NOVEMBER 2022

AVEVA™ Connect:
Vision & Roadmap

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AVEVA

Agenda

Connecting with data

AVEVA Connect

Enhancements to help your digital transformation

Industrial cloud platform and software as a service

AVEVA Data Hub enhancements

Remote operations monitoring via AVEVA technologies

Engineering information and your digital twin

Secure data sharing in Communities

Where AVEVA Connect is going

AVΞVA

Dominion Energy®

Dominion Energy collates data streams from multi-sourced and distributed power generation units, through their cloud-based AVEVA Data Hub. Real-time and dynamic cloud-based data is gathered from the network and made available to its residential, commercial and wholesale customers, enabling companies to validate their renewable energy commitments and ESG reporting requirements.

Benefits include:

Enhanced visibility and efficiency

Secure shared insight into energy and power generation and asset utilization

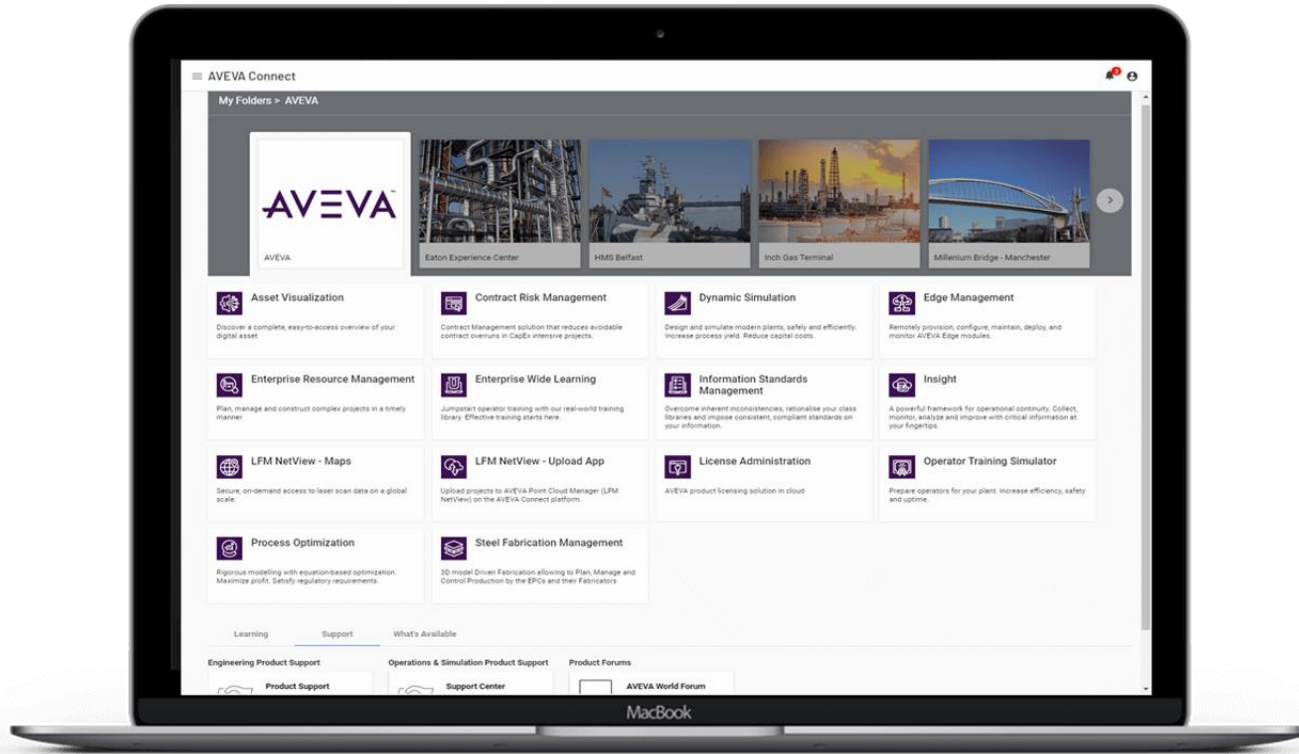Efficient energy use, mitigating costs and potential critical outages

AVEVA Connect

Accelerate time to value and scale faster with AVEVA Connect, our industrial cloud platform
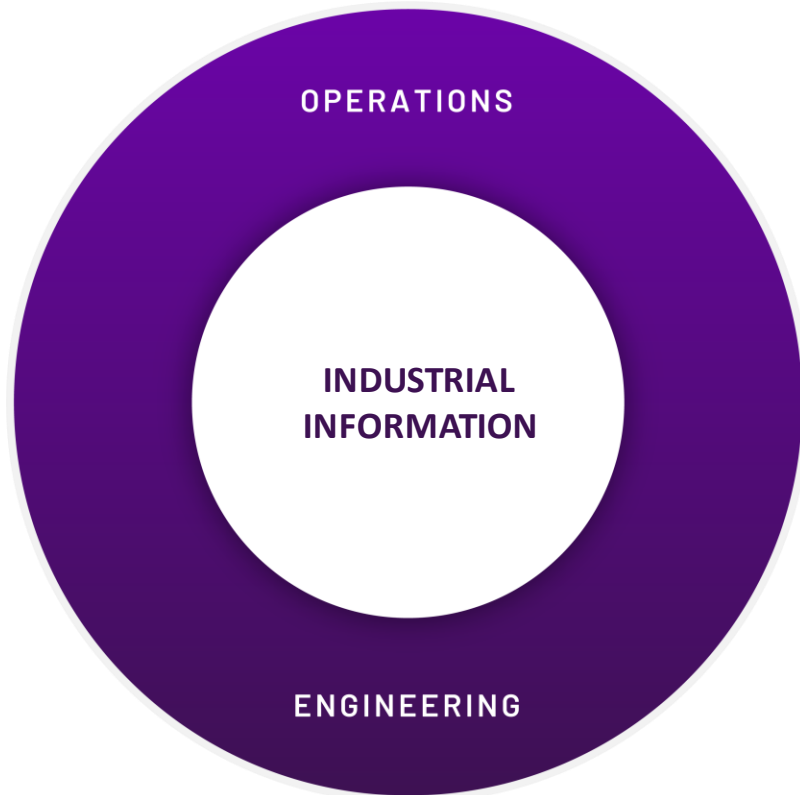
AVEVA

What is AVEVA Connect?

Our industrial cloud platform is your digital transformation hub

- ✓ Transform faster
- ✓ Enable new ways of work
- ✓ Connect and collaborate
- ✓ One single source of truth
- ✓ Move from CapEx to OpEx
- ✓ Lower dependency on IT
- ✓ Always the latest and greatest features
- ✓ Easily scale up and down
- ✓ Built with security, resiliency, high-availability

AVEVA

An Industrial Cloud Platform

AVEVA's comprehensive portfolio, on AVEVA Connect

OPERATIONS

INDUSTRIAL INFORMATION

ENGINEERING

AVEVA is a leader in industrial digital transformation

SUBSCRIBE.

AVEVA Flex

Commercial subscription program to unlock flexible access to any amount and any mix of AVEVA software both on-premise and cloud.
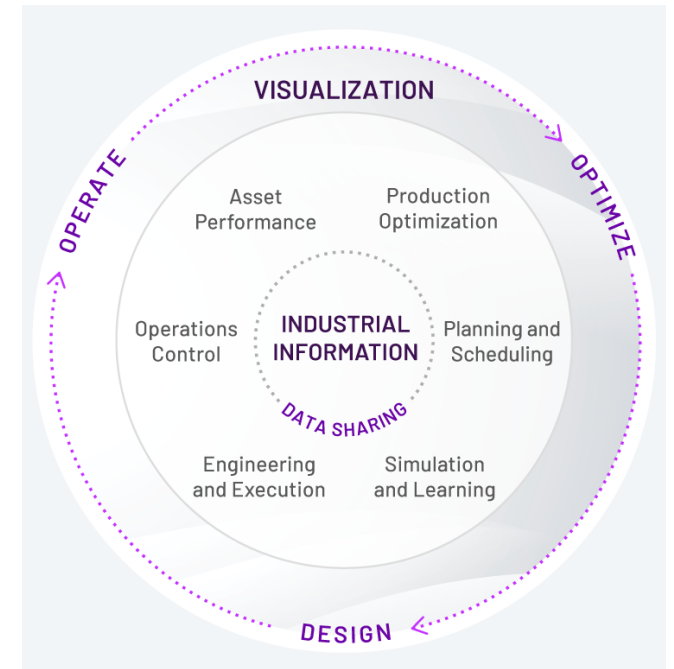
One common subscription program

CONSUME.

AVEVA Connect

Industrial cloud platform to transform faster, reduce IT costs, scale up and down with flexibility and securely consume our portfolio.
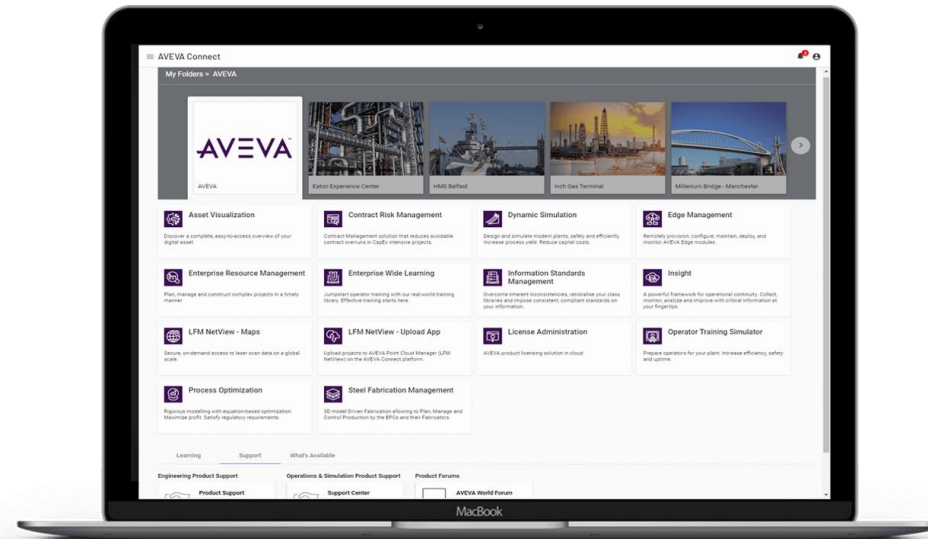
One industrial cloud platform

EXPERIENCE.

VISUALIZATION

OPERATE

OPTIMIZE

Asset Performance

Production Optimization

Operations Control

INDUSTRIAL INFORMATION

Planning and Scheduling

DATA SHARING

Engineering and Execution

Simulation and Learning

DESIGN

Full access across one comprehensive set of portfolio capabilities

AVEVA

Why AVEVA Connect ?

Collaborative

Remove organizational silos and enable transparent, real-time collaboration in a shared environment to allow unmatched levels of workforce efficiency.

Fast

Fast deployment and easy access to contextualized information and rich Artificial Intelligence, to make agile decisions and ensure sustainable growth.

Flexible

Lower total cost of ownership (TCO) and flexible consumption based on need. Scale up, or down, with the right tools at the right time.

Secure

Access the latest digital services built for data security and high availability (>99% uptime), with centralized user management and single sign-on.

AVEVA

# Advantages of leveraging Platform as a Service Software as a Service
(overlapping: Understanding everything as a Service)

Legend: ■ Traditional ■ Cost savings ■ Differentiated capabilities ■ Transformational capabilities

Traditional IT	IaaS	PaaS	SaaS	Industrial PaaS	Industrial SaaS
				Partner / Customer Applications	PaaS Native Applications
				Information Access	Information Access
				Data Enrichment Apps	Data Enrichment Apps
				Modeling	Modeling
				Optimized Storage & Access	Optimized Storage & Access
Applications	Applications	Applications	Applications	Data Capture & Normalization	Data Capture & Normalization
Data / Information	Data / Information	Data / Information	Data / Information	Data Integration & Integrity	Data Integration & Integrity
Runtime & Middleware	Runtime & Middleware	Runtime & Middleware	Runtime & Middleware	Runtime & Middleware	Runtime & Middleware
OS & Virtualisation	OS & Virtualisation	OS & Virtualisation	OS & Virtualisation	OS & Virtualisation	OS & Virtualisation
Servers, Storage & Network	Servers, Storage & Network	Servers, Storage & Network	Servers, Storage & Network	Servers, Storage & Network	Servers, Storage & Network

AVEVA

AVEVA SaaS drives sustainable growth

Transform faster, reduce costs and easily scale to engineer smarter, operate better
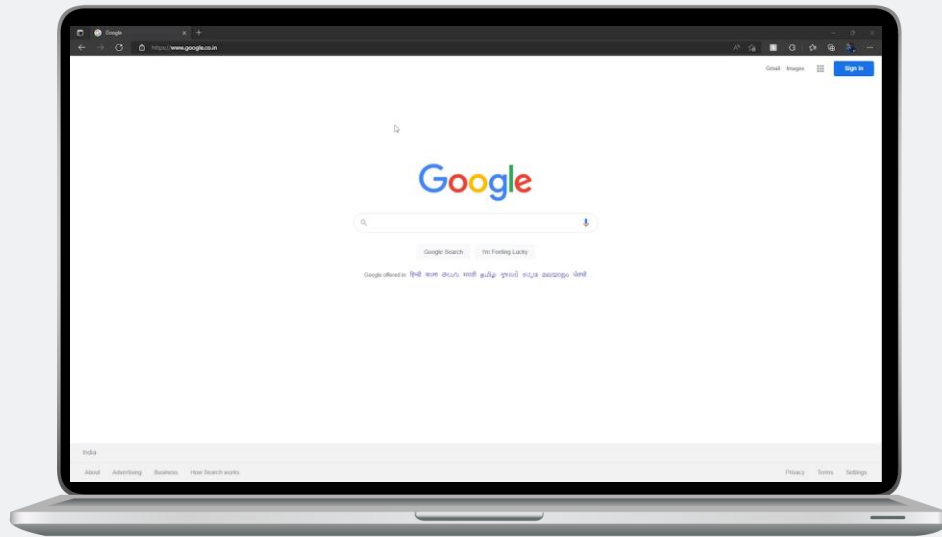
Highlights: Access existing and new offerings such as AVEVA Data Hub, Edge Management, rich engineering and operations applications, and extend on-prem investments to the cloud via AVEVA Connect!
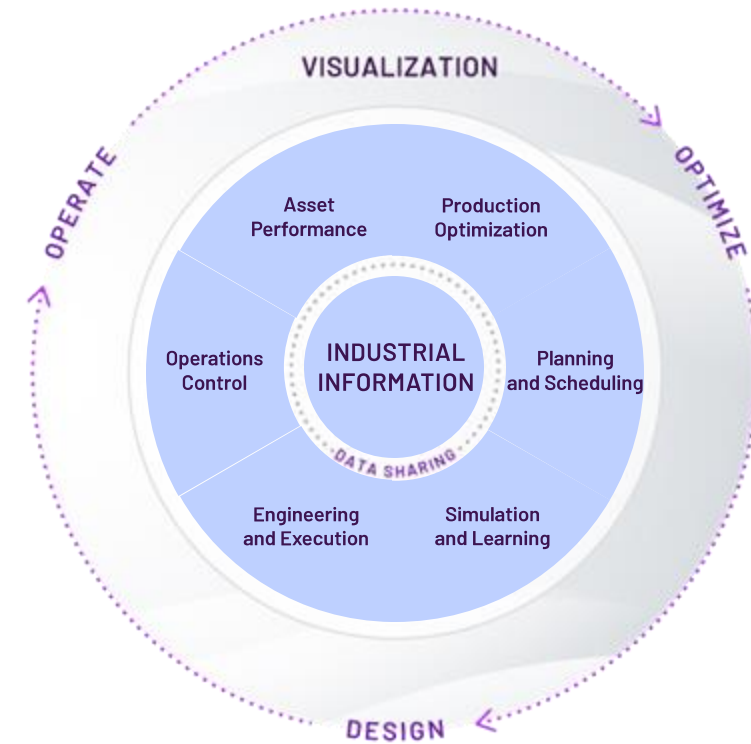
1. AVEVA™ Simulation
2. AVEVA™ Unified Learning
3. AVEVA™ Unified Engineering
4. AVEVA™ Operations Control

5. AVEVA™ Insight
6. AVEVA™ Unified Supply Chain
7. AVEVA™ Asset Information Management
8. AVEVA™ Data Hub

AVEVA

Management capabilities in AVEVA Connect

More capabilities to manage and monitor your AVEVA software

AVEVA

Maturity Curve

Credit Management / Software Asset Management roadmap
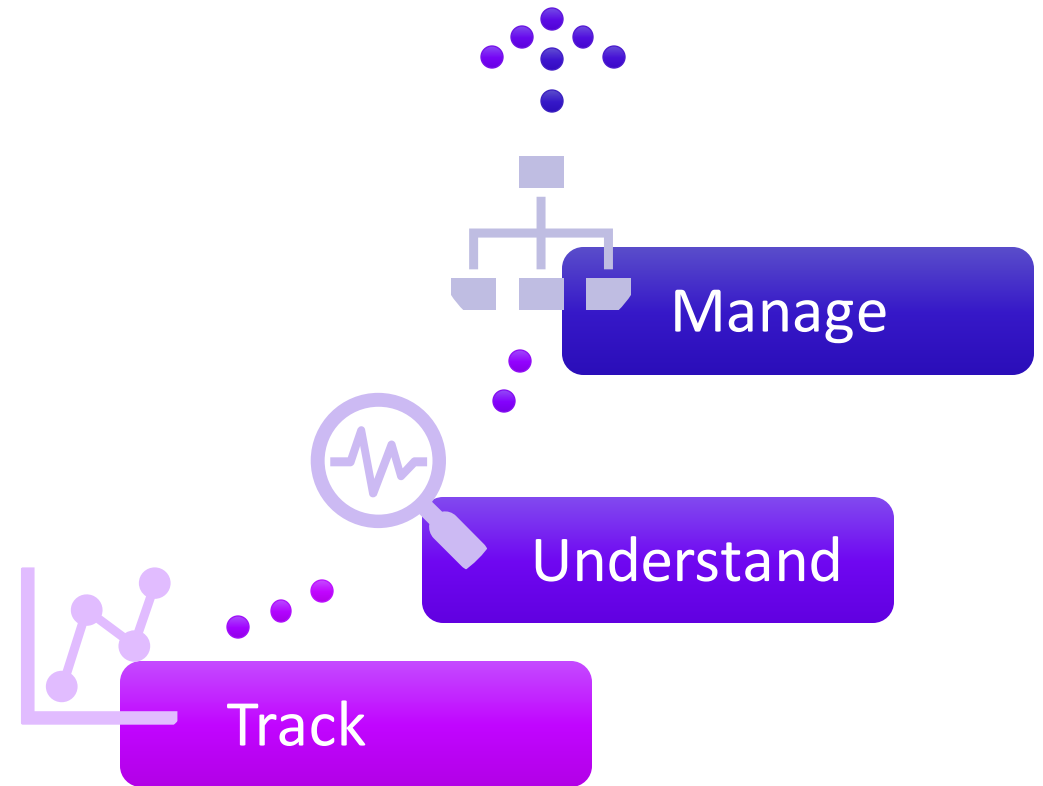
Understand

- Usage by services
- Usage by structure
- Credit Consumption
- Assessable through BI tools
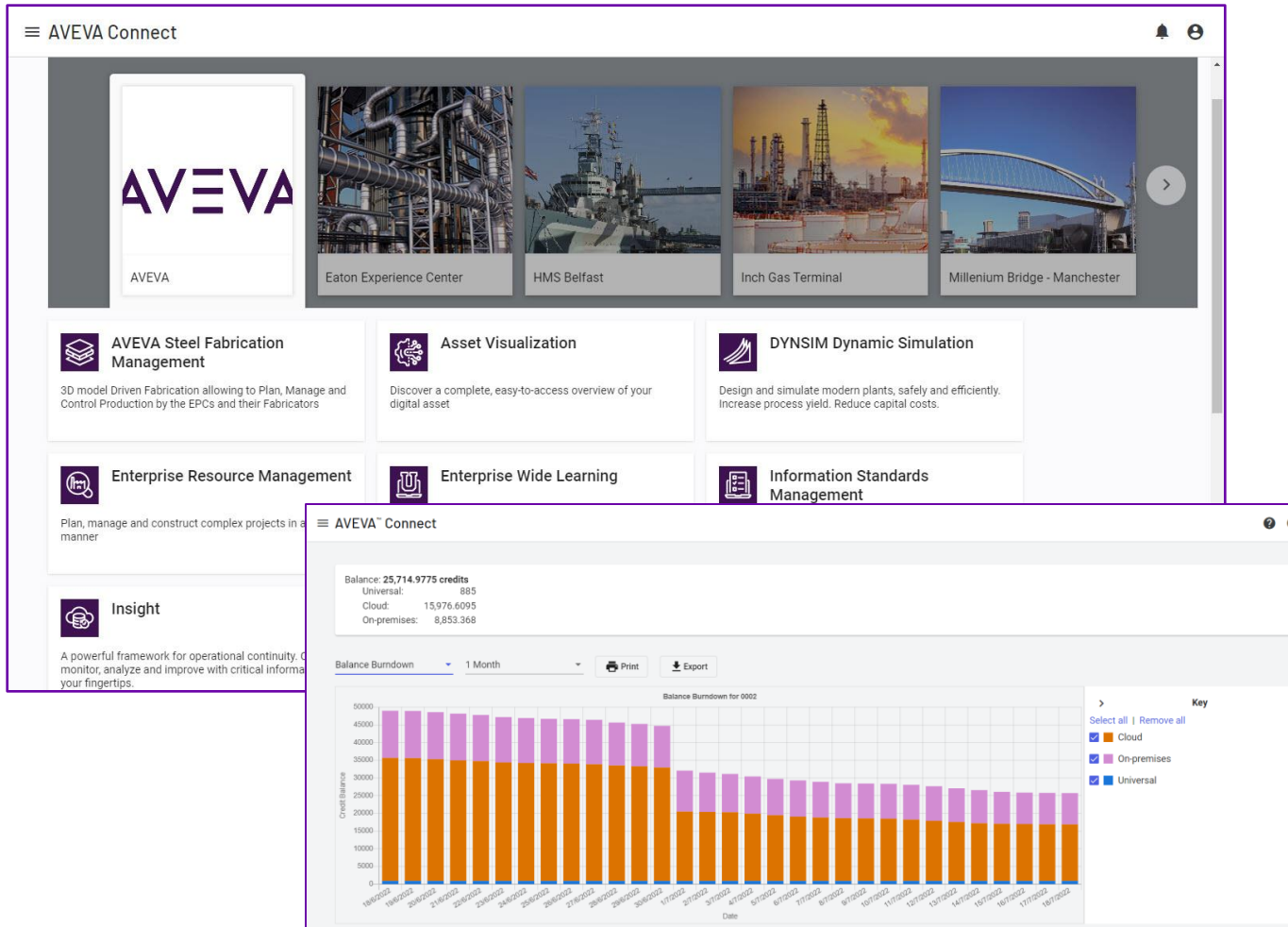
Tracking

- All usage AVEVA Flex credits
- All On prem tracked
- All SaaS services

Manage

- Optimize usage
- Central and Delegated Control of adoption
- Self Service
- Soft budgets
- Credit Pool/Reservations

Manage

Understand

Track

AVΞVA

Track

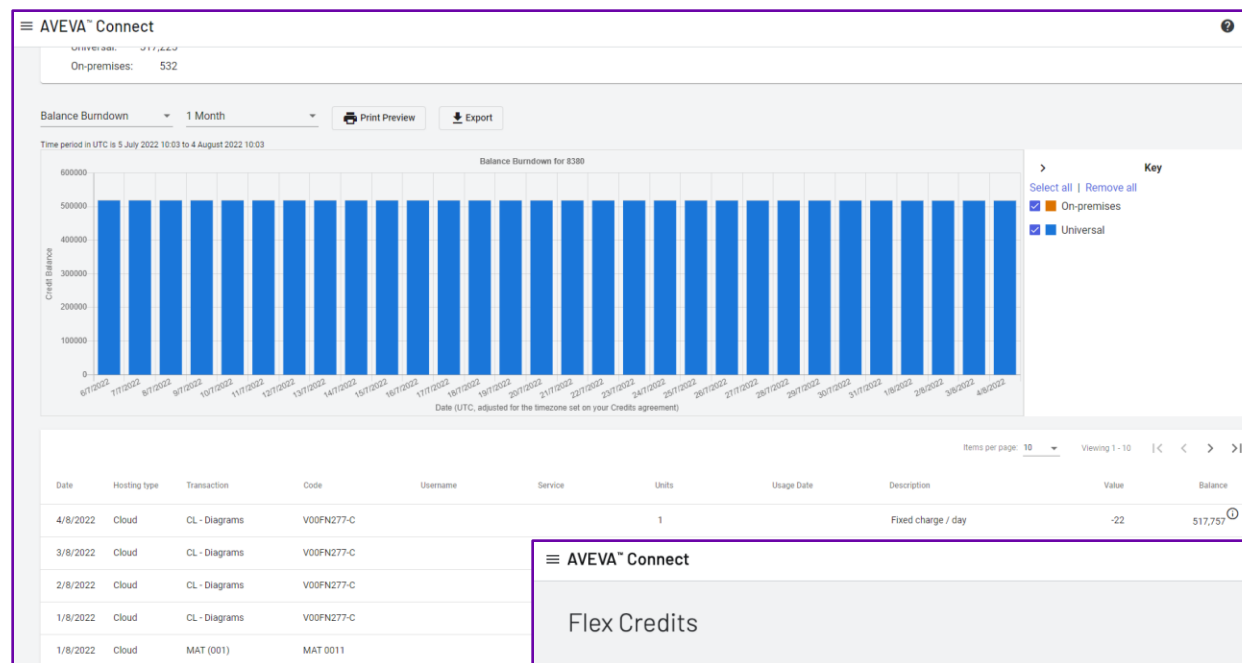## Helping You to Optimize Software Usage & Value

- Self-service AVEVA Flex Credit management

- Flexible subscription models

- Dynamically change product and usage mix

- Simplify license management and reporting

- Take advantage of e-learning services to empower your people to do more with AVEVA's products.

Understand

Credit Transactions

Credit Transactions Improved Filtering

Customers can review transactions from specific services, or folder level services, or from specific usernames of whom has triggered the cost deduction.

Understand

Usage – Account, Service, User
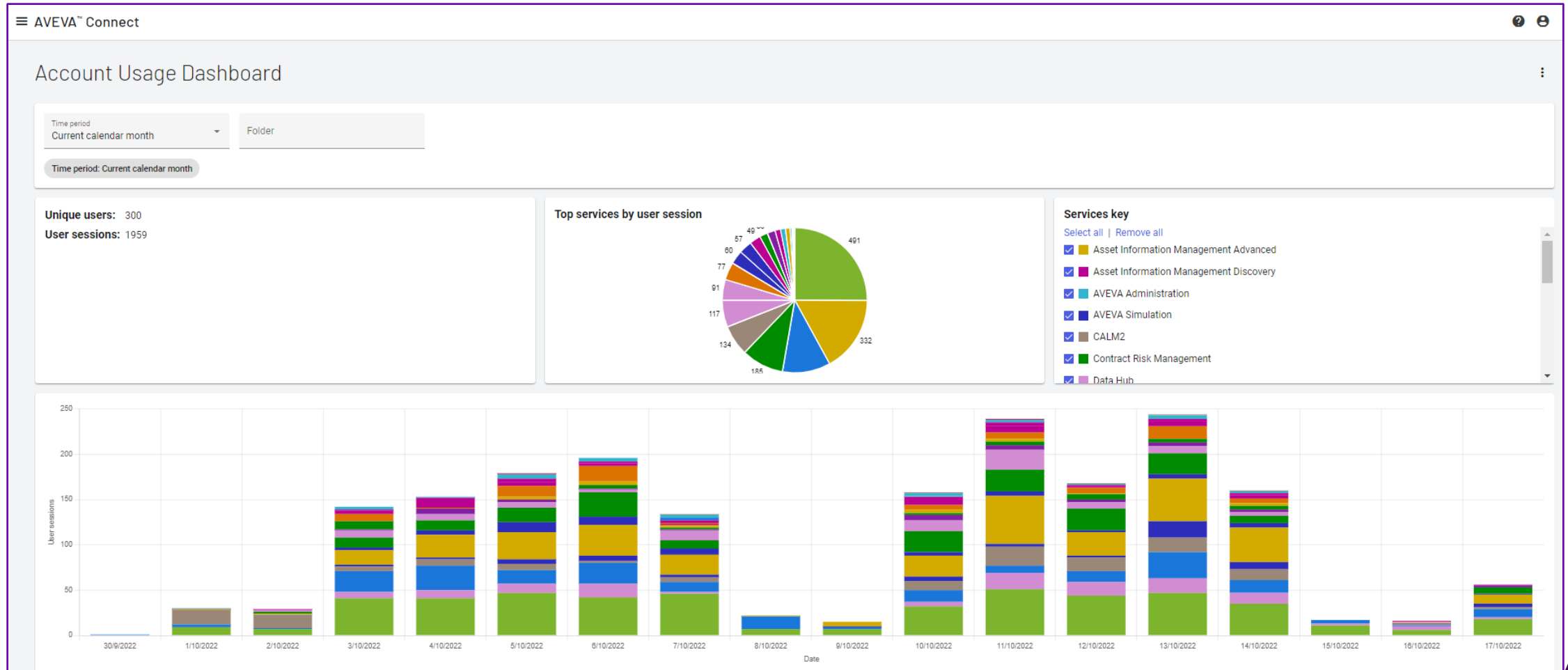
Manage

Budget Management

Customers will be able to configure budgets for the Account, Folder, Service and Products. The Activity tab allows a visual display and analysis over a period of time. Notifications will be sent at 80% and 100% consumption of the budget

Forecast

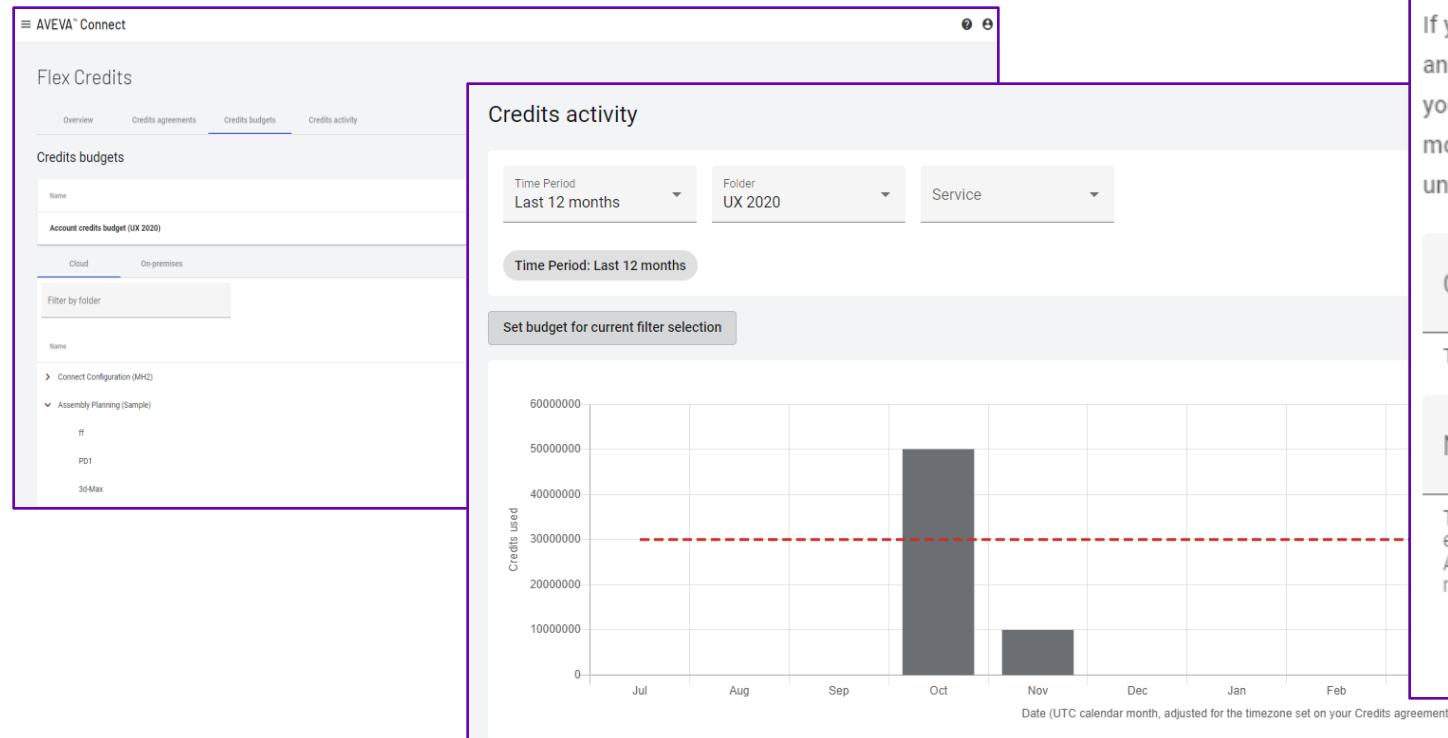## Burndown Forecast
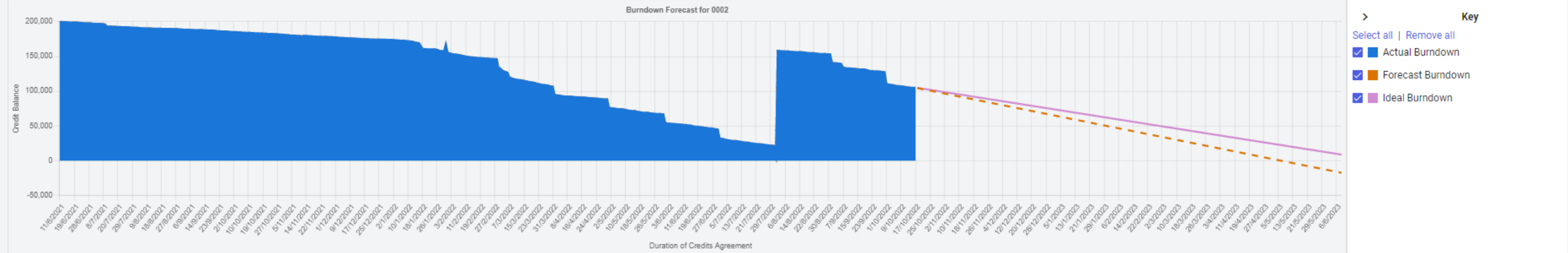
Increasing AVEVA Connect's industrial cloud platform capabilities

The platform journey

AVEVA

A complete digital thread, purpose-built for industry

Accelerate time to value with trusted industrial hybrid SaaS solutions

DESIGN → OPERATE → OPTIMIZE

OPEN AND AGNOSTIC

Visualization

Multi-experience engineering and operations visualization across the enterprise

3rd party visualization

Simulation and Learning	**Engineering and Execution**	**Operations Control**	**Asset Performance**	**Production Optimization**	**Planning and Scheduling**
Process simulation, operator training, enterprise learning	Engineering, 3D design, project execution	Edge, supervisory, enterprise control	Asset strategy, asset analytics, maintenance execution	Operations execution, process optimization, production management	Feedstock management, supply chain planning and scheduling

3rd party apps and analytics

Industrial Information Management

Engineering: Engineering data collection, aggregation, storage and contextualization

←→

Operations: Real-time data collection, aggregation, contextualization, events and self-service analysis

3rd party data sources, systems, and databases

DATA SHARING

SUPPORT YOUR HYBRID CLOUD ARCHITECTURE

AVEVA

The Power of AVEVA Connect industrial cloud platform

AVEVA Connect enables a hybrid data architecture through cloud offerings

Remote operations monitoring

Data science & advanced analysis

Applications

Data sharing with trusted ecosystem partners

AVEVA Connect

| AVEVA Asset Information Management | AVEVA Edge Management | Open, Neutral RESTful API's |

AVEVA Data Hub

AVEVA PI Server

Edge Data Store

Remote assets

AVEVA Historian

AVEVA Edge

AVEVA System Platform

AV≡VA
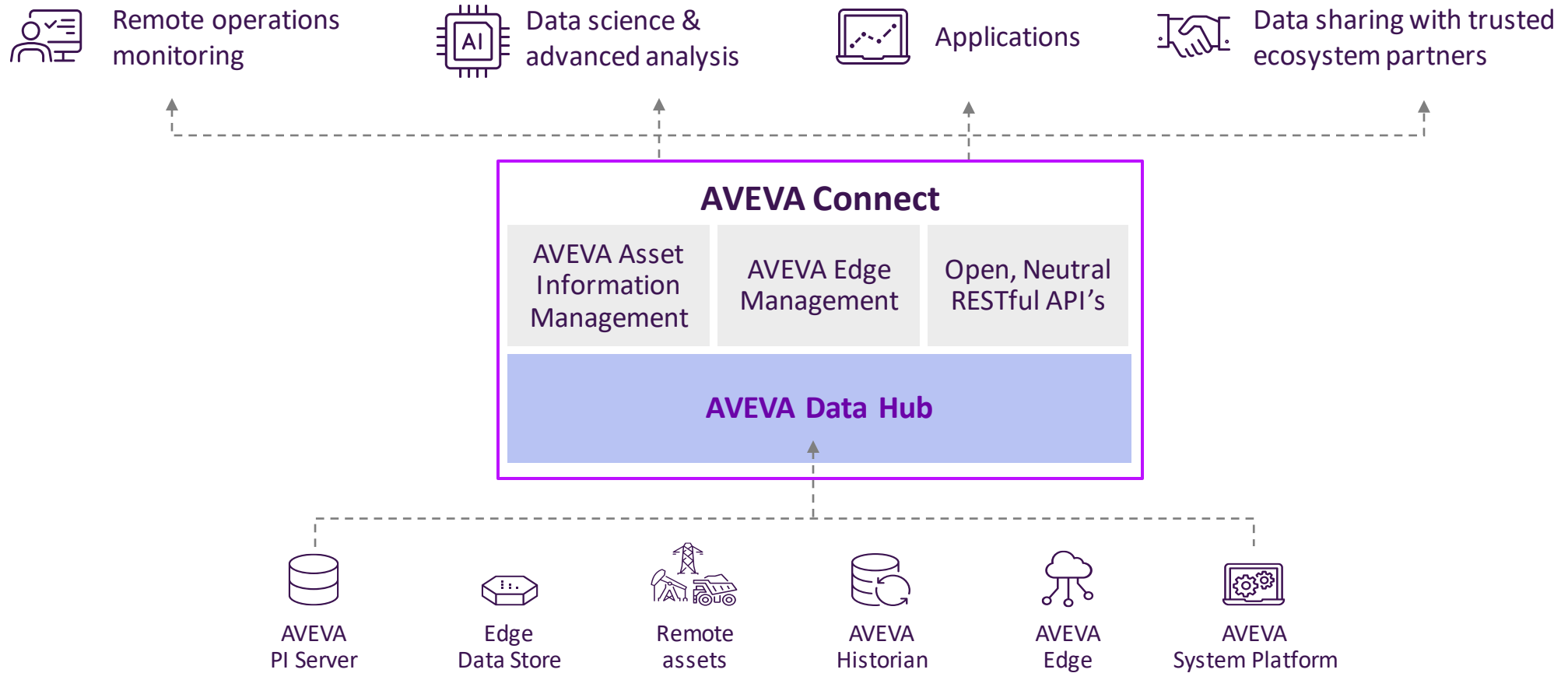
AVEVA Data Hub
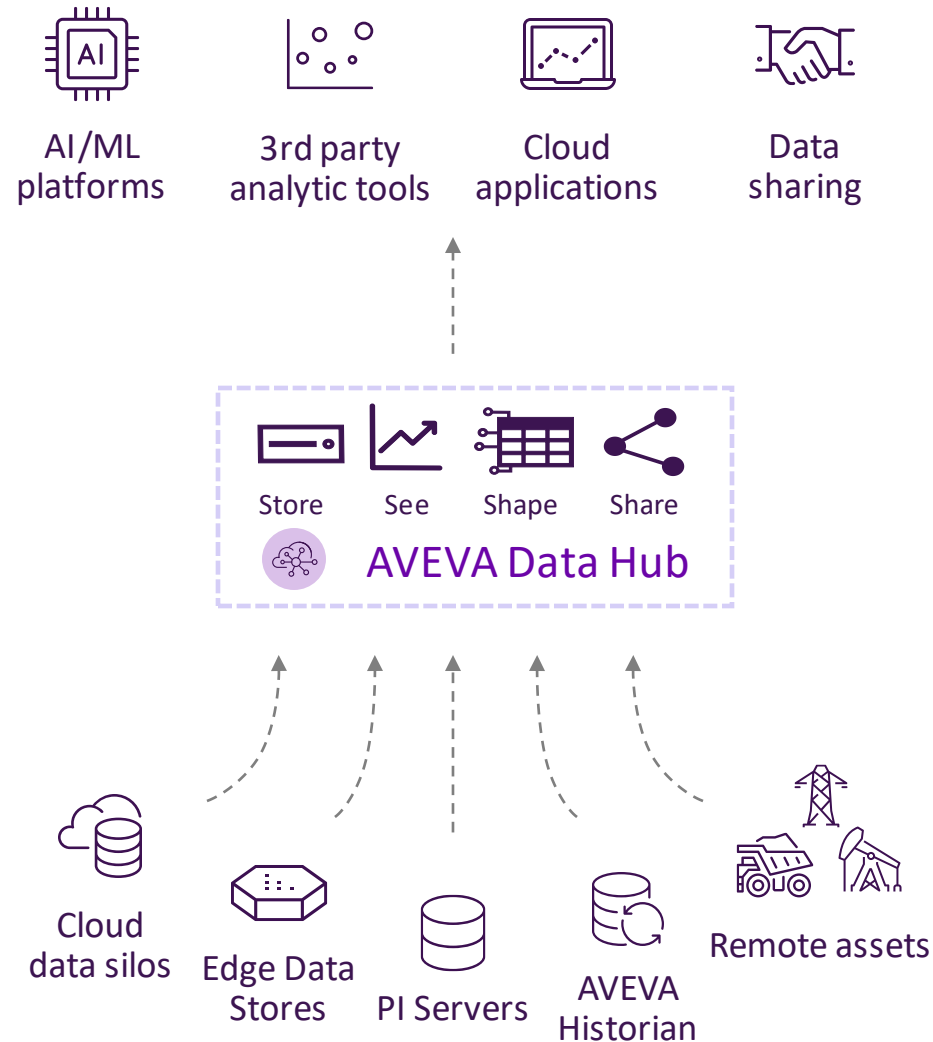
A cloud-native service for aggregating, storing, enriching, accessing, and analyzing real-time operations data from historians, edge devices, and more

- Managed, secure, multi-tenant platform
- Operated & maintained by AVEVA
- High speed, scalable, elastic, & resilient
- Modern, secure REST APIs
- Built & deployed on Microsoft Azure

AVEVA

What sets AVEVA Data Hub apart?

| Built securely for industrial operations | Native integration from on-premises and edge systems | Scalable operations data, anywhere | Smarter, more secure data sharing | Leave the management to the experts |
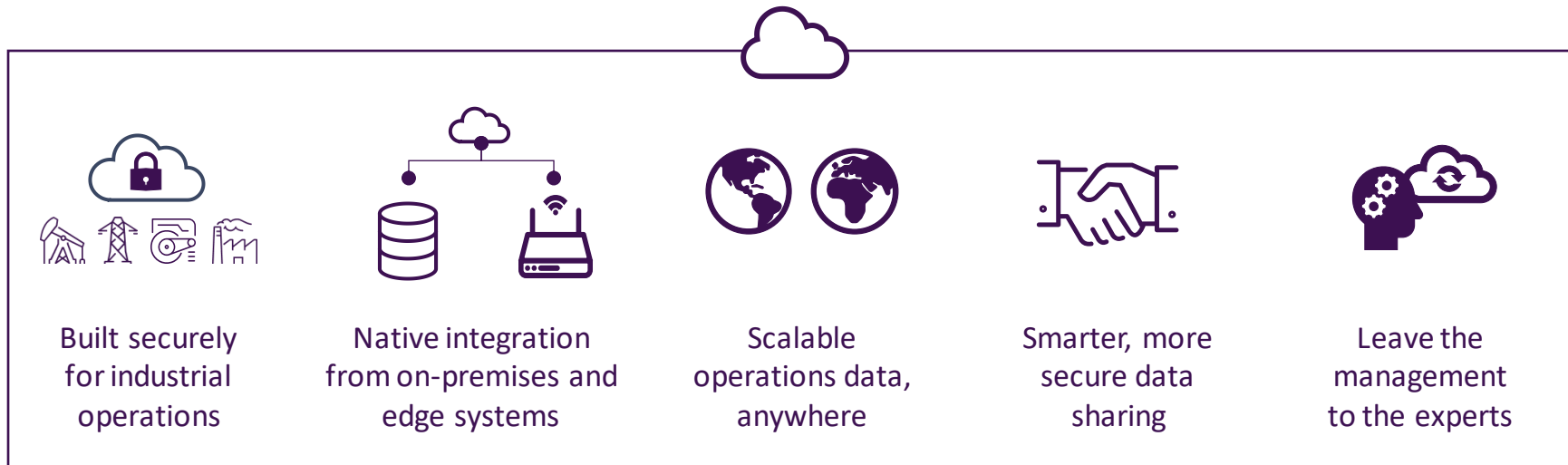
AVEVA Data Hub

AVEVA

Bridging engineering, operations, and business domains

Cloud data silos

AVEVA Connect
AVEVA Data Hub
AVEVA Insight

Remote assets, sensors, & IIoT devices

Edge Data Store PI Adapters

AVEVA PI Server

AVEVA Historian/System Platform
AVEVA Manufacturing Execution System

Data sharing with trusted ecosystem partners

Advanced analysis via AI/ML
AVEVA Predictive Analytics
3rd party models

Enterprise visibility and analysis
AVEVA Unified Operations Center, PI Vision
3rd party applications

Monitoring & reporting
AVEVA Operations Control, AVEVA PI Vision, AVEVA PI DataLink

AVEVA

AVEVA™ Edge Management

Edge Data Store, Adapters, and Data Hub

AVEVA Edge Management unlocks remote operations monitoring

- Easily manage remote systems and sources
- Collect and organize data for visualization and analytics

Legend:
- Adapter container
- Edge Data Store container
- Edge Management components

Remotely deploy and manage EDS & AVEVA Adapters

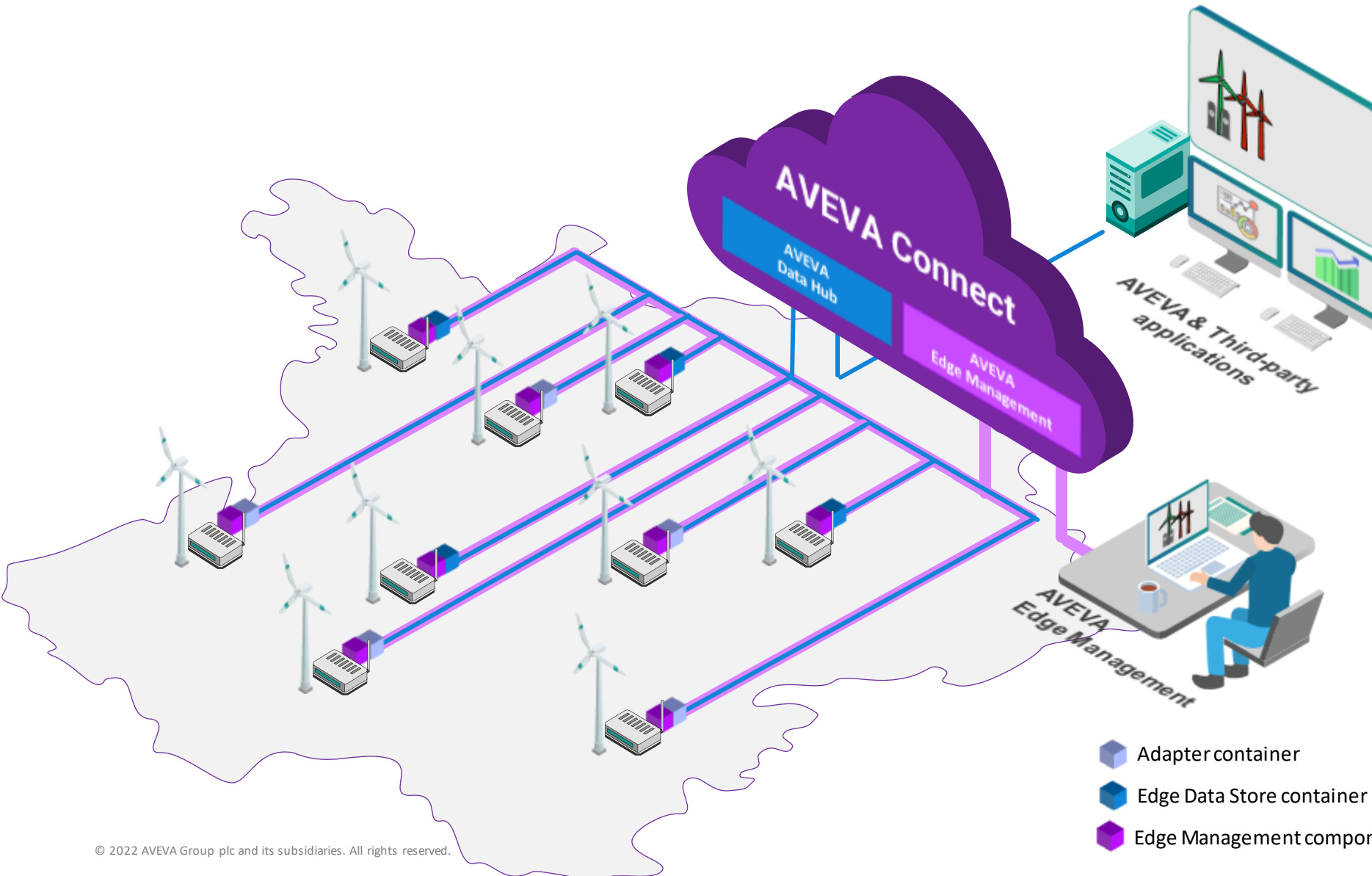**AVEVA Connect**
industrial cloud platform

Asset Information Management	**Edge Management**	Other AVEVA Applications

AVEVA Data Hub

AVEVA Edge Management

Reduce TCO with centralized device, software, and configuration management

↓

Improve visibility to device, software, and connection health

↓

Easy to use, no code solution

↓

Push button deployment of software modules

↓

Standardize applications in disparate remote locations

Edge Module

Configuration

Embedded Software

Edge Module Manager

Edge Management Components

Edge Device

AVEVA

Contextualizing the digital twin

AVEVA

Creating a Digital Asset for a Digital Twin

Existing Facilities
Or
Document Centric
Project Execution

Digitalization

Digital Asset

Trusted
Engineering
Information

Data Centric Project
Execution

CONNECTED WORKER

Collaboration

Learning

Multi-experience visualization

Digital twin

Data sources

Models and analytics

Guidance
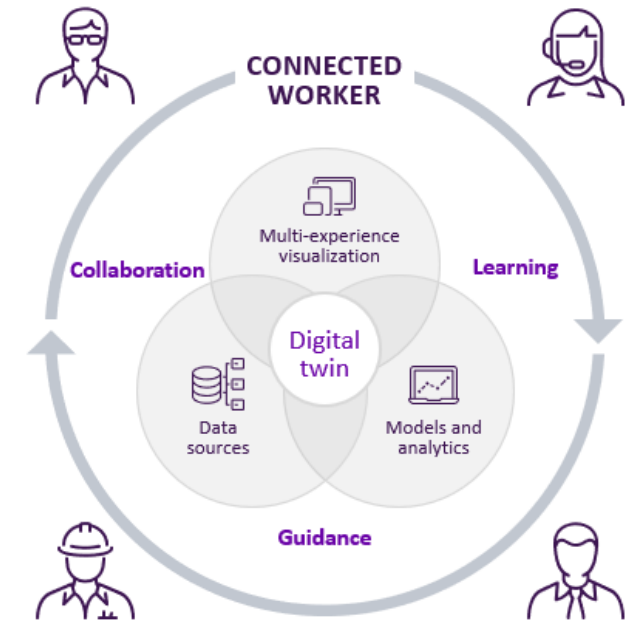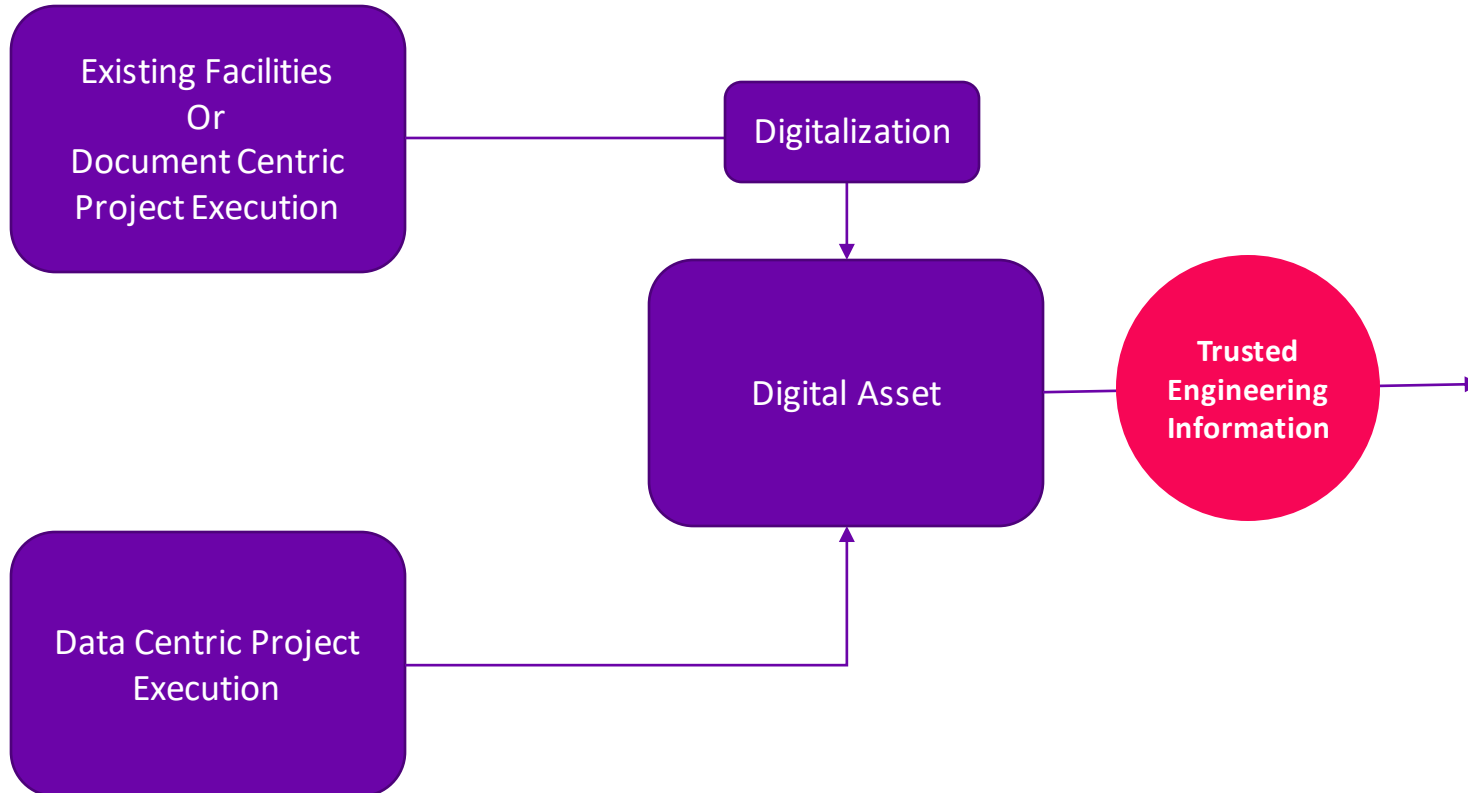
AVEVA

Advantages of AVEVA Asset Information Management
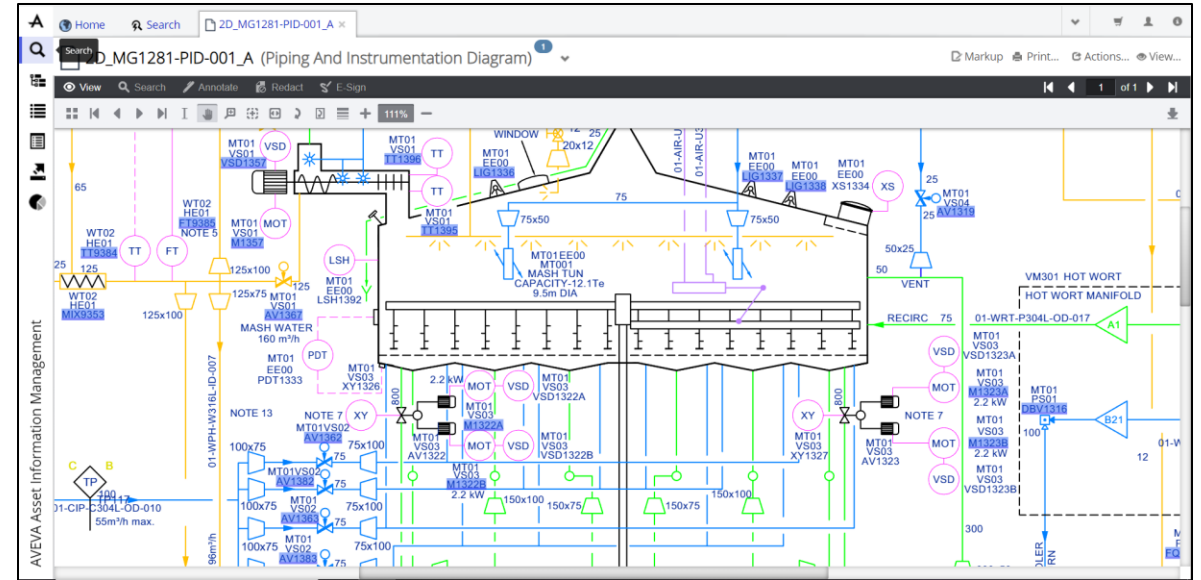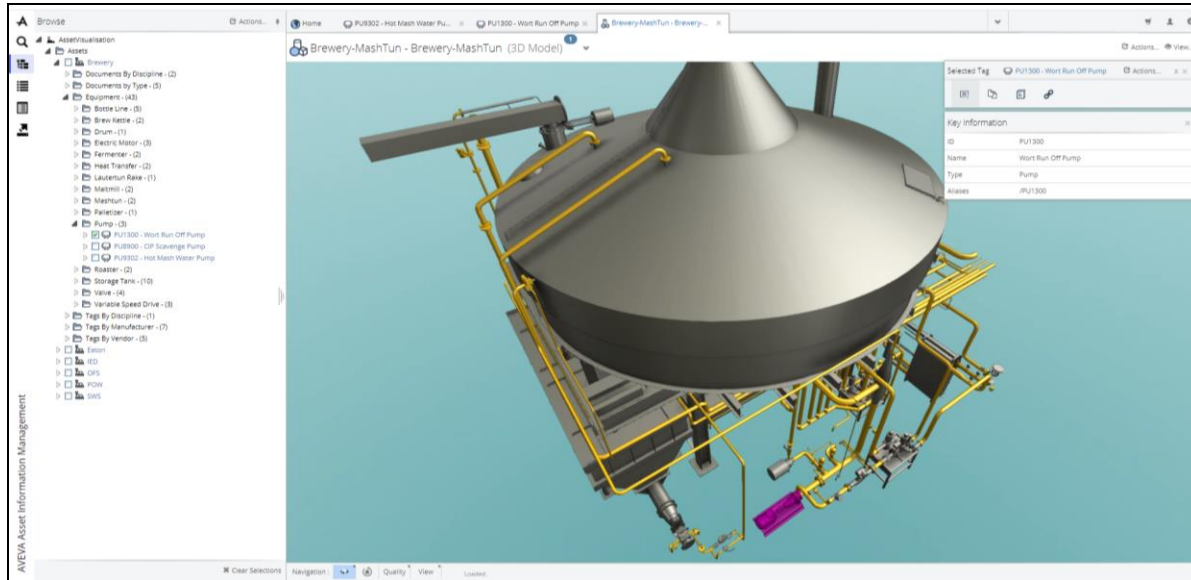
Eliminate data silos with all information available in one place

Improve safety and compliance with quick access to critical information

Gain the insights necessary for informed, good decision making

Save time and effort on finding and validating information

Empower teams to collaborate with a 360° view of data

Reduce costs and time to value with a cloud solution

The asset is represented by multi-faceted, multi-dimensional, multi-interval, unified data
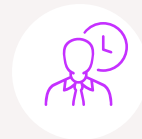
Information standards management

Physical Asset

Digital Asset

COMPANY STANDARDS

Trusted and Validated Common Engineering Data Repository

| Native Formats | Spreadsheet | 3D Model | Laser Scan | Documents | Drawings | Images | Plant Realtime Data | Maintenance Data | Inspections Data | Simulation Data | Other Data |

Plant Structured and Unstructured Data

Operational data

AVEVA™

J-9002A (Pump)

Actions...

Attributes Filter   Expand All ⤢

▲ Core (11)

Area Code	C31
Asset	IED
Category	Equipment
Function Code	PA
Main Tag	43PA002B
Previus Ld Tag Number(S)	53PH001A
Purchase Order Number	ER300
Sub System	4302-01
Tag Class Name	CFIHOS-30000550
Tag Description	LP Flare KO Drum Pump
Tag Name	J-9002A

▲ Functional (9)

ATEX Marking	II 2 G
Certification Standard	ATEX
Content Weight	15 kg
Coordinate X	390861 mm
Coordinate Y	160509 mm
Coordinate Z	500664 mm
Is Function	N
Is Pressure Vessel	N
Is Signal	N

▲ Physical (5)

Links

[PI Vision] [Predictive Analytics]

External Views ⤢

▲ Insight

J-9002A - External Dashboard

J-9002A Bearing Temperatures
2/7/2022 12:00:00 am - 2/7/2022 1:41:45 pm
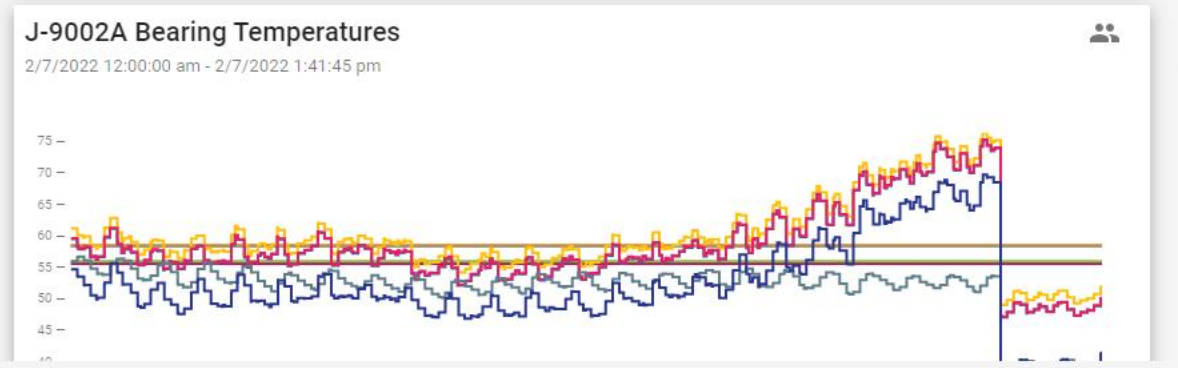
AVEVA

▷ PI Vision

▷ Point Cloud Viewer

Parts / Components Filter   Expand All ⤢

▷ Motor (1)

▷ Nozzle (3)

Documents and 3D Models Filter   Expand All ⤢

▷ 3D Model (1)

AVEVA Asset Information Management

AVEVA
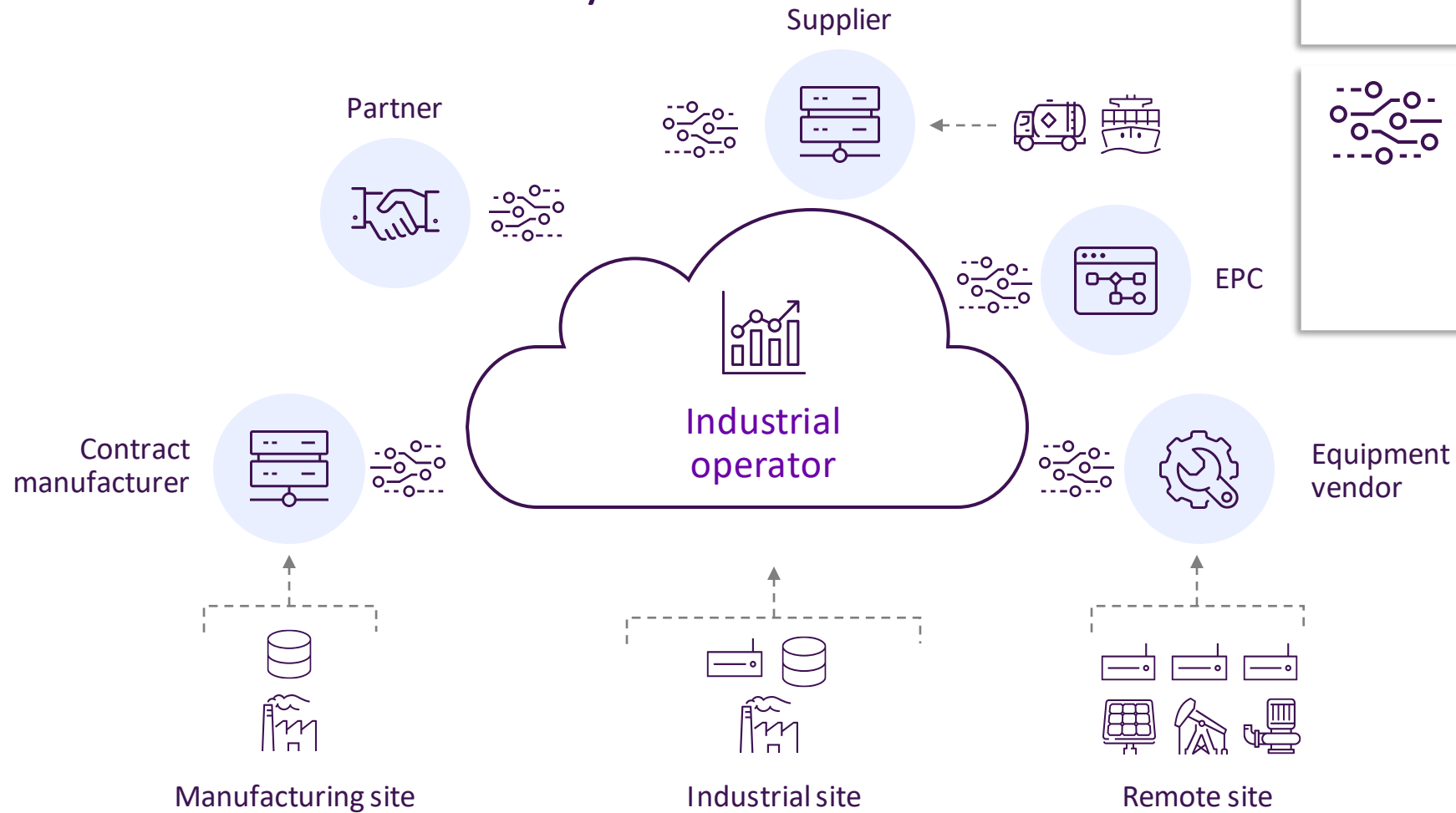
Introducing secure data sharing in AVEVA™ Data Hub

Communities enable secure ecosystem interactions and applications

AV∃VA

Data becomes the foundation of a connected community

AVEVA's
Industrial Cloud Platform
Open & Neutral
Powers AVEVA, Customer, & Partners
Secure data sharing
Developer-friendly
Vendor neutral

AVEVA Data Hub
Community
Tenants
Tenant members (users)
Bidirectional access to stream data
Trending of shared data
API access to shared data

Supplier

Partner

EPC

Industrial operator

Contract manufacturer

Equipment vendor

Manufacturing site

Industrial site

Remote site

AVEVA

Service providers drive the network effect

Service Delivery
Network

Industrial
Operator A

Service
Provider

Joint
Venture /
Operator

Industrial
Operator B

Industrial
Operator C

Remote site X
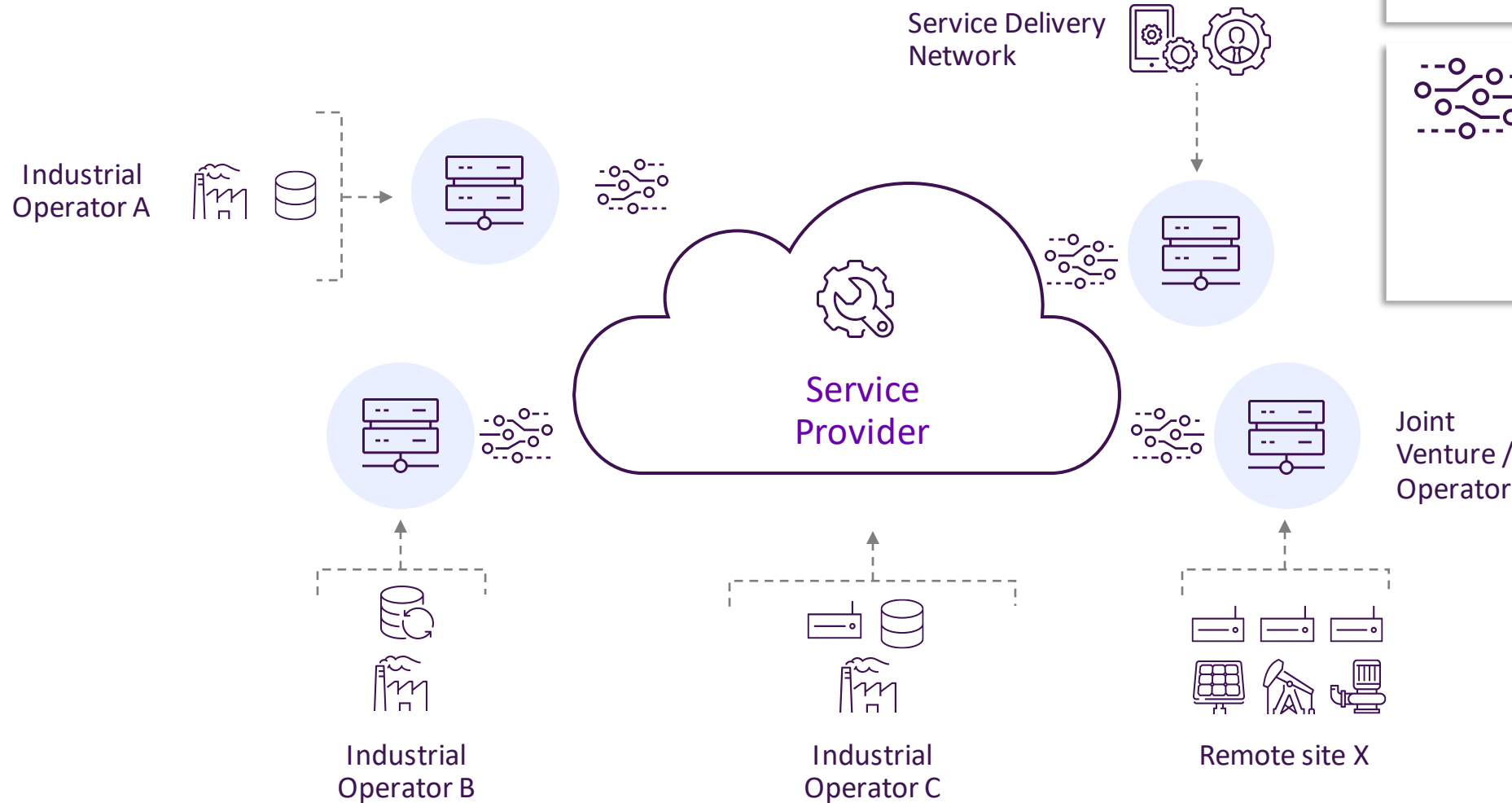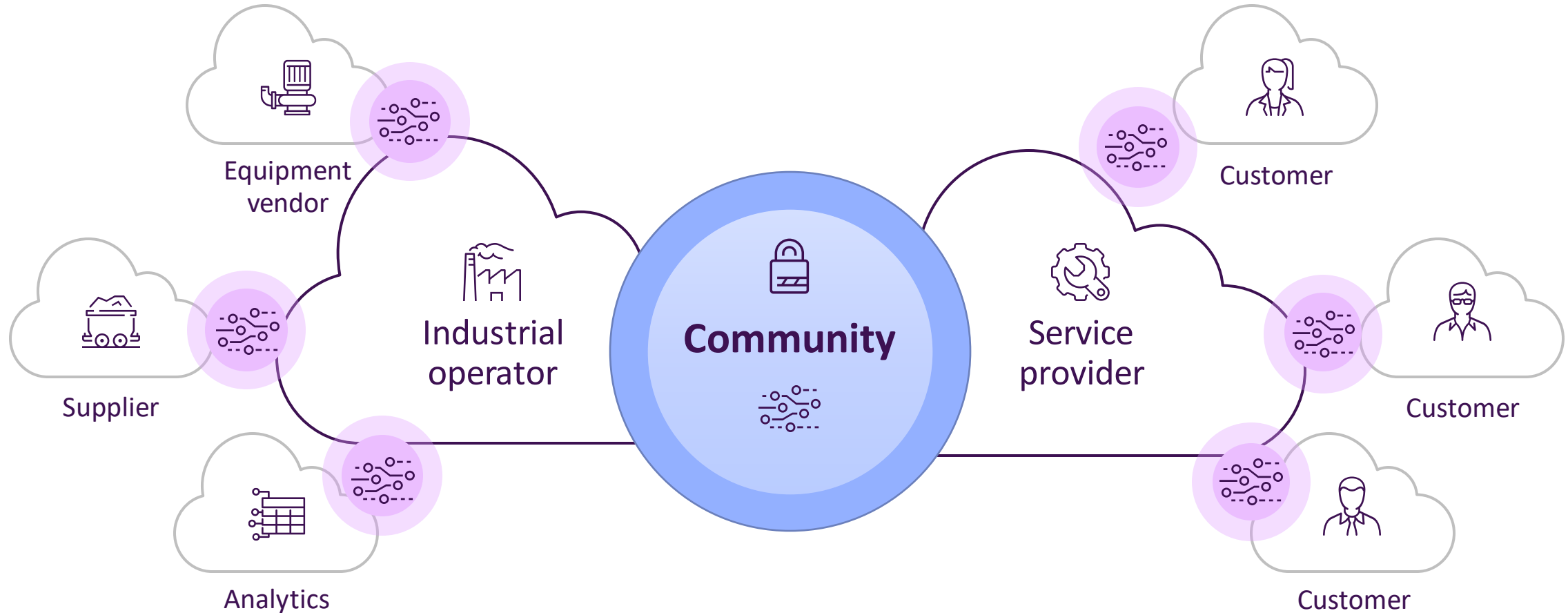
AVEVA's
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AVEVA

The connected community drives innovation

Equipment vendor

Supplier

Analytics company

Industrial operator

Community

Service provider

Customer

Customer

Customer

AVEVA's
Industrial Cloud Platform
Open & Neutral
- Powers AVEVA, Customer, & Partners
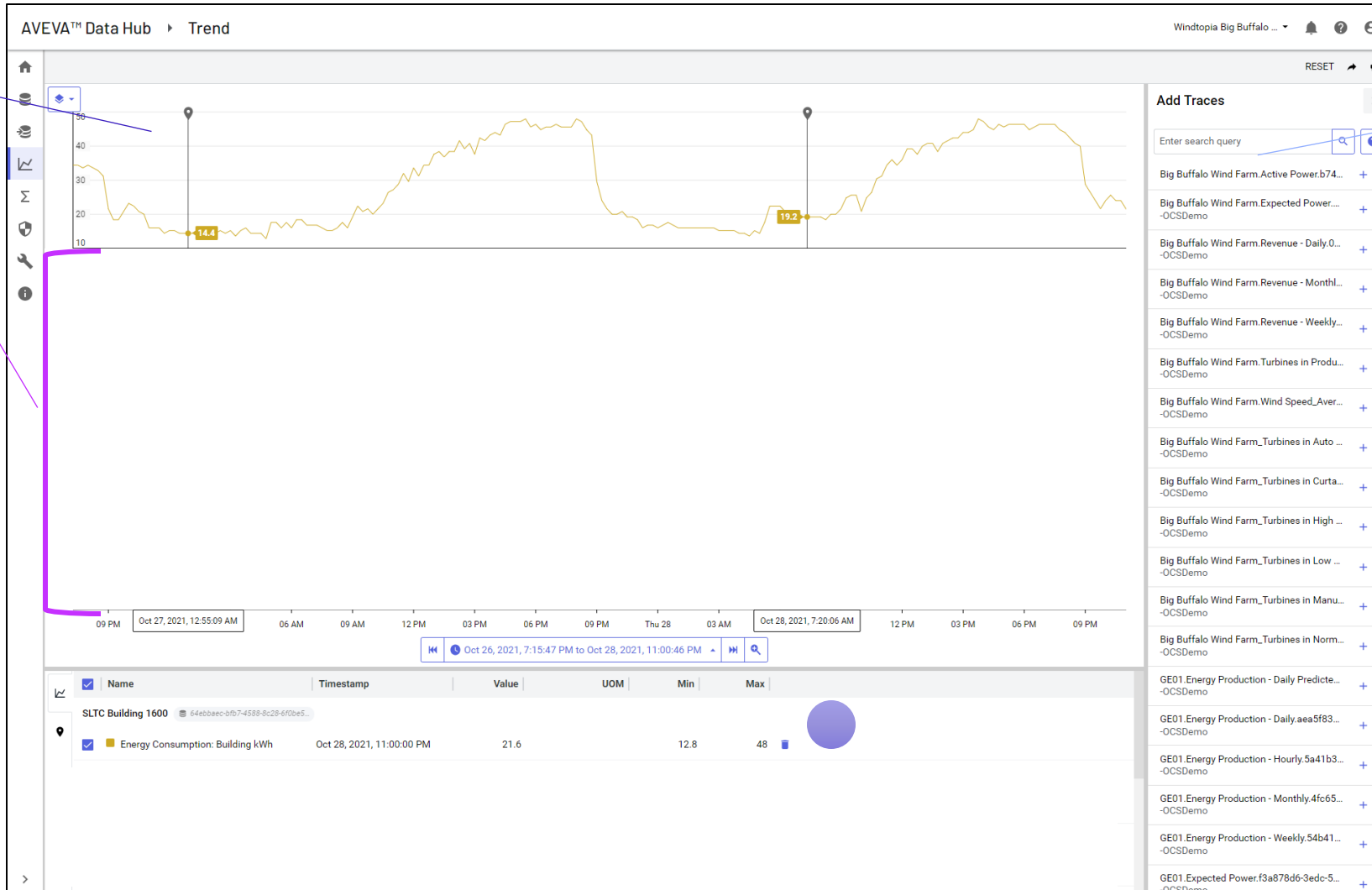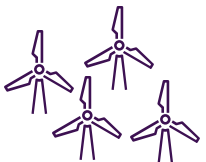- Secure data sharing
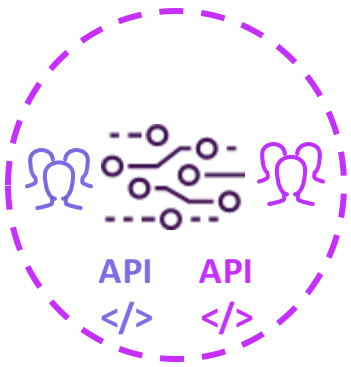- Developer-friendly
- Vendor neutral

AVEVA Data Hub
Community
- Tenants
- Tenant members (users)
- Bidirectional access to stream data
- Trending of shared data
- API access to shared data

AVEVA

See shared data in one place

Your data

See shared data in context!

Add more of your data, or select shared data!

Link to trend

(must be a community member to view)

AVEVA

Renewable Energy Group & Allied Reliability

Centrifuge manufacturer worked collaboratively with monitoring service partner to share real-time performance data securely, enabling proactive maintenance and reducing downtime. Made possible with AVEVA Data Hub.

Established secure, bi-directional data highway between partners

Service provider easily able to access real-time and historical data for analysis, decreasing diagnostic time and improving accuracy

Supports shift to predictive maintenance, estimated to deliver a reduction in downtime by up to 90%

AVΞVA

FIRST QUANTUM
MINERALS LTD.
Cobre Panamá

Mining operation captured near real-time data from fleet of trucks, to create a digital Knowledge Center, improving fleet management, reducing unplanned downtime and boosting productivity.

Significant savings expected per extra production day through smart maintenance.

Reduced risk of expensive asset failures through predictive maintenance.
(Trucks can cost up to 5M USD)

Data sharing improved collaboration between mining truck operations, dam management and other departments.
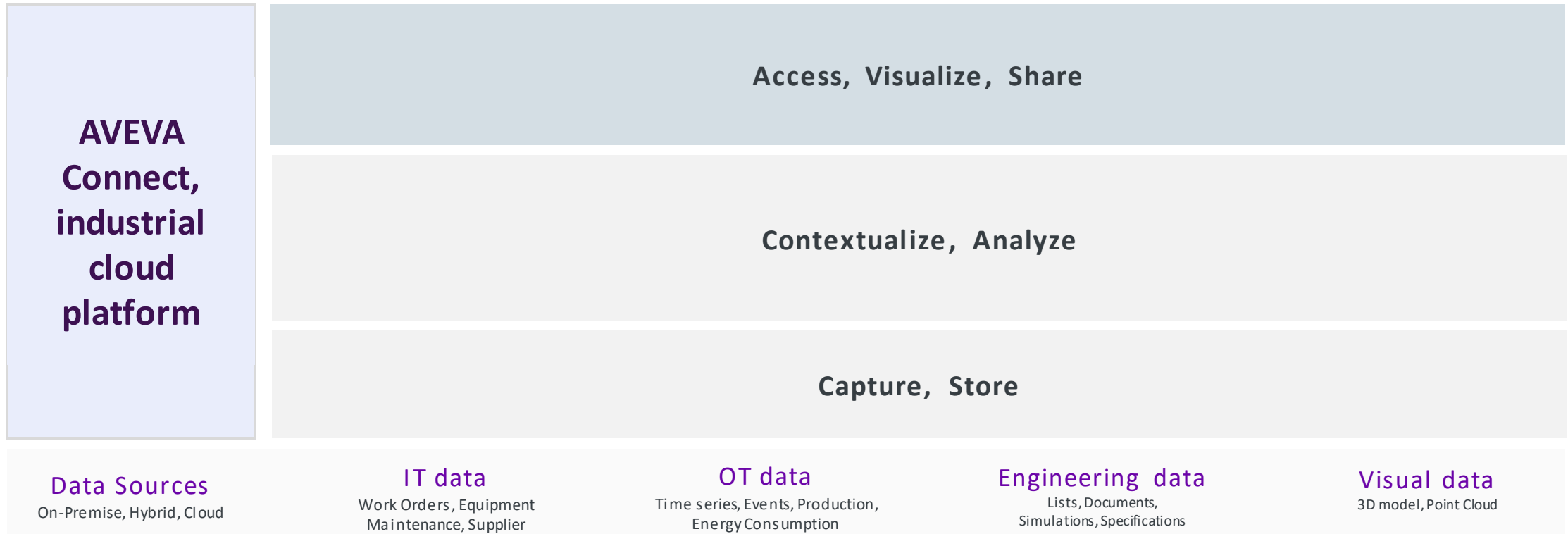
AVEVA

The future of
AVEVA Connect

AVEVA

Connecting people with industrial intelligence

Global, holistic optimization across the entire industrial ecosystem

AVEVA Connect, industrial cloud platform

Access, Visualize, Share

Contextualize, Analyze

Capture, Store

Data Sources
On-Premise, Hybrid, Cloud

IT data
Work Orders, Equipment Maintenance, Supplier

OT data
Time series, Events, Production, Energy Consumption

Engineering data
Lists, Documents, Simulations, Specifications

Visual data
3D model, Point Cloud

AVΞVA

Future vision: Optimize the entire industrial ecosystem

Connecting people with Industrial Intelligence-as-a-Service
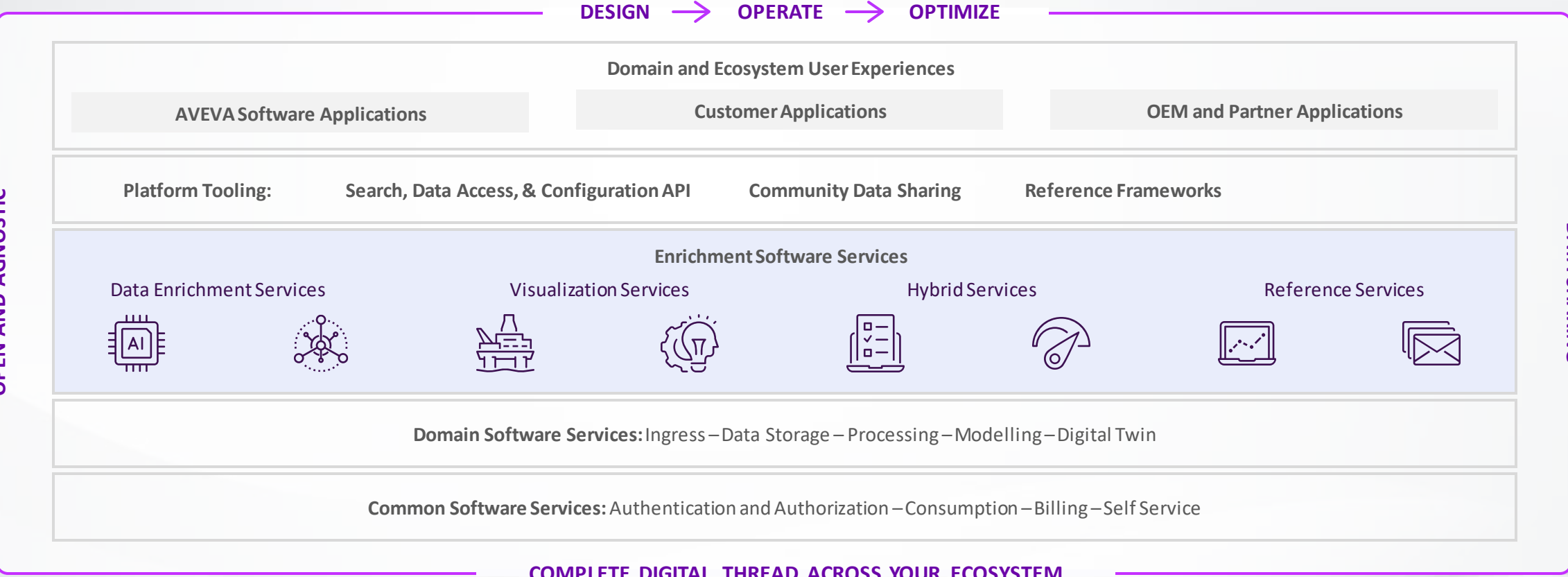
DESIGN → OPERATE → OPTIMIZE

OPEN AND AGNOSTIC

DATA SHARING

Domain and Ecosystem User Experiences

AVEVA Software Applications | Customer Applications | OEM and Partner Applications

Platform Tooling: Search, Data Access, & Configuration API | Community Data Sharing | Reference Frameworks

Enrichment Software Services

Data Enrichment Services | Visualization Services | Hybrid Services | Reference Services

Domain Software Services: Ingress – Data Storage – Processing – Modelling – Digital Twin

Common Software Services: Authentication and Authorization – Consumption – Billing – Self Service

COMPLETE DIGITAL THREAD ACROSS YOUR ECOSYSTEM

AVEVA

AVEVA Connect future:
Industrial Intelligence-as-a-Service

1

EXPANDING AVEVA CONNECT & DATA HUB VALUE

Increased data source aggregation & data science capabilities

Leverage and extend your investments in AVEVA's applications

2

SUPPORTING FROM EDGE TO COMMUNITY

Make it easy to manage everything from edge devices to data sharing

Close the loop for data operations between the edge and cloud

3

BRIDGE ENGINEERING & OPERATIONS DIGITAL TWIN

Increase storage, management, and alignment capabilities

Represent engineering information in operational contexts

4

EXPANDING THE ECOSYSTEM

Open and neutral platform for engineering and operations information

Supporting new digital business ventures and customer applications

AVEVA

Lighthouse Ready: Optimize the entire industrial ecosystem

- Empower strategic decision-making and increased collaboration across the enterprise
- Improved process and utilization of resources
- Increase workforce safety
- Improve asset reliability, availability and performance
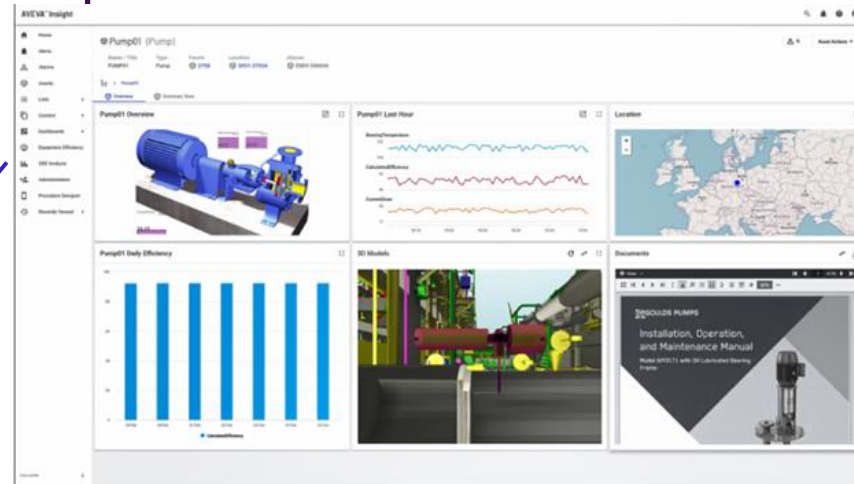
All via a self-service application with personalized dashboard creation within minutes
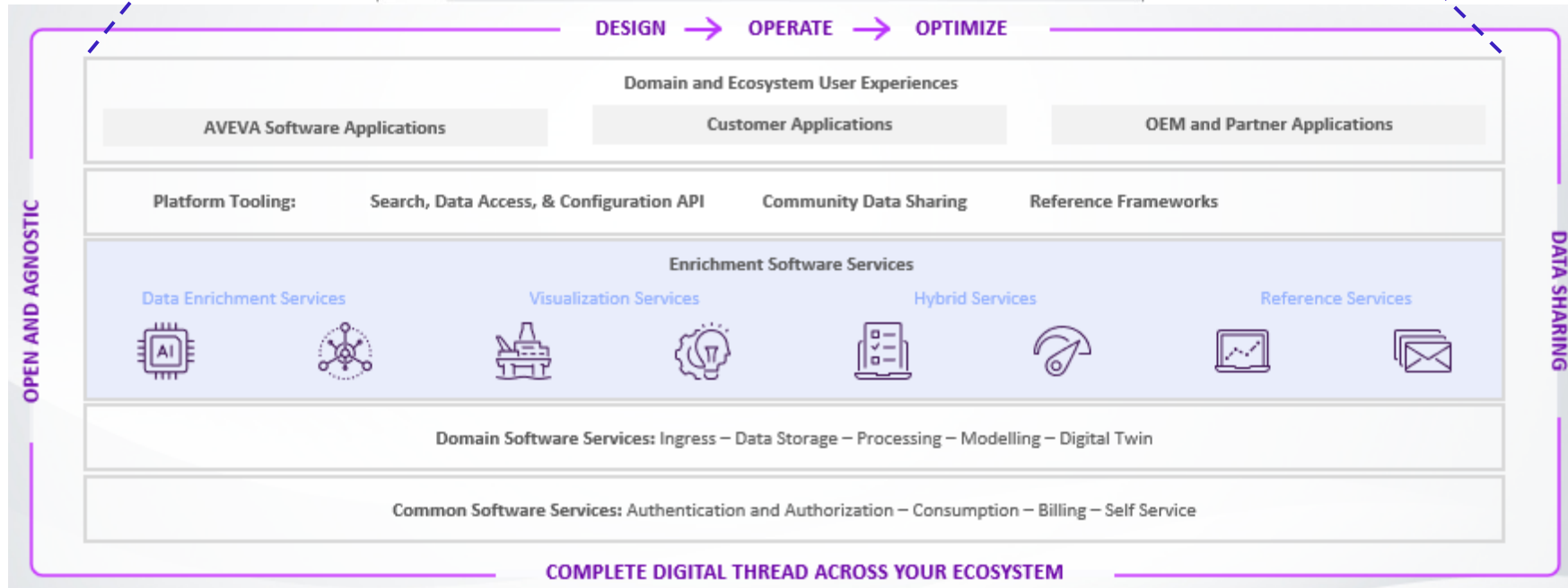
Learn more about AVEVA Connect & AVEVA Data Hub

Industrial Cloud Platform @ AVEVA PI World 2022 – San Francisco

Day 1: Industrial Cloud Platform

- <u>AVEVA</u>: AVEVA Connect, Industrial Cloud Platform – Vision, roadmap, and starting your operations and engineering digital twin journey [14:00] [this talk]
- <u>AVEVA</u>: Power your secure industrial ecosystem of data, applications, and partners with AVEVA Data Hub connected communities [14:40]
- <u>AVEVA</u>: Accelerate Your Time to Value with Analytics and Applications Fueled by AVEVA Data Hub [15:40]
- <u>AVEVA</u>: On your marks, get set, Unleash your Operational Data in the Cloud! [16:20]
- <u>AVEVA</u>: Aggregating Engineering Content, Data and Documents and Real-Time Data into a Common User Experience [17:00]

Day 2: Customer Presentations

- <u>IGI</u>: The International Group: Lityx, use AVEVA™ Data Hub to implement AI-based analytics, improving yields and generating millions in additional profit at a 20x ROI [10:55]
- <u>First Quantum Minerals</u>: Mixed Mobile Machinery Fleet Streaming Data to AVEVA Data Hub at First Quantum Minerals [14:00]
- <u>Industrial Parts Depot</u>: Real-Time Fleet Monitoring with OCS at Industrial Parts Depot [14:00]

Day 3: Industrial Cloud Platform

- <u>AVEVA</u>: Four Imperatives of a Trusted Information Infrastructure [10:45]
- <u>AVEVA</u>: Deploy Edge Data Store and Adapters in minutes with AVEVA Edge Management [11:25]
- <u>AVEVA</u>: Visualizing the Digital Twin, an Independent Service on the Industrial Cloud Platform [13:30]
- <u>AVEVA</u>: Uniting the connected community through secure and transparent industrial data sharing [14:25] <u>AVEVA</u>: Harnessing the power of Sequential Data Store (SDS) and Assets for developers and partners [15:30]
- <u>AVEVA</u>: Aggregating data with Data Hub asset rules and data views for analytics and applications [16:25]

AVEVA

How can you influence the AVEVA Connect roadmap?

https://feedback.aveva.com
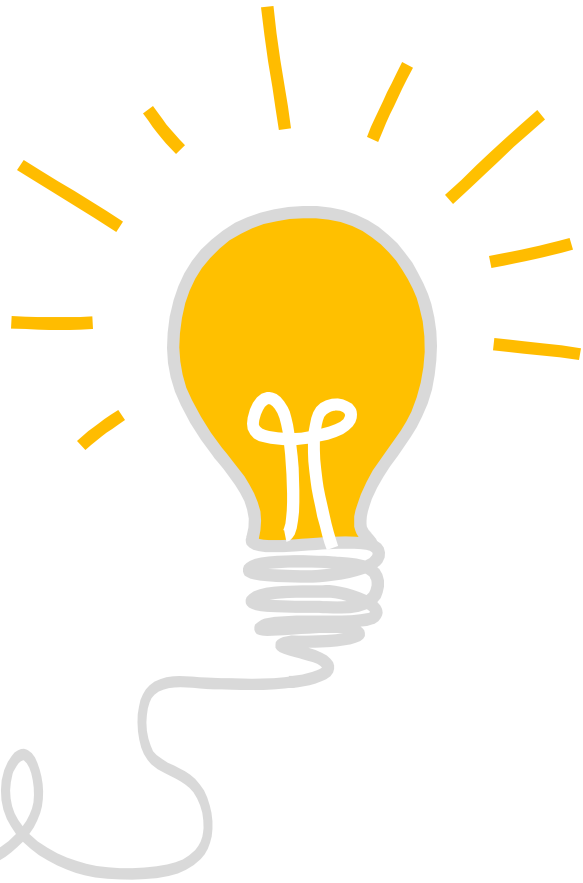
Let us know your product feedback!

AVEVA

Questions?

Please wait for the microphone.

State your name and company.

Please remember to...

Navigate to this session in the mobile app to complete the survey.

Thank you!

AVEVA

Gregg Le Blanc

SVP, Cloud Platform Portfolio

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Laurent Garrigues

VP, Cloud Platform Portfolio

- AVEVA
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