# The Transformative Power of Data

By Janice Abel

## Keywords

Digital Transformation, IIoT, Big Data, Real-time Data, Time Series Data, Analytics, OSIsoft, PI System

## Summary

OSIsoft recent held the company's 28th annual User Conference in San Francisco, California under the cohesive theme: "People with data can transform their world." At the event, we learned about the company's vision and strategy, how it is working closely with customers to accelerate innovation, and how the OSIsoft PI System and partner ecosystem make it all possible. We also learned how the OSIsoft PI System provides a data infrastructure for digital transformation in industry.

> The 2017 OSIsoft User Conference focused on how companies are using the PI System infrastructure to enable digital transformation and value. OSIsoft's strategy is to connect the assets, the plant, the enterprise and community so customers can share and obtain value from their data. The Partner EcoSphere and marketplace continue to grow. The company has over 450 PI connectors; and OSIsoft is investing heavily in new technologies to further strengthen its infrastructure.

The event attracted over 2,000 attendees, representing 600 companies, and featured more than 72 customer use case presentations, plus an expansive expo area. New this year were an Asian conference track, separate development conference track, and an executive track.

In her opening comments, Jenny Linton, OSIsoft's President, explained that the company is reaching and addressing the concerns of new audiences and users, from engineering/operations staffs to IT, OT management, corporate executives, R&D groups, and data analysts. Ms. Linton also explained OSIsoft's three-part strategy, which consists of:

1. **Customer success** – With a focus on enabling smooth interactions and successful rollouts by extending services with technical and business service adaptions to enable the company to get more out of what it does to support its customers.

2. **Enable community** – With a focus on helping clients break down barriers and sharing information and data with communities and whoever needs it.

3. **Extending PI System infrastructure** – With a focus on extending the infrastructure to the network edge to incorporate local and remote assets and everyone in the customer's organization.

## IIoT Stratifying into Four Layers

Dr. J. Patrick Kennedy, OSIsoft Founder and CEO, discussed digital transformation and IIoT and how these will disrupt customers' business. According to Dr. Kennedy, the IIoT data and applications will ultimately stratify into four layers:

- **Sensor layer** will include controls, data, applications and analytics; some local and some in the Cloud
- **Integration layer** will connect, aggregate, and share all the data coming from the equipment and automation systems
- **Enterprise layer** will tie the plant-level data and information to the financial aspects to enable companies to be more profitable and competitive
- **Community layer** will share the data with the wider community (partners, customers, local regulatory authorities) with even more complex analytics

According to Dr. Kennedy, the next evolution of the digital transformation will fundamentally change the way business operates using data and analytics.
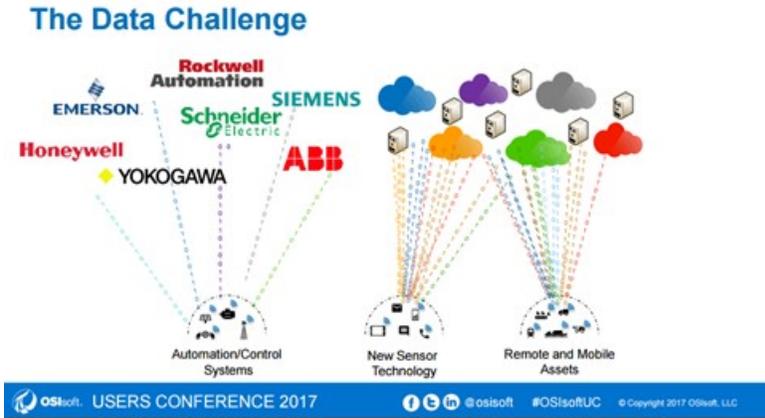
## Data from the Plant to the Enterprise and Community

OSIsoft had over 160+ Enterprise Agreements in 2016. These enable companies to drive enterprise and community value through a single scalable, visible infrastructure that provides one version of the truth.

Adani, for example, a $12 billion port operator in India, integrates its resources, logistics, and energy assets using the OSIsoft PI System to provide a smart community. Adani began with an Enterprise Agreement rollout for mobile assets (involving fuel, safety, and health management for its fleet of

tug boats), and subsequently expanded across the supply chain. The company used the OSIsoft infrastructure to realize its vision of integrating Big Data for visibility. This includes Esri ArcGIS across the supply chain.

## Partner Ecosystem

Automation and enterprise companies such as Rockwell Automation, SAP, Microsoft, Emerson, Schneider Electric, Siemens, ABB, and Yokogawa are all embedding or integrating OSIsoft's PI System to be able to create additional value for their customers.



**OSIsoft Has an EcoSphere of Partners and Over 450 PI Connectors to Simplify Data Integration**

A few examples from the recent OSIsoft User Conference follow.

### Emerson Leverages PI for Connected Services

Emerson Connected Services partnered with OSIsoft to develop new solutions for remote client support. Emerson Connected Services leverage PI data and the OSIsoft Asset Framework to provide context to the data. Emerson worked with both Dell and OSIsoft to help ensure secure data transfer between the field and the edge to develop remote support solutions for equipment health, equipment efficiency, and energy efficiency.



According to Nathan Pettus, VP North America, Process Systems and Solutions, Emerson Automation Solution, companies around the world lose approximately one trillion dollars in value every year due to suboptimal operating performance. With its Connected Services offering, Emerson aims to help address that. Pemex took advantage of the OSIsoft partnership, and was able to cut their operator rounds by 67 percent, increased throughput by 20 percent and saved $12 million in one year.

### FactoryTalk Analytics on the Edge

Rockwell Automation's Ted Hill, Director, Global Business Development, discussed the company's decade-long partnership with OSIsoft. The company is focused on IT/OT convergence. According to Mr. Hill, The Connected Enterprise involves moving data from intelligent devices seamlessly through the client's organization to the people who need it, in a meaningful way, when they need it, and on whatever device they are using. Rockwell Automation is working with OSIsoft, Microsoft, and Cisco to make this possible.

The company has a new edge analytics device designed to work with the customer's network and self-discover all intelligent devices, pull together the available data, and expose it to the people in the organization that can act on and gain the most value from the data and information.

### Esri ArcGIS Geographical Displays and Drones

OSIsoft software is being integrated with Esri ArcGIS for applications ranging from pipelines and water systems to electrical lines to solar farms. The GIS displays provide a framework for users with location-based context for their OSIsoft data.

Christopher Capelli, Director, Global Sales and Business Development, Esri, described how the technology can be used to quickly understand issues with sensors or pipelines and optimize operations. Geographical information provides users with better situation and location awareness, enabling them to make the right decisions quickly and move to action.

### End Users Leverage Data for Digital Transformation

The many use cases presented during the conference helped illustrate how companies are solving complex challenges with data to reduce costs and increase profitability. However, a key challenge for digital transformation remains determining how to best measure and show the business benefits gained by connecting the data.

### Enabling Digital Transformation at Barrick Gold

Andrew Scott from Barrick, the world's largest gold mining company, spoke about how the company is looking for opportunities to innovate though new mining applications and technologies. Barrick, a long-time PI
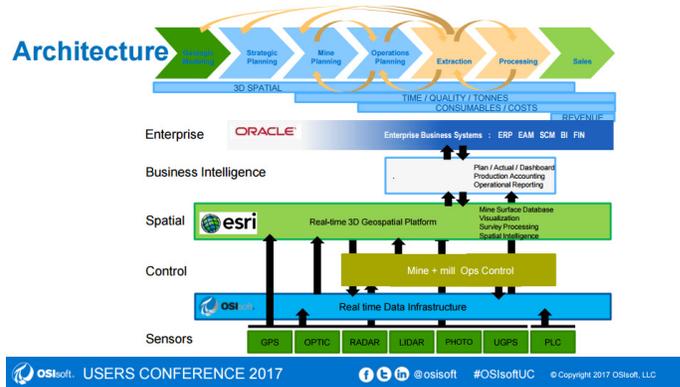
**Barrick's Architecture for Innovation in Gold Mining**

System user with an Enterprise Agreement, is working with OSIsoft, Cisco, and other partners to lower costs and realize new business models.

Barrick remotely connects assets, which lower its costs and improves its ability to innovate. The company strives for "absolute integration," which it defines as "connecting every asset and activity in our ecosystem in an intelligent and transparent system."

## Managing Solar Farms

Power Factors LLC, worked with OSIsoft to deal with the company's challenges related to data velocity, variety, and volume to reduce maintenance costs for its solar farms. We learned that a typical solar power developer brings anywhere from 100 to 500 new plants online each year. On a per-megawatt basis, a typical solar plant generates five to ten times more data than a coal-powered plant. Furthermore, due to their typically small budgets, solar farm operators need to continuously drive down operating costs.



**PI Coresight Solar Farm Generation Display**

Steve Hanawalt, Executive VP from Power Factors LLC, discussed how the company partnered with OSIsoft, AeroVironment, and Esri ArcGIS to reduce its solar farm maintenance costs. According to Mr. Hanawalt, a drone is deployed to survey the solar farm, the imagery is captured, and the AeroVironment AVDSS decision support system then automatically builds out a data model using the PI System. The company uses this model to quickly locate and diagnose problems, such as a cracked solar panel, and display it to the operator.

## Asset Management for Emergency Response

Patrick Lee, VP of Infrastructure and Technology at electric and gas utility, Sempra Energy, explained how the OSIsoft PI System and Esri ArcGIS solu-

tion, help the company to manage its far-flung assets and improve emergency response. Due to lack of information, Sempra Energy, was challenged to assess emergency situations (wildfires, landslides, earthquakes, etc.) to be able to quickly mobilize appropriate resources to the locations. Mr. Lee explained how the integrated technology works.

Should a wildfire, for example, break out along a power line, the operator gets an alert and then views the related Esri ArcGIS data on the PI Coresight display. The standard operating procedure is for the operator to deenergize and notify the appropriate community entities. Upon request, AeroVironment checks the lines using its drone. The data is sent back to the PI System, the Esri ArcGIS information is updated, and the company can view the transmission corridor for damage and determine the next steps.

## New Products for Future Innovation

As we learned, OSIsoft continues to invest in new technologies. The company's new products, many of which were featured in end user cases at the conference, revolve around digital transformation and related approaches for even more effective data analytics and visualization. Brief summaries of some of the new products the company demonstrated this year follow.

### PI System Connector

The PI System Connector represents a new infrastructure for simpler connectivity. It is designed to enable users to manage large sets of connections with automatic data discovery and updated security.
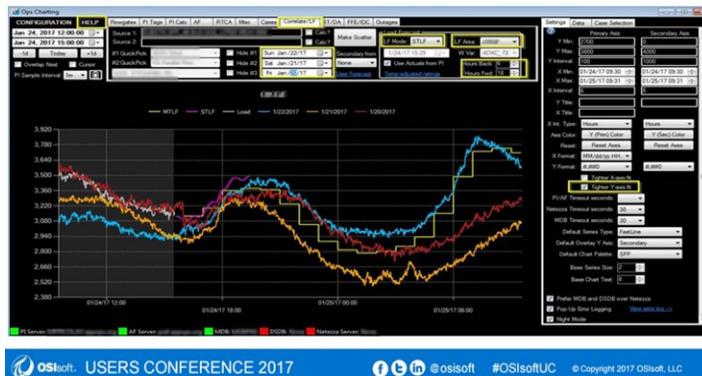


**PI Coresight Display**

### New PI Notification

The new notification capabilities make it easier to organize, store, and archive data, plus integrate streaming data calculations. The number of possible PI Notifications was increased by a factor of 100 and made easier to manage at scale.

### PI Vision (Formerly PI Coresight)

This enhanced integrated visualization package includes process monitoring, ad hoc analytics, and dashboards built on the PI System, with events, assets, analytics and notifications delivered anywhere. It includes pre-built symbols, trends, and templates.

**Operationalizing Predictions with PI System and Azure**
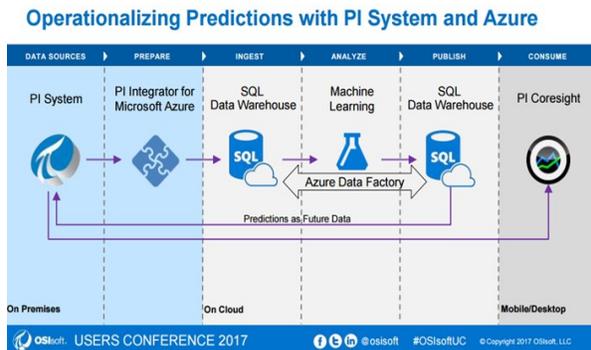
**PI Integrator for Microsoft Azure**

### PI Integration

Enhanced PI Integration capabilities make it easier to integrate and collect and analyze data. It provides visual analytics, data warehouse/data lake, and streaming analytics tools capabilities. The PI Integrator for Microsoft Azure takes data from the real-time system and converts it to a format that can be transmitted securely to the destination system.

### Conclusion

Since digital transformation is all about data, (OSIsoft's "sweet spot") the company is well-positioned to help its clients gain significant value from the data they generate. By working with its many partners, OSIsoft has demonstrated that it can help end users across a wide spectrum of industries and applications collect, organize, store, visualize, and contextualize their data to be able to make better decisions, faster, to reduce costs and increase profitability.

Some key takeaways from the user conference include:

- Real-time contextualized data is providing companies with competitive advantages
- New edge devices will enable edge-to-enterprise connectivity
- Advanced analytics is becoming more important than ever
- Machine learning is becoming mainstream because new connectivity tools make it easier and faster to access the data

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