From traditional to smart industrials

The future of industrial manufacturing is smart: not just using the latest digital technologies in traditional processes like assembly and warehousing, but building smart products, creating new digitally enabled services, and driving different business models.

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Introduction

Industrial manufacturing, like other industries, has been reshaped by digital technologies. In factories, robots and humans work together in an intricate dance orchestrated by sophisticated production systems. Raw materials and components arrive from around the world ready for use, and finished products are staged in automated warehouses. Back-office functions have been digitized.

But the concept of "smart industrials" is more than automating traditional processes.[1] A smart industrial uses technology to develop and support new business models—like providing "as a service" solutions in addition to manufactured products. A smart industrial sells products that share performance data back to the manufacturer, enabling smart service strategies, improving reliability, lowering cost of ownership, and ultimately building more customer loyalty. A smart industrial uses technology to change its value proposition to its customers.

Many companies believe that smart is the future. However, most have made modest progress. KPMG has a perspective on how the transition to smart has made manufacturers stronger competitors, better innovators, and better performers for shareholders and other stakeholders. We believe we can help our clients on this journey and accelerate their progress.

The "smart" imperative

Competitors, customers, and shareholders are pushing manufacturers to become digital, connected, and data-driven. Manufacturing companies that have done the most to digitize their businesses and use data to develop new revenue streams and business models are outpacing traditional manufacturers. Those furthest along in the transformation have already translated smart into new revenue streams and faster growth. They are data-driven and more agile, enabling them to respond more quickly to disruptions and opportunity. The companies at the mature end of the smart spectrum have developed a culture of innovation and adaptability—they have invested in the experience to improve service and build loyalty and growth.

The results are compelling. In the table on the following page, we show five industrial manufacturers that embraced smart strategies and how their adoption led to differentiated results. Each of these companies has developed new digitally enabled businesses and service offerings. These innovations have enabled smart industrials to grow revenue and profit (measured in total return to shareholders) faster than their peers.

John Deere, for example, has gone from making tractors and other types of farm equipment to developing a whole business around smart equipment, including data services. Deere's shareholder returns are more than three times what peer U.S. industrial manufacturer achieve.

Johnson Controls went from selling air conditioning chillers and other HVAC equipment to become the leading provider of energy management services. Ford has restructured to focus on its EV business and rationalize its traditional internal combustion engine (ICE) business.

[1] "Deere announces Smart Industrial operating model," Equipment Journal, July 13, 2020

The stock market likes the smart industrial investment thesis

Deere & Company

126%

Starting in the early 2000s, the company began developing smart agriculture products and services. It built a data services business to help farmers adopt precision agriculture—using a combination of weather and soil data to optimize watering, fertilization, and application of pesticides using a cloud-based farm management system. Now, Deere is leading in development of electric and self-driving farm equipment.[2]

CNH Industrial N.V.

72%

CNH, a Deere competitor, is using acquisitions to leapfrog to smart. In 2021, it acquired Raven Industries, a leader in precision agriculture, and the next year introduced the industry's first self-driving spreader. CNH also invested in Stout Industrial Technology, which makes a cultivator that uses AI and vision technology to distinguish crops from weeds and cultivates the crops while simultaneously removing weeds. Its goal: "a fully autonomous crop production cycle."[3]

Ford Motor Company

70%

Ford has reorganized into three main businesses to enable the company to focus resources on the EV transition and rationalize its traditional businesses of ICE passenger cars and commercial vehicles. Success in using small, mission-driven teams to deliver EV models drove the overhaul, which the company dubbed Ford+, and which KPMG helped design and implement.[4]

Johnson Controls

45%

Johnson Controls, a global manufacturer of HVAC equipment and building-control devices, remade itself into a leader in smart building products and services. It has shifted from hardware sales (ship and forget) to providing connected monitoring, service, and maintenance. This has reduced total cost of ownership for customers and increased customer lifetime value for JCI. Service-related business has been growing in "the mid-teens."[5]

Schneider Electric

43%

Schneider Electric has a strategy to grow recurring revenues that "serve to deepen the relationship with customers across the lifecycle of their assets and installations, for the benefit of both parties over time." The company now sells energy-as-a-service as cloud-enabled monitoring and maintenance services. These segments racked up double-digit growth in 2022 and are targeted to grow to 60 percent of group revenues by 2025.[6]

[2] "Deere announces Smart Industrial operating model," Equipment Journal, July 13, 2020

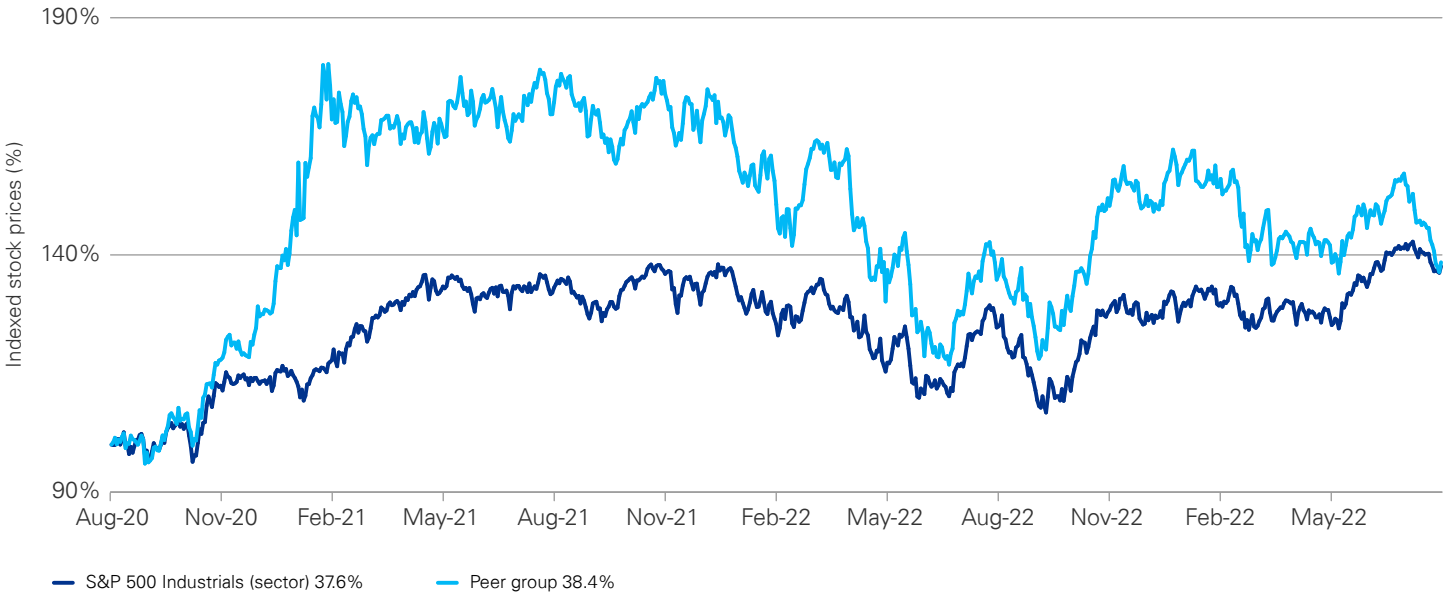
[3] "CNH Reveals New Tech, Strategy," Progressive Farmer, Dec. 13, 2022

[4] "Ford Accelerating Transformation: Forming Distinct Auto Units to Scale EVs, Strengthen Operations, Unlock Value," Ford, March 2, 2022

[5] "Johnson Controls Q1 Results 'Solid,' Growth in Service-based Businesses," Security Systems News, Feb.1, 2023

[6] Schneider Electric Full Year 2022 Results

Exhibit 1: Total shareholder returns from 8/15/20 to 8/15/23. Total shareholder return for the S&P 500 Industrials index averaged 39 percent.



Becoming a smart industrial

The transformation to smart is much more complex than merely introducing new digital technology. Automating a factory or warehouse is largely about improving traditional processes, which can be managed in traditional ways. Becoming a smart industrial requires aligning corporate strategy and the organization around the possibilities that new enabling technologies create: building new business and operating models, developing new capabilities, and reimagining the organization and culture (see below, "What is a smart industrial?").

What is a smart industrial?

We define a "smart" industrial corporation as an industrial manufacturing company that:

- Develops a clear "smart" strategy
- Adjusts its portfolio of businesses and tunes its organization to accelerate the shift to smart
- Builds digitally enabled, connected products that can be controlled, monitored, and tracked remotely
- Develops new revenue streams beyond product sales, such as "as a service" purchasing
- Creates a robust technology and data infrastructure to improve customer experience, identify opportunities, innovate, and make the company more resilient
- Builds a culture of innovation and creative problem solving that attracts the best talent (and retains them with plentiful development opportunities)

These characteristics describe an approach to manufacturing that applies digital intelligence to products and processes and enables companies to serve their customers better and compete in new ways. The list is not exhaustive and will evolve as smart industrials do.

The transition from traditional to smart industrial is multi-layered and far-reaching—it involves new revenue and delivery models, new people, new governance processes, and new technologies (Exhibit 2). It will touch many parts of the organization and change how many people do their jobs. It will likely require new partners and, perhaps, acquisitions and divestitures. It will also require strong leadership to instill the vision of the smart enterprise and maintain a sustained focus on the transformation.

As with any transformation, a critical success factor will be managing the cultural and people changes. Building a resilient culture of innovation takes time and patience. On the plus side, starting the transformation to smart can create a virtuous cycle, enabling manufacturers to do a better job attracting the top talent who can generate the innovations that drive success and attract more talent.

Exhibit 2. Traditional to smart industrial transformation framework

New revenue and delivery models	People, process, governance	New technologies
Key considerations	**Key considerations**	**Key considerations**
Moving to smart, connected products; offering connected digital services; redefining revenue, contracting, delivery, and cost models (e.g., XaaS, etc.)	Digitize business services and standardize chart of accounts	Define the tech strategy that will drive opportunities for efficiency or customer proximity
Delivering the optimal Customer Experience (CX); shifting to a customer lifetime value focus; optimizing customer value propositions; establishing customer collaboration	Articulate employee value proposition: align recruiting, select L&D and retention strategy to support them	Evaluate cloud versus on-premise solutions, single instance versus hundreds
Strategic design of sales and service channels; dealer and distributor partnering; effective orchestration of sales and service through dealers and distributors; branding and CX through dealers and distributors	Partner with finance during strategy planning, employ technologies like AI for predictive financial analytics	Consider how to optimize cloud usage while retiring tech debt and improving tech capability
	Define a modernized cybersecurity capability that can protect a "smarter industrial" enterprise and provide security and risk management across all network entities, both internal and external	Incorporate robotics/ automation and additive manufacturing
	Create master data management strategy, clean and standardize, design and implement governance, deploy analytics to business challenges	Leverage technology such as IoT/5G
	Partner with supply chain during strategy, conduct risk assessment, near-shoring/on-shoring options identified and implemented; revamp S&OP to take new risk thresholds into account	

Six steps in a smart transformation

Smart transformation is an enterprise transformation, not just a functional fix or cost exercise. All too often, companies invest in a program focused on improving a discrete process, team, or function to reduce cost or improve visibility in the supply chain, for example. This narrow functional vision isn't enough to make a company a smart industrial enterprise. The transition to smart industrial affects many functions and business units. It requires significant organizational change and building the technology and data foundation to create a "connected" enterprise, where data is shared—so engineering gets performance data to correct possible problems or plan the next innovation and sales can know when a customer call is needed. Here are six steps that begin the journey:

1. Articulate a smart strategy

Define the destination for the company in terms of business model and financial ambition. Develop a unique roadmap to achieve or, depending on maturity, complete the vision that best suits your company and industry.

Wichita-based Spirit AeroSystems, which supplies roughly 70 percent of Boeing's fuselages, added the space market to its defense division at the same time it accelerated the automation of its manufacturing processes and began reshaping its portfolio of businesses to better align with its strategic goals. Along with partnerships and acquisitions to strengthen its hand in space, the company digitized and automated manufacturing lines, restructured facilities and simplified its supply chain, created global, connected, digital logistics and defense prototyping centers, and upgraded assembly technology. To transition to making operational weapons systems, Spirit and its partners integrated the technology for a flexible industrial base that would enable it to customize solutions for various applications.[7]

2. Create the right organization/portfolio

Align corporate governance and structure to optimize delivery of the strategic vision. Divest assets that do not fit the strategic vision, acquire or partner with those that do. Use M&A as a mechanism to reduce shareholder risk and improve performance and to accelerate to smart outcomes.

In 2022, Ford announced that it was reorganizing into three main businesses to enable the company to focus resources on the EV transition and rationalize its traditional ICE businesses. For more than a century, the company had organized around geographic markets. But the company's success in creating small, mission-driven teams that delivered several popular EV models, such as the Mustang MachE, drove the overhaul, which the company dubbed Ford+, and which KPMG helped design and implement. "Our ambition," Ford President and CEO Jim Farley told shareholders" is to become a truly great, world-changing company again, and that requires focus. We are going all-in." Different approaches, talents, and organizations are "required," the company said.[8]

[7] "Spirit AeroSystems adds space as a strategic focus," Spirit AeroSystems, June 23, 2021
[8] "Ford Accelerating Transformation: Forming Distinct Auto Units to Scale EVs, Strengthen Operations, Unlock Value," Ford, March 2, 2022

3. Finish the digital transformation

Data alignment is a requirement—data as a function by itself has limited utility. To complete the transformation, every aspect from supply chain through production and customer experience must be connected and feed back information to optimize performance and unlock value.

As part of a broader push to leverage advanced technologies, BAE Systems plc, the British multinational defense, security, and aerospace company, established a UK-based Digital Intelligence business that "[brings] together capabilities in cyber, space, intelligence security, and data into one organization to improve [its] customer alignment." The firm's R&D efforts are aimed at integrating advanced technology into its products to improve the efficiency and performance of its own manufacturing capability and to provide those solutions as a service to support its customers. In partnership with Sheffield University's Advanced Manufacturing Research Centre, BAE Systems is hosting a 5G testbed to understand how best to use that technology across its supply chain, including with smaller subcontractors.[9]

4. Recalibrate risk management

With smart, connected manufacturing, traditional risks are exchanged for new ones. With fewer workers in the factory, injuries are no longer a major risk in manufacturing. Also, IoT sensors and predictive maintenance reduce the risk of unplanned outages. Now, the bigger risks are around data—protecting customer data and proprietary information and adopting ethical AI practices.

As General Motors ramps up EV manufacturing, both the process and the products require millions of lines of code, which in turn mean an expanded target for attack and myriad more vulnerabilities to hacking. For several years, the company has been investing roughly $100 million annually in cyber security that covers not just the development and safety of its vehicles—and related customer privacy concerns—but its back-office infrastructure and internal data, as well. Its security team comprises hundreds of employees who do penetration testing, cryptography, data analysis, and even in-house "white hat" hacking.[10]

[9] BAE System plc 2022 Annual Report

[10] "GM Needs Cyber Security to Drive Future Success," Dice, March 11, 2020

5. Align culture and talent—create opportunities

Successful transformations require the enthusiastic support of the managers and employees who will execute the change and work in new ways. The transformation from traditional to smart may require a culture shift—from a focus on product and engineering to service, software, and user experience. If the transformation gives employees the chance to learn and grow—and earn incentive rewards—the shift will be easier. Preserve the core values that made the company successful.

In 2021, Johnson Controls set a goal to reduce greenhouse gas emissions for itself, its customers, and supply chain partners. The company's target is to use 100 percent renewable electricity globally by 2040. Being a leader in decarbonization fulfills business goals, but is also an important cultural marker, helping the company hire and retain talented younger employees who want their employers to support their values. The company also plans to double women leaders globally and minority leaders in the U.S. by 2026; partner with HBCUs to educate future sustainable building industry leaders; and link diversity and sustainability goals with executive compensation to drive accountability. True transformation includes a workforce that understands the company's clearly articulated commitment to strategic goals, and is unified around their role in its success.[11]

6. Technology and data platforms

Update your technology and data foundation so you are ready to jump on opportunities. With enabling technologies in place throughout, an enterprise can take advantage of its capabilities to develop new offerings that respond to the competitive environment and changing customer demands.

Schneider Electric launched an "AI at Scale" strategy and a global AI Hub focused on data and analytics in 2021. In the first year of the initiative, the company hired a chief AI officer, implemented a hub-and-spoke model globally, hired more than 200 AI and data experts, applied for 18 AI technology patents, enhanced 15 solutions with AI capabilities, developed more than 20 internal AI applications, and launched a public AI knowledge base. The company's ongoing digital transformations, including assembling a hybrid cloud platform, has enabled new revenue sources in the form of as-a-service offerings.[12]

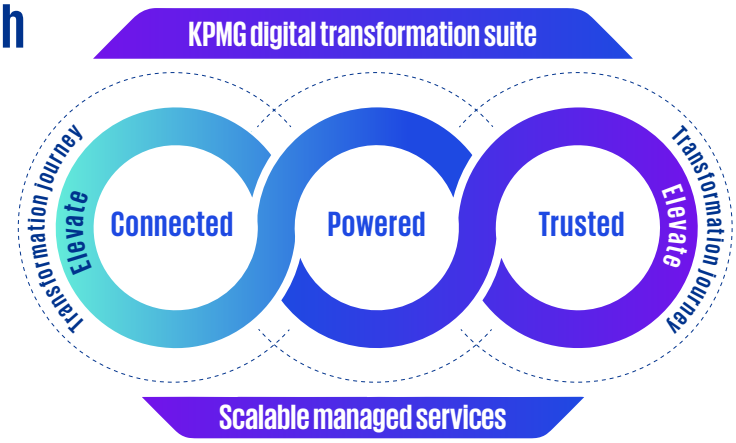
[11] "Insights: 2023 Sustainability Report," Johnson Controls

[12] "Schneider Electric accelerates its AI at Scale strategy with solid progress in the first year," Schneider Electric, Nov. 16, 2022

How KPMG can help

KPMG helps companies in traditional-to-smart transformation using custom solutions as well as our proven transformation methodology. In every transformation, KPMG brings practical guidance and solutions to help clients navigate the journey and realize value quickly—whatever the company's starting point or industry. We help clients achieve greater value by defining value goals (strategic and financial), measuring progress throughout the project, and adjusting as needed. We also help companies orchestrate the multiple transformation efforts that are typically underway in large organizations.[13]

The KPMG approach



Value. We put value at the center of everything we do, always balancing risk and reward. We carefully monitor and orchestrate multiple transformation projects to ensure successful execution and value capture.

Culture. We also know the critical role people and culture play in making change stick. We emphasize ongoing leadership commitment and help generate employee engagement to create a culture that embraces continuous improvement and innovative thinking.

Technology. Technology and data are the engines that drive transformation. Data-led insights enable our ability to increase financial value by uncovering new opportunities for clients to perform better, profit more, explore new potential, and save costs.

Reimagining experiences. By examining, exploring, and reframing what's possible, we help clients develop processes and ways of working that create better experiences for all stakeholders—employees, customers, partners, and clients.

KPMG is uniquely positioned to help clients succeed with a portfolio of transformation solutions:

Elevate: Quantifies value-creation opportunities using a data-driven approach—helping to achieve measurable improvements to revenue, margin expansion, cost management, and capital structures.

Connected: Aligns your business around your customers to create a seamless, agile, digitally enabled organization that delivers better experiences and new levels of performance and value.

Powered: Transforms functions with target operating models that are designed with the future in mind for optimized processes, governance, KPIs, people skills, and data.

Transformation journey: Continuously plan, prioritize and orchestrate transformation initiatives as end points shift to deliver results that matter.

Trusted: Build trust and confidence in the business and the digital transformation journey by predictably navigating risk and regulation—and deliver on the promise to keep customer data trusted, safe, and secure.

[13] See "The art of continuous transformation," KPMG LLP, 2023

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