OCTOBER 25, 2023

AVEVA™ Data Hub™ is storing something new, and it’s a must-see Event

AVEVA

Todd Brown & Alicia Coppock

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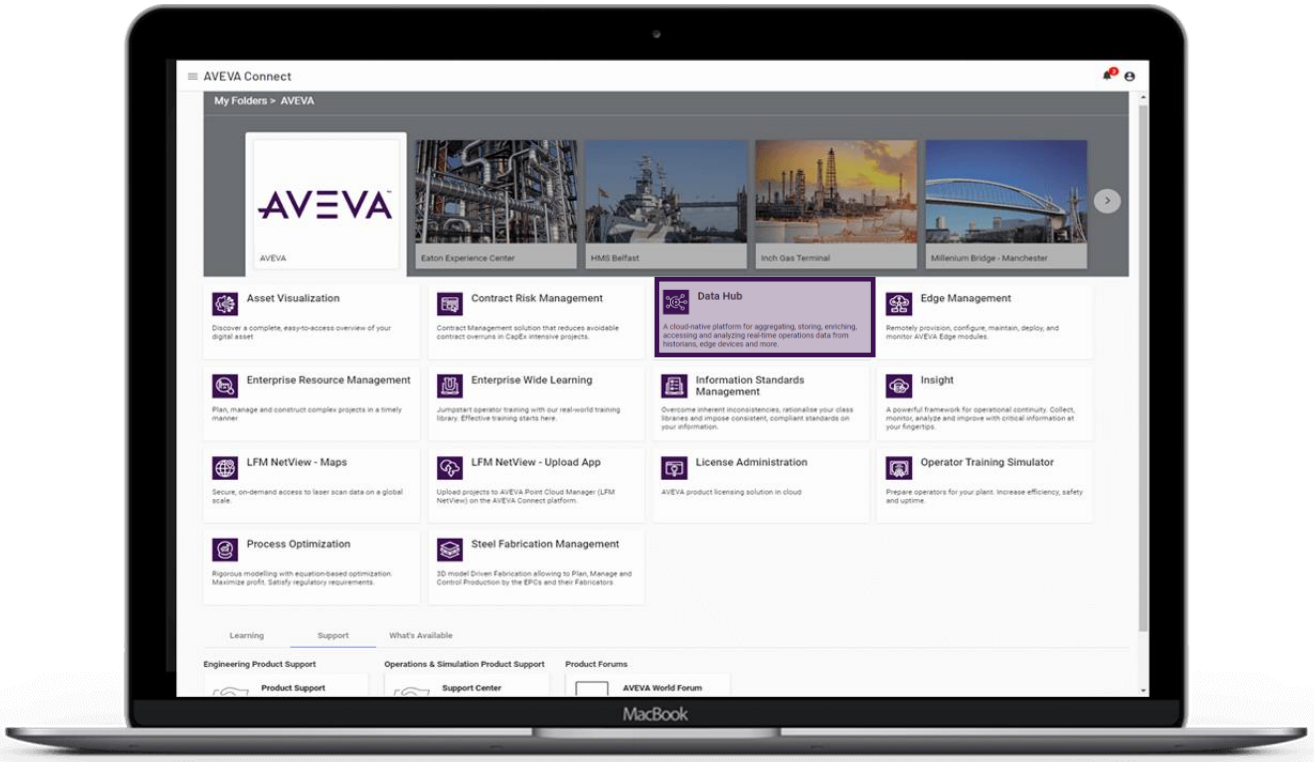
AVEVA Connect: Our industrial cloud platform

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

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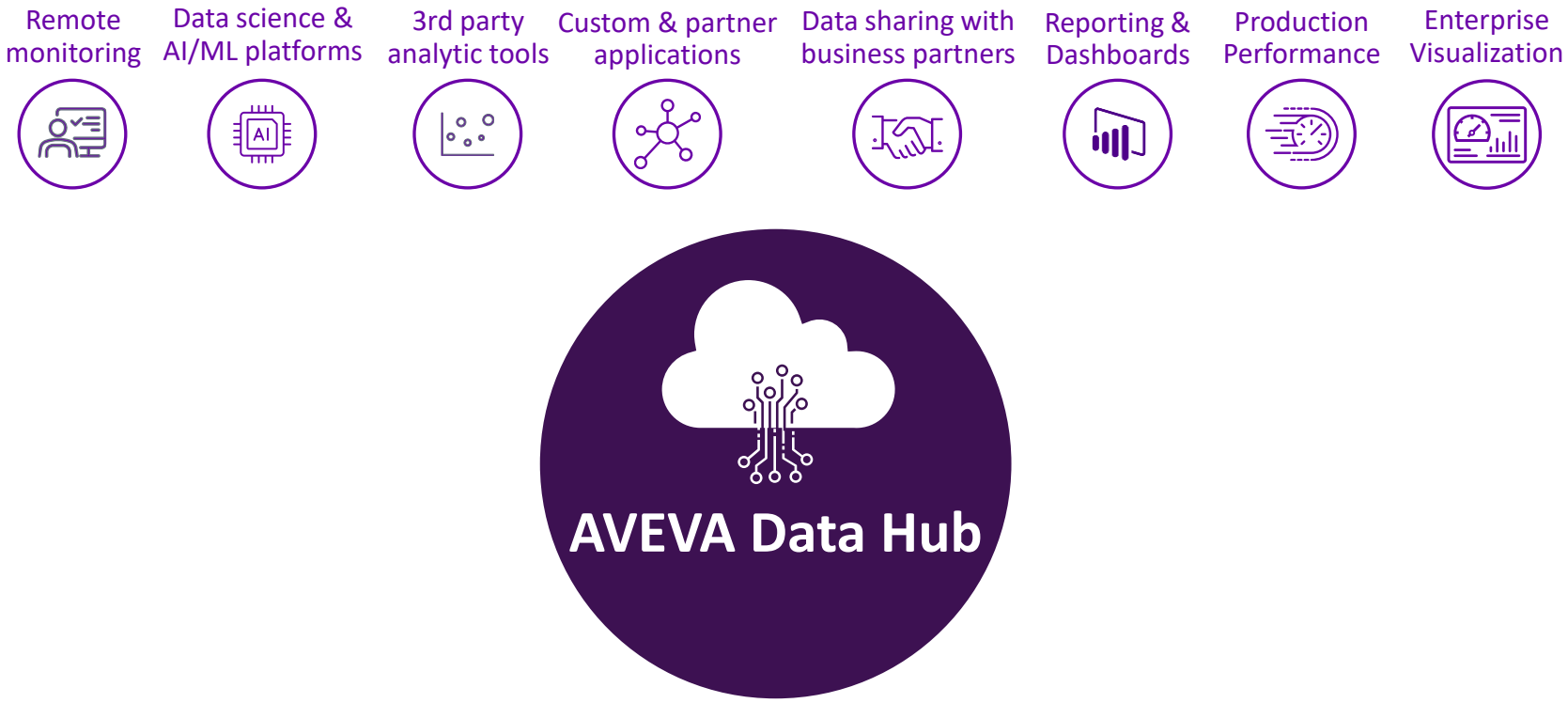
AVEVA Data Hub



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

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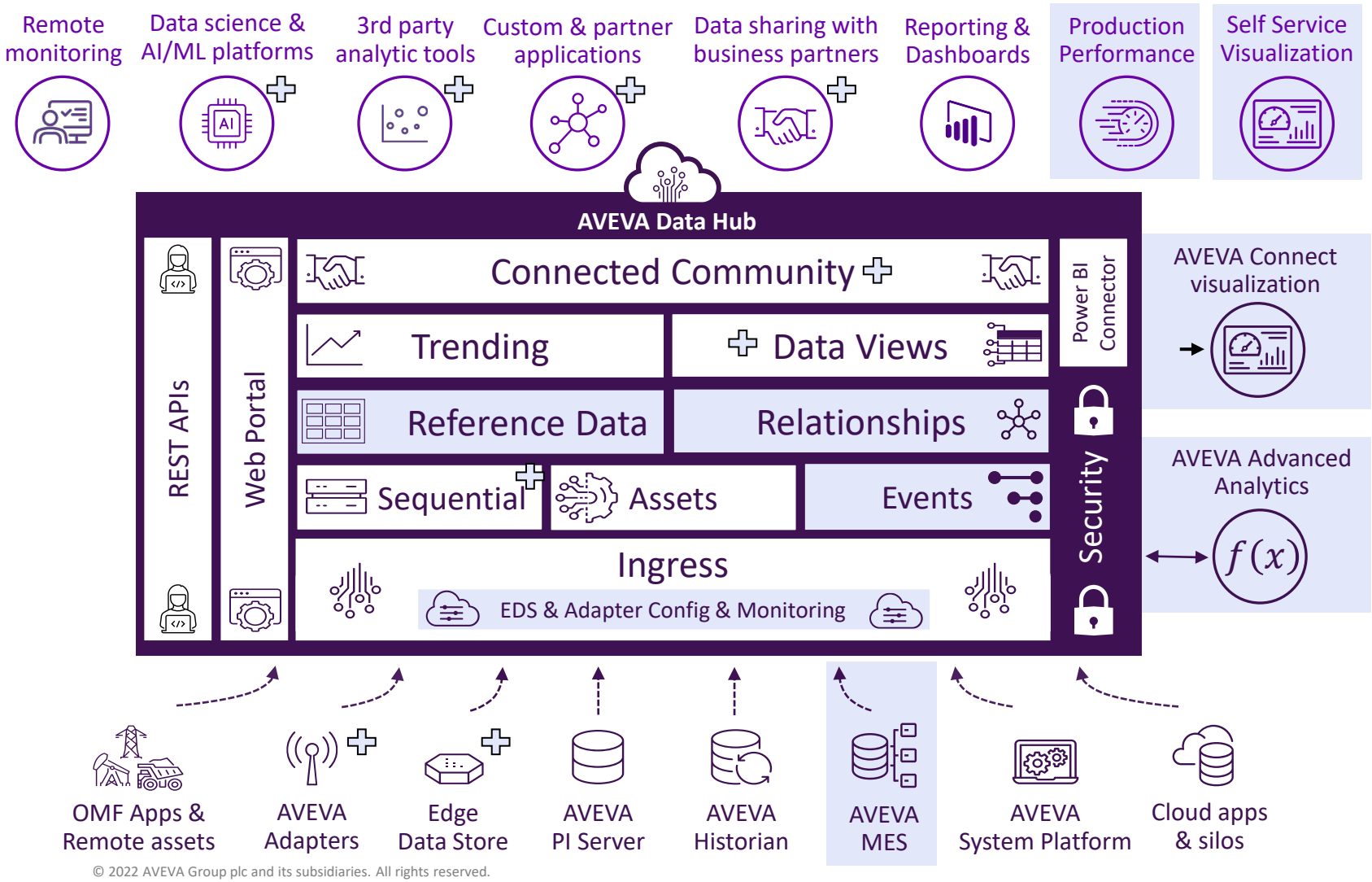
AVEVA Data Hub in 2023



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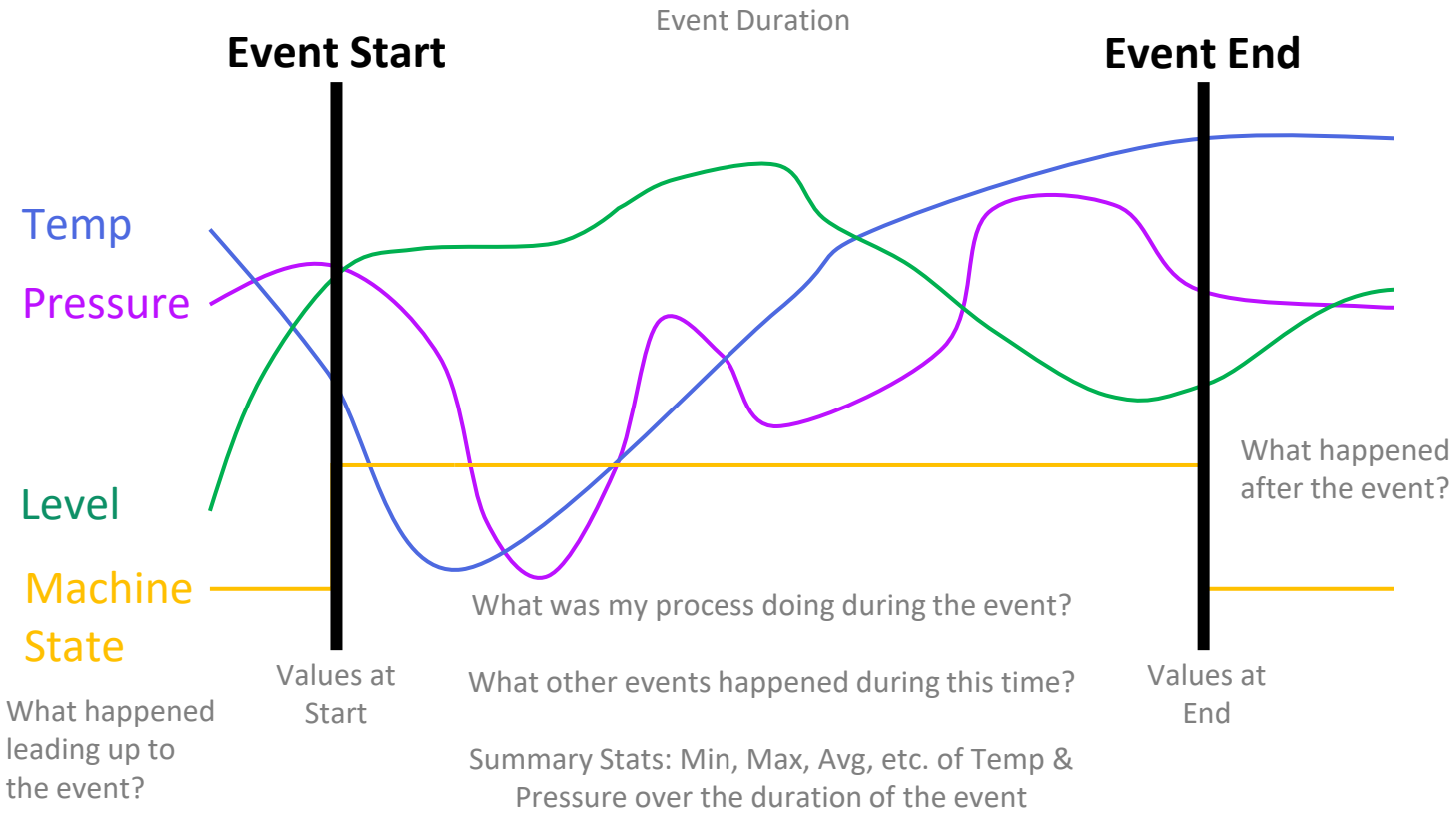
- Modern, secure REST APIs
- Built & deployed on Microsoft Azure

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

AVEVA

Events capture meaningful industrial context & observations



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

Find all the times when _____ happened over the past month on my wind turbines.

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

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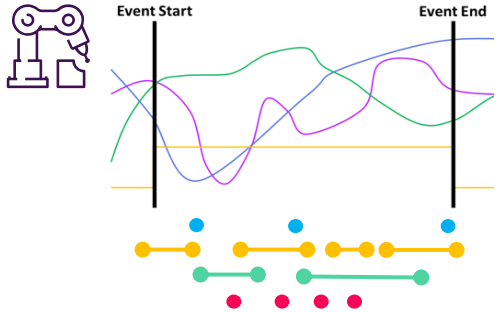
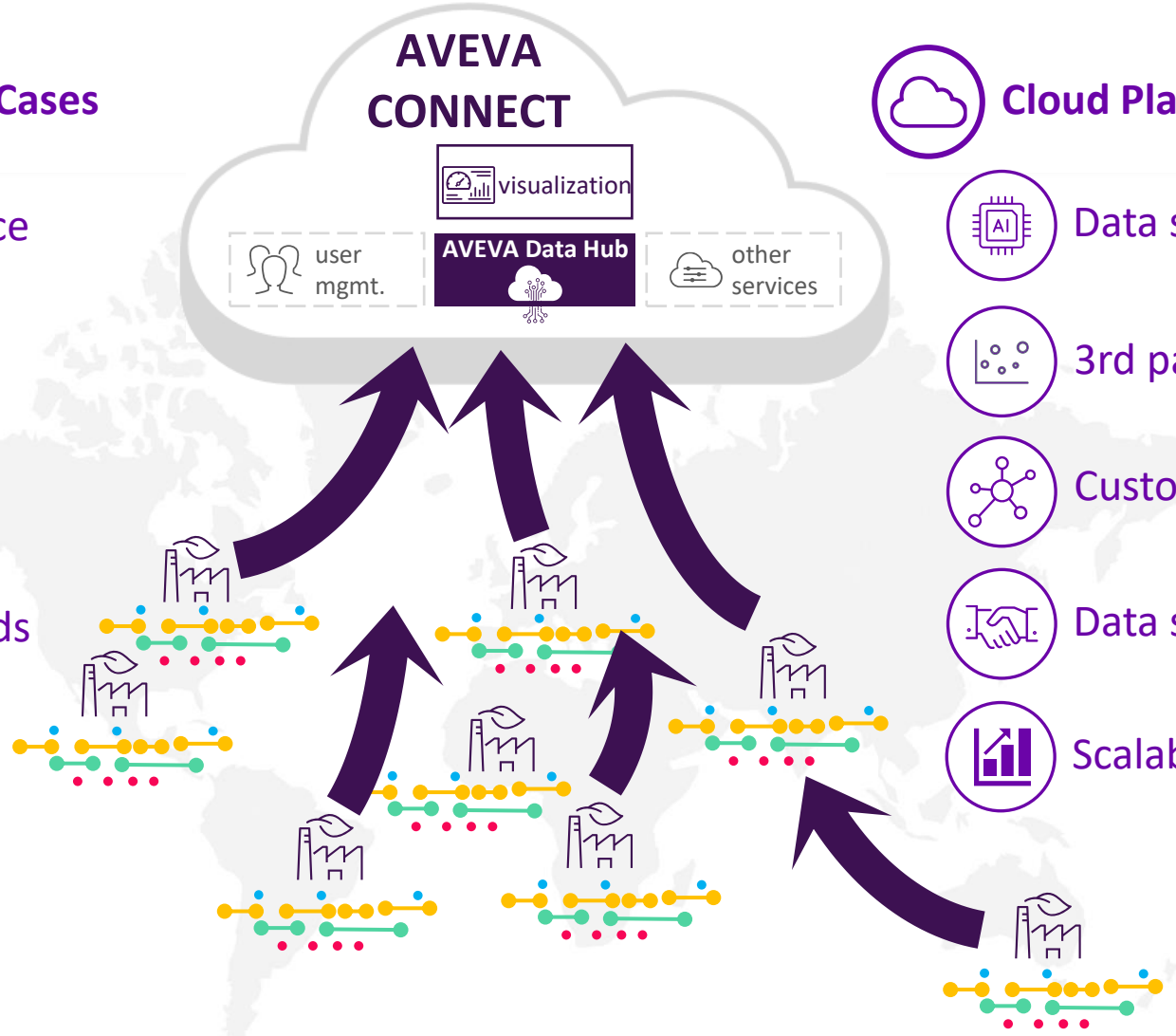
Events scaled for your industrial enterprise



Multisite / Enterprise Use Cases

- Production Performance
- Product Quality
- Sustainability
- Reporting & Dashboards
- Visualization
- and more …



Cloud Platform Advantages

- Data science & AI/ML platforms
- 3rd party analytic tools
- Custom & partner applications
- Data sharing with business partners
- Scalability

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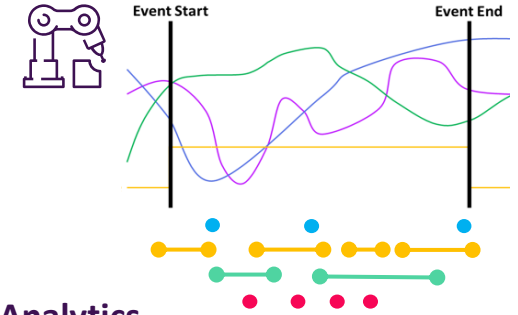
Delivering more value with AVEVA Connected MES



Multisite / Enterprise Use Cases

- Production Performance
- Product Quality
- Sustainability
- Reporting & Dashboards
- Visualization
- and more …

Enterprise Data Management Services

AVEVA CONNECT

visualization

user mgmt.

AVEVA Data Hub

other services

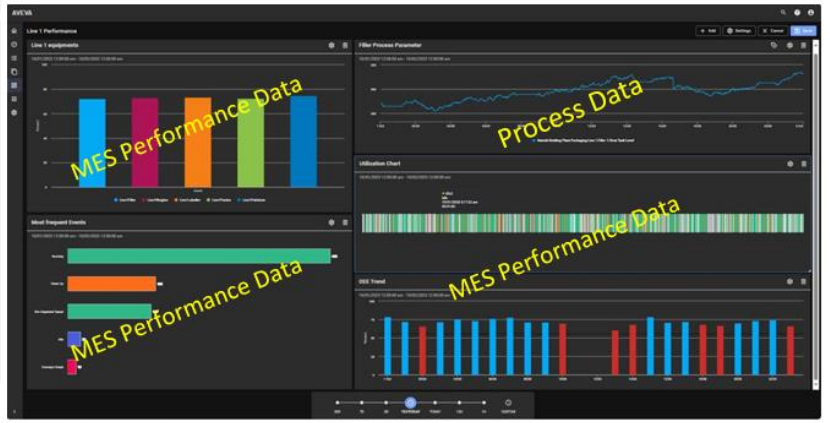
AVEVA Advanced Analytics

Production Optimization (AI/ML) Services

AVEVA Connect visualization services

[AVEVA MES Reporting]

Analysis & Dashboarding Services



AVEVA Manufacturing Execution System (MES)

AVEVA Manufacturing Execution System (MES)

AVEVA Manufacturing Execution System (MES)

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AVEVA

Events in AVEVA Data Hub

Alicia Coppock

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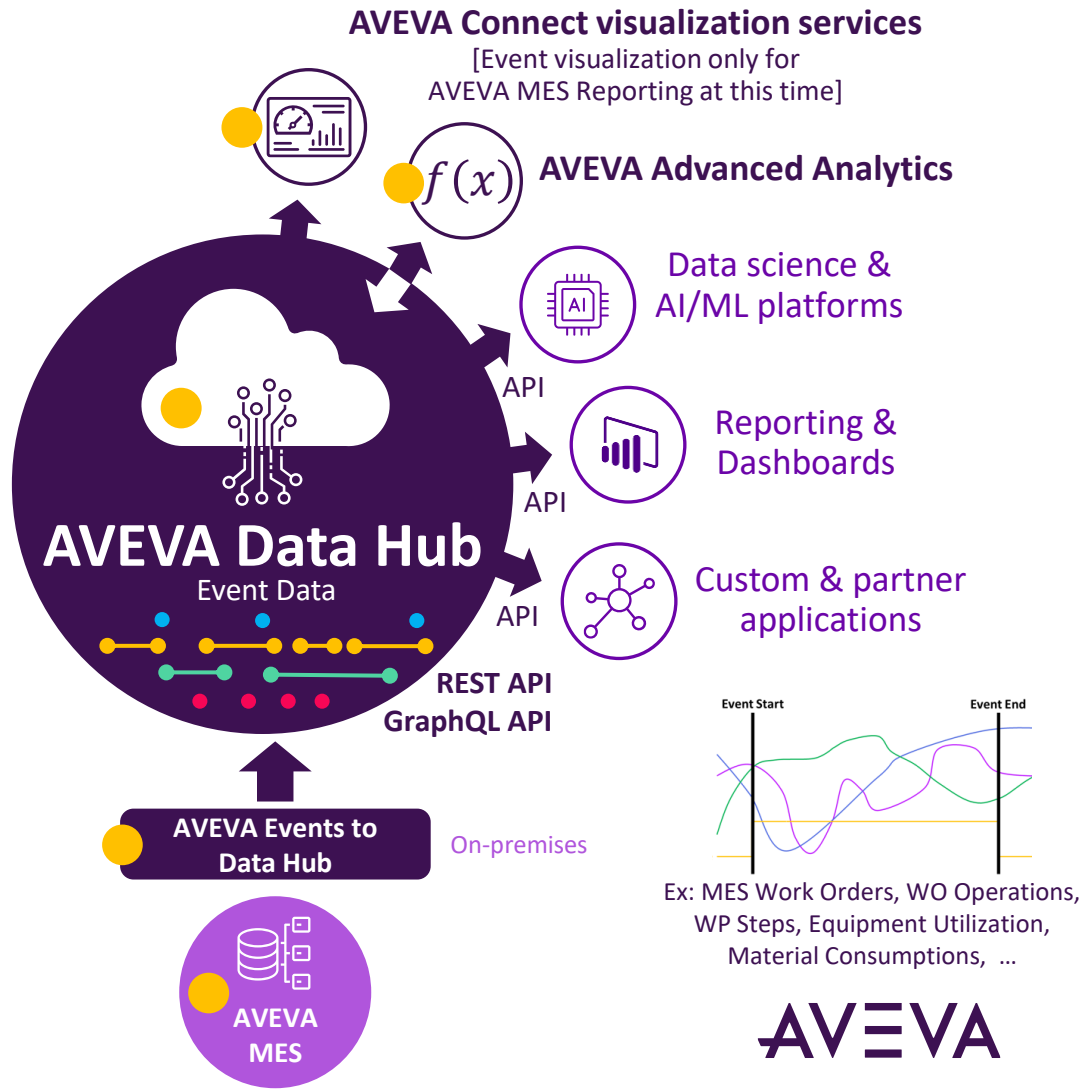
Event & Production Data Context in AVEVA Data Hub

Enterprise Connected AVEVA MES

- **Egress & API**
  - *AVEVA Connect visualization services*: Visualization & Reporting for AVEVA MES
  - Rich GrahpQL API for accessing events & related events, reference data, and assets.
  - GraphQL Explorer UI for building complex queries easily
- **Enrichment**
  - *AVEVA Advanced Analytics*: creation of events from process data, inclusion of events in analytics & machine learning, visualization of events
- **Storage**
  - Flexible schema for modeling & storing industrial events & reference data
  - Capture complex relationships between events, reference data, and assets
  - Events leveraging scale of the cloud
- **Ingress**
  - Rich API for ingressing event data from other applications & event sources
  - Out of the box connectivity for AVEVA MES



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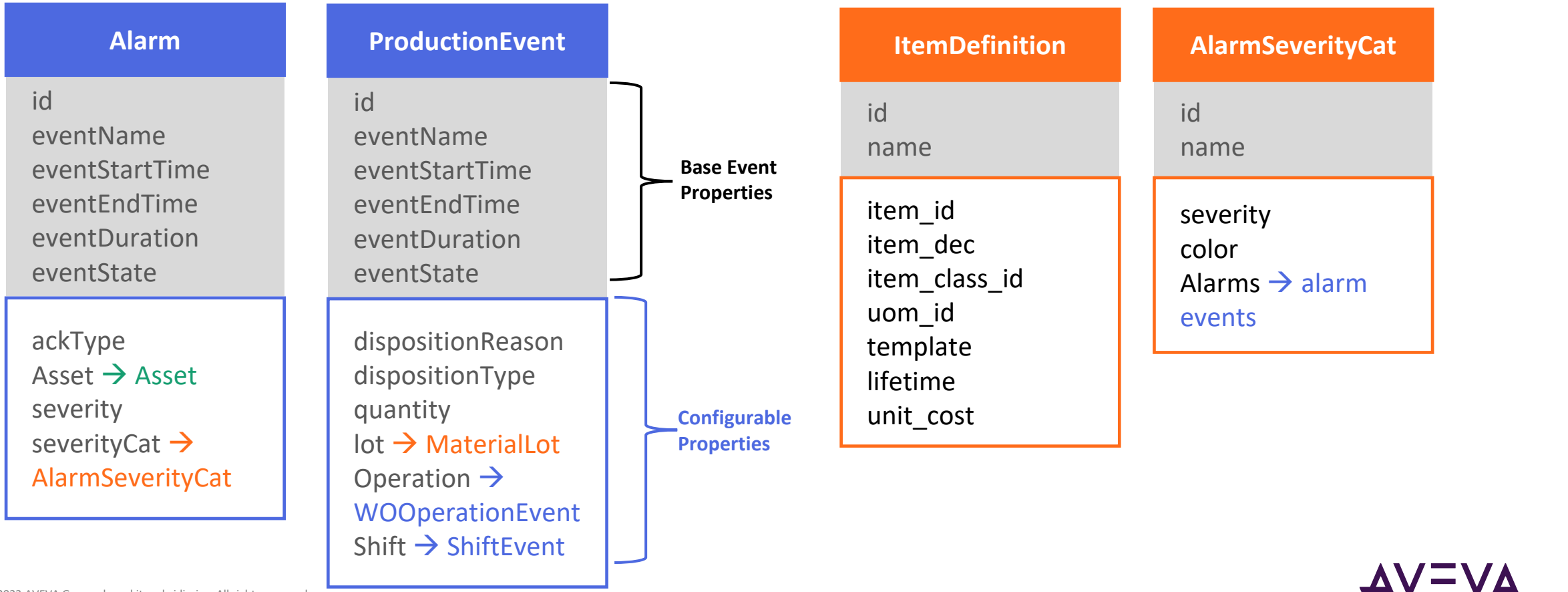
Flexible schema for modeling Events & Reference Data

AVEVA Data Hub Events & Reference Data

Event Types *– definitions for domain specific events*

Reference Data Types *– definitions for additional context*



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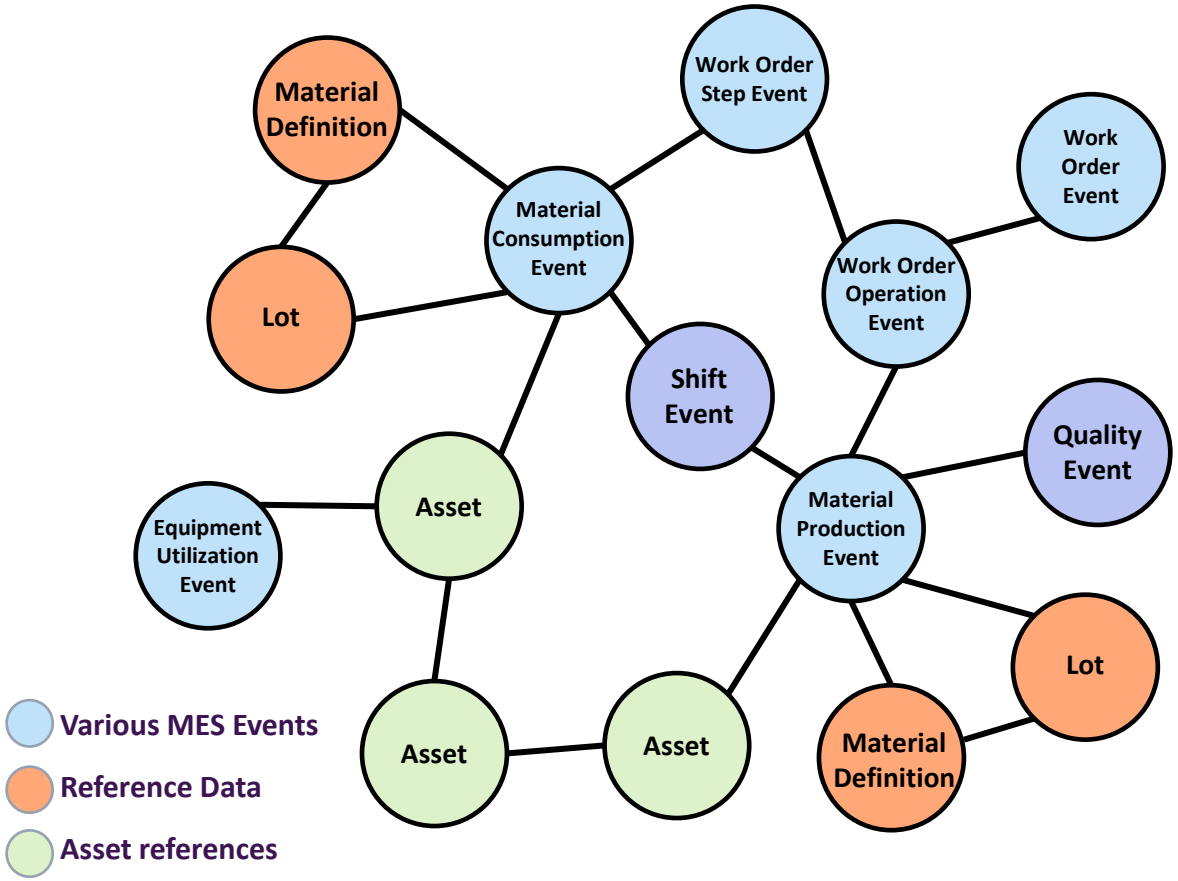
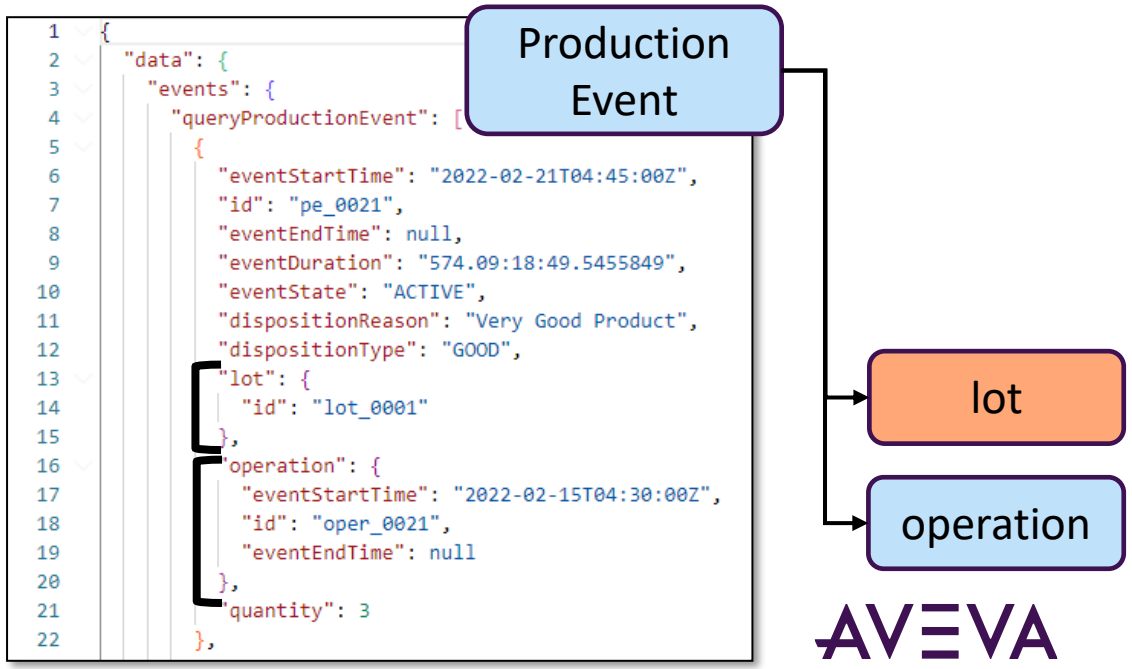
Capturing industrial relationships between events, ref data, & assets

AVEVA Data Hub Events & Reference Data



- **Flexible Relationships**
  - Any Event property can reference *another event* or *reference data* or *asset* or *[future entity]* in the graph
  - More flexibility: Model the unique relationships in your data



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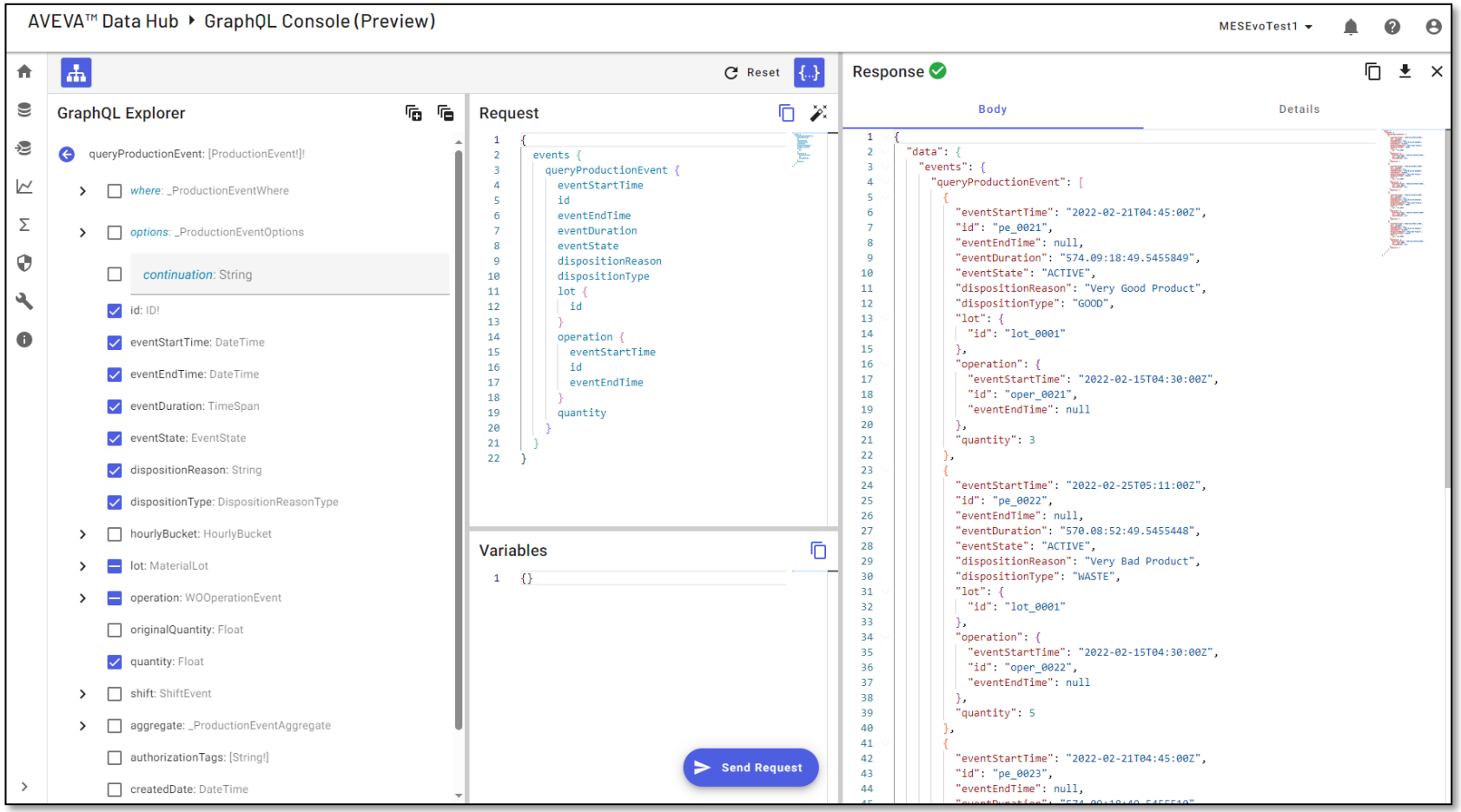
Richer query language to interact with the connected industrial data

AVEVA Data Hub Events & Reference Data

- **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



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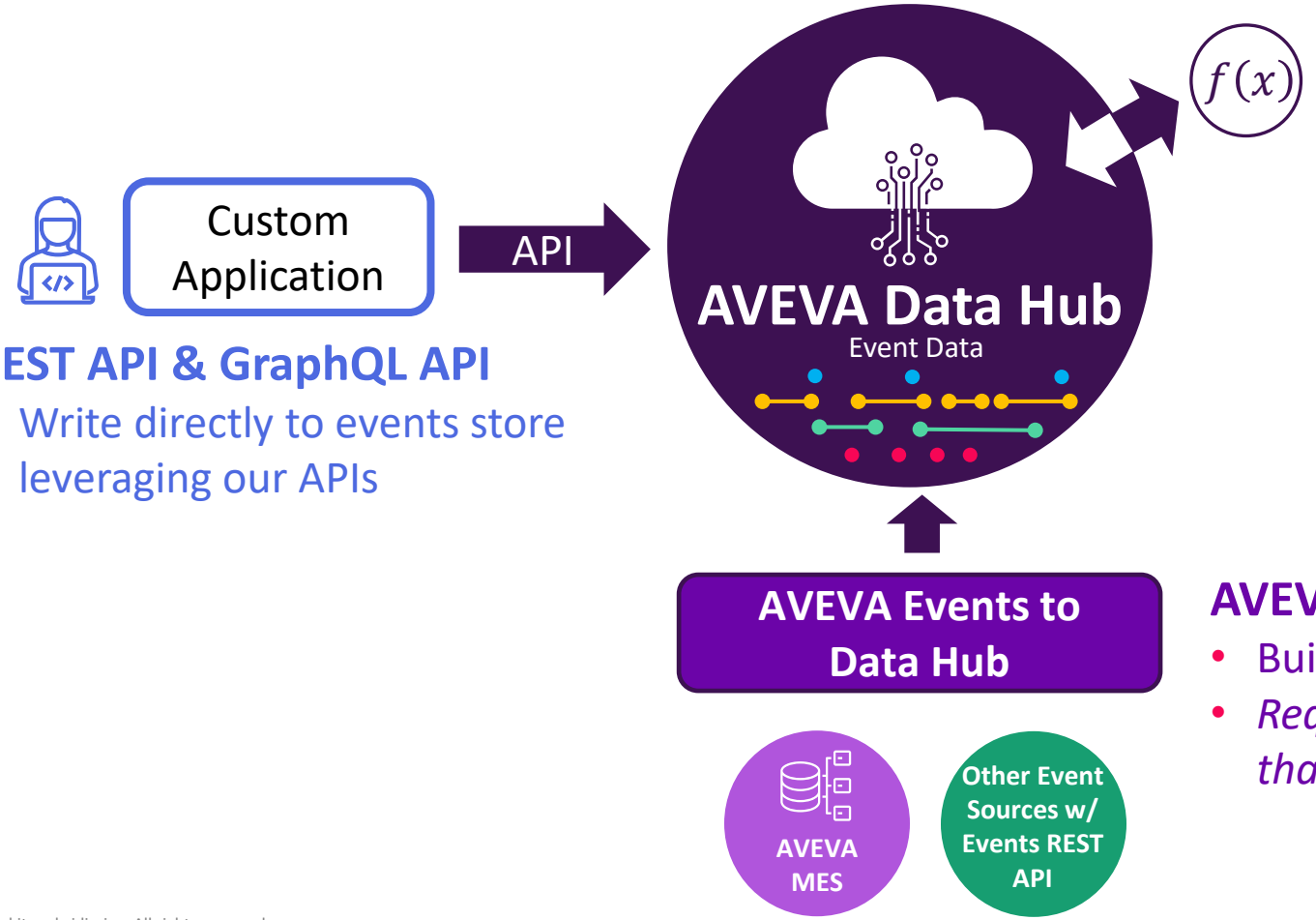
Ingressing Events

Multiple ways to ingest events into AVEVA Data Hub (more to come in future)



REST API & GraphQL API

- Write directly to events store leveraging our APIs

AVEVA Advanced Analytics

- No code analytics product that can READ DATA from data steams, assets, and events and then WRITE BACK streams and events into Data Hub!

AVEVA Events to Data Hub

- Built initially for integration with AVEVA MES
- *Requires an events data source REST endpoint that supports the message format for events*

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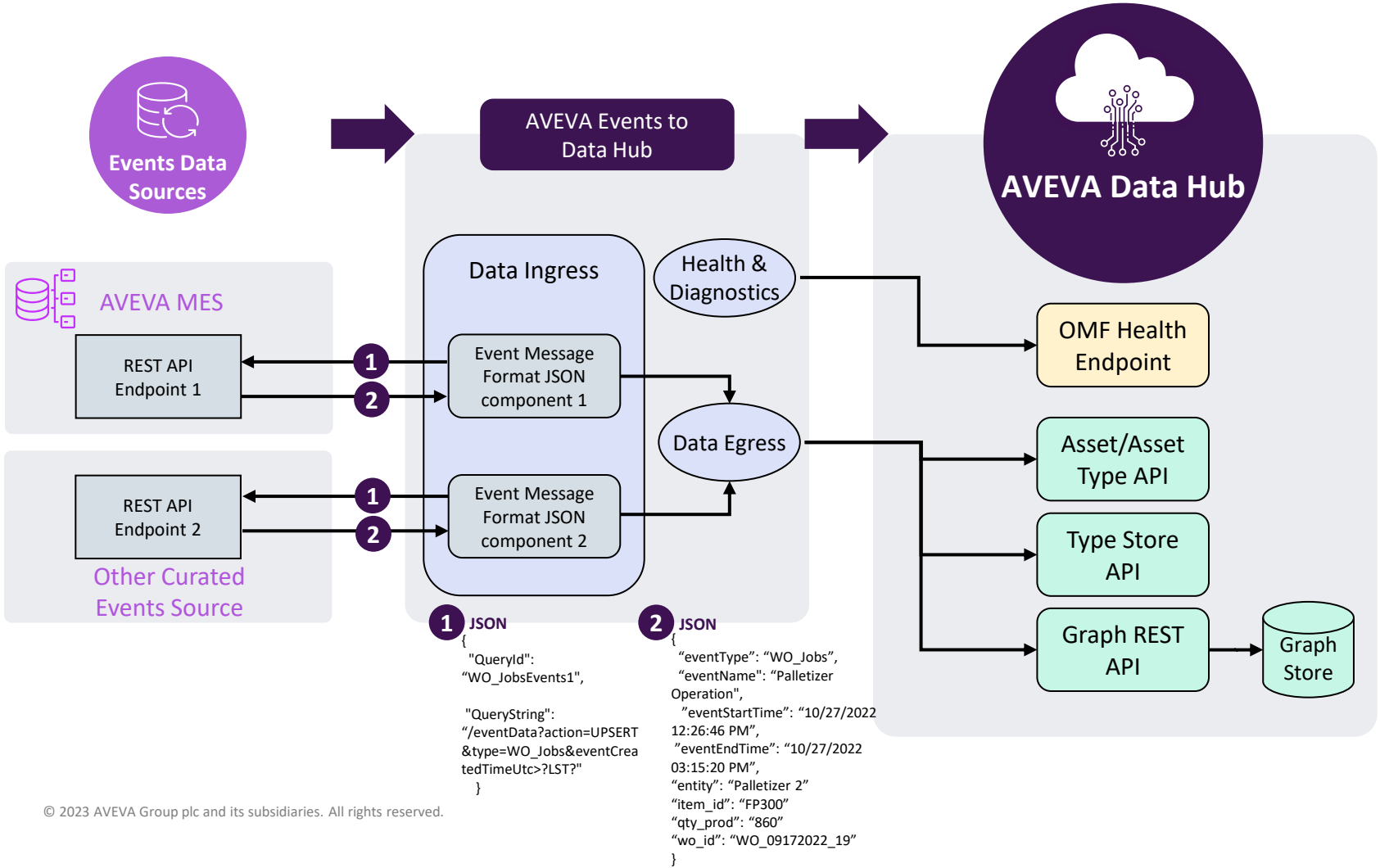
AVEVA Events to Data Hub

Built initially for AVEVA MES & supports sources with REST endpoint



AVEVA Events to Data Hub

- Requires a data source REST endpoint that supports the message format for events
- Polls a data source for event types & data on schedules
- Creates Assets/Types, Event/Types, Reference Data/Types, Enumerations in AVEVA Data Hub
- Buffers data on disconnection
- Supports history recovery
- Health & diagnostics info

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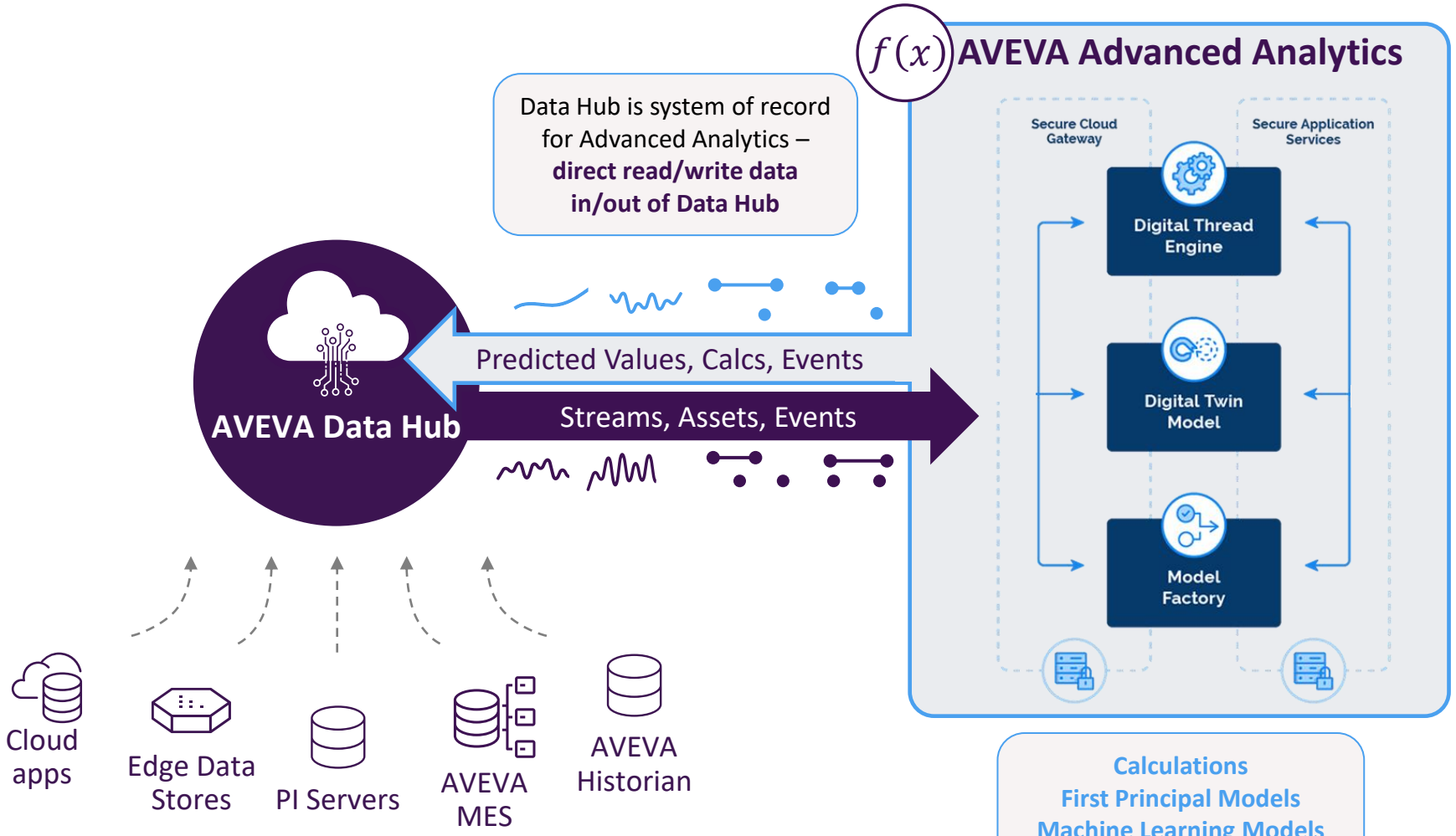
AVEVA Advanced Analytics

Combine your existing data with ML-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

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MES enterprise production performance reporting with AVEVA “connected MES”

MES Production Performance Analysis

Single Asset Scenarios:

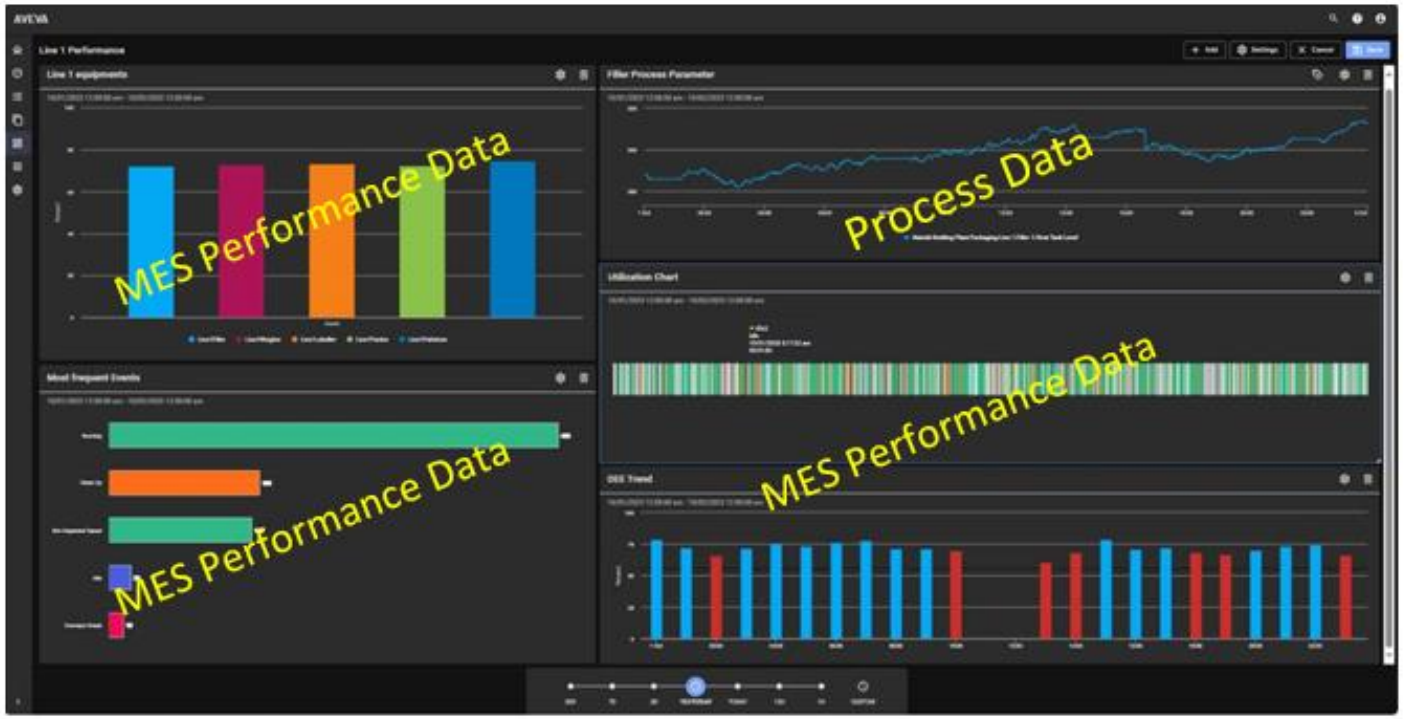
- OEE KPIs (*)
- OEE KPIs by Product/by Shift (*)
- OEE KPIs Trend (*)
- OEE KPI Details (*)
- Production Summary
- Production Trend
- Utilization Status
- Utilization Summary
- Utilization Trend
- Utilization Timeline/Gantt
- Utilization Time Summary
- Utilization Time Summary by Product/by Shift
- Utilization Details

Multi-Asset Comparison Scenarios:

- OEE KPI (*)
- Downtime Summary
- MTTR/MTBF Summary

(*) OEE KPIs includes OEE, Availability, Performance & Quality

AVEVA Connect visualization services



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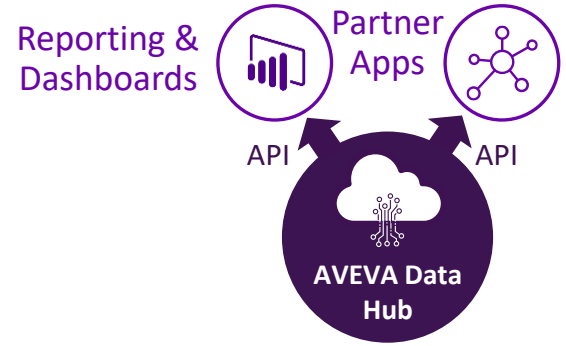
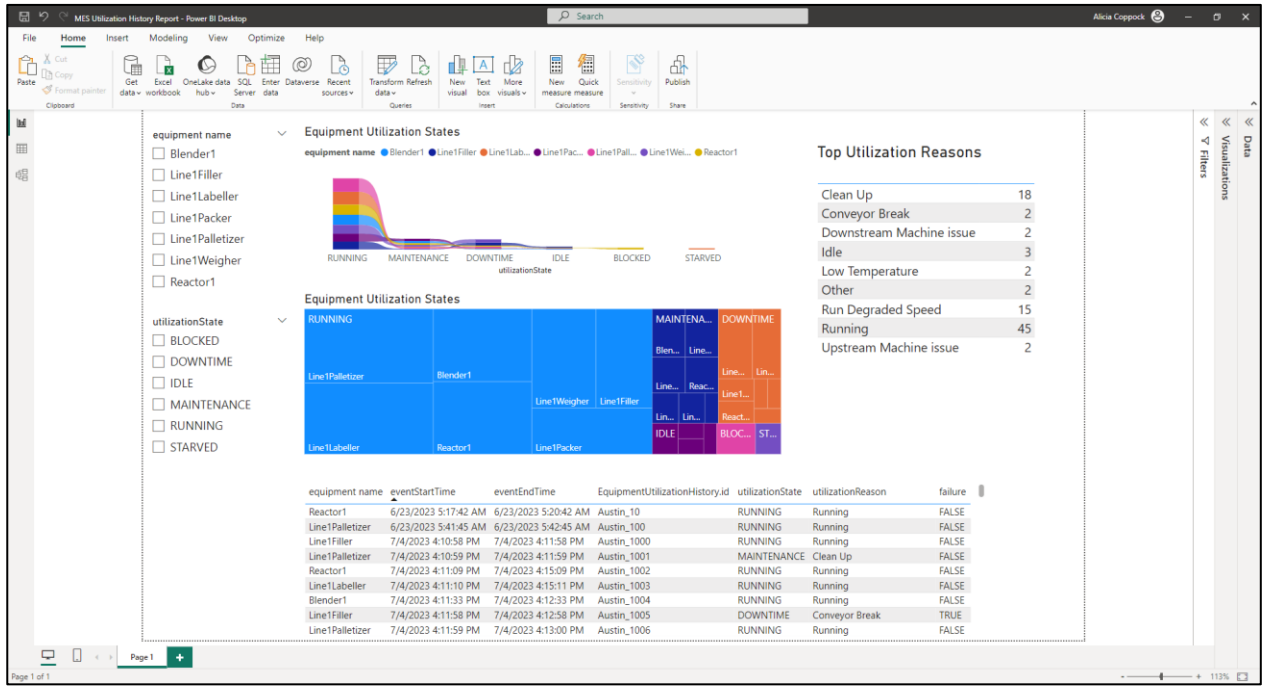
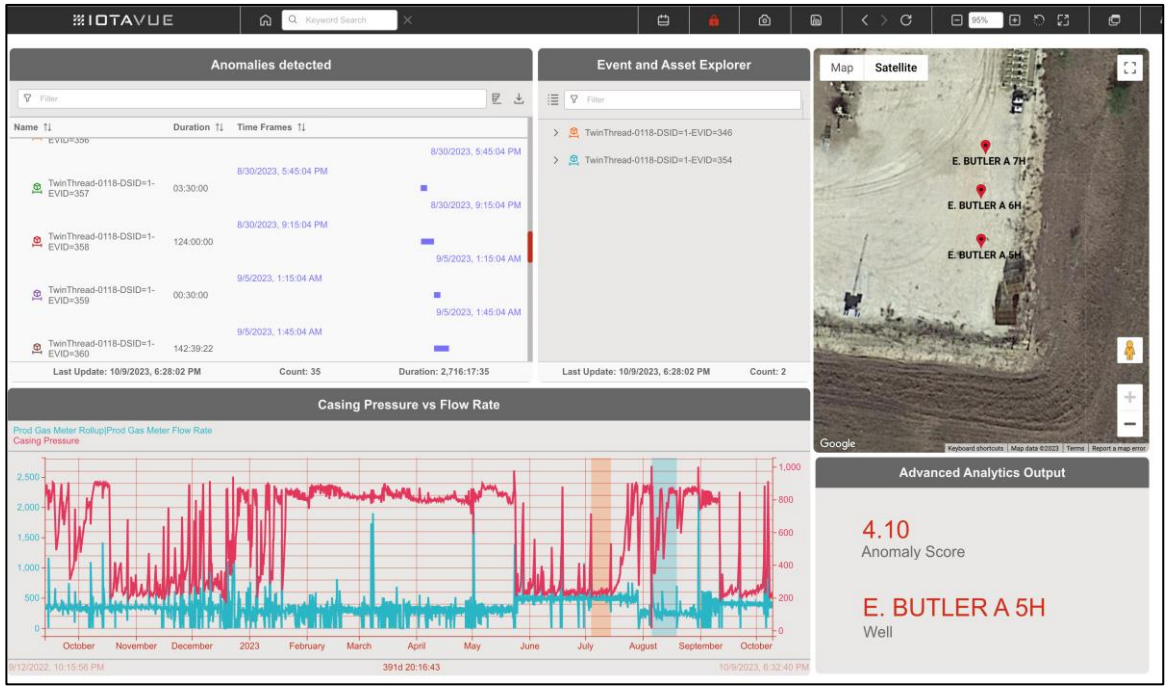


Events in Partner Applications

Power BI

IOTA





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Demo

Events in AVEVA Data Hub

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Data Hub

int-datahub.capdev-connect.aveva.com/tenant/1ba0542f-4caa-4244-a48d-13b5f825597e/dashboard

AVEVA Favourites

AVEVA™ Data Hub

MDDemoSimulatedData

- Home
- Data Management
- Data Collection
- Visualization
- Analytics
- Security
- Developer Tools
- Support

COLLAPSE

Customize

Latest Service Updates

AVEVA™ Data Hub has a new look!

Sep 30, 2021, 12:43:57 PM

On September 30th, 2021, users will find an improved look and feel when they log in to the AVEVA™ Data Hub customer portal. To be more specific, some notable changes include:

Colors are used a little more intentionally to draw users to the primary actions within the portal.

The left navigation menu is more visually streamlined, showing only the categories of Data Hub's capabilities (e.g. visualization and analytics) and having the ability to collapse this menu to just icons.

There is now a universal location for where users pick the

Quick Links

- View API documentation
- Explore working code samples provided in multiple programming languages
- View service blog
- Manage Users And User Access For Your Organization
- Manage clients and secrets for securely accessing your data
- Experiment with the REST API console

Yesterday's Resource Usage

Oct 10, 2023

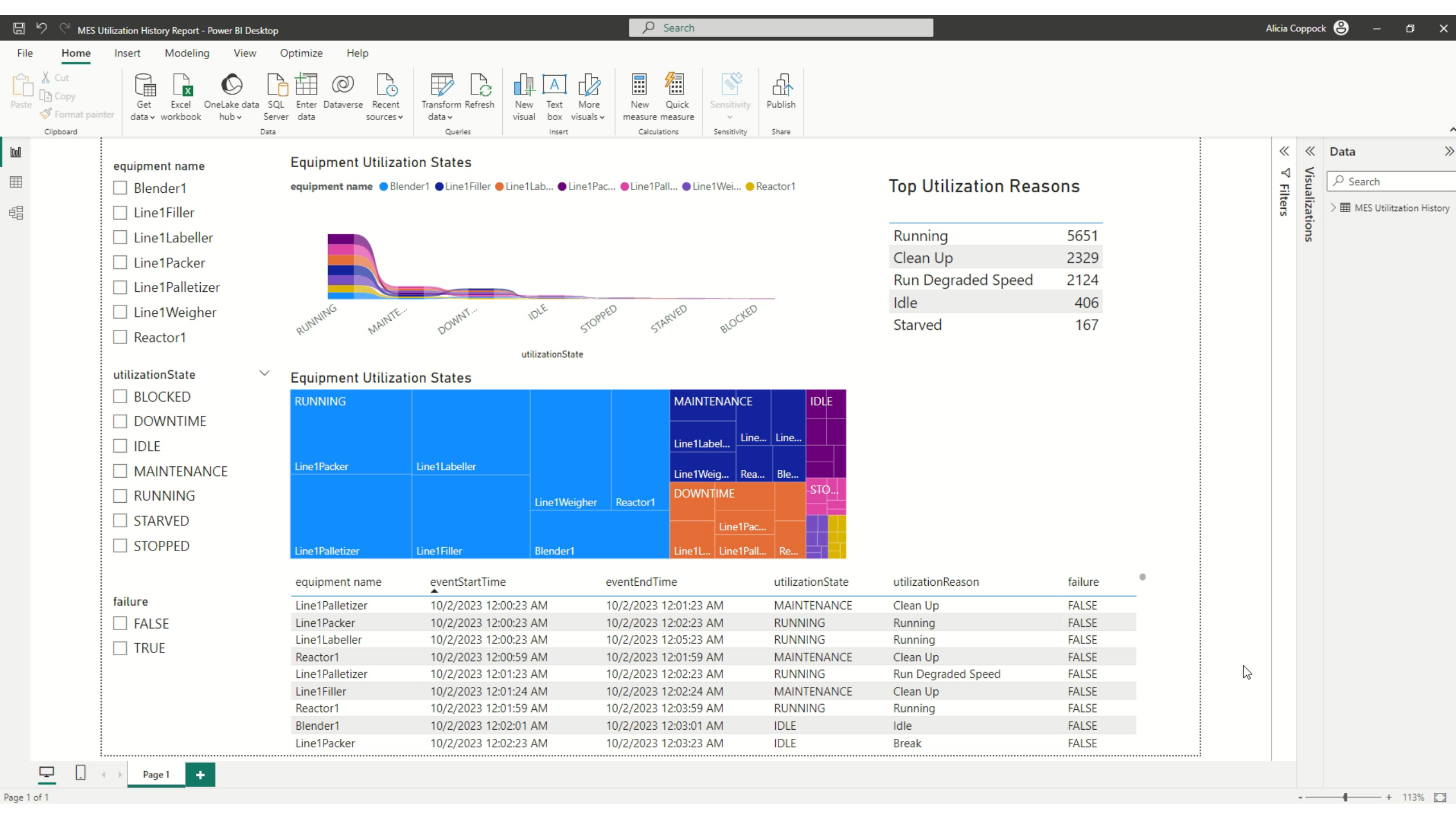
Streams Stored	Streams Accessed	Shared Streams Accessed
46,710	2,721	0

System Health

Ok

PI to Data Hub Agents

All agents in good health


MES Utilization History Report - Power BI Desktop
Search
Alicia Coppock
File
Home
Insert
Modeling
View
Optimize
Help
Paste
Cut
Copy
Format painter
Clipboard
Get data
Excel workbook
OneLake data hub
SQL Server
Enter data
Dataverse
Recent sources
Data
Transform data
Refresh
Queries
New visual
Text box
More visuals
Insert
New measure
Quick measure
Calculations
Sensitivity
Sensitivity
Publish
Share
equipment name
Blender1
Line1Filler
Line1Labeller
Line1Packer
Line1Palletizer
Line1Weigher
Reactor1
utilizationState
BLOCKED
DOWNTIME
IDLE
MAINTENANCE
RUNNING
STARVED
STOPPED
failure
FALSE
TRUE
Equipment Utilization States
equipment name Blender1 Line1Filler Line1Lab... Line1Pac... Line1Pall... Line1Wei... Reactor1
RUNNING
MAINTE...
DOWNT...
IDLE
STOPPED
STARVED
BLOCKED
utilizationState
Equipment Utilization States
RUNNING
Line1Packer
Line1Labeller
Line1Weigher
Reactor1
Line1Palletizer
Line1Filler
Blender1
MAINTENANCE
Line1Label...
Line...
Line...
Line1Weig...
Rea...
Ble...
IDLE
DOWNTIME
STO...
Line1Pac...
Line1L...
Line1Pall...
Re...
Top Utilization Reasons
Running 5651
Clean Up 2329
Run Degraded Speed 2124
Idle 406
Starved 167
equipment name | eventStartTime | eventEndTime | utilizationState | utilizationReason | failure
Line1Palletizer | 10/2/2023 12:00:23 AM | 10/2/2023 12:01:23 AM | MAINTENANCE | Clean Up | FALSE
Line1Packer | 10/2/2023 12:00:23 AM | 10/2/2023 12:02:23 AM | RUNNING | Running | FALSE
Line1Labeller | 10/2/2023 12:00:23 AM | 10/2/2023 12:05:23 AM | RUNNING | Running | FALSE
Reactor1 | 10/2/2023 12:00:59 AM | 10/2/2023 12:01:59 AM | MAINTENANCE | Clean Up | FALSE
Line1Palletizer | 10/2/2023 12:01:23 AM | 10/2/2023 12:02:23 AM | RUNNING | Run Degraded Speed | FALSE
Line1Filler | 10/2/2023 12:01:24 AM | 10/2/2023 12:02:24 AM | MAINTENANCE | Clean Up | FALSE
Reactor1 | 10/2/2023 12:01:59 AM | 10/2/2023 12:03:59 AM | RUNNING | Running | FALSE
Blender1 | 10/2/2023 12:02:01 AM | 10/2/2023 12:03:01 AM | IDLE | Idle | FALSE
Line1Packer | 10/2/2023 12:02:23 AM | 10/2/2023 12:03:23 AM | IDLE | Break | FALSE
Filters
Visualizations
Data
Search
MES Utilitzation History
Page 1
Page 1 of 1
113%

AVEVA Connect | AVEVA

int.visualization.capdev-connect.aveva.com/framework/dashboard/8a0969fb-d50a-1098-a901-3a0dedc906d8

AVEVA Favourites

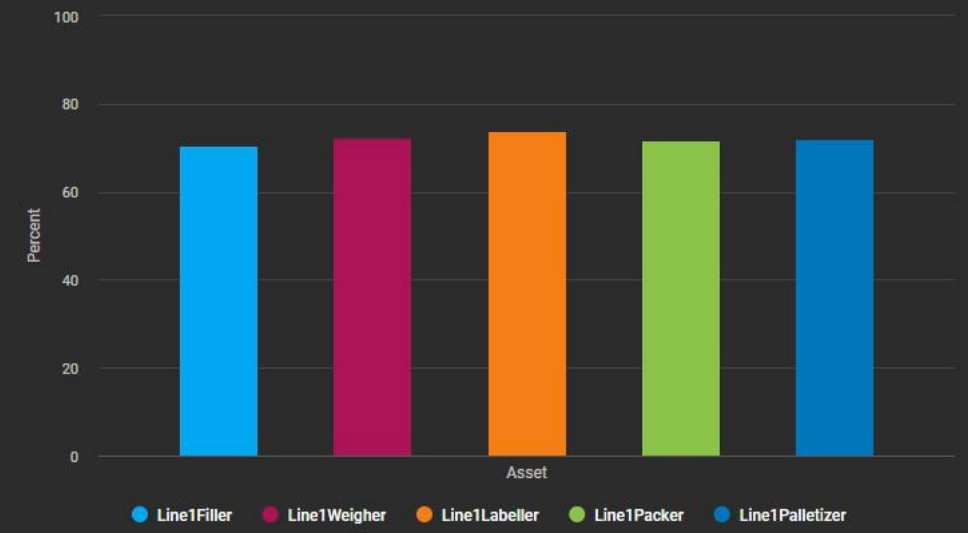
AVEVA

Sample Dashboard 1

Edit

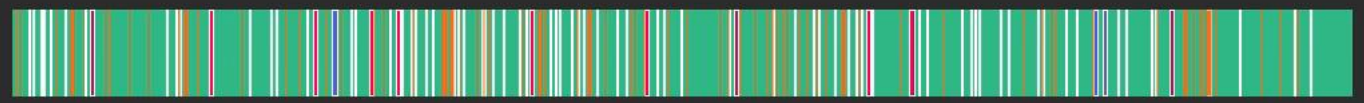
Line 1 equipments

10/12/2023 2:28:53 am - 10/12/2023 2:28:53 pm



Utilization Chart

10/12/2023 2:28:53 am - 10/12/2023 2:28:53 pm

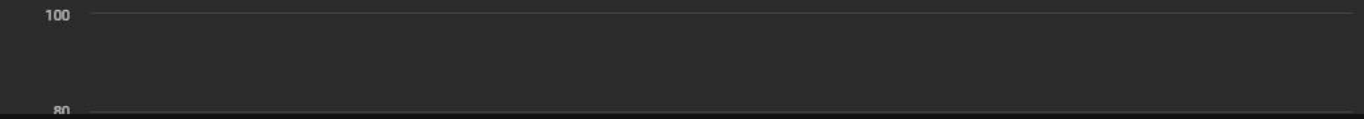


Most frequent Events

10/12/2023 2:28:53 am - 10/12/2023 2:28:53 pm

OEE Trend

10/12/2023 2:28:53 am - 10/12/2023 2:28:53 pm



30D | 7D | 3D | YESTERDAY | TODAY | LAST 12 HOURS | 1H | CUSTOM

Wrap Up

Events in AVEVA Data Hub

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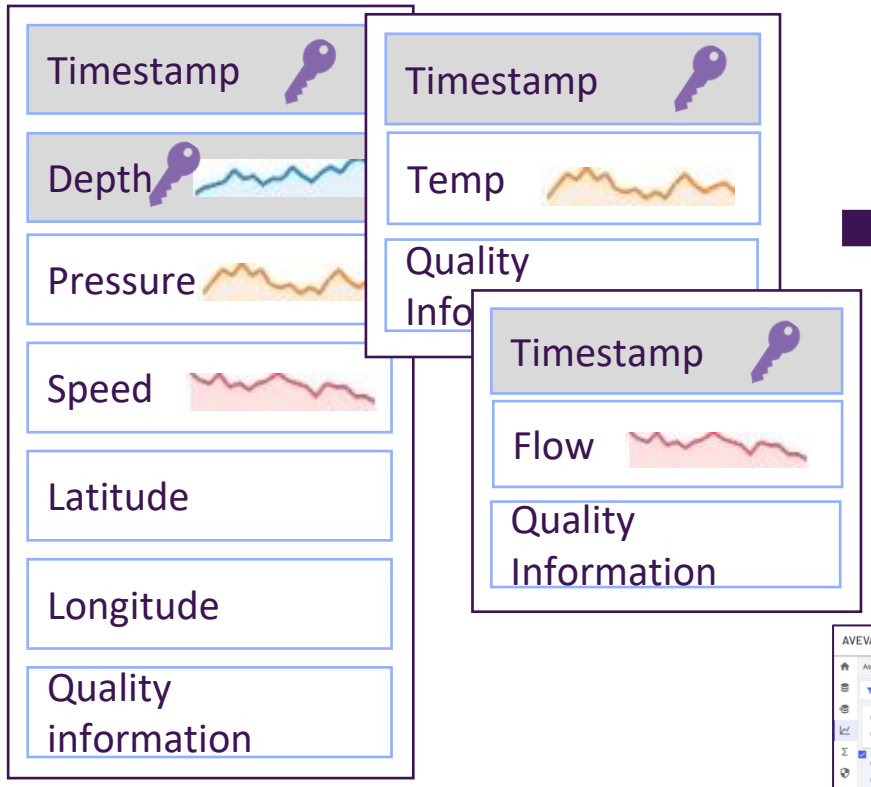
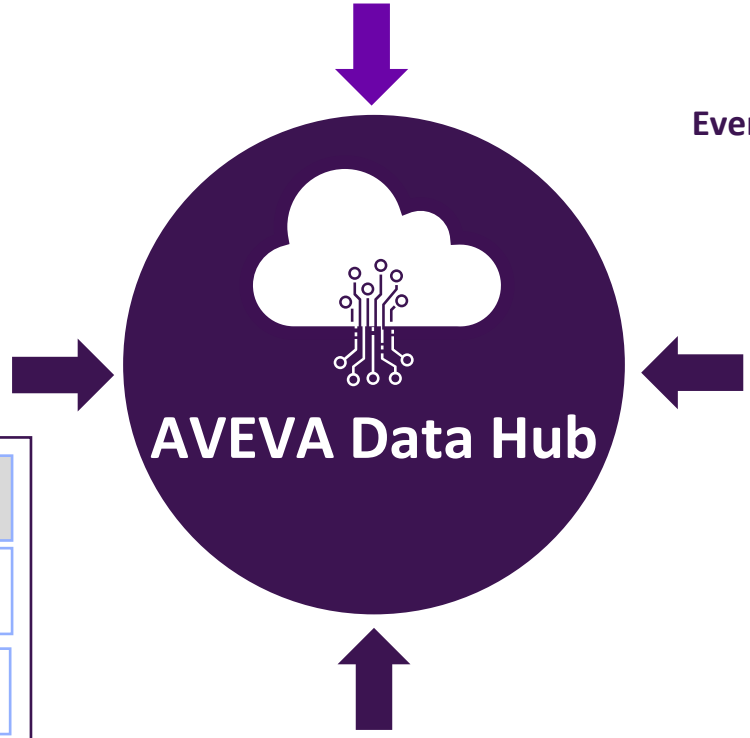
Solid foundation to expanding the industrial data footprint

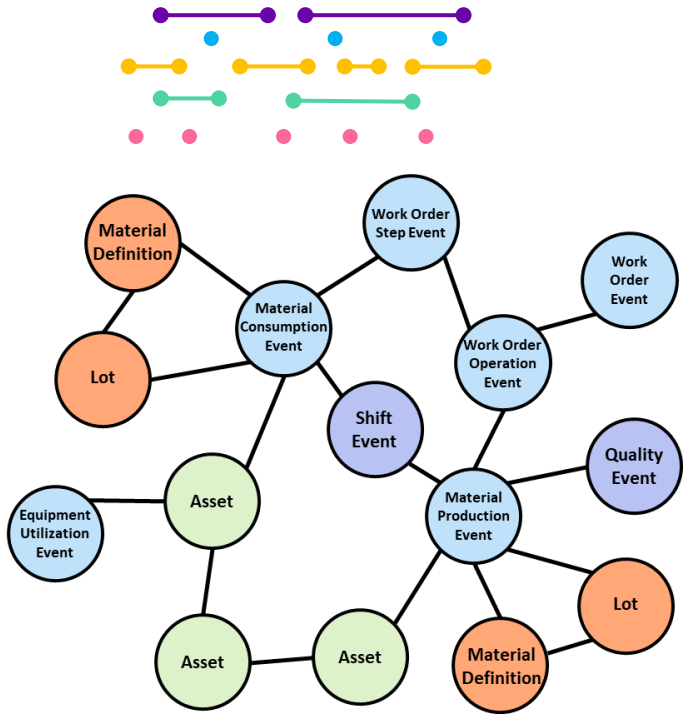
Engineering & Operations Data: 1D, 2D, 3D

Process Data: *Streams*

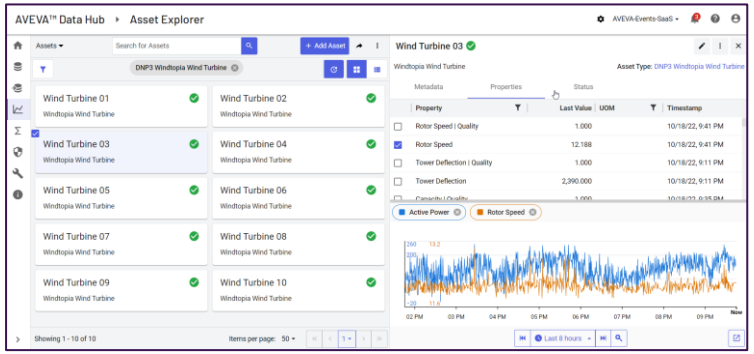




Events & Production Context: *Events & Reference Data*



Asset Context: *Assets*



*Lighthouse Preview (Event Apps): **Now***
*Lighthouse Preview (AVEVA MES): **Dec 2023***
*General Availability: **1Q2024***

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AVEVA Lighthouse Program

Join us in a Lighthouse Project to prove & shape the value of new technology for your business scenarios!

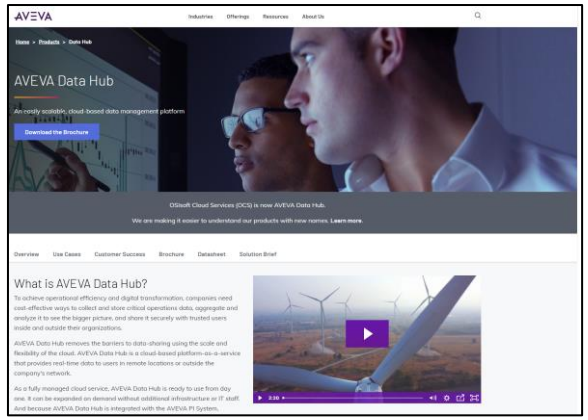
- **AVEVA provides:**
  - AVEVA pre-released software
  - Installation & configuration support
  - Technical R&D support
  - Program management
- **Participating customer provides:**
  - Viable scenario
  - Resources to use AVEVA pre-released software for your scenario
  - Product feedback on use of software for scenario
  - Willingness to document a success story and participate in a future AVEVA public presentation

Email us at lighthouse@aveva.com to engage with our team!

AVEVA

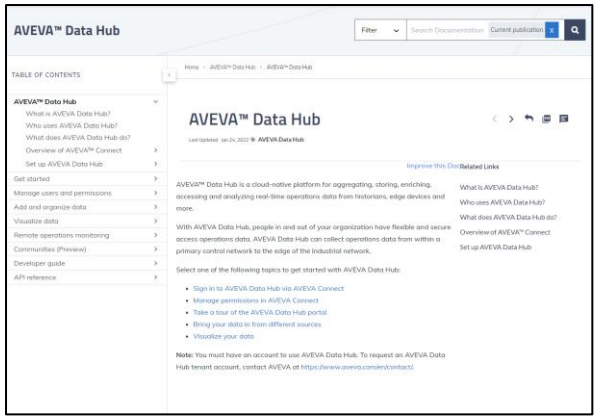
Where to find more information on AVEVA Data Hub

Overview & Resources



https://www.aveva.com/en/products/data-hub/

Documentation

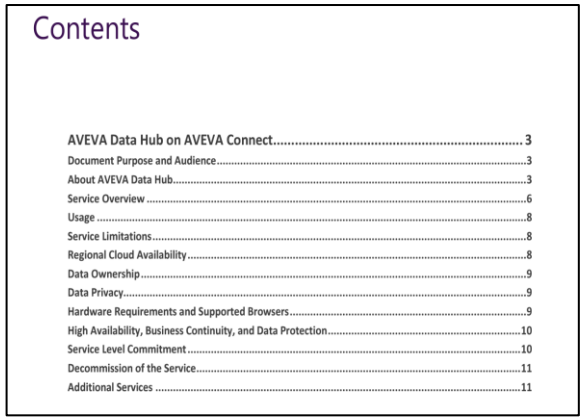


https://docs.aveva.com/bundle/data-hub/page/adh-content-portal-overview.html

Security & Trust Center

https://www.aveva.com/en/legal/trust/

Service Description



https://www.aveva.com/content/dam/aveva/documents/datasheets/AVEVA_Data_Hub_on_AVEVA_Connect_v1_1.pdf

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Recommended Sessions

Uniting AVEVA Data Hub and Advanced Analytics with IOTA View, for Proactive Well Maintenance
Devon Energy

Wednesday, October 25 @ 10:20am
Room 2004

Sharing data across Quebec Iron Ore's IT and OT ecosystem with AVEVA's cloud technologies
Quebec Iron Ore

Wednesday, October 25 @ 1:30pm
Room 2004

Get more out of your data with AVEVA Advanced Analytics

Wednesday, October 25 @ 2:10pm
Room 2004

Facilitating Digitalization in Extra-Small Cargill Facilities using Edge Data Store
Cargill

Wednesday, October 25 @ 2:50pm
Room 2004

Bringing industrial operations data into your analytics platform with AVEVA Data Hub Data Views

Thursday, October 26 @ 10:45am
Room 2004

Improving Kaiser Permanente's sustainability footprint with enhanced energy efficiency, visibility, and optimization
Kaiser Permanente/DERNetSoft

Thursday, October 26 @ 11:25am
Room 2004

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