What excites you about the digital transformation in the coming 12 months? We asked a collection of thought leaders to share their perspectives.
Take a look...

At the start of each new year we look forward to new technologies, new trends and new tools that will bolster the efficiency of our lives and our businesses. This year, as the world more fully embraces the digital transformation, new technologies are launched each day, those technologies are rapidly adapted into tools, and trends develop around them, which reward individuals savvy enough to take action.

Below, find a collection of some of these pioneers of the digital transformation…thought-leaders from a spectrum of fields who share with us their thoughts on what most excites them in 2017.

Take a look…

The normalization of machine learning

"I see 2017 as the year in which the esoteric concept of machine learning is formally adopted into traditional industrial workflows. For decades, many vendors have deployed their own versions of the classic PID control equation; others have even implemented autotune features to varying degrees of success. Advanced control applications required the development of adaptive control for fighter jets, and control simulators in academic labs have developed model-predictive control algorithms. All of these approaches require intensive configuration to function properly. The broad suite of machine learning algorithms (e.g. neural networks, genetic algorithms, and Bayesian classifiers) present transformative potential in process control, machine design and manufacturing applications. Open-source toolkits are reaching an unprecedented level of maturity. Like the adage *It takes a village to raise a child*, the success of a machine-learning algorithm is highly dependent upon training. The open-source community has the most eyeballs scrutinizing these packages to maximize security and robustness. Google's TensorFlow and Python's Scikit-learn are leapfrogging vendor-specific attempts in this sector. Watch for companies to get excited about proof-of-concept exercises using these new tools. Then look for them to waste no time rolling them out to the production floor. The IoT is a stepping stone in gaining access to data. Machine learning will actually leverage that data into improving the bottom line."

Andy Young, Process Control Manager—Pioneer Energy

Small wins, larger visions

"Were going to see a clearer vision and a stronger commitment to pursue digital transformation, with a goal to rapidly develop and implement smart-manufacturing solutions throughout businesses, from automation to information to intelligence. What excites me most in the coming year is the growing energy to accelerate this transformation through compelling use-cases across enterprises, leveraging the right talent, the right technologies and the right infrastructure. Small wins, with an eye toward the larger vision—this will create an unstoppable momentum that will propel us into the Fourth Industrial age. That's exciting!"

Haresh G. Malkani, Senior Manager: Manufacturing Intelligence & Automation Technologies—Arconic Technology Center

Smarter machines=less downtime

"The shift from reactively servicing equipment only after a break to remotely monitoring and proactively maintaining equipment (enabled by IIoT) is gaining momentum. That will continue in 2017. But before IoT investments go fully mainstream, we are also going to see a rise in CIOs making strategic and surgical buys in machine learning and analytics to get smarter with the data they already have. Harnessing the existing data that service organizations already have can give managers and executives critical visibility into ways to achieve productivity gains like they couldn't before. And while seemingly incremental, these gains add up; when done at scale across entire industries, billions of dollars will be realized. This doesn't necessarily require putting a sensor on every single piece of equipment in the field. It requires getting a handle on existing data spread across various enterprise systems, and training smart analytical tools on it to start realizing value today. Eventually, sophisticated IoT-enabled assets will create a network of insight that will lead to even more massive productivity gains and insight. A medical-device company, for instance, could program a CAT-scan machine to automatically trigger a work order for service when a part begins vibrating past a certain threshold, but long before it has to be taken out of service. As we gain a better understanding of these machines over time, we'll be able to not only react to outages but predict when and how they'll occur and in doing so, deliver more reliability and uptime to customers as well as improve productivity in their service workforce. With productivity improving, it's worth noting that some executives will likely see this as an opportunity to cut costs and reduce service workforce—after all, if machines are collecting data and making decisions for us, what do service providers have left to do? I predict, though, that this move toward IIoT and greater productivity will allow us to better utilize the talents and skills of service professionals, not only to grow the business by driving new streams of customer value (and revenue), but also to diversify businesses by expanding into other areas. These workers will be empowered with information to be able to service more customers and equipment, of course, but also focus on data analysis, predicting outages, and ultimately delivering better performance of the assets. And better performance means happier customers."

Athani Krishna, Founder—ServiceMax

The rise of IT task forces

"Information technology has always been a shunned step-child in manufacturing's day-to-day operations. As the buzz of the Internet of Things starts ringing in decision-makers' ears (carrying promises of increased business intelligence enabling decisions to be made with greater confidence), IT will finally become integral and welcomed through the product lifecycle. Education, dedication and persistence will be required from all aspects of the business to form new multi-talented teams (task forces) that will have the ability and influence to overcome some of the biggest challenges in American manufacturing culture."

Chris Misztur, Software Architect and IIoT Evangelist—MacLean-Fogg Component Solutions

Listening to the solution-providers

"There is no turning back on distributed generation, storage, and distributed-control systems optimizing and managing the grid in real time. The savings from more granular grid-management is enormous. I am optimistic that the landscape will become greener, local power and storage will be more empowered, and the systems to manage this landscape will continue to evolve. The OpenFMB framework for grid-edge-device interoperability will be implemented more and more. Distributed Autonomous Functions (DAFs) will become more trusted, as more prevalent. Likewise in 2017, grid-edge-device security and security management will take a step forward, with prototypes and position papers describing how to practically fulfill this tremendous need. The current gap in IoT/IIoT device security is a big problem. Many big-name companies step up their game and listen to utility SME's to find right-fit solutions. Finally, edge-analytics and behavior-analysis will be key in optimization, asset-health management and security."

David Lawrence, Technology Development Manager: Emerging Technology—Duke Energy

Quantum leap in efficiency

"One of the things that is most exciting about digital transformation is the quantum leap that will be made in manufacturing and management efficiency. However, no one company can make this happen alone. With a shared-competency approach, IoT users can acquire, analyze, display and process plant information from across the enterprise within minutes, leading to massive performance improvements. I am excited to see a greater awareness of the need to

take a collaborative approach by forming partnerships and co-operations with key solutions providers in the Internet of Things."
Craig Lentzkow, IIoT Business Development Manager—Hilscher North America, Inc.

Accelerated adoption of automation

"2017 will continue to be filled with hype and expectation around the Internet of Things, expectations that will be missed if the measures of success are simply revenue and endpoints and the volume of new connected consumer widgets. Real progress in 2017 will be made in three areas: IT/OT convergence, distributed IoT architectures, and in-workforce transformation. After years of talk about the convergence of IT and OT, we will begin to see significant traction in 2017. The combined forces of machine learning, coupled with the embrace of standards like OPC UA, will make cloud connectivity possible and ultimately necessary to maintain competitive advantage. The result will be real systems of intelligence where factory-floor operations are optimized with insights from cloud-based analytics, resulting in greater efficiency and reduced waste. These systems of intelligence will predict failures, dispatch technicians and provide feedback into product design to prevent similar failures. The data flow from existing sensors to the cloud is already stressing current IoT architecture; in 2017, new distributed IoT architectures (i.e. fog computing, algorithm-as-a-service) will enable distributed resources from the edge to the cloud. These approaches will enable intelligence to move nearer the edge to filter and process data, drive actions in near real time, and leverage public cloud assets as a powerful control backplane. Finally, the "Fourth Industrial Revolution" is continuing to march on. Evidence can be seen in the recent political shifts in the United States and Europe toward increased protectionism. I predict that in 2017 this shift will accelerate the adoption of automation technologies in the same way that the great recession of a few years ago drove the substitution of labor for automation. The result will be greater productivity, but also a profound transformation of the workforce."

Matt Vasey, Director: Internet of Things—Microsoft

The end of the distraction tour

"2017 will be the year when the distraction tour ends…when attention returns from the myriad shiny objects that have been announced recently (cloud platforms, big data, drones, machine learning, autonomous vehicles, raspberry PI, whatever) to enabling front-line employees to deliver improved production and business outcomes. Certainly, the recent waves of technology

and innovation can play a role in enabling that insight. But all the innovations can't make an impact on outcomes without three basic elements: data, tools, and someone who knows how to use the tools to find what they need in the data. These are the base layer of access, ability and incentive. So, in 2017 there will be a return of attention to enabling and accelerating the efforts of the skilled employees who are best situated to impact outcomes...engineers, analysts, the front-line experts. Help them succeed and the organization's results will certainly follow."
Michael Risse, Vice President / Chief Marketing Officer—Seeq Corporation

East-west security
"We are excited about the growing capabilities in the field of software-defined data centers providing micro-segmentation, which enables you to segment the network into isolated logical segments and utilize next-generation firewalls to provide an additional security layer between those segments. This is known as east-west security…something impractical to accomplish prior to the introduction of micro-segmentation."
Edward Rodden, Chief Information Officer—SugarCreek

Rethinking cybersecurity
"2017 will be marked by an industry-wide shift in mindset regarding cybersecurity and the Industrial Internet of Things. Cybersecurity concerns will no longer be viewed as a binary non-starter to greater connectivity. Instead, cybersecurity will be viewed as yet another risk to be managed through investment in increasingly capable defense, detection and responsive measures. Executive leadership of all types of enterprises are waking up to the importance of cybersecurity investments, motivated by recent high-profile breaches as well as a new wave of financially punitive regulations. Gartner, for example, predicts that overall cybersecurity investments will top a record $80 billion in 2016. Industrial organizations' investments in cybersecurity, together with demonstrated benefits of increased connectivity, will open the door to increased investment in IIoT applications."
Keith Larson, Vice President of Content—Smart Industry

Targeting the business outcome of transformation

"As more enterprises—customer or supplier side—discover IIoT and the connected services they enable, discoveries will abound. This will not only be on the nuts-and-bolts technology side…keen attention will need to be placed on the business-process side of the equation. You see, until an enterprise adopts IIoT to any degree past a laboratory environment, they will be unable to comprehend the road in front of them. Upon adoption they will need to address the fundamental changes this technology enables in their supplier/customer relationship. Although many have written on the transformation—from make/sell/ship to an XaaS pricing model—to me this is nothing more than a change in pricing. The deeper topic here is getting more aligned with the desired business outcomes; this will redefine the way business units function (sales, marketing, support, delivery, product development, R&D, etc.). In being more closely aligned with outcomes, the challenge becomes transforming business units to a new level of intimacy with customers."

Jeff Smith , Managing Partner—eviot

Automating the drilling process

"My focus has been to redefine how we perform drilling by replacing the operator as the process with machine learning. I believe in the next 12 months we will see more drilling processes performed autonomously, enabling the human to be process management instead of the process. Analytics will move from the cloud closer to the control layer, because more context will be available in real time. We will enjoy safer environments, as the autonomous system (a more optimized environment) will be able to observe more data points and make faster decisions. And predictive maintenance will become a reality, because the machines will now have context around their operations."

Mark Carrier, CEO—Carrier Labs

Data-collection, digital standards & increased clarity

"The coming year looks like it will be one of the most critical years U.S. manufacturing has faced in a while. Besides the usual concerns of running a business (hiring and retaining engaged and productive personnel, launching innovative products, managing risk effectively), accelerating technologies will continue to stymie and stimulate. Being able to wield technology for a greater advantage will likely remain a key concern. Throughout 2017, however, more companies will turn to advanced technologies in hopes of gaining an edge. There will be an increasing commitment to data -collection, coupled with an increased investment in subtle technology infrastructure. We'll finally have proactive and engaging conversations regarding the adoption

of future-forward digital standards, protocol and hardware advancements, but we won't be talking about new machines themselves so much as the ways to make the machines we're already using more efficient. Manufacturing's muddy areas—procurement, pricing, etc.—will finally gain some clarity, enabling manufacturers to focus on design and delivery. Lastly, we should see an uptick in worker training so companies have the highly skilled and diverse workforce they need to stay alive in the 21st century."
Drura Parrish, CEO/Founder—MakeTime