

Practical Starting Points for Industry 4.0

A Plan for the First Steps in a Successful Smart Connected Manufacturing Journey

by Nick Ward, Joe Dury, Michael Glessner and Nate Buyon

Industry 4.0, widely considered the 4th Industrial Revolution, is the current trend of automation and data exchange in manufacturing technologies to create smart factories featuring autonomous controls. It combines cyber-physical systems, the Internet of things (IoT) and cloud computing, and has the potential to affect every aspect of manufacturing business. The pace of change is staggering, but companies that commit to learning from others can succeed.

Our first article, [Positioning for Success with Industry 4.0](#), focused on learning from others outside of one's own industry to get started with Industry 4.0. Here, we discuss how to create commitment and buy-in while addressing fundamental changes to collaboration and culture, as you work to advance Industry 4.0 within your organization.

Creating Commitment and Executive Support

As discussed in [our first article](#), companies must first do an honest assessment of current capabilities and understand where you stand relative to competition. The next step is to gain executive support. Senior leadership buy-in requires a strategic vision that demonstrates how you'll evolve from where you are today to where you want to be in the future, and articulates the imperative to begin the change journey now. The best plans have a short-term focus with a long-term vision. Regardless of what that plan looks like, there needs to be a strong commitment to allocate capital for new technologies along with required talent to implement and refine the solutions.

To build the vision and plan, prove out the value by developing concrete use cases with a strong link to business value.

For example, a common use case is using Industry 4.0 to maximize the value of existing data by leveraging investments in Product Lifecycle Management (PLM) and Enterprise Resource Planning (ERP). Leaders in the space connect disparate data sources into a flowing structure of data for every product. A true bill of information connects design requirements and details how a product fulfills these needs through models, simulations, processing and field data. Also, linking manufacturing data to the product record can enable insightful visualizations and processing optimizations.

Linked data structures enable managers and operators of smart factories to 'see' operations in an entirely different manner. Blending the physical world with superimposed digital characteristics or dimensions provides managers with actionable, real-time insights to improve product quality, productivity, and profitability.

This journey can typically be achieved using existing PLM and ERP systems (with some improved datasets), leading to a high return on investment. These initial returns or "quick wins" can be used to build consensus within the organization and gain executive support for digital manufacturing, setting the stage for future initiatives to further enable Industry 4.0.

Considerations for Collaboration and Culture Change

The shift to a digitally connected manufacturing organization will cause the company's value chain to condense and become more connected. Divisions and departments that have historically operated in silos will need to become interconnected. Collaboration is essential to the success of developing smart, connected products leveraging a digital manufacturing process. Product development must be tightly connected to customer experience, procurement, and operations teams. R&D and engineering groups must work closely with marketing and IT to create a unified vision and roadmap for the future. Collaboration and focused communication will be necessary to successfully navigate this change.

The work of individuals within a smart connected manufacturing value chain and upgraded factory will look and feel very different. Individuals will see their duties shift, and will need to collaborate with their colleagues across the organization more frequently. For example, individuals in product engineering and manufacturing operations groups will be in frequent communication with each other to optimize the product design and manufacturing processes. These new communication channels will be enabled by technology and interconnected information systems, but will require a concurrent cultural change to fully realize their potential.

As with any significant cultural change, digital leaders should expect to see pockets of resistance across the organization. Embracing Industry 4.0 will be a big change and will require dedicated and proactive change management to overcome opposition. A shift in organizational structure may be needed to align to the changes. In the HBR article "How Smart Connected Products are Transforming Companies," the authors introduced the term DevOp to describe combining the functions of product development and operations to foster collaboration and coordination. The flexibility to reposition key influencers to the places in the DevOp organization where they can add the most value, will also be critical to the success of Industry 4.0.

Understanding the Digital Imperative

Embracing the shift to Industry 4.0 is a substantial opportunity for companies to seize a competitive advantage. Investing in innovation is a key for sustainable long-term growth. However, the window of opportunity is closing. The pace at which companies adopt Industry 4.0 will be highly dependent on how fast managers and executive leaders embrace the challenge and leverage the technologies that are available today. Lagging firms may find themselves fighting for their survival or swallowed by more advanced players. The journey to integrate digital manufacturing technologies into existing processes will take time, but it is critical to take these initial steps now.

If you do not have the capability to make these changes or need guidance along the way, seek out trusted advisors with industry knowledge, experience, and an appreciation for what is possible for your business. Speed is essential—learn, fail, and make adjustments quickly.

You will want the history books to show how your company identified, reacted, and thrived during these disruptive times. Winston Churchill said, “History will be kind to me for I intend to write it.” Industry 4.0 concepts offer the next opportunity for the savvy manager to create history.

Read More

[Positioning for Success with Industry 4.0](#)

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