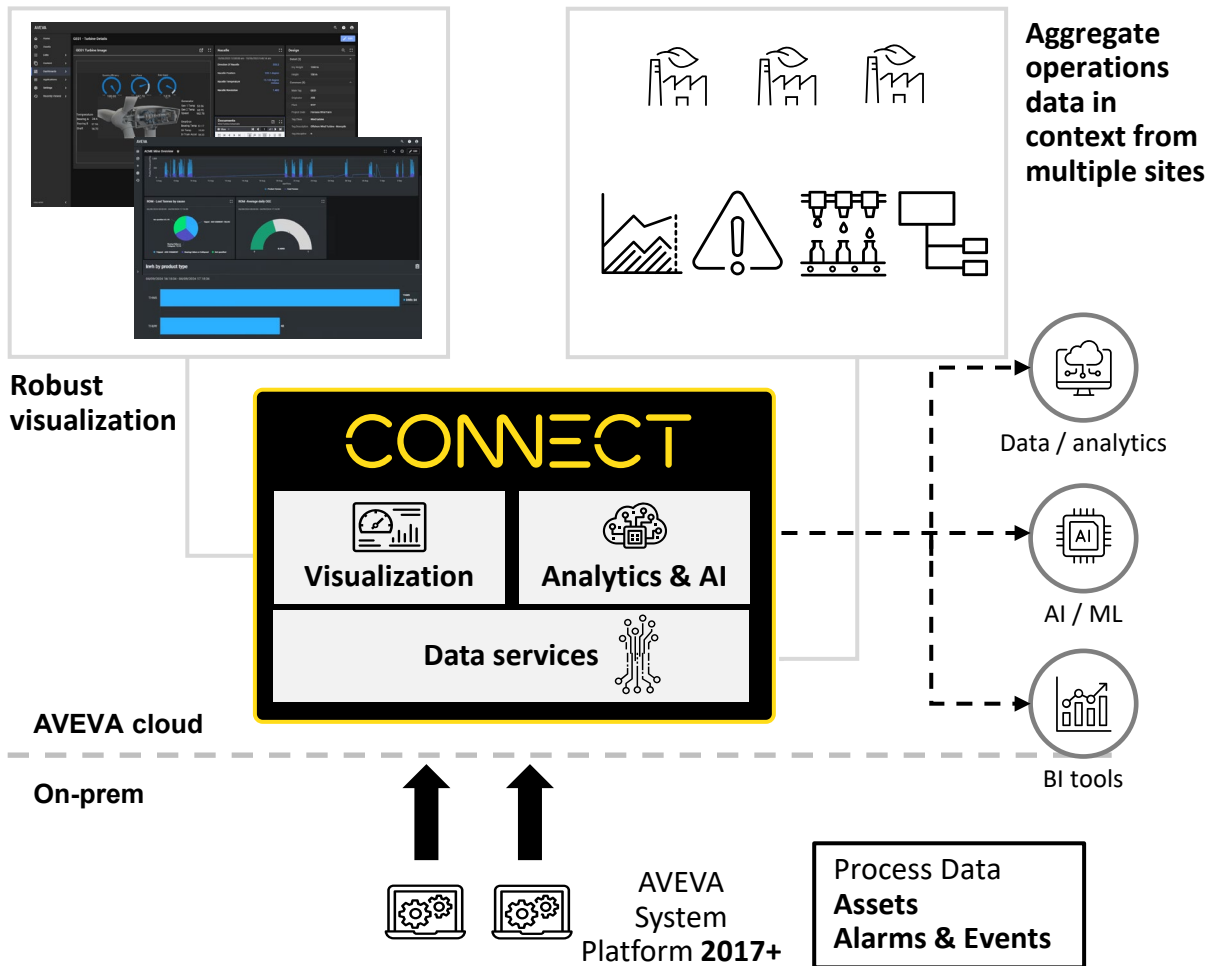
- Transfer PI Server's event frames to CONNECT.
- Define criteria to select event frames and capture related element and attribute PI Server tag data.
- Supports real-time transfer and backfilling.
- Rich contextual search GraphQL API for searching and retrieving.
- Event widgets for displaying event frames in CONNECT visualization

Benefits

- Centrally historize events and take advantage of cloud scalability.
- Perform advanced analytics and apply AI/ML models on event data.
- Expose event data to custom or partner applications.
- Converge event frames with other industrial information through enterprise visualization in CONNECT.

CONNECT Stores data from System Platform 2017+

Publish process data, asset hierarchy, and alarms & events data to CONNECT



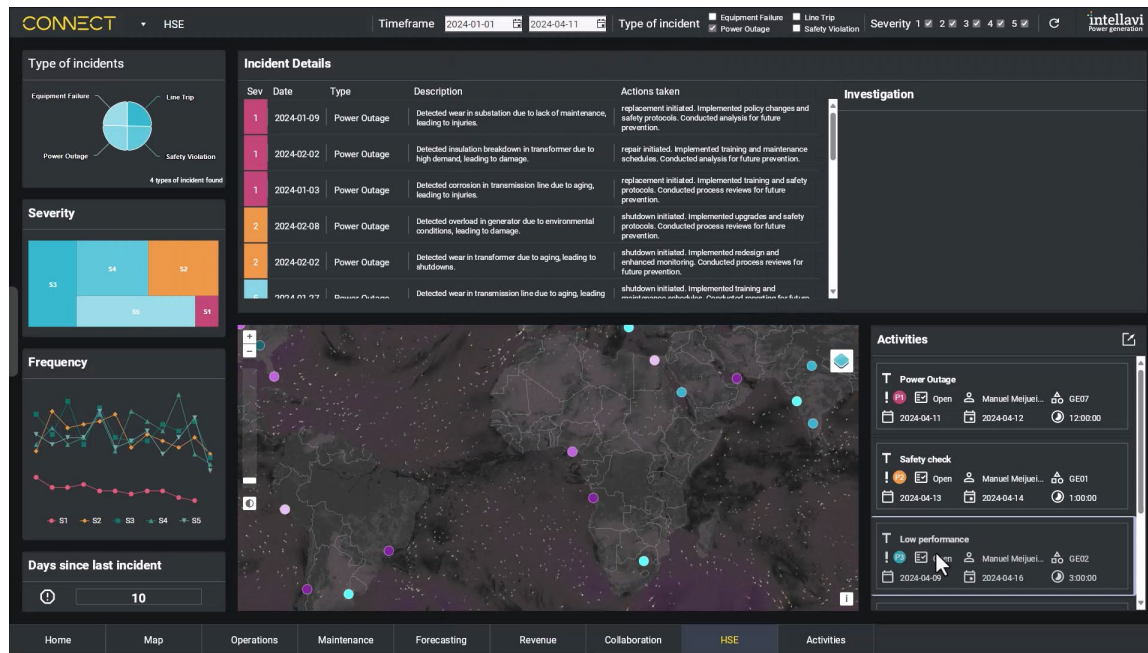
Features

- Independently installed Historian publishing agent supporting all System Platform 2017 and later versions.
- Support various customer plant floor architectures, securely publishing data from historians in the secure control network.
- Publish process data to CONNECT.
- Publish assets and asset hierarchy to CONNECT.
- Publish alarm & event data to CONNECT.

Benefits

- Centrally historize all data from all System Platform versions across multiple sites.
- Perform advanced analytics and apply AI/ML models on the data.
- Expose System Platform data to custom or partner applications.
- Converge System Platform data with other industrial information through enterprise visualization in CONNECT.

Deploy specialized role-based experiences in CONNECT



Features

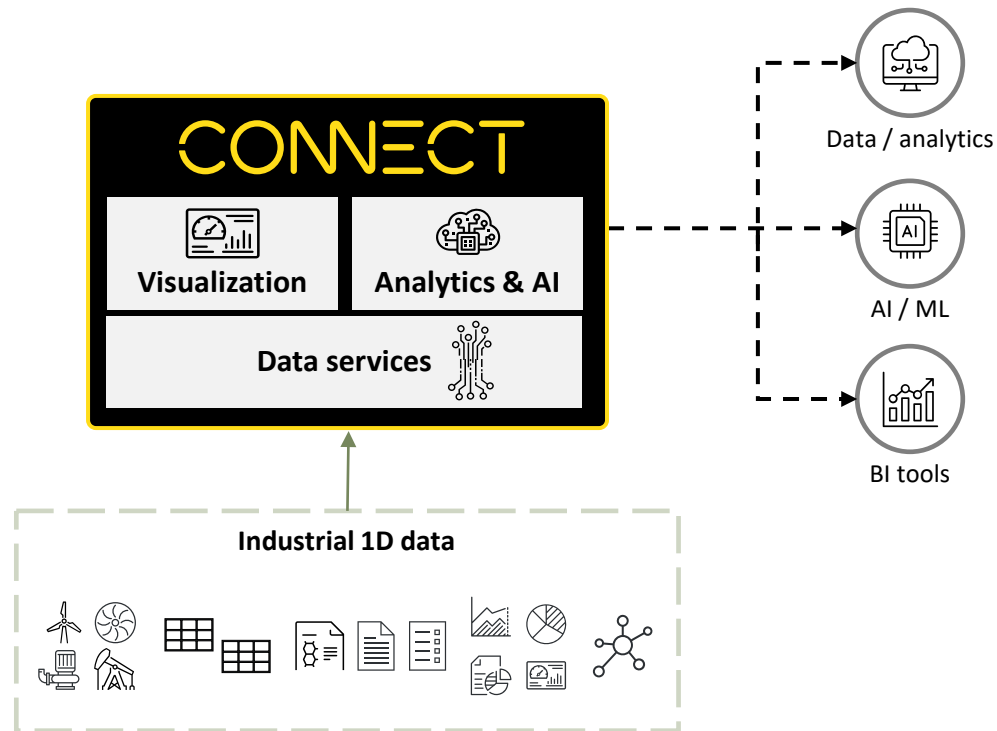
- Custom build, self-contained experiences, leveraging visuals from managed content libraries
- Built in navigation, with complex drill-down and cross context interaction
- Providing rich animations and dynamic, customized styling
- Integrate external reporting and collaboration capabilities

Benefits

- Custom KPI focused visualization, from a plant to a global level, with 'at-a-glance' monitoring, investigation and decision support

CONNECT New entity store for industrial 1D data

Storing more types of industrial data on our journey towards a harmonized digital twin



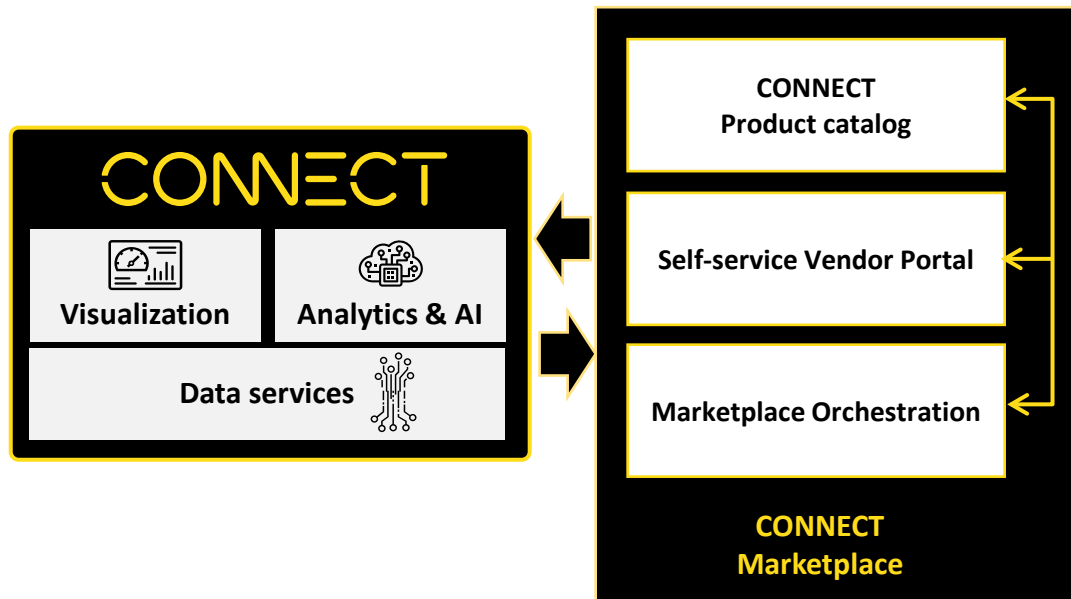
Features

- New entity store for storing industrial 1D data and entity relationships.
- Designed to store assets, reference data, documents, content entities.
- Entities can be composed of properties from multiple data sources.
- Rich relationship model between all entities, streams, and events.
- Rich GraphQL API for querying entities and related information.

Benefits

- Centrally historize 1D data from engineering & operations sources & take advantage of cloud scalability.
- Leverage the 1D contextual data in advanced analytics & AI/ML models.
- Expose 1D data to custom or partner applications.
- Converge 1D data with other industrial information through enterprise visualization in CONNECT.

One stop shop with solutions for your industrial challenges



Features

- Digital product catalog
- CONNECT Ecosystem vendors self-service onboarding & products listing
- Integration with CONNECT experience

Benefits

- Variety of solutions from trusted vendors, making it easy for customers to find exactly what they need
- Increased solutions visibility and reach to CONNECT customers
- Seamless customer experience to find, explore and purchase offerings that best fit their needs
- Unlocked new business opportunities through CONNECT Marketplace experiences



CONNECT roadmap themes

Hybrid: extend the value of AVEVA infrastructure & authoring

Secure, rapid connectivity – powerful new use cases

System of record for industrial data, apps, & data science capabilities

Flexible: from edge to community, from data to AI insights

Connect and manage everything from edge devices to data sharing

Powerful analytics and visualization from edge to cloud

Industrial digital twin: bridge engineering & operations context

Shared version of the truth for analytics, visualization, and AI

Enhance visibility, consistency, and insights across operations

Ecosystem & enterprise: drive digital transformation

Leverage a network of partner applications and services

Flexibly use, monitor, and provision AVEVA SaaS and PaaS capabilities

RECOMMENDED PRODUCT TALKS

What to see at AVEVA World 2024!

Accelerating remote assets insights with CONNECT

Tuesday, October 15 @ 3:15pm
Room 243

Cloud-Scale AI with CONNECT - From Point-and-Click Simplicity to Databricks Integration

Tuesday, October 15 @ 4:00pm
Room Salle Passy

AVEVA Industrial AI: Generate impact to achieve greater goals

Wednesday, October 16 @ 9:00am
Room Amphitheatre Bleu

AVEVA & NVIDIA: AI-Driven Autonomous Operations

Wednesday, October 16 @ 9:45am
Room Amphitheatre Bleu

Increasing industrial information effectiveness, through enterprise visualization

Wednesday, October 16 @ 10:45pm
Room 253

Communities for AVEVA Unified Engineering: Unparalleled collaboration in Engineering and Design enabled with CONNECT

Wednesday, October 16 @ 1:15pm
Room 241

Security architecture of CONNECT data services

Wednesday, October 16 @ 3:30pm
Room 242a/b

RECOMMENDED CUSTOMER TALKS

What to see at AVEVA World 2024!

Agnico Eagle: CONNECT data services as a Gateway to Haul Truck Analytics

Agnico Eagle Mines

Tuesday, October 15 @ 3:15pm

Room Amphitheatre Bleu

Panel: Driving Sustainable Innovation - Collaborative Strategies for Energy Transition

DERNetSoft, Protium, AVEVA

Tuesday, October 15 @ 2:15pm

Room Amphitheatre Bleu

Harnessing AVEVA Advanced Analytics for Enhanced Quality Control powered by CONNECT at Coromandel International Limited

Coromandel International Limited

Wednesday, October 16 @ 1:15pm

Room 251

CONNECT data services for a data analytics platform at F. Hoffmann-La Roche

F.Hoffman-La Roche

Wednesday, October 16 @ 11:30am

Room 252a/b

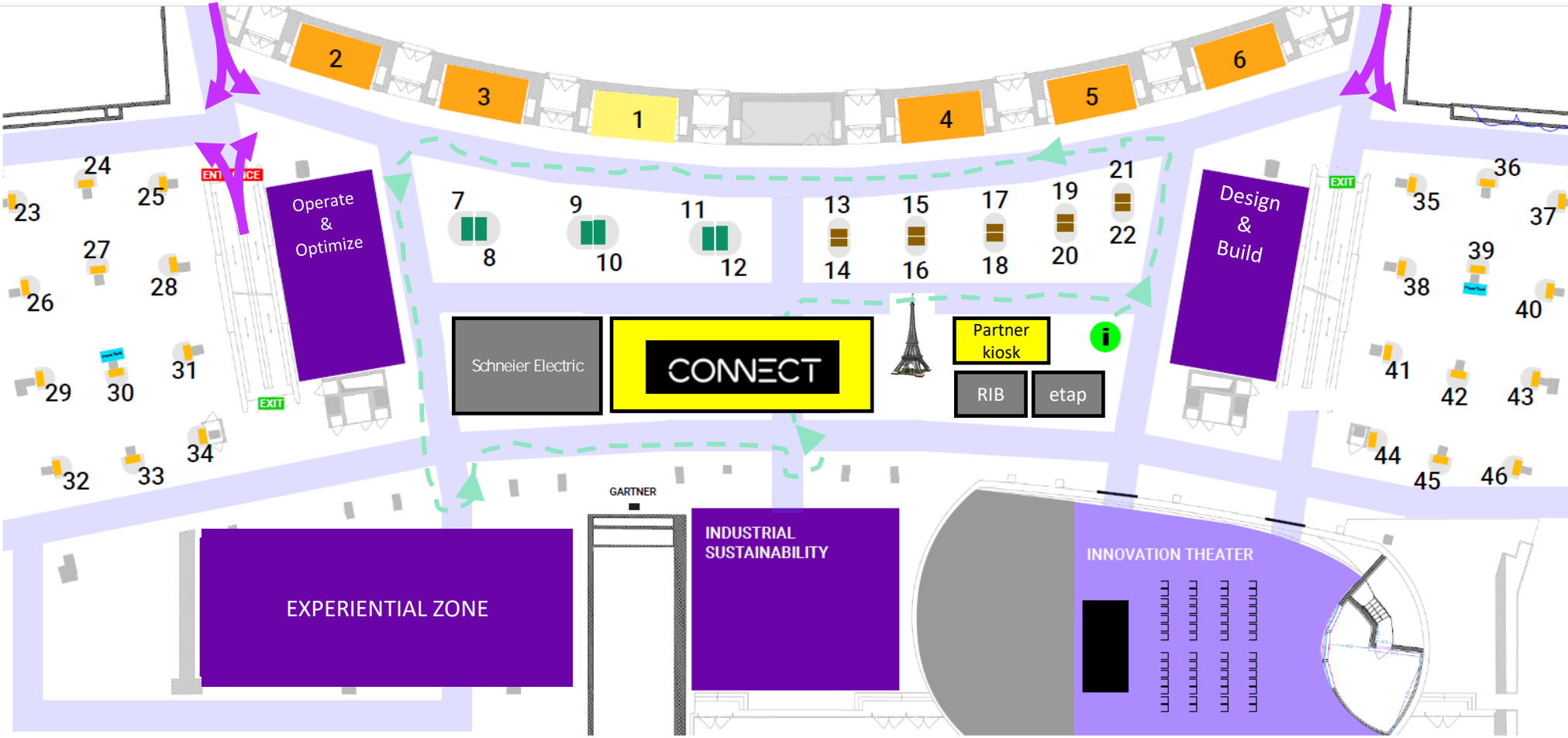
Nestlé: Harnessing advanced analytics and real-time data in the cloud to enhance product quality and minimize waste

Nestlé

Wednesday, October 16 @ 2:45pm

Room 252a/b

Where to find CONNECT on the Expo floor!



- Highlights:**
- Product features
 - Use cases
 - UX VoC sign-up
 - Meet the Experts!



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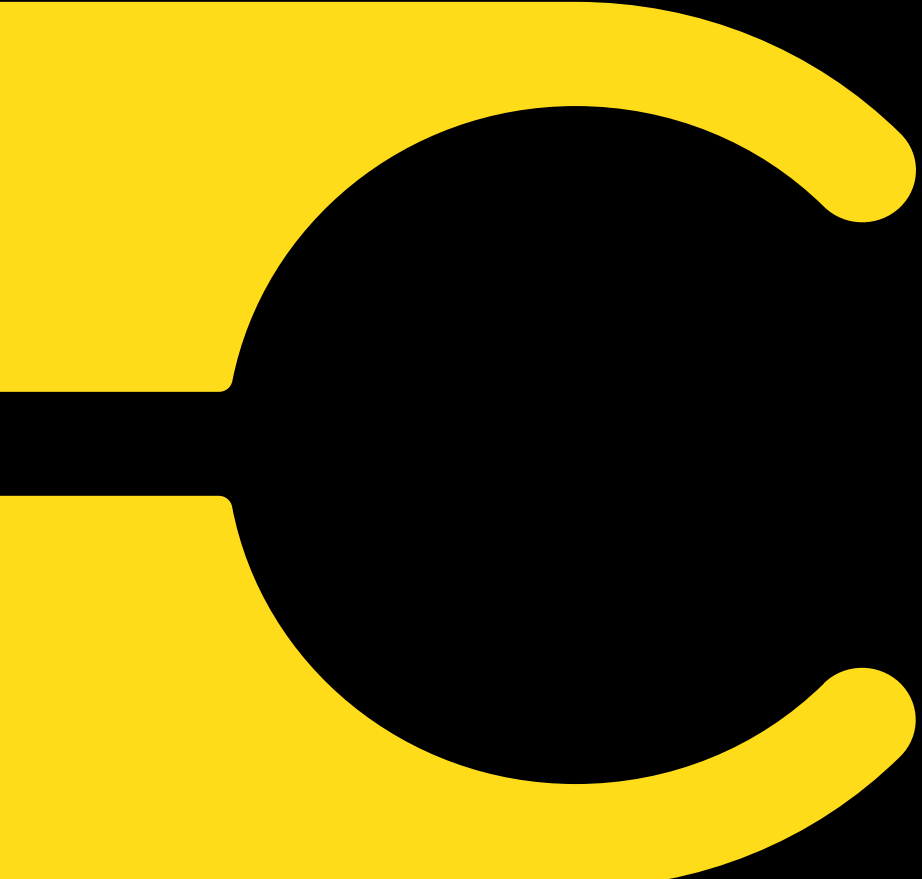
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ABOUT AVEVA

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