

Connecting to the Industrial Internet of Things

A Proactive Approach for Enabling Intelligent Manufacturing Solutions

For the first time in its brief and storied history, the Internet now has more machines and inanimate objects talking to each other than people. Cisco, the world's largest provider of Internet equipment, estimates there are now 10 billion devices and data-gathering sensors connected online – with that number expected to soar to 50 billion over the next six years.¹

Proving itself far more valuable than a forum for sharing selfies and cat videos, the Internet of Things (IoT) is considered the fourth evolution of the Internet (the first three major developments being the introduction of email and websites, e-commerce platforms and then the combination of social media, video sharing and the cloud). The much hyped IoT describes the use of web-enabled sensors embedded in physical objects to gather, track and analyze data in the cloud—and then act on that information.

“Manufacturers are set to invest up to \$70 billion in the Industrial Internet of Things (IIoT) by 2020, reports John Greenough of Business Insider. However, actual investments could easily exceed these expectations. The development and deployment of autonomous vehicles, machine-to-machine communication abilities and preventative maintenance could all team up to result in even greater savings in 2016, which will further increase investments for the Industrial Internet of Things.”² For manufacturers, the ability to remotely operate and gather data from their manufacturing machinery, communicate this information through the cloud and achieve improvements in their operations through analysis of this data is transforming the way they do business.

As a supplier of manufacturing equipment, you've probably been told that the IoT is rapidly expanding.

By now, you've heard that “big data analytics” can help take your products to the next level and that automation and robotics are becoming the norm. But how do any of these aspects of Intelligent Manufacturing impact what's happening on the factory floor?

The Move to Automation & Connectivity

The vast majority of industrial equipment today is still standalone and manually operated. “Since 2012, the overwhelming majority of manufacturers (63 percent) have either already implemented or are planning to implement IIoT technologies soon, according to Forrester and Zebra Consulting.”³

The potential benefits of deploying the Industrial Internet of Things (IIoT) are significant for manufacturers. A connected and automated factory can decrease downtime, increase output and quality all while reducing labor costs. But these benefits also extend to the suppliers of capital equipment used in manufacturing who can be the enablers of the IIoT. Consider the following:

- Introducing equipment data tracking, remote equipment service and predictive failure analysis can improve product reliability and minimize downtime.
- Acting on this wealth of information in real time can boost customer return on investment (ROI) through productivity and quality gains.
- Automating the operation of equipment can result in lower customer labor costs and increased manufacturing throughput.
- Leveraging the knowledge gained from 24/7 connectivity can ultimately increase long-term market share through product performance improvements.

By remotely tracking data, capital equipment suppliers can offer more value to customers by always knowing

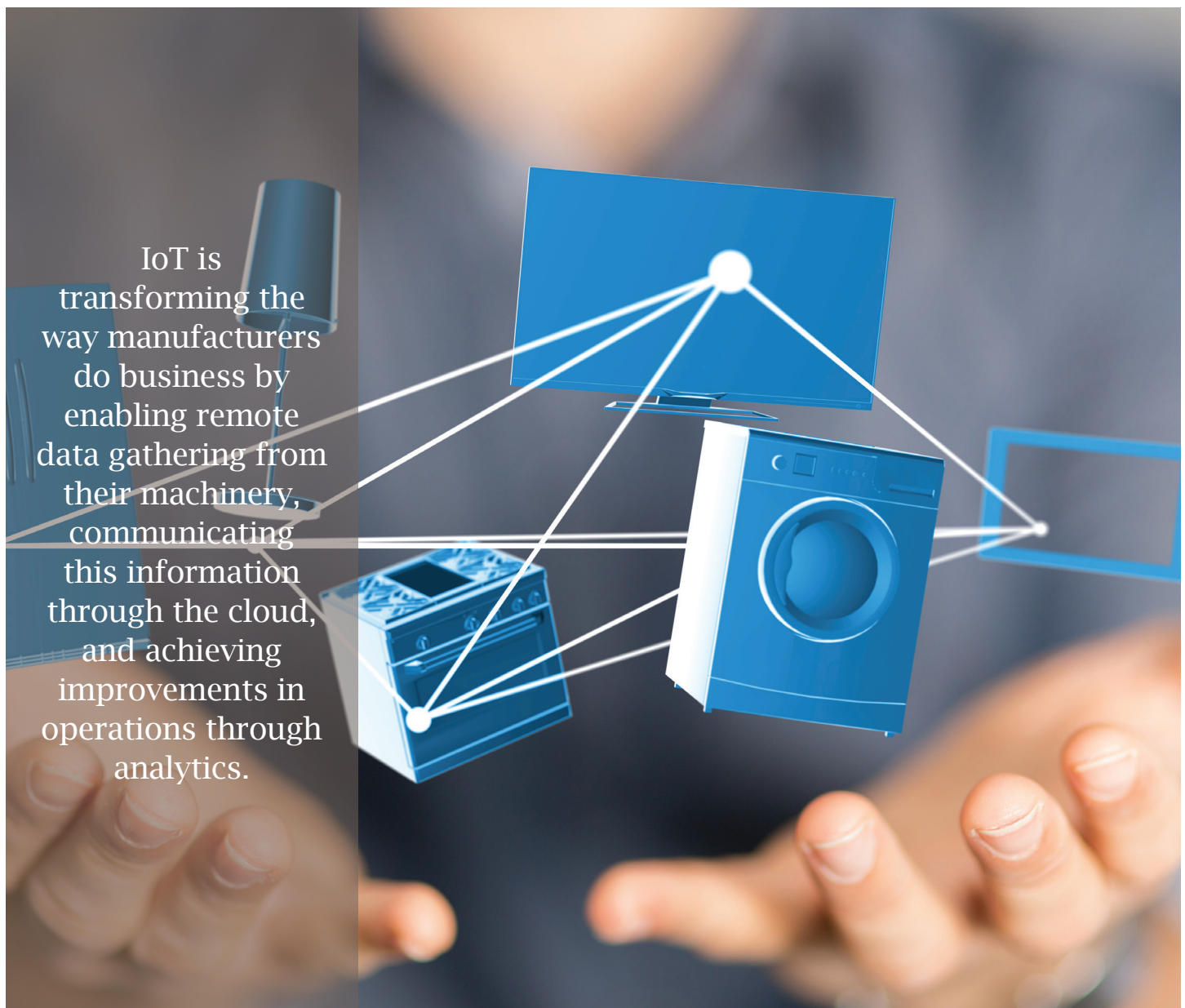
INSIGHTS into THE INDUSTRIAL INTERNET OF THINGS

what's happening and why—and being able to diagnose and fix problems over the Internet instead of the more time-consuming and costly approach of sending a repair person. Suppliers also can use this data to improve their next-generation machines. With this increased efficiency, the customer may need fewer machines and will perceive your brand as a better investment.

These benefits aren't hypothetical. The first generation of "smart factories" is experiencing them now. Recently, Intel reported that connecting their assembly and testing equipment for semiconductor chips to the cloud resulted in a 2X improvement of their mean time between failures (MTBF) ⁴ metric – the statistical benchmark for a hardware product's reliability.

In Amberg, Germany, Siemens' 100,000-plus square-foot factory makes automated industrial equipment for manufacturing giants such as BASF, Bayer, Daimler and BMW. The facility is now 75 percent automated with machinery able to retrieve and assemble components with little human supervision.

As more multinational companies migrate their manufacturing plants from China to the United States, pursuing more automated production lines to offset high labor costs is becoming the norm. "The South China Morning Post claims that Foxconn, Apple's long-time manufacturing partner, has replaced over half of its workforce with robots." ⁵



Deer in the Headlights

Capital equipment suppliers realize their world is dramatically changing and know that their customers are—or soon will be—demanding full connectivity and automation for many types of machines on the manufacturing floor. They see that their customers' needs are evolving, yet it is not so easy to shift gears. For starters, there are no universal connectivity standards for the manufacturing floor. Nearly two dozen competing software platforms assert they are the best Intelligent Manufacturing solution. Complicating matters is that legacy equipment with long lifespans employs a multitude of different connectivity protocols.

Faced with this chaotic situation, many suppliers of industrial equipment are frozen in their tracks as they ponder two unsatisfactory options:

1. Wait for a potential customer to specify their preferred automated interface as part of the purchase requirements. This requires a large engineering effort with a tight delivery timetable that would result in a one-off solution for that particular customer.
2. Pre-emptively pick a solution to standardize on and develop an interface to the IIoT based on that solution. This approach ignores the odds that your customers may choose a different software standard or platform, putting you back to square one: creating another one-off solution.

Adopt a Proactive Approach

There is a third option that capital equipment suppliers may not have considered. Suppliers can develop their own interface that is independent of the connectivity standards being used by potential customers. Some suggested elements:

- Aggregate the equipment control and data collection into a separate layer of the system architecture creating an “abstraction layer.” This will enable the

equipment to adapt to any communication solution/platform that a customer may deploy.

- Include a data and control port in the interface that can remotely collect data and provide remote diagnostics.
- Include an application programming interface (API) so that third-party integrators can buy your equipment and integrate it into automated work cells.

Offering up your API flips the current process on its head. It empowers you to stop guessing what your customers will choose for a platform and gives them your interface specs instead. The customer can then bring in a systems integrator to make the two systems compatible. At bare minimum, this approach gives suppliers a huge head start in creating connectivity rather than be held hostage to working with multiple systems at the whim of your customer.

Summary

The promise and potential benefits of the Industrial Internet of Things are real and accessible to all. The biggest obstacle for many equipment suppliers is likely insufficient experience and expertise on how to leverage the IIoT in new systems—and also a lack of expertise on how to retrofit legacy equipment for connectivity. Leveraging the right technology and product development partner can help you proactively prepare to meet your customers' most urgent needs and anticipate what they'll want tomorrow.

Competition in the capital equipment markets is intense and getting a jump in IIoT connectivity is critical to keeping and increasing your market share. More machines than ever before are talking on the factory floor. As the growing demand for more intelligent systems dramatically expands the Industrial Internet of Things, you can't afford to be left out of the conversation.

Have questions about the Industrial Internet of Things?

CONTACT ALTRAN

Sources:

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