

What's **NEXT** in Manufacturing

THE FUTURE OF MAKING THINGS

EXECUTIVE BITE

INTERNET OF THINGS

The future of making things is here, and it is exciting. For manufacturing executives, the Internet of Things (IoT) adds a new dimension of possibility and potential.

While much of the media attention around the IoT has focused on consumer products such as connected household devices and personal fitness bands, the potential for business and industrial usage is far greater. Senior manufacturing leaders need to understand the opportunities to create and expand value, and also the challenges to successful implementation of the IoT in their businesses.

WHAT IS IoT?

Simply put, IoT is the interconnectivity of physical devices (including products and machinery) using embedded software, sensors, actuators and communications that enable these devices to collect and exchange data.

WHAT DOES IoT MEAN FOR MANUFACTURERS?

In manufacturing, IoT enables businesses to improve both the top and bottom lines. Topline growth can be generated through product-as-a-service, aftermarket offerings and harvesting performance data to make better products. Bottom line savings can be achieved with smart production operations that use less labor and materials.

It is estimated that investment by manufacturers in IoT was \$29 billion in 2015, and is estimated to increase to \$70 billion in 2020*.

*Source: Business Insider "Internet of Things in Manufacturing" Report, 2016

APPLICATIONS OF IoT IN MANUFACTURING

With rapidly reducing costs to implement IoT solutions it is easier than ever before to link disparate assets together to create self-managing operations for improved field and internal operations.



Heavy Equipment



Production Monitoring



Power Systems



Agriculture



Spare Parts Logistics



Clean Energy



Flow Control



Fluid Tank Monitoring



Resource Metering



Supply Chain Tracking & Telematics



Industrial Machinery



Container Tracking



Processing

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BENEFITS OF IoT FOR MANUFACTURERS

Manufacturers are well aware that when customers' products and internal assets are down, money is lost every hour. Smart, connected businesses keep things running 24/7/365 to assure uptime, with less labor and material spending. The key benefits of IoT:

→ NEW SOURCES OF REVENUE

Industrial equipment and consumer products have moved beyond a one-off transaction. For many complex products, customers are interested in total cost of ownership. And they are willing to pay for better products and advanced services that make their lives simpler and deliver greater value.

→ PRODUCT INSIGHT

Connected products can capture and send data about how they are used. This provides invaluable information such as how frequently various features are used, as well as opportunities for upsell or replacement. This information can be fed back into product designs to improve offerings and shorten development cycles.

→ IMPROVED PRODUCTION EFFICIENCY

The machines that make your products are an integral part of your market success. IoT can be used to implement predictive maintenance in your production operations to avoid downtime and improve first-time fix rates. It can also be used to monitor and streamline raw materials costs, spare parts and machine consumables. The result is higher productivity, often with less labor.

CHALLENGES FOR MANUFACTURERS IN IMPLEMENTING IoT

→ VALUE IDENTIFICATION

If you've never previously seen data from your products and machines, it's likely that your teams aren't sure exactly how and why things operate the way they do. Modern IoT analytics can identify patterns and anomalies that would take humans years to sift through, analyze and identify. And rapid, no-coding application development techniques facilitate the testing of business ideas and minimize investment to prototype.

→ STANDARDS AND INTEROPERABILITY

Over several decades, many protocols and technologies have emerged as the "language" of how machines and computers "speak" with each other. It's now possible to link up disparate hardware and software with recent innovations – from machine, to cloud, to your enterprise systems to create high speed sense-and-respond operations.

→ SECURITY

Cybersecurity is already top of mind for most business leaders. The IoT multiplies the potential for system breaches with millions more embedded sensors and communication devices. In response, multiple levels of protection from device to network to application have arisen to minimize IoT cybersecurity risks.

→ COMPLEX IMPLEMENTATION

The distributed nature of IoT and the wide disparity between the many connected devices and machines leads to potentially complex deployment. It requires a lot of coding, and multiple languages, protocols and standards to connect to ensure successful implementation.

IoT IN ACTION



California Tomato Machinery helped their customers reduce total cost of ownership of machinery and ensure maximum asset uptime

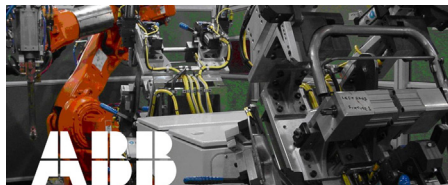


ABB delivered advanced services and faster parts replacement, as well as valuable intelligence about when products need to be replaced



Trident Network implemented a templated IoT system that allowed them to create a connected product on day one of operations, and to launch to market 10 to 20 times faster than may have otherwise been possible.

Learn more about how the **Internet of Things** can help you lead your business into the future of making things. Visit www.autodesk.com/engineeringleadership