50% of all industrial data was created in the last two years. In 2024, that will still be true.

Source: Statista, Sept 2022

38% of new operational data will be stored and processed in the cloud. This is an increase of 16% since just two years ago.

A hybrid data infrastructure from edge to plant to community

**AVEVA PI Data Infrastructure**

- **Edge Data Store**
- **AVEVA Adapters**
- **PI Interfaces**
- **PI Connectors**
- **PI to Data Hub**
- **Data Hub to PI**
- **AVEVA PI Server - core**
- **AVEVA PI Server - hybrid**

**AVEVA CONNECT**

- **AVEVA Data Hub**
- **AVEVA Connect, visualization services**
- **AVEVA Advanced Analytics**
- **AVEVA Data Hub data views**
- **AVEVA Data Hub community**
- **AVEVA PI Vision**
- **AVEVA PI DataLink**
- **AVEVA PI System Access**

**Community**

- Field technician
- Service provider
- Reliability engineer
- Equipment manufacturer
- Information systems developer
- Data scientist
- Plant manager
- Process engineer

* In Development

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Data collection portfolio
A hybrid data infrastructure from edge to plant to community

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Extending real-time data connectivity to remote assets

**AVEVA Adapters** | Ready off-the-shelf, lightweight footprint, flexible end-points

- **Lightweight, robust, real-time data collection**, buffering technology protects data during network outages or unavailability of destination endpoint

- **Out-of-the-box connectivity** to common industrial protocols: Azure Event Hubs, BACnet, DNP3, Modbus TCP, MQTT, OPC UA, RDBMS, Structured Data Files

- **Maximize uptime** with client-side failover; server-side failover is available as provided by the data source

- **Cross-platform compatible**, installation options for Windows and Linux devices or use Docker containers

- **Simplified management**, cloud-hosted remote installation, configuration management, and health monitoring

- **Multiple data destinations**, transfer data to AVEVA PI Servers, AVEVA Data Hub, and/or Edge Data Store, and use filtering to reduce network bandwidth
High availability for mitigating data loss

Client-side and server-side failover for AVEVA PI Server and AVEVA Data Hub

Client and server failover modes:
- Hot
- Warm
- Cold
Failover support for edge/cloud environments

Client and server failover modes:
- Hot
- Warm
- Cold
Lightweight data storage and integration at the industrial edge

**Edge Data Store | Local storage, self-healing, application platform**

- Lightweight, resilient data storage, purpose-built for harsh and/or uncrewed environments — self-healing to survive power loss to the device, network outages, and unavailability of destination endpoints.

- Out-of-the-box connectivity to Modbus TCP and OPC UA servers, custom application connectivity available through an OMF endpoint.

- Feature-rich, programmatic API for custom application development such as local analytics or visualization.

- Cross-platform compatible, installation options for Windows and Linux devices or use Docker containers.

- Simplified management, cloud-hosted remote installation, configuration management, and health monitoring.

- Multiple data destinations, directly integrate with AVEVA PI Servers and AVEVA Data Hub and use filtering to reduce network bandwidth.
Homogenous connectivity to AVEVA systems

Open Message Format (OMF) | Scalable application development for edge, on premises, and cloud

- **Maximum developer flexibility**, any hardware platform, any operating system, any development tools
- Internet-friendly, secure **REST API endpoints**, no VPNs required!
- Inbound connectivity to **Edge Data Store, AVEVA PI Servers, AVEVA Data Hub**
- **Outbound connectivity by Edge Data Store, AVEVA Adapters, and AVEVA Historian** provides interoperability with AVEVA PI Servers and AVEVA Data Hub
- Specification is **public and available to all**
Enabling plant-wide real-time data connectivity

PI Interfaces and PI Connectors | Supporting numerous protocols and large data throughput

PI Interfaces
- More than 30 years of development and support, enabling robust and stable data collection
- Optimized for time-series data, allowing for highly configurable tag data
- Hundreds of available protocols readily available: OPC DA, OPC HDA, UFL, RDBMS, PI-To-PI
- Exclusive connectivity to PI Data Archive

PI Connectors
- Streamlined Configuration facilitating PI Point creation with rules-based data selection
- Auto-discover data with data source discovery
- Unified administration experience, enabling a one-stop shop to manage all connectors
- Automatically create elements and attributes with PI AF Connectivity
No matter where your operational data resides, AVEVA has the technologies available to collect and store that data
Remote operations monitoring with AVEVA™ PI Data Infrastructure
Number of IoT devices exist in 2030 compared to number in 2020. Data from these devices will grow even faster.

Source: Gartner: Predicts 2022: The distributed enterprise drives computing to the edge
Data Hub

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

Edge Management

Register and pair device twins with physical edge devices. Remotely provision, configure, maintain, deploy, and monitor AVEVA edge modules.

Visualization

Composable dashboards using custom and pre-defined content for visualizing AVEVA Data Hub and other data sources.
Manage software deployments at scale

**Edge management | Cloud-hosted, centralized software installation and monitoring**

- Create and configure a **device digital twin**
- **Pair and bootstrap** each device to **establish secure communications** with AVEVA Connect, common cloud platform
- **Remotely install** AVEVA application software on each device
- **Monitor** device diagnostics and software logs
- **Manage** devices, software configuration, and versions
Centralized monitoring and configuration management

**AVEVA Data Hub | Software monitoring, configuration and version management**

- **Create** and **manage** software configuration
- **Monitor** Edge Data Store and AVEVA Adapter **health**
- **View** and **trend** device and software **diagnostics**
- **Synchronize** field **configuration** using import/export
- **Troubleshoot** device and software issues
Remote device, configuration, & software management

Edge modules & device compatibility
- Edge modules are Docker images of selected AVEVA application software, including AVEVA Adapters and Edge Data Store
- Edge modules require a Linux environment
  - Linux device (x64 and ARM64)
  - Windows device (x64)
    - Linux virtual machine
    - Azure IoT Edge for Linux on Windows (EFLOW)
Remote operations monitoring use case
“Remote” operations monitoring use case

- **Plant network**
  - Process data
  - Edge Data Store
  - AVEVA Adapters

- **Internet**
  - Health data

- **AVEVA PI Server**
  - AVEVA Connect
  - AVEVA Data Hub

- **Equipment manufacturer**
  - AVEVA Connect visualization services
  - AVEVA Advanced Analytics
  - AVEVA Data Hub data views
  - AVEVA Data Hub community

- **Data scientist**

- **Subject Matter Expert**

- **Reliability engineer**

- **Process engineer**

- **Plant manager**
Connect your operations domain experts and data scientists

Available today

Active Development
Final design may change

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### What is next for data collection?

<table>
<thead>
<tr>
<th>Released</th>
<th>In Development</th>
<th>Researching</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Remote device management</strong>&lt;br&gt;Install &amp; monitor edge modules using AVEVA Edge Management</td>
<td><strong>Remote software management</strong>&lt;br&gt;Configure &amp; monitor edge modules using AVEVA Data Hub</td>
<td><strong>Data connectivity</strong>&lt;br&gt;Even more inbound options using AVEVA Adapters</td>
</tr>
<tr>
<td><strong>Edge Data Store and AVEVA Adapter Edge Modules</strong>&lt;br&gt;Docker images that support remote device management; includes OPC UA &amp; MQTT</td>
<td><strong>More edge modules</strong>&lt;br&gt;Release more AVEVA Adapters as edge modules to configure and monitor via AVEVA Edge Management</td>
<td><strong>Asset handling</strong>&lt;br&gt;Collection, storage, and transfer of asset metadata</td>
</tr>
<tr>
<td><strong>AVEVA Adapter failover</strong>&lt;br&gt;Available with OPC UA and MQTT Adapters</td>
<td><strong>Extend failover to more AVEVA Adapters</strong>&lt;br&gt;Release more Adapters with failover capability</td>
<td><strong>Event handling</strong>&lt;br&gt;Collection, storage, and transfer of event data</td>
</tr>
<tr>
<td><strong>Stability, performance, and security updates</strong>&lt;br&gt;PI System Connector&lt;br&gt;Batch, PItoPI, OPC DA, OPC A&amp;E Interfaces</td>
<td><strong>Continued Support and Investment</strong>&lt;br&gt;Connectors: Relay, PI System, OPC UA&lt;br&gt;Various Interfaces</td>
<td><strong>Digital twin</strong>&lt;br&gt;Collect and transfer 1D data</td>
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<td></td>
<td></td>
<td><strong>OMF Endpoint Updates</strong>&lt;br&gt;Assets, events, 1D data, and relationships</td>
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Upcoming sessions

Facilitating digitalization in extra-small Cargill Facilities using Edge Data Store
*Cargill*
Wednesday, October 25 @ 2:50pm Room 10

Bringing industrial operations data into your analytics platform with AVEVA Data Hub data views
Thursday, October 26 @ 10:45am Room 10

**AVEVA Adapters and Edge Data Store IIoT configuration workshop**
*PI Geek Track*
Thursday, October 26 @ 10:45am Room 12

Extending your AVEVA PI System infrastructure to edge and cloud
Thursday, October 26 @ 1:30pm Room 8

Visit us at the AVEVA Data Hub, AVEVA Connect, and Edge and IIoT booths in the Expo Hall!
How can you influence the AVEVA product roadmap?

https://feedback.aveva.com

Let us know your product feedback!
Chris Felts
Staff Strategic Product Manager
• AVEVA
• chris.felts@aveva.com

Ellery Murdock
Senior Technical Product Manager
• AVEVA
• william.murdock@aveva.com
Questions?
Please wait for the microphone.
State your name and company.

Please remember to...
Navigate to this session in the mobile app to complete the survey.

Thank you!
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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 world leader in industrial software, providing engineering and operational solutions across multiple industries, including oil and gas, chemical, pharmaceutical, power and utilities, marine, renewables, and food and beverage. Our agnostic and open architecture helps organizations design, build, operate, maintain and optimize the complete lifecycle of complex industrial assets, from production plants and offshore platforms to manufactured consumer goods.

Over 20,000 enterprises in over 100 countries rely on AVEVA to help them deliver life’s essentials: safe and reliable energy, food, medicines, infrastructure and more. By connecting people with trusted information and AI-enriched insights, AVEVA enables teams to engineer efficiently and optimize operations, driving growth and sustainability.

Named as one of the world’s most innovative companies, AVEVA supports customers with open solutions and the expertise of more than 6,400 employees, 5,000 partners and 5,700 certified developers. The company is headquartered in Cambridge, UK.

Learn more at www.aveva.com