

# INSIDER

INDUSTRIAL AUTOMATION & PROCESS CONTROL

VOLUME 20  
NUMBER 9  
ISSN2334-0789  
September 2016

Inside this issue:



Your key to the latest industrial automation and process control information

INSIDER  
INDUSTRIAL AUTOMATION & PROCESS CONTROL

HealthWatch

No HealthWatch This Month

Page 9

What a New Generation Auto-  
mation Company Looks Like:  
The Ignition Community Con-  
ference

INSIDER Roundup: 3

- Rockwell buys Maverick
- Emerson buys Perma-sense
- MCAA seeks nominees for 2017 Hall of Fame
- Schneider Suddenly Changes Industry Leaders
- Honeywell UOP adds IIoT
- Ecom introduces new app
- Seametrics acquired by Onicon

The Way I See It— Editorial by 9  
Walt Boyes: What happens to  
the IIoT without Open Sys-  
tems?

Rajababatur V. Arcot: By all 11  
means leverage technology,  
but be aware of its pitfalls

Want to know the **Mind of the Customer™**? Do you know why your customers buy and why they buy specific products or services, and don't buy others? If you don't know, call us to find out how we can help you! Call **Walt Boyes** +1-630-639-7090 or **Joy Ward** at +1-314-283-5259.

## What a New Generation Automation Company Looks Like: the Ignition Community Conference

The ExxonMobil Open Group initiative illustrates the desperate need for new software design models, new hardware design models, and new business models throughout the manufacturing industries.

But it is not the only sign of change. The Ignition Community Conference brought together a significant number of practitioners of those new models.



Inductive Automation Founder and CEO Steve Hechtman

Ignition is the product of Inductive Automation, who have put together an innovative software product, with an innovative business model.

According to founder Steve Hechtman, there are four pillars that underpin everything Inductive Automation does. "What are the four pillars?" he said. "First, the New Technology Model, second, the New Licensing Model, third, the New Business Model, and last, a New Ethical Model."

In his keynote, Hechtman reiterated the pillars. The technology model has two significant features that differentiate it from other SCADA or

DCS software: the software is modular, built on a platform or substrate with essentially open APIs, and the software is open to third party module developers, who can sell their own modules through a sort of app store. Unsurprisingly, that's exactly what ExxonMobil and the Open Group claim they want. I went through the "Discover Gallery" where third party developers were showing their application modules.

Ignition software covers a SCADA suite, and includes ERP, MES, and other modules like Asset Management and Track-

and-



Inductive's CTO Don Pearson

Trace. Inductive Automation touts that the modules are hot-swappable. So you can add or replace a module without bringing down the system.

According to Don Pearson, the CTO, there are more than 1200 control system integrators who regularly use Inductive Automation products for their clients.

## What a New Generation Automation Company Looks Like: the Ignition Community Conference (continued)

Ignition is sold on a novel pricing model, with a server license, rather than a seat or tag license.



Walt Boyes attends Industry MeetUp moderated by Gary Mintchell.

Well over 450 people attended the conference, not including Inductive employees. This year the company closed the conference attendance, because it has outgrown the facility.

Keynotes were given by Hechtman, Pearson, software leaders Colby Clegg and Carl Gould, and sales leader Travis Cox, who is also the founder of the fabulously successful “*Inductive University*”.

One of the significant discussions, as has been true the last two years, was the use of MQTT as a data translation protocol. MQTT co-creator, Arlen Nipper, presented a breakout session called “Accelerate IIoT Solution Development using Ignition and MQTT.” Much was made of the ease and simplicity of MQTT, as compared to OPC-UA, and other potential protocols.

Jose Rivera, Executive Director of the Control System Integrators Association (CSIA) spoke about applying CSIA’s Benchmarks and Best Practices to accelerate system integrator company growth. Rivera believes that open systems and the IIoT will further enhance the growth of the control system integrator in the coming decade.

David Lewis, from Sierra Nevada Brewing Company, discussed how he was taking the first steps toward a predictive analytics system in Ignition, by using dynamic SQL queries coupled with a data visualization tool. They are proactively identifying failing RTDs with this module.

Despite the large presence of Arlen Nipper and the MQTT fan club, Tom Burke from the OPC Foundation

presented his view of practical field-to-enterprise IIoT connectivity, using OPC-UA.

It is a common game among analysts and press to guess if and when Inductive Automation will be sold to a major automation company, and to guess how large revenue has become. I have started sounding like a broken record when I report that Steve Hechtman says he is not interested in selling, and that his resistance to selling the company forms the fourth pillar, what Hechtman calls, “a new ethical model.”

“How many SCADA companies have sold out?” Hechtman believes this so firmly that he’s written it on his website. “And what happens to their end-users, integrators and employees after they do? What happens to the vision and innovation after the founder is gone? What are the ethics when a few people become enriched at the expense of an entire user base and thousands of supporters? We’ve been approached several times and we aren’t selling out.” Hechtman says that it has been more than several times.

The other thing Hechtman refuses to discuss is what sales are. There are a couple of ways to come at estimates. One way is to count the number of employees and apply a multiplier based on standard employee productivity benchmarks. Another way is to look at the number of integrators that use Ignition and apply a project multiplier.

If you assume that Inductive Automation has approximately 50 employees, and a good number for employee productivity is about \$750K per employee, you come up with a revenue of \$37.5 million. We suspect this is the low bar. If you use the number of integrators, the average control system integrator does between \$5 and \$8 million in revenue. A believable high bar would be around \$108 million in revenue. The INSIDER’s guess is somewhere in between those two bars.

Hechtman says Inductive Automation has been talking to ExxonMobil and the Open Group. I continue to be impressed by the enthusiasm of their integrators, developers, and especially their employees.

**NEXT ISSUE: YOKOGAWA, WONDERWARE AND HURRICANE MATTHEW.**

## The INSIDER's September 2016 Roundup

### Rockwell Automation Buys Maverick Technologies

It did not take new Rockwell CEO Blake Moret, or his successor as senior vice president of Control Products and Solutions Ken Champa, to set the automation world on its ear. As the INSIDER was getting ready to go to press, Rockwell Automation announced the acquisition of Maverick Technologies, arguably the largest independent control system integrator in the world. Maverick, located in Columbia, IL, across the Mississippi River from St. Louis, has all of the MIC/MAC tools of any of the major automation vendors, including a highly touted remote control center, from which it can provide operations services to its clients.



New Rockwell CEO Blake Moret

According to Rockwell spokespeople, the acquisition significantly strengthens Rockwell's expertise in key process and batch applications to help its customers realize greater productivity and improved global competitiveness through process control and information management solutions.



ROK's Ken Champa

"Industrial control and information solutions are most effective when they result from close collaboration between a knowledgeable supplier and the user," Ken Champa said, "The combination of our global industrial automation leadership with MAVERICK's platform-independent domain expertise will help our customers reduce complexity and realize unprecedented productivity."

According to Rockwell spokespeople, the acquisition supports the Rockwell Automation growth strategy of using Rockwell's version of the Industrial Internet of Things, or Industry 4.0, The Connected Enterprise – a vision that connects information across the plant floor with the entire enterprise to drive new business value. This is particularly important to process customers whose uptime and continuous performance are critical.



Paul Galeski, new Rockwell employee

"We will continue to deliver our domain expertise, now with the power of a Fortune 500 industrial automation leader at our side," said Paul Galeski, Maverick founder and CEO. "This creates the best combination available to help uncover the benefits of information that drives performance in process industries."

This is the second time Galeski, who is commonly acknowledged to be a brilliant businessman and entrepreneur, has sold a system integration company that he's built from the ground up. In 1989, he founded Magnum Technologies, and sold it to General Electric in 1997. In 1999, he founded Maverick Technologies, and in 2005, he bought back from GE what had been Magnum for pennies on the dollar. It is likely that Rockwell will not repeat the performance.

There are some obvious issues with this acquisition, both for Maverick and for Rockwell Automation. One of the most important selling features for an independent control system integrator is the ability to use best-of-breed hardware and software, rather than being tied to a single proprietary brand of products. It is highly unlikely that Rockwell will permit Maverick to freely use Siemens or Schneider, Emerson or Honeywell. The pressure to "upsell" to Rockwell will simply be too great.

The other obvious issue is Rockwell's relationship with its own ecosystem of control system integrators and distributors. Once before, Rockwell tried to move into the integration business in the early 2000s. It wasn't pretty, as the integrators screamed and yelled at the Rockwell representatives at the CSIA Executive Conference.

Maverick has been a major supporter of CSIA, and a major partner of ISA. The INSIDER has learned that Maverick still has two years on its contract with ISA and this may give ISA an opportunity to have a closer relationship with Rockwell Automation, which has largely ignored ISA for decades.

Clearly this signifies Rockwell's intention to increase the pressure on Emerson, Honeywell, Yokogawa, and the other DCS vendors. Acquisition of Maverick Technologies gives Rockwell all of the tools to compete straight up for MAC/MIC business anywhere in the world.



## The INSIDER's September 2016 Roundup (continued)

### Emerson Acquires Permasense

By Nick Denbow

Emerson has announced the acquisition of UK-based Permasense Limited, a leading provider of non-intrusive corrosion monitoring technologies for the offshore and onshore oil production, refining, chemical, power, pipelines, metals and mining and other industries. Permasense monitoring systems use unique sensor technology, wireless data delivery and advanced analytics to continuously monitor for metal loss from corrosion or erosion in pipes, pipelines or vessels, and reliably deliver high-integrity data from even the harshest environments.

The acquisition represents another step forward in Emerson's strategy to invest in its core business platforms and expand in markets that hold significant long-term growth opportunity.



Emerson's Mike Train

"Corrosion and erosion can significantly impact the safe and reliable operation of our industrial customers' infrastructure, which can have dire consequences. Wireless non-intrusive corrosion monitoring is a transformational shift that helps customers immediately understand the health and integrity of their infrastructure in real-time and enables them to fully optimise their operations while maximising safety," said Mike Train, president, Emerson Automation Solutions. "For example, with the increasing complexity of the types of crude oil coming into a refinery, corrosion is becoming a significant issue in the up-time and profitability of a refinery. Now refinery infrastructure can be monitored and controlled using this non-intrusive technology."

The Permasense product line will become part of the Rosemount portfolio of measurement and analytical technologies. Permasense technologies complement the Emerson Roxar intrusive corrosion



Lal Karsanbhai of Emerson

monitoring and non-intrusive sand management systems and strengthen the company's Pervasive Sensing applications that provide customers a more complete view of their operations and facilities. With Permasense and Roxar technologies in its portfolio, Emerson will be the largest provider of integrity and corrosion management solutions in the marketplace.

Lal Karsanbhai, group vice president, measurement and analytical technologies, Emerson Automation Solutions, added: "The addition of patented Permasense technologies along with our existing Roxar technologies enables Emerson to provide customers with a more complete corrosion monitoring solution and a clearer picture into the performance of their infrastructure based on what they're demanding of it and the strategies needed to optimise production."



Central to Permasense corrosion monitoring systems are sensors that employ proven ultrasonic wall thickness measurement principles. The sensors are battery powered and communicate wirelessly, which mini-

mises the cost of installation and enables use in remote areas and on a large scale. The sensors are also designed so they can be deployed in hazardous areas.

### MCAA Seeks Nominees for 2017 Hall of Fame



The Measurement, Control and Automation Hall of Fame recognizes individuals whose body of work has contributed to the instrumentation and control industry in a significant and memorable way.

Nominations for this honor come from MCAA members and will be accepted through December 30. Honorees will be announced at the Industry Forum in Atlanta, GA.

For details regarding the award, and to submit your nomination, visit MCAA's website at [www.measure.org](http://www.measure.org).

## The INSIDER's September 2016 Roundup (continued)

### Schneider Suddenly Changes Industry Leaders



Peter Herweck

Schneider Electric announced that Clemens Blum was out as head of the businesses formerly known as Invensys and Modicon by announcing the appointment of Peter

Herweck as his replacement. The appointment was said to be effective January 1, 2017, as was Blum's retirement, so that Herweck could come up to speed by shadowing Blum. However, Clemens Blum resurfaced a very few days later as a Director of the privately-held Buehler AG and Buehler Holding AG. It isn't clear if Blum flew the coop early, or not.



Clemens Blum

Schneider appointed Peter Herweck as the executive vice president of the Industry Business, and member of the executive committee.

Peter began his career at Mitsubishi Electric as a software development engineer in Japan before joining Siemens in 1993, where he held a variety of positions in the automation and drives field in Germany and the US.

Peter will join Schneider Electric on 1<sup>st</sup> October 2016. Following a 3-months inclusion time to acquire a deeper knowledge of Schneider Electric and its employees, he'll be in charge of the Industry Business from 1<sup>st</sup> January 2017.

Blum posted on his LinkedIn page, "The acquisition and integration of INVENSYS PLC in January 2014, a major player in the process automation industry, was the mile-

stone in my professional career. Together with my team, I was able to deliver all cost and revenue synergy targets from day one. This is a recognised success story inside and outside of Schneider Electric.

With the completion of the integration of INVENSYS PLC by end of 2016 I'll step down from the Executive Committee of Schneider Electric and will further reshape the profile of my professional life."

One wonders what happened.

### Honeywell UOP Introduces IIoT Offering

Honeywell UOP has introduced a new software-based service designed to allow refiners and petrochemical and gas processing plants to improve performance.

Honeywell UOP's new [Connected Performance Services](#) (CPS) business leverages the Industrial Internet of Things to tap Honeywell's deep process knowledge, design expertise, and understanding of catalysis with next-generation software platforms from Honeywell Process Solutions, the leading provider of software-based solutions for the process industries.

"This cloud-enabled service makes plants smarter and more responsive," said Zak Alzein, vice president for CPS. "Problems that caused plants to be less efficient or less productive and that went undetected for weeks or months now can be resolved quickly and proactively, and decisions that used to take days now can be made in hours. For many plants, the avoidance of downtime and suboptimal performance, and better agility can be worth millions of dollars per year."



UOP's Zak Alzein

The [CPS offerings](#) include applications to address [critical challenges](#) for refineries and petrochemical and gas processing plants, including better asset utilization, unplanned downtime, energy efficiency, and gaps in expertise as plants become more sophisticated and experienced engineers retire. The CPS offerings are part of the larger IIoT ecosystem being built by Honeywell to allow end users to harness IIoT technology to tap the deep expertise of Honeywell UOP and other leading suppliers and partners.

At the heart of the [CPS offering](#) is a cloud-based software service that continuously monitors streaming plant data and applies advanced analytics and machine learning, leveraging UOP process models and best practices to find latent or emerging underperformance, alert plant personnel and make specific operational recommendations. The system runs continuously with user-friendly digital dashboards that provide

## The *INSIDER*'s September 2016 Roundup (continued)

highly intuitive context and actionable understanding of a plant's performance. The same dashboards are reported simultaneously to a dedicated Honeywell UOP process advisor who also monitors performance and can provide additional direction and resources.

In addition to identifying underperforming assets and anticipating equipment failures and process issues, Honeywell can monitor and help manage energy use to support compliance with stricter regulatory standards, and also can bridge [knowledge gaps](#) among personnel who may not be fully experienced with their equipment. Roughly half of the industry's most highly-tenured staff are expected to retire in the next seven years.

"The unique feature to this solution is the combination of customer operating data and UOP expertise that provides plant personnel with early-stage warnings that identify performance improvements," Alzein said. "Advancements in software, instrumentation and Big Data capabilities have finally converged, which makes it possible for the [first time](#) to offer a cloud-based IIoT solution that brings the connected plant to the oil and gas industries. That combination is made even more powerful by UOP's century-long knowledge of process technology, equipment, catalysis and commercial best practices.

Honeywell UOP's CPS platform is designed around the [user experience](#), providing a practical interface that is easy to read and understand and that provides quick and easy analysis and recommendations.

Operators can get to the bottom of an issue in a few clicks, giving staff time to address the problem quickly or before it becomes more serious. By leveraging powerful embedded root cause analysis models, it puts critical performance information at the user's fingertips to improve performance and offers predictive insights to identify issues well before they could result in costly problems.

**Spitzer and Boyes LLC** offers unique services to high tech companies such as—

**Mind of the Customer™ research**, which can tell you what your customers really think, and what they really want, both in products and services.

**Content Generation** for high tech and automation companies. We have the research and experience to write in your words, for you, on the subjects you care most about, and are most valuable.

**Strategic Research** on Smart Manufacturing, Industry 4.0 and the Internet of Things, Cyber Security and other hot topics, to help you position your company properly for the years ahead.

### ecom Instruments Introduces new App

Ecom Instruments, a provider of intrinsically safe mobile devices and solutions such as smartphones, tablets, handhelds and peripherals, has developed a professional data capture software solution, the CamScan Keyboard App, which allows – even offline – 1D / 2D barcodes to be scanned and NFC / HF RFID transponders to be read/written simply using the camera of a smartphone or tablet.

### Accuracy almost matching a hardware scan engine

The ecom CamScan app is a "keyboard wedge" software utility based on Honeywell's SWIFTDecoder Mobile™ professional offline barcode decoding software. It uses the integrated camera of the world's first Zone 1 / 21 and Division 1 certified tablet, the Tab-Ex® 01, and the world's first intrinsically safe 4G / LTE-capable Android smartphone, the Smart-Ex® 01, to scan barcodes – automatically converting them to human readable text.

The CamScan Keyboard scans and enters NFC / HF RFID data and nearly all other types of barcodes – even in both sunlight and poor light conditions – directly into the selected data fields of most applications. Triggering the scan is very easy. Simply press the 'scan' button shown on the on-screen keyboard or make use of ecom's Smart-Ex programmable hardware button – reducing manual typing and eliminating copy and paste actions. Portrait/landscape scanning and batch mode are also supported.

Unlike the errors experienced from free barcode scanner apps, the accuracy of Camscan prevents incorrect asset identification and the wasteful rework this causes. Offline decoding with 100+ scans per hour in full 360° scanning rotation is also possible – ensuring spying, phishing and keylogging are unfeasible.

Where high frequency scanning (200+ scans per hour), challenging circumstances and long range scanning (up to 15 meters) are required, ecom also offers innovative hardware based solutions including Ident-Ex ® 01 and i.roc® Ci70-Ex. Ident- Ex ® 01 is a powerful, intrinsically safe Bluetooth "All-in-One" barcode scanner and RFID reader. i.roc® Ci70-Ex is the first intrinsically safe PDA with WWAN, each with changeable head modules (RFID, 1D / 2D barcode or combined head modules) for customer specific configuration.

### Benefits of a professional data capture application



## The INSIDER's September 2016 Roundup (continued)

Using a professional barcode scan application in combination with ecoms intrinsically safe mobile devices – not every device and camera offers sufficient performance for scanning requirements – provides several advantages for companies operating in hazardous areas:



Operator uses CamScan device

The most obvious advantage is the cost effectiveness, as no additional hardware for scanning assets is needed. The CamScan Keyboard gives the option to scan and upload data directly within third party apps, and therefore eliminates the need for mobile workers to manually input results in the field or back at the office. Using specialized software packages also helps to prevent unwanted outages. Since they're designed to integrate with other applications and backend systems, they have a direct impact on work process effectiveness and visibility, reacting faster to anomalies, streamlining decision-making and ultimately reducing cost.

Another advantage of the ecom CamScan Keyboard is the considerable improvement in the consistency and accuracy of the data captured. As many engineering managers will know only too well, descriptions of equipment and assets can vary widely depending on the engineer reporting the problem. These variations often cause confusion and wasted time since identical assets and equipment cannot be differentiated when transferred to backend systems. By scanning and entering data directly into input fields of various applications and minimizing the use of free-hand text, operators begin to record more consistent data, enabling easier manual or even automated analysis and reducing the risk of human error. Thus, incorrect input and poorly transcribed records can be avoided entirely.

### More than 130 beneficial professional applications

The product comes with powerful mobile hardware – including the tablet Tab-Ex® 01, the smartphone Smart-Ex® 01 to the PDA i.roc® Ci70 and Ex-Handy 09 –

The ecom [App Library](#) provides more than 130 beneficial professional applications for use in hazardous areas – enabling companies to take advantage of proven technology in new usage scenarios to streamline workflows and substantially improve the way assets are operated and managed.

### Seattle Metrics (Seametrics) acquired by Onicon

Seattle Metrics, better known as Seametrics Inc. has been acquired by long time competitor, Onicon, Inc., a part of Harbour Group in St. Louis. Jeff Fox, Harbour Group's secretive chairman and chief executive officer, announced the acquisition. Terms of the transaction were not disclosed. Since 1990, Seametrics has developed and manufactured flowmeters for the irrigation, industrial, water, and wastewater end markets with a focus on electromagnetic meters (mag meters). Seametrics has a leading position in mag meters for the irrigation market throughout North America and a growing international presence. The company is headquartered in Kent, Wash., near Seattle.



Harbour Group CEO Jeff Fox

Seametrics was founded in 1990 to manufacture flow measurement sensors as a spin off of Romac Industries of Seattle. The products included paddle wheel flow meters, insertion paddle wheel flow meters, low flow meters, and cold water meters modified to pulse chemical metering pumps. Seametrics also manufactured transmitters and water treatment controllers. In 1998, Seametrics developed a novel bidirectional turbine flow meter which took them into the HVAC business, and made them a direct competitor to Onicon. In the 2000s, experimentation with low cost magnetic flow meters culminated in the product for which they were acquired.

Mr. Fox commented, "The addition of Seametrics brings Onicon further into the measurement of one of the world's most critical resources, water. Seametrics' expertise allows the combined company to be a leader in irrigation metering."

## The INSIDER's September 2016 Roundup (continued)

John Norris, president and chief executive officer of Onicon, commented, "As we build a diversified flow meter business to serve multiple markets, the acquisition of Seametrics expands our technology base and market reach. We look forward to growing the combined business with the Seametrics team."

Seametrics' founder and Chairman of the Board, Curt Burnett, added: "We are excited to partner with Onicon and believe their operational expertise and additional sales channels will help us continue to grow as a business. We believe our engineering, sales & manufacturing talent and product suite will enhance the Onicon business. Together, with Onicon and Harbour Group, we have exciting plans for the future."

The Seametrics acquisition joins Onicon and Fox Thermal as part of Harbour Group's flow control and measurement group, along with Air Monitor Corp., and Greyline Instruments.

It must be disclosed that Walt Boyes was Director of Marketing and Sales for Seametrics Inc. from 1995 to 2000, where he established a highly efficient distributor organization, an international sales organization, and obtained several high level OEM accounts, approximately doubling sales in that period. "I wish I still had my stock," Boyes said. "Spitzer and Boyes LLC also has had a client relationship with Fox Thermal, a manufacturer of thermal flow meters," he disclosed.

Although Mr. Fox declined to be interviewed by the INSIDER, it is clear that he has been to the Danaher school of growing in a very stealthy way. Harbour's flow control and measurement group is probably closing in on \$100 million in revenue, and essentially nobody knows about it. Harbour should appear in *Control* magazine's TOP 50 soon, if they get a little higher visibility. Especially since they also own a motion control group, and a boiler works group including boiler controls. According to Harbour's website, they have completed 187 acquisitions. Harbour's acquisition methodology sounds deeply cribbed from the Danaher Business System, so if they follow it, they will continue to be successful and fly mostly under the radar.

### ABB Updates System 800xA Minerals Library

ABB has released an updated version of its System 800xA Minerals Library. The latest version adds functionalities for advanced analog loop control, further facilitating the engineering processes and widening the scope of visible information to improve the situation awareness for operators.



ABB's Global Technology Manager, Eduardo Gallestey

"This solution update focuses on improving the operator's ability to monitor, analyze and efficiently control safe production," said Eduardo Gallestey, Global Technology Manager at ABB. "The next generation of Minerals Library builds upon our long history of helping our customers use the latest technology

and tools to optimize their operations. Leading global mining and cement companies have relied on this software solution for more than 15 years as a key element of their plant operation to reduce downtime and maximize production performance."

With the new loop control connection (LCC), the Minerals Library applies the successful concept of "intelligent objects talking to each other" to the world of loop control. The consistent linking between objects enables engineers to design complex control concepts with a standardized structured approach. The actual control strategy and dependencies between objects are directly visualized on the operator interface.

LCC is available for all existing loop control blocks as well as for the newly added loop control blocks for actuators, ratio, split-range and adaptive PID (proportional integral derivative) control. These elements deliver powerful out of the box functionalities ready to be used on a broad array of advanced control challenges. The interlock status viewer provides an improved user interface to support efficient fault-finding and displays more information like time to trip to enable the transformation from reactive to proactive plant operation. The group step viewer shows all steps of a group sequence in a format easy to understand by operators. It raises awareness of potential changes in the process before starting a group sequence. The detailed status viewer for engineers and maintenance teams provides an innovative view that shows a global, functional representation of the process, all in the same chart. The detailed status report of its assets and the abnormal situations all in the same chart. This helps provide information needed for quick analysis and action to resolve issues.

ABB's System 800xA Minerals Library is a suite of object-oriented software control modules, which make it possible to design process control and power applications in an efficient and fully-parameterized manner. Successfully operating in more than 450 cement and mining sites worldwide, the technology increases standardization, functionality and quality of process control software over the complete life cycle of a production facility. This minimizes downtime caused by abnormal situations and allows cement and mining industry customers to operate and maintain the production process and assets most efficiently.



# No Health Watch this Month.

**INSIDER**  
INDUSTRIAL AUTOMATION & PROCESS CONTROL

## Health Watch

Due to scheduling issues and illnesses, the Health Watch will not appear in the September issue. Look for its return in the October INSIDER.

**Spitzer and Boyes LLC** offers unique services to high tech companies such as—

**Mind of the Customer™ research**, which can tell you what your customers really think, and what they really want, both in products and services.

**Content Generation** for high tech and automation companies. We have the research and experience to write in your words, for you, on the subjects you care most about, and are most valuable.

**Strategic Research** on Smart Manufacturing, Industry 4.0 and the Internet of Things, Cyber Security and other hot topics, to help you position your company properly for the years ahead.



# THE WAY I SEE IT

## Editorial

### What happens to the IIoT without Open Systems?

Last month we took a look at the ExxonMobil/Open Group initiative to make automation systems based on open systems and open standards. The question we asked was, "What will happen when the big vendors say 'No!'"

Because they certainly will. There is not much question of that. The "vendors' annuity" that ARC's Harry Forbes has been talking about isn't going away without a fight. Look at the protracted standards fights over fieldbus, industrial wireless, alarm management, and many others. In each case, one or more of the large vendors skirmished, delayed, played games, threatened jobs, and otherwise obstructed progress, in some cases for years. In some cases, we are left with the smoking carcass of a decent standard, while the small vendors and the end users simply sat there and watched.

The end users have not wanted, with some exceptions, like ExxonMobil, to do the work and spend the R and D money that is necessary for innovations, at least in automation.

The Internet of Things, and its offshoot, the Industrial Internet of Things, simply cannot be

managed without truly open systems.

Because anyone can produce a transmitter, one-off, using a Raspberry Pi or something like it, a NEMA 4X enclosure and a sensor, for under \$100— which is the same order of magnitude as a large instrument vendor can, you should expect

**Remember, anybody can buy a Raspberry Pi, a purpose built NEMA 4X enclosure for it, and a sensor (temperature, level, flow, pressure, and even some analytic sensors) for under \$100. That gives them an Ethernet enabled COTS field device for what is, frankly, not much more than the burdened cost of a large instrument vendor for a similar device. And it programs in Linux.**

to see a huge influx of sensor vendors. These new vendors will be driving open systems and open networks for those systems.

This will put great pressure on traditional sensor vendors, and this pressure will be far greater than any pressure that ExxonMobil and the other large end user/asset owners can bring.

Eventually, the COTS nature of sensors, transmitters, and network devices will drive open systems in the marketplace.

And if the Smart Manufacturing Leadership Coal-

tion, which has been awarded a decent-sized grant to begin developing an open software substrate on which open apps can be installed) and the others working on similar projects, can pull off what they want to do, we will see open systems from the field device to the enterprise. This would be not just a destabilizing event for vendors in the automation space, but a whole series of them— a perfect storm, if you will. Two years ago, I keynoted the Yokogawa USA User Conference, in which I described highlights from a strategic study I had

completed earlier that year for Yokogawa in which I postulated that this was coming. I am pleased, as a futurist, to note that my prediction was correct and appears to be remaining so, coming true perhaps sooner than anticipated.

So what is there do? Without open systems there *is* no IIoT

End user/asset owners like ExxonMobil and others need to keep the pressure on, while newer vendors, like Inductive Automation and Bedrock Automation, produce innovative products, and new sensor and software manufacturers begin to flood the market with inexpensive products. End users, engineers and operators need to keep telling their management that they want new and innovative ways to operate their plants, and new tools to do it with. It is only with pressure coming from the marketplace and from all the stakeholders, will the traditional vendors move to open systems. It isn't clear what will happen if they don't

*Walt Boyes*

Comments? Talk to me!  
waltboyes@spitzerandboyes.com

Read my Original Soundoff!! Blog:  
<http://waltboyes.livejournal.com>

The Industrial Automation and Process Control INSIDER™ is published by Spitzer and Boyes LLC., Copyright 2014-2016, all rights reserved.

The INSIDER is edited by Walt Boyes. Joy Ward is a columnist. Additional reporting is done by David W. Spitzer PE., Rajabahadur V. Arcot, Nick Denbow, and Steven Meyer.



The INSIDER is a subscription based publication and does not take advertising. This means that the INSIDER can be completely independent and unbiased in its reporting and in its analysis.

To subscribe to the INSIDER, please visit <http://www.iainsider.co.uk> and click the "Become an Insider" button.

Send comments to [insider@spitzerandboyes.com](mailto:insider@spitzerandboyes.com). We want to hear from you!



## Rajabahadur V. Arcot: By all means leverage technology, but be aware of its pitfalls

In general, our dependence on technology has been continually increasing and the impact has been highly beneficial. While the manufacturing industry has been leveraging the automation technology to achieve productivity improvements, efficient use of all resources, and plant safety, the automation technology, on its part, has evolved rapidly from the days of mechanical gauges and pneumatic instruments to computer based systems; and the development of information, computer and communication technologies has made a tremendous impact on automation. In the process, both manufacturing and automation benefitted with human operators remaining in final control of all plant-floor operations. Such an equation among the manufacturing industry, automation technology, and human operators suited all, but with the developments in information, computer and communication technologies racing ahead of the curve, such a situation is changing. Some of the companies that are working on related cutting edge technologies are vigorously pushing for their adoption; but, that may result in unintended consequences.

been highly beneficial. While the manufacturing industry has been leveraging the automation technology to achieve productivity improvements, efficient use of all resources, and plant safety, the automation technology, on its part, has evolved rapidly from the days of mechanical gauges and pneumatic instruments to computer based systems; and the development of information, computer and communication technologies has made a tremendous impact on automation. In the process, both manufacturing and automation benefitted with human operators remaining in final control of all plant-floor operations. Such an equation among the manufacturing industry, automation technology, and human operators suited all, but with the developments in information, computer and communication technologies racing ahead of the curve, such a situation is changing. Some of the companies that are working on related cutting edge technologies are vigorously pushing for their adoption; but, that may result in unintended consequences.

Greater reliance on automation has the potential to reduce further the manufacturing industry's dependence on workforce and such a trend can make redundant not only low-skilled but also managerial jobs.

The writing on the wall is that current developments, such as the Industrial Internet of things (IIoT) or Cyber Physical Systems, cloud platform, big and fast data analytics, artificial intelligence, machine learning, robotics, and others will greatly influence the automation architecture and contribute to the emergence of new industrial era, Industry 4.0. While there is the expectation that these developments in the technology domain will help the manufacturing industry to become more customer-responsive and improve its operations, there are numerous reports that indicate that it could lead to job losses and pose serious

cyberattack threats to industrial companies. Greater reliance on automation has the potential to reduce further the manufacturing industry's dependence on workforce and such a trend can make redundant not only low-skilled but also managerial jobs. Industrial control

cyber incidents are already on the increase. The financial year 2015 review report NCCIC/ICS-CERT says that ICS-CERT received and responded to 295 incidents compared to 245 in the previous year, an increase of 20 percent. The Critical Manufacturing Sector accounted for 97 of these incidents that

represent around 30 percent of the total incidents. More pervasive automation with more data, more devices, and more clouds provides a perfect platform for increased security threats and vulnerabilities.

That is not so good news, but what is troubling is that the industry is on the threshold of further increasing its dependence on information, computer, & communication technologies and their spin-offs. Leveraging them is one thing but for the manufacturing industry and automation to become overly dependent on them calls for serious introspection.

Automation systems were essentially conceived to help plant operators with operational information and equipment status in addition to automatically regulating critical parameters so that they are maintained at designed set point values, monitoring certain other parameters so that they are within safe operating conditions, and provide timely alerts to control room operators or initiate shut-down procedures, if necessary. Even though the state-of-the-art control systems have greatly diminished the operator's role over the years, he/she remains very much an integral part of the loop and in control. But the current trends indicate a further erosion of the role of plant operators with detrimental effects and this could result in unintended consequences.



## Rajabahadur V. Arcot: By all means leverage technology, but be aware of its pitfalls (continued...)

In my opinion, the role of industrial control systems must be to ensure safe, secure, automatic and autonomous operation of the plant and generate & provide all necessary operational information to the operators with well-honed cognitive abilities to remain in command. The operator has to remain situationally aware all the time. There must be equilibrium between autonomous capabilities of ICS and the primary role of control room operators. The enhancement of autonomous control system capabilities beyond a threshold point, that will make the operator more of an observer, will affect his / her cognitive abilities that will have significant ramifications.

Recent developments such as artificial intelligence, robotics, machine learning, and data analytics demonstrate that barriers to computerization are rapidly disappearing. It is a myth to believe any more that computerization will eliminate only routine jobs and not those involving human cognitive and perceptive skills. Trends show that it possible to computerize even tasks that require human cognitive and perceptive skills to solve that were considered as non-routine until a decade ago.

Some of the recent reports speak about computer programs with capabilities to decode people's thoughts almost in real time with better than 95 percent accuracy and about robots and artificial intelligence machines finding their way to the corporate board rooms in the next ten years.

Today's technology advancements, such as ability to produce large and complex datasets and big data analytics, allow non-routine tasks to be converted into well-defined problems and computer code. This makes it possible to computerize even some of the cognitive tasks that use human's mental power. In recent months we have been reading about the successful application of robots and computers to perform tasks that are normally considered cognitive non-routine. Watson, IBM's supercomputer, assisting doctors in diagnosing patients and suggesting treatments, the Google's driverless car, world's first self-driving taxi service to passengers, started by Singapore's an autonomous vehicle software startup *nuTonomy*, and such others are examples of a task considered cognitive non-routine until recently. Extrapolating these trends it should not be inconceivable to imagine of a day when robots could take over the role of control room operators as well! We may also concede that such robots may be able to perform better than a human operator until such time they encounter a new situation. Let us remember that such situations are not uncommon in industrial processes or operations.

Present day automation systems are highly sophisticated requiring the human operators to largely monitor screens and interact with

screen displays; they even aid operators with prompts. The future automation systems, aided by artificial intelligence, self-learning and big data analytics, and such other capabilities, will require minimal intervention of human operators who will otherwise only remain alert, situationally aware, and intervene under unforeseen conditions that are not coded into control systems' algorithms. The future plant control will be akin to flying of a modern day airplane which during most of the flight time will be on GPS guided autopilot mode, with well-

trained pilots taking actual control of the airplane only during takeoff and landing times and during crucial phases that an auto flight system may not be able to handle. Excessive dependence on autopilot erodes pilots' expertise and dulls their reflexes. A safety alert for operators (SAFO) issued by Federation of Aviation Administration (FAA) a couple of years back, points out that too much reliance on the autopilot, "does not reinforce a pilot's knowledge and skills in manual flight operations." Auto flight systems, the agency notes, are "useful tools for pilots and have improved safety and workload management, and thus enabled more precise operations. However, continuous use of auto flight systems could lead to degradation of the pilot's ability to recover the aircraft quickly from an undesired state." The alert encourages pilots to hand-fly airplanes more often to address the challenges. The FAA findings reveal that automation, for all its benefits, can take a toll on the performance and talents of those who rely on it. I hope the experience of FAA makes all those pushing for greater pervasiveness of automation to pause, evaluate the consequences, and be prepared to take corrective measures to overcome the limitations.

**Rajabahadur Arcot is an Independent Industry Analyst and Business Consultant, and Director Asia Operations for Spitzer and Boyes LLC with 40 years of senior management experience. He was responsible for ARC Advisory Group in India. Contact him at [rajabahadurav@gmail.com](mailto:rajabahadurav@gmail.com)**

