OCTOBER 24, 2023

# AVEVA Industrial Platform Roadmap

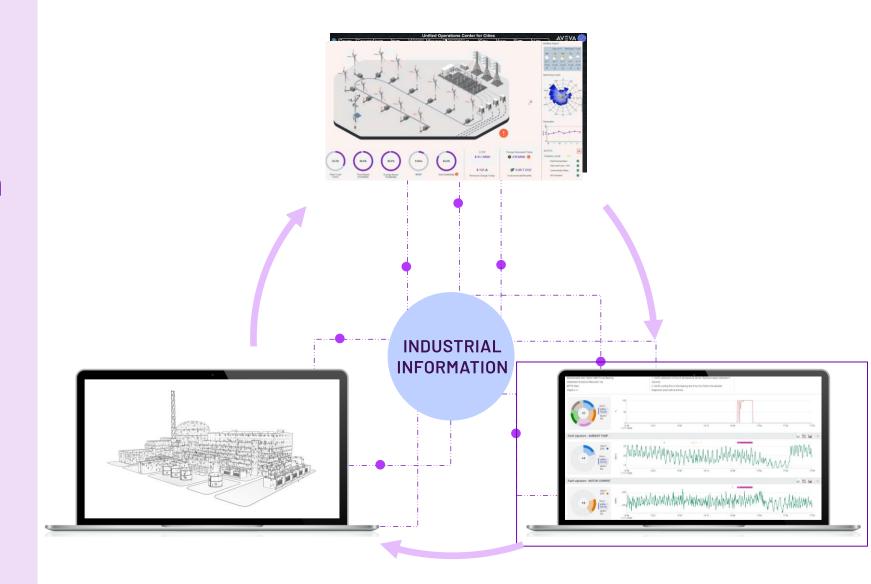
Gregg Le Blanc & Erwin Gove

**AVEVA** 

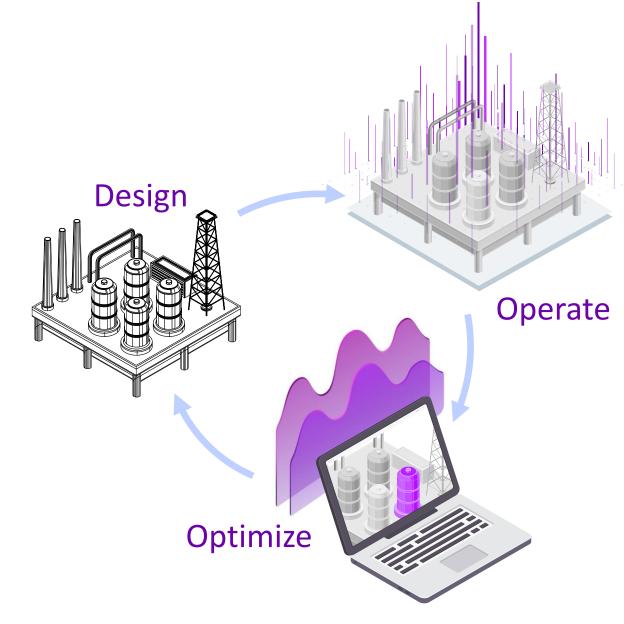


# Industrial information is at the heart of the living digital twin

Frictionless exchange of information fuels innovation and confidence



Build additive intelligence with a living digital twin







Deliver an open and neutral industrial platform

To accelerate value creation from AVEVA and partner applications



Access to applications and AVEVA Flex credit management

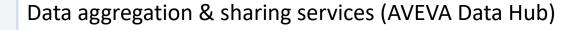






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**AVEVA Connect:** 

Access to applications and AVEVA Flex credit management







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Partner applications

#### NEW

#### **AVEVA** apps

- AVEVA MES support
- Advanced Analytics

**NEW** 

Visualization services

**AVEVA Connect:** 

Access to applications and AVEVA Flex credit management

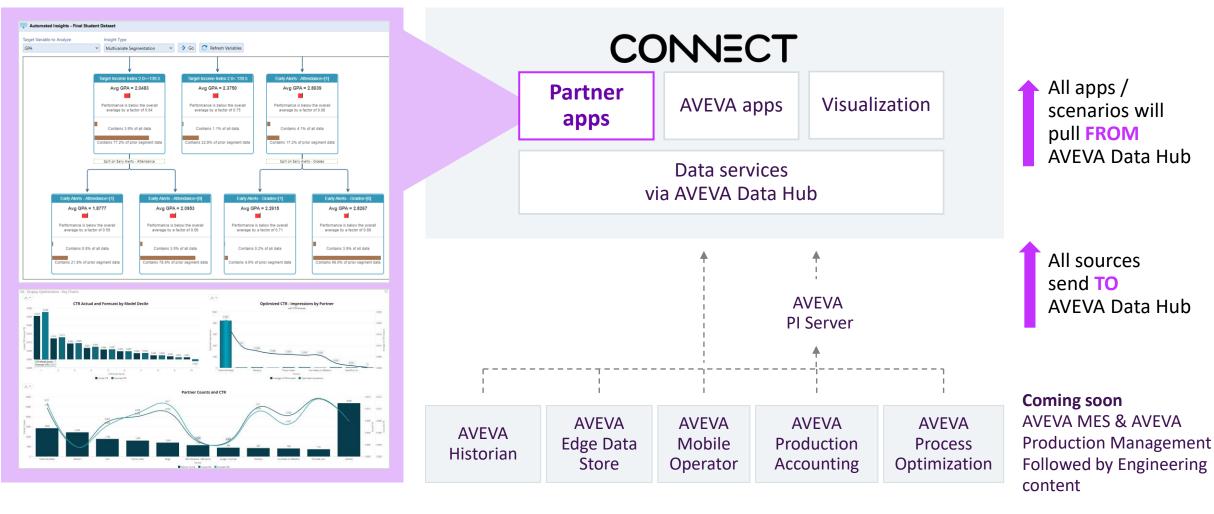
Data aggregation & sharing services (AVEVA Data Hub)





#### **NEUTRAL PLATFORM**

### Taking advantage of AVEVA Data Hub today sets up success for the future







Accelerate value creation from AVEVA and partner applications with an open and neutral industrial platform





Partner apps

Connect

**AVEVA** apps

In-house apps



Data services

Visualization

platform services • Modeling & analytics

& more to come



**CONSECT** Industrial intelligence-as-a-service





### Ecosystem of the Future

#### **Enhance the value of AVEVA Connect**

Increased data source aggregation & data science capabilities Leverage and extend your investments in AVEVA's applications

#### Support 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

#### **Bridge Engineering & Operations digital twin**

Increase storage, management, and alignment capabilities Represent engineering information in operational contexts

#### Drive digital transformation across the enterprise

Open and agile platform for engineering and operations information Support a network of partner applications and services

### AVEVA Connect – What's New and What's Next

#### **Available Now**

#### **Connect Admin**

- Improved UX
- Self-service customer intelligence

#### **Data Hub**

- Community data sharing/streams
- PI to Data Hub: edit existing transfers and replicate data changes
- AF in PI to Data Hub
- Data Views from shared data
- Data Views in Parquet format
- OCS to Data Hub migration

#### **Edge management**

- Edge Data Store 2023
- Edge Modules for EDS & Adapters

#### **Connect visualization services**

- AVEVA Data Hub integration
- Create dashboards on web & mobile

#### **In Development**

#### **Connect Admin**

- Identity and federation enhancements
- Cloud storage location addition
- Auditing for user and group imports
- Flex credit budget notifications

#### **Data services / Data Hub**

- Change data broker
- Event data store

#### **Edge management**

Edge Management: EDS & Adapters

#### **Connect visualization services**

- New integrations: AVEVA MES, AVEVA Asset Information Management
- Create pre-built applications for rich visual experiences
- Apply industrial graphics libraries

#### **Future Consideration**

#### **Connect Admin**

- 3<sup>rd</sup> party access to usage and consumption data
- Connect account communities: two accounts to collaborate on projects, consuming their own Flex credits (for UE)

#### **Data services / Data Hub**

- Community asset data sharing
- Asset Relationships / hierarchies
- 1D data for digital twin
- New availability regions

#### **Edge management**

- More data capabilities in EDS
- More data types in Adapters

#### **Connect visualization services**

Industrial Al assistant



# Recent Enhancements

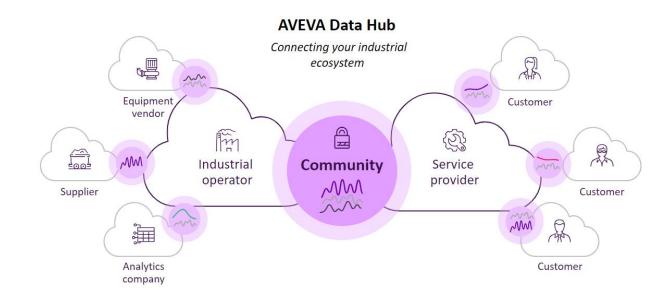
Available Now



### Community data sharing

#### Securely share operations data in a bidirectional way across tenants

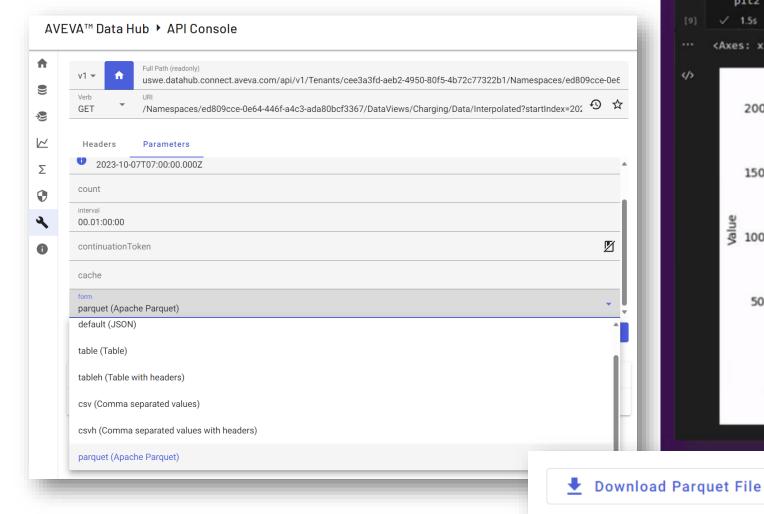
- Share data securely and seamlessly externally and bidirectionally across multiple tenants within the same community
- Granular control over what data each partner sees
- Shared data can be:
  - Consumed directly within AVEVA Data Hub via Trends
  - Transferred into Power BI using the AVEVA Data Hub native Power BI connector
  - Shared across custom applications, AI/ML platforms, or third-party analytics tools, like Grafana, via REST APIs





### New Data View export formats

Now supporting Parquet for use in data science!



```
+ Code + Markdown | ▶ Run All 

Clear All Outputs S Restart  

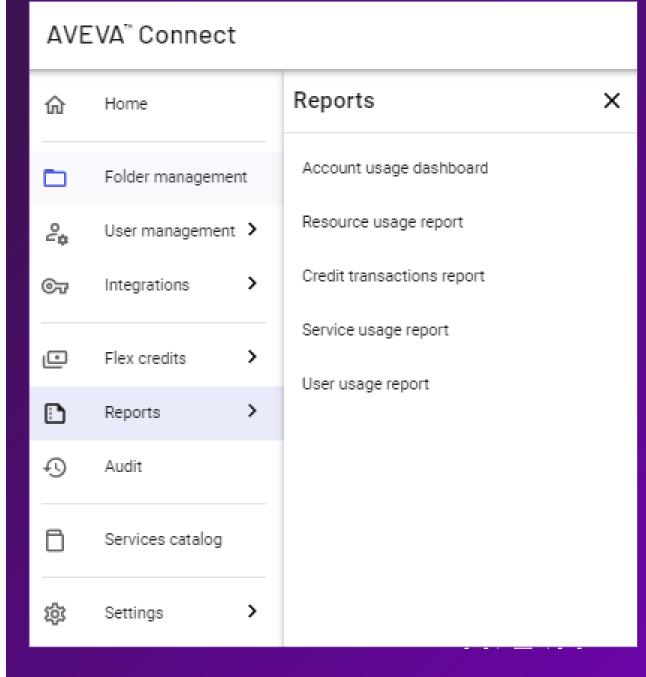
Variables 

Outline …
         plt2 = data.plot(x='Timestamp', y='Value')
         plt1
         plt2
     <Axes: xlabel='Timestamp'>
          20000
          15000
       9 10000
           5000
              06-20 0306-20 0606-20 0906-20 1206-20 1506-20 1806-20 2106-21 0006-21 03
                                             Timestamp
```

### Improved user experience

#### User-friendly design updates

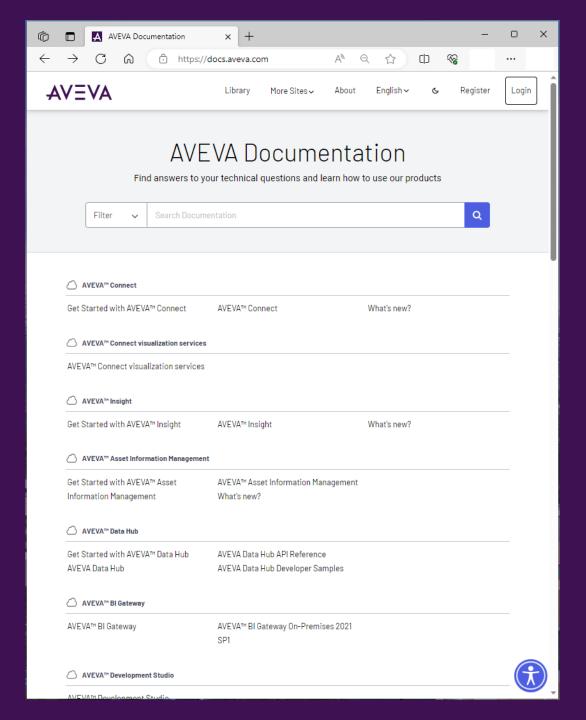
- Alignment with AVEVA's design standards
- Enhanced navigation and rail bar
- Faster navigation to pages
- Modern aesthetic



### **AVEVA Documentation**

# Product documentation for easy onboarding and implementation

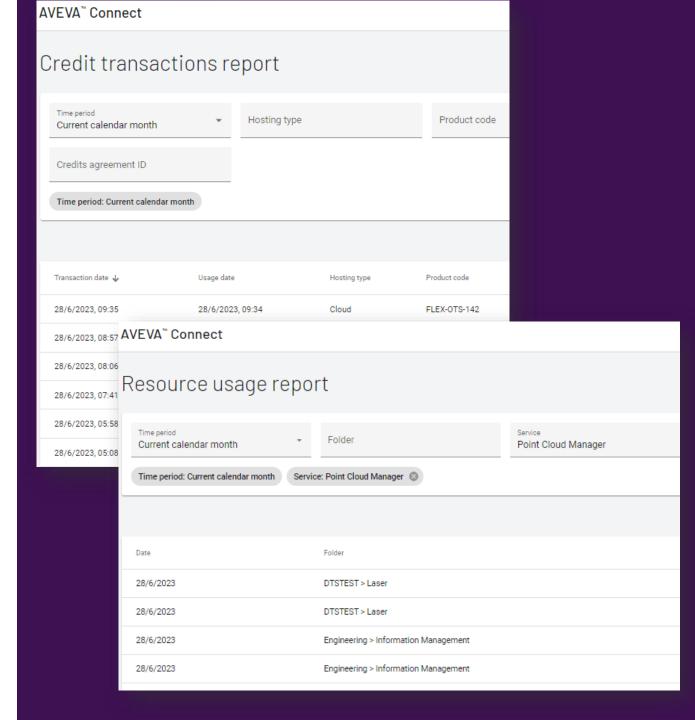
- Accessible through the Help Icon, or direct docs.aveva.com
- Available for AVEVA Connect and its extended platform services
- Able to see 'What's New?' for each product –
   centralised release notes
- Able to search across all documentation



### **New Reports**

# Improved data analysis within AVEVA Connect

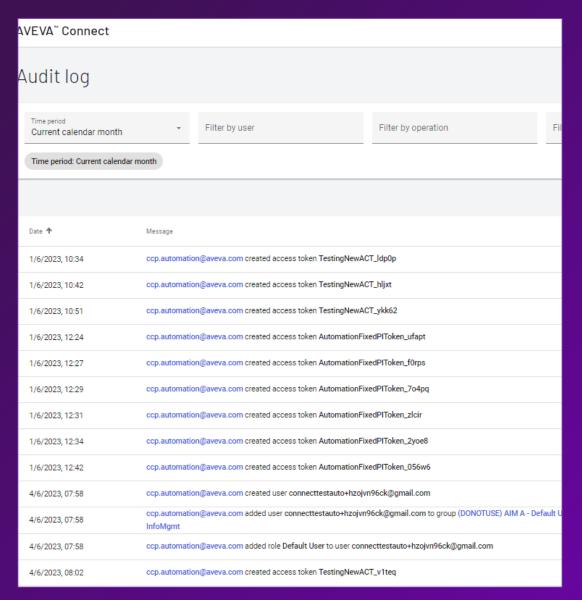
- New Credit Transactions report includes:
  - Enhanced filtering options
  - Order by
  - Decimal point standards
  - Additional export functions
  - Balance breakdown to view Universal, Cloud or OnPrem
- New Resource Usage report for solutions such as Point Cloud Manager to report on amount of storage consumed per folder level and expose data to administrators.



### **Enhanced Auditing**

#### Improved Audit analysis

- Improved labelling of functions across the solutions sending data, more solutions sending Audit data.
- \*coming soon\* inclusion of User modifications performed by the import file
- Minor improvements to messages

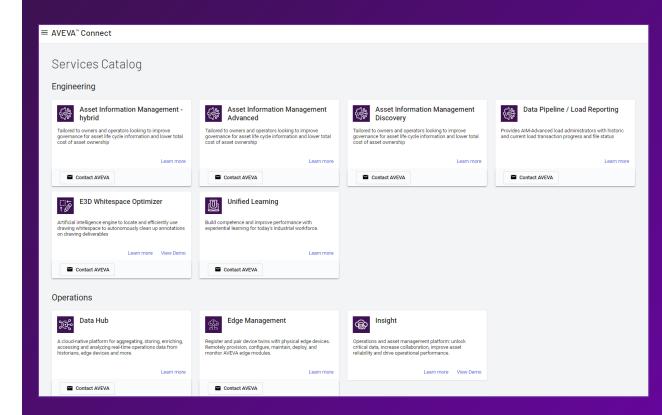




### Showcasing in Service Catalog

#### Improved portfolio discovery

- Cloud solutions shown within all customers' Service Catalog view, e.g.:
  - AIM
  - E3D Whitespace optimizer
  - Unified Learning
  - Data Hub
  - Edge Management
- Customers can self-discover and learn more about our offerings from within Connect
- "Contact AVEVA" emails the assigned Account Manager(s) on the account to express interest in the Solution





### Flex Budget notifications

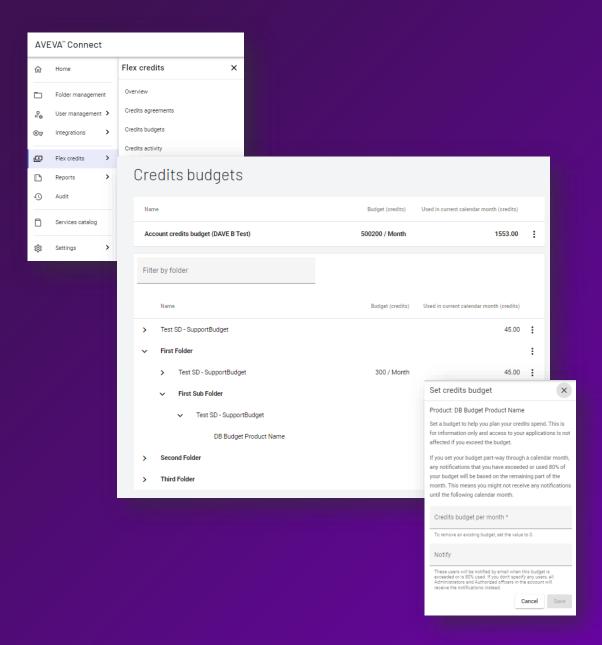
Ability to better understand and manage Flex

#### Phase 1

- Set "soft" budgets meaning email notifications once a threshold has been consumed that month
- By service instance, i.e., have a budget notification for Unified Engineering in folder A, and a separate budget notification for Unified Engineering in folder B. The budget can be against 1D, 2D or 3D user Flex consumption.

#### Phase 2

- By product, i.e., have a budget notification on Unified Engineering as a total solution, regardless of the number of instances.
- Provides basic budget capability regardless of the budget opt In





# Upcoming Innovations



### AVEVA Data Hub in 2022

Remote monitoring



3rd party analytic tools

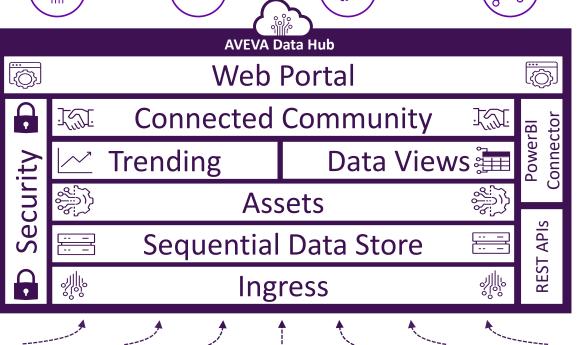
Data sharing with business partners

Custom & partner applications

Reporting & Dashboards







OMF Apps & Remote assets

((p))

**Adapters** 



Data Store



PI Server



Historian





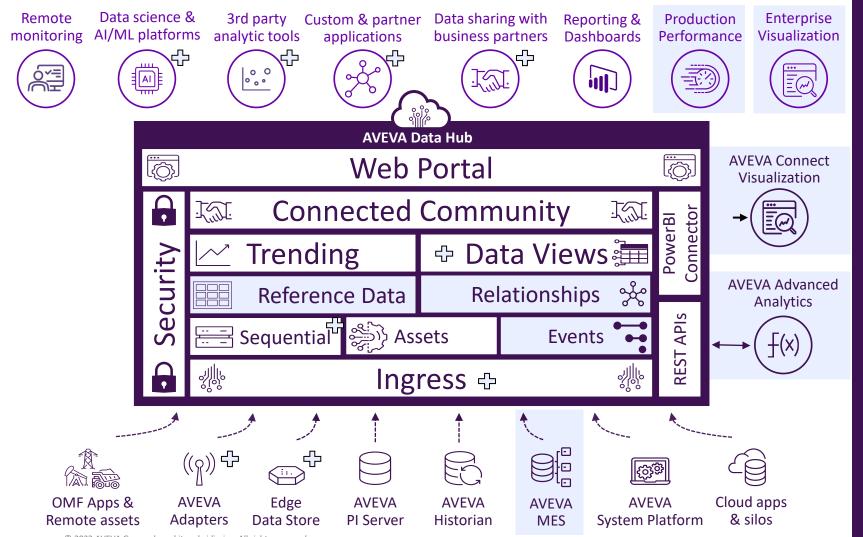
AVEVA System Platform Cloud apps & silos A cloud-native industrial platform designed for aggregating, storing, enriching, accessing, analyzing, and securely sharing real-time operations data from historians, edge devices, and more

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

Supported Regions
West US (California)
North Europe (Ireland)
Australia East (New South Wales)



### AVEVA Data Hub in 2023



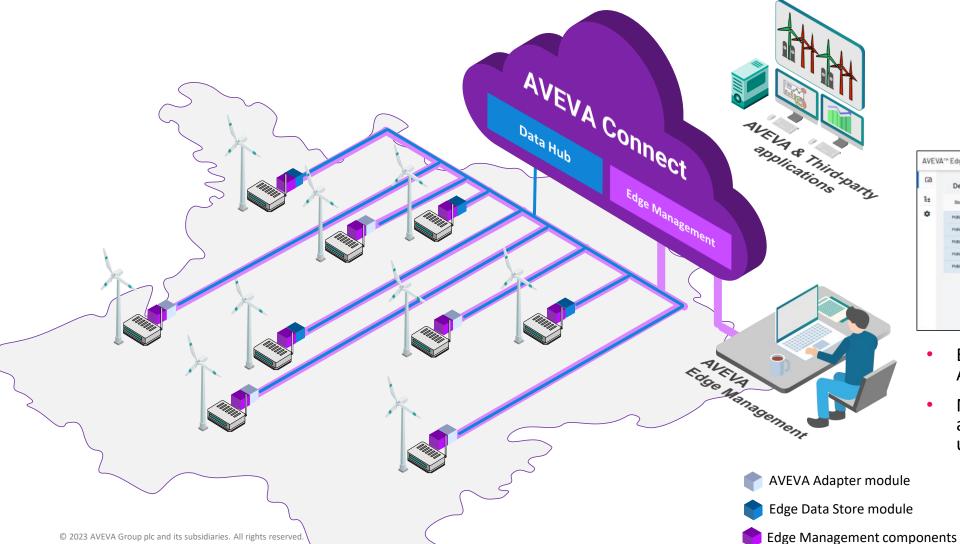
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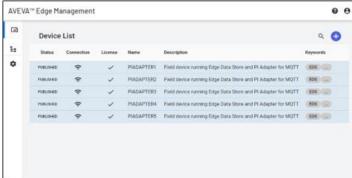
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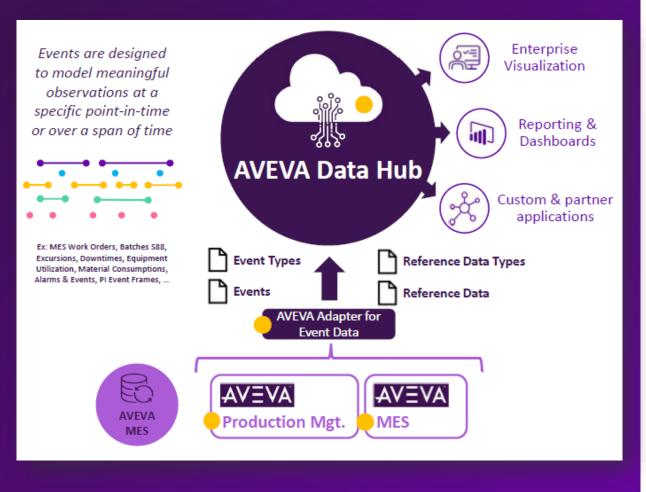
### Manage software deployments at scale with AVEVA Edge Management





- Easily deploy Edge Data Store and AVEVA Adapters from the cloud
- Manage device and installation status and apply software and configuration updates





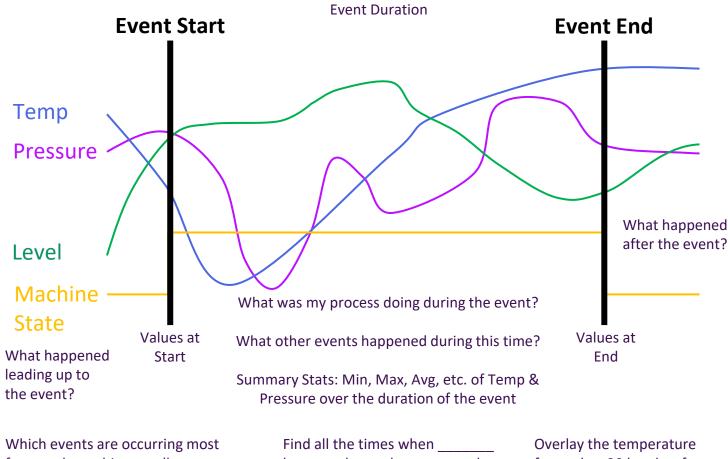
### New: Event Data Store

Store event data in AVEVA Data Hub and provide a rich contextual search API for retrieving the information

- Extend the data historization and retrieval capabilities of AVEVA Data Hub (ADH) to include event data
- Inclusion of various event types (production, quality, inventory, batch, downtime, excursions, etc.)
- Integration of contextual reference data for improved relationship analysis
- Stores MES/MOM event history
- Enables enterprise-wide visibility into manufacturing operations
- Enhances data management capabilities across a network of plants and beyond



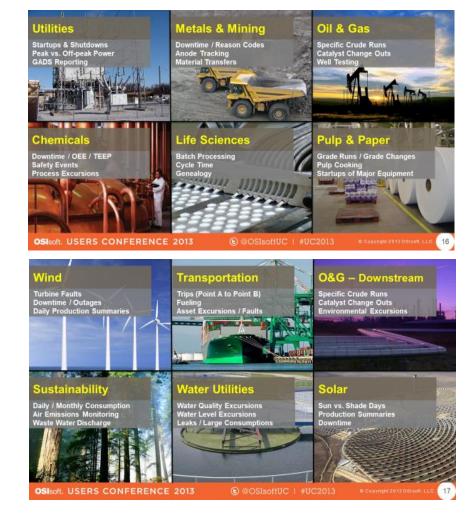
### Events capture meaningful industrial context & observations



Which events are occurring most frequently on this asset (by count or cumulative duration)?

happened over the past month on my wind turbines.

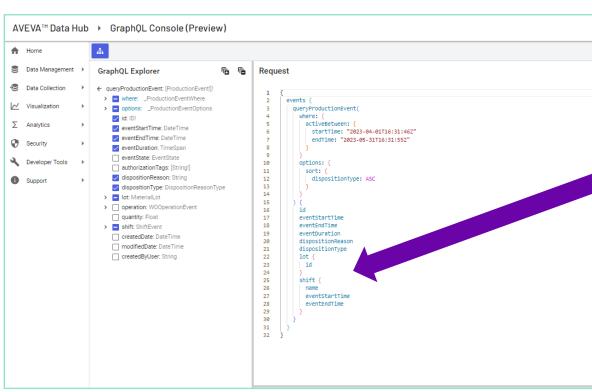
Overlay the temperature for my last 30 batches for my product 'Super Drug'.





### AVEVA Data Hub Event Data Store

Richer query language to interact with the connected industrial data



# What's being evolved & improved with AVEVA Data Hub Events:

#### • Flexible Relationships

- Any Event property can reference another event or reference data or asset or [future entity] in the graph
- More flexibility: Customers can model the relationships that they want (can be extended)
- GraphQL Richer Query Language to interact with the data
  - Rich GraphQL API Console
  - Retrieve specific properties from related data in one query by navigating the relationships between entities

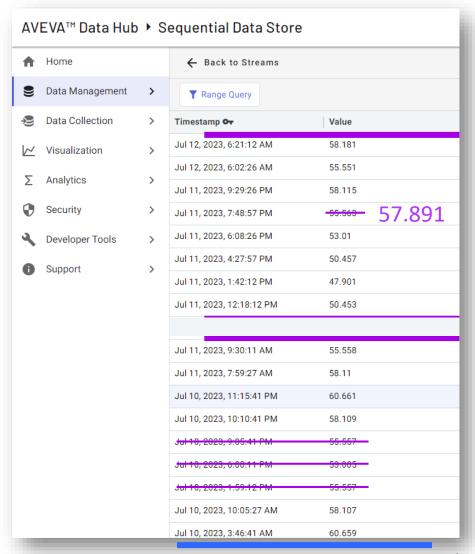
#### Broader data scope

- Broader event data footprint (ex: AVEVA MES)
- Reference data
- Larger [Cloud] scale
  - Approach is to leverage cloud scale & goal is to handle events across the enterprise



### New: Change broker tackles dynamic operations data

- Query change data from streams
- Support streams shared via community
- Capture changes to data
  - Update
  - Insert
  - Replace
  - Delete
- Reduces inaccuracies and other challenges associated with changes in data



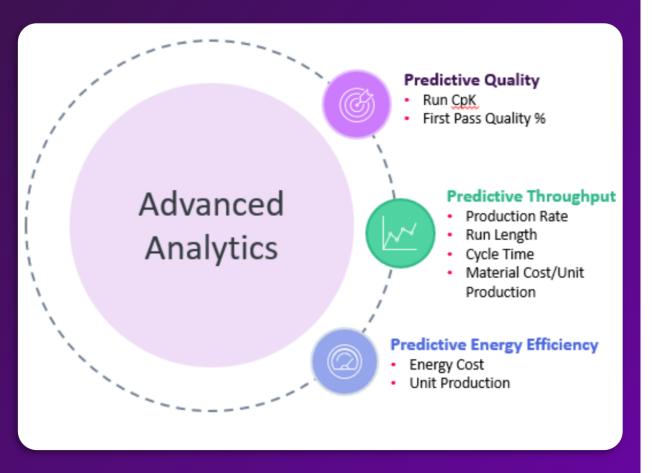
Update – new values

Replace - an existing value

Insert – new value (out of order)

Remove – deletion!





### AVEVA Advanced Analytics

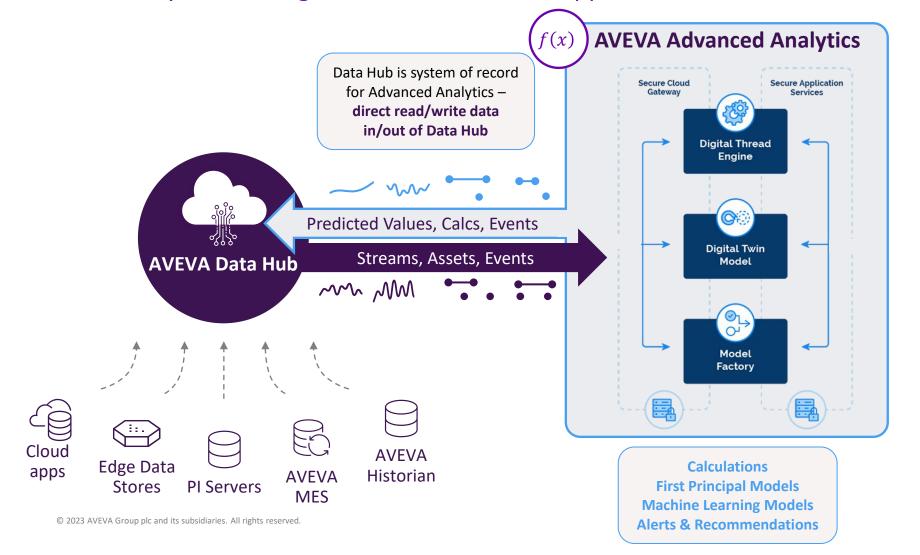
Transform data into actionable insights to maximize production efficiency

- Improve production quality
  - Ensure optimal quality by predicting quality metrics during the production process.
  - Reduce cost of quality, increase first pass yield and reduce recalls.
- Increase energy efficiency
  - Reduce carbon footprint by identifying patterns and conditions to operate at an optimal energy rate.
- Enable predictive throughput
  - Optimize throughput on products and lines to be able to operate at the highest possible production rate.
  - Get recommended corrective actions when deviating from optimal conditions.



### AVEVA Advanced Analytics

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





#### **Predictive Quality**

- Run CpK
- First Pass Quality %



#### **Predictive Throughput**

- Production Rate
- Run Length
- Cycle Time
- Material Cost/Unit Production



#### **Predictive Energy Efficiency**

- Energy Cost
- Unit Production





### AVEVA's Visualization Experience – Strategy

**Key Concepts** 

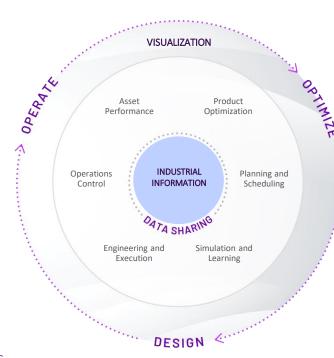
Enable Self Service Innovation







Specific Lenses Experiences into Digital Twin



Aligning Siloed Industrial Data thru AVEVA Data Hub

Aligning other Industrial Operations Data

Visualization Integration/ One Pane of Glass

Ability to Assemble Role/ Situation Lenses Experiences

Domain Application Composer

Contextualized Co-Innovation Teams

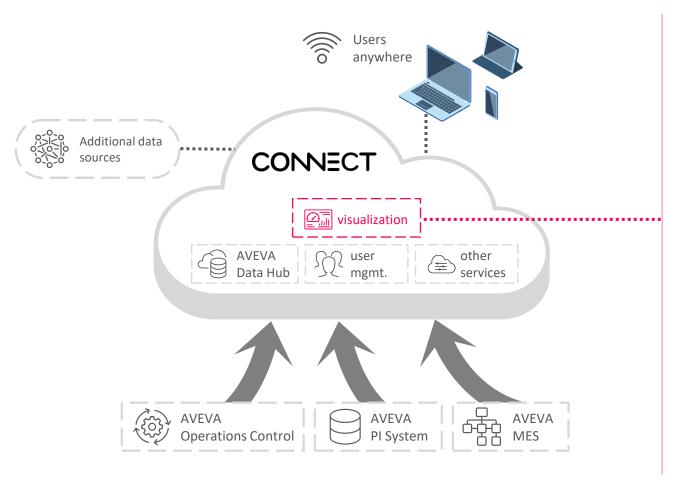
Content/ Application Management Service Across the Enterprise

Industrial Enterprise Portals for Speed to Value



### Data visualization through AVEVA™ Connect

Rapid information synthesis for the citizen analyst



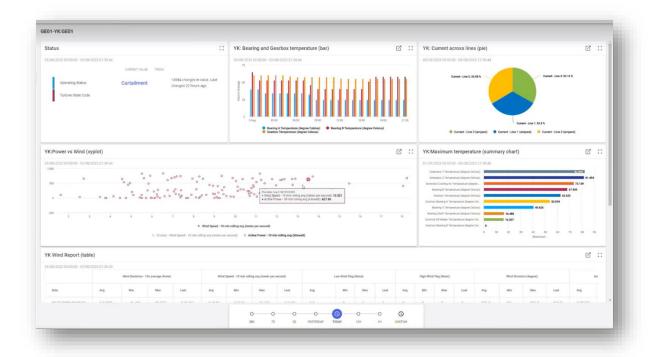
- Self-service dashboard creation in a browser, accessible on any device
- Craft unique experiences by role and use case need
- Save, edit, and share displays
- Create and arrange a variety of content, including:
  - Process analysis data streams
  - Production event and contextualized metadata
  - Engineering 1D, 2D, 3D materials
  - Graphical elements library
  - Operational Tower views
  - Third-party information
- Cloud-native service provided by AVEVA in the Cloud



### Connect visualization services

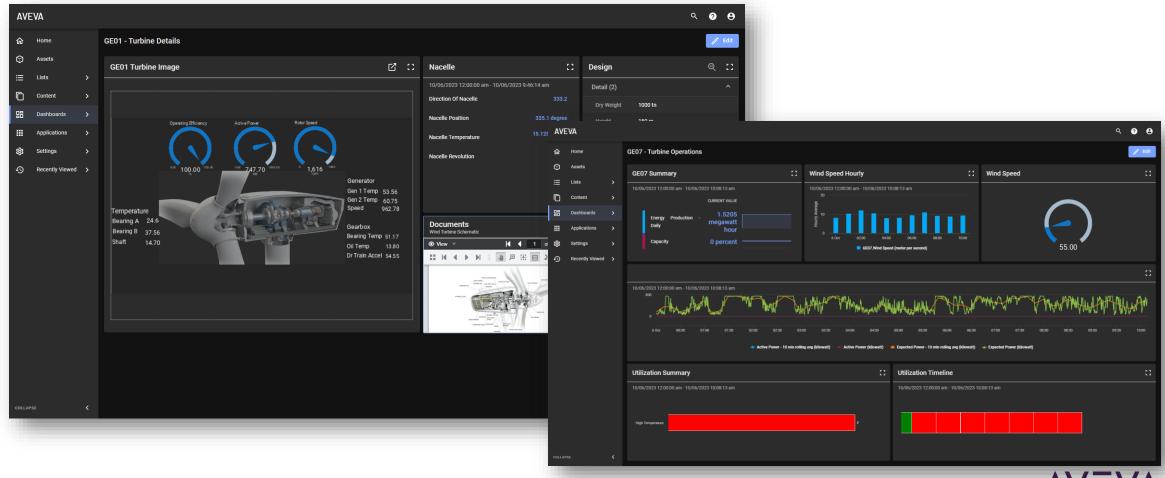
#### Create custom and pre-defined dashboards for industrial time-series data

- Two dashboard types
  - Self-service: user created views assembled from a default and customized/imported content library
  - Pre-defined: engineered views providing a more structured and interactive visualization experience
- Craft dashboards for different use cases and data visualization needs
- Incorporate data from AVEVA Data Hub and thirdparty services
- Assemble lists of assets and previously associated content for easy view
- Manage user permissions by creation and access





### Self service visualization



### Pre-engineered content







### More pre-engineered content





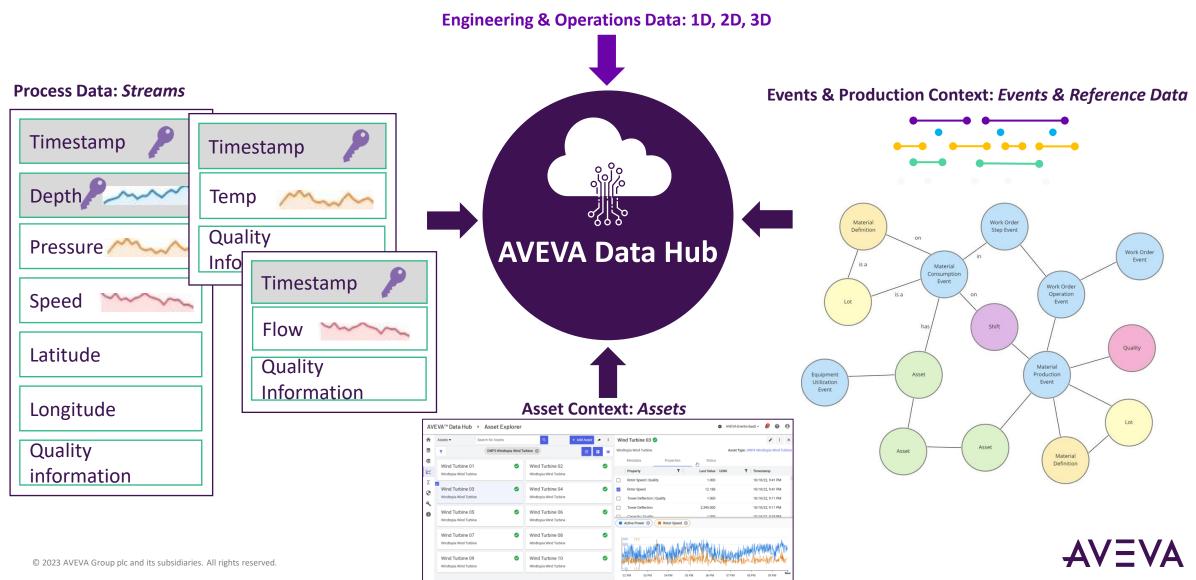


# Contextualizing the digital twin

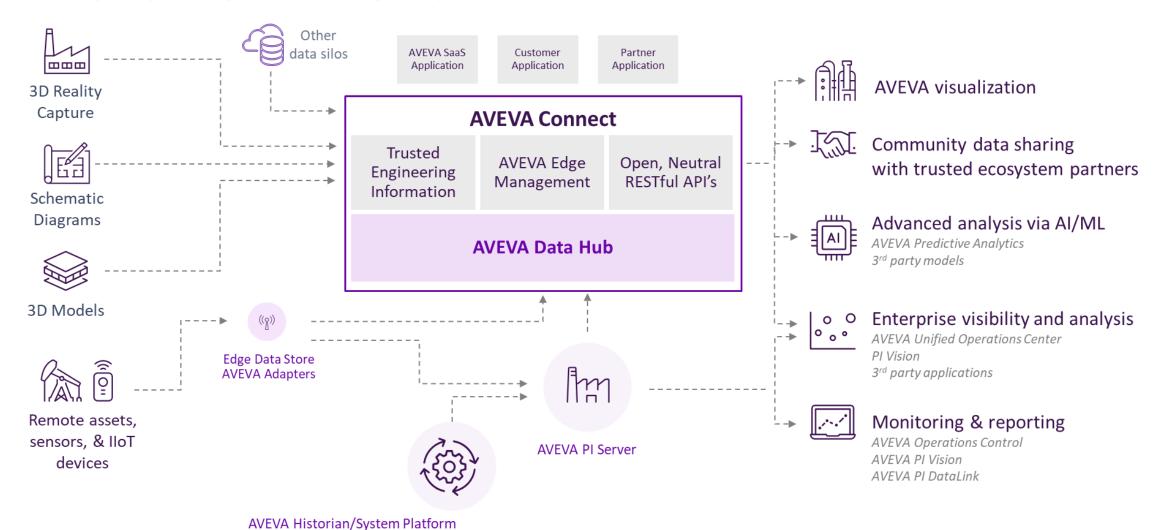
Engineering information and context build more intelligent information



### Solid foundation to expanding the industrial data footprint



### Bridging engineering, operations, and business domains





**AVEVA Manufacturing Execution System** 



### Ecosystem of the Future

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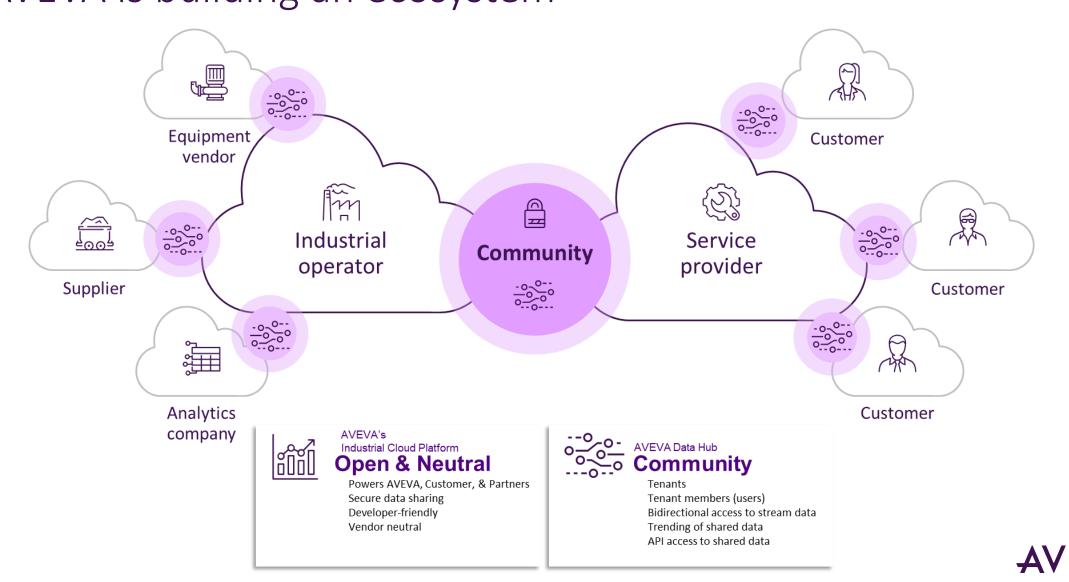
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## AVEVA is building an ecosystem



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Industrial AI assistant



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- @avevagroup

#### **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

