

WHITE PAPER

The Journey to Industry 4.0:

The Smart Manufacturing Roadmap



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CONTENTS

[Executive Summary](#)[Make the Right Decisions at the Right Time](#)[The Components of Industry 4.0: What You Need to Know](#)[Orienting to Industry 4.0](#)[Address Legacy Systems the Right Way](#)[Secure Your Industrial Space](#)[Unlock Business Benefits with the Cloud](#)[Transform Underutilized Data with Artificial Intelligence](#)[Make IT Happen with Connection](#)

Industry 4.0 represents a more significant cultural shift: a move toward integrated technology solutions

Executive Summary

Global manufacturing is at a pivotal point in history. Emerging technologies like the Industrial Internet of Things (IIoT) and big data are rapidly transforming the way manufacturers conduct their operations. Companies adopting these new technologies are seeing substantial business benefits, including reduced costs, better products, and increased throughput.

Business leaders across the manufacturing space are taking notice. In fact, 85% of CEOs¹ and 58% of CFOs² now view smart factory or IIoT technology investments as key to their future business success.

That sentiment is permeating into IT departments, who are being tasked with carrying out the implementation of these new technology initiatives. However, many IT professionals have not gained the training or experience to select and deliver effective solutions in challenging manufacturing environments. Connection can help.

Make the Right Decisions at the Right Time

At Connection, our [manufacturing technology](#) experts have real-world experience in the manufacturing sector. This experience doesn't just come from consulting engagements, but from a lifetime of working full-time as industrial engineers and as IT leaders in manufacturing companies. We clearly understand the pressures and risks you face.

This specialized experience helps us provide the insight you need to make the right IT decisions at the right time for your company. It also helps you understand what steps not to take, so you don't ever have to make the same mistakes that others have made before.

The Components of Industry 4.0: What You Need to Know

From establishing a foundational infrastructure that can support new technologies, to securing your industrial space, to implementing edge compute and AI solutions, Connection has the expertise to guide you through all aspects of your Industry 4.0 transformation. We'll work with you to address the following manufacturing technologies within your specific business:

- **Industry 4.0**
- **Industrial infrastructure**
- **Industrial security**
- **The cloud**
- **Artificial intelligence (AI)**

By analyzing each of these technologies and examining the different ways we can apply them, you'll be prepared to strategically address each of these initiatives within your own company.



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“Through 2022, more than 50% of infrastructure and operations (I&O) organizations will fail to meet company cloud adoption goals, due to a lack of in-house skills and experience.”

Gartner Report: The Cloud Infrastructure and Platform Services Skills I&O Teams Require for the Future

Orienting to Industry 4.0

Industry 4.0 represents the move manufacturers are making toward integrating new manufacturing technology solutions and using data for practical and real-time needs. It encompasses many new and useful technologies that manufacturers have begun to adopt, including the IIoT, sensors, machine learning, mobile devices, tracking solutions, edge compute, robotics, and other technologies that connect and integrate workspaces.

Deploying many of these new technologies offers substantial business benefits for manufacturers: reduced costs, improved product quality, increased safety, optimized throughput, and ultimately creating better customer experiences, to name a few.

However, figuring out which of these initiatives to implement first, how to enable and deploy some device configurations, how to connect disparate pieces of technology, and other concerns can be an overwhelming undertaking for IT professionals.

How to Leverage Our Manufacturing Expertise

Tell us where you're at and what you want to accomplish, and we can show you a way forward. Depending on your specific goals, we'll start with a proven use case that makes the most sense for your company. At the same time, we'll help you build a roadmap that your IT team and your business stakeholders will jointly appreciate.

Address Legacy Systems the Right Way

Legacy technology and dated equipment can hamper any Industry 4.0 initiative. This is a challenge many factories face as the average factory today is 25 years old, with machinery that's approaching nine years old.³

Operational technology (OT) systems running on aging software and machinery can put manufacturers at risk for costly, operational failures that can damage a company's reputation and, in extreme cases, even complete manufacturing shutdowns. Traditionally, the solution to this has been to either isolate or upgrade the outdated equipment. Neither option is realistic in manufacturing, however, as companies will always need to find a way to properly maintain machinery with long lifecycles.

To eliminate the need for all-or-nothing solutions, we offer access to new manufacturing technology solutions that allow manufacturers to securely connect to serial machines, industrial protocols, and integrate with the enterprise.

How to Make Use of Our Industrial Infrastructure Experience

Let us know about your legacy systems, and we'll work with you to integrate them into a smart factory environment. That way, the huge capital investments you've made into these machines and processes can continue to provide returns for you over time, while also allowing you to gain the productivity benefits of smart factories.



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Secure Your Industrial Space

Security and data breaches within industrial spaces can lead to significant losses of time and money, sometimes even leading to entire manufacturing facilities being shut down for periods of time.

Industrial facilities with outdated machines, aging software, and an increasing number of vulnerable endpoints are especially susceptible to cyberattacks. To avoid the damaging repercussions from a breach, security measures need to be implemented before one happens.

How to Utilize Our Cybersecurity Savvy

Talk to us about vulnerabilities within your network, and we'll determine how best to address them. We'll also establish a backup and recovery plan to maintain and restore mission-critical functions to ensure your facility is protected in the event of a disruption. We provide fast data recovery, including restoration down to bare metal.

Starting at the OT edge and all the way through to enterprise management infrastructure, data centers, and into the cloud, we'll ensure your company's digital workspace is secure.

Unlock Business Benefits with the Cloud

The business benefits of the cloud reach far beyond IT departments. Cloud services allow manufacturers of all sizes to streamline complex production processes, enhance collaboration, reduce costs, and increase flexibility within operations.

However, cloud migrations are not guaranteed to be smooth. Migrations performed poorly can face disruptive and expensive repair efforts later. As a result, business leaders are looking to IT to migrate their manufacturing operations strategically and successfully to the cloud.

Because the ramifications of a cloud migration will affect the entire business, IT leaders know that it is critical to unify IT and LoB stakeholders' needs. These same leaders also understand that this unification process takes time, insight, and a steady hand.

How to Benefit From Our Cloud Services

With so much at stake, any move to the cloud can benefit from external insight. Connection can conduct customized [Cloud Assessments](#) to identify which of your applications and workloads are cloud-ready, which ones need more time, and which ones should stay on-premises. We also offer [Cloud Managed Services](#) to help you make the most of your cloud assets with increased performance and cost-effectiveness.



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Sources:

1 Manufacturers Alliance, 2020, Ten Trends Shaping U.S. Manufacturing in the Next Twelve Months

2 BDO, 2017, Technology Outlook Survey

3 McKinsey Global Institute, 2017, Making It In America: Revitalizing Us Manufacturing

Transform Underutilized Data with Artificial Intelligence

Once a manufacturer has laid a modern foundation for their IT infrastructure, including robust security measures and increased use of cloud services, that same organization can begin to leverage AI solutions.

Incorporating new AI technologies into manufacturing processes can transform your organization's underutilized data into an integrated and automated flow of information, insights, and business benefits.

How to Implement AI Solutions with Our Expert Guidance

Let us know your goals, and we'll start you off with the right AI solution. By drawing on such use cases as predictive maintenance, product quality control, and workplace safety, we can help you explore which initiatives can help your company see fewer production challenges, have lower operational costs, less downtime, an optimized supply chain, and fewer injuries on manufacturing floors.

As with all Industry 4.0 technologies, your organization's first steps toward implementing AI technologies don't need to be rushed. Instead of trying to apply AI to every business problem, we can use AI to solve the right problems at the right time for your business.

Make IT Happen with Connection

Moving to new platforms, software, and tools can create challenges and opportunities for IT leaders. For IT leaders in manufacturing companies, these challenges are ever-present due to the large investments manufacturers have made in legacy technology stacks. These challenges and risks need to be effectively mitigated if a manufacturer is going to take advantage of new technologies vs. being brought down by them.

Connection has a long history of helping IT leaders generate more opportunity than risk.

Our manufacturing technology specialists come from the same manufacturing setting that you work in every day, so we understand the pressing issues that you face. We'll listen to your challenges, offer a direct and practical consultation that cuts through the clutter, and empower you with the right solutions. [Engage our Manufacturing Practice](#) to learn how we can assist you with smart technology integration and adoption—no matter where you are on your journey to Industry 4.0.

Contact us today to learn more.

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