

# Manufacturing in a Connected World - Part 1:

## Getting Started with Your Digital Transformation Journey



# Introduction

As a manufacturer, you can't afford to ignore Industry 4.0 any longer. A recent study shows that nearly two thirds of manufacturing executives believe their companies will fall behind the competition if they fail to implement any Industry 4.0 initiatives. It's clear that your company's ability to remain competitive will be at risk if you choose the status quo.

Digital transformation (DX) may seem daunting but it doesn't need to be. Often, the challenge lies in figuring out where to start. To help you prepare for your DX journey, this white paper will cover:

**1**

**The basics of Digital Transformation**

**2**

**What is Industry 4.0 and the "smart factory"**

**3**

**What you can achieve with Industry 4.0 initiatives**

**4**

**How you can get started**

## What is Digital Transformation?

Digital transformation is the process of using digital technologies to either create new or alter existing business processes, culture and customer experiences to address changing market necessities. It is not simply an IT project, a departmentally driven plan or an executive initiative designed to centralize systems and standardize processes as some form of cost-cutting measures. In a digital transformation, all these elements are integrated.

"We need to break down silos and start looking at the big picture," says Jonathan Gross, Managing Director of Pemeco Consulting, a company that specializes in ERP consulting services. In a nutshell, this involves rethinking our business processes, our relationships with customers and suppliers, and how technology will be used to adopt and support these changes.

The manufacturing portion of digital transformation is commonly referred to as Industry 4.0. Simply put, Industry 4.0 involves using new technologies to create higher levels of productivity and efficiency.



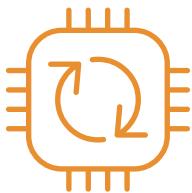
# History of Industry 4.0

Germany, long known as a global manufacturing powerhouse, began to feel pressure after the third industrial revolution in the 1970s when inexpensive goods from low-wage, mass production countries like China gained a foothold globally. To compete against this while retaining its high wage environment, in 2011 the German government introduced Industry 4.0 as an initiative to computerize manufacturing.

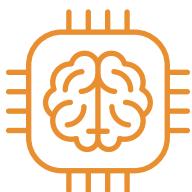
The goal was to take high-value tasks and push them towards smart people while shifting the lower-value tasks onto the machines. This was designed to create a manufacturing environment capable of delivering last-minute product customization in a mass production environment. For example, if a customer places an order and makes a last-minute customization request while the unit is being sent down the assembly line, an Industry 4.0 factory – or smart factory – needs to be able to support these changes. That means machinery that can send and receive signals from planning and enterprise resources, then pick the materials and bring them to the line.

## Components of an Industry 4.0 Smart Factory

At its core, a smart factory utilizes a variety of new interconnected technologies to automate and bring together all aspects of a business including its processes, operations and supply chain, among others. The end result is a dynamic, optimized, and flexible system. Here are some of the integral components of a smart factory that can be leveraged:



**Automation:** This refers to the application of technology to automate any sequence of production tasks which does not require manual intervention. By deploying new technologies, various operations such as production lines, material handling, assembly and inspection can all be automated. Cyber Physical Systems (CPS) can also be created when a combination of computers and networking can take user instructions, adapt to new situations and control physical devices and processes. For example, sensors can monitor how equipment functions and then relay processed information wirelessly to a central node from where further instructions can be passed along based on the data received.



**Artificial Intelligence (AI) & Cognitive Computing:** AI is the ability of machines to perceive information from their environment, process it and take appropriate action that maximizes the chances of successfully achieving desired results. As an example, AI can help to reduce downtime and machine failure on the shop floor by using sensors to analyze the condition of equipment so that maintenance can be scheduled proactively, optimizing efficiency. Essentially, AI augments human thinking so that complex problems can be solved. Computers today can simulate and mimic human thought processes and help synthesize large volumes of data from multiple sources to identify and recognize patterns and anticipate potential problems. This is referred to as cognitive computing.



**Cloud Computing:** Moving all IT resources to the cloud can help in dealing with the unrelenting velocity of technology advancements without the need to invest in expensive hardware that can easily get obsolete and can be costly to maintain. Rising customer expectations and customization requests require manufacturers to have real-time access to data and applications, from anywhere and at any time, to increase productivity. Cloud computing enables this through solutions such as:

- Infrastructure as a Service (IaaS): access to virtual computing resources
- Platform as a Service (PaaS): availability of an environment where applications can be built, tested, deployed, and run
- Software as a Service (SaaS): access to software which is managed and maintained by a third party



**Internet of Things (IoT):** Digital sensors can be added to all manufacturing equipment to gather data and interconnect systems. The data gathered from manufacturing equipment can not only be analyzed to gain powerful insights but can also provide manufacturers the ability to make last-minute changes and improve efficiency.



**Human Capital:** There's a perception that Industry 4.0 will lead to manufacturing jobs disappearing. However, experts maintain this is a myth. A 2019 WEC-McKinsey white paper states that the goal of Industry 4.0 is to be an "injector of human capital, transforming work to make it less repetitive, more interesting, diversified and productive." At its heart, Industry 4.0 presents a chance to take low-value tasks out of the hands of people and onto machines. It will deliver timely data and analysis, allowing people to make better informed decisions that improve operational efficiency and deliver profitability.

## Top Industry 4.0 Business Goals

Before you start planning and focusing on specific areas of your digital transformation journey, let's look at the key business goals that manufacturers plan to achieve by adopting Industry 4.0. BDO's 2019 *Middle Market Industry 4.0 Benchmarking Survey* reveals the following business goals that manufacturers pursue:

Business model diversification **71%**

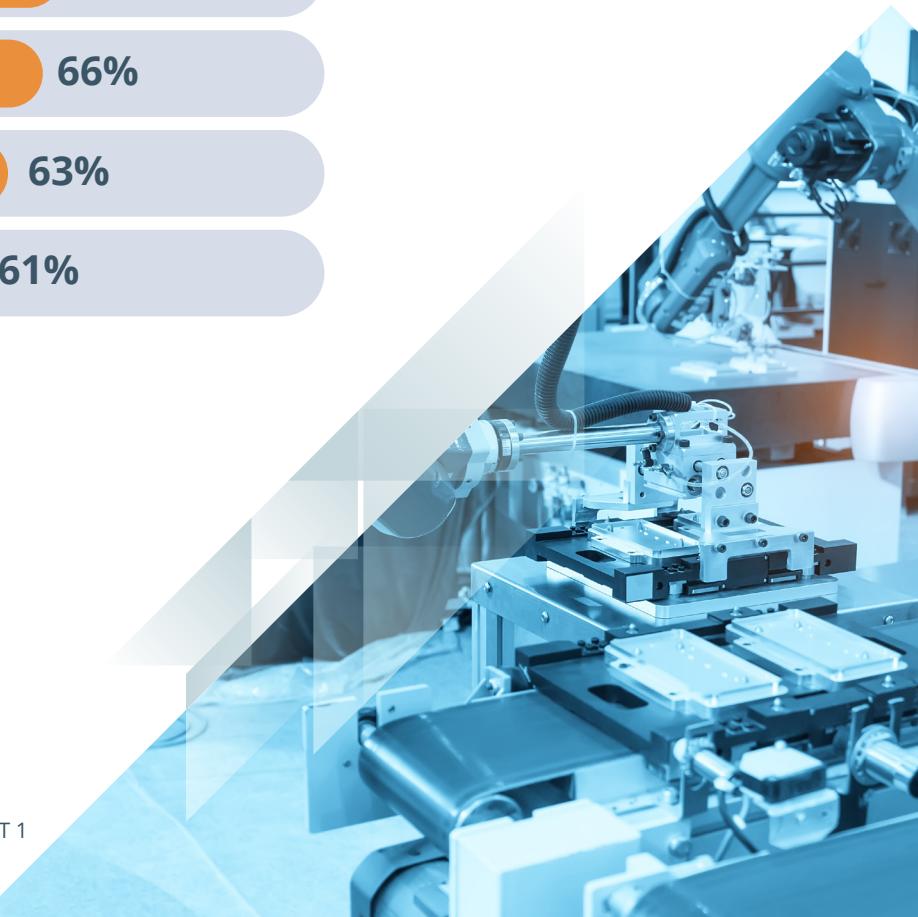
Improve operational efficiencies **67%**

Increase market penetration **67%**

Improve quality assurance **66%**

Improve supply chain resilience **63%**

Improve customer experience **61%**



On the other hand, in the same survey, the biggest threats of not investing adequately in Industry 4.0 were identified:

**69%** considered 'disruption in industry by industry outsiders' as the greatest threat

**66%** fear lagging behind competitors

**63%** consider pricing pressure due to automation as a threat

**59%** fear low margins

## Outcomes of Investing in Industry 4.0

By tying the physical world together with the virtual world, manufacturers can achieve the agility and flexibility that they require to meet customer demands, improve overall efficiency and maximize profitability. A BDC Survey found that:



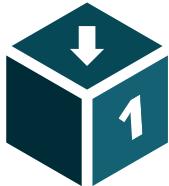
- 50%** Of those who adopted technology saw a reduction in their operating cost
- 42%** Confirmed that it improved overall quality
- 13%** Felt it gave them greater capacity to innovate

While each organization will have its own objectives as to where to invest in Industry 4.0, taking the first steps towards digitalization can be challenging if you can't clearly define what you hope to achieve.



# Understand Your Organization to Get Started

The first step in your digital transformation journey is to truly understand your organization and be prepared to reassess certain aspects. Before launching into any initiatives, you'll need to figure out where you currently are on the enterprise maturity scale as this will help dictate your go-forward strategy. According to Pemeco Consulting's Maturity Framework, there are five levels of maturity:



**Siloed:** Departments work on paper with unstructured processes, pushing documents from one department to the next.



**Manually integrated:** Some or all departments have systems to manage processes, creating a partially integrated organization, but passing information from department to department is still generally manual.



**Integrated core:** You have the core of an ERP system -- the planning engine and real-time accounting information are present.



**Fully integrated:** You've moved beyond an integrated core with integrations to other systems such as equipment maintenance or CRM.



**Networked:** You're not just fully integrated internally, but also with your suppliers, customers, employees and other business partners.



# Critical Focus Areas for a Successful Transition

Carefully defining the current state of your organization will expose areas that require your attention. According to Gross, the following five areas are critical to your Industry 4.0 strategy mapping, as it's vital that all parts of the organization move in lockstep to ensure a successful transition:



**Organizational structure:** You must examine what your organizational structure looks like right now. How will this structure evolve as your company evolves to meet Industry 4.0 standards? Define clearly who needs to do what and identify talent development needs and whether you require new roles.



**Business processes:** Inspect your current business processes. Are they manual or are they automated? Who owns specific processes? How are different processes integrated? How can they be optimized?



**Data:** How is it being governed? Is it currently structured in a way that will still work for you in the future? As you become more reliant on systems, information assurance becomes more critical than ever. It must always be available, accurate, accessible, and secure.



**Technology:** Evaluate the technology infrastructure that you currently have. How does it help your current business processes and integrate information flow? What kind of changes are needed to facilitate information flow, through the new structure? What applications will be needed? What middleware and connectors will be required to tie the apps together? You must give yourself enough time to acquire, integrate and test new technologies.



**Risk management:** Opening up your systems into the cloud may pose security risks that need to be assessed. Map your current risk management procedures and define how risk will be managed as your business evolves. You may have to form a committee to oversee how various risks are managed.

Ultimately, you will need to map how data, processes, and technologies need to transform to create a path for your successful evolution.

# Conclusion

Industry 4.0 is a journey not a race, so it must be planned carefully and incrementally. Establishing your internal foundation for Industry 4.0 implementation is a vital step because, without this, your chances for success will not be high. You must start by assessing where your organization is today as that will expose areas that you need to address to get the foundation right for your transformation. Getting to a point when you are fully integrated and automated takes time and requires an organized and holistic approach. Break the project down into chunks to best set yourself up for a successful transformation.

## About SYSPRO

SYSPRO is a global, independent provider of industry-built ERP software designed to simplify business complexity for manufacturers and distributors. Focused on delivering optimized performance and complete business visibility, SYSPRO's strengths lie in a simplified approach to technology, expertise in a range of industries, and a commitment to future-proofing customer and partner success.

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