22ND ANNUAL ARC INDUSTRY FORUM

Digitizing and Securing Industry, Infrastructure, and Cities

FEBRUARY 12-15, 2018
ORLANDO, FLORIDA

ARC
Advisory Group

Digitizing and Securing Industry, Infrastructure, and Cities

It's happening fast. Everywhere we turn, things and processes are becoming more connected and intelligent. Streetlights, cars, gas turbines, and thermostats stream data. Buildings, refineries, oil platforms, mines, and wind turbines are optimizing asset and operating performance. Parking meters and distributed power grids deliver value to both consumers and operators. Design software can link to additive machines to print parts directly. And it's only the beginning.

Challenges continue to grow for the industrial cybersecurity community. Broader deployment of operational technology is expanding the use cases requiring protection. Resource shortages are undermining the effectiveness of established defenses. Blurring boundaries between IT, OT, and IoT are increasing the need for more integrated, collaborative cybersecurity strategies.

How will disruptive technologies change existing products, plants, and cities? Can cybersecurity threats be overcome? When will machine learning and artificial intelligence transform operations? Will open source solutions impact traditional software and automation domains? How will a digitally-enhanced workforce stem the loss of tribal knowledge? How do connected products create opportunities in aftermarket services? What steps can organizations take to foster innovative thinking?

There are countless ways to conduct your digital transformation journey, too many technologies and suppliers to evaluate, and endless choices to make along the way. Embedded systems, networks, software platforms, augmented reality, and machine learning may play a role as you begin to improve uptime, optimize operating performance, enhance service, and re-think business models.

Join us at the 22nd Annual ARC Industry Forum in Orlando, Florida to learn more about how digitizing factories, cities, and infrastructure will benefit technology end users and suppliers alike. Discover what your peers are doing today and what steps they are taking in their respective journeys.

FORUM PROGRAMS

- **Analytics and Machine Learning**
- **Asset Performance Management**
- **Automation Innovations**
- **Connected Smart Machines**

- **Cybersecurity and Safety**
- **Industrial Internet Platforms**
- **IT/OT/ET Convergence**
- **Networks and Edge Devices**

AGENDA AT A GLANCE

Join us for a Pre-Forum Welcome Reception, Sunday, February 11, 6-9 PM

Monday, February 12 – Forum Opening Day Workshop Sessions

	Track 1	Track 2	Track 3	Track 4
8:30 AM	The State of Cybersecurity for Industry, Infrastructure, and Cities			
10:30 AM	Industry Cybersecurity Trends and Developments	Infrastructure Cybersecurity Trends and Developments		
12:00 PM				Supplier Press Announcement
2:00 PM	IIoT Cybersecurity Frameworks and Standards	Integrating IT-OT Cybersecurity Efforts	Asset Performance Management	
4:00 PM	Smart Cities Cybersecurity Trends and Developments			
6-9 PM	Networking Reception and Dinner			

Tuesday, February 13

	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6
7:00 AM	Forum Registration and Continental Breakfast					
	Schneider Electric Breakfast (Invitation Only)					
	Inductive Automation Breakfast					
8:30 AM	Keynote Presentations					
10:00 AM	Break					
10:30 AM	Executive Panel					
12:00 PM	Lunch					
12:15 PM	HIMA Workshop: It Takes Two to Tango - Safety and Security					
1:00 PM	L&T Technology Services Workshop: Benchmark Your Digital Enterprise Readiness Index					
	AspenTech Workshop					
	Track 1	Track 2	Track 3	Track 4	Track 5	Track 6
2:00 PM	Open Process Automation Status	Cybersecurity Case Studies/Panel Discussion - Part 1	Obtaining Faster ROI with EAM, Predictive Maintenance, and IIoT	The Power of Application/IoT Platforms	Digitalization Drives Value Chain Improvements in Discrete Manufacturing	Building Energy Management
3:30 PM	Break					
4:00 PM	Drones for Industry	Cybersecurity Case Studies/Panel Discussion - Part 2	IT/OT/ET Convergence	Digitizing Subject Matter Expertise	IoT Network Edge Infrastructure and Devices	The Case for Bottom-up Smart City Development
5:30-6:30 PM	Happy Hour, Sponsored by Wind River					
7-10 PM	Reception and Dinner					

Wednesday, February 14

7:00 AM	Forum Registration and Continental Breakfast					
	GE Digital Breakfast (Invitation Only)					
8:30 AM	Keynote and Executive Panel					
10:00 AM	Break					
	Track 1	**Track 2**	**Track 3**	**Track 4**	**Track 5**	**Track 6**
10:30 AM	Can You Answer These Four Questions about Process Safety?	Cybersecurity Case Studies/Panel Discussion - Part 3	How OEMs Improve Customer Satisfaction and Revenue with IIoT	Transforming Data into Value	IT/OT Convergence: Linking Legacy to an IIoT World	BIM for Smart Safe Cities
12:00 PM	Lunch					
1:00 PM	SAP Workshop: The Network of Digital Twins Connecting Product and Asset Intelligence					
	Stratus Technologies Workshop					
2:00 PM	Executing Major Automation Projects	Cybersecurity Case Studies/Panel Discussion - Part 4	Field Service Management Evolves into a Competitive Weapon with Emerging Technologies	Digital Transformation Progress and Challenges	Integration Technologies and Information Modeling for Process Control and Asset Management Systems	The Digital Supply Chain: The AGCO Inbound Materials Supply Chain Transformation
3:30 PM	Break					
4:00 PM	Creating a Manufacturing IT/OT Strategic Imperative Investment Plan	Network Solutions for Cybersecurity	Strategies and Technologies for a Successful Asset Integrity Management Program	Organizing for Analytics: From Business Case to Scale	Smart Field Systems Creating Business Value for Process Industries	Smart Machines in Logistics
7-10 PM	Reception and Dinner at SeaWorld's Discovery Cove, Sponsored by Microsoft					

Thursday, February 15

7:00 AM	Forum Registration and Continental Breakfast					
	Track 1	**Track 2**	**Track 3**	**Track 4**	**Track 5**	**Track 6**
8:30 AM	OPA Forum Discussion	Tying Process Analytics to Corporate Performance	Cybersecurity Case Studies/Panel Discussion - Part 5	Digitizing Intelligence: From Analytics to Bots	Digitization: The New Engine for Growth in Rail Transport	Augmented Reality and Wearables for the Industrial Enterprise
10:00 AM	Break					
10:30 AM	Strategies to Reduce Downtime and Increase Plant KPIs	Operator Training by Doing	Using Blockchain to Improve Supply Chain Operations	Production Innovation and Digital Transformation: Making the Connection	Smart Cities and Infrastructure Technology Challenges	
12:00 PM	Forum Ends with Boxed Lunches					

OPENING DAY WORKSHOP DESCRIPTIONS

Asset Performance Management

Technology is only one piece of a successful and sustainable asset performance management program. People and processes must be included.

IIoT Cybersecurity Frameworks and Standards

The Industrial Internet of Things (IIoT) spans a wide range of products used to control and monitor industrial systems. This includes traditional equipment like PLCs and DCS systems as well as the many new sensors being added to facilities to collect information that will enable significant improvement in plant performance.

This session will include brief presentations by representatives from various groups involved in developing IIoT standards and validating conformance. Presentations will be followed by a panel discussion where session attendees will be invited to offer their input and discuss their own issues/concerns.

This information will be of benefit to owner-operators, suppliers, and researchers involved with the cybersecurity of Industrial Internet of Things.

Industry Cybersecurity Trends and Developments

Improving the cybersecurity in industrial control systems (ICS) has been a subject of focus for over a decade. Control systems and security experts have collaborated to develop improved standards and practices, and suppliers are responding with new and innovative products and technologies. Yet, the risks continue to evolve, requiring improved response and increased adoption in virtually all critical infrastructure sectors.

The purpose of this workshop is to present and discuss trends and developments in this area, including but not limited to application of available standards, practices, and guidelines. Presentations by the Automation Federation and NIST will be followed by a panel discussion where attendees will be invited to offer their input and discuss their own issues or concerns.

Participation in this workshop will be of benefit to owner-operators, suppliers, and any stakeholders interested in the application of standards and practices to improving the cybersecurity of industrial control systems.

Infrastructure Cybersecurity Trends and Developments

Infrastructure spans a wide range of industries including electrical power, water and wastewater, transportation, etc. Many of these industries are regulated and are subject to specific cybersecurity standards established by groups like FERC, NERC, NRC, etc. There are gaps in these standards, like distribution in the power industry, and companies are using standards like IEC-62443 and NIST to fill these gaps.

This session will include short presentations by people from a variety of infrastructure industries regarding the challenges they face and the trends and developments they are observing in cybersecurity standards and guidelines. Presentations will be followed by a panel discussion where session attendees will be invited to offer their input and discuss their own issues/concerns.

This information will be of benefit to owner-operators, suppliers, and researchers involved with the cybersecurity of critical infrastructure.

Integrating IT-OT Cybersecurity Efforts

End user companies and asset owners have taken a variety of approaches to address the need to coordinate and integrate IT, OT, and IIoT cybersecurity programs and activities, including the use of security operations centers (SOCs). A successful response must cover the full spectrum of people, process, and technology challenges that these organizations face in this area.

Speakers will describe their experiences and lessons learned. This will be followed by a discussion between panelists and workshop attendees who will add their insights on the subject and share their challenges.

Attendees will gain insight into what peer organizations are, or are not, doing and what have been determined to be effective practices.

Smart Cities Cybersecurity Trends and Developments

This session will begin with presentations to frame the challenges that large cities face in the event of a cyber-attack on any of their critical services. This will be followed by a panel discussion with smart city personnel and consultants who will add their insights on the issues raised. Session attendees will also be invited to offer their input on the topics and explore their own issues with panel members and others attending the session.

Attendees of this session will gain insight into what cities are/are not doing and how their own efforts compare with industry peers. This information will be of benefit to practitioners, suppliers, researchers, and anyone involved with smart cities cybersecurity.

The State of Cybersecurity for Industry, Infrastructure, and Cities

This session will provide an update from DHS on the state of ICS cybersecurity and the results of research performed by ARC and the SANS Institute regarding the current state of cybersecurity in industrial plants, infrastructure systems, and smart cities. Topics will span the full spectrum of people, process, and technology challenges that organizations face as well as the use of various cybersecurity technologies and management strategies.

Presentations will be followed by a panel discussion with end users who will add their insights to the DHS, ARC, and SANS findings. Session attendees will also be invited to offer their input on the topics and explore their own issues with panel members and others attending the session.

Attendees of this session will gain insight into what organizations are/are not doing and how their own efforts compare with industry peers. This information will be of benefit to owner-operators, suppliers, and researchers involved with the cybersecurity of industrial systems.

FORUM SESSION DESCRIPTIONS

Augmented Reality and Wearables for the Industrial Enterprise

Whether it's equipment manufacturers or enterprises using industrial machines, companies are looking for technologies that empower them to service their customers and their own processes better and faster. To help achieve these results, companies are adopting mobile augmented reality (AR) solutions that enable field and maintenance technicians to diagnose and resolve problems more efficiently by sharing, capturing, and creating actionable information. This session will explore industrial use cases of AR to illustrate the various functions, applications, and benefits of the technology.

BIM for Smart Safe Cities

Cities and the infrastructure that connects and moves people are becoming much smarter. Additionally, cities are becoming safer for the people who live in these increasingly denser environments. There are a range of technologies that have emerged to make cities smart, connected, and safe. These include geospatial and geosystems that can capture the physical context of cities and create virtual cities where the fusion of perception and reality to augment perception with digital reality. And for physical safety use next-generation technology to provide physical security and to coordinate multiple agencies such as police, fire, emergency management, and communications. This would include command and control centers that enable interagency communication and collaboration using advanced technologies like mobile wireless centers, unifying physical security monitoring (video cameras, perimeter security, etc.). It would also include intelligence gathering for threat assessment, UAVs/drones, mobile robots, etc. They would leverage technologies from sister business units for geospatial and geosystems like virtual mapping and large scale virtual modeling for cities and facilities.

This session brings together technology providers and their customers to examine the smart and safe city of the future.

Building Energy Management

Building energy is a major consumer of energy resources and this session focuses on building design for energy efficiency, energy monitoring, lighting, HVAC, and control systems.

Can You Answer These Four Questions about Process Safety?

In the early hours of Sunday December 11, 2005, a number of explosions occurred at Buncefield Oil Storage Depot, Hemel Hempstead, Hertfordshire. At least one of the initial explosions was of massive proportions and there was a large fire, which engulfed a high proportion of the site. Over 40 people were injured; fortunately there were no fatalities. Significant damage occurred to both commercial and residential properties in the vicinity and a large area around the site was evacuated on emergency service advice. The fire burned for several days, destroying most of the site and emitting large clouds of black smoke into the atmosphere. Five companies were fined as a result. This included the tank gauging supplier.

During a press conference by the HSE, Gordon MacDonald presented three questions for companies to ask themselves. A fourth was added based on a presentation by CCPS to the Texas A&M Instrumentation and Automation Symposium.

1. Do we understand what could go wrong?
2. Do we know what systems are to prevent this from happening?
3. Do we have the information to assure us that these systems are working effectively?
4. What is your role?

These are great questions for any organization to ask itself. According to the ACC, incident rates are steadily declining, however, the severity of the incidents that do occur are increasing. This can be a problem, as the lack of incidents can cause an inappropriate sense of security. Asking these

questions on an ongoing basis will help avoid processes and systems from being neglected.

"What is your role?" is a great question especially in the world of 'everyone's job is safety'. The question makes it personal. What role in the organization do you personally have with regards to process safety? What roles are not being filled in your organization? Does your facility have a 'set it and forget it' mentality?

This session discusses how organizations answer these questions.

Creating a Manufacturing IT/OT Strategic Imperative Investment Plan

So many opportunities for improving manufacturing operations management are available. Often these opportunities are missed due to the lack of a strategy for deciding where the best investment opportunities are. While technology continues to evolve, there is a strong need to not only evaluate technology options, but to understand which options will actually improve operating performance.

This session will discuss success stories of taking a strategic investment approach to thoroughly evaluate options for manufacturing operations management technology investment.

Cybersecurity Case Studies/Panel Discussion - Parts 1-5

This session is part of a series of case study sessions wherein industry, infrastructure, and smart city end users make presentations regarding their cybersecurity programs and initiatives. Specific topics for each session will be defined once ARC finalizes selection of nominated speakers and groups the presentations around specific issues.

Presentations will be followed by a panel discussion where the end users and their suppliers respond to questions/comments by the attendees.

Attendees of this session will gain insight into what organizations are/are not doing and how their own efforts compare with industry peers. This information will be of benefit to owner/operators, suppliers and researchers involved with industry, infrastructure, or smart cities cybersecurity.

Digital Transformation Progress and Challenges

While use cases and proofs-in-concept are valuable, many companies still struggle to embark on their digital journey to what many refer to as the 4th industrial revolution. Some industry leaders have addressed corporate readiness, organization, governance, and have developed a unique approach to the deployment of advanced digital technology and transforming processes. This Digital Transformation is about the augmentation of people and knowledge through the expanded use of sensors and analytics.

Industrial first-mover organizations have found better ways to optimize internal processes to be better positioned to implement emerging technologies such as predictive analytics and artificial intelligence. These industrial "first movers" are also better utilizing their existing infrastructure, sensors, and the data already being gathered and without compromising cybersecurity.

Please attend this session where industrial peers will share their lessons learned, challenges, plans, and experiences in their company-wide digital transformation.

Digitizing Intelligence: From Analytics to Bots

Smart, connected, real-time data that is synchronized throughout the plant and global enterprise is the future for process automation, the digital transformation, and smart manufacturing. Whether working with advanced analytics, machine learning, robotics, or chatbots, having connected industrial time stamped process data enables companies to make better data based decisions that can optimize production.

Join the digital transformation and attend this session and learn how Pioneer Resources is applying advanced analytics to maximize oil and gas production by detecting abnormal operating conditions in gas lift compression. See how Duke Energy's Emerging Technologies group is using a chatbot for operations and maintenance on wind turbines to help substation technicians understand and analyze historical operations data.

Digitization: The New Engine for Growth in Rail Transport

Rapid growth in IoT, Analytics, and Big Data have changed the operations and asset management strategies of the transit industry dramatically. Predictive technologies are now driving process improvement, asset performance, and operations and maintenance services throughout the industry, saving millions of dollars and increasing passenger safety. This session will emphasize the implementation of new and cutting technologies that help improve operations and the maintenance of assets, and provide enhanced services by addressing the current issues in critical fields. Topics include rail signaling and train control systems, operations and maintenance, asset performance management, and rolling stock maintenance.

Digitalization Drives Value Chain Improvements in Discrete Manufacturing

Analytics and simulation tools are driving improvements in discrete manufacturing production. Manufacturers are embracing the vision of the IIoT as an enabler to improve the

predictability of machinery performance in operations and product design. Many manufacturers operate blindly and are slow to close the loop with the supply chain or engineering organizations. Progressive manufacturers seek to identify the cause of poor production performance. Manual data collection is often the first approach used to collect manufacturing metrics. However, productivity improvements require real-time monitoring at the edge of production. This session will focus on edge to cloud integration with an emphasis on integration throughout the extended value chain.

Digitizing Subject Matter Expertise

Going back decades, capturing and applying knowledge has been one of the most continually pursued, mission-critical tasks undertaken by industrial companies. New technologies, training, and educational methods have been used to try to transfer tribal knowledge and best practices from individuals to the organization. Results have been mixed at best as individuals have resisted sharing the know-how and expertise they have helped create through years of work. Now, with businesses losing experienced workers while competing in disrupted markets and managing increasingly complex work environments, tribal knowledge is undermining the ability of organizations to survive and succeed.

Digital work environments can effectively address and, perhaps, eliminate these long-standing barriers related to knowledge and expertise. This session will provide working examples of how businesses are using data-driven methods to harness stranded knowledge. Examples include:

- Digital knowledge bases can be built and leveraged to overcome skills gaps between younger and more experienced workers
- Analytics can be applied to discover, crowd source, contextualize, and share knowledge from disparate sources that are often tightly siloed, collected but rarely ever used, or not part of an "active" knowledge base
- Subject matter experts can harness data to identify and implement best practices
- Digital techniques can deliver prescriptive feedback to support the point of decision by enabling machines and humans to interact using common language

Drones for Industry

Drones have found many useful jobs in the commercial, agricultural, surveying, and industrial space. This session will focus on drone applications, drone related technologies, drone regulations, and the challenges to insure safe and efficient drone missions that provide value.

Executing Major Automation Projects

Whether they are brownfield or greenfield, major automation projects present a challenge to the owner-operators. While automation is clearly an essential ingredient to a successful operation, it is often overshadowed by other factors in the total project such as construction, equipment procurement, and overall plant design and engineering.

While a plethora of technologies are now available to make the new or newly upgraded plant operate to meet business objectives, combining these technologies, often from multiple suppliers, is a complex task. This task must be executed flawlessly.

Process and discrete automation users that have major automation decisions in the next 5 years should attend this session. It includes speakers with real-world experience in complex automation projects. Together with their main automation contractor they will describe the journey and provide lessons learned along the way to completion and startup.

Executive Panel – Tuesday General Session

The main focus of this executive discussion will be to explore ideas how companies can transform their business operations with new innovative processes and technologies.

Field Service Management Evolves into a Competitive Weapon with Emerging Technologies

Good field service delivery is being radically impacted by new technologies. Field service involves servicing widely distributed assets and requires features like integrated maps and route optimization in vehicle parts inventory management and customer billing. Now, emerging technologies – specifically Industrial Internet of Things (IIoT) and analytics – have opened new opportunities for optimizing technician effectiveness and achieving metrics in service level agreements. Original equipment manufacturers (OEM) are finding new sources for revenue and a competitive advantage.

This session focuses on strategies for how field service becomes a competitive weapon for OEMs. Equipment manufacturers will gain an understanding of their path. End users will gain an understanding of why field service should be part of their selection criteria when choosing a supplier.

How OEMs Improve Customer Satisfaction and Revenue with IIoT

Using Industrial Internet of Things (IIoT) to monitor equipment allows the OEM to identify an issue at their customer's site before it affects the end user. Condition monitoring helps prevent unplanned downtime and improve asset performance. Mitigating the problem before it affects production improves customer satisfaction and repeat sales. OEMs have improved revenue with increased sales of its equipment and additional value-added services.

This session is for OEMs who want to gain a competitive advantage and grow revenue. Also, end users will gain a

deeper understanding of IIoT and why this should be part of their supplier selection criteria.

Integration Technologies and Information Modeling for Maximizing Utility of Fully Digitized Process Control and Asset Management Systems

A fundamental premise of Industrie 4.0, the IIoT, China 2025, and other advanced manufacturing initiatives is the ubiquity of digitization from the plant floor to the cloud. Smart field devices are only as smart as the information that can be delivered from the device to critical enterprise systems.

In 2015, FieldComm Group's FDI (Field Device Integration) standard, using OPC UA information modeling technology, was introduced. Today, numerous process industry host systems and smart field instruments spanning all major protocols support FDI. Emerging, OPC UA based communication servers and cloud integration services are enabling dramatically simpler access to smart device information across the enterprise and driving value for end users worldwide.

This panel session will include an overview of FDI technology, case studies of full plant digitization at Reliance Industries Jamnagar J3 facility and on board the Shell Prelude FLNG, and the advantages of OPC UA information modeling in process standards through case studies of various companion standards.

Finally, we will discuss the impact that emerging initiatives like the Advanced Physical Layer, and OPC UA PUB-SUB will have on future process automation systems.

IoT Network Edge Infrastructure and Devices

The Internet of Things (IoT) network edge has emerged as a primary vehicle for delivering incremental business value via internet-enabled business strategies such as the Industrial Internet of Things (IIoT), Industrie 4.0 (I4.0), and smart cities and infrastructure. This session will highlight current and prospective demands on both network edge infrastructure, such as gateways, routers, and switches, as well as smart end devices that function as edge nodes in the IoT architecture.

IT/OT Convergence: Linking Legacy to an IIoT World

We have been hearing a lot about the convergence of information technology and operations technology (IT/OT). This has led to a rapid learning curve for both groups, such as IT learning about what is actually "real time" and OT learning that to leverage the latest technology, 30 year old control systems may need to be upgraded. Connectivity between OT to IT is essential for any business to compete today with the increasing demand for tighter integration and more information and analytics, along with leveraging

the Industrial Internet of Things (IIoT), cloud, and big data. However, the reality is most factories contain multiple generations of systems where 30 year old products need to somehow be part of the convergence story.

This session will explore how companies have successfully linked their OT legacy systems to their state-of-the-art OT and IT systems, covering the hurdles and challenges that need to be overcome Persons wanting to learn about IT/OT convergence, as well as those involved with control systems and/or production management software should attend to gain insight into real world examples of OT and IT convergence success stories involving legacy systems, what lessons were learned, and what were the derived business benefits.

IT/OT/ET Convergence

The convergence of IT (Information Technology at the enterprise level) and OT (Operations Technology, the information and automation technologies employed in the plant), is not new, but the relationship is intensifying. What is changing is the addition of ET (Engineering Technology) to this convergence. ET consists of newer technologies such as Ethernet/Wi-Fi, virtualization, cloud, SaaS, analytics, Big Data, mobile, social, modeling and simulation, augmented reality, machine learning, remote monitoring, and digital twin that create virtual models. Convergence of all three disciplines enables digital enterprises to operate in innovative and collaborative ways to improve performance.

Presenters in this session will share how they are using this killer combination to their advantage.

Keynote Presentations – Tuesday General Session

There are countless ways to conduct your digital transformation journey, too many technologies and suppliers to evaluate, and endless choices to make along the way. Embedded systems, networks, software platforms, augmented reality, and machine learning may play a role as you begin to improve uptime, optimize operational performance, enhance service, and re-think business models.

Several industry leaders will share with us how they are leveraging new processes and technologies to transform their business and manufacturing operations.

Keynote and Executive Panel – Wednesday General Session

New technologies such as cloud computing, mobility, Internet of Things, analytics, and 3D visualization have been getting a lot of attention in the industrial community as each has the potential to disrupt and radically change the way companies do business. Still, most industrial enterprises tend to be conservative and slow to embrace new information technologies. This go-slow strategy, however, can be far riskier than anticipated. This executive panel discus-

sion will focus on how you can transform your operations using new, innovative technologies and processes.

Network Solutions for Cybersecurity

New network technologies such as SDN are shaking up the IT space, and ARC expects uptake of this new tech in industrial applications to be rapid. End user needs for better cybersecurity and broader integration are the main drivers for industrial uptake. This session will highlight industrial early adopters and applications of these new network technologies.

Obtaining Faster ROI with EAM, Predictive Maintenance, and IIoT

Users often struggle with the financial justification for an upgrade to their enterprise asset management (EAM) system due to the difficulty with identifying specific benefits for new features. New technologies like Industrial Internet of Things (IIoT) and mobility require a modern EAM system, and provide a new basis for justification of the upgrade.

This session is for those EAM users who want to dramatically improve the effectiveness of their asset management programs. Hear strategies and case stories for technology adoption with clear benefits.

OPA Forum Discussion

This session will provide the status of Open Process Automation Forum activities, including:

- Activity and status overview
- Technical Committee and V1 document status
- Business Guide rollout plan

These will be followed by a Q&A discussion.

Open Process Automation Status

This session will update end users on the state of the Open Process Automation Forum. It will include:

1. Status report of the ExxonMobil-Lockheed prototype project
2. Status report of the Open Group Open Process Automation Forum
3. Panel discussion
4. Q&A

Operator Training by Doing

Operator training continues to be very important as the millennial generation assumes operational responsibility for industrial manufacturing. Industry has learned that training by doing is highly effective and different simulation technologies can allow operators to practice doing their job. Training simulators continue to evolve with new 3D virtual

technologies. This session will focus on new trends for process, control system, and 3D spatial simulations used for training.

Organizing for Analytics: From Business Case to Scale

Analytics is a complex endeavor, complicated by the growing volume and complexity of data that can be applied. Executives tasked with leading these initiatives must navigate a range of issues, including justifying a return on investment, understanding solution options, and determining how to scale analytics.

Attendees of this session will hear from two companies in different stages of analytics. The first company will provide you with an inside look at initial use case development and consensus building, emphasizing how to identify starting points and select an appropriate solution provider. The second company, managing multiple global projects, will share with you how it scaled analytics, and it will also discuss the ongoing discovery process for implementing additional techniques and solutions. Key questions will be addressed, including:

- Who should be part of the team and why?
- How do you determine initial use cases?
- What should you consider when identifying and selecting a solution(s)?
- If the pilot worked out, why is scalability so difficult?
- What is the best way to effectively test and implement additional types of analytics?
- How do you know when to move on to the next problem?

Production Innovation and Digital Transformation: Making the Connection

Visualization is becoming easier to use and interpret and more immersive and descriptive than ever. Digital dashboards, virtual reality, augmented reality, and mixed reality can provide immense value to operations and production. New gen production applications are being deployed using "digital twins" and other visualization technologies to help determine bottlenecks and problems before they happen and prior to the deployment of new products. The digital twin and process simulation is being used to replicate the process and help determine potential issues. Companies are seeing lots of value by redesigning digital dashboards and other technologies that enable workers to see what is going on at a glance. How the information is portrayed to the user can have an enormous impact on response time and production decisions.

Newer technologies are making an impact on operations and these capabilities can have an impact on the bottom line. Strategies for designing and implementing best practices, roles, responsibilities, and the value obtained in the

production or operations environment will be presented. This session will illustrate how well-designed visualization impacts real users and how it can improve operations and plant productivity and help solve problems faster. Join us and see how these innovative technologies can make a difference in your plant. The future of visualization will be discussed!

Smart Cities and Infrastructure Technology Challenges

Smart cities and infrastructure are being driven by a whole new landscape of applications, platforms, networking, and other technologies that can make it extremely challenging for cities, municipalities, governments, and other end users of smart city technology to make good strategic decisions. ARC has always believed that any technology should be evaluated from the standpoint of business value. In this session, we will discuss the real value that technology brings to the world of smart cities and infrastructure and bring context and clarity to the extremely diverse world of technologies that are available.

Smart Field Systems Creating Business Value for Process Industries

Smart field devices, systems, and associated digital networks continue to support every aspect of the process industries. While the various digital field technologies are based on standards and provide far more functionality than conventional analog communication, we continue to see relatively slow adoption, particularly in brownfield situations. Smart field devices can provide greater operational visibility, agility, and flexibility when leveraged effectively.

On the smart device side, the available technology goes beyond the basic measurements of pressure, temperature, flow, and level, to include multiphase flow, multi-variable transmitters, video, acoustic, fiber optic, and analytical measurements. Not only do these new, smart devices and associated digital communication networks provide the opportunity to obtain additional real-time process and asset intelligence, they also reduce the number of process penetrations required.

This session will include examples of how smart field systems (devices) have created value for their owners. A follow on panel discussion will provide attendees with an opportunity to ask questions and further examine how smart field systems can be used to create value in their respective operational situations.

Smart Machines in Logistics

Robots and drones are poised to revolutionize logistics. Here three CEOs of robotics and drone service providers describe the people, process, and technology implications of using autonomous mobile robots in the warehouse. What are the drivers, hurdles, and the ROI associated with these technologies?

Strategies and Technologies for a Successful Asset Integrity Management Program

Asset-intensive organizations around the world are under increasing pressure from their stakeholders to increase profitability, reduce costs, ensure safety, and maximize stakeholder value. As a result, operators are constantly trying to find ways to maximize output from their assets while maintaining the integrity of those assets in a cost-effective manner. In this context, the concept of Asset Integrity Management (AIM) becomes relevant. Asset integrity management is a standard of operating that aims to ensure that assets deliver the required function and level of performance in a sustainable manner without compromising safety.

The aim of this session is to highlight the importance of AIM systems and programs for asset-intensive industries, especially oil & gas, and discuss some of the key features of a successful AIM program. The session would also cover leading technologies that are helping owner-operators strengthen their AIM programs.

Strategies to Reduce Downtime and Increase Plant KPIs

This session will discuss manufacturers' biggest nemesis - unscheduled downtime - and strategies on how to reduce or eliminate it, subsequently increasing a plant's key performance indicators (KPIs). Case studies will offer need-to-know guidance on "must haves" for OT leaders looking to maximize the ROI of their automation systems by eliminating any unscheduled downtime. Presentations will focus on learning to assess availability readiness of automation systems, as well as best practices to engage with IT decision makers. Learn how IT and OT convergence can align to deploy the best solution, one that fits into existing systems, supports standards including OPC, and delivers ROI, while laying the foundation to support modern technologies, such as virtualization and IIoT.

This session will cover:

- OT business drivers, including simplicity, TCO, and avoiding unscheduled downtime
- The best of both worlds for OT/IT convergence, such as best practices to engage with IT
- Support for modern technologies, including IIoT, virtualization, and Cloud

The Case for Bottom-up Smart City Development

Several city CIOs shall present some of the challenges facing smart cites, from lighting, connectivity, data, and cybersecurity, to interoperability of utilities, transportation, logistics, and systems.

The Digital Supply Chain: The AGCO Inbound Materials Supply Chain Transformation

There are a series of exciting new technologies that are creating new possibilities in supply chain management: real-time visibility and risk management, predictive analytics, additive manufacturing, and blockchain. This panel highlights some companies that are on the leading edge in deploying these technologies.

The Power of Application/IoT Platforms

Today's application and Internet of Things (IoT) platforms provide a modern way for plant, city, or infrastructure operations to access a variety of vendor or third party apps from a company store - or build and run their own apps. Join this session to hear from early adopters of application and IoT platforms.

Transforming Data into Value

Are organizations handling data effectively and what's the value? Data and applications should bring insights to operations, and today's operations are based on big data. Whether it's time to value, product quality, regulations, or something else – most companies need a way to calculate the business case, ROI, and technology value.

This session will illustrate how manufacturers are solving problems through analytics, data infrastructures, and the digital transformation. Users will present use cases on how they are making sound business decisions using operational data.

Learn how one brewery is reducing costs and getting better beer through data and how an oil company is using analytics for real-time data more effectively.

Tying Process Analytics to Corporate Performance

Companies that apply analytics usually have a goal in mind. This may be ad hoc or strategic, focused on a specific asset or process section or part of a corporate initiative such as operational excellence or continuous improvement. Corporate initiatives must be structured and ensure all contributors use the same methodology and tools, to make analyses comparable. To work well, these initiatives also need corporate executive and expert support.

There are many types of analytics, ranging from visualization and discovery and could be predictive or prescriptive. Often, it can be difficult to understand what technique, or combination, works best and when. That confusion certainly applies to the use of data-driven analytics versus optimization using first "grey-box" models, as used in model-predictive control. This session will create clarity for industry professionals looking for solutions, whether ad hoc, focused, or enterprise-driven.

The discussion will cover how corporations can set up and organize analytics activities to support corporate performance goals. To turn theory into practice, several use cases from end users will demonstrate how analytics can be applied in corporations and which outcomes can be reached for corporate initiatives, and using shared methodologies, for example.

Using Blockchain to Improve Supply Chain Operations

In this panel, experts from ARC, Oracle, and SAP will talk about the prospects for using Blockchain to improve supply chain processes. Does this technology have real potential? Is it too early to say? Or is this much ado about nothing? The panelists have very different views.

ARC FORUM LOGISTICS AND REGISTRATION

Location

Renaissance Orlando at SeaWorld
6677 Sea Harbor Drive
Orlando, Florida 32821 USA
renaissanceseaworldorlando.com

To make hotel reservations, please visit https://aws.passkey.com/go/ARCAdvisoryGroup. The ARC Forum 2018 group room rate is $224 based on availability.

Forum Fee

The Forum fee is $2,995.

The fee includes breakfast and lunch each day, evening receptions, and program materials.

Cancellations and Substitutions

Substitutions may be made at any time at no charge. The fee is fully refundable up to three weeks prior to the forum. A 50% cancellation fee will be assessed after that date.

Forum Updates

For the latest information on speakers and sessions, visit www.arcweb.com/events/arc-industry-forum-orlando/.

About ARC

Founded in 1986, ARC Advisory Group is the leading research and advisory firm for industry and infrastructure. For the complex business issues facing organizations today, our analysts have the industry knowledge and first-hand experience to help our clients find the best answers. Visit us at arcweb.com.

Who Should Attend

- CEOs, COOs, and Presidents
- CIOs and CTOs
- VPs and Directors of IT
- VPs, Directors, and Managers of Operations
- VPs, Directors, and Managers of Manufacturing
- VPs, Directors, and Managers of Supply Chain
- VPs, Directors, and Managers of Engineering
- Plant Managers and Supervisors
- Production Managers and Supervisors
- Directors, Managers, and Architects of Automation and Enterprise Integration

Preliminary Forum Agenda

Monday, February 12
9 AM	Pre-Forum Workshop Sessions
6-10 PM	Welcome Reception

Tuesday, February 13
8:30 AM	General Session
12 PM	Luncheon
2 PM	Concurrent Track Sessions
6:30 PM	Reception

Wednesday, February 14
8:30 AM	General Session
10 AM	Concurrent Track Sessions
12 PM	Luncheon
2 PM	Concurrent Track Sessions
6:30 PM	Reception

Thursday, February 15
8:30 AM	Concurrent Track Sessions
12 PM	Forum Ends with Boxed Lunches

❑ Please register me for the Forum.   Source Code (if needed):_____

❑ Use my complimentary Advisory Service ticket for admission   ❑ Check is enclosed   ❑ Bill company, PO#:_____

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