OSIsoft®

SUMMARY

AeroVironment

Industry

Unmanned Aerial Vehicles, Electric Vehicle Systems, Energy Systems

Business Value

- Business Intelligence
- Predictive Maintenance
- Operational Insight
- Performance Optimization
- Process Controls
- Risk Management

PI System™ Components

- PI Server™
    - Data Archive
    - Asset Framework
    - Event Frames
- PI Vision™

Sensors Take Flight: Harnessing Drone Intelligence with the PI System

Founded in 1977 by Dr. Paul MacCready, AeroVironment is a pioneer in creating human-powered vehicles. Their portfolio of successes includes the first vehicle to cross the 23-mile wide English Channel, the first solar-powered vehicle, and, since 1985, UAVs (also known as drones). The company originally developed drones for the military and Department of Defense, but the value of the visual data collected by drones has created demand in the commercial sector. Now, with help of the OSIsoft PI System, AeroVironment is finding new applications for drone data.

A Broader Application

"We really need to think of drones as another mobile device in the whole IoT world," said Nazlin Kanji, Director of Products at AeroVironment, during the 2017 OSIsoft Users Conference in San Francisco. "They provide another source of data, and we can use that data to develop analytics." To produce actionable intelligence from drone data, AeroVironment built the AeroVironment's Decision Support System (AV DSS).

"Customers just aren't interested in the raw data," Kanji noted. AV DSS delivers insights that work in conjunction with customer needs and it was built with an open architecture so data could be shared with partner solutions – like the PI System. With the AeroVironment and OSIsoft solution, photographic, thermograph, and video survey data from drones is combined with the sensor data from the PI System, bringing an additional layer of value to customers and increasing operational visibility.

With this influx of information, companies can use real-time, historical, and visual data from AV DSS and the PI System for data-driven insights and in a predictive manner so they can implement preventative maintenance strategies to fix issues before they become catastrophic.

Improved Data-Driven Decisions

Combining visual data from drones and with sensor data from the PI System can not only save customers money – it can save lives. Utility line workers (known as linemen) have one of the ten most dangerous jobs in the world. Linemen are tasked with physically inspecting and repairing utility towers and lines which constantly puts their lives at risk. The mix of drone imagery and real-time PI System data is improving job safety and maintenance strategies for these workers.

For one customer, AeroVironment flew drones to geo tag towers, which established names and locations for each tower. These visual tags were mapped to AF where geo-registered data and visual imagery collected by drones was combined with sensor data from the Data Archive. This mixture of information was presented in the control center through PI Coresight[1], giving linemen a comprehensive view of all data and towers in one system. Linemen can now remotely see and identify the source of issues so they only need to perform physical inspections on specific assets, which substantially decreases work-related injuries and deaths.
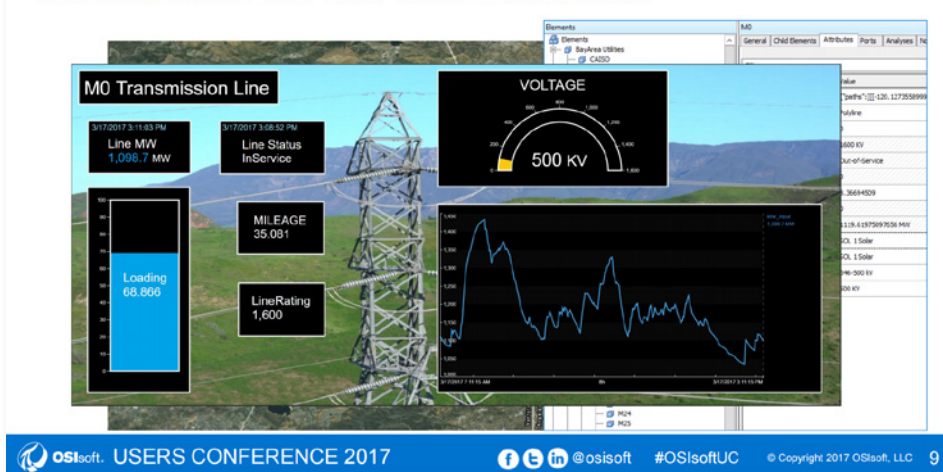
Transmission tower visualization: The combination of geo-registered data, images, and PI System sensor data is visualized in PI Coresight to enable predictive analytics and maintenance strategies.

Additional Data-Driven Benefits

AV DSS and the PI System also brings additional benefits to AeroVironment customers. Visual data collected from drones can enhance remote substation security by identifying security breaches or vandals that can cost providers millions of dollars in damage. Sensor and drone images can also promote better substation asset management by pinpointing utility pole-loading issues to determine if infrastructure must be upgraded or changed. In addition, utility providers can increase environmental compliance by monitoring and controlling vegetation around their infrastructure by identifying which trees are dead or stressed so crews can eliminate potential dangers.

A Powerful New Source of Data

Drones are a new and powerful source of visual data that can be combined with sensor data to provide new visibility into operational performance. With real-time and historical data, companies can use these insights to make better, more informed, repair and maintenance decisions.

> **"Incorporating the use of drone data in an intelligent, asset-based management program provides users with the information needed to operate more efficiently and in a safe manner."**
>
> – Nazlin Kanji
>   Director of Products

[1] PI Coresight was renamed to PI Vision in 2017.

Kanji, Nazlin. *Geospatial Sensor-Driven Analytics Using Drones.* OSIsoft.com. 22 Mar. 2017. Web. 17 April 2017. <http://www.osisoft.com/Presentations/Geospatial-Sensor---Driven-Analytics-Using-Drones/>