

Next Gen Technologies Enabling Connected Manufacturing

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KEY TAKEAWAYS

- Digital transformation helps manufacturers better serve their customers.
- Manufacturers are interested in digital transformation, but most aren't ready for it just yet.
- Dell Technologies OEM & IoT Solutions helps industrial manufacturers solve five major challenges.
- Noodle.ai has partnered with Dell to provide full-stack Enterprise AI solutions.

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OVERVIEW

Industrial manufacturers are beginning to recognize how digital transformation is likely to disrupt the industry, especially as the information gathered from integrated machines and devices on the factory floor enables businesses with the right technologies to act quickly and efficiently to prevent and solve problems at customer sites.

Manufacturers have been slow to adopt next-generation technologies, with many companies just piloting some of the advanced technologies that are necessary for digital transformation. While some of this movement has been intentionally slow in order to understand how best the technologies and processes fit into the business—and what needs to change within the organization to support these new concepts—many manufacturers also face common challenges in the design and implementation of new systems.

Companies like Dell Technologies OEM & IoT Solutions and Noodle.ai offer solutions that can help manufacturers begin to make their digital transformations even more quickly.

CONTEXT

Harry Forbes discussed how digital transformation will help manufacturers better serve their customers. Greg Moore and Spencer Doyle discussed how Dell Technologies OEM & IoT Solutions and Noodle.ai can help manufacturers digitally transform their businesses.

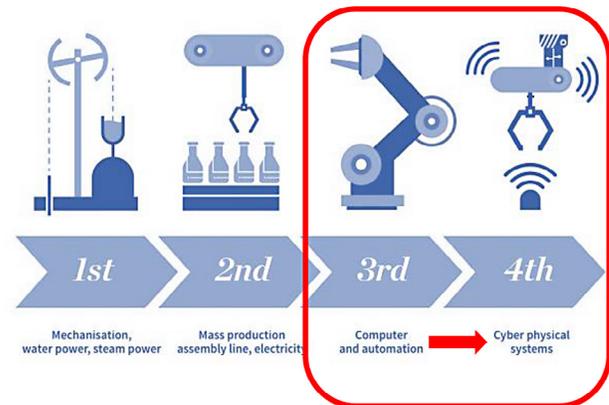
KEY TAKEAWAYS

Digital transformation helps manufacturers better serve their customers.

Considered the fourth industrial revolution—Industry 4.0—digital transformation augments the people within a business and their knowledge with the expanded use of sensors, data, analytics, and artificial intelligence (AI). Manufacturing operations, products, aftermarket

services, and value chains are all improved through digital transformation.

Digital Transformation is the 4th Industrial Revolution



As part of digital transformation, products and components provided by manufacturers are becoming more intelligent, collecting information and sharing data back to the manufacturer. This enables the manufacturer to identify and solve problems before they occur, improving support to the customer and potentially decreasing costly downtime.

Manufacturers are interested in digital transformation, but most aren't ready for it just yet.

In a survey of 157 industrial manufacturers, the ARC Advisory Group found that only 5% believed they were fully ready for digital transformation. Most businesses see the need for the transformation, and 85% of those in the study were actively piloting advanced technologies in preparation for digital transformation.

Manufacturers are really not ready. But they're working on it . . . because they see a case for change and a potential for disruption of their existing business.

Harry Forbes

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Comprehensive planning and management is necessary for digital transformation to be successful. Beyond understanding and testing out the technologies used within digital transformation, businesses also need to understand how changes will impact the whole organization. They need management support and direction of the programs, as well as a clear understanding of desired results, allowing them to properly set priorities within their digital transformation projects.

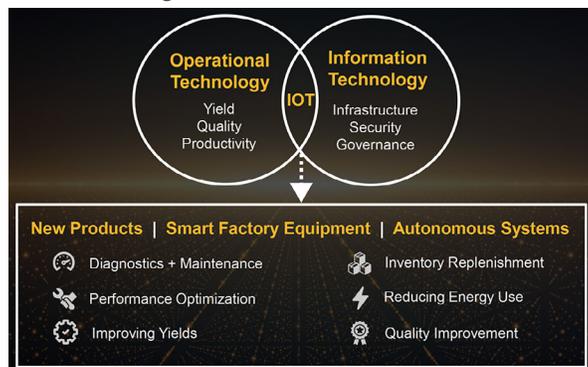
Key Elements of Digital Transformation



Dell Technologies OEM & IoT Solutions helps industrial manufacturers solve five major challenges.

The convergence of information technology (IT) and operational technology (OT) is the cornerstone of Industry 4.0. New products, smart factory equipment, and autonomous systems are using this convergence to provide real-time information that helps businesses improve yields and quality along with optimizing performance.

IT & OT Convergence



We've seen huge growth in the movement of IT from the traditional data center environment right out of the world of OT, right down to the production line, to the edge.

Greg Moore

As IT and OT converge, businesses are running into significant challenges that create issues when rolling out digital transformation across the organization.

Dell Technologies OEM & IoT Solutions helps solve five of the most common, major challenges that industrial manufacturers see.

Dell Technologies OEM & IoT Helps Solve Common Industry 4.0 Challenges

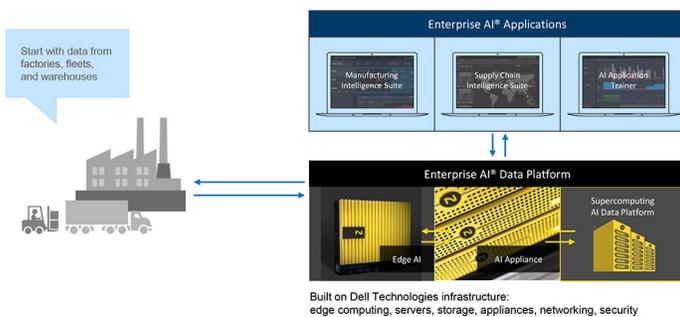
Challenge	How Dell Technologies OEM & IoT Helps
Difficult-to-find technology talent	Dell Technologies team of engineers and program managers are ready to help you jointly develop solutions to meet your unique requirements. Save development time and stay focused on your IP.
Rough, rugged environments	We have a broad portfolio of products and solutions designed for tough industrial environments so that you could deploy a new class of IoT and edge computing applications. Testing for high performance in high-stakes environments is a Dell Technologies' engineering hallmark and includes temperature, humidity, corrosion, vibration and shock testing, among others.
Product longevity and stability	Our products are built with stability and longevity in mind to make customer transitions easy and less disruptive.
Security threats	Security is designed into our products and built into our supply chain. We can help you protect data, critical infrastructure and operations.
Global agility	Dell Technologies' global presence helps customers expand their reach around the world without requiring costly global facilities. Dell Technologies also helps solution builders customize products for individual markets and navigate regulatory complexities with pre-certified products.

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Noodle.ai has partnered with Dell to provide full-stack Enterprise AI solutions.

Noodle.ai's vision is to create a world without waste. The company is doing that by injecting AI into the supply chain and manufacturing process. Noodle.ai recently launched a new industrial Enterprise AI platform entirely built on a Dell Technologies infrastructure.

Full-stack Enterprise AI Solutions from Noodle.ai



The full-stack Enterprise AI solution has already made a difference at partner company Big River Steel, a \$1 billion steel mill serving the energy and transportation industries. By using Noodle.ai's Production Scheduling Intelligence product to predict product and volume demand and lead times, and to optimize inbound and outbound transportation capacities and utilization, Big River Steel saw significant annual savings through improved efficiencies.

The data platform is built to support applications across the end-to-end supply chain and manufacturing process. Noodle.ai currently offers eight applications, available in the Manufacturing AI Suite and Supply Chain AI Suite, but also supports businesses building their own solutions to integrate with the platform.

Noodle.ai Applications for a Learning Enterprise

Manufacturing AI Suite	Supply Chain AI Suite
<ul style="list-style-type: none"> – Production Flow AI increases profit per hour via demand sensing and optimization of product mix and sequencing – Energy Consumption AI reduces energy consumption through electricity prediction and shaping – Asset Health AI increases revenue and throughput via improved failure diagnosis, prediction, and prevention – Product Quality AI increases revenue and margins via higher yield driven by quality forensics, prediction, and control 	<ul style="list-style-type: none"> – Demand Signal AI improves forecast accuracy by sensing and predicting demand risks and opportunities – Fleet Health AI optimizes fleet uptime through equipment failure and downtime risk predictions – Fill Rate AI maximizes margins by balancing predicted inventory, production, and material with demand – Warehouse Labor AI optimizes labor utilization through smoothing and scheduling

We believe you have to move fast. While we're designing and researching applications . . . we encourage our customers to design alongside us.

Spencer Doyle

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BIOGRAPHIES

Spencer Doyle

Vice President, Industrial Platform, Noodle.ai

Spencer is a life-long client services practitioner. His guiding metric for success in business is his client's own success. A student of data and analytics for his entire career, Spencer spent fifteen years at MicroStrategy playing an active role in every directorate in the organization. Spencer developed a keen sense of how organizations use data to empower executives to make informed business decisions. He parlayed his skills to develop, consult, and sell analytic software and services to clients across the Fortune 2000, becoming a multi-year top global performer and client development leader. Before joining Noodle.ai, Spencer worked as the Director of Sales for Platfora, a big-data software analytics company headquartered in Silicon Valley.

Spencer graduated from Dartmouth College and trained extensively with the Royal Shakespeare Company in London before starting his career in technology. When he's not out-and-about with clients, friends, or family you'll find him playing golf anywhere he can find a course and time to play.

Harry Forbes

Research Director, ARC Advisory Group

Harry Forbes is a Research Director with ARC Advisory Group based in Boston. Harry leads ARC's coverage of DCS and industrial networks. He contributes to ARC coverage of process automation and the Industrial Internet of Things (IIoT). Harry is also an expert in the electric power vertical industry. Harry has over 30 years of experience in process automation, electric power generation, energy management, modeling and simulation, advanced control, and optimization. He has written for many industry and trade magazines, as well as for many technical and industry conferences.

Prior to joining ARC Advisory Group Harry served in a variety of marketing, sales and engineering posts for Simsci-Esscor, Invensys, and Foxboro. He also worked as a performance and automation engineer in fossil and nuclear power generation at the Detroit Edison Company. Harry is a graduate of Tufts University with a BS in electrical engineering and has an MBA from the Ross School of Business at the University of Michigan.

Greg Moore

OEM Enterprise Technologist, Dell Technologies OEM & IoT Solutions

Greg Moore is the "OEM Enterprise Technologist" for the Dell Technologies OEM & IoT Solutions organization in the EMEA Region. The Dell EMC OEM team is a Global Engineering & Sales organization, setup to enable customers to integrate the extensive portfolio of Dell Technologies, into the Operational Platforms and Solutions they develop. OEM also provides services for global logistics, global support, product customisation & trade compliance, product rebranding and a specialised rugged portfolio.

Greg supports verticals such as Industrial Automation, Marine, IoT, Space, Surveillance, Transport, Health & Life Sciences and Energy, therefore offering the Defense Industry with insights and trends from across many markets. He has been in the IT industry for over 30 years, lives in Dublin Ireland.