19th Annual ARC Industry Forum

Industry in Transition: The Information Driven Enterprise for the Connected World

February 9-12, 2015
Orlando, Florida
WELCOME TO THE 19TH ANNUAL ARC INDUSTRY FORUM

Industry in Transition:
The Information Driven Enterprise for the Connected World
February 9-12, 2015
Renaissance Orlando at SeaWorld

Meeting Location
Oceans Ballroom

Forum Registration
Forum registration and check-in is available at ARC’s registration counter in the Oceans Ballroom Foyer.

Innovations Showcase
The Innovations Showcase is located in the Oceans Ballrooms 1-4.
ARC’s Welcome Reception on Monday evening and breakfasts and breaks will be held there.

Presentation Material and Videos
Speaker presentations and videos will be available on ARC’s Website 2-4 weeks after the forum at:
www.arcweb.com/events/arc-industry-forum-orlando/

Wireless Service
Wireless service is provided courtesy of ARC. The access code and password is “arcforum”.

Mobile App Available for Smartphone or Tablet
You can access current forum information from your smartphone or tablet using our app which is available in the App Store under ‘ARC 2015’. The user name is your email address and the password is “arcforum”.

Founded in 1986, ARC Advisory Group is the leading research and advisory firm for industry and infrastructure. Our coverage of technology extends from business systems to product and asset lifecycle management, supply chain management, operations management, energy optimization and automation systems. For the complex business issues facing organizations today, our analysts and consultants have the industry knowledge and first-hand experience to help our clients find the best answers.

ARC Advisory Group
3 Allied Drive, Dedham, Massachusetts 02026 USA
Tel 781-471-1000, Fax 781-394-0094

Please visit us on-line at www.arcweb.com
Twitter hashtag: #ARCforum
## ARC INDUSTRY FORUM — AGENDA AT A GLANCE

*Join us for a cocktail reception on Sunday, February 8, 6-8 PM, The Upper Deck*

### Monday, February 9 – Forum Opening Day Workshop Sessions

<table>
<thead>
<tr>
<th>Time</th>
<th>Track 1</th>
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<tr>
<td>8:00 AM</td>
<td>Forum Registration (Oceans Ballroom Foyer)</td>
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<tr>
<td>9:00 AM</td>
<td>Cyber Security Workshop I</td>
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<tr>
<td>12:00 PM</td>
<td>Cyber Security Workshop II</td>
<td>Developing the Future Workforce Leaders in an Evolving Manufacturing World</td>
<td>IoT Workshop: Industry Groups Lead the Way</td>
<td>The Roadmap to Sustainable Reliability</td>
<td>Supplier Press Announcements</td>
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<tr>
<td>1:00 PM</td>
<td>Cyber Security Workshop III</td>
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<tr>
<td>6-9 PM</td>
<td>ARC Forum Welcome Reception (Oceans Ballrooms 1-4)</td>
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### Tuesday, February 10

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<th>Time</th>
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<tr>
<td>7:00 AM</td>
<td>Forum Registration and Continental Breakfast (Oceans Ballrooms 1-4)</td>
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<tr>
<td>8:30 AM</td>
<td>Industry in Transition: Keynote Presentations (Oceans Ballrooms 5-8)</td>
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<tr>
<td>10:00 AM</td>
<td>Break (Oceans Ballrooms 1-4)</td>
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<tr>
<td>10:30 AM</td>
<td>Industry in Transition: Executive Panel (Oceans Ballrooms 5-8)</td>
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<tr>
<td>12:00 PM</td>
<td>Lunch — (Pool Terrace and Lawn)</td>
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<td>1:15 – 1:45 PM</td>
<td>ABB Workshop: We Asked Plant Managers – What Keeps You Up at Night (Oceans 6/8)</td>
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<tr>
<td>2:00 PM</td>
<td>The Automation Challenge Continues</td>
<td>Managing Industrial Cyber Security Risks – Part 1</td>
<td>Winning the Battle for Uptime: Creating and Sustaining a Proactive Culture in Enterprise Asset Management</td>
<td>Industrial Internet of Things: The New Frontier</td>
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<tr>
<td>3:30 PM</td>
<td>Break (Oceans Ballrooms 1-4)</td>
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<tr>
<td>4:00 PM</td>
<td>Integrated Control and Electrification</td>
<td>Building a Secure-by-Design Industrial Internet of Things</td>
<td>Connected Asset Performance Management: Where Industrial Internet of Things Gets Real – Part 1</td>
<td>New Analytics Approaches for the Industrial Internet of Things</td>
<td>Use Enterprise Recipe Management to Quicken Production and Reduce Costs</td>
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<tr>
<td>6-9 PM</td>
<td>Networking Reception and Dinner (Pool Terrace and Lawn)</td>
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### Wednesday, February 11

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<tr>
<td>7:00 AM</td>
<td>Forum Registration and Continental Breakfast (Oceans Ballrooms 1-4)</td>
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<tr>
<td></td>
<td>GE Breakfast (invitation only) (Coral A/B Ballroom)</td>
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<tr>
<td>8:30 AM</td>
<td>Industry in Transition: Keynote and Executive Panel (Oceans Ballrooms 5-8)</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Break (Oceans Ballrooms 1-4)</td>
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</tbody>
</table>
| 10:30 AM   | **Track 1**
|            | Oceans 6/8                                   | **Track 2**
|            | Enterprise Manufacturing Intelligence: Business Results from Manufacturing Intelligence, Analytics, and IIoT - Part 1 | **Track 3**
|            | **Track 4**
|            | Oceans 11                                   | **Track 5**
|            | Industrial Internet of Things Bears Fruit with Connected Services for Plant Assets and Fleet Migration | Managing Industrial Cyber Security Risks - Part 2 |
| 12 - 2 PM  | Lunch (Poolside Terrace and Lawn)                                                          |
| 2:00 PM    | **Track 1**
|            | Best Practices for Developing Organizational Structure for Securing and Managing Automation and IT | **Track 2**
|            | Enterprise Manufacturing Intelligence: Business Results from Manufacturing Intelligence, Analytics, and IIoT - Part 2 | **Track 3**
|            | **Track 4**
|            | Oceans 10                                   | **Track 5**
|            | Managing Industrial Cyber Security Risks - Part 2                                          | MTConnect for the Internet of Things |
| 3:30 PM    | Break (Oceans Ballrooms 1-4)                                                                |
| 4:00 PM    | Maximizing Benefits through Control and Information Convergence                            |
|            | Workforce Improvement through Targeted Training                                            |
|            | Operator Training Simulators, Immersive Training Simulators, Augmented Reality, and Gaming |
|            | Internet of Things in the Supply Chain                                                     |
|            | Machines as a Service Enabler                                                              |
| 7 – 9:30 PM| Siemens Dinner, Entertainment, and Fireworks at Epcot (Depart at 6:30 PM from Oceans Ballroom Foyer) |

### Thursday, February 12

<table>
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<th>Time</th>
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<tr>
<td>7:00 AM</td>
<td>Forum Registration and Continental Breakfast (Oceans Ballrooms 1-4)</td>
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</table>
| 8:30 AM    | **Track 1**
|            | Efficient Automation Execution Brings Effectiveness in Operations                          | **Track 2**
|            | Leveraging Smart Field Systems to Create Value in Process Industries                       |
|            | New Cyber Security Approaches for ICS/IloT Resilience and Cyber-safety - MIT-(IC)³           |
| 10:00 AM   | Break (Oceans Ballrooms 1-4)                                                                |
| 10:30 AM   | **Track 1**
|            | Process Control and Safety Systems: Separate, Interfaced, or Integrated?                    | **Track 2**
|            | Developing Cyber Security Metrics and Disrupting the Vulnerability Ecosystem - MIT-(IC)³    |
| 12:00 PM   | Forum Ends with Boxed Lunches (Oceans Ballroom Foyer)                                       |
SPONSORED EVENTS

AT&T Solutions Pavilion
Monday – Wednesday, Innovations Showcase

AT&T will be featuring 2 of our strategic partners in our partner pavilion, who help us to bring complete end to end solutions to our customers. They include Red Lion Controls and ThingWorx. Red Lion delivers communication, monitoring, and control solutions for industrial environments. Red Lion’s Automation, Ethernet, and CELLULAR technologies enable real-time data visibility to drive productivity. ThingWorx™ provides the first platform designed to efficiently build and run the applications of today’s connected world. ThingWorx, the centerpiece of PTC’s Internet of Things (IoT) technology portfolio, combines capabilities from Axeda to deliver the world’s first complete IoT Platform, which includes connectivity, device cloud, business logic, big data, analytics, and remote service applications. In addition, we are featuring the Rockwell Automation and AT&T alliance partnership.

ABB

Tuesday Workshop: We Asked Plant Managers – What Keeps You Up at Night
1:15 – 1:45 PM, Oceans 6/8 Ballroom

We will share their answers, collected over the past ten years and highlight items new to the list as well as identify issues that are much less of a concern as markets have changed and technologies have improved. You will find their answers interesting and relevant to your business today and as you plan for the next few years ahead. This workshop will be interactive, including a panel of end users and audience participation. Attend this workshop to be entered to win an I-Pad Mini!

GE

Wednesday Breakfast: Making the Industrial Internet Real
7 – 8:30 AM, Coral A&B Ballroom
Invitation Only

The opportunity to transform your business is now. We’re on the threshold of a new era of innovation with the convergence of brilliant machines and intelligent data, known as the Industrial Internet. And it’s changing the way companies work—creating new possibilities like never before. GE’s proven and innovative, Industrial Internet-enabled solutions can help improve your productivity, efficiency, and performance. It’s time to leverage new ecosystems of connected machines, advanced analytics, and people at work to optimize your business performance, and we’re committed to helping you. We invite you to join us at a special breakfast reception to learn how you can make the Industrial Internet real—to drive smarter, faster, and better operations—enabling transformation for your business.
Siemens invites you to attend a special reception at the American Adventure Pavilion at Epcot for dinner, entertainment, and networking. After dinner and the reception, join us for a private viewing of the award-winning IllumiNations: Reflections of Earth fireworks show at the park’s World Showcase Lagoon. Buses to depart at 6:30 PM from the Oceans Porte Cochere (Oceans Ballrooms Foyer). All Forum attendees and guests are welcome!

Yokogawa’s 100th Year Anniversary

Visit Yokogawa at Booth 9 as we acknowledge the 100-year anniversary of our founding on September 1, 1915. For 100 years, Yokogawa has delivered field-proven operational efficiency, safety, and reliability, while combining superior technology with engineering, system integration, project management and maintenance services.
SESSION DESCRIPTIONS
MONDAY, FEBRUARY 9
OPENING DAY WORKSHOP SESSIONS

9 AM – 12 PM
Cyber Security Workshop I: Automation Federation Cyber Security Seminar
The Automation Federation will conduct a Cyber Security Framework Seminar at the 2015 ARC Forum to educate Forum attendees on the importance of the US Cybersecurity Framework which was launched in February 2014. As a key contributor to the development of the Framework, the Automation Federation organized a series of informational seminars across the US in 2014 to raise awareness around the need to put the Framework’s guidelines into action and improve America’s defenses against industrial cyberattacks.

As the umbrella organization of the International Society of Automation (ISA), the Automation Federation in 2013 worked with cyber security experts at the White House, the US Department of Homeland Security, and the National Institute of Standards and Technology to incorporate ISA’s internationally recognized industrial automation and control systems security standards (IACS) within the US Cybersecurity Framework.

ISA’s cyber security standards — known as ISA/IEC 62443 — are designed to mitigate the effects of cyber damage to industrial plant systems and networks (commonly used in transportation grids, power plants, water treatment facilities, and other vital industrial settings), thereby preventing widespread plant shutdowns, operational and equipment failure, severe economic and environment disruption, and serious risks to the public.

The Automation Federation for this Seminar will assemble representatives from the White House, NIST, and the FBI, along with Subject Matter Experts to discuss the Cybersecurity Framework and the ISA cyber security standards and resources that play a strategic role in the Framework. The Automation Federation will also bring together a panel of area manufacturer CEOs to discuss how they are addressing cyber threats in their companies.

Participants Include:
Michael Marlowe, Automation Federation
Adam Sedgewick, NIST
David Nelson, FBI
Samara Moore, Exelon

12 – 2 PM
Cyber Security Workshop II: For IT, Automation, and Engineering
This Workshop will be conducted by DHS personnel. The goal of the workshop is to update IT and automation senior staff and practitioners on the latest cyber security threats to the US critical infrastructure. This workshop will also cover current cyber security challenges as they apply to control systems and how users can protect against potential attacks. Specific topics include:

- Importance of protecting control systems from cyber-attacks and why they are susceptible
- Understanding the risks and potential consequences of attacks
- Understanding common vulnerabilities in industrial control systems
- Discussion of system exposures to attacks, various attack scenarios, and associated mitigation strategies
- Control Systems Security Program products and services available to asset owners

Participants Include:
Jeff Gray, U.S. Department of Homeland Security

1 – 4 PM
Developing the Future Workforce Leaders in an Evolving Manufacturing World
In a time of imminent demographic shifts, manufacturing organizations must prepare their workforce to keep up with the rapid pace of innovation inspired by wide-sweeping manufacturing paradigms such as the Internet of Things and Industry 4.0. These impending technology and demographic disruptions are set to dramatically affect the workplace of the future. As many members of the “Baby Boomer” generation retire, industrial organizations face the challenge of passing down their knowledge and intuition. Companies must effectively introduce and cultivate new talent to lead the drive towards the rebirth of manufacturing by preparing for the diversification of their talent pool. Organizations can expect changes in the way these new workers solve problems, interact with technology, and approach their careers.

In this session, current and future workforce leaders will share how their organizations surmount challenges related to workforce onboarding and development and where workplace improvements can be made to make manufacturing and automation-related careers more attractive and fulfilling. Following presentations, workshop participants will have the opportunity to ask questions to a multi-user panel. The session will break up into workgroups where participants from owner-operators, technology suppliers, and academic institutions will engage in discussions, which will ultimately develop new networks for both current and future workforce leaders. Potential topics for discussion:

- “Gaps” between workforce expectations and realities
- Proactive strategies to understand the evolving needs of new employees
- Recruitment and retention strategies
- New employee engagement models
- Understanding employee discontentment and ways to address it
- Effective knowledge transfer programs
- Leveraging the potential of social media in HR

**Participants Include:**

* Alyssa Thomas, Dow Chemical
* Tyler Lemke, 3M
* Tim Schultz, Owens Corning
* Patty Sparrell, ExxonMobil (Retired)
* Carrie Schaller, Dow Chemical
* Scott Evans, ARC

1 – 4 PM

**The Roadmap to Sustainable Reliability**

In asset management terms, reliability refers to the probability that an asset will function as intended, over a specified period of time, under a specified set of conditions. As a component of a comprehensive asset performance management strategy, reliability focuses on optimizing asset availability and utilization, but reliability doesn’t just happen. It requires a strategic plan that aligns with corporate objectives and tactical plans involving technical, cultural, and leadership elements.

ARC and Reliabilityweb are joining forces for this open workshop to present a roadmap for not only achieving reliability, but to sustaining it based on a holistic approach that involves everyone in the organization. Topics for discussion include:

- Value and benefits of comprehensive asset performance management programs
- Failure prediction and prevention
- Empowering a reliability workforce
- Developing and implementing best practices
- Meaningful metrics to determine success
- Creating an effective infrastructure to leverage the rich information of individual solutions to improve the effectiveness of each

**Participants Include:**

* Shadrach Stephens, Dow Chemical
* Terrence O’Hanlon, Uptime Magazine
* Paula Hollywood, ARC

1 – 5:30 PM

**Industrial Internet of Things Workshop: Industry Groups Lead the Way**

Join this workshop to hear directly from representatives and members of leading organizations dedicated to advancing the Industrial Internet of Things. Learn about the activities and goals of each organization, positioning with regard to standards, and specific activities such as working groups, test beds and results, reference architectures, and more.

**Industrie 4.0:** Dr. Reinhold Achatz, Head of Corporate Function Technology, Innovation & Sustainability at ThyssenKrupp and member of the Industrie 4.0 Steering Committee, will present two topics:

- Principles, Progress, and Prospects for Industrie 4.0, the "Fourth Industrial Revolution"
- ThyssenKrupp’s journey towards becoming a "Digital Company"

**The Industrial Internet Consortium (IIC):** Dr. Richard Soley, Executive Director of the IIC, and other IIC members will focus on the technologies and security requirements that companies need to enable the Industrial Internet in their organizations, plus use cases and case studies presented by IIC members.

**The Smart Manufacturing Leadership Coalition:** Jim Wetzel, Chairman of the Board of SMLC, and other members of SMLC will discuss strategic approaches being taken, and progress being made, by SMLC towards their vision: unleash a new paradigm of seamless manufacturing execution to drive industrial competitiveness, through an open, real-time manufacturing platform.

**Participants Include:**

* Richard Soley, Industrial Internet Consortium
* Reinhold Achatz, Thyssenkrupp
* Jim Wetzel, General Mills
* Jamie Smith, National Instruments
* Katya Golovchenko, TE Connectivity
* Jean-Philippe Provencher, ThingWorx

2 – 5 PM

**Cyber Security Workshop III: We Have Chosen Our Framework for Industrial Control System Cyber Security, Now What?**

Frameworks in and of themselves do not address the challenge of securing industrial control systems. They merely provide guidance and context for organizing the security program. The purpose of this panel discussion is to present and discuss several approaches for moving from planning to response, with a specific focus on elements that are deemed essential to success. What are the most relevant and authoritative references for specification? What types of metrics are most useful and meaningful? What is the role of changing behaviors in improving security performance?

Speakers will share their experiences and observations with respect to "what works" as well as how best to report on results. This session is designed to include and encourage input from the audience, so please bring your experiences, thoughts, observations, and challenges.

**Participants Include:**

* Eric Cosman, ARC
* William Cotter, 3M
* Keith Stouffer, NIST
* Perry Pederson, Langner Communications
* Ed Crawford, Chevron
* John Wason, ARC
**SESSION DESCRIPTIONS**

**TUESDAY, FEBRUARY 10**

### GENERAL SESSION

8:30 – 10 AM  
**Industry in Transition: Keynote Presentations**

The business environment is increasingly dynamic and volatile. New business models such as Information Driven Enterprises, Industry 4.0, Industrial Internet, and Connected Manufacturing are emerging. In addition to a host of potentially disruptive technologies, companies must also face rapid changes in government regulations, energy and raw materials availability, and fierce global competition. Several industry leaders will share with us how they are leveraging new processes and technologies to transform their manufacturing operations.

**Participants Include:**  
Andy Chatha, ARC  
Peter Holicki, Dow Chemical  
Brigadier General (Retired) Gregory Touhill, U.S. Department of Homeland Security

10:30 AM – 12 PM  
**Industry in Transition: Executive Panel**

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

**Participants Include:**  
Peter Herweck, Siemens  
Takashi Nishijima, Yokogawa Electric (5 minute speech)  
Chet Mroz, Yokogawa Corporation of America (panel)

### TRACK 1

1:15 – 1:45 PM  
**ABB Workshop: We Asked Plant Managers – What Keeps You Up at Night**

ABB will share their answers, collected over the past ten years and highlight items new to the list as well as identify issues that are much less of a concern as markets have changed and technologies have improved. You will find their answers interesting and relevant to your business today and as you plan for the next few years ahead. This workshop will be interactive, including a panel of end users and audience participation. Attend this workshop to be entered to win an I-Pad Mini!

**Participants Include:**  
Rick Dolezal, ABB  
Andrew Soigner, ABB  
Joop Peeters, Styron

2 – 3:30 PM  
**The Automation Challenge Continues**

Last Forum we all were treated to three excellent presentations based on many years of experience of specifying and deploying automation systems. The common message was why so many projects continue to be unnecessarily difficult to implement. Why can’t many of the steps just happen? Automation is an increasingly important requirement for modern industrial production. Many plants and production facilities simply could not operate safely or efficiently without automation. Effective automation involves a combination of technologies, people, and processes. However, until recently, automation has been unnecessarily difficult to implement; creating an extra burden on end users, many who would clearly like to see the technology evolve to the point where – as one user put it – “it just happens”. We’ve developed an entire Forum session devoted to this attainable idea.

This session will feature senior automation professionals who will present their respective visions as to what is needed in their automation to further improve their companies’ competitive position (and make their own lives a lot less stressful). The goal is to create a discussion that transcends this Forum and ultimately leads to even more useful functionality so, “it just happens”.

**Participants Include:**  
Abdullah Khalifah, Saudi Aramco  
Daniel Noles, TVA  
Haresh Malkani, Alcoa  
Ed Hanschke, Solaris Management Consultants  
Ashok Nangia, 3M  
Mike Bell, Nova Chemicals  
Dick Hill, ARC

4 – 5:30 PM  
**Integrated Control and Electrification**

Industry is the number one consumer of power, yet industry as a whole has a remarkably poor grasp on energy efficiency and cost effective maintenance of electrical assets. Many potential cost-saving opportunities related to power and energy consumption are ignored simply because people don’t have the appropriate visibility or control into their electrical infrastructure. In addition to the cost savings on power and energy, the electrical infrastructure can benefit significantly from some of the same technologies and work practices that are being implemented in process automation, such as plant asset management systems and predictive maintenance practices, but this requires real-time, reliable data from electrical assets. New standards such as IEC
61850 provide a digital networking infrastructure for electrical products that will open up significant maintenance cost saving opportunities and can have a huge impact on unplanned downtime.

**Participants Include:**
- Sandy Vasser, ExxonMobil Development
- Alexander Mendoza, Slacol
- Steven Kunsman, IEC 61850 Committee
- Larry O’Brien, ARC

**TRACK 2**

2 – 3:30 PM
**Managing Industrial Cyber Security Risks - Part 1**
Industrial cyber security is a hot topic today. The potential impact of disruptions to the operation of industrial systems have made them prime targets for cyber-warfare and cybercrime. Owners and operators recognize this risk yet many struggle to implement effective cyber security programs. Cyber risks are hard to evaluate, so investment decisions are difficult to justify. Overcoming confusion about the differences between Enterprise and Industrial IT impedes development of appropriate people, process, and technology strategies.

In this session, several leading industrial organizations will discuss their approach to overcoming these obstacles and the strategic decisions they have made to ensure the cyber security of critical assets. This information will be of benefit to every owner-operator in the industrial arena. An open panel discussion will follow the presentations and enable attendees to discuss their concerns and issues with the experts.

**Participants Include:**
- Tyler Williams, Shell Global Solutions
- Noel Tabas, Agrium Redwater
- Kazuhiko Takeoka, Yokogawa Electric
- Eric Knapp, Honeywell Process Solutions
- Greg Carter, Cisco
- Sid Snitkin, ARC

**TRACK 3**

2 – 3:30 PM
**Winning the Battle for Uptime: Creating and Sustaining a Proactive Culture in Asset Lifecycle Management**
Reliable, high performing, capital assets are the lifeblood of businesses in asset intensive industries. Staggering sums are spent each year for projects to upgrade plants for improved operational performance. This session will explore business processes and technologies for improved asset lifecycle management. Those involved in asset management will want to attend this session.

**Participants Include**
- Deborah McNeil, Dow Chemical
- Ray Topping, Fiatech
- Dan Miller, AT&T Business Solutions
- Ralph Rio, ARC

4 – 5:30 PM
**Connected Asset Performance Management - Where Industrial Internet of Things Gets Real - Part 1**
Unplanned downtime is the nemesis of manufacturing. The potential to improve uptime through remote asset monitoring is a primary business value proposition driving justificaion of the Industrial Internet of Things (IIoT). Remote monitoring is not a new development, but IIoT is expected to supercharge the practice. In a world where even the slightest competitive edge can make or break an operation, remote monitoring can offer considerable value by helping to minimize unplanned downtime and improving performance. This session will feature users of remote monitoring equipment and services to increase plant efficiency and reduce unplanned downtime, and operating and maintenance costs.

**Participants Include:**
- Kevin Snowden, Dow Chemical
- Shadrach Stephens, Dow Chemical
- Chuck Micallef, FieldComm Group
- Matt Cicciari, Meridium
- Paula Hollywood, ARC
2 – 3:30 PM

**Industrial Internet of Things: The New Frontier**

The transformation of the industrial sector has begun. New Industrial Internet of Things (IIoT) scenarios are being developed and deployed. Using intelligent, connected production assets (and product offerings), advanced analytics, and execution applications, companies are benefiting from dramatically improved performance, lower operating costs, and increased reliability. However, there’s still a long way to go. Large portions of industry have yet to learn about the new kinds of solutions that are already being implemented. Proofs of concept and test bed projects by new and existing industry organizations are underway. Standards and best practices are only slowly emerging from the innovative stew of technologies, products, services, and ideas that characterize the IIoT today. In spite of this, many thought leaders are forecasting dramatic growth in the number of connected industrial things. This session features users on the leading edge of the IIoT.

*Participants Include:*
- Robert Guarini, PEECO
- Janet Chaffin, Stanley AeroScout Industrial
- Steve Pavlosky, GE Intelligent Platforms
- Randy Amerine, AT&T
- Kevin Davenport, Cisco
- Greg Gorbach, ARC

4 – 5:30 PM

**New Analytics Approaches for the Industrial Internet of Things**

The Industrial Internet of Things (IIoT) demands new approaches to analytics. Traditional approaches to business intelligence and analytics typically introduce a large latency between events occurring and management gaining insight into those events. The large volumes of data and high velocity of data generated by the Industrial Internet of Things will make that approach impractical. This session will:

- Outline the challenges posed by IIoT analytics
- Suggest potential new approaches and technologies
- Present case study examples from industrial corporations

*Participants Include:*
- Adam South, Kennametal
- Hedi Ago, Orlando Utilities Commission
- Scott Abramson, Duke Energy
- William Sobel, System Insights
- Stephen Slade, Oracle
- David Petrucci, Genpact
- David White, ARC

4 – 5:30 PM

**Use Enterprise Recipe Management to Quicken Production and Reduce Costs**

Recipe management is used by many types of operations, beyond just food and beverage processing. However, improper recipe management can be a bottleneck that slows down production and raises costs. For example, when converting the language description in a master recipe to control recipe process control code, version control is not easy. It may reside in many types of databases, and search and conversion functions are not often a simple task. When going from PLM, to MES, to control often means different databases, and even with common models and terminology advocated in ISA 88 and ISA 95, databases may not be compatible and views for specific individuals are often lacking. Database designs may not meet the specific needs and lack many of the wizards to make recipe information both analyzable and modifiable. However, using Enterprise Recipe Management solves many of these issues, such as automated conversion master recipes to control recipes, dynamic recipe updating, providing a common language, common meaning, and common structure (common data representation) with task specific views that are created once and understood by everyone.

In this round table session, end users who have deployed Enterprise Recipe Management solutions will talk about the benefits, such as shortening the time to write a recipe, shortening the time to run testing batches, promoting innovation, shortening the time to market, quickening response to commodity changes and short term trends, and reducing compliance costs. End users will describe financial benefits, such as how reusable recipe segments can provide $3 million savings on recipe writing and $1 million savings on batch testing.

*Participants Include:*
- Sandy Currie, Dow Chemical
- Rik Geerts, Cargill
- Darin Massner, Country Maid
- Marc Banwart, Country Maid
- Dennis Brandl, B&R Consulting
- Sergio Gama, Rockwell Automation
- Craig Resnick, ARC
SESSION DESCRIPTIONS

WEDNESDAY, FEBRUARY 11

GENERAL SESSION

8:30 – 10 AM
Industry in Transition: Keynote and Executive Panel

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

Participants Include:
Stephan Biller, General Electric
Reinhold Achatz, Thyssenkrupp
Thomas Steckenreiter, Bayer Technology Services
Mike Troiano, AT&T Mobile & Business Solutions
Michael Siegel, MIT Sloan School of Management
Andy Chatha, ARC

TRACK 1

10:30 AM – 12 PM
Modern Process Automation Systems Offer More than Just Process Control

While reliable and consistent process control still is the objective of today’s process control systems, the capabilities go far beyond even the systems introduced just a decade ago. Modern businesses are not just satisfied with safe, secure, and reliable process control. True business improvements are required. Owner-operators faced with “greenfield” projects need the increased configurability, flexibility, and reliability and security that today’s system can now provide. In addition to these and other ‘must haves’, systems need to match the way modern industrial businesses work – openly and collaboratively!

At "brownfield" sites, owner-operators face considerable challenges in converting their installed control systems to modern automation systems that provide much more than just a reliable platform for control. Suppliers of these systems have made the conversion easier by incorporating technology and services such as smart configurable I/O; server virtualization; automated field device detection, configuration and commissioning; as well as conversion services for existing systems. Many of these technologies come together to help make it easier to upgrade automation systems.

This session will include speakers with real-world experience in utilizing these capabilities for new sites as well as for upgrades to existing sites to help provide rapid return on their investments. The session will include an open panel discussion with audience participation. The representatives from operating companies in the audience will be able to ask questions and also share their own experiences for the benefit of attendees.

Participants Include:
Don Bartusiak, ExxonMobil Research & Engineering
Mike Miller, Shell
Dick Hill, ARC

2 – 3:30 PM
Best Practices for Developing Organizational Structure for Securing and Managing Automation and IT

Organizations are trending towards a mixture of in-sourced and outsourced resources that are capable of not only supporting automation infrastructure, but also justifying and driving new sources of value within their industry.

This workshop session will focus on how leaders organize internal champions, automation and application engineers, and IT technical resources both inside and outside an organization to secure and manage the ever-changing industrial application and automation architectures.

• What is best in class for organizing?
• How do small to medium sized companies organize to be competitive with larger organizations?
• How can organizational design make a company agile?
• How does risk management and governance play a role in deciding how groups work together?
• What can we learn from other industries that can teach us about best practice?

If you are an owner-operator supplier/OEM, system integrator, or IT champion please be prepared to attend this best practice workshop.

Participants Include:
Mike Williams, Dow Chemical (Retired)
Carrie Schaller, Dow Chemical
Jacob Warren, Braskem Americas
Steve Bitar, ExxonMobil
Peter Reynolds, ARC

4 – 5:30 PM
Maximizing Benefits through Control and Information Convergence

For years, we have been hearing about the convergence of control technologies: process automation meets discrete automation. This has led to the growth of multi-disciplined control platforms, such as PACs, which offer common tag-
ging, objects, and databases; single programming, configuration, and engineering tools; as well as single-platform connectivity to MES and the enterprise world. This increasing demand for tighter integration and more information and analytics, along with the Internet of Things, cloud, and big data, will drive convergence technologies from sensors to production management. Suppliers have delivered solutions and proven that the technology works. This session will explore the value created from the convergence of control and information technologies.

Participants Include:
Lee Richards, Owens Corning
Pete Anderla, Kimberly-Clark
Nina French, Clean Coal Solutions
Allen Ray, Aera Energy
Brian Radmer, AT&T
Kirt Anderson, Stone Technologies
Travis Cox, Inductive Automation
Dan McGrath, Panduit
Craig Resnick, ARC

TRACK 2

10:30 AM – 12 PM
Enterprise Manufacturing Intelligence: Business Results from Manufacturing Intelligence, Analytics and Industrial Internet of Things - Part 1
With today’s emphasis on making manufacturing more “intelligent” to drive more efficient operations, it’s critical to have instant access to actionable, in-context information about the performance of each manufacturing operation. Enterprise Manufacturing Intelligence (EMI), Operational Intelligence, and Manufacturing Intelligence technologies and practices are available to help users tap into the vast amount of data available in the plant and exposing it as intelligent information with analytics, dashboards, and other visualization tools. In addition to process data, this in-context information includes business information, operations data, and key performance indicators (KPIs). The data can be visualized in various formats including mobile devices enabled by cloud computing. Emphasis will be given to the business results gained from the implementation, integration from a variety of sources, deployment, and operational intelligence.

Participants Include:
Graham Whyte, Chevron
Uy Pham, Chevron Energy Technology
Maulik Patel, Dow Chemical
Frank Hurink, Yokogawa
Janice Abel, ARC

2 – 3:30 PM
Enterprise Manufacturing Intelligence: Business Results from Manufacturing Intelligence, Analytics, and Industrial Internet of Things - Part 2
Emphasis will be given to the business results gained from the visualization and dashboards that make the information easy to understand at a glance. For detailed session description, please refer to Part 1.

Participants Include:
Mohammed Batouq, Saudi Aramco
Geoff Wood, Alcoa
Samy Achour, Integration Objects
Lance Fountaine, OSIsoft
Janice Abel, ARC

4 – 5:30 PM
Workforce Improvement through Targeted Training
Much has been written over the last several years about the changing demographics of industry. With the imminent departure from the workforce of many in the "Baby Boomer" generation, a knowledge gap is created. Simply hiring new workers only addresses the headcount issue. Even the most qualified new employees from the "Millennial" generation will need to have specific or targeted training to ensure that they are qualified to engineer, operate, and maintain today’s sophisticated systems that keep industrial facilities operating at safe and efficient levels.

This session will discuss how companies have approached the targeted training needs to address shortages in experience and retain talent.

Participants Include:
Jeremy Patches, Alliance Coal
Stephen Huffman, Mead O’Brien
Dan McGrath, Panduit
Andy Mason, Cargill
Mark Sen Gupta, ARC

TRACK 3

10:30 AM – 12 PM
Plant Design Lifecycle: The Information Continuum from CAPEX to OPEX
Today’s advanced plant design tools allow EPCs to design and manage the entire design/build process. Designers are able to use concurrent engineering methods enabled by technologies like laser scanning point cloud models that provide real-time validation of the construction process. Moreover, owner-operators are now able to participate in early stages of the design process to provide specific requirements for engineering information needed at the handover. Enabling and maintaining the flow of information across the entire design/build/operate/maintain lifecycle is critical to keeping CAPEX and OPEX connected. This session will examine and present customer accounts of the use and benefits of these next-generation engineering design tools.
and the plant design lifecycle information systems that support them.

**Participants Include:**
- Erin Delorme, Apache
- David Lafferty, Scientific Technical Services
- Bill Muldoon, AVEVA
- Dick Slansky, ARC

**2 – 3:30 PM**
**Connected Asset Performance Management - Where Industrial Internet of Things Gets Real - Part 2**

Unplanned downtime is the nemesis of manufacturing. The potential to improve uptime through remote asset monitoring is a primary business value proposition driving justification of the Industrial Internet of Things (IIoT). Remote monitoring is not a new development, but IIoT is expected to supercharge the practice. In a world where even the slightest competitive edge can make or break an operation, remote monitoring can offer considerable value by helping to minimize unplanned downtime and improving performance. This session will feature users of remote monitoring equipment and services to increase plant efficiency and reduce unplanned downtime, and operating and maintenance costs.

**Participants Include:**
- Stacie Sourasinth, Loram Maintenance of Way
- Keith Berriman, Agrium
- Colin Beaney, IFS
- Mike Durand, Bentley Systems
- Paula Hollywood, ARC

**4 - 5:30 PM**
**Operator Training Simulators, Immersive Training Simulators, Augmented Reality, and Gaming**

In today’s business environment, companies are pushing their plants to the limits, while at the same time both processes and control systems are becoming increasingly more complex. Staffed largely with aging work forces, with many experienced workers getting ready to retire, companies need to ensure that they can continue to operate their plants in a safe, reliable, and profitable manner. Training approaches that incorporate operator training simulation systems (OTS), immersive training simulators (ITS), gaming, 2D, 3D visualization, immersive augmented reality, avatars, and other methods are being used to train the new tech savvy generation of workers and retrain experienced workers. OTS, ITS, augmented reality, and gaming represents one of the best methods for training operators, field personnel, engineers, and plant managers. Human factors engineering is one of the best ways to evaluate and understand how people work best. Immersive technologies and human centered design will shape the future of engineering and user tools. Operator and immersive training simulators will be emphasized.

This session will include presentations and workshops that illustrate technologies, tools, and methodologies being used to evaluate and design for human factors, to train and develop today’s workers, and to understand how to improve people performance. ARC will provide all attendees of this session with a copy of an ARC Strategy Report on Operator Training Simulators that was based on a recent survey.

**Participants Include:**
- Richard Turton, West Virginia University
- Joseph McMullen, Schneider Electric
- Janice Abel, ARC

**TRACK 4**

**10:30 AM – 12 PM**
**Industrial Internet of Things Bears Fruit with Connected Services for Plant Assets and Fleet Migration**

The Industrial Internet of Things (IoT) has become a strategic enabler for enterprises. While plant floor and business systems are continuing to meld, the opportunity to transform manufacturing operations by changing the deployment of technology is apparent.

This new wave of Industrial IoT technology fueled by cloud services is allowing manufacturing and process plants to better manage plant assets, improve safety, maintain costs, and improve operational uptime. IoT enables the creation of new business and asset service models and liberates the information that has traditionally not been available to experts outside the walls of the plant or factory. Operations and maintenance especially will benefit from a larger support network of staff, experts, and OEMs.

First mover organizations benefiting from IoT have realized that traditional plant architectures do not easily scale to support the flow of information across company boundaries and even international borders, and common internet and wireless technologies can provide the security and reliability for their business. These services are easily expandable across multiple plants and facilities.

ARC will present the opening context and dynamics, followed by three 20-minute presentations from companies successfully transforming their technology landscape. Session presenters will then participate in an interactive 30-minute panel discussion.

**Participants Include**
- Jim Wetzel, General Mills
- Frank Berry, Air Products & Chemicals
- Maryanne Steidinger, Schneider Electric Software
- Rick Dolezal, ABB
- Peter Reynolds, ARC

**2 – 3:30 PM**
**Connecting Far-Flung Sites and Devices**

The Industrial Internet of Things will use networks that extend beyond factories and plants to field assets in all types...
of locations, many of them very remote. In fact, very remote locations often are the prime candidates for connectivity because of the higher cost of traditional service models. How can asset owner-operators use networks to support existing and new services for remote assets? Presenters at this session will show some recent examples.

**Participants Include:**
Dominique Wille, Lafarge  
Keith Dicharry, BASF  
Travis Cox, Inductive Automation  
Harry Forbes, ARC

4 – 5:30 PM  
**Internet of Things in the Supply Chain**
Dow Chemical is one of the most advanced users of IoT technologies in the world. This session will begin with Jeff Tazelaar - Dow’s Global Leader for RFID, AutoID, GPS, and Telemetry – speaking about Dow’s journey in IoT. Following Jeff’s speech, James Fairweather, VP of Architecture at Pitney Bowes will talk about some of the interesting supply chain IoT applications at Pitney Bowes. Following these presentations, the audience will have the opportunity to ask questions of the speakers.

**Participants Include:**
Jeffrey Tazelaar, Dow Chemical  
James Fairweather, Pitney Bowes  
Steve Banker, ARC

**Track 5**

10:30 AM – 12 PM  
**Managing Industrial Cyber Security Risks - Part 2**
Industrial cyber security is a hot topic today. The potential impact of disruptions to the operation of industrial systems have made them prime targets for cyber-warfare and cyber-crime. Owners and operators recognize this risk yet many struggle to implement effective cyber security programs. Cyber risks are hard to evaluate, so investment decisions are difficult to justify. Overcoming confusion about the differences between Enterprise and Industrial IT impedes development of appropriate people, process, and technology strategies.

In this session, several leading industrial organizations will discuss their approach to overcoming these obstacles and the strategic decisions they have made to ensure the cyber security of critical assets. This information will be of benefit to every owner-operator in the industrial arena. An open panel discussion will follow the presentations and enable attendees to discuss their concerns and issues with the experts.

**Participants Include:**
James Goosby, Southern Company  
Ibrahim Hamad, Dolphin Energy  
Khalid Al-Khori, Dolphin Energy  
Michael Coden, NextNine  
Eddie Habibi, PAS  
Eric Cosman, ARC  
Sid Snitkin, ARC

2 – 3:30 PM  
**MTConnect for Internet of Things**
The adoption of MTConnect as a standard protocol for machine tool information connectivity has gained tremendous momentum over the last 5 years. The MTConnect protocol has lowered the cost for integration with information management systems used in manufacturing operations. Manufacturers that have deployed MTConnect in their operations are reaping tremendous operational improvements. This session will present several case studies of manufacturers who have deployed MTConnect in their operations to improve operational efficiencies. A panel discussion will follow.

**Participants Include:**
Brian Sides, Okuma America  
Rocky Rowland, Mazak  
Jeff Rizzie, Sandvik Coromant  
Sal Spada, ARC

4 – 5:30 PM  
**Machines as a Service Enabler**
Machine builders are altering their business models to identify alternative revenue streams while also providing their customers improved reliability of equipment. Machine builders are leveraging the architecture of the Industrial IoT to implement service programs that provide customers with predictive maintenance programs that improve the uptime of machinery. Machine builders will be selected to present in this session in order to describe the value proposition from their customer’s perspective as well as the business opportunity to their business. A panel discussion will follow presentations.

**Participants Include:**
Andrew Kling, Schneider Electric  
Mark Ruberg, Pro Mach  
Mat Robyr, Bobst North America  
Robert Bates, Mentor Graphics  
Spencer Cramer, ei3  
Sal Spada, ARC
SESSION DESCRIPTIONS

THURSDAY, FEBRUARY 12

**TRACK 1**

8:30 – 10 AM  
**Efficient Automation Execution Brings Effectiveness in Operations**  
Proper Automation Execution is essential to safe, efficient, and effective operations. In this session, speakers will present methodologies and practices used as well as standards and technologies that create effective automation.

The presentations will showcase how new methodologies/technologies can be leveraged to achieve breakthrough results. They will also present how the benefits are realized from initial facility startup through the operation lifecycle.

*Participants Include:*  
Yahya Nazer, Dow Chemical  
Cliff Pedersen, Pedersen Enterprises (Retired)  
Mark Sen Gupta, ARC

10:30 AM – 12 PM  
**Process Control and Safety Systems: Separate, Interfaced, or Integrated?**  
There is much confusion in the marketplace today regarding the integration of basic process control systems (BPCS) and safety instrumented systems (SIS). Various levels of integration and interface capability exist between BPCS and safety systems today, from the traditional standalone approach to interfaced systems and integrated systems where the BPCS and safety system can share common networks, operator interface, and engineering tools. Come find out which approach is right for you by learning from end users!

The various advantages and challenges of each approach will be discussed in this session. We will also discuss the impact of international safety system standards such as ISA84, IEC 61508, and IEC 61511 as they relate to standalone, interfaced, and integrated approaches. End users of control and safety systems will present their experiences, followed by a panel discussion with an opportunity for Q&A and discussion.

*Participants Include:*  
Joop Peeters, Styron  
Craig Wheatley, St. Paul Refining  
Jan DeBreet, Yokogawa  
Luis Duran, ABB  
Chris Stogner, Schneider Electric  
Larry O’Brien, ARC

**TRACK 2**

8:30 – 10 AM  
**Leveraging Smart Field Systems to Create Value in 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. Smart devices are also being deployed to ensure physical plant infrastructure security in the faces of increasing domestic and international terrorist threats to the power plants, chemical and petrochemical plants, among others.

On the smart device side, the available technology goes beyond the basic measurements of pressure, temperature, flow, and level, to include video, acoustic, multi-variable transmitters, 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.

*Participants Include:*  
David Lafferty, Scientific Technical Services  
Kenneth Shackleford, SkyCop  
Sally Fernandez, Safety Dynamics  
Tim Shea, ARC

**TRACK 3**

8:30 – 10 AM  
**New Cyber Security Approaches for ICS/IoT Resilience and Cyber-safety - MIT-(IC)³**  
This session will be hosted by the MIT Interdisciplinary Consortium for Improving Critical Infrastructure Cybersecurity (IC³). It will include presentations by MIT researchers followed by a panel discussion.

- Advancing Cyber Security Using System Dynamics Simulation Modeling for System Resilience, Patching, and Software Development
• Cyber Safety: A Systems Thinking and Systems Theory Approach to Managing Cyber Security Applied to TJX Case and Stuxnet

Participants Include:
Michael Siegel, MIT Sloan School of Management
Ibrahim Hamad, Dolphin Energy

10:30 AM – 12 PM
Developing Cyber Security Metrics and Disrupting the Vulnerability Ecosystem - MIT-(IC)³
This session will be hosted by the MIT Interdisciplinary Consortium for Improving Critical Infrastructure Cybersecurity (IC)³. It will include presentations by MIT researchers followed by a panel discussion.

• Advancing Cyber Security Using System Dynamics Simulation Modeling for Analyzing and Disrupting Cybercrime Ecosystem and Vulnerability Markets
• MIT House of Security: Techniques to Quantify Metrics and Other Cultural Aspects of Cyber Security

Participants Include:
Michael Siegel, MIT Sloan School of Management
Michael Coden, NextNine
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Janice Abel
Principal Analyst
Janice performs research and provides consulting services for clients in process and discrete industries. She focuses on collaborative production management, manufacturing execution systems, enterprise manufacturing intelligence, operator training simulators, process engineering technologies, anti-counterfeiting and brand protection, supply chain integrity, and simulation training. She has over 25 years of experience in industrial automation, regulatory requirements, enterprise control, performance improvements and operational excellence.

Allen Avery
Senior Analyst
Allen is a member of the Automation Research team at ARC and is responsible for research and analysis of process measurement technologies (flow, level, pressure, and temperature), wireless field devices, energy management, process control, and plant asset management.

Steve Banker
Service Director, Supply Chain Management
Steve heads up the supply chain research area at ARC. Recent research has focused on the ROI of transportation and warehouse management systems, omni-channel logistics, and supply chain analytics. Steve is also a co-writer of Logistics Viewpoints.

Alex Chatha
Analyst
Alex is a member of the process automation study team. His areas of research include water & wastewater automation, water management for oilfields, SCADA, and level measurement technologies including radar and ultrasonic.

Andy Chatha
President
Andy is a recognized authority on business strategies and is a frequent speaker at executive conferences around the world. He has over 35 years experience in enterprise and automation solutions with Westinghouse, Foxboro, and ARC. Andy founded ARC through which his vision and influence has advanced the art of manufacturing.

David Clayton
Research Director
Dave focuses on automation technologies at ARC, specifically Distributed Control Systems (DCS), process safety systems, and final control elements, including control valves, actuators, and positioners. He has more than 20 years experience in manufacturing with Foxboro and ARC.

Eric Cosman
Contributing Consultant
Eric has over 35 years of experience in the development, delivery, management, and support of operations information technology solutions in the process industries. During his career his assignments and responsibilities have included process automation systems development, communications network design, functional and technical architecture design, and technology lifecycle management. He recently retired as an Operations IT Consulting Engineer with Dow Chemical.

Valentijn de Leeuw
Vice President
Valentijn’s responsibilities include research and consulting in the process industries, with a focus on clients in Europe, the Middle East, and Africa. He has extensive experience in best management practices in process industries and also includes knowledge of unit processes, simulation, and modeling, and business practices utilizing application software designed for manufacturing operations.

Steve DePaola
VP, North America Supplier Sales
Steve is a member of ARC’s business development team for North American suppliers and is focused on automation, enterprise, energy, and IoT solutions; manufacturing operations management; cyber security; and sustainability. He has over 25 years experience in business management and industrial automation.

Scott Evans
Analyst
Scott’s focus areas include additive manufacturing/3D printing, 3D laser scanning, machine vision, and autonomous mobile robotics. He is also a member of ARC’s Internet of Things team. Prior to ARC, Scott interned for Senator Scott Brown and worked for two summers at the Schuster Institute for Investigative Journalism where he conducted research on pending legislation and its impact on supply chain operations.

Harry Forbes
Senior Analyst
Harry leads ARC’s coverage of the electric power vertical industry, and also leads ARC research on industrial networking and network/communication standards. His research topics include the Smart Grid,
fieldbus technologies, industrial wireless, wireless sensor networks, industrial Ethernet, and emerging network technologies. He has over 25 years of experience in process automation, electric power generation, industrial energy management, process modeling and simulation, advanced control, and multi-variable optimization.

**Greg Gorbach**  
**Vice President, Information Driven Manufacturing**  
Greg spearheads ARC’s transformative technologies for industry initiatives, including Industrial Internet of Things, Analytics and Big Data, Cloud Computing, and Mobility. He is an acknowledged industry leader in Operations Management and MES, and is also knowledgeable about ERP and PLM software, especially in their interplay with plant systems. He provides clients in a number of manufacturing vertical markets, including medical device, aerospace, automotive, high-tech, life sciences, chemicals, and CPG with strategic advice in transforming manufacturing operations.

**Uwe Grundmann**  
**GM European Operations**  
Uwe is responsible for managing ARC’s operations in Germany and Europe. He has over 25 years experience in the manufacturing industry with deep knowledge in automation and enterprise applications. He established the ARC Advisory Group in Europe.

**Conrad Hanf**  
**Director, Manufacturing & Supply Chain Services**  
Conrad manages hybrid industries, including food, beverage, CPG, and semiconductors, along with supply chain and logistics software vendors with emphasis on integration of enterprise applications with manufacturing systems. He also works with financial firms assisting with industrial automation, manufacturing systems, and supply chain and logistics technology companies. He has over 15 years experience in manufacturing, operations, product development, and marketing with Schlumberger/Fairchild, National Semiconductor, Harris Corporation, and NEC Electronics.

**Dick Hill**  
**VP & GM, Industry Advisory Services**  
Dick is responsible for managing ARC’s Industry Advisory Services Group. Dick’s focus areas include manufacturing industries strategies and best practices, real-time performance management, operational excellence solutions, and advanced software and systems technologies such as APC, optimization, and DCS. His industry experience includes oil refining, chemicals, and other process industries. He has over 30 years experience with BP Oil, Foxboro, Walsh Automation, and ARC.

**Paula Hollywood**  
**Senior Analyst**  
Paula’s responsibilities include asset performance management with a focus on reliability and plant asset management. Other areas of coverage include field devices (flow, level, and pressure), process analytical chemistry, intelligent pumping systems, and laboratory information management systems. She has over 30 years experience in marketing and sales of industrial field instruments.

**Bill Krah**  
**Director, Strategic Services**  
Bill is a member of ARC’s business development team for North American and global accounts including IIoT, analytics, networking, automation solutions/technology providers, OEMs, and end user client relationships with ARC. His past 25+ years of industry experience include Eaton Corporation and Westinghouse Electric.

**John Kuenzler**  
**Director, Strategic Services**  
John is responsible for ARC’s process automation supplier clients, system integrators, and industry organizations. He has over 30 years of industrial automation system design and sales & marketing management experience with Invensys Foxboro, ICONICS, USDATA, the Turnbull Control Systems division of Eurotherm, and EMC Controls.

**David Lavieri**  
**Analyst**  
David’s area of focus is manufacturing technologies in the discrete automation domain. He is responsible for primary research of various discrete markets such as Computerized Numerical Control (CNC). Prior to joining the company he was an Investment Banking Analyst with Capstone Partners, an investment banking firm in Boston specializing in the mid-size business market.

**Bob Mann**  
**Director, Strategic Services**  
Bob is a member of the Business Development Team, focusing on North American end user clients. Bob has over 30 years of experience in product design and manufacturing systems, including positions in sales, project management, and product design and engineering with Omega Optical, BCT Technology, and EDS/Unigraphics Solutions (now Siemens PLM).

**Paul Miller**  
**Senior Editor/Content Director**  
Paul has been a “student of the industry” for almost a quarter of a century, closely following the evolution from yesterday’s proprietary, purpose-
built control systems to today’s more open and interoperable automation systems. His experience in the industrial automation industry includes many years with Foxboro and Invensys, a year as a contributing editor with Putman Media, and more recently, as ARC’s senior editor and Advisory Services content director.

Larry O’Brien  
Vice President, Process Automation
Larry has over 20 years of experience in process automation ranging from instrumentation and field networks to distributed control systems, safety systems, and engineering services. Prior to joining ARC in 2014, he was Global Marketing Manager for the Fieldbus Foundation for four years. Previously, Larry was Research Director for Process Automation at ARC from 1993 – 2011 where he covered process fieldbus, distributed control systems, process safety, the automation services business, and intelligent field instruments.

Chantal Polsonetti  
Vice President
Chantal’s current activities include working with the ARC teams covering the Industrial Internet of Things (IoT) and industrial networks. She also administers the ARC “Industrial Internet of Things” group on LinkedIn. Chantal’s focus areas encompass the Industrial Internet of Things, including connected device management platforms, industrial Ethernet switches and devices, wireless networks, device networks, and intelligent train control systems. She has been an industry analyst covering manufacturing automation since 1987.

Craig Resnick  
Vice President of Consulting
Craig’s focus areas include production management, HMI, I/O, industrial PCs, PLCs, OEE, PACs, PC-based control, and embedded systems. His industry expertise includes packaging, plastics, and rubber. Craig’s primary experience is in the areas of sales, marketing, product development, and project management in the industrial market, gained at major suppliers of PLCs, process control systems, power transmission equipment, and field devices.

Peter Reynolds  
Director of Consulting
Peter leads ARC’s end user consulting business at ARC and researches the advanced process control, optimization, and simulation markets. He brings more than 25 years of professional experience in process control, advanced automation applications, and information technology in the downstream oil refining industry. Prior to ARC, he served as the Manager of Automation and IT at Irving Oil which operates Canada’s largest refinery, eight petroleum terminals, and over 800 retail locations in Canada and the US.

Ralph Rio  
Research Director
Ralph’s focus areas include asset lifecycle management, enterprise asset management, field service management, and global service providers. He has 40 years of experience with manufacturing in marketing, product management, and manufacturing engineering including General Electric, Emerson Electric, Digital Equipment, Motorola, and Texas Instruments.

Mark Sen Gupta  
Senior Consultant
Mark leads ARC’s coverage of process automation and automation supplier services, and also covers topics in process safety and SCADA. He has over 24 years of expertise in process control, SCADA, and IT applications with Mobay Corporation, Honeywell, Plant Automation Services, CygNet Software, and Invensys. His experience includes the refining, chemical, specialty chemical, pulp & paper, and oil & gas processes industries.

Himanshu Shah  
Senior Analyst
Himanshu has 25+ years of direct experience in motion control equipment for machinery automation. He is part of the automation team focusing on AC drives, general motion control, PLC, wind turbine control systems, and automation systems expenditures for discrete industries.

Tim Shea  
Senior Analyst
Tim’s focus areas include operational activities in support of the digital oilfield including multiphase flow metering, oilfield operations management systems, artificial lift optimization, leak detection systems, drilling optimization, and general field devices. Prior to ARC, he was a Senior Analyst with VDC Research Group where he covered industrial automation technology markets and in the oil & gas industry at Iroquois Gas Transmission Systems and PanEnergy (now Duke Energy Field Services).

Inderpreet Shoker  
Analyst
Inderpreet is a member of the field device research team at ARC. Her focus area include field systems (flow, pressure, temperature, gas detection, emission monitoring). She is also a part of the asset performance management team focusing on plant level asset management technologies and services. Prior to joining ARC, she worked as a management consultant at MLKJ Business Empowerment Center, a non-profit organization.
Dick Slansky  
Senior Analyst  
Dick’s responsibilities include PLM, ALM, digital manufacturing, plant and infrastructure design tools, and collaborative production management systems. He has over 35 years of experience in manufacturing engineering, CAD/CAM, controls systems integration, embedded systems, software development, and technical project management with Boeing and ARC.

Sid Snitkin  
VP & GM, Enterprise Advisory Services  
Sid has over 30 years of experience in automation and enterprise applications including ERP, supply chain, and service and asset management. Sid’s research areas at ARC have included supply chain planning, asset lifecycle management, industrial analytics, and industrial cyber security.

Sal Spada  
Research Director  
Sal leads ARC’s discrete industry team. His expertise includes real-time, object-oriented software design and development applied to motion control systems. He has over 20 years experience with Schneider Automation, Boston Digital, EG&G, Intermetrics, and RCA Astro Electronics.

Paul Steinitz  
Director Strategic Services  
Paul is a member of the Business Development Team, focusing on end user clients. He has over 35 years of experience in the automation industry, including positions in sales, marketing, and product management. He has been directly involved in the application of process control systems in the power (nuclear and fossil), chemical, oil & gas, petrochemical, pharmaceutical, and other industries.

John Wason  
Vice President, Global Client Management  
John is responsible for managing ARC’s process industries business globally. He has over 35 years of experience in the manufacturing automation industry with Pfizer, Foxboro, Intec Controls, and Nematron. He also manages ARC’s Mergers and Acquisitions practice.

David White  
Senior Analyst  
David uses his 20 years’ experience from many industries to research and advise on the art and science of getting the right information, to the right people, at the right time. At ARC, his research coverage includes business intelligence, analytics, big data, and the Industrial Internet of Things.

Kaoru Yanagimoto  
Director, Strategic Services  
Yanagimoto-san is a member of the ARC Japan Team and has over 30 years experience in the process industries. He previously spent 30 years with Tonen Oil Refinery where his responsibilities included design improvement and project expansion of refinery plants, automation control application design and operation, and information system business development projects. His experience also includes System Plaza, a spin-off from Tonen for the information business, Yokogawa Electric, and OSIsoft.
UPCOMING FORUMS

ARC Industry Forum Europe 2015
March 4-5, 2015
Amsterdam, Netherlands

ARC Industry Forum India 2015
July 9-10, 2015
Bangalore, India

ARC Industry Forum Japan 2015
July 14, 2015
Tokyo, Japan

ARC Industry Forum China 2015
November 4, 2015
Shanghai, China

ARC Industry Forum USA 2016
February 8-11, 2016
Orlando, Florida