

NOVEMBER 2022

Uniting the connected community through secure and transparent industrial data sharing

Presented By: Ryan McErlean & Derek Endres

AVEVA

Agenda

What is AVEVA™ Connect & AVEVA™ Data Hub?

Why share industrial data?

Data sharing challenges

Connected community in AVEVA Data Hub

Connected community demo - Getting value out of shared data

Customer success stories

Connected community now and in the future

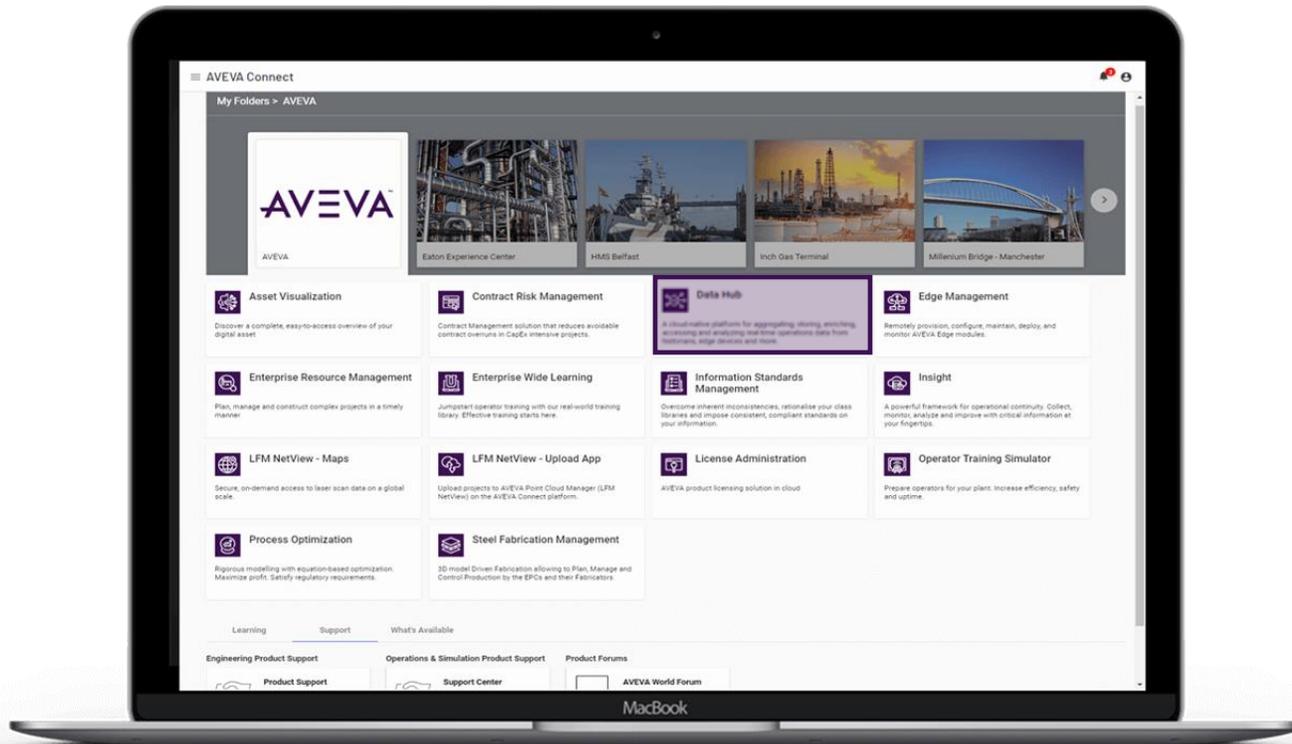
Wrap up

What is AVEVA Connect and AVEVA Data Hub?



AVEVA Connect: Our industrial cloud platform

Our industrial cloud platform is your digital transformation hub



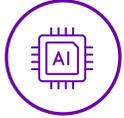
- ✓ Transform faster
- ✓ Enable new ways of work
- ✓ Connect and collaborate
- ✓ One single source of truth
- ✓ Move from CapEx to OpEx
- ✓ Lower dependency on IT
- ✓ Always the latest and greatest features
- ✓ Easily scale up and down
- ✓ Built with security, resiliency, high-availability

AVEVA Data Hub

Remote monitoring



Data science & AI/ML platforms



3rd party analytic tools



Data sharing with business partners



Custom & partner applications



Reporting & Dashboards



OMF Apps & Remote assets



AVEVA Adapters



Edge Data Store



AVEVA PI Server



AVEVA Historian



AVEVA System Platform



Cloud apps & silos

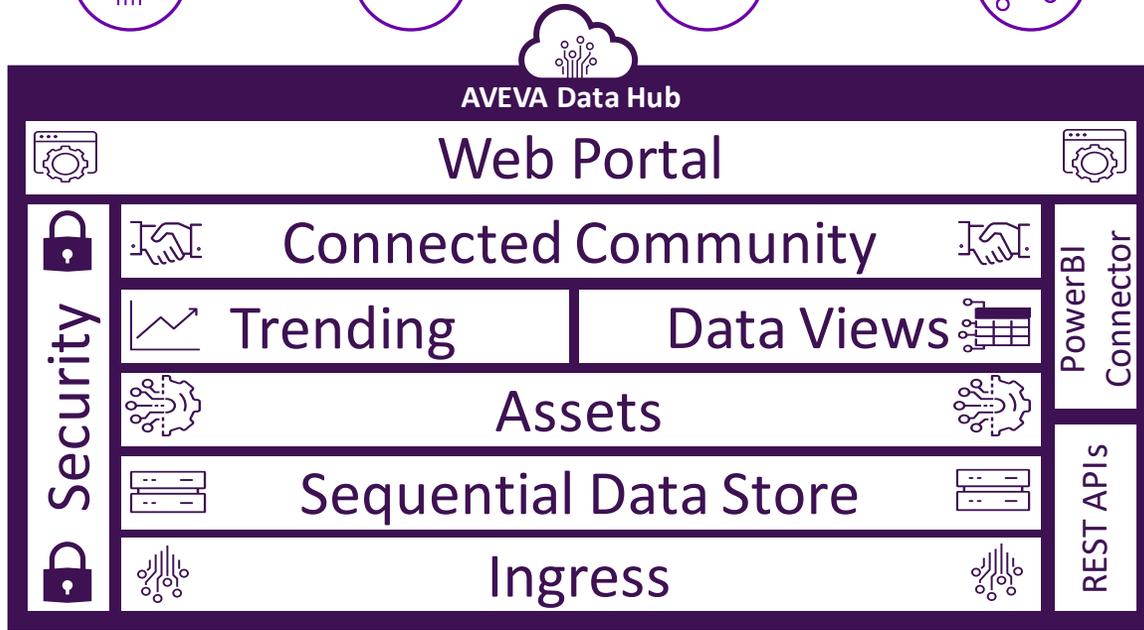


A cloud-native industrial platform designed for aggregating, storing, enriching, accessing, analyzing, and securely sharing real-time operations data from historians, edge devices, and more

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

AVEVA Data Hub

Remote monitoring Data science & AI/ML platforms 3rd party analytic tools Data sharing with business partners Custom & partner applications Reporting & Dashboards



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

Why share industrial data?

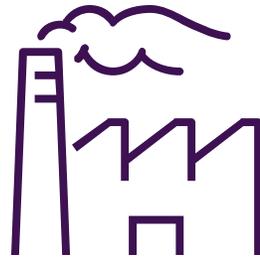
Getting more value out of industrial data, together

“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, it’s the future of our industry.”

“Sharing data across organizations is brilliant.”

“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.”

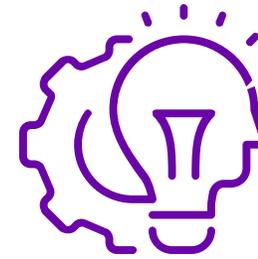


Industrial Operator



“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.”



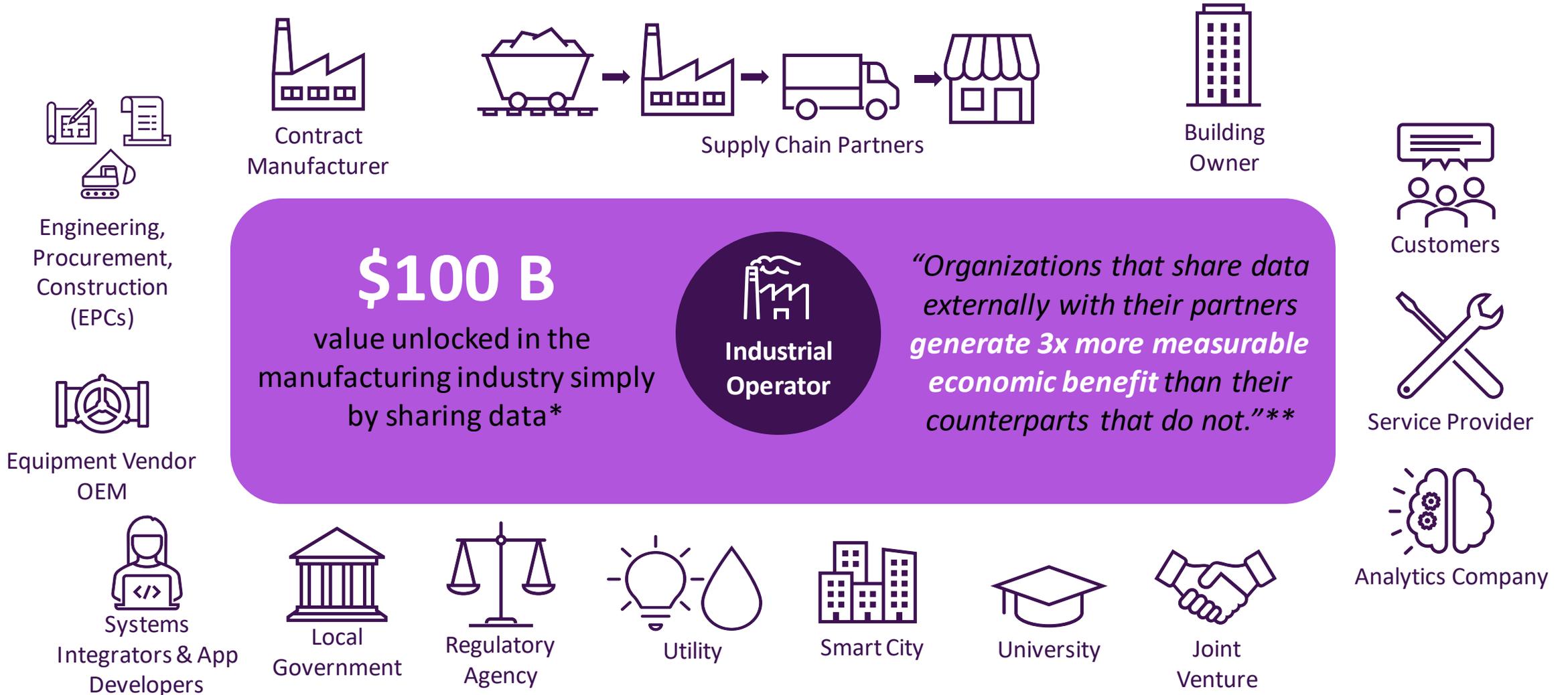
Service Provider

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

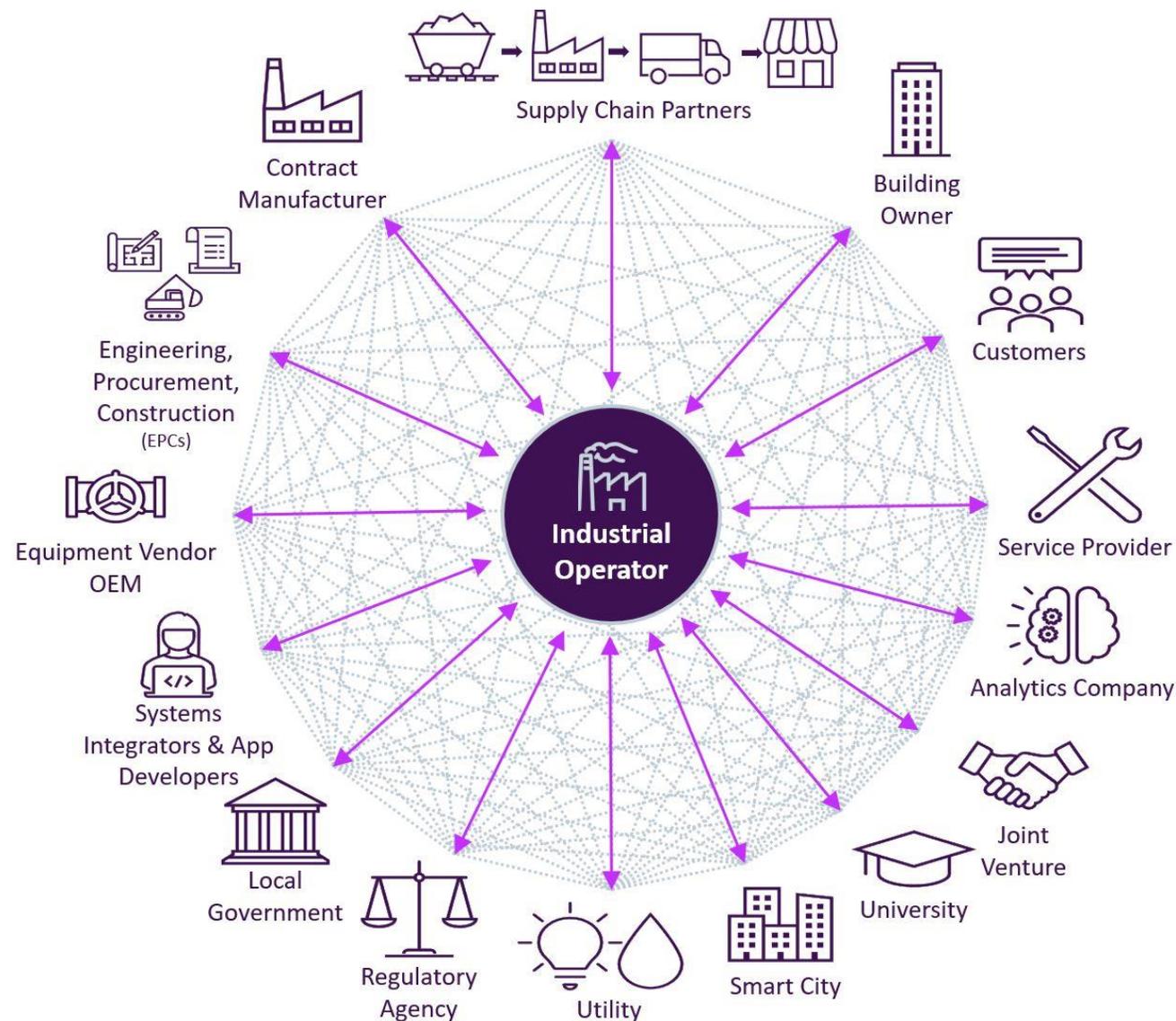
“We talk and collaborate daily with our customer. We want to make sure the data we’re sharing with them is useful. Our goal is to be a good steward of the data and help make them successful.”

“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



Unlock your industrial ecosystem to deliver customer value



Data sharing challenges

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.”



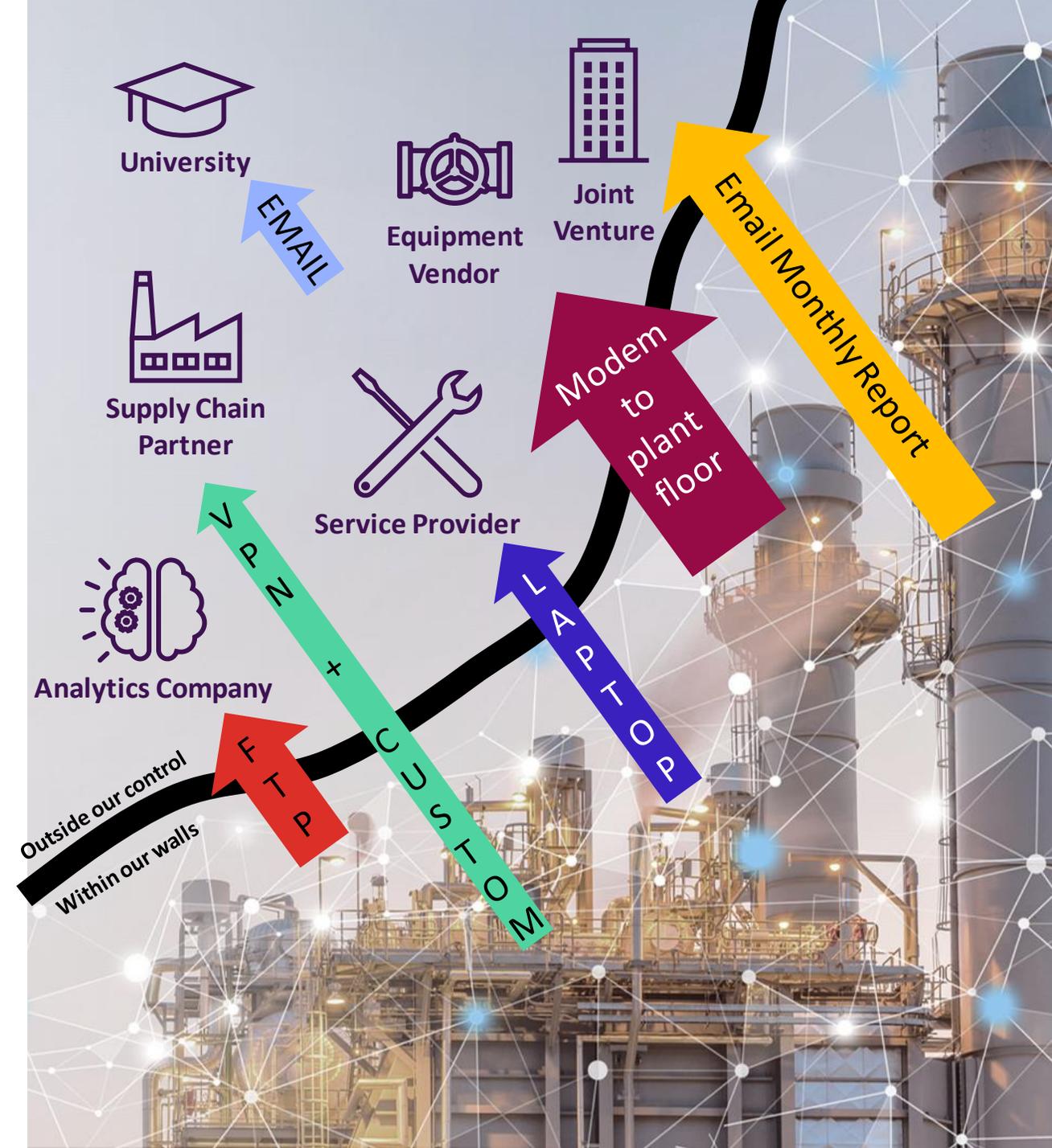
“PI Cloud Connect works great for our customers that have a PI System. But 50-60% of our customers don’t have a PI System.”



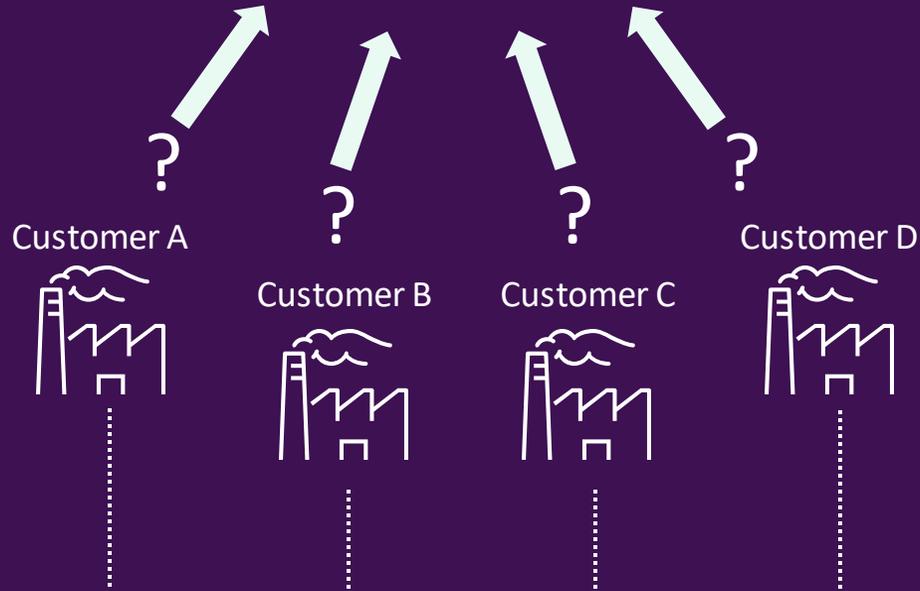
Industrial operator challenges

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



The whole story



Remote assets



Equipment conditions



Wireless sensors & IoT gateways



Process data

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?**

AVEVA DATA HUB

Connected community

AVEVA

AVEVA Data Hub connected community

Enables simple & secure operational data sharing across organizations



Achieve a more secure way of sharing your data



Manage users in your AVEVA Connect account



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



Gain control and transparency over your shared data



optional

Works great with AVEVA PI Server & AVEVA historian

(but not required)

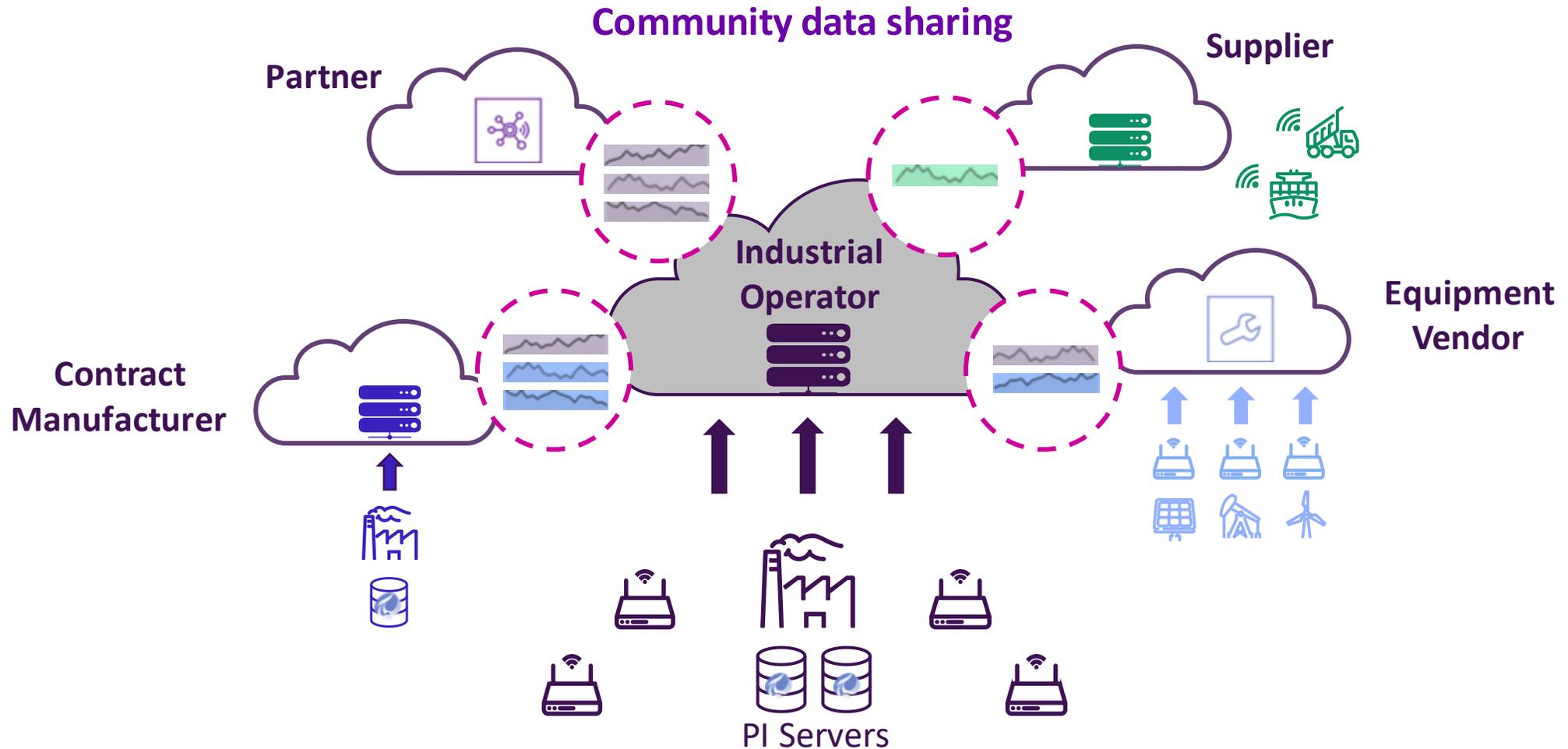


Scale your sharing to many business partners

Connected Community – Industrial Operators

AVEVA Data Hub
Community

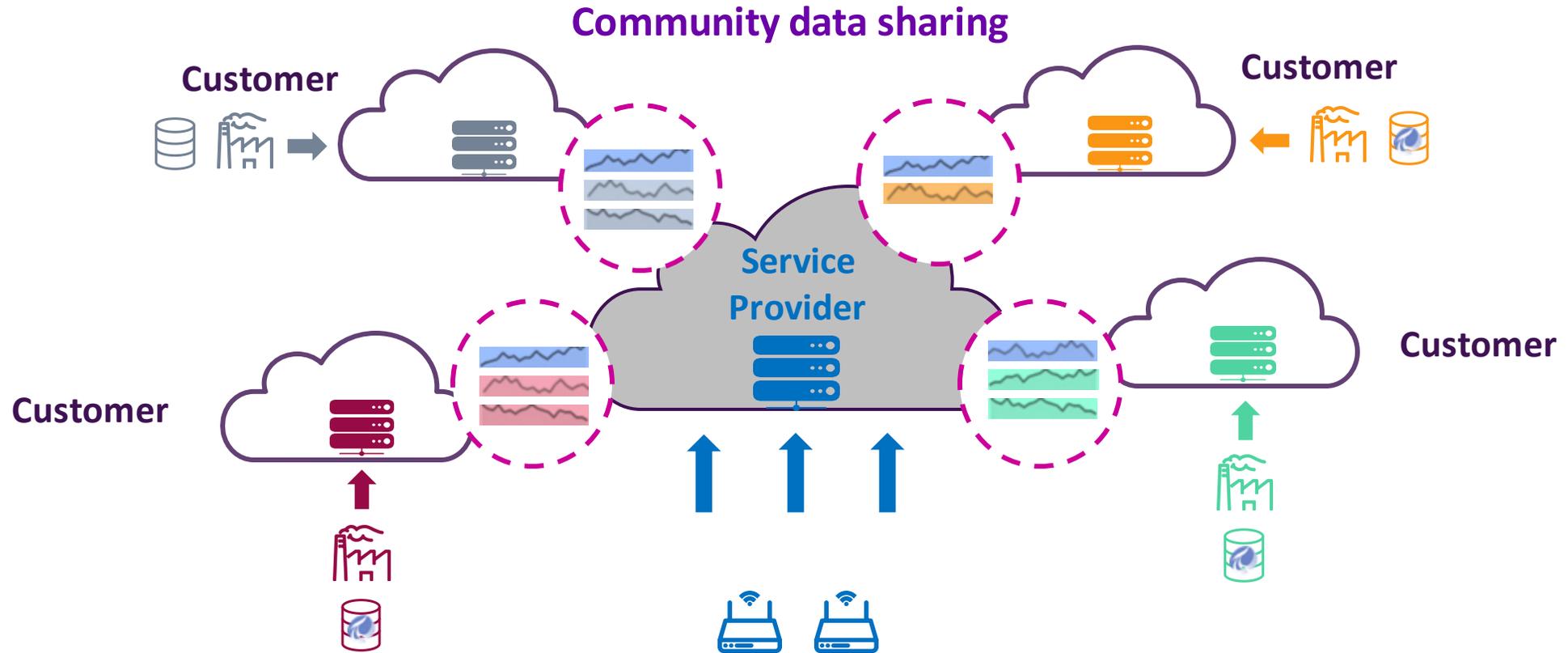
- Tenants
- Tenant members (users)
- Bidirectional access to stream data
- Trending of shared data
- API access to shared data



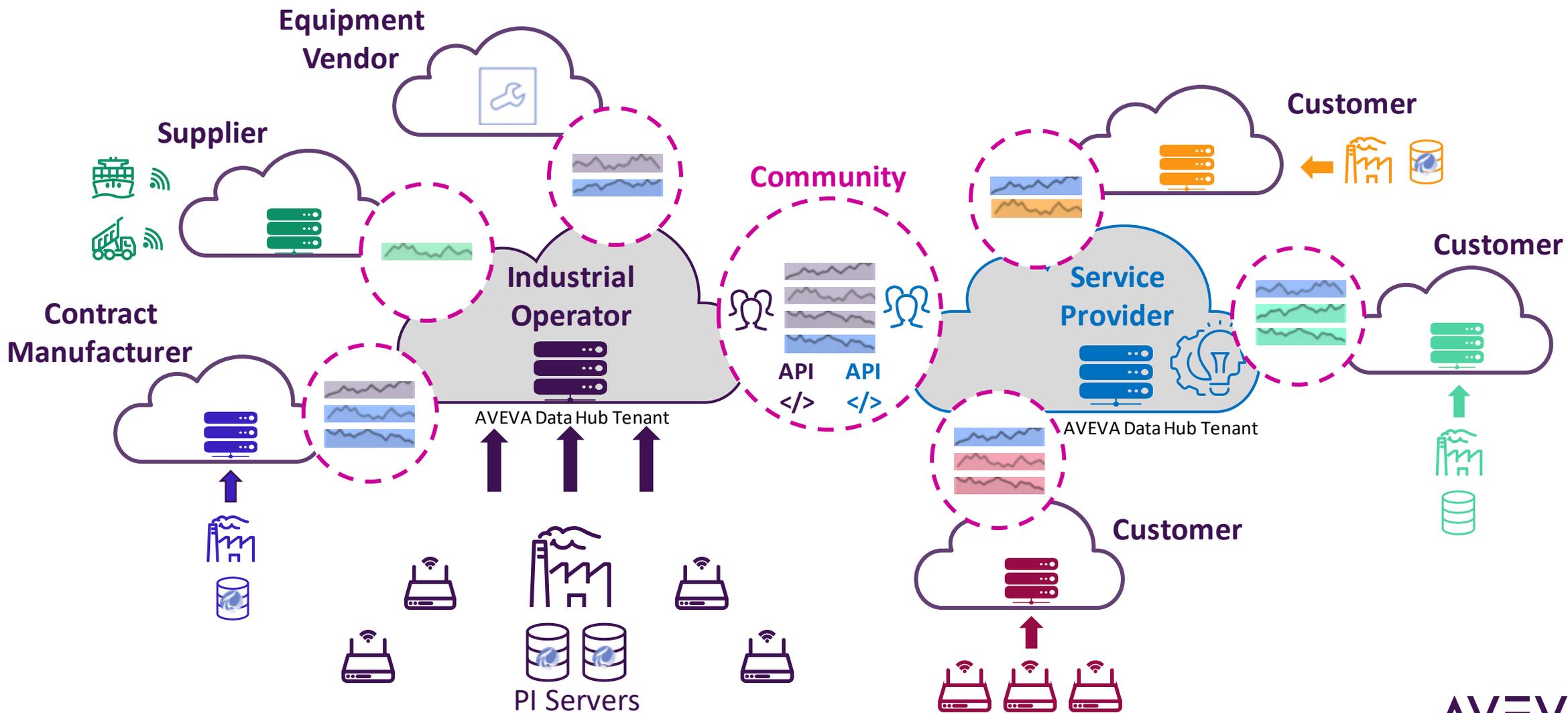
Connected Community – Service Providers

AVEVA Data Hub
Community

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



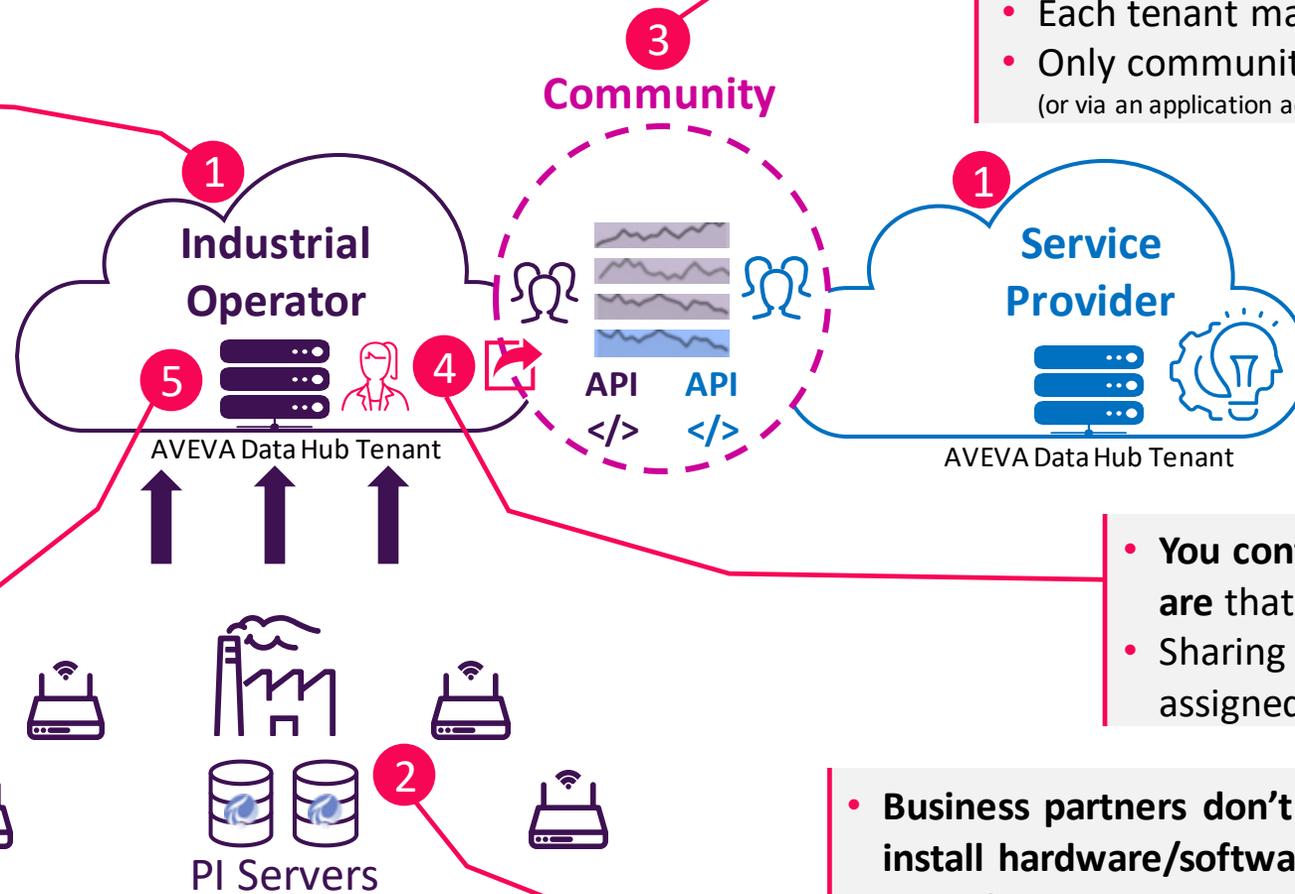
Easily scales to all your partners, even those without PI



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



- **3-way handshake for Community formation & requires tenant admin approval**
- Communities are private
- Each tenant manages their community members
- Only community members can read shared data (or via an application accessing data via API)

- **You control who your “data stewards” are** that have resource sharing privileges
- Sharing privilege must be explicitly assigned

- **Business partners don’t need to install hardware/software** within your site to get access to your data

AVEVA DATA HUB

Getting value out of shared data

Connected Community Demo

AVEVA

Windtopia

Remote monitoring



Data science & AI/ML platforms



3rd party analytic tools



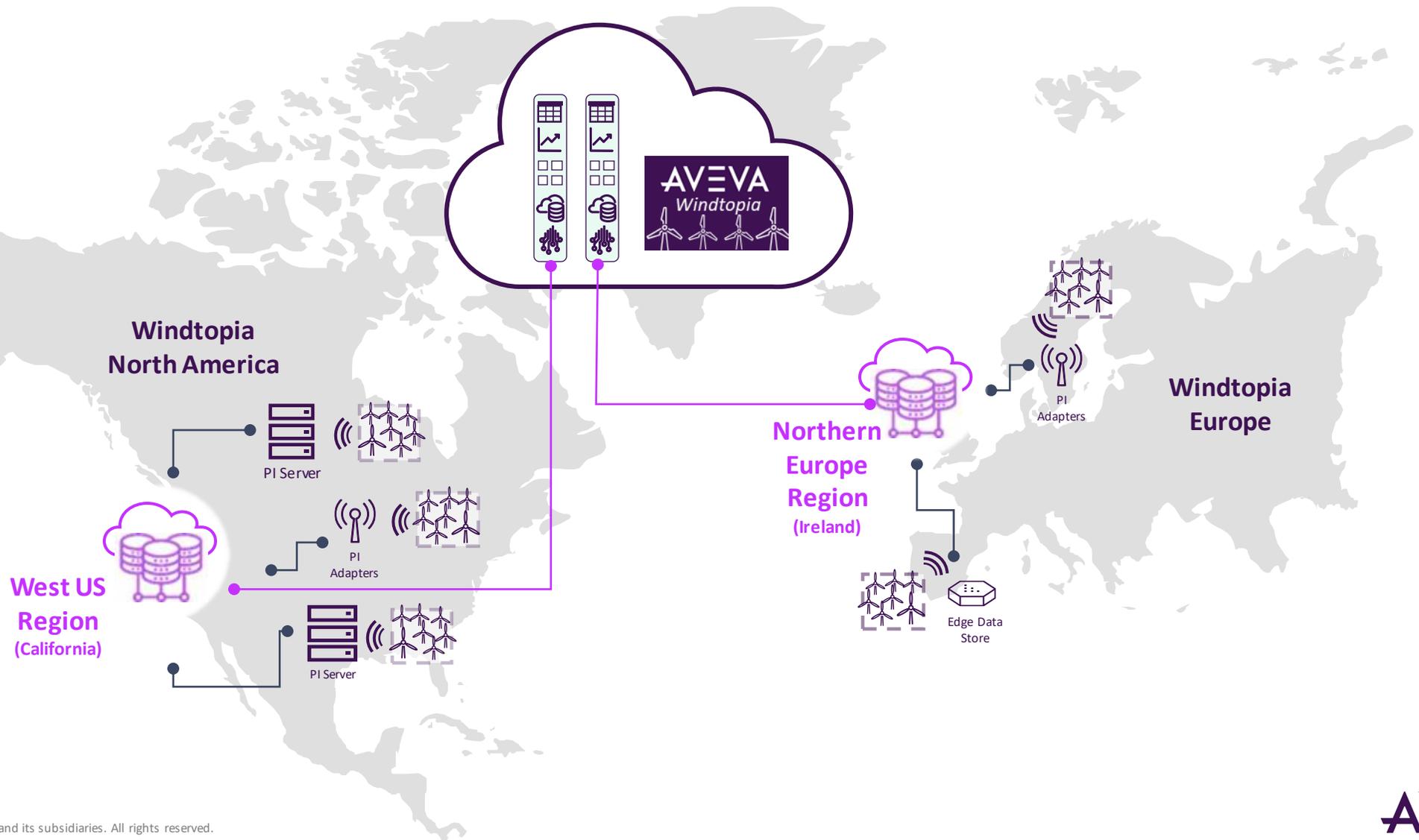
Data sharing with business partners



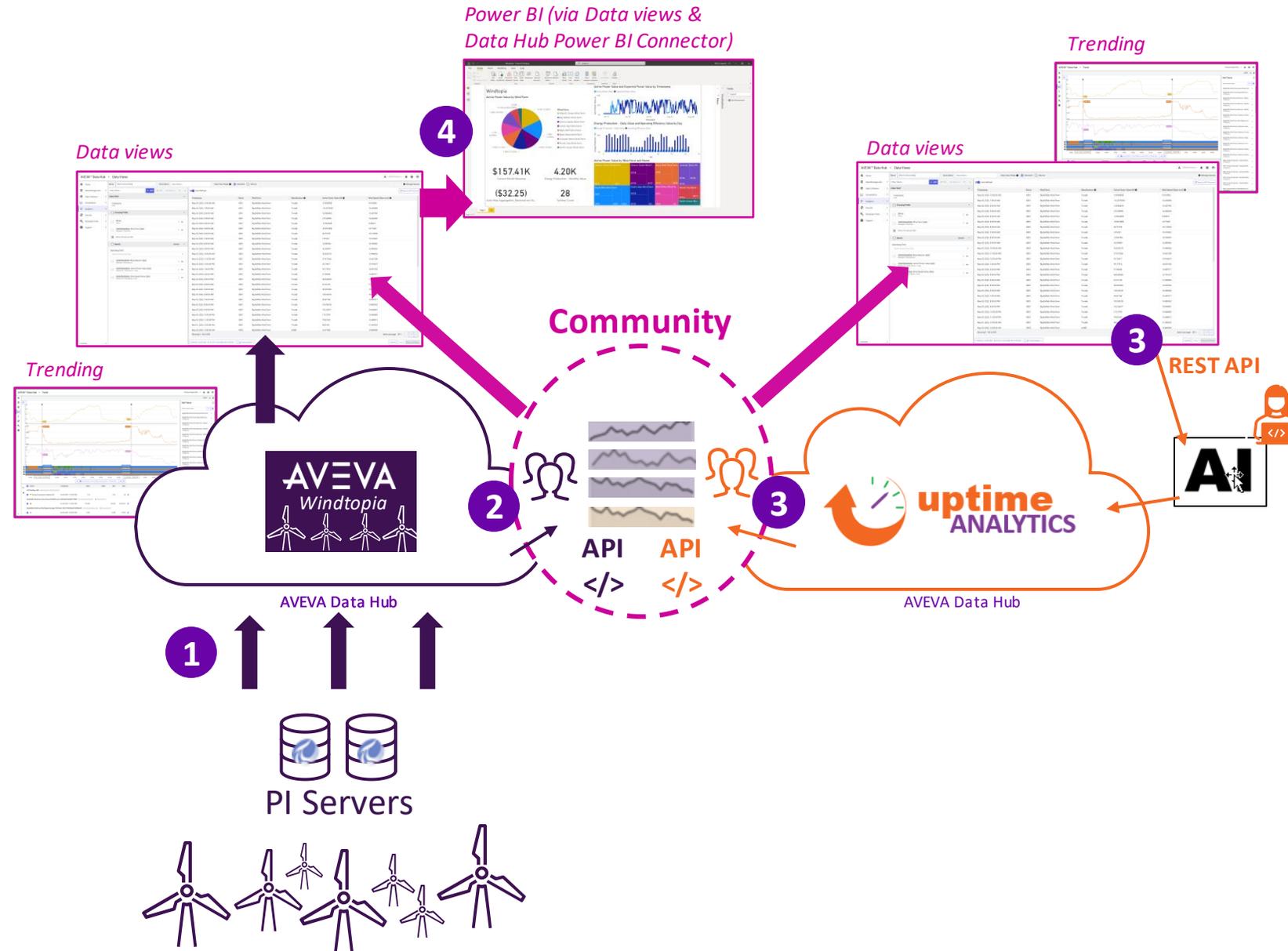
Custom & partner applications



Reporting & Dashboards



AVEVA Data Hub Demo Outline



1 Seamless connectivity from AVEVA PI System to AVEVA Data Hub

2 Community creation & stream sharing

3 Data views with shared streams, share predictions

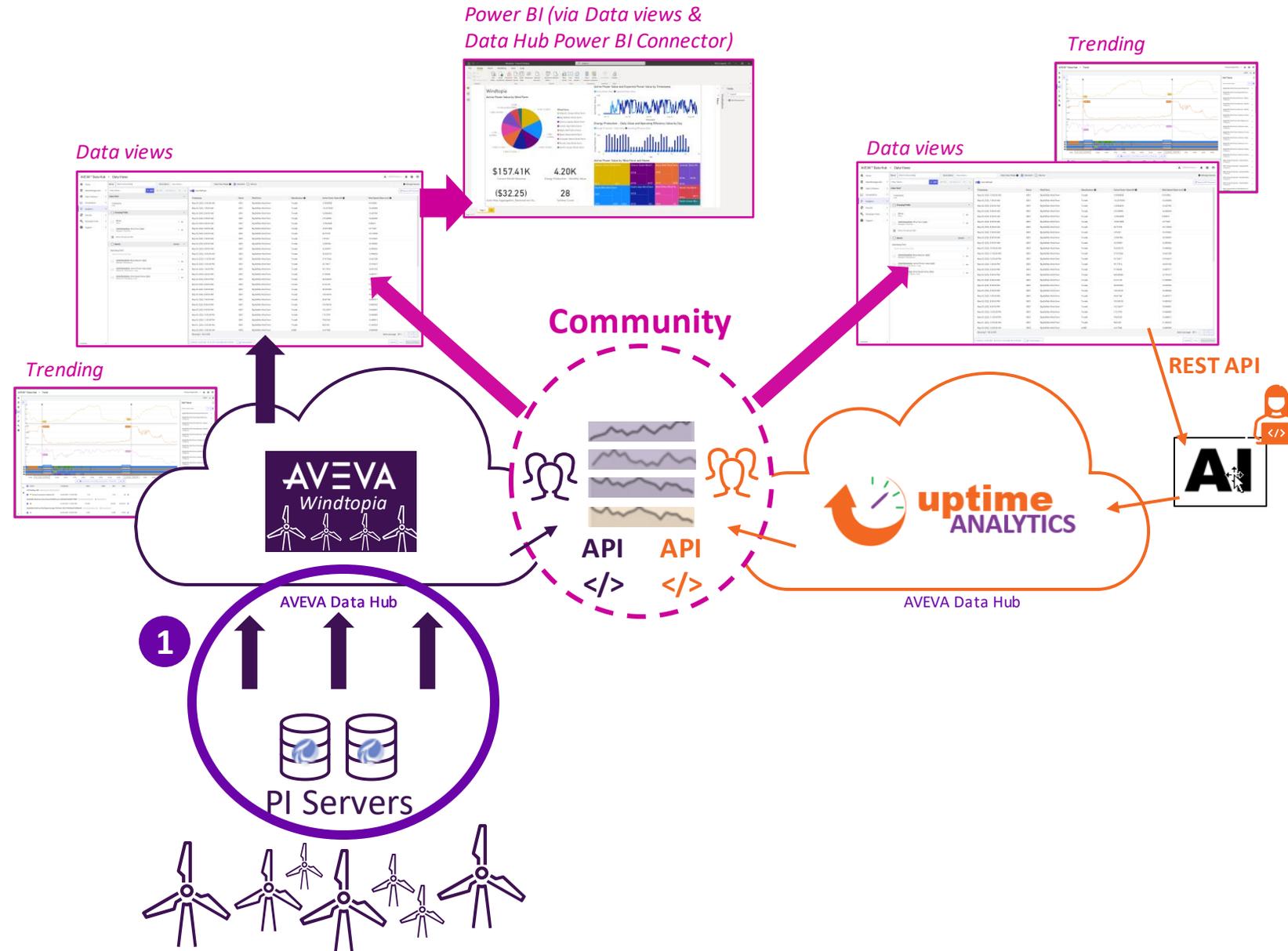
4 Power BI dashboard, control & transparency for your data

AVEVA Data Hub Windtopia Demo

- 1 Seamless connectivity from AVEVA PI System to AVEVA Data Hub

What you will see in this demo:

1. PI to Data Hub Agent Configuration: Transfer of PI System AF elements & PI tags to AVEVA Data Hub
2. Show streams data landing in AVEVA Data Hub
3. Trend some of the Wind Turbine streams to verify data transfer



AVEVA Connect

https://connect.aveva.com/#/account/home

≡ AVEVA™ Connect

My Folders > AVEVA



AVEVA



AVEVA APAC UE3.1.1



AVEVA Datahub



AVEVA O&G



AVEVA Power

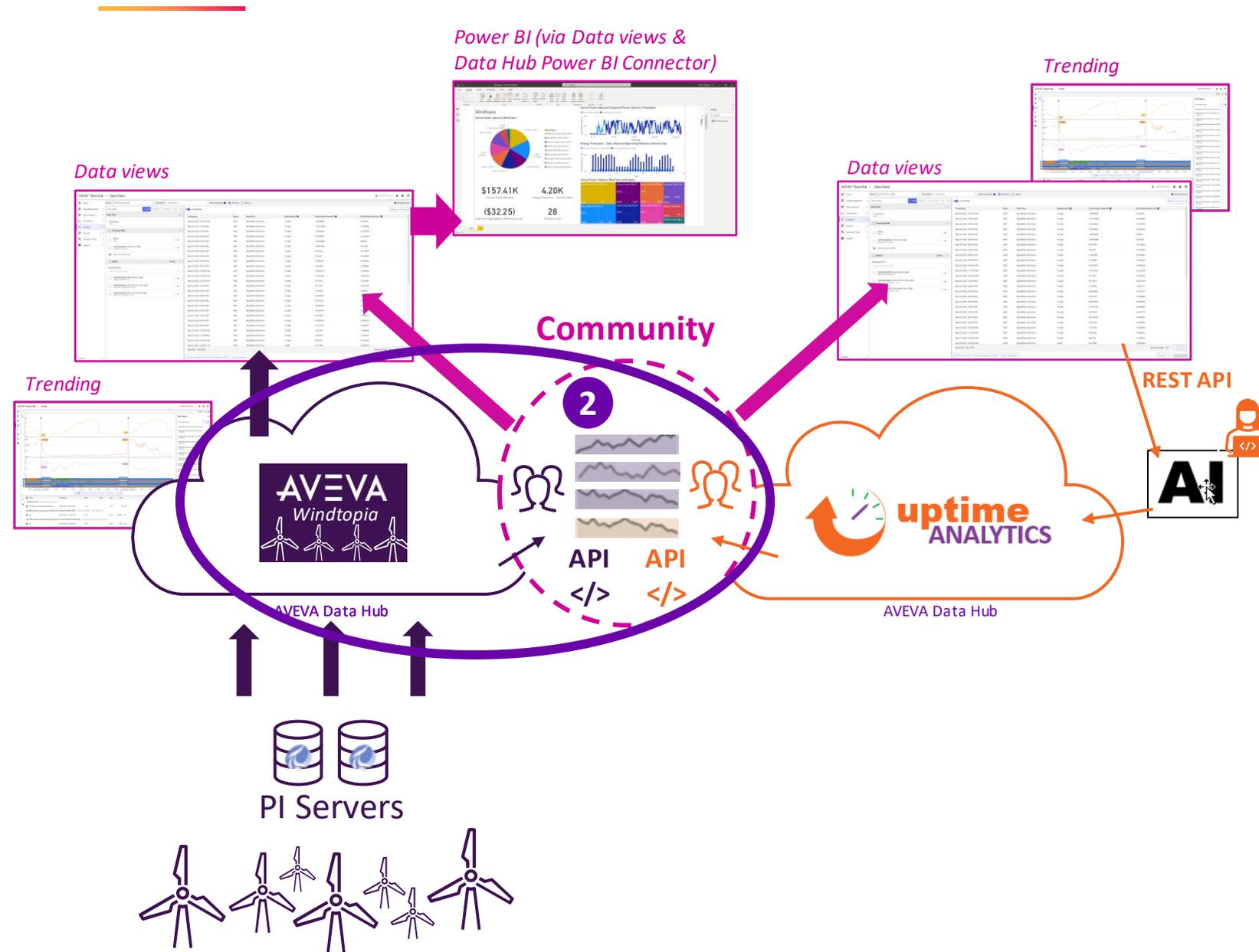
| | | | |
|--|---|--|--|
|  <p>Asset Information Management Advanced</p> <p>Tailored to owners and operators looking to improve governance for asset life cycle information and lower total cost of asset ownership</p> |  <p>Asset Information Management Discovery</p> <p>Tailored to owners and operators looking to improve governance for asset life cycle information and lower total cost of asset ownership</p> |  <p>Contract Risk Management</p> <p>Contract Management solution that reduces avoidable contract overruns in CapEx intensive projects.</p> |  <p>Edge Management</p> <p>Register and pair device twins with physical edge devices. Remotely provision, configure, maintain, deploy, and monitor AVEVA edge modules.</p> |
|  <p>Enterprise Resource Management</p> <p>Plan, manage and construct complex projects in a timely manner</p> |  <p>Information Standards Manager</p> <p>Overcome inherent inconsistencies, rationalise your class libraries and impose consistent, compliant standards on your information.</p> |  <p>Integration Studio</p> <p>Develop, manage and maintain your HMI and SCADA. Drive standardization and reduce costs</p> |  <p>License Administration</p> <p>Reporting and Administration for Licensing as a Service (LaS)</p> |
|  <p>Operator Training Simulator</p> <p>Advanced training systems that help control room operators learn the skills they need to run a plant safely, efficiently, and profitably.</p> |  <p>Simulation</p> <p>Platform for performing process design and operational studies using steady state and dynamic process simulation tools.</p> |  <p>Unified Learning</p> <p>Experiential learning to build and sustain competence and improve performance for today's industrial workforce</p> | |

AVEVA Data Hub Windtopia Demo

2 Community creation & stream sharing

What you will see in this demo:

1. Create the community & invite Uptime Analytics
2. Confirm Uptime Analytics into the community
3. Share streams into the community



AVEVA™ Data Hub

Home

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

Latest Service Updates

New code samples for Grafana and "Data Hub to PI"
 Sep 2, 2022, 3:19:33 PM
 AVEVA is pleased to announce the release of two new code samples on GitHub!
 The first is a new Grafana plugin for Data Hub that uses the latest plugin framework and adds new features such as Grafana Alerting and the ability to use a user's OAuth token to authenticate against Data Hub.
 The second sample is a Data Hub to PI utility that can be used to transfer data from Data Hub to a PI Data Archive. This sample sends OMF messages to a PI Web API server to automatically create corresponding PI points and to replicate data in your PI Data Archive.

More involved samples demonstrating various aspects of Data Hub can be

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 12, 2022

| Streams Stored | Streams Accessed | Shared Streams Accessed |
|----------------|------------------|-------------------------|
| 3,438 | 283 | 0 |

System Health

Ok

PI to Data Hub Agents

All agents in good health

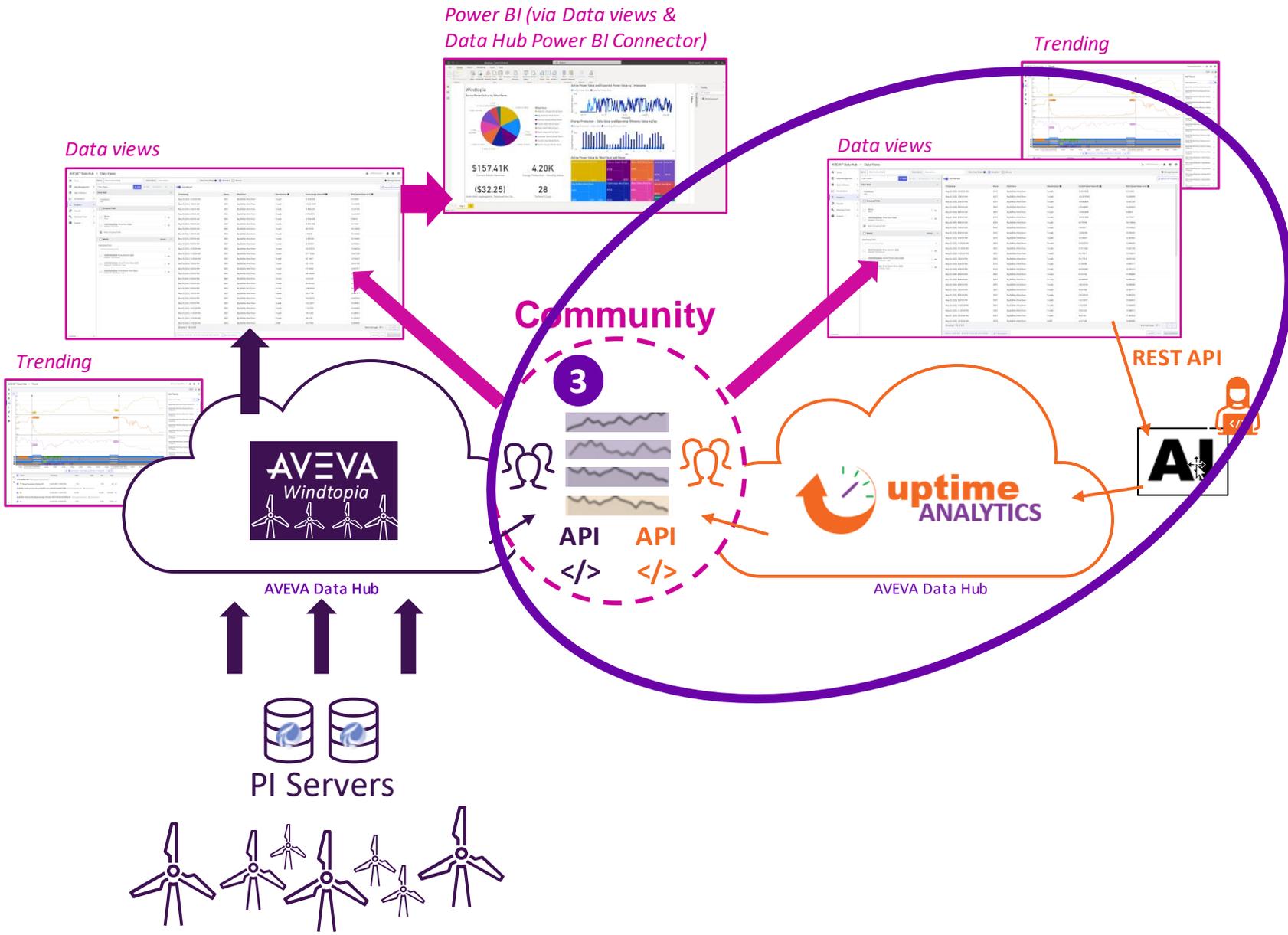
COLLAPSE

AVEVA Data Hub Uptime Analytics Demo

3 Data views with shared streams, share predictions

What you will see in this demo:

1. Accept community invitation from AVEVA Windtopia
2. Configure community tenant
3. Trend Windtopia shared data from community
4. Create data view on shared data & leverage API in Uptime Analytics AI app
5. Write predictions data back to Uptime Analytics tenant & share into community.



AVEVA Connect

https://connect.aveva.com/#/account/home

AVEVA™ Connect

My Folders > Development

Development

Production

Data Hub

A cloud-native platform for aggregating, storing, enriching, accessing and analyzing real-time operations data from historians, edge devices and more.

Learning Support What's Available

Services Catalog

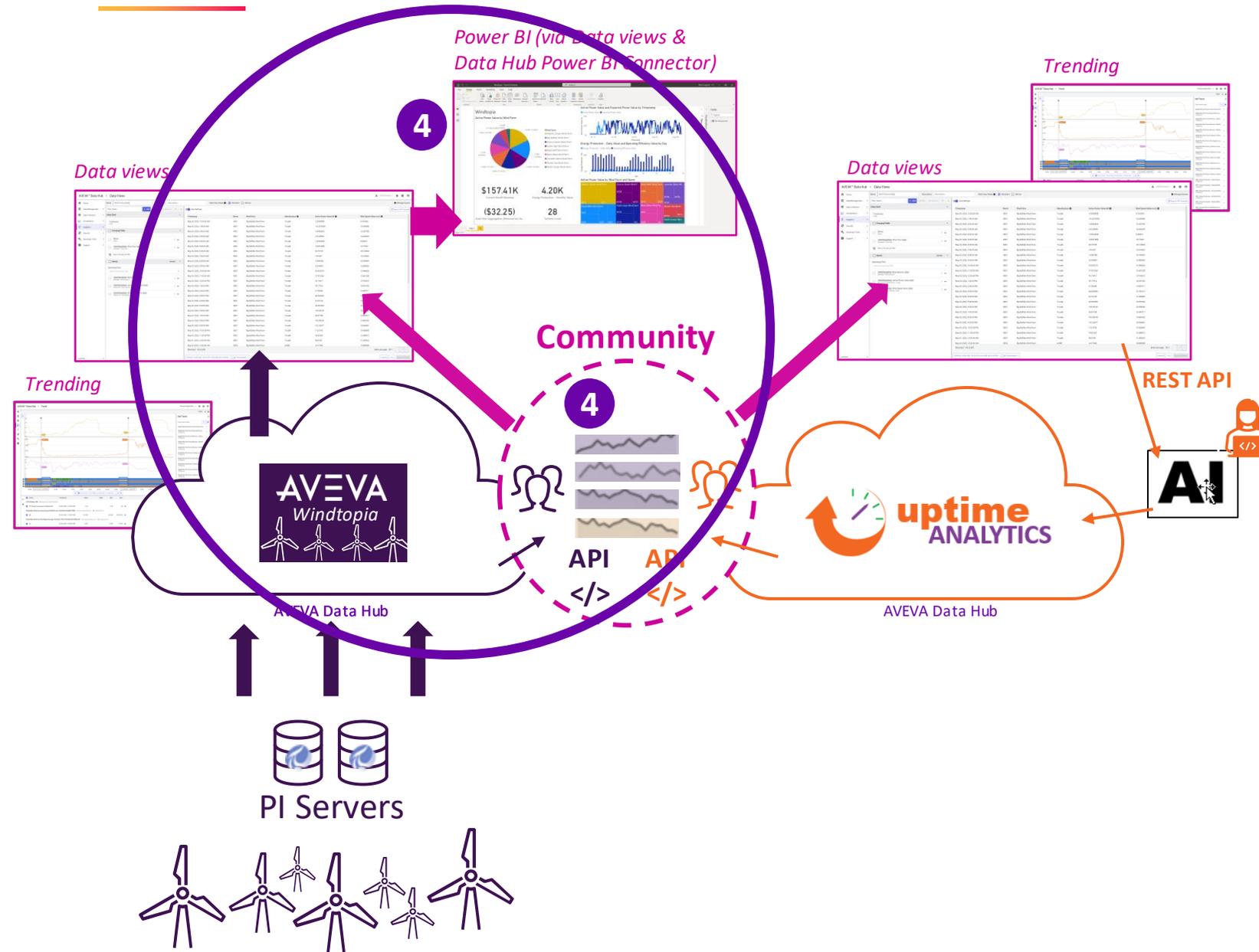
Discover other cloud services from AVEVA

AVEVA Data Hub Windtopia Demo

4 Power BI dashboard,
control & transparency
for your data

What you will see in this demo:

1. View community shared data from Uptime Analytics in PowerBI dashboard
2. View specific information within a community
3. View all shared data across your communities
4. View usage reporting from community
5. Pausing data sharing



AVEVA™ Data Hub

Uptime Analytics

Home

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

Customize

Latest Service Updates

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- Experiment with the REST API console

Yesterday's Resource Usage

Oct 18, 2022

| Streams Stored | Streams Accessed | Shared Streams Accessed |
|----------------|------------------|-------------------------|
| 3,439 | 2,752 | 1,292 |

System Health

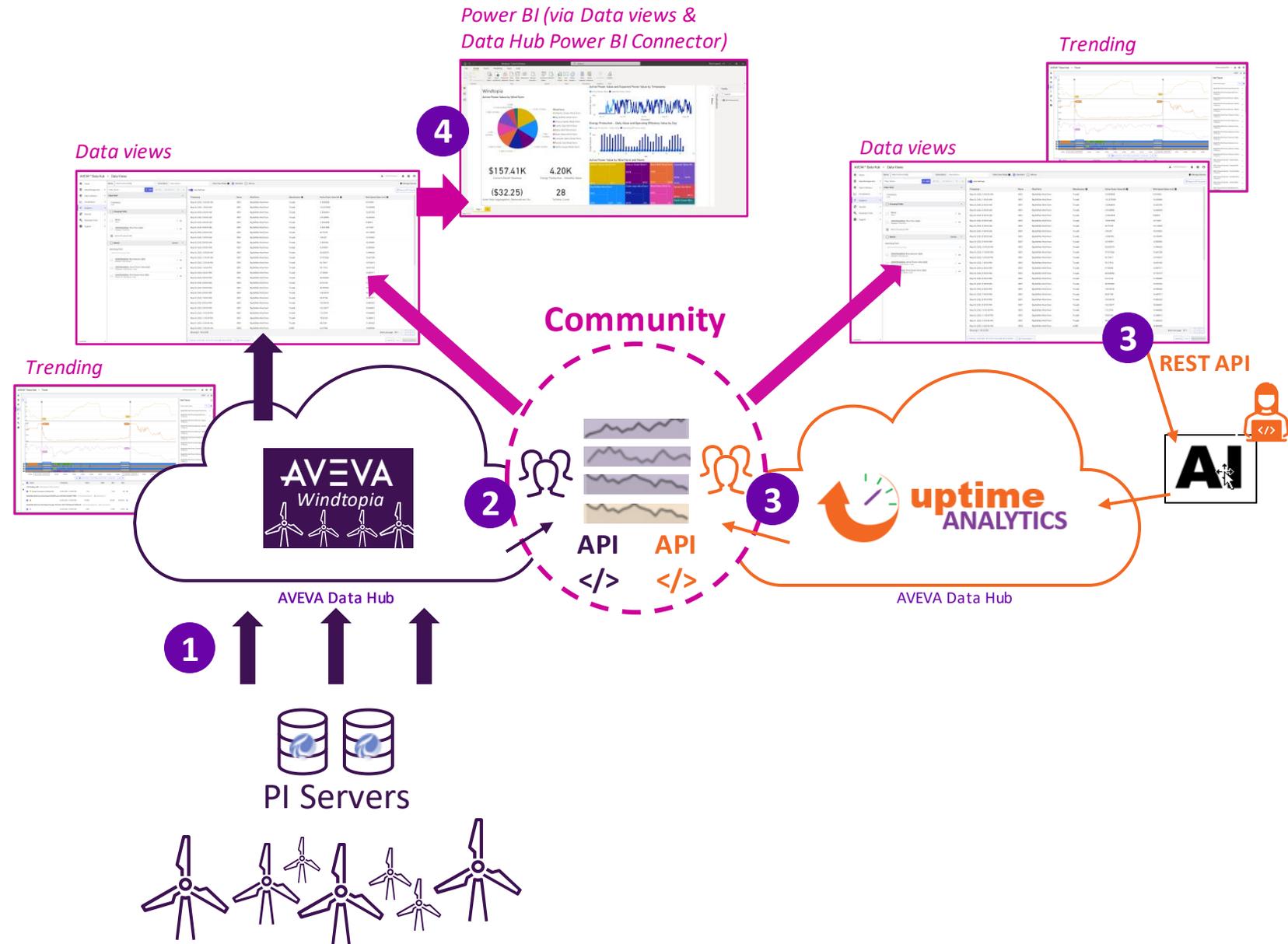
Ok

PI to Data Hub Agents

All agents in good health

COLLAPSE

AVEVA Data Hub Demo Recap



- 1 Seamless connectivity from AVEVA PI System to AVEVA Data Hub
- 2 Community creation & stream sharing
- 3 Data views with shared streams, share predictions
- 4 Power BI dashboard, control & transparency for your data

AVEVA DATA HUB

Customer success stories

AVEVA

Dominion Energy

Renewable energy data aggregated and shared via AVEVA Data Hub

Challenges

- Reduce the time and effort spent collecting and aggregating data streams from many distributed wind and solar power generation sources in remote locations
- Make it faster and easier to create environmental reports
- Provide real-time data on power sources for customers pursuing net zero

Solution

- Secure, real-time data highway implemented using AVEVA Data Hub
- Real-time & historical data easily and natively transferred between AVEVA PI System and AVEVA Data Hub

Results

- Real-time energy source data integrated into Dominion's activities
- Fifty percent increase in speed-to-market for vital environmental data
- New data increasing customer satisfaction and enabling Dominion to increase its profitability



Water Utility

Leverages the cloud to enable secure real-time data sharing

Challenges

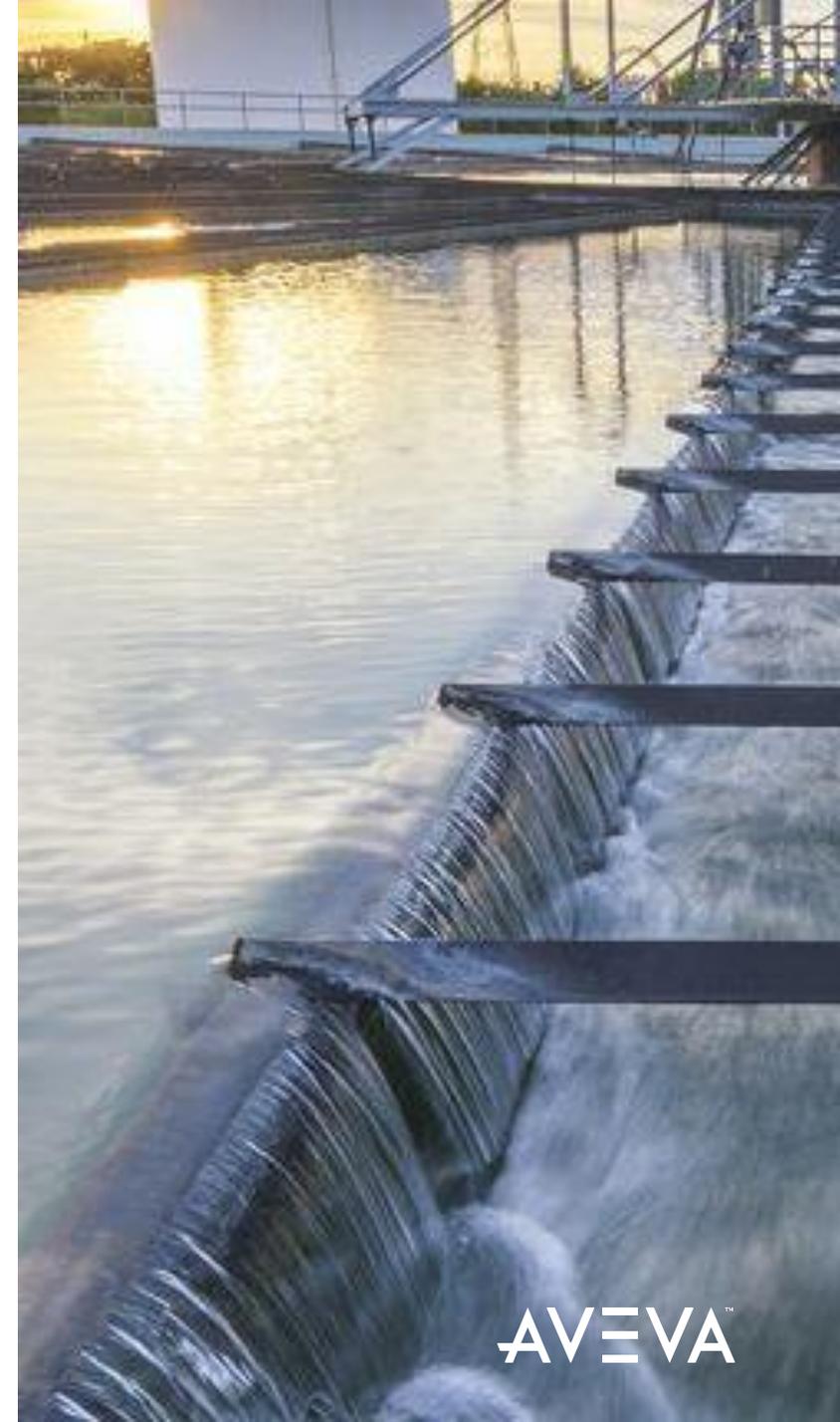
- Securely share critical operations data with customer to understand water usage, asset health and validate work order requests
- Replace a time-consuming manual process involving spreadsheets
- Sister agency hacked with ransomware raised concerns about sharing data with customers, so the solution must minimize risk to on-premises systems

Solution

- Simple, secure sharing of data enabled for analysis, reporting and water management with AVEVA Data Hub
- Customers now have self-service access to real-time datasets

Results

- Cloud based data sharing reduces security risk to on-premises systems
- Utility now has repeatable pattern for other customers
- Customers access datasets when they want using applications of their choice



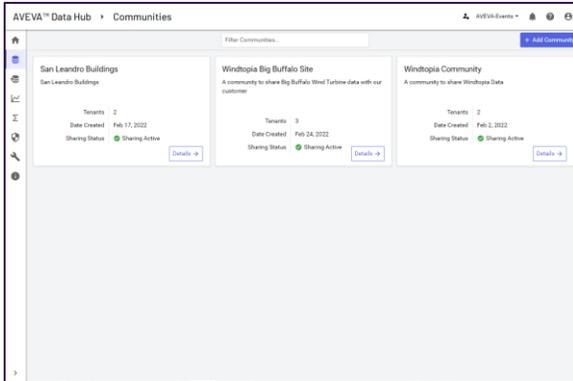
AVEVA DATA HUB

Connected community now and in the future

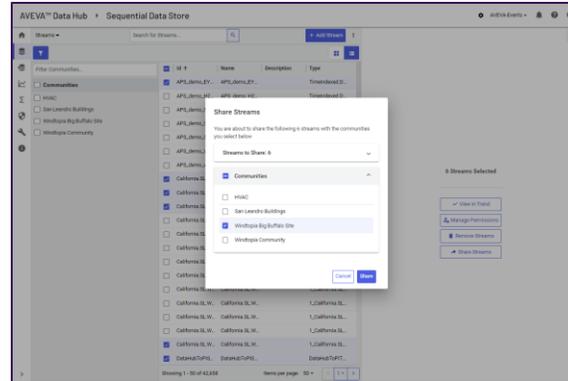
AVEVA

What can you do with AVEVA Data Hub connected community today?

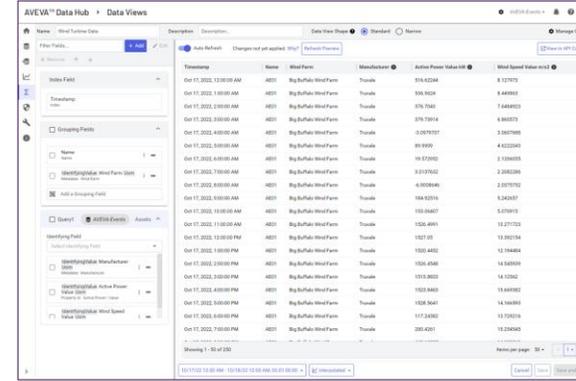
Community management



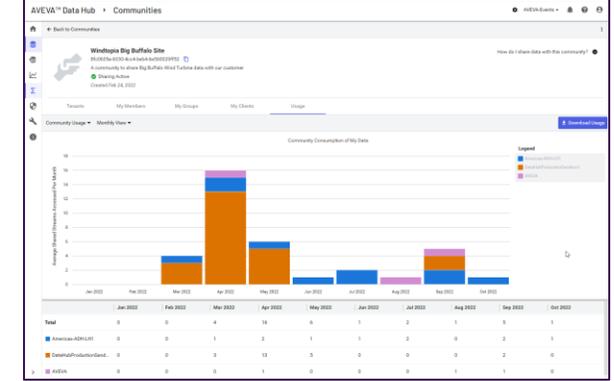
Stream data sharing



Data views with shared data



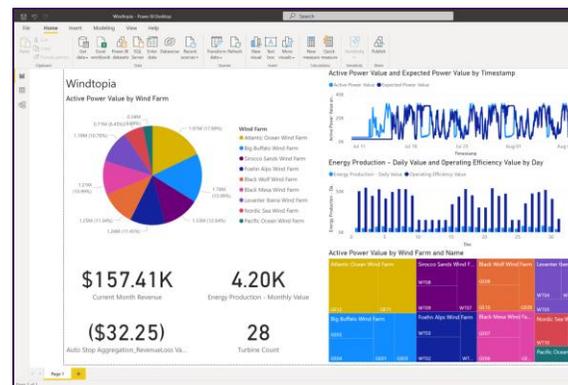
Transparent community usage



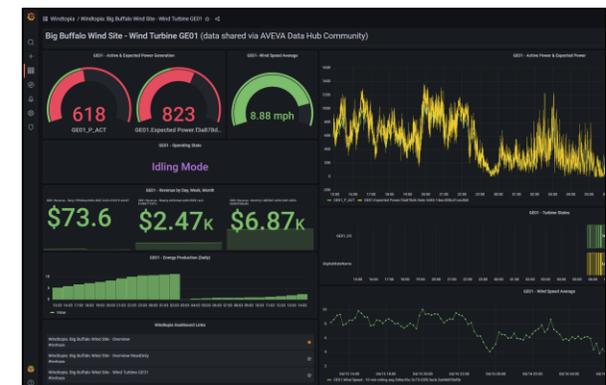
Trending with shared data



Power BI with shared data



Access via REST API / Integration



What's next for AVEVA Data Hub?

In development

Collecting feedback

Seamless infrastructure

Community Data Sharing (Streams) Released

Enable cross-tenant data sharing of streams with your business partners, service providers, and analytics providers

PI to AVEVA Data Hub enhancements Released

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

Support in new regions Released

You have a third choice of where your data can be stored: East Australia

Manageable software

Remote Software Management Lighthouse

Manage configuration and monitor the health of AVEVA Adapters and EDS with AVEVA Data Hub

Increased value and scope

AF in PI to AVEVA Data Hub Released

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

Data Views from shared data Released

Ability to create a curated data view from Community shared streams.

Event Data

Ability to store event data in AVEVA Data Hub and provide a rich contextual search API for retrieving the information.

Manageable software

OCS to AVEVA Data Hub migration Released

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

Seamless infrastructure

Community Data Sharing (Assets) Released

Enable cross-tenant data sharing of assets.

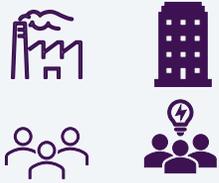
Event Broker

Ability to sign up for and query changes to stream data and metadata and changes to assets

Wrap up

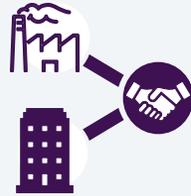
Data sharing that puts you in control of your data

True multi-tenant system



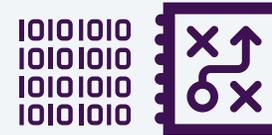
- ✓ Natural separation of authentication, users, and data
- ✓ Each tenant manages their own authentication & users
- ✓ Business partners don't need to install hardware/software within your site to get access to your data

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



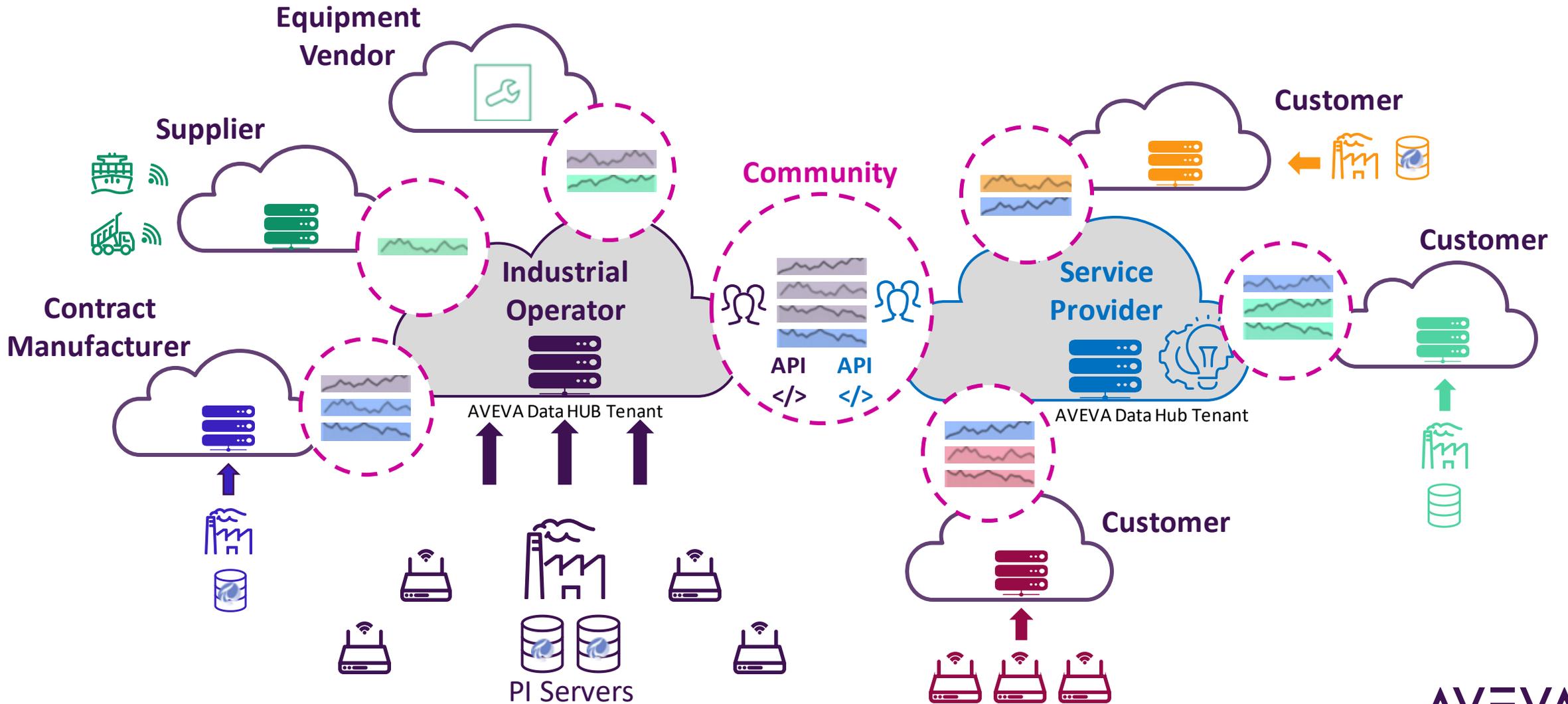
- ✓ Share / Un-share data – each tenant has control of what specific data they share
- ✓ Sharing privileges explicitly assigned to your “data stewards”
- ✓ Sharing is providing *external access*, not copying data outside your tenant
- ✓ Pause / Un-pause data sharing
- ✓ View community consumption to 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

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 lighthouse@aveva.com to engage with our team!

AVEVA

Learn more about AVEVA Connect & AVEVA Data Hub

Industrial Cloud Platform @ AVEVA World 2022 – San Francisco

• Day 1: Industrial Cloud Platform

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

• Day 2: Customer Presentations

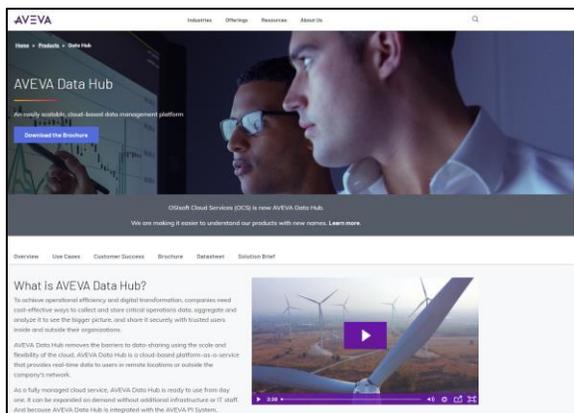
- IGI: The International Group: Lityx, use AVEVA™ Data Hub to implement AI-based analytics, improving yields and generating millions in additional profit at a 20x ROI [10:55]
- Industrial Parts Depot: Real-Time Fleet Monitoring with OCS at Industrial Parts Depot [14:00]
- AVEVA: Digital Transformation Fueling Operational Excellence and the Journey to Net-Zero [16:35]

• Day 3: Industrial Cloud Platform

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

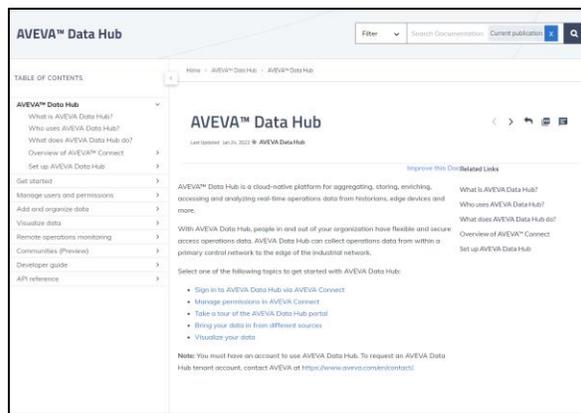
Where to find more information on AVEVA Data Hub

Overview & Resources



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

Documentation



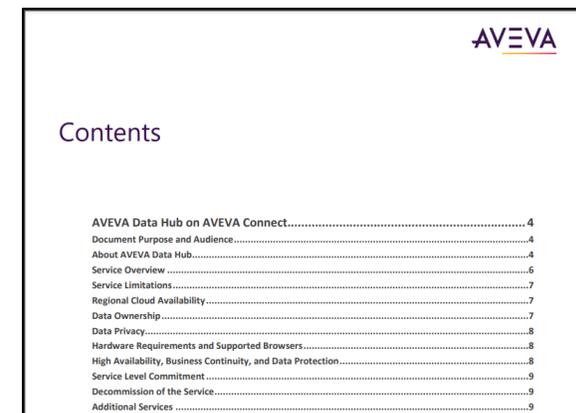
<https://docs.osisoft.com/bundle/data-hub/page/adh-content-portal-overview.html>

Security & Trust Center



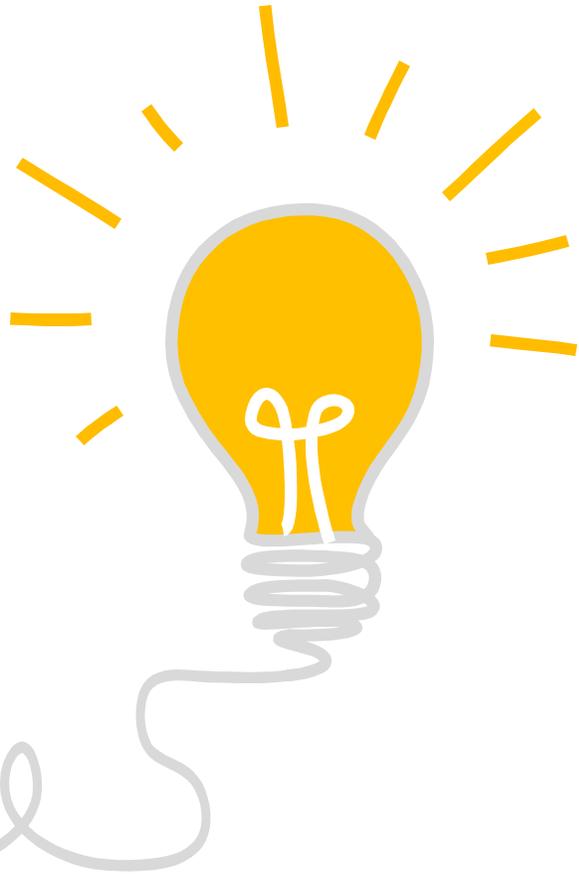
<https://www.aveva.com/en/legal/trust/>

Service Description



https://www.aveva.com/content/dam/aveva/documents/legal/service-documents/AVEVA-Data-Hub-on-AVEVA-Connect_v1-0.pdf

How can you influence the AVEVA Data Hub roadmap?



<https://feedback.aveva.com>

Let us know your product feedback!



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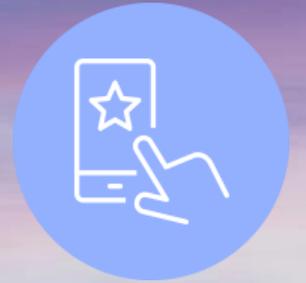
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