

WHITEPAPER

Connected services: Deliver valuable, new solutions based on real-time industrial data

Industrial enterprises increasingly view real-time operations data as a valuable resource, giving them the insight to get more from limited resources, operate efficiently, maintain safety, and increase productivity. Now, operations data is also helping equipment manufacturers and service providers deliver more customized and relevant services to their industrial clients. Demand for industrial services is growing as companies pursue digital transformation, leverage emerging technologies, and replace the expertise of lost or retiring subject matter experts.



This paper describes how your success in industrial services depends upon the quality of the data management platform that supports your service. AVEVA PI System™, the industry standard for managing operations data, now includes data collection from remote sites and data delivery to users, applications and tools in any location via the cloud. In this paper, you will learn the benefits of using the expanded PI System to develop and deliver data-driven services in connected industrial ecosystems.

OSIsoft, now a part of AVEVA, has been the leader in operations data management for over 40 years and makes it easy for you to build your industrial service on the best-in-class PI System. Our connected services business model lets you use the power of our fully-integrated data platform at a low entry cost that scales easily as your business grows. Flexible options let you access client data in any location and give you the right to transfer the data into your own applications, machine learning and AI platforms, and analysis tools. Cloud-based data sharing lets you access data from any location and share it with other ecosystem partners. Read on to learn how a connected services model can help you bring your service to market more quickly, improve service quality, and build a compelling, value-added service for your clients.



Digital transformation in industrial services

In the global industrial sector, services are a fast-growing segment. Companies must work hard to find operating efficiencies, eliminate waste, reduce risk, and identify new ways of attracting customers. Data is a valuable resource to achieve these goals. And data-driven services provided by domain experts such as equipment manufacturers and service providers are increasingly important to industrial companies as well. Several key trends in the global industry have converged to make this happen.

The decreasing cost of sensors now allows stakeholders to gather operations data from outside the traditional control and automation network. This ability enables industrial companies to more closely monitor their remote sites and operating assets. Sensors also give manufacturers an easier way to monitor the equipment and systems they deploy or manage for customers. Beyond basic support, manufacturers can now provide advanced services like predictive maintenance and optimization tuning based on years of historical data and advanced analytics.

Key trends in global industry



Inexpensive sensing technology



Increasing need for remote access to data



Brain drain leading to loss of expertise



The business value of secure data sharing is increasing



Cloud technology offers new solutions

The outbreak of Covid-19 forced many companies to adopt remote monitoring to reduce in-person site visits and manual data collection. Overcoming this unexpected challenge has also made companies that might have been slow to adopt technology more accepting of automation and remote services. And turnover among subject matter experts has also driven demand for third-party services to fill knowledge gaps.

The increasing specialization and complexity of industrial operations also mean companies are more likely to need a trusted ecosystem of technology partners to keep things running smoothly, efficiently, and securely.

The opportunity ahead

The net effect of these trends is that industrial companies and their service providers can address and solve problems they didn't think possible even a few years ago. This is an amazing opportunity for you as a service provider – to develop and deliver new, high-quality value-added services. At the same time, you have an opportunity to decide on the data infrastructure that will power your new services. Your choice can make it faster and easier for your staff to find and use relevant data, thereby reducing your costs and increasing profitability.

A wide range of industrial data services

PI System technology is used by a wide range of service providers, helping them achieve growth and strengthen their competitive position.

Asset monitoring and predictive maintenance

Equipment manufacturers and other providers use actual performance data to conduct asset monitoring and predictive maintenance. The high cost of unexpected outages increases the value of product reliability and availability guarantees. Brands that offer this extra layer of risk management have an advantage over competitors that do not.

Aftermarket customer support

Performance data can also improve the delivery of spare parts, repairs, maintenance, and support. In some industries, third parties routinely provide these services. In addition, original equipment manufacturers can use data to improve the design and engineering of products and differentiate from competitors.

Industrial operations and maintenance (O&M)

O&M specialists rewrite processes and policies with the goal of reducing operating costs that result from plant or process design, use patterns, and data flow. Smart factories and digital twins fall into this category. These providers can use data to optimize a company's production flow and propose more efficient processes.

Engineering and design

Firms that design, build, or supervise the construction of complex plants or highly specialized industrial systems can use operations data to validate their designs, optimize system performance, troubleshoot problems, and capture critical system start-up data. These firms can use aggregated insights from prior deployments to improve future designs and deliver increasingly superior products.

Other industrial data services

Other providers use data to develop services that help industrial companies operate more efficiently, improve supply chains, monitor safety, forecast demand and supply, and achieve competitive advantage. New services will emerge with continued adoption of IIoT and digital transformation.



Data is driving a new generation of industrial services

Operations data is quickly becoming a key industrial resource. And like a natural resource, the value of data comes from the ability to procure it, refine it, and deliver it efficiently to the right people at the right time. The right data platform can help you do this with speed and integrity.

As you plan and implement a data platform, consider the following:

- Are you capturing all the data you need to deliver a compelling service?
- Is data collection reliable in adverse conditions?
- Is the data understandable to the people and systems that need to use it?
- Can you access and share data easily and securely within a trusted ecosystem?

Your data platform matters

Not all data platforms have the ability to increase the efficiency of your service development and delivery or adapt to future changes and opportunities associated with Industry 4.0. Several key functions heavily influence the success and profitability of data-driven services.

Capture all relevant operations data

Low-cost sensors, better software, and improved connectivity allow companies to now collect operations data once stranded outside the traditional control network. Sensors can now be added to legacy equipment without connectivity. Real-time data is easier to move securely and reliably. Gateways can collect and aggregate edge data for more efficient transmission. As a service provider, you now have more potential sources of data to form a more complete and accurate view of your customer's operating environment. The right data platform will allow you to pull in edge data easily and cost-effectively.

Provide data context to support users without domain expertise

In its raw form, operations data is difficult to use. Recording measurements at high-frequency intervals in real time produces a massive amount of data. Outside of operations, analysts cannot easily differentiate one data stream from another and need an expert to help them find what they need and validate their models. Service providers need a platform that attaches all the necessary descriptors and can show the rollups, drilldowns, and physical/logical relationships that give the raw data meaningful context.



Enable real-time data sharing within a trusted ecosystem

Industrial operators are increasingly working with equipment manufacturers and service providers to reduce the risk of asset failure, acquire non-core expertise, and operate more efficiently. Successful implementations have shown that sharing data insights can help companies create more compelling products, minimize capital investments, and get to market faster. The right data platform can eliminate the natural barriers to secure data sharing and enable the “connected industry of the future.”

Leverage proven expertise in data management

You can build a platform to do all this yourself, but that can end up siphoning development resources away from your core service. Will you be able to find and retain developers that have experience with time-series data sets? How much effort will be required to maintain the data platform, keep it secure, and create the interfaces for each new data source? Leveraging a ready-to-use data platform already trusted by industrial customers is the safest and more economical choice.

Connected industries in action

Chemicals: Suppliers use data from mobile delivery trucks to increase the accuracy of billing and support local decision-making at delivery sites without network connectivity.

Energy transmission and distribution: Companies monitor and compare data from batteries and solar panels with energy demand algorithms for smart grid management.

Heavy equipment: Service providers use sensors and digital imagery to provide situational awareness and red zone monitoring that protects workers in dangerous environments.

Oil and gas: Engineering firms combine data taken from drill-bits with geographic information systems to provide intelligence for natural resource exploration for consortiums of investors.

Plant engineering: Firms specializing in the design and construction of industrial processing plants offer aftermarket monitoring services based on their in-depth knowledge of plant design. Virtual digital twins are offered to plant operators as scenario simulators and for continuous monitoring.

Advantages of the AVEVA PI System's edge-to-cloud data management

Operations data helps companies and their service providers increase operating efficiency, reduce downtime, lower costs, and achieve greater profitability. This fact has driven the success of the AVEVA PI System, made it a market leader in essential industries, and enabled us to add new capabilities.

The fully-integrated PI System encompasses data storage and management software deployed and used on-premises at operating plants, lightweight edge software to collect and use data in remote locations, and a cloud-based data hub that provides easy, secure access to aggregated operations data anywhere from the cloud. Partners can access this technology via a flexible, subscription-based model that easily expands to meet business needs and is described in the next section.

Operations data with context

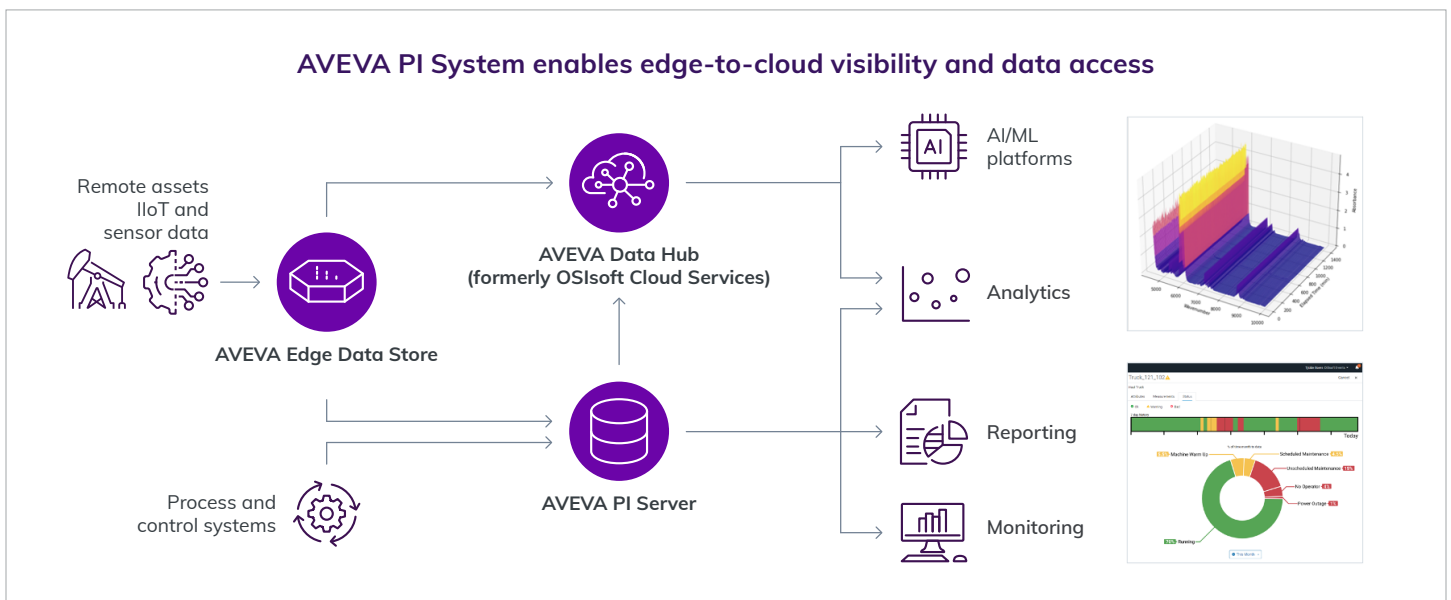
We designed the PI System components specifically to collect, store, and move time-series operations data with speed and efficiency. Other time-series databases exist, but our platform is the de facto standard for industrial operations due to its unmatched performance and resilience. The PI System excels at giving operations experts an easy way to add context to raw

data streams. This helps analysts and users outside operations understand the data and reduces the time it takes to turn data into actionable intelligence. With decades of industrial experience, it's very likely your customers are already familiar with and even using the PI System.

Vendor-neutral and adaptable

The PI System is vendor-neutral and ingests data from a diverse set of control systems, including SCADA and HMI, operations historians and as well as from equipment and assets manufactured by a wide variety of vendors. The PI System offers hundreds of ready-to-use interfaces and connectors so companies can begin collecting data immediately. No programming required.

The PI System also transfers operations data directly into dozens of popular analysis tools, industrial applications, and intelligence platforms using off-the-shelf integrators. Open APIs also allow developers to build custom application interfaces if required. Over the years, these features have made the PI System the most installed operations data platform. And the PI System has evolved in response to thousands of customer deployments, making it the most proven platform for industrial data management.





Efficient access to the edge

Remote asset monitoring and predictive maintenance can reduce maintenance costs significantly. But accessing data outside the control network can be complicated and expensive due to physical distance, dangerous conditions, unreliable connectivity, and concerns over data security. Manual data gathering exposes personnel to health and safety risks. Outfitting hundreds or more remote assets with a data management platform is expensive. And data transfer is subject to satellite bandwidth, transmission delays, lost data, and the need for data cleansing.

The PI System's edge technology overcomes these issues. Edge Data Store is lightweight software deployed on low-cost edge devices designed to run in rough environments without IT support. Edge Data Store ensures reliable data collection, even in adverse conditions, and is integrated with AVEVA PI Server on premises and with the cloud-based AVEVA Data Hub. PI System's edge-to-cloud data management gives equipment suppliers and service providers real-time access to customer data in its original fidelity – for faster, more accurate services, with less expense.

Integrated from edge to plant to cloud

The PI System data platform provides a complete, integrated, and consistent view of operations in the increasingly distributed environment of modern industrial companies.

The PI System gathers data from IIoT sensors, remote sites, mobile assets, and multiple plants or operating locations to create a complete view of a company's critical operations. The data is aggregated, organized, and made available to authorized users in any location via the cloud. Having a single source of truth ensures all users have a shared and consistent view of the data – even service providers outside the company. Because data is kept in a single database, users don't need to spend time validating and reconciling data before using it. This makes collaboration easier and faster and outcomes more accurate.

Trusted and secure

Security is key when partnering with industrial companies. Operations data may contain clues to the company's secret sauce and is therefore treated as intellectual property. The PI System has provided operations data security and reliability for decades. Customers pay for PI System technology, but always maintain ownership of their data and control who has access privileges. The PI System separates data management from the underlying physical control systems to protect essential infrastructure. Robust security measures have made the PI System the most trusted operations data platform.

Leverage the AVEVA PI System through connected services

The technical advantages of the PI System for operations data management are substantial. But to achieve profitability as a service provider, you need to control the cost of service development and delivery. We have that covered through our connected services. This technical and transactional model lets you build a data platform on a pay-as-you-go basis that better matches your business model.

With connected services authorized by their industrial clients, partners can license PI System technology to collect and store operations data from their clients and use it in the applications and algorithms that define their service. Subscription-based pricing lets providers start out slowly and scale up as the number of clients and data streams grows. Contracts are flexible and can be structured to fit a variety of business models and growth scenarios.

Connected services allows providers to:

Get to market faster

Thousands of industrial companies already use the PI System to collect and manage their operations data, giving you an opportunity to get immediate visibility into your clients' operations. If you've thought about building your own data platform with components from your favorite cloud vendor, make sure you've considered the impact on your time-to-revenue. Will the time you spend building a custom platform cost you precious time getting to market? Will your clients find other solutions that will be hard to unseat?

Use development resources strategically

Developing and maintaining an operations-focused data platform is not trivial. Leveraging an established platform lets you focus on service development and customer satisfaction, rather than building the scaffolding that supports your business.

Access data in hard-to-reach places

AVEVA PI System edge products give you the option to collect data directly from assets your clients operate outside their primary control network, including those in harsh and dangerous environments or isolated locations with intermittent connectivity. Automatic collection of edge data can reduce the risk and cost of data acquisition, as well as enable new services and increase service quality.

Scale easily and cost-effectively

Once your service is accepted and deployed by your clients, how will you support expansion as demand increases? If you build your own data platform, how long will it take to add capacity or expand into new geographic regions? A connected services model lets you scale your data platform easily and cost-effectively with a subscription-based, pay-as-you-grow model to match your business model.



Final considerations

Operations data can help you develop value-added services that boost your clients' operating efficiency, productivity, and safety. And the right data management platform can help you minimize your own business risk and achieve service profitability.

AVEVA PI System is the de facto standard for critical operations data and delivers:

- **Proven success in essential industries.** The PI System is the platform of choice at thousands of industrial sites.
- **Trusted, real-time data sharing.** The AVEVA Data Hub platform-as-a-service offers data access from remote locations.
- **Support for flexible business models.** Adjust your connected services subscription as your business grows.

Ask your sales representative how connected services based on the AVEVA PI System can help you leverage our proven data management, industry expertise, deployment specialists, and our industrial partner ecosystem.

You're the expert on your business. Focus on what you do best, and let us take care of the data management.