The IT Innovator's Guide to

Digital Transformation in Manufacturing

2018

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Introduction

Manufacturing has always been a process-driven industry, with continuous improvements to help companies work more efficiently and reduce costs. From the first Industrial Revolution in the 1700s to today, change has been a constant in the manufacturing space.

Technology has played a large part in manufacturing's drive toward greater efficiencies, but the focus has for the most part been on working faster and more cheaply. Whether it was an automatic pattern cutter for the garment industry, a robotic arm to help assemble automobiles or a high-powered press pumping out the next day's newspapers, machines were—and still are—the center of much of manufacturing's success in achieving speed to market while keeping the price of creating goods down.

The digital transformation efforts of other industries are proving their worth as

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more organizations reap the benefits of technologies such as big data and analytics, machine learning and artificial intelligence, cloud services, IoT and more to help uncover new opportunities and take their business well beyond its traditional boundaries. Manufacturing traditionally has been slow to embrace digital transformation, but that has changed: Eighty-seven percent of manufacturing companies taking part in a recent IDG survey have adopted or have plans to adopt a digital-first business strategy.[1]

For an industry that has always focused on increasing efficiencies, embracing digital transformation would seem like a given. However, manufacturers traditionally have been hesitant to invest in their operations due to the high cost. But newer technologies such as IoT devices—and the accompanying data they bring to the business— are pushing companies to make investments in the technology necessary for digital transformation. More than half (65 percent) of companies surveyed plan to increase their capital spending over the next few years.[2]

Now, as organizations embark on their digital transformation 2.0 journeys, the manufacturing space is poised to take great advantage of a data-driven business model to gain insight to streamline processes, improve product quality and increase customer satisfaction.

87%

87 percent of manufacturing companies* have adopted or have plans to **adopt a digital-first business strategy**[1]

*Taking part in a recent IDG survey

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Data Drives Manufacturing

Manufacturers have always relied on processes that rely on technology to operate at peak efficiency. Under that operating model, the focus has been on the creation of the end product. The data that was created during the process—such as workers' average speed in completing tasks during the production process to the changes in temperature on the factory floor and even the number of times per month (and at what time of day) systems failed—was simply discarded.

The advent of big data and analytics and their ability to provide intelligence for better business outcomes has changed the way manufacturers—and, indeed companies in every industry—view their perceptions of data. Everything from environmental conditions on the factory floor to weather reports outside are now considered valuable data, under the premise that anything that can impact the process or production of the end product is worth analyzing.
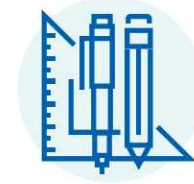
As a result, all facets of a manufacturing organization, from research and development to human resources and even facilities

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management, are using data to help them make better-informed decisions that ultimately impact the organization's bottom line. For example, automotive companies can tap into data around consumer buying trends, oil market activities and even the conditions of state and national highways to design vehicles that address market demands, while planning for future needs. Or a pharmaceutical company could cull data around national and regional health trends, speed in producing new medications and health insurance statistics to develop and appropriately price and market treatments for certain ailments or conditions.

Given the insights and opportunities data can unlock throughout all aspects of the manufacturing cycle, it's no wonder companies of all sizes, from startups to large, established enterprises, have embraced big data and analytics. In fact, big data/analytics is perceived by 70 percent of IT executives taking part in an IDG survey as a contributor to revenue growth.[3]

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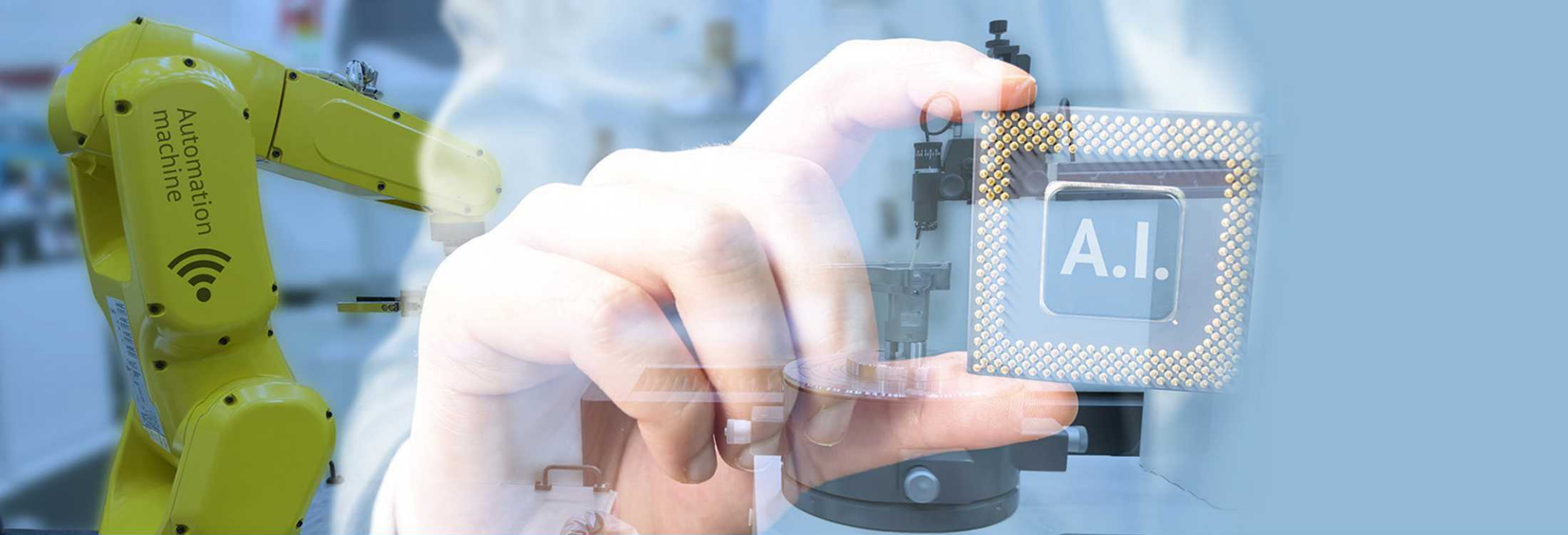
Artificial Intelligence Aiding Manufacturing Processes

Just as big data and analytics have become integral tools for manufacturing companies in improving their business stance, artificial intelligence is making its mark in all areas of manufacturing to improve business processes, assist employees in doing their jobs more efficiently and increase overall end user satisfaction. Speed to market is a major driver in the use of artificial intelligence, as artificial intelligence has the power to provide value beyond simply automating tasks.

For example, manufacturing firms could use bots to help communicate with and expedite service to their customers, answering questions and providing information instantly without human interaction. Likewise, bots could be used all along the supply chain, keeping the lines of communication open and flowing between the manufacturer and its suppliers, its sales organizations and other entities in the manufacturing process.

> ARTIFICIAL INTELLIGENCE AIDING MANUFACTURING PROCESSES

Artificial intelligence combined with tools such as sensors and RFID tags can help provide insight to manufacturers where there may be inefficiencies in their production processes. In addition, manufacturers can shift to a more proactive maintenance stance for their equipment, as the insights provided by artificial intelligence can help them better predict when certain systems are close to breaking down.

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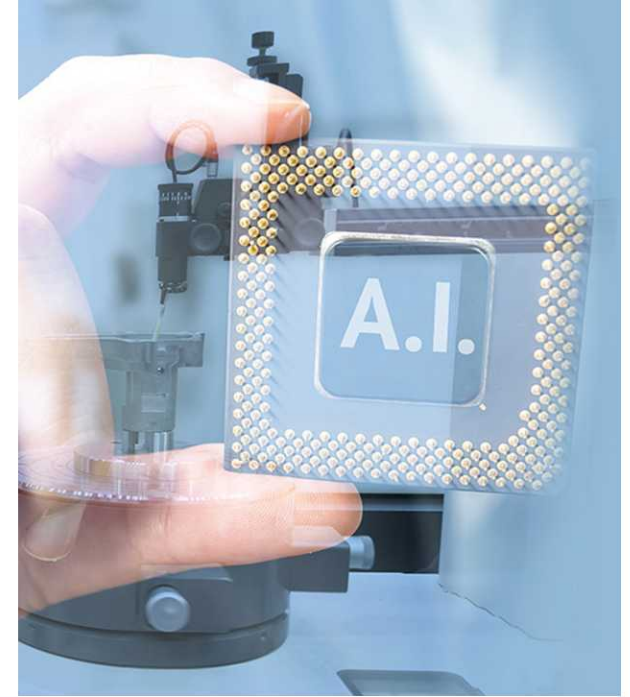
IoT: Driving Manufacturing Today and Beyond

The power of IoT in the manufacturing space is almost immeasurable. Connected devices can help streamline and simplify various processes in the development cycle, from alerting procurement specialists when inventory of certain components runs low to warning developers and quality control engineers that certain components are consistently failing safety tests.

Along the supply chain, devices connected between and among manufacturers, suppliers and dealers can keep all parties informed about any issues related to product or component availability, procurement and quality, in an effort to reduce waste and cost while improving

overall value to the market.

In the field, connected devices can be managed remotely via the internet for regular maintenance or to diagnose and treat issues impacting their performance. Sensors monitoring air quality control around an oil field, for example, can be managed through a

web-based interface from one central location to determine factors that might impact oil production, such as high winds, extreme precipitation or fumes that could indicate a leak in the oil pipeline.

As the number of use cases grow for IoT in all industries, so, too, are the numbers of IoT devices—connected industry is the second largest segment of IoT projects currently underway,[4] with the industrial IoT (IIoT) market predicted to reach $123 billion in 2021.[5]

Building the Infrastructure for Digital Transformation

Digital transformation in manufacturing requires an infrastructure that is capable of supporting multiple technologies both on-premises and in the cloud and can manage the data transport that many technologies today require.

As organizations strive to move beyond the first wave of their digital transformation—moving "beyond fast,"—they need an environment that supports their digital transformation 2.0 from every point on the network. Hybrid cloud and network environments, SD-WAN and high-speed broadband are just some of the technologies that can enable companies to better manage their business applications across all locations, while networking components such as WiFi and unified communications can ensure systems and employees can work together seamlessly and collaboratively.

❯ BUILDING THE INFRASTRUCTURE FOR DIGITAL TRANSFORMATION

To help organizations as they move farther in their digital transformation journey, managed services can be a bridge to tie disparate systems together and "fill in the gaps" as companies update their current infrastructure and after networks have been upgraded.

Working with a network service provider can help ease the burden associated with building and maintaining a network capable of handling the all aspects of digital transformation 2.0. By working with a network services provider, organizations can leverage virtual and physical private Ethernet connectivity to assure there are no issues regarding network performance and availability for critical applications at all company locations. They also can receive all or some of their most critical connectivity functions as a managed service, including managed connectivity, WiFi, security, voice and business continuity, among others.

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2 Steven Brand, "The Drive Toward Digital Transformation in Manufacturing," CMTC Manufacturing Blog, June 19, 2018 https://www.cmtc.com/blog/the-drive-toward-digital-transformation-in-manufacturing

3 "2018 State of Digital Business Transformation," research report, IDG http://resources.idg.com/download/white-paper/2018-digital-business

4 Padraig Scully, "The Top 10 IoT Segments in 2018 – based on 1,600 real IoT projects," IoT Analytics, Feb. 22, 2018 https://iot-analytics.com/top-10-iot-segments-2018-real-iot-projects/

5 The Industrial Internet of Things (IIoT): the business guide to Industrial IoT," research paper, I-Scoop https://www.i-scoop.eu/internet-of-things-guide/industrial-internet-things-iiot-saving-costs-innovation/

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