THURSDAY, MAY 19, 2022

Securely share data with your trusted business partners & customers using AVEVATM Data Hub connected community

Presented By: Todd Brown & Ryan McErlean



Agenda

What is AVEVA Connect & AVEVA Data Hub?

Why share industrial data?

Data sharing challenges

Sharing data with Connected Community

- Accessing & Visualizing shared data [DEMO]
- Data sharing that puts you in control of your data

Customer Success Stories

Commercial Approach & Roadmap

Wrap up

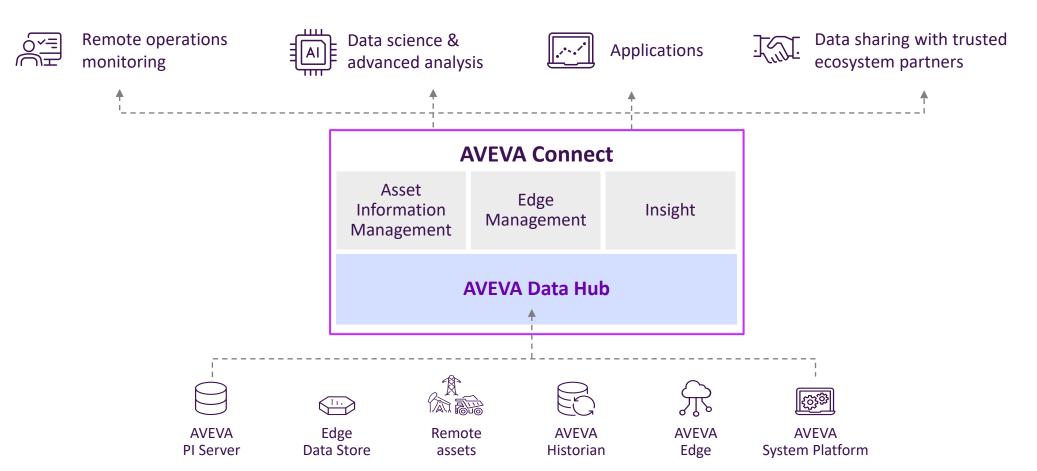


What is AVEVA Connect & AVEVA Data Hub?



Connecting with your trusted ecosystem partners

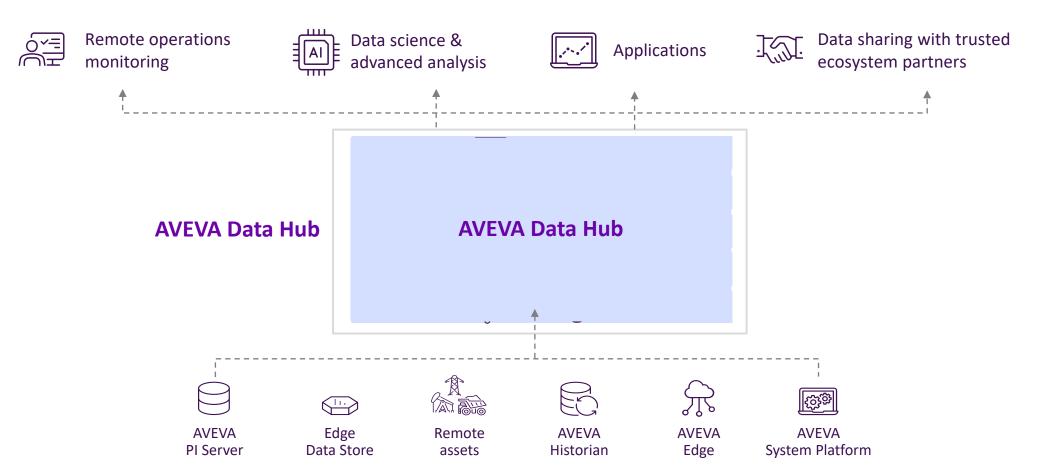
AVEVA Connect enables a hybrid data architecture through cloud offerings





Connecting with your trusted ecosystem partners

AVEVA Connect enables a hybrid data architecture through cloud offerings





Why share industrial data?



Getting more value out of industrial data, together

"You have to share data or you're going to get outages."

"We have 5-7 contract manufacturers for this product alone long term. This will not go down, <u>it's</u> the future of our industry."

"Sharing data across organizations is <u>brilliant</u>."

"We want a standard sharing approach for the entire world. We're the experts of the process. We are not the experts of the individual components that are part of our process.

This is why we want to share data."



"We can get added value because we can send the data to the cloud, our service provider subscribes, they do their analysis, and they can notify us if we have a water leak."

"We have big production clusters and have a team of data scientists to look at the data models and pass these analytics back to the customers. Our goal is to make money out of data."

"Sharing this data provides more transparency with our customers ... we have customers for 15 years ... it helps build trust with our long-standing partnerships."

"We talk and collaborate daily with our customer. We want to make sure the data we're sharing with them is useful. Our goal is to be a good steward of the data and help make them successful."

"The data we get is the same data the clients see in their PI Server typically. So, the value add is the analytics that we perform on the equipment that we know."



Empowering an ecosystem to deliver customer value



Engineering, Procurement, Construction (EPCs)



Equipment Vendor OEM





Contract Manufacturer



Supply Chain Partners



Building Owner

\$100 B

value unlocked in the manufacturing industry simply by sharing data*



"Organizations that share data externally with their partners generate 3x more measurable economic benefit than their counterparts that do not."**





Service Provider



Analytics Company



Regulatory Agency





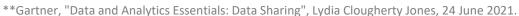




Joint Venture









Empowering an ecosystem to deliver customer value



Data sharing challenges



Data sharing today

From the age of the dinosaurs & some modern-day monkey business!









VPNs or direct access to plant floor or custom apps w/csv, FTP, etc.



Duplicate
'customer facing'
PI system



PI Cloud Connect

Stale, out of date data
Sparse snapshots of data, not granular
Very resource intensive
Analysis and value is severely delayed

Real time updating data Full data granularity Automated data copy to outside

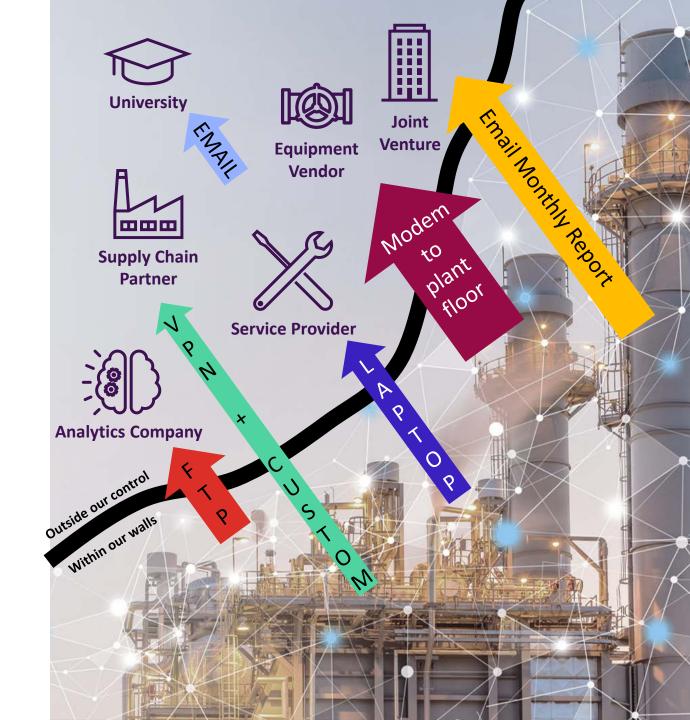


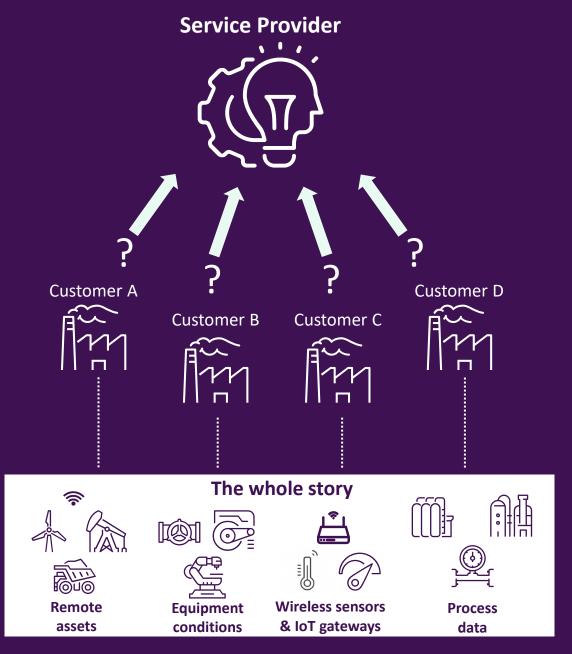
Industrial operator challenges

Sharing operations data externally

- × No standard scalable way to share
- × Increased security risk
- × Data is copied all over the place
- × Maintaining control & confidentiality
- × High IT cost
- × High overhead cost
- × Not everyone has PI
- × Not maximizing value







Service provider challenges

Getting access to customer's operations data

- Data from vendor devices alone may not tell the whole story
- Getting data from customer's plant site
 - Onsite installation & configure hardware and software at plant,
 3-5 days onsite
 - Setup dedicated VPN connection between companies, maintained on both sides
 - Ongoing configuration & maintenance of local hardware & software (+ some custom software databases)
- Writing data management software is not a strength or our core expertise / business
- Potentially need to share results data back to the customer
- How to deliver my value & expertise at scale for many customers?



The pain of sharing data externally today

In the words of our customers ...

"We don't share with anyone because it's such a pain today: **VPNs, linking IT** systems, opening up our SCADA systems. We don't want cyber security events, so no thanks."

"We don't want to give them direct access, so we give them a locked down laptop that remote VPNs into our network. This is a horrible solution to be honest."

"Today the data is copied all over the place. The main issue we have is many ways of communicating outside from our PI Systems via firewall openings. Not all these connections are really that secure."

"We are transporting data around to different places and some data is taking strange routes with four or five systems along the way. It gets way out of your responsibility & is impossible to troubleshoot."

"PI Cloud Connect works great for our customers that have a PI System. But 50-60% of our customers don't have a PI System."













AVEVA DATA HUB

Sharing data with Connected Community



AVEVA Data Hub Connected Community

Enables simple & secure operational data sharing across organizations















Achieve a more secure way of sharing your data

Manage
your own
users in
your AVEVA
Connect
account

Easily connect
to your trusted
business
partners in an
AVEVA Data
Hub
community

Gain control over your shared data

Works great
with an AVEVA
PI Server
(but not
required)

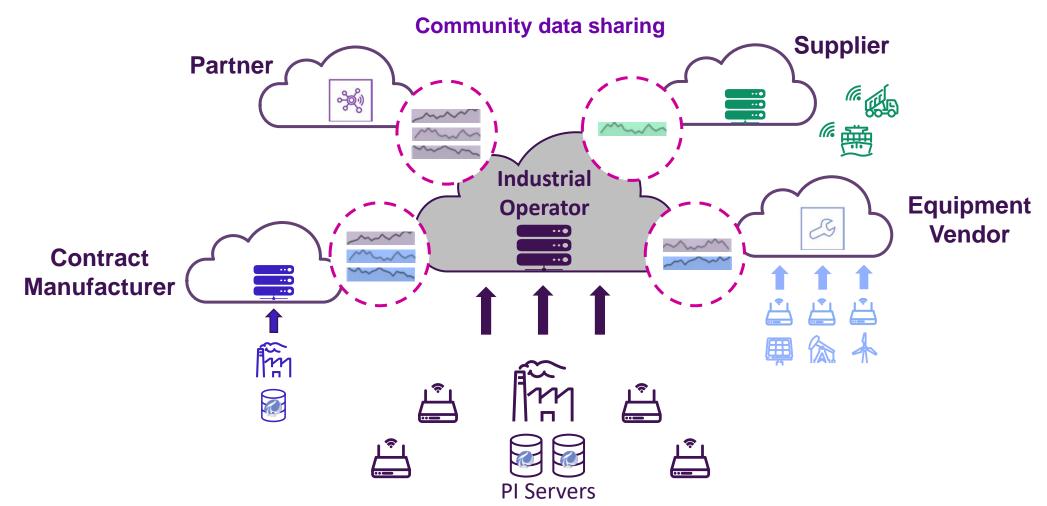
Scale your sharing to many business partners



AVEVA Data Hub Community

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



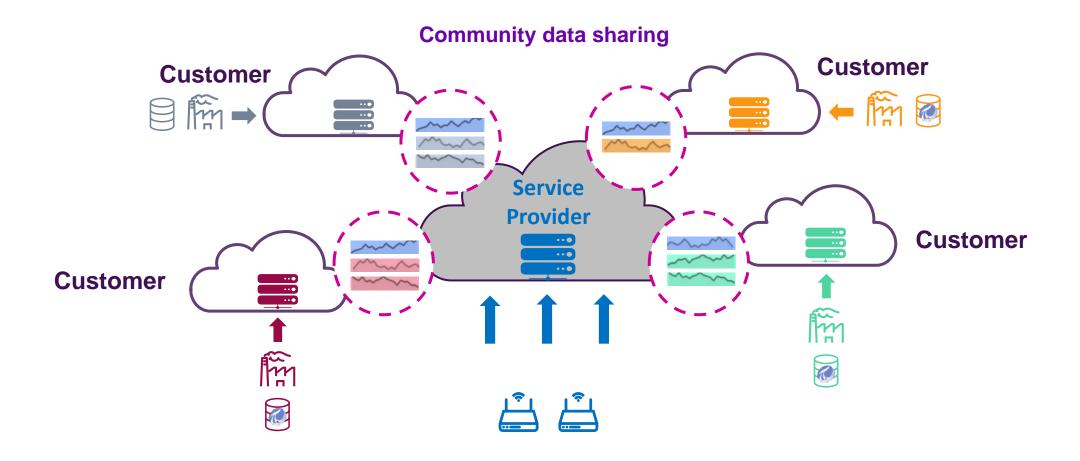




Connected Community – Service Providers

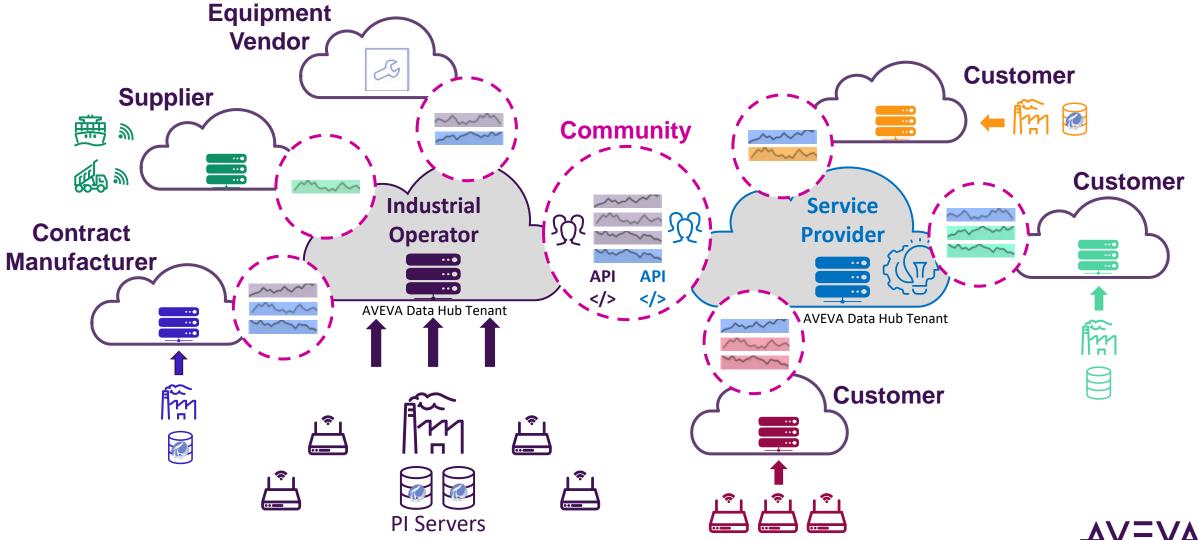


- Tenant members (users)
- Bidirectional access to stream data
- Trending of shared data
- API access to shared data





Easily scales to all your partners, even those without PI



AVEVA DATA HUB

Accessing & visualizing shared data

Connected Community



Sustainability drives a need for data sharing



How do I make the power I generate more marketable?

? Simple-and-secure mechanism for sharing my data



Power Purchaser (Bay Area Clean Energy)

Can I provide my customers with visibility into energy sources?

- ? Visibility into energy production I'm purchasing
- ? Share with partners for forecasting& scheduling power bids on market



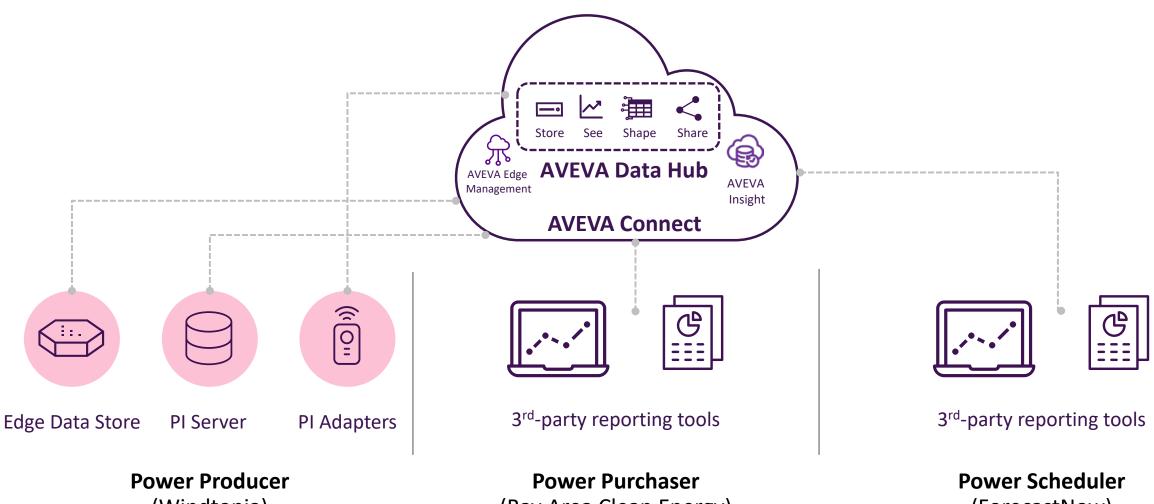
Power Scheduler (ForecastNow)

How can I provide better forecasting data?

? Visibility into current and past energy production



Multi-tenant, cloud-native platform built for data sharing



(Windtopia)

(Bay Area Clean Energy)

(ForecastNow)

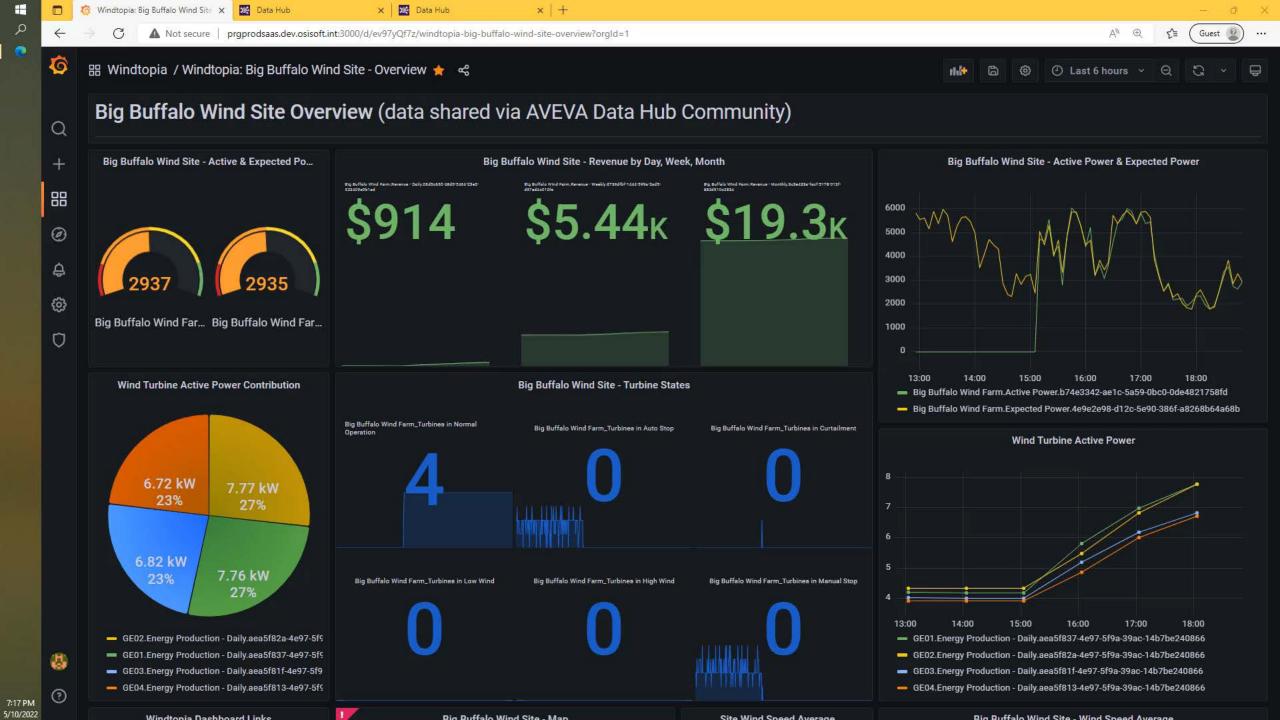


AVEVA DATA HUB

Demo

Connected Community





Trend community shared operational data across tenants



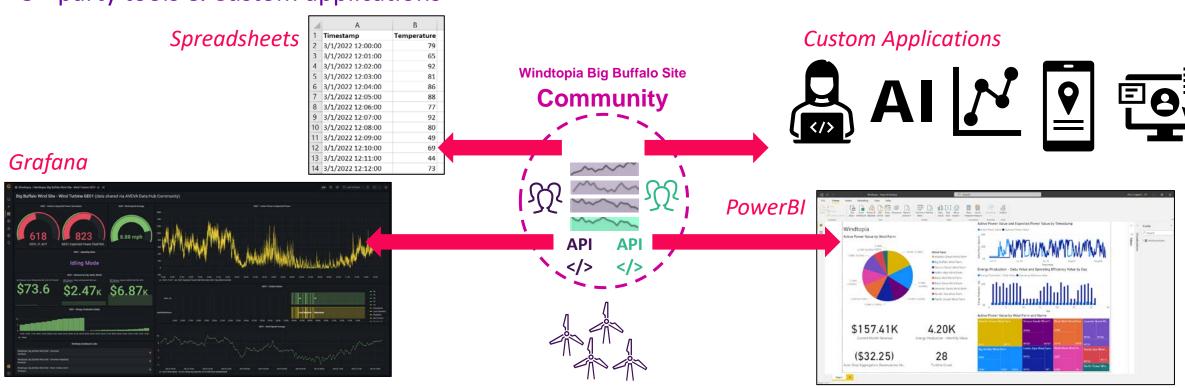
 More data available from Windtopia Big Buffalo Site Community (different tenant)



Leverage AVEVA Data Hub API to access to shared data



3rd party tools & Custom applications



Get data from a community shared stream between a start time and end time

URI Path GET https://uswe.datahub.connect.aveva.com/api/v1-

preview/tenants/<TenantID>/namespaces/<NamespaceID>/streams/<StreamID>/data?

startIndex=**3/1/2022**&endIndex=**4/1/2022**

Headers: {community-id, <CommunityID>}



AVEVA DATA HUB

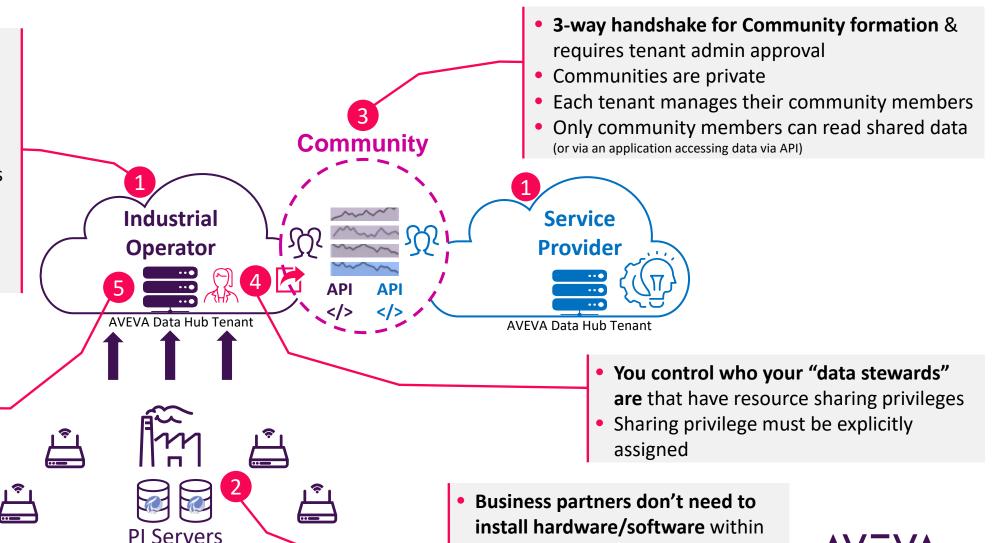
Data sharing that puts you in control of your data

Connected Community



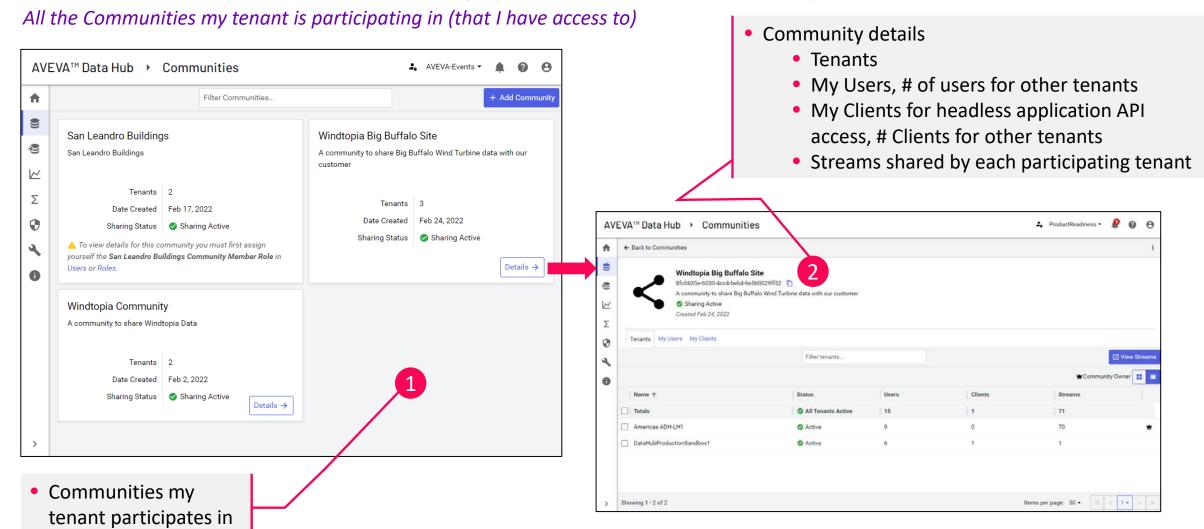
A more secure way to share operational data

- True multi-tenant system
- Natural separation of authentication, users, and data
- Each tenant manages their own authentication & users
- No external users logging directly into your tenant
- Better protection of Intellectual Property (IP)
- Sharing provides access to data stored in your tenant
- Data is not copied outside of your tenant by AVEVA Data Hub



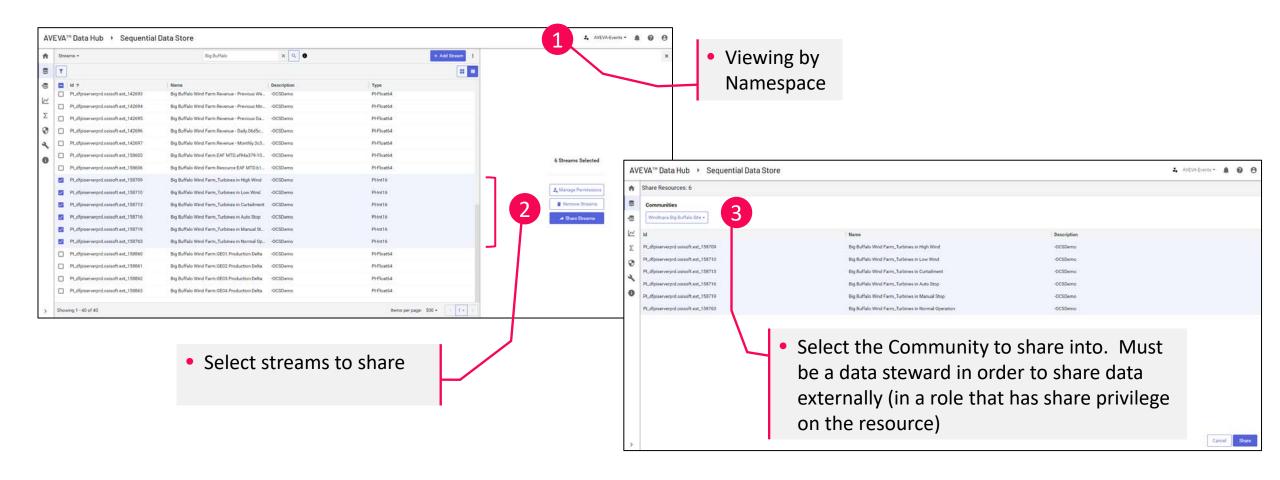
your site to get access to your data

See where you're sharing your data, in one place



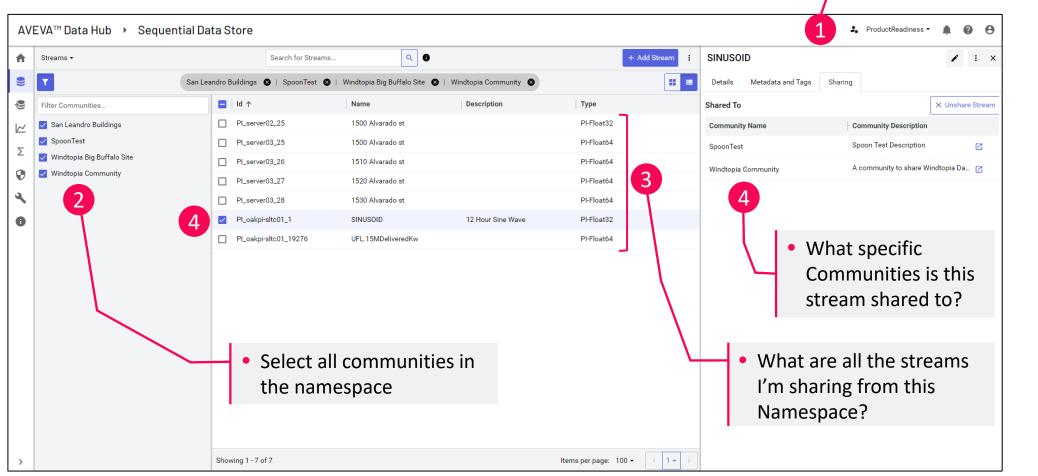


Sequential Data Store (SDS) Explorer – Sharing stream data into a Community



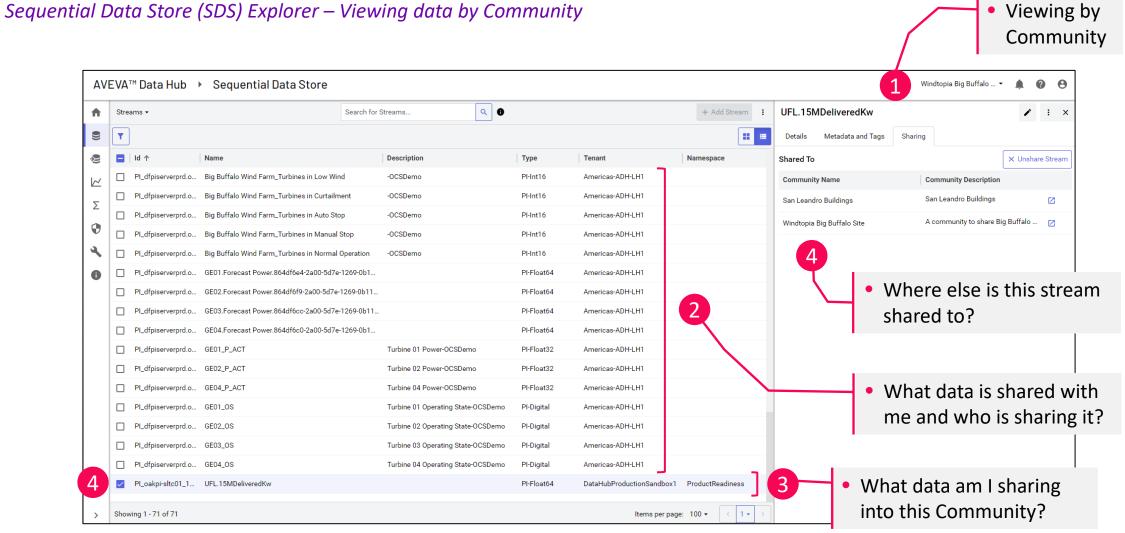


Sequential Data Store (SDS) Explorer – Viewing data by Namespace

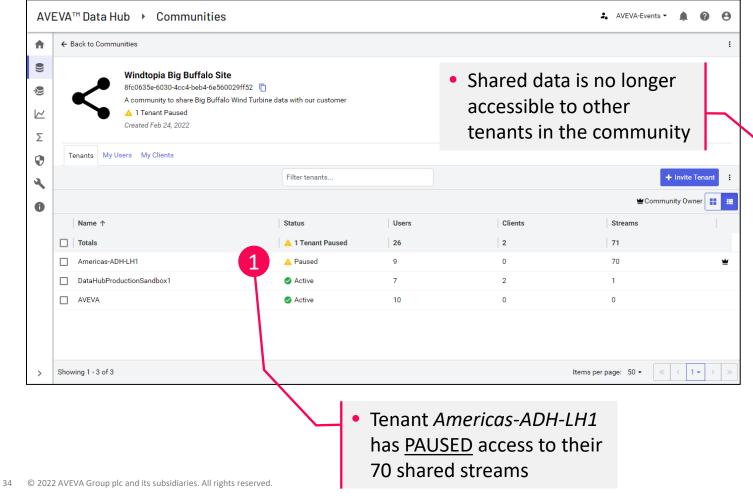


Viewing by

Namespace



Pausing access to your data in a Community







AVEVA Data Hub: Data sharing that puts you in control of your data

True multi-tenant system



- Natural separation of authentication, users, and data
- Each tenant manages their own authentication & users
- Business partners don't need to install hardware/software within your site to get access to your data

Community formation



- 3-way handshake for Community formation & requires admin approval
- ✓ Communities are private
- Each tenant manages their community members
- Only community members can read shared data
- Email notifications to all members when another tenant joins a community you participate in

Sharing data



- ✓ Share / Un-share data each tenant has control of what specific data they share
- ✓ Sharing privileges explicitly assigned to your "data stewards"
- Sharing is providing external access, not copying data outside your tenant
- Pause / Un-pause data sharing
- View community consumption to see if your business partners are accessing data
- View what data is shared to which external partners

Business relationship ends



- Tenants can leave a community, removing data access
- Administering tenant of the community can Delete the entire community, removing data access



AVEVA DATA HUB

Customer success stories





Esperance Zone Innovations (EZI) Growers Group

Enabling data collaboration across farms, grower's groups, and agricultural value chains

Challenges

- Improve crop rotation planning (spray applications, identifying resistance issues, yield performance, soil testing) by sharing historical farm records with soil, weather, and yield data within a grower's group.
- Issues around data ownership, possession and control are significant barriers to adoption;
- No easy way to collaborate and share data

Solution

- All farm data is ingested and stored within AVEVA Data Hub;
- Data ownership, possession and control are maintained at an individual farm or business level;
- Visualisation and analysis of data across all data sets from a single or multiple farms;
- Leverage AVEVA Data Hub Community features to securely share farm data with other farms participating in grower's groups, or supply chains.

Results

- Ability to improve crop rotation planning across entire grower's groups increasing yield and productivity for all participating farms.
- Cost savings in spray applications.
- Improved animal welfare sustainability practices
- Increased collaboration within the agricultural industry and across farms.





AxisTech @ AVEVA PI World 2021 Digital





Making agricultural data fair and FAIR – Wes Lawrence









https://resources.osisoft.com/presentations/making-agricultural-data-fair-and-fair/





Consistent data shared inside an ecosystem using AVEVA Data Hub

Challenges

- Access power asset data securely from multiple independent power producers while maintaining data privacy.
- Provide utility operators with real-time data for key metrics and analysts with large historical interpolated datasets.

Solution

- Cloud-based data sharing enabled by AVEVA Data Hub supplements existing AVEVA PI Systems used by ecosystem companies.
- "Single source of truth" data hub provides consistent data to asset owners, schedulers, business analysts and power purchasers.

Results

- Simplified, web-based data sharing for multiple users via one data solution.
- Data transparency between community members enables **auditing and fosters** collaboration and trust.
- Timely operation decisions can be made to maximise economic value of assets.

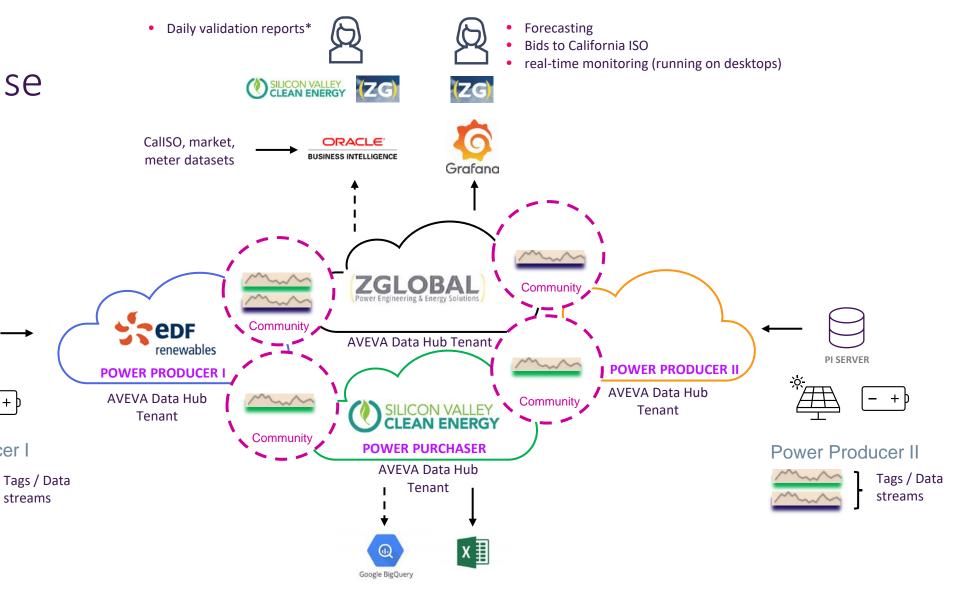


Lighthouse Project

PI SERVER

Power Producer I

streams





- Invoice validation
- Monthly invoice settlements
- Availability and usage of power assets*



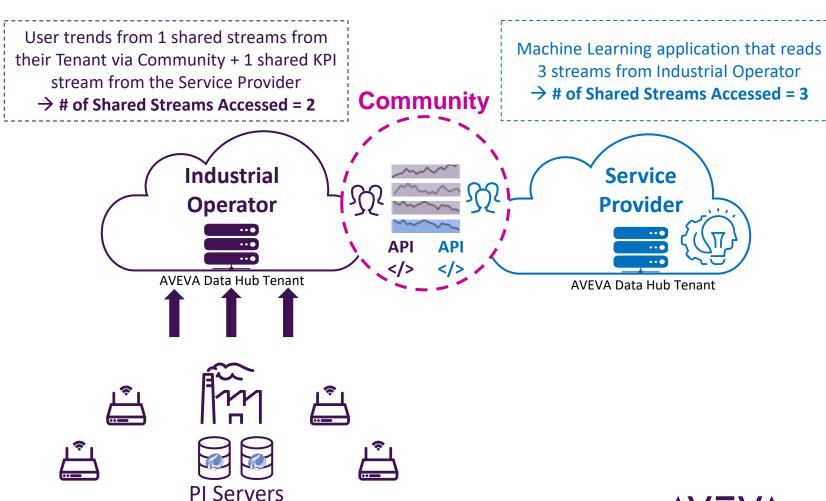
AVEVA DATA HUB

Commercial Approach & Roadmap



What is the commercial approach for AVEVA Data Hub Connected Community?

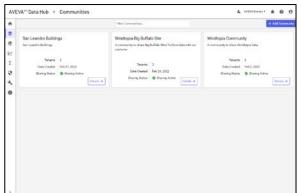
- AVEVA Data Hub consumption metrics:
 - # of streams stored (in tenant)
 - # of streams accessed (in tenant)
 - # of shared streams accessed (via Community)
- Account management & setup is integrated with AVEVA Connect cloud platform
- Each tenant pays for their own consumption via AVEVA Connect flexcredits
- We plan on having a rate plan targeted towards customers that just need read access to Community shared data



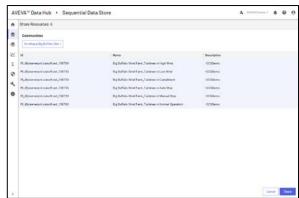


Where are we today for AVEVA Data Hub Connected Community?

Community management



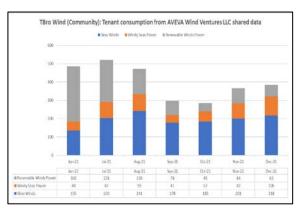
Stream data sharing



Trend shared data



Usage reporting



Ability to form a community, invite other Data Hub tenants to join, and manage users

Ability to share streams into a community & access the data via REST API

Trend community shared data alongside data stored in your Data Hub tenant

Report on community consumption for billing

IN PREVIEW / LIGHTHOUSE

IN PREVIEW / LIGHTHOUSE

IN PREVIEW / LIGHTHOUSE

IN DEVELOPMENT



What's next for AVEVA Data Hub?

In development

>>

Collecting feedback

Community Data Sharing (Streams)

Cross-tenant data sharing of streams with business partners, service providers, and analytics providers

Seamless infrastructure

PI to AVEVA Data Hub enhancements

Added support to edit an existing transfer; Replication of data changes in PI Server to AVEVA Data Hub

Support in new regions

Data can now be stored in East Australia

Manageable software

Remote Software Management

Manage configuration and monitor the health of PI Adapters and EDS with AVEVA Data Hub Increased value and scope

AF in PI to AVEVA Data Hub

Leverage existing AF context by transferring AF representation to AVEVA Data Hub Assets.

Data Views from shared data

Create a curated data view from Community shared streams.

Manageable software

OCS to AVEVA Data Hub migration

Support for migration from existing OCS tenants to AVEVA Data Hub tenants

Increased value and scope

Manageable

software

Community Data Sharing (Assets)

Cross-tenant data sharing of asset information.

PI System data transfers across tenants

Cross-tenant data transfers of PI Point data and AF asset data

PI to AVEVA Data Hub multiple transfers

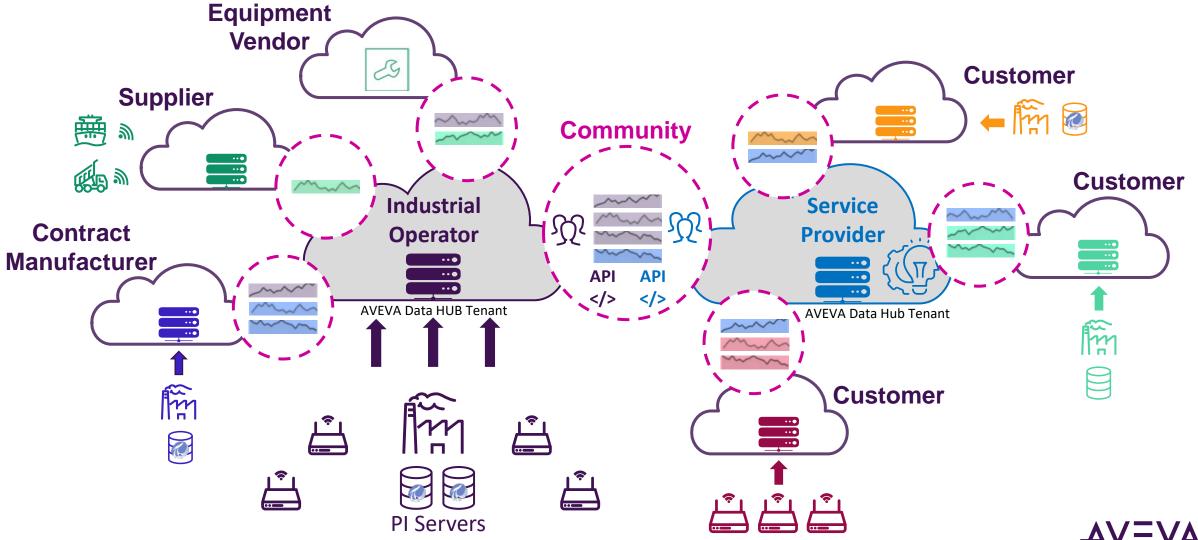
Enable multiple transfers for sending data to AVEVA Data Hub



Wrap up



Connected Community: Powering your industrial ecosystem





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 <u>lighthouse@aveva.com</u> to engage with our team!



Learn more about AVEVA Connect & AVEVA Data Hub

AVEVA Data Hub @ AVEVA PI World 2022 – Amsterdam

Day 1: Cloud Data Platform Track

- AVEVA: AVEVA Connect vision & roadmap [14:00]
- AVEVA: Increasing the value of your existing data through innovation with AVEVA Data Hub [14:40]
- AVEVA: Tapping into data for your industrial ecosystem on AVEVA Data Hub [15:40]
- AVEVA: Four Pillars of a Trusted Information Infrastructure [16:20]
- AVEVA: Lighten your load: How to accelerate time to value and streamline technology upkeep through SaaS [17:00]

Day 2: Customer Presentations

- HENN: OSIsoft Cloud Services in discrete manufacturing / value chain approach [8:40]
- <u>EDP Renewables</u>: Analyzing Wind Power data in AVEVA Data Hub [9:45]
- Industrial Digital Solutions: Real Time Fleet Analytics with OCS [14:00]
- IMA LIFE: Leveraging the combination of on-prem PI Server and OCS cloud, to feed data analytics and machine learning applications [14:00]
- <u>Enel</u>: Leveraging on AVEVA
 Edge/Cloud solutions to satisfy Enel's new data needs [16:00]

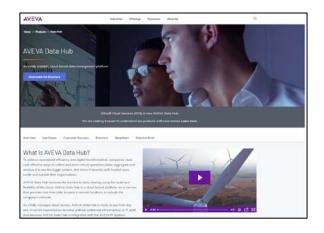
Day 3: AVEVA Product Deep Dives

- AVEVA: Customer Administration Best Practices for AVEVA Connect [10:00]
- AVEVA: Securely share data with your trusted business partners & customers using AVEVA Data Hub connected community [11:15] [this talk]
- AVEVA: The Data Value Chain: From Edge to Impact [13:30] [highly recommended]
- AVEVA: Data Collection On-premises and at the Industrial Edge [13:30]

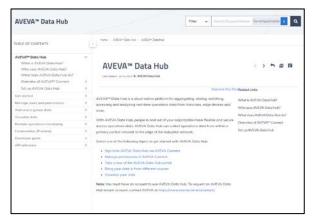


Where to find more information on AVEVA Data Hub

Overview & Resources



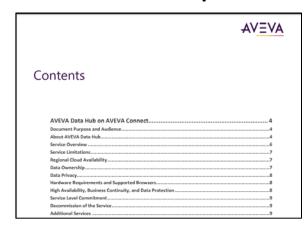
Documentation



Security & Trust Center



Service Description









https://docs.osisoft.com/bundle/datahub/page/adh-content-portal-overview.html



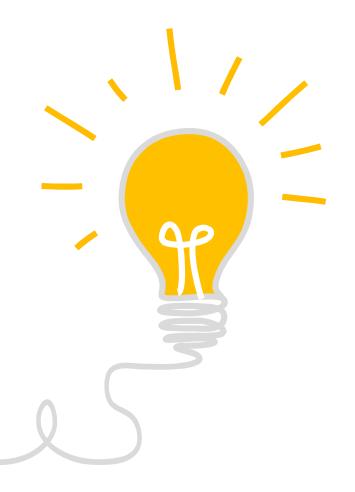
https://www.aveva.com/en/legal/trust/



https://www.aveva.com/content/dam/aveva/doc uments/legal/service-documents/AVEVA-Data-Hub-on-AVEVA-Connect v1-0.pdf



How can you influence the AVEVA Data Hub roadmap?



https://feedback.osisoft.com

Let us know your product feedback!







Staff Strategic Product Manager

- AVEVA
- todd.brown@aveva.com





Sr. Technical Product Manager

- AVEVA
- ryan.mcerlean@aveva.com







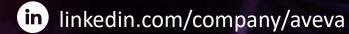
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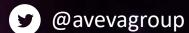


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The Company shall not be obliged to disclose any revision to these forward-looking statements to reflect events or circumstances occurring after the date on which they are made or to reflect the occurrence of future events.







ABOUT AVEVA

AVEVA is a global leader in industrial software, driving digital transformation and sustainability. By connecting the power of information and artificial intelligence with human insight, AVEVA enables teams to use their data to unlock new value. We call this Performance Intelligence. AVEVA's comprehensive portfolio enables more than 20,000 industrial enterprises to engineer smarter, operate better and drive sustainable efficiency. AVEVA supports customers through a trusted ecosystem that includes 5,500 partners and 5,700 certified developers around the world. The company is headquartered in Cambridge, UK, with over 6,500 employees and 90 offices in over 40 countries.

Learn more at www.aveva.com

