A Greater Ghost in the Machine: Smart Software Inside Industry 4.0

Machines are adopting greater ownership of their actions as manufacturing undergoes digital transformation. And powering this change isn’t the gears or the belts or the engines within the hardware, but rather the increasingly sophisticated software overseeing the processes.
Case Study: How predictive analytics helps to save the environment.

**Challenge:** Managing sewer blockages and spills that occur in the mains system.

Often the first notification of a spill comes from a member of the public, hours and sometimes days after the first spill. This can intensify public health and environmental impacts and the cost of cleanup efforts.
UX is the new UI

By Barry Lynch, vice president of sales and marketing with Factora Solutions

IoT technology has evolved to the point that self-serve solutions are easier to configure, with personalized display mash-ups and data analytics.

Who needs that data-scientist system designer?!
Not so fast. There’s a flipside to this build-your-own world. The flexibility of the new self-serve technology is both its strength and its weakness, as you must determine who will help develop the most intuitive interface, design and data management for your system.

UI VS UX...WHICH IS WHICH?
I’ve been swimming in the waters of User Interface (UI) design and User Experience (UX) for the past 20 years. I’ve seen, repeatedly, the improvement in operator take-up and plant performance that comes from systems with an intuitive interface.

But first, let’s review the distinction between UI and UX, as some still find these terms confusing.

UX is the big picture—the blend of design, usability and architecture. It means designing for users, for people; making the end-to-end experience intuitive and, thereby, pleasant to use.

UI is what you see—the front-end look and feel. The UI implements the UX design. A UX can work effectively with a terrible UI. You can have an application with a stunning design that is painful to use (good UI, bad UX). You can also have an application that has a poor look and feel, but is highly intuitive to use (poor UI, good UX).

MOVING PAST UI TO UX
Manufacturing software evolved its approach to design as technology advanced. When displays were simply about graphics (tanks, valves motors), UI was the main design criteria and skillset. Today, as new capabilities around big data and advanced analytics evolve, software firms are hiring UX design and data scientists to create their applications.

Most major companies that use advanced analytics now have their own data scientist resources—a rare practice just five years ago. In the same way, as data sources and displays of new and legacy systems are connected into a common IoT display framework, UX skills are needed to develop a common user experience, rather than replicate multiple disjointed screens in a single frame.

BENEFITS OF UX
At our organization, we work with UX design companies to train our delivery teams in the methodical approach to UX design. The good news is that UX is a science, not an art. You can train people. It’s just a different approach to the engineering-focused classic UI approach. It considers more factors; it raises the bar.

When it comes to designing and blueprinting IoT solutions, today’s manufacturers are looking for experienced consultants who can help them get it right the first time. The vast majority of them simply lack the resources for this critical aspect of the IoT build-your-own world. In my experience, many have tried doing it on their own and have been unsuccessful. Just recently I encountered a company that had been trying to build their own IoT displays for nine months—without a defined UX and standards approach! Not surprisingly, they were going in circles, building aggressively but not able to complete anything.
SO WHERE TO GO FROM HERE?
You can have every bit of manufacturing information on a screen, but if the users can’t work out how to use the display it’s useless. Likewise, you can have the most intuitive display but unless it shows the manufacturing metrics that matter to that user, it’s useless.

It’s very much yin and yang, a harmony of UX and UI—a core capability for today’s leaders in manufacturing.

Q&A: New York Power Authority CEO Gil Quiniones

By Chris McNamara, Smart Industry content director

In 1882, Thomas Edison built the nation’s first powerplant in Manhattan. In early 2018 in nearby White Plains, New York, the New York Power Authority (NYPA) unveiled its Integrated Smart Operations Center, a state-of-the-art headquarters that uses GE Digital’s predictive-analytics software to forecast and prevent equipment failures and significant outages at the NYPA’s 16 power plants and 1,400 circuit miles of transmission lines.

Online monitoring of power plants, sub-stations and power lines increases plant efficiency and productivity, reduces unplanned downtime, lowers maintenance costs and minimizes operational risks. The technology will help NYPA progress toward meeting their state’s Governor’s Clean Energy Standard, which requires that half of all electricity in New York comes from renewable sources and that greenhouse gas emissions be reduced 40% by 2030.

During the opening ceremony, project stakeholders repeatedly expressed admiration for Gil Quiniones, lauding the NYPA president and CEO’s leadership throughout this massive, ongoing project. Quiniones, while insistent on sharing the credit with his team, was clearly proud of his new digital-control center as he led tours through the facility.

“Deploying these breakthrough technologies marks a major step in NYPA’s effort to become the nation’s first digital utility, end-to-end, and sets a new standard in utility asset management,” he said. “By using advanced data analysis to monitor all our assets simultaneously, we can continue to provide low-cost and reliable power while making smart and efficient operating decisions real time.”

We chatted with Quiniones, a member of The Smart Industry 50, to get his unique perspective on the project. Take a look…

Smart Industry: Are large municipal entities like the NYPA tricky to bring into the digital age?
Quiniones: It’s about changing the corporate culture in how we deal with information in this digital age. How do we think more like startup? That should inform the decision-making in our processes, our new products and services. It requires a culture change—that’s the most challenging thing.

Smart Industry: You estimate a billion dollars in savings in ten years. Where do those savings come from?
Quiniones: Increased energy efficiencies, reliability and availability. Also, just capital efficiency. From here on we’re maintaining assets based on actual health rather than cycle times.

Smart Industry: Are we talking about retrofitting legacy equipment or installing greenfield assets?
Quiniones: Many of power plants have SCADA control systems, so we’re getting information from those existing systems by adding sensors and other elements. We’re connecting more equipment into the network while building a high-speed area network to connect all systems in a dedicated way.

Smart Industry: You use the phrase “A more resilient” energy system. What does that mean?
Quiniones: One that can be, in a way, self-healing. We can sectionalize parts of the grid when issues arise. We can reroute power where it is needed during different events.

Smart Industry: What are the differences in application of technology between generation and transmission elements?
Quiniones: It’s all integrated—data analytics and sub-stations, hydro and natural gas. It’s becoming more decentralized, with bi-directional power flows. It’s monitoring the health of those systems in real time, trying to optimize operations and make it all more reliable.

Smart Industry: Your team cites that this digital utility creates new products. What are those products?
Quiniones: Digital twins of customer energy systems is one example. There may be a tech company that comes in and develops software that modulates the performance based on requirements of the grid. The grid can send a signal and the building can receive it. Also, AI and machine-learning are becoming more prevalent.

Smart Industry: What’s your favorite element of this project?
Quiniones: The most cool thing for me is the fact that I see enthusiasm renewed in employees. They are psyched up—excited with all these changes that we’re introducing. They can see tangible results in managing plants and developing new products. It’s an environment where everyone is contributing.
IIoT for MES may not be what you think

By Michael Ford, European marketing director with Aegis

Computer systems and software are, by definition, an integral part of MES since their mainstream inception in the 1990s. Becoming increasingly sophisticated, we now assume that the adoption of IIoT technology is the next step forward with communication from the MES perspective. But understanding the true nature of IIoT tells us that this is actually far from the truth. And unless we address the true nature of the change that IIoT brings to MES, many current solutions will turn legacy very quickly.

The recent focus for MES has been data acquisition. When executed properly, data acquisition enables the software to make automated operational decisions. As such, IIoT is increasingly seen as the mechanism for the advancement of MES business goals.

But first, two issues must be addressed.

When developing software for any computer system, the old-school mindset of programming was to start with the data. All of the value from software comes from the manipulation and processing of data. Incomplete data means no value—garbage in, garbage out. This is very relevant for IIoT. As communication technology within manufacturing has developed, however, the industry still seems to be missing the point.

Take the example of the mobile phone. Compared to previous forms of communication, mobile phone handsets made by many vendors all over the world are all compatible with each other. With any phone in my hand, I can reach out and talk instantly with anyone else, no matter where they are on the planet, no matter their cell service provider. Differences in the spoken language can be problematic, of course. A language other than your own will have a substantially reduced conversation opportunity.

The same is true of IIoT. We can now easily create the mechanism to send live data in real-time across the globe on-demand, but unless we have defined the language and the content of the data, it is of little more value empirically than sending the data by fax. Such a situation has been faced head-on by the IPC Connected Factory Exchange (CFX) committee, where 150 companies have realized that we must define technology and vendor-neutral data content (in addition to the data-transportation mechanism and encoding method) in order to create a true plug-and-play IIoT communication standard that will work for everyone. The content definition, to meet the needs of hundreds of different machine technologies, has been intense, representing more than 99% of the work done already to create the standard, which is expected to be finalized by the end of 2018. Without this work however, we would simply be delivering garbage faster than ever before. We should not be using our new cloud-based systems as data landfills.

The second issue is that, when it comes to data, industry tends to think that “It is all about me.” The focus is on data acquisition, not data exchange. The old-school view is that machines are given instructions to follow in the form of data prepared by production engineering and programming systems, then the flow of data is outward, to make a record about what has been going on. Less discussed is machine vendors’ need for more information, especially run-time data. Machine vendors are also now realizing that they shouldn’t have to shoulder the burden of providing data in many different formats.
based on individual customer requests. Vendors should not be denied the opportunity of being an added-value part of the new smart factory or an Industry 4.0 solution. IIoT has a clear focus on omnidirectional data flow. This is a good thing.

Take a typical surface-mount machine in electronics manufacturing as an example. A digital-engineering product model is provided to the machine for each work-order. Machine-vendor software in the past environment would simply convert the data into an optimized machine program, and off it went. Today, however, machine software is also expected to:

- Group materials between sequential products to reduce changeover time, while also not compromising individual program efficiencies
- Detect differences in incoming material shapes and supply forms in advance to allow the machine to seamlessly transition a material change without the need for manual intervention for re-programming or program adjustment
- See the measured performance of placement deviations as measured by a down-stream inspection machine, which allows the placement machine to automatically adjust to compensate for operational variation and to recognize the need for maintenance, are increasingly expected.

Machine vendors can achieve boosted performance/quality by using data from other machines and processes, including transactional sources such as material logistics. Software can then be created to make machines work in flexible environments, by looking further at the schedule and optimizing themselves for any level of product mix. These functions are as essential to the realization of factory-level Industry 4.0 as any other part of MES.

Realizing real-time production optimization requires an intimate understanding of machine processes. In short, machine software and MES need to work together, rather than stick in the old “give me the data” mindset.

IIoT is an omnidirectional technology that delivers a step-change in the way that MES works. With a comprehensive data-content definition, IIoT in the form of CFX creates a sustainable business/technological platform that meets Industry 4.0 specifications. Those who think IIoT is just an enhancement for data gathering by old-school MES software may not be wrong. But they are certainly missing an opportunity. IIoT partnered with defined-data content is the revolution we have needed to make the leap forward to true digital-factory operations.

We can now easily create the mechanism to send live data in real-time across the globe on-demand, but unless we have defined the language and the content of the data, it is of little more value empirically than sending the data by fax.
World’s largest cherry production line thrives on software expansion

By Jim Meyers, Inductive Automation success manager

California-based Prima Frutta has the largest cherry production line in the world. The company achieved that status recently when it installed new equipment and overhauled its cherry line. The result was a production increase of 50 percent, achieved without expanding the workforce.

Prior to the overhaul, Prima Frutta wasn’t able to fully utilize all of its production lines. Owners wanted greater efficiency and productivity without increasing labor. The company hired systems integrator Industrial Automation Group (IAG) to oversee the upgrade.

The successful project was also aided by Ignition by Inductive Automation, an industrial application platform with tools for building solutions in HMI, supervisory control and data acquisition (SCADA), and the IIoT. Prima Frutta had already been using the software for other functions, and with Ignition’s unlimited tags and licenses, it opted to expand it into the new cherry line.

“We wanted a new control system,” said Tom Augello, production manager at Prima Frutta. “Normally we use Allen-Bradley PLCs and HMIs, and that is a costly approach. We wanted a larger HMI, and IAG recommended we use Ignition, since we already have it in-house. We were able to leverage that Ignition server that we’d already paid for. So it was a great HMI solution that fit our production needs perfectly.”

DATA EVERYWHERE

The new initiative enables Prima Frutta to share data about the line with workers throughout the plant. Every day, 10 managers and 900 other employees get data from more than 120 video screens around the facility.

“It’s very important to provide this data to our employees on the plant floor,” said Augello. “As fast as we run, every second counts. If a change is coming—whether it’s in size, quality, or variety—our people have a very short time to react. So we put that information up, and we flash things, or we use different colors, to make sure everyone sees the data. The large productivity increase we’ve seen with Ignition is from these screens.”

Smaller screens play a key role as well. The production line is now controlled from 10 tablets, which have stationary holders but can also be carried around the plant. The tablets provide full SCADA control.

Jason Kieffer, project manager for IAG, said Prima Frutta could have gone with “indestructible” tablets, but opted for less expensive, consumer-grade tablets because they’re so easy to replace if the need arises. “It was so quick,” he said. “Within two hours of pulling the tablet out of the box, we were running the application on it.”

Greg Sinigaglia, production manager at Prima Frutta, said having the data on the tablets and the larger monitors saves time and money. “Let’s take grading of the fruit, as an example,” said Sinigaglia. “Before, we had to walk down and look at the quality and see what the sorters were doing. Now, we have all this information displayed on screens. There’s no more running around from spot to spot.”
LITTLE TIME, BIG RESULT
Prima Frutta and IAG made the project a success despite a very tight timeline. IAG mimicked the cherry producer’s system, building a digital twin in its own office. “That allowed us to develop Prima Frutta’s application in their working environment, so we could bring their application on-site and implement it very quickly,” said Kieffer. “We did it in less than a day.” The new code was copied and pasted to Prima Frutta’s server with no issues.

The project also adhered to standards developed by the Control System Integrators Association (CSIA). “The extensive planning and the use of CSIA standards really allowed us to deploy this rapidly,” said Kieffer. “It helped with the design, testing, startup, and commissioning phases.”

“The update process went flawlessly,” said Prima Frutta’s Augello. “We had no issues after the update. With other software packages, there’s always something that goes wrong. We had nothing go wrong with this update.”

Rip Van Winkle & digital transformation

By Dennis Wylie, global product manager, and Julie Robinson, business manager with Rockwell Automation

If you were a production engineer who fell asleep at your laptop and woke up 20 years later, what would you behold?

That classic time-traveler, Rip Van Winkle, slept through the Revolutionary War and awakened to an unfamiliar country after his 20-year slumber. Would your operations, circa 2038, be just as foreign?

It’s not such an outlandish scenario, given the revolutionary change that is afoot in today’s industrial world. Digital technologies are redefining how some companies understand, manage and staff their industrial operations. Yet, for so many others, terms like Industry 4.0 and digital transformation are still abstract concepts. That classic time-traveler, Rip Van Winkle, slept through the Revolutionary War and awakened to an unfamiliar country after his 20-year slumber. Would your operations, circa 2038, be just as foreign?

So, let’s look 20 years into the future to see how today’s smarter controllers and other digital technologies could reshape operations in different industries.

FOOD & BEVERAGE:
PREDICTING AN END TO UNPLanned DOWNTIME?

Your packaged-foods plant has held up surprisingly well after 20 years. But there are noticeable changes.

For instance, you see fewer operator workstations on the production floor. Instead, you see the plant manager and an engineer looking at a tablet, while a robot replaces a device on the production line.

“What broke?” you ask them.

“Nothing,” the plant manager responds. “We have another week and two days before the pump goes down on the mixing tank. Our system predicted a failure last month and put an order in for the replacement part. We’re putting the new pump in today during our scheduled maintenance.”

You watch as the plant manager pulls up the plant analytics on his tablet and quickly drills down into the failing pump, showing its expected failure...
date. He then pulls up a display of all plant devices that need to be serviced within the next month.

Having just arrived in the future, knowing nothing about it, you’re amazed by how analytics software can now see into the future with enough clarity to predict downtime issues. Twenty years ago, you think, the plant was still doing calendar-based maintenance. Workers couldn’t predict anything, and they often found themselves fixing the same re-occurring problems.

You’re also surprised by just how easily information is now accessed. For example, the plant manager can now search his operations for answers—such as machine health or performance KPIs—as if he were searching the internet. He can even verbally ask his tablet questions, like how long the next batch will take to produce, and the software speaks back with answers.

**AUTOMOTIVE: ROBOTS SAVE YOUR BACK (AND MORE)**

Who knew robots could be so intuitive—and so helpful?

As you stumble out of your slumber and onto the plant floor, you are amazed by how seamlessly and safely robots are now woven into production processes.

Approaching the assembly area, you don’t see a gate around the robots to keep people at a safe distance. Instead, as you walk closer, the robot slows down and then comes to a stop as you stand next to it.

But it’s not just the proximity of the robots—it’s what they’re doing. Before drifting into your decades-long dream, you were worried about the safety implications of the heavy lifting being done by the plant’s older workers. And you worried that the plant wasn’t going to find skilled talent to replace those workers when they retired.

Now, robots do all the heavy lifting. This helps keep production running—even through labor or skills shortages. It also improves ergonomics for workers, reducing their exposure to repetitive strains.

All this is made possible by a combination of safety technologies, including robots, sensors and controllers.

**LIFE SCIENCES: A MULTI-MODAL MOBILE MAKEOVER**

Is this even the same production facility? You look around to see that the sea of fixed, stainless-steel biopharma machinery has been replaced by modular, mobile equipment.

It looks like a coordinated dance: workers move equipment throughout the facility and reposition it with simple, plug-and-play connectivity. Instead of large batch runs, you see workers making smaller, more targeted batches or even single drugs that are personalized to one person’s physiology.

You intently follow one operator as she pushes a piece of mobile equipment from one production area to another and then connects it to a docking station. The control system automatically detects the equipment connection, identifies its IP address and confirms that it’s in the right location. The operator then uses a tablet to guide her through connecting the right tubes to the appropriate points on the transfer panel.

Making all this happen is a modern distributed control system (DCS) with an open and unmodified Ethernet backbone. The DCS can confirm that the right mobile equipment is connected—and only allows control when equipment is in the right location. It also allows workers to scan materials to confirm they’re used with the right equipment.

Thin-client technology makes mobile visualization possible by recognizing an operator’s location and allowing access to screens and applications that are relevant to that location. And asset-management software securely and centrally manages production.

**MAKE THIS FUTURE A REALITY**

These future factory scenarios aren’t simply theory or fantasy. They’re the inevitable outcomes of adopting the control and information technologies that are available today as part of an Industry 4.0 strategy. And they’re closer than you might think.
The new rise of time-series databases

By Michael Risse, vice president at Seeq Corporation

Time-series data storage and management has long been an interesting—if quiet—market category. It’s been a multibillion-dollar business for years and a mainstay in process-manufacturing plants since the 1980s. But recently, the category has been getting another look from investors and companies large and small.

Why?

For starters, time-series data volumes are huge: way back in 2010 manufacturing companies were generating 1,800 petabytes of data per year (twice as many as the next closest vertical). Much of that was time-series data. And manufacturing data volumes have only continued to grow in recent years thanks to new Internet of Things (IoT) and Industrial Internet of Things (IIoT) deployments.

These vast data volumes attract attention because “data has gravity”—meaning that whoever stores the data will attract high-value add-ons such as management, security, analytics and consulting services. The result? To attract these other business opportunities, time-series data-storage platforms can be licensed for less than they cost.

VENTURE INTEREST AND OPEN SOURCE OPTIONS

To see what’s happening, just follow the dollars. On January 24 of this year, Timescale, an open-source time-series database (OSTSDB) company, secured $12.4 M Series A funding led by Benchmark Capital. This was soon followed by InfluxData, which scored $35M in a Series C funding on February 12, led by Sapphire Ventures, bringing their total funding to $60M.

If the names don’t ring a bell, Sapphire Ventures is the venture arm of SAP, and Benchmark Capital and Battery Ventures are both very successful venture funds. (Benchmark has nearly $3B under management and was an early-stage investor in companies ranging from Twitter to Dropbox to Instagram. Battery Ventures has nearly $7B in assets.) The investors...
are likely looking at graphs showing that time-series databases have recently been the fastest growing segment in the database market. InfluxData, for example, claims 115,000 active sites using their product.

That said, Hortonworks (NASDAQ: HDP), a leader in Hadoop and big-data implementations with process-manufacturing companies, has itself been adding features and patterns to address time-series database opportunities. Their added value is enabling manufacturers to analyze any type of data for batch, interactive, or real-time applications by unlocking siloed data sets from both operational technology and information technology systems. By centralizing customer-process data into a single open-source platform, Hortonworks is able to democratize industrial data analysis by providing a single view of operations for their customers. By virtue of their funding, Timescale and InfluxData are now separated from a pack of OSTSDB companies or open-source efforts, including OpenTSDB, Prometheus, Druid, KairosDB and others. Net of another funding event, it seems Timescale and InfluxData may be staging a repeat of the recent CloudEra/Hortonworks battle among big-data startups.

So, whether public companies or startup venture, OSTSDB and big-data vendors are now significant players in the time-series storage market.

**THE PUBLIC CLOUD ARRIVES**

Storing large volumes of data in the cloud is increasingly, if not already, a “when” not an “if” question for many companies. Consequently, the big public-cloud platforms are paying more attention to the largest sources of data.

For example, Microsoft recently introduced a Cassandra interface to Azure CosmosDB, their NoSQL cloud-data service, which brings them into the market for time-series storage. (For context, Cassandra is an open-source database and a popular choice for storing time-series data, so a Cassandra interface to CosmosDB is an obvious fit for time-series data storage.) What’s more, CosmosDB has a graph-database interface, which means it has both of the services required for modern historian functionality: a Cassandra interface for time-series storage, and a graph-database interface for defining and accessing asset models and hierarchies.

Of course, interfaces by themselves don’t make a historian or a time-series database product successful. There are many other factors involved, and it remains to be seen how Microsoft prices their service and differentiates it from open-source offerings, and how they work with partners offering historians on top of Azure. These and other decisions will go a long way to determining the success or failure of Microsoft’s foray into the market.

Honeywell’s recently announced Uniformance Cloud Historian, for example, runs on Azure and leverages Microsoft data services as its platform for distributed storage and management. These types of industry partnerships will be crucial for success within process-manufacturing verticals.

Finally, Microsoft won’t be making their decisions on CosmosDB and time-series data in a vacuum. Amazon with DynamoDB and Google with BigTable are both making their own arguments for using their NoSQL offerings for time-series data storage. This list could go on and on: PTC/Thingworks has established partnerships to support their IIoT platform with time-series storage options, plus there are time-series storage services in GE Predix and Siemens Mindsphere. Beyond these offerings, 2nd tier IIoT-platform offerings supporting time-series data could fill a dictionary.

**THE INCUMBENTS**

As mentioned earlier, data historians (also called process
Historians) have been used by process-manufacturing companies for decades. Every process-automation vendor offers at least one historian, like DeltaV Continuous Historian from Emerson Process Automation. And others have multiple historians due to a history of acquisitions, like Schneider Electric. Some historians are sold separately by dedicated historian firms like Canary Labs, and others are offered in the context of the software company’s principal offering, as with Inductive Automation’s Ignition SCADA system.

But for all the historians available for sale, one vendor stands apart in market share among high-value oil & gas, chemical, power generation and other process-industry customers: OSIsoft and its PI infrastructure platform.*

If the new entrants—startups and clouds—are affecting OSIsoft’s business, it’s hard to see from the outside. As a private company, they don’t release earnings, but an investment in OSIsoft last year by Softbank suggests expectations of further growth. There are also public examples of OSIsoft’s momentum. Their upcoming user conference, rebranded PI World, is expected to be their largest ever, with a doubling of space for partners and sponsors. With new investors, a growing partner ecosystem, and new efforts in edge and IIoT deployments, it would seem OSIsoft sees opportunity for growth, despite challenges from new participants.

Certainly, OSIsoft’s established position is a point of confidence for customers, as is its support for existing investments and IT requirements—and that position is validated by industry observers, including ARC: “ARC research indicates OSIsoft has been the market leader in process historians for many years,” commented Janice Abel, principal analyst at ARC Advisory. “The company has a well-established and loyal customer base, a large partner ecosystem, and the OSIsoft PI historian connects to data from more than 450 different sources, which to the best of our knowledge far exceeds any competitors’ products.”

Perhaps the actual impact on OSIsoft of the open source and cloud entrants to the time-series database market is an increase in the awareness of and need for a proven, enterprise-ready solution delivered out of the box.

CONCLUSION

With incumbents and challengers using both open-source and cloud services, the market for time-series storage in recent months has taken a strong turn to the interesting. This market, even with its strong incumbents, is attracting both top-tier venture-capital firms and the largest public cloud platforms. For now, it would seem all boats are rising on a tide of interest in the market segment, as IoT and IIoT interest and deployments continue to grow.

While it’s been interesting, it’s likely only the beginning of what promises to be a wild race, with multi-billion-dollar prizes at stake.

*As a point of disclosure, Seeq is an OSIsoft ISV partner.

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