

AVEVA PI WORLD



OSIsoft Cloud Services (OCS) Update

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AVEVA



Agenda

Customer success with OCS

What's new

What's in preview

OSISOFT CLOUD SERVICES

Customer success with OCS

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Customers are using OCS today for a variety of scenarios



Unlocking data within agriculture and agribusiness



Challenge

- Significant amounts of data is in inaccessible forms – notebooks, paper, pdfs etc.
- Data within an application layer remains locked away in separate platforms and databases;
- Data is rarely uniform or standardised;
- Farms and agribusiness have nowhere to store data;
- Issues around data ownership, possession and control are significant barriers to adoption;
- Lack of data segregation between business units or projects within an organisation;
- No easy way to collaborate and share data

Solution

- All farm records, production data and device data is ingested and stored within the OCS portal;
- Data ownership, possession and control across all data sets are maintained at an individual farm or business level;
- On ingestion, data is standardised to a uniform data model (industry or global standard);
- Visualisation and analysis of data across all data sets from a single farm or multiple farms or businesses;
- Users can conduct their own research and analysis to gain farm or operation-specific insights;
- User-controlled data collaboration and sharing at a group, grower group or supply chain level.

Benefits

- **Ability to analyze and compare as never before – across years, paddocks, soil types, varieties, genetic bloodlines, paddock and animal treatments**
- **Generate real cost savings and time savings**
- **Better asset and infrastructure management**
- **Gains in yield and productivity**
- **Improved animal welfare sustainability practices**
- **Opportunities for collaboration on research, machine learning and national carbon and sustainability projects**

Predicting harmful algal blooms in city drinking water



<https://detroitlake.thepredictionlab.com/story>

Challenge

- Harmful algal blooms (HAB) threaten city's drinking water
- Data collection from the lake, local weather, and USGS streamgage data needed to be shared with external partners
- Manual lake sampling involves a 2-hour drive and \$1,000/sample

Solution

- PI System deployed remotely to collect lab, weather, & treatment data
- CASNE Engineering (partner) integrated satellite images
- OCS was used to store/share data with partners to enable predictive modeling

Benefits

- Data sharing with OCS allows partners to develop predictive models to catch HAB events sooner
- Data science reduces any surprises in drinking water quality with the help of OCS and the PI System
- Foundation to ask next gen questions like climate change

OCS cloud platform for enabling remote monitoring services



[Highlight video](#)



Challenge

- Needed a solution for real-time monitoring and advanced diagnostics capabilities
- Wanted to provide clients with new, high-value, remote monitoring maintenance services

Solution

- Offered new remote operations monitoring services by leveraging OCS as their preferred PaaS
- Provides real-time monitoring and advanced diagnostics services to clients based on OCS platform (reliability & maintenance services)

Benefits

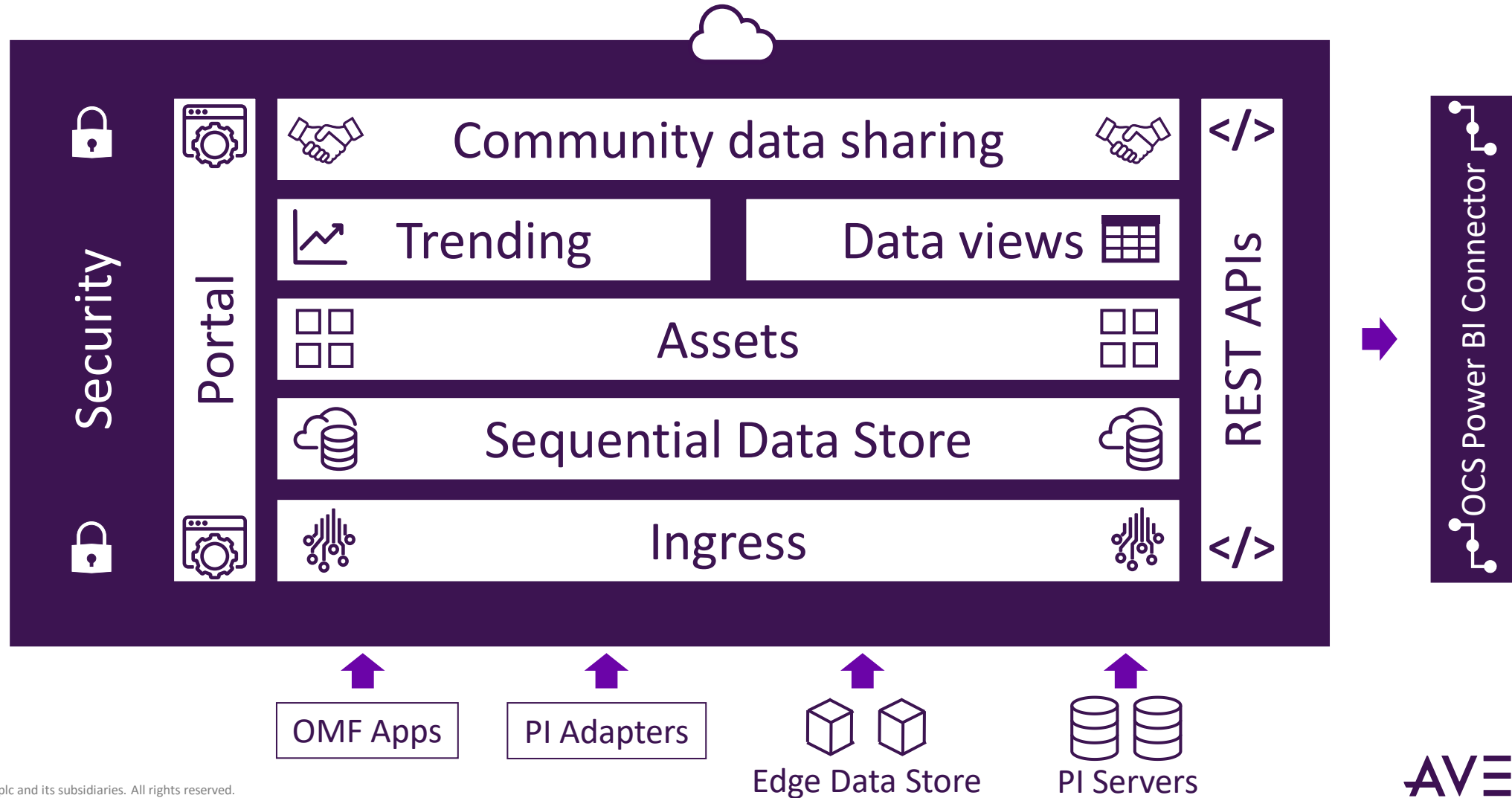
- **Eliminated unplanned downtime for clients and reduces repair costs**
- **Provides prediction of failure analysis & expert guidance for maintenance**
- **Improved maintenance spend for clients**
- **Up and running in hours, not weeks or months!**

OSISOFT CLOUD SERVICES

What's new

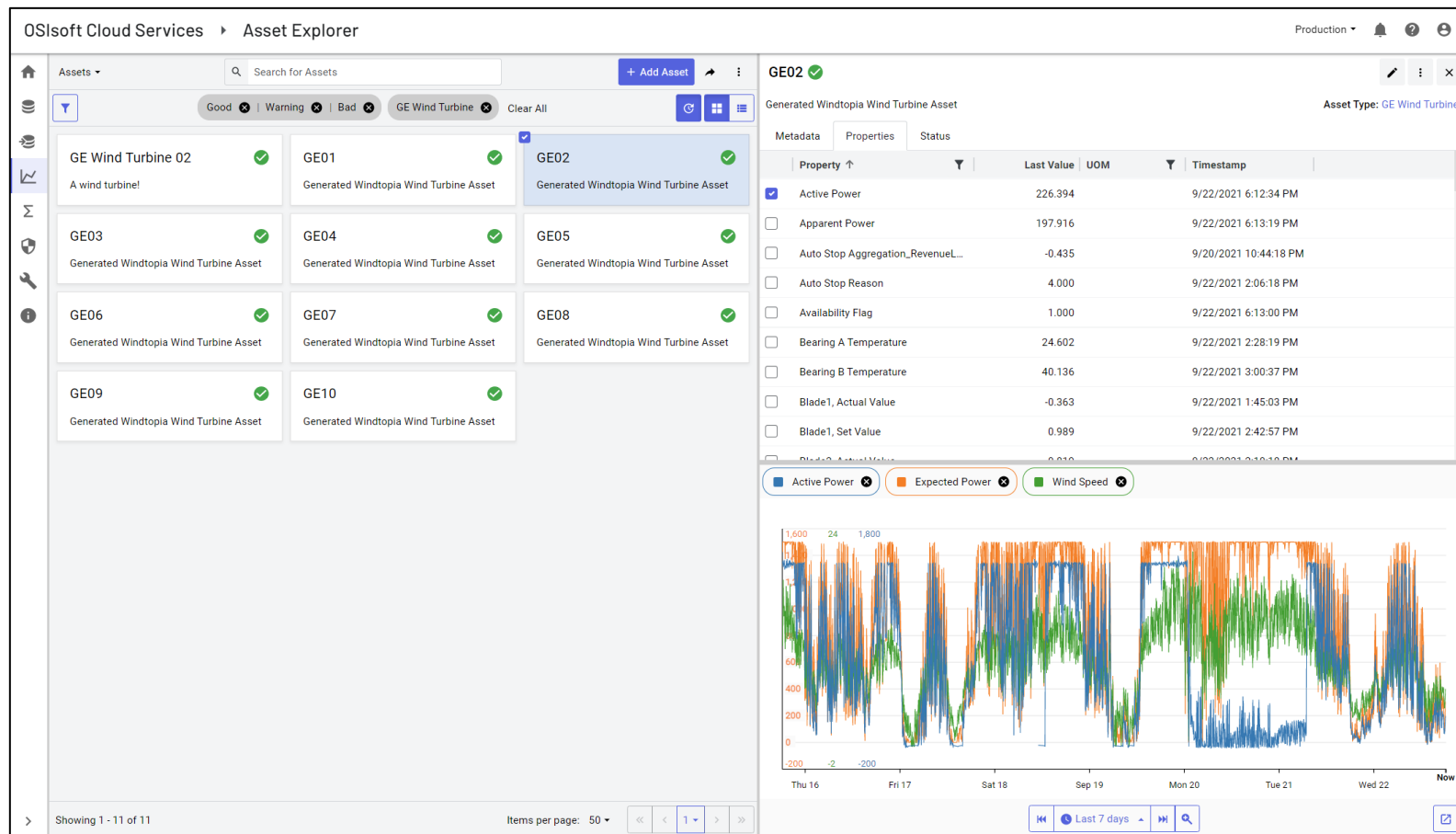
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OSIsoft Cloud Services components



Assets give useful context to your data streams

Assets



- **Static metadata** (Region: North America, Wind farm: Big Buffalo Wind Farm, Asset Type: GE Wind Turbine, Manufacturer: Truvalle, Model: T95-2MW, ...)
- **Stream reference properties** (Active power, expected power, operating state, etc.)
- **Asset status** (stream property values mapped to status: good, warning, bad)



Asset status enables real-time monitoring & historical performance

Assets

Asset status configuration

GE02

Asset: GE02

Id: GE02

Asset Type: GE Wind Turbine

Description: Generated Windtopia Wind Turbine Asset

Metadata Properties Status

Property

T Auto Stop Reason | Value

Value

System OK →

Gear Box Vibration →

Pitch Motor →

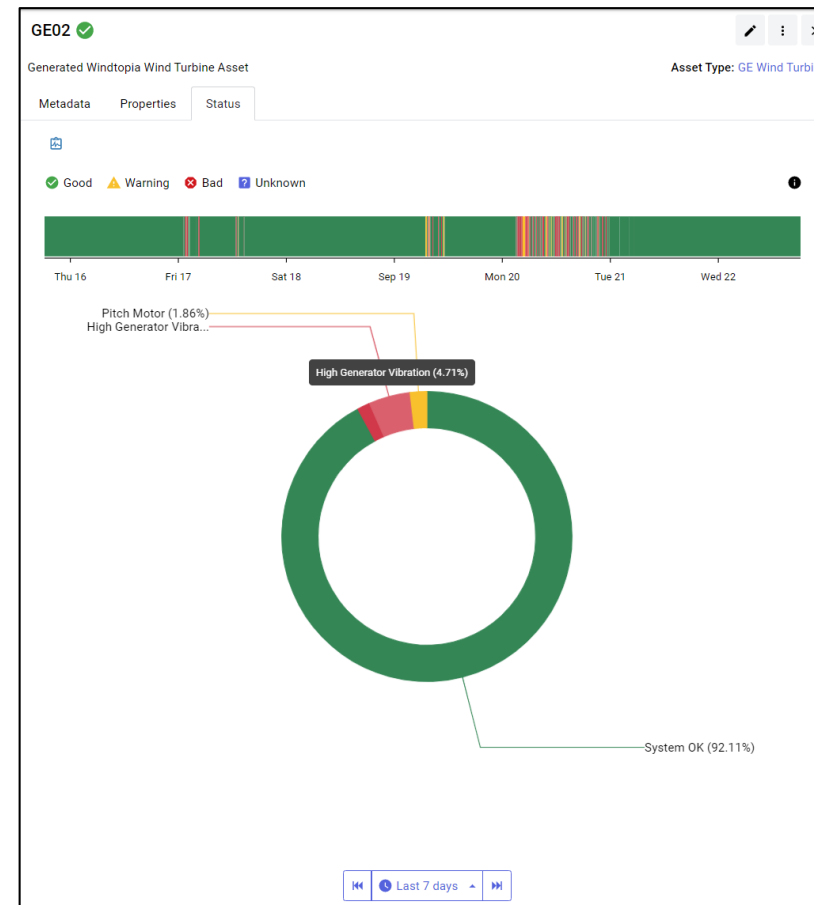
High Gear Box Vibration →

High Generator Vibration →

Status

Cancel Save as Asset Type Save

Asset status history

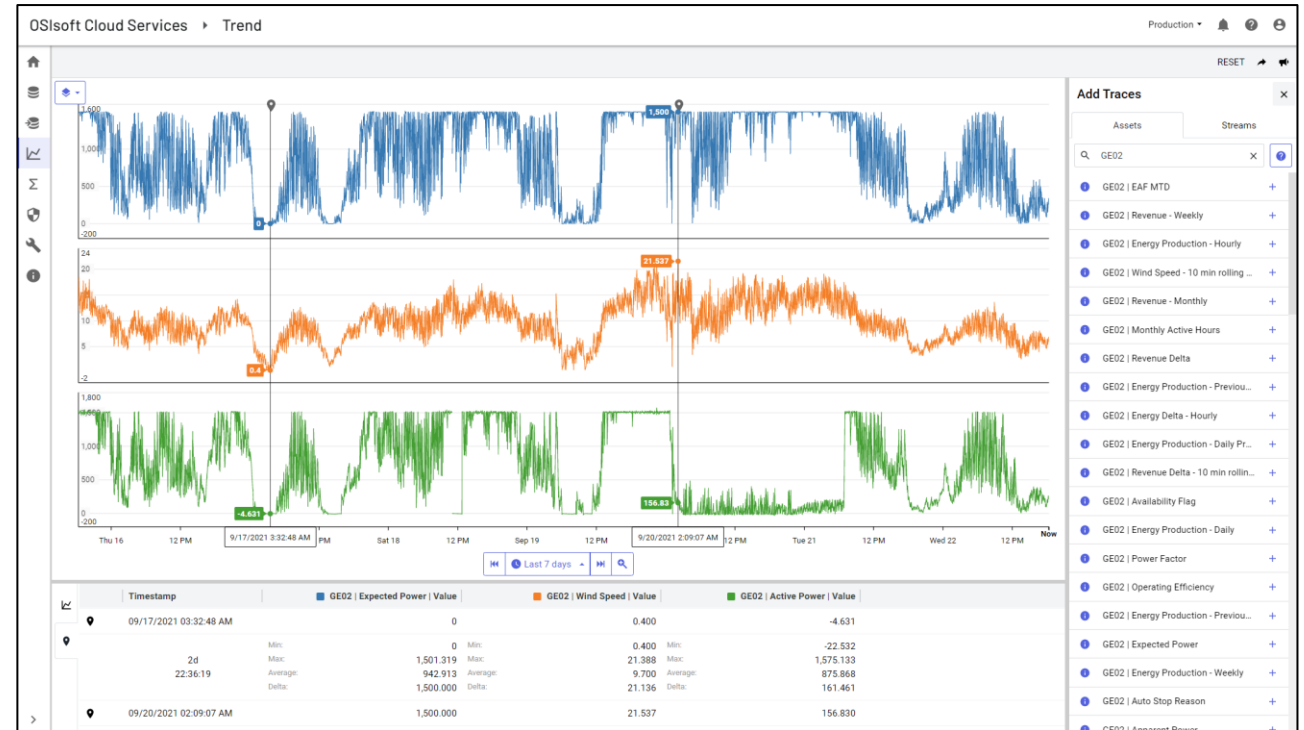


Visual trending enables asset root cause analysis & investigations

Trending

- ✓ Seamless contextual navigation from Asset Explorer
- ✓ Trending asset properties
- ✓ Asset swapping
- ✓ Sharing / URL parameters support for assets

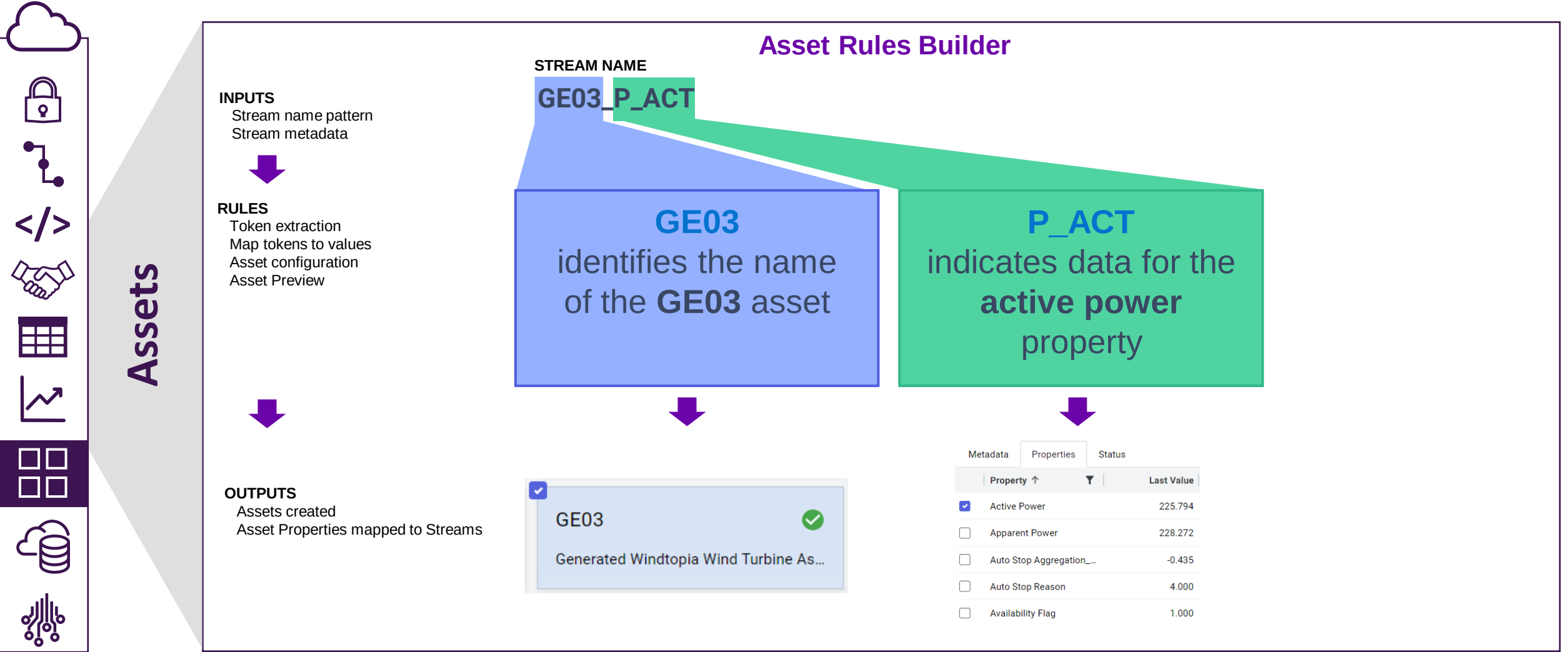
Trending



Sharing with URL Parameters

<https://cloud.osisoft.com/tenant/osisoft-events/trend?namespace=Production&trace=a;GE02;Expected%2520Power;Value;%25231f77b4&trace=a;GE02;Wind%2520Speed;Value;%2523ff7f0e&trace=a;GE02;Active%2520Power;Value;%25232ca02c&mode=stacked&startIndex=2021-09-15T22:20:43.590Z&endIndex=2021-09-22T22:20:43.591Z&cursor=2021-09-17T07:32:48.627Z&cursor=2021-09-20T06:09:07.796Z&selectedTrace=null>

Assets Rules create assets automatically from stream patterns



Assets Rules create assets automatically from stream patterns

Assets

Asset Rules Builder: Stream name pattern

Stream Name Pattern

BBWF_WT_GE01_Active Power

- | | |
|--|------------------------------|
| 1. Match letters preceding the delimiter "_" | {Site} - BBWF |
| 2. Match the delimiter "_" | |
| 3. Match letters preceding the delimiter "_" | {AssetType} - WT |
| 4. Match the delimiter "_" | |
| 5. Match the next group of letters | {Manufacturer} - GE |
| 6. Match numbers preceding the delimiter "_" | {AssetID} - 01 |
| 7. Match the delimiter "_" | |
| 8. Match characters of any type (including letters, numbers, and symbols) until the end of the stream name | {Measurement} - Active Power |

Cancel Undo Capture Next

Assets Rules create assets automatically from stream patterns

Assets

Asset Rules Builder: Token value mappings

Token Value Mappings

Token Value of **Site** from Stream Name **BBWF_WT_GE01_Active Power**

☐ Use Existing Token Values

☒ Rename Token Values

 Generate Mappings

+ Add Mapping

 Remove All Mappings

Mappings

BBWF

→

Big Buffalo



BMWF

→

Black Mesa



BWWF

→

Black Wolf



Data Views curate operational data for external consumption

Data Views

- ✓ Join streams and assets together as meaningful datasets
- ✓ Retrieve interpolated or stored data values
- ✓ Include units of measure and summary data

Enabling data exploration & integration

OSIsoft Cloud Services ▶ Data Views

Name: GE Wind Turbine Analysis Description: Description... Data View Shape: ☒ Standard ☐ Narrow

Filter Fields... [+ Add](#) [Edit](#) [Remove](#) [↑](#) [↓](#) ☒ Auto Refresh

Index Field

Timestamp
Index

☐ **Grouping Fields**

☐ Name
Name

☒ **Query1** [Assets](#)

Identifying Field
[Select Identifying Field](#)

☐ IdentifyingValue Wind Farm Uom
Metadata - Wind Farm

☐ IdentifyingValue Active Power Value Uom
Property Id - Active Power | Value

☐ IdentifyingValue Active Power Value Maximum Uom
Property Id - Active Power | Value - Maximum | Forward

Timestamp	Name	Wind Farm	Active Power Value	Active Power Value Maximum
Sep 9, 2021, 2:00:00 AM	GE02	Big Buffalo Wind Farm	745.68536	1210.29345703125
Sep 9, 2021, 3:00:00 AM	GE02	Big Buffalo Wind Farm	981.8095	1013.7664184570312
Sep 9, 2021, 4:00:00 AM	GE02	Big Buffalo Wind Farm	101.67014	172.8572540283203
Sep 9, 2021, 5:00:00 AM	GE02	Big Buffalo Wind Farm	75.169075	126.84657287597656
Sep 9, 2021, 6:00:00 AM	GE02	Big Buffalo Wind Farm	24.525969	230.16708374023438
Sep 9, 2021, 7:00:00 AM	GE02	Big Buffalo Wind Farm	108.42154	245.31785583496094
Sep 9, 2021, 8:00:00 AM	GE02	Big Buffalo Wind Farm	154.62201	263.4127197265625
Sep 9, 2021, 9:00:00 AM	GE02	Big Buffalo Wind Farm	268.26007	729.2237548828125
Sep 9, 2021, 10:00:00 AM	GE02	Big Buffalo Wind Farm	681.8332	707.7183837890625
Sep 9, 2021, 11:00:00 AM	GE02	Big Buffalo Wind Farm	212.40373	652.9362182617188
Sep 9, 2021, 12:00:00 PM	GE02	Big Buffalo Wind Farm	505.0232	806.93701171875
Sep 9, 2021, 1:00:00 PM	GE02	Big Buffalo Wind Farm	526.1119	1412.8525390625

Showing 701 - 750 of 3707

9/8/21 12:00 AM - 9/22/21 12:00 AM, 00:01:00:00 [Interpolated](#)

Easily slice & dice your OCS data in Power BI

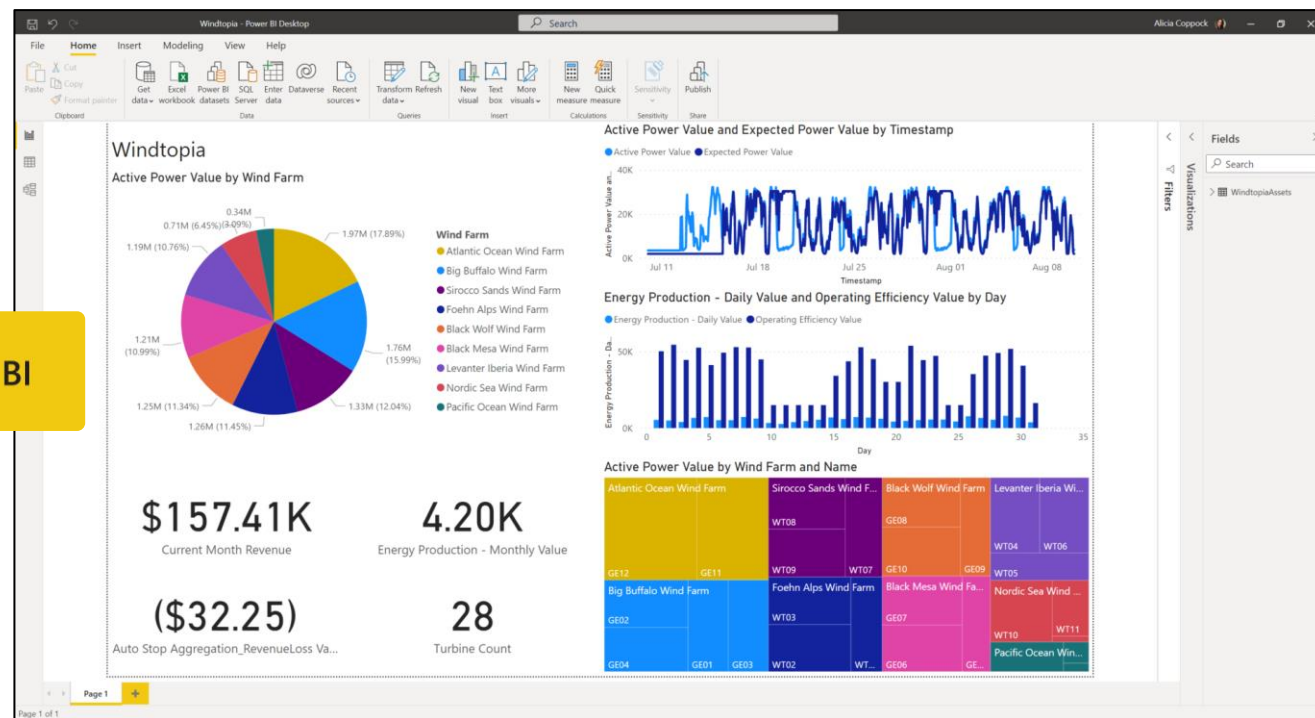


OCS Power BI Connector

OCS
Data Views

OSIsoft Cloud Services Power BI Connector

Power BI



- ✓ Import OCS Data Views into Power BI
- ✓ Stored & Interpolated retrieval modes

- ✓ No coding required
- ✓ Power BI Desktop and Power BI Service (through On-Premises Data Gateway)

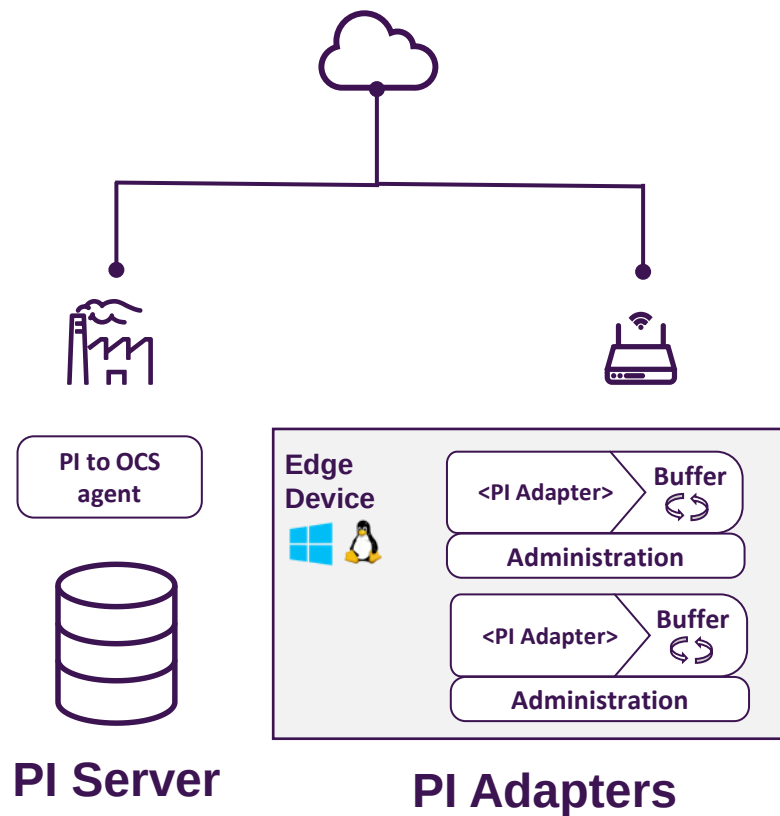
Flexible ingress for different data collection patterns

Ingress

PI to OCS Enhancements

- ✓ Improved management of PI to OCS agents and transfers
- ✓ Configuration Utility for easy communication with PI Server
- ✓ Health overview on OCS home page

PI to OCS & PI Adapters



New PI Adapters

- ✓ Azure Event Hub
- ✓ MQTT (Sparkplug B & generic payloads)
- ✓ RDBMS
- ✓ Structured data files (CSV, JSON, XML)

Existing PI Adapters

- ✓ OPC UA
- ✓ Modbus TCP
- ✓ DNP3
- ✓ BACnet

In summary: What's new in OCS

Ingress

- PI to OCS Enhancements
 - Improved management & configuration
 - Health overview
- New PI Adapters
 - Azure Event Hub
 - MQTT (Sparkplug B & generic payloads)
 - RDBMS
 - Structured data files (CSV, JSON, XML)

Assets

- Assets Explorer / Editor
- Asset Status
- Asset Rule Builder
- Asset Trending
- Assets API (Preview)

Data views

- Asset queries
- Stored / Interpolated retrieval modes
- Summary columns
- UOM

OSIsoft Cloud Services Power BI Connector

- Import OCS Data Views into Power BI
- Stored / Interpolated retrieval modes
- No coding required
- Supported on
 - Power BI Desktop
 - Power BI Service (through On-Premises Data Gateway)

OSISOFT CLOUD SERVICES

What's in preview

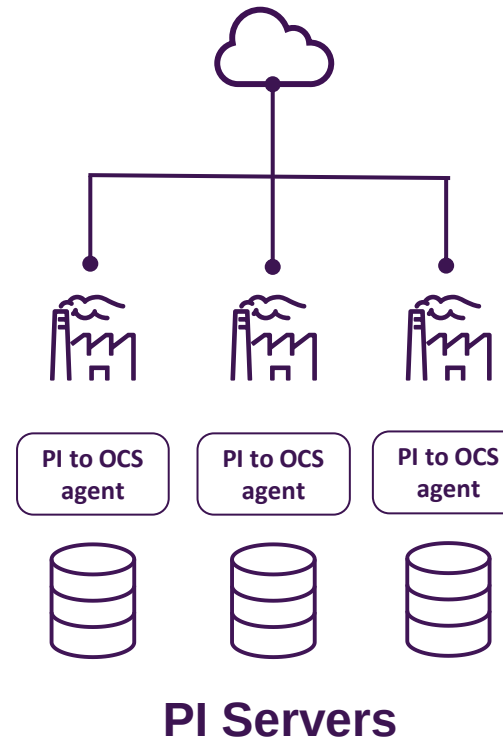


Leveraging your AF investment in OCS

Ingress

- ✓ Replicate AF elements and attributes in OCS as assets and metadata
- Includes static attributes and PI Point references
- ✓ Search for and select PI Server data for transfer to OCS via existing AF hierarchies

PI to OCS with AF context



OSisoft Cloud Services › Asset Explorer

Assets: Search for Assets + Add Asset

Filter facets: Status, Asset Type, Wind Farm

Wind Farm: Big Buffalo Wind Farm, Levantier Iberia Wind Farm, Atlantic Ocean Wind Farm, Foenh Alps Wind Farm, Black Mesa Wind Farm, Black Wolf Wind Farm, Nordic Sea Wind Farm, Pacific Ocean Wind Farm, Sirocco Sands Wind Farm

Region, Longitude, Latitude

GE Wind Turbine 02: GE01, GE02, GE03, GE04

GE02: Generated Windtopia Wind Turbine Asset

Metadata	Value
Altitude	1000
Gearbox Serial Number	4800000-0000-0
Latitude	44.560861
Longitude	-109.248982
Manufacturer	ACME
Model	1.5 csCWE
Overheating delta limit	8
Power Rated	1500
Region	NA
Serial Number	M000000
Turbine Count	1
Type	Wind Turbine
Wind Farm	Big Buffalo Wind Fa...

Windtopia - PI System Explorer

File Search View Go Tools Help

Database Query Date Back Check In Refresh New Element

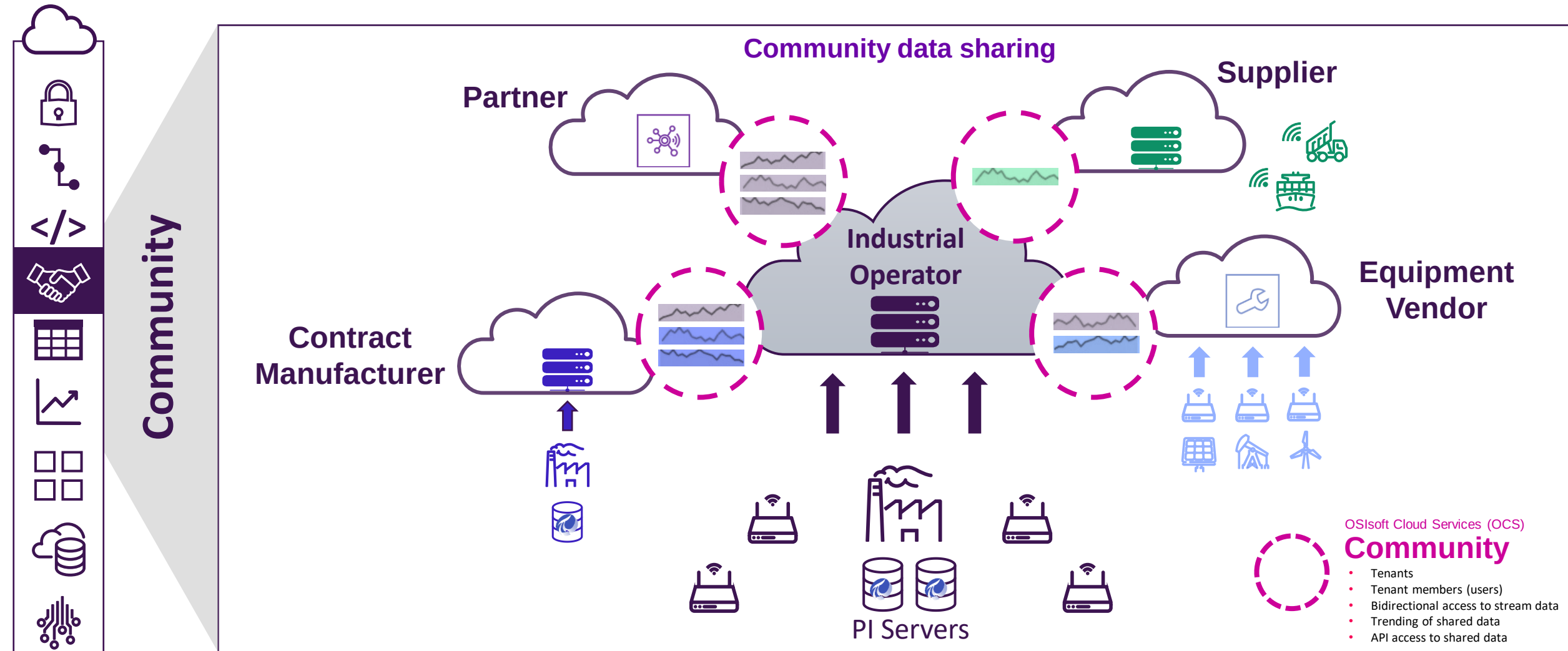
Elements: PI Data Archive, Windtopia, Big Buffalo Wind Farm (GE01, GE02, GE03, GE04), Black Mesa Wind Farm (GE05, GE06, GE07), Black Wolf Wind Farm (GE08, GE09, GE10)

GE02: General, Child Elements, Attributes, Ports, Analyses, Notification

Filter: Name

Active Power
Active Power - 10 min rolling avg
Adjusted Wind Speed
Air Density
Altitude
Ambient Temperature

Share operational data securely with trusted business partners



Wrap up



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@osisoft.com to engage with our team!

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Where to find more information

OSISOFT Cloud Services (OCS)

- **AVEVA PI World Digital 2021**

- **Day 1: AVEVA Product Talks**

- AVEVA's cloud vision and strategy
- Your Roadmap to Operational Excellence
- PI System & OCS Roadmap
- Pervasive Data Collection
- OCS: OSISOFT Cloud Services [this talk]

- **Day 2: Customer Presentations**

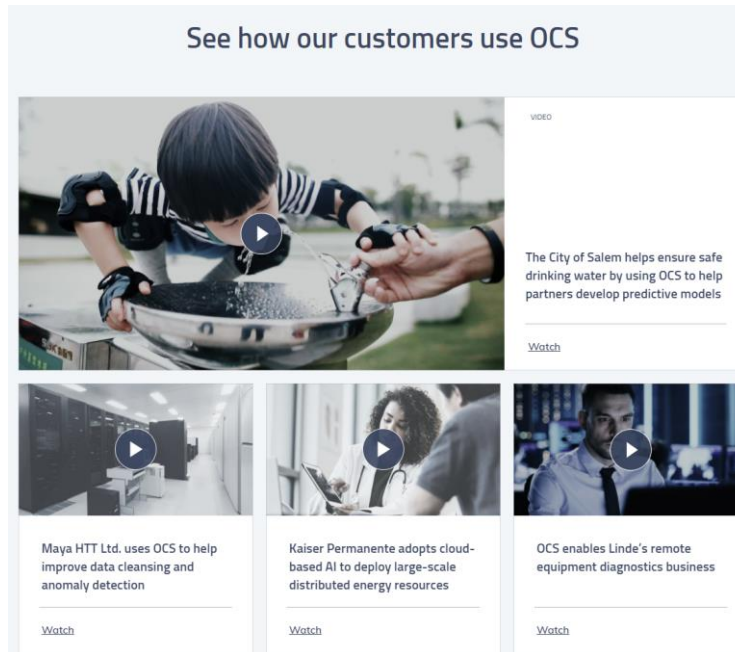
- AxisTech: Making agricultural data fair and FAIR
- SDG&E: Data-driven community-based approach to attain grid reliability and sustainability

- **Day 3: AVEVA Deeper Dives**

- OCS Communities
- Remote operations monitoring in OCS
- OCS Data science enablement

- **Overview**

See how our customers use OCS



The City of Salem helps ensure safe drinking water by using OCS to help partners develop predictive models

Watch

Maya HTT Ltd. uses OCS to help improve data cleansing and anomaly detection

Watch

Kaiser Permanente adopts cloud-based AI to deploy large-scale distributed energy resources

Watch

OCS enables Linde's remote equipment diagnostics business

Watch



<https://www.osisoft.com/pi-system/pi-cloud/osisoft-cloud-services>

- **Security & Trust Center**

OSISOFT Cloud Services Trust Center

Overview

Identities

Development & Operating Procedures

Validation & Audit

Third Parties

Data Privacy

Data Ownership

CSA CAIQ-Lite Responses

Letter of Attestation

Overview

OSISOFT Cloud Services (OCS) provides a comprehensive and secure cloud native set of offerings for capturing, processing, and analyzing data, including security controls, practices, and terminology. Each section also includes a list of resources.

Security by Design

Because OSISOFT products and services support companies with critical infrastructure missions that require a high level of security, we have designed our products and services with security by design in mind.

1. high-quality software

2. operational security assurance

3. clear communication about attendant risk and responsibility

OSISOFT follows the Microsoft Security Development Lifecycle methodology and OWASP practices for secure Web applications.

Transparency

OSISOFT's Ethical Disclosure Policy addresses transparency for issues affecting OSISOFT products and services that may impact our customers.

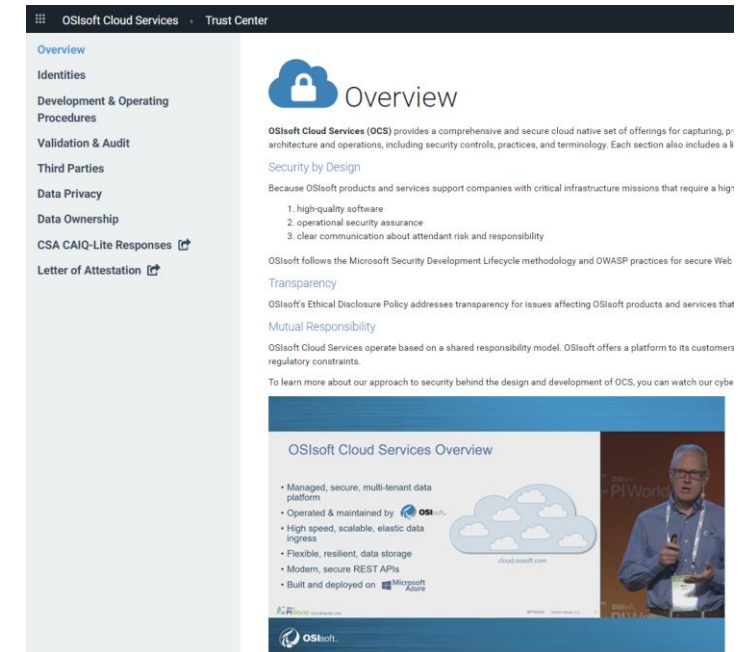
Mutual Responsibility

OSISOFT Cloud Services operate based on a shared responsibility model. OSISOFT offers a platform to its customers to help them manage their data and applications in a secure and compliant manner.

To learn more about our approach to security behind the design and development of OCS, you can watch our cyber security overview video.

OSISOFT Cloud Services Overview

- Managed, secure, multi-tenant data platform
- Operated & maintained by OSISOFT
- High speed, scalable, elastic data ingress
- Flexible, resilient, data storage
- Modern, secure REST APIs
- Built and deployed on Microsoft Azure



<https://cloud.osisoft.com/trust-center>



Communicate with Product Managers

<https://feedback.osisoft.com>

Share your ideas, vote on others



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THANK YOU

Other languages and words visible include: DZIĘKUJĘ CI, NGIYABONGA, TEŞEKKÜR EDERİM, DANKIE, SPASIBO, GRAZIE, MATUR NUWUN, ХВАЛА ВАМ, MULȚUMESC, ПАСИБЕ, GO RAIBH MAITH AGAT, БЛАГОДАРЯ, ТИ БЛАГОДАРАМ, TAK, DANKE, RAHMAT, HATUR NUHUN, CẢM ƠN BẠN, WAZVIITA, FALEMINDERIT, GRAZZI, PAKKA PÉR, PAXMAT CAҒA, TI БЛАГОДАРАМ, СИПОС, EΥΧΑΡΙΣΤΩ, GRATIAS TIBI, OBRIGADO, MERCI, DI OU MÈSI, ĎAKUJEM, TERIMA KASIH, SIPAS JI WERE, UA TSAUG RAU KOJ, TI БЛАГОДАРАМ, СИПОС, SHUKRA, HVALA, ESKERRIK ASKO, HVALA, TEŞEKKÜR EDERİM, GRAZIE, GOMAPSEUNIDA, KÖSZÖNÖM, SALAMAT, KEA LEBONA, MISAOTRA ANAO, BAJARLALAA, WHAKAWHETAI KOE, DANKON, TANK, TAPADH LEAT, DZIĘKUJĘ CI, NGIYABONGA, TERIMA KASIH, GRAZIE, MATUR NUWUN, ХВАЛА ВАМ, MULȚUMESC, ПАСИБЕ, GO RAIBH MAITH AGAT, БЛАГОДАРЯ, ТИ БЛАГОДАРАМ, TAK, DANKE, RAHMAT, HATUR NUHUN, CẢM ƠN BẠN, WAZVIITA, FALEMINDERIT, GRAZZI, PAKKA PÉR, PAXMAT CAҒA, TI БЛАГОДАРАМ, СИПОС, EΥΧΑΡΙΣΤΩ, GRATIAS TIBI, OBRIGADO, MERCI, DI OU MÈSI, ĎAKUJEM, TERIMA KASIH, SIPAS JI WERE, UA TSAUG RAU KOJ, TI БЛАГОДАРАМ, СИПОС, SHUKRA, HVALA, ESKERRIK ASKO, HVALA, TEŞEKKÜR EDERİM, GRAZIE, GOMAPSEUNIDA, KÖSZÖNÖM, SALAMAT, KEA LEBONA, MISAOTRA ANAO, BAJARLALAA, WHAKAWHETAI KOE, DANKON, TANK, TAPADH LEAT.

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ABOUT AVEVA

AVEVA, a global leader in industrial software, drives digital transformation for industrial organizations managing complex operational processes. Through Performance Intelligence, AVEVA connects the power of information and artificial intelligence (AI) with human insight, to enable faster and more precise decision making, helping industries to boost operational delivery and sustainability. Our cloud-enabled data platform, combined with software that spans design, engineering and operations, asset performance, monitoring and control solutions delivers proven business value and outcomes to over 20,000 customers worldwide, supported by the largest industrial software ecosystem, including 5,500 partners and 5,700 certified developers. AVEVA is headquartered in Cambridge, UK, with over 6,000 employees at 90 locations in more than 40 countries. For more details visit: www.aveva.com