

Digital and Internet of Things transformation for industrial companies

Becoming more efficient, productive, and smarter through leadership and talent.



What IOT and digital transformation means to industrial companies.

This paper discusses the opportunity for industrial companies to embrace the digital world using the Internet of Things (IOT), and offers thoughts on strategies, with a focus on leadership and talent, to digitally transform and generate value within the company and across the supply network.

The term “digital transformation” is commonly used frequently in many different contexts, and, frequently, comes loaded with assumptions.

Given the wide range of definitions and applications, then, it's useful to focus on the meaning of digital transformation as it applies to industry and manufacturing, exemplified as:

- Using technology to radically improve performance and reach of enterprises.
- Encompassing technologies that disrupt the traditional way of doing business.
- Enabling a strategy to achieve better business outcomes.
- Resulting in a new convergence of hardware, software, services, and communication.
- Requiring leadership and a human capital dimension to achieve sustainable success.

From the industrial companies' perspective, digital transformation takes on special meaning, enabling industries and supply networks to change in ways that were impossible before.

At least 40% of all businesses will die in the next 10 years ... if they don't figure out how to change their entire company to accommodate new technologies.

John Chambers
Executive Chairman, Cisco System

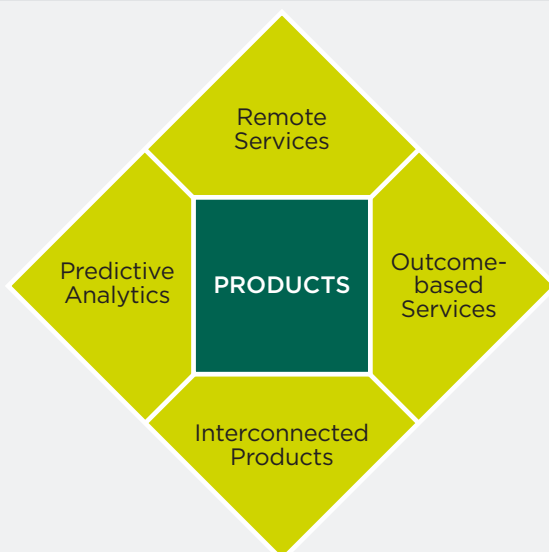
The transformation promise for industrial companies using IOT

The Industrial Internet of Things (IIOT) is revolutionizing the industry with some estimates claiming \$11 trillion of economic impact over the next 10 years (McKinsey, 2015).

One example of IIOT is the concept of the smart factory—a manufacturing leap forward to a digital and flexible system of things. This pursuit of integrating technology and the physical world into an interconnected network, using streams of data to continuously learn, adapt, and produce, offers considerable promise: The Smart Factory domain alone is expected to generate \$3.7 trillion of economic impact.

It's no wonder then that many companies have embarked on IIOT journeys to take their physical products, and connect them in new ways, leveraging the Internet, shifting to cloud-based platforms, and using analytics to drive business value.

Figure 1
The IIOT journey.



As an industrial company proceeds to embark on a journey towards IOT and Digital Transformation, they need to start with some IOT case uses that will drive their business; start with some small use cases, get some early wins, and then scale up to other use cases. Some examples of common IOT cases are shown below:

- **Predictive Maintenance.** A host of industries—including discrete manufacturing, transportation and logistics, energy, and health care—can benefit from predictive maintenance.
- **Asset Performance Management.** APM is a software application designed to increase asset reliability and availability while reducing unnecessary maintenance.
- **Self-Optimizing Production.** Connected factories and plants can use IOT to monitor and optimize production processes in real time.
- **Automated Inventory Management.** IOT can provide much greater insight into the status of inventory and the supply chain, allowing companies to track inventory location and condition.
- **Track and Trace.** IOT sensors are ideally suited for increasing systems' efficiency. The sensors can be used in the assembly area to identify the status of products and to locate.

In the past few years, there has been a lot of activism around IOT and digital transformation. A lot of things in support and against digital transformation have been said. I can imagine that many CEOs and leaders in the industry still wonder if digital transformation is truly a disruption, or simply another distraction. There is one thing for sure: the increased use of analytics and the deployment of new technologies can improve significantly the efficiency, safety, quality and customer interface but nothing good will happen without people engaging the workforce.

Yannick Binvel
President, Korn Ferry Global Industrial Market

The important point is for an industrial company to pick some preliminary IOT use cases, and then test them out by building some business cases around them (growing top-line revenue through new business models, or saving costs through operational efficiency). If they fail, build out some other use cases. The key idea is to create an agile test-and-development environment where you can incubate different business models quickly, and then scale out the business if they are successful rather than spending years building the perfect product or solution using long stage-gate processes of innovation. As part of this strategy, an industrial company needs to change the culture of its people.

The manufacturer that is seeking to become a smarter factory, therefore, must establish a construct that allows it to evolve with the changing needs of customers, expand into new markets, develop new products and services, and approach operations in fresh and flexible ways.

The transformation strategy, then, is one of the critical enablers of success.

Figure 2

New Value or Competitive Risk?

Opportunities

- **Cloud**– Amazon Web Services, Microsoft Azure, IBM Bluemix, Google Cloud
- **Mobile**– Apple iPhone/iPad, Samsung/Android Smartphone/Tablets
- **Internet of Things (IOT)**– GE Predix, Siemens Mindsphere
- **Social**– Facebook, LinkedIn, Instagram
- **Big data and analytics**– Cloudera, MapR
- **Machine learning and artificial intelligence**– TensorFlow, Caffe, NVIDIA
- **Robotic process automation, bots**– Blueprism, Automation Anywhere
- **Additive manufacturing (3D Printing)**– 3D Systems
- **Augmented reality and virtual reality**– Facebook Oculus, Google Tango, MSFT Hololens
- **Secure and powerful distributed computing enabling unprecedented speed-to-market innovation and new entrants**– HPE, Mocana
- **Block chain**– Bitcoin

Competitive Risks across Sectors

- **Home and Buildings**– Google Nest and Amazon Echo/Alexa)
- **Auto industry**– Tesla with electric cars, Waymo with self-driving cars, Uber/Lyft with ride-sharing
- **Energy Industry**– Renewables and distributed energy generation, SolarCity, Tesla
- **Agriculture Industry**– Farming as a service, John Deere, AGCO
- **Manufacturing Industry**– IOT and automation, GE and Siemens as Industrial Software Companies
- **Logistics and Transportation**– Cargomatic for shipments and truckers, Samsara for fleet monitoring

The transformation strategy.

Many companies start their journeys by establishing a strategy that centralizes an Internet of Things (IOT) organization working with sub-IOT organizations that are embedded within various divisions.

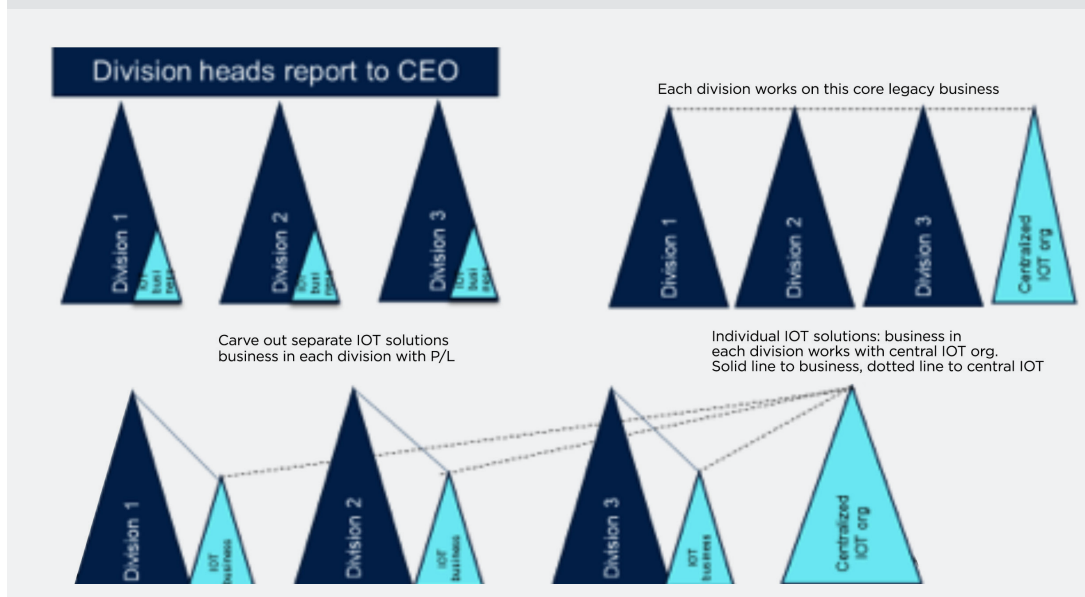
This places enormous pressure on these organizations at one stroke, revealing multiple gaps in skills and capabilities. For example, building an IOT stack requires knowledge of embedded processing, wireless communication, cloud computing, big data analytics, AI and machine learning, and new business services. If there are multiple IOT centers within the one organization, the gaps are multiplied. And this comes at a time when manufacturers are struggling to secure these and other specialized skills. (MIT Technology Review, 2014).

This begs the question: What is the right transformation strategy?

As attractive as a single solution might seem, there is no prescription for what is “right.” Instead there are many choices. Each offer advantages and trade-offs.

For instance, some organizations distribute their capabilities, having each division build its own IOT expertise. Others configure a central IOT accountability through which all digital services and products flow. Still others, recast the role of a central IOT organization as building the foundation and then coordinating IOT groups across the different organizational units.

Figure 3
Aligned IOT Organization.



A more recent trend is for an industry to forge technology partnerships to create a rich ecosystem to achieve their digital ambitions—and beyond. These partnerships set the stage for open innovation platforms and some manufacturers are already envisioning futures as a continuous process of breaking out of traditional molds to spark new ways of producing and moving goods and services, better, faster, and with increasing efficiency. (Korn Ferry, 2015).

Figure 4

Selected company examples.

Services	Allows companies to integrate and customize data so it is readily accessible and actionable (Capgemini, Infosys, Wipro)
IOT Analytics AI/ML	Allows companies to make sense of data and meaningful insights, artificial intelligence, machine learning (Oracle, SAP, Cloudera, Tensorflow)
Identity and security	Restricts access to the IOT system and safeguards connected devices (Bayshore, Symantec, Mocana, Industrial Defender)
Cloud and Platform	Captures and stores data from connected devices (Amazon Amazon Web Services, Microsoft Azure, IBM Bluemix, Google Cloud)
Communications	Allows things to communicate with internet, 2G/3G/4G/5G, Wifi, Bluetooth, LORA, Zigbee, (Verizon, AT&T, Ericsson, Cisco)
Edge computing	Allows processors at edge to analyze local data before sending to the cloud (Intel, NVIDIA, HPE, Dell)
Connected things	Allows sensors and microcontrollers to monitor homes, machinery (Intel, ARM, Microchip, Qualcomm, Broadcom)

Regardless of the construct and strategy, IIOT transformation was thought to be a single destination, achieved through a program, and enabled by digital technology. Once accomplished, the transformative work was done, and organizations declared victory.

After the initial euphoria of triumph, however, many companies were disappointed to discover significant barriers remained to realizing the true potential of their investments.

Potential vs. barriers

The anticipated investment in digital transformation is staggering. In 2017, companies will spend \$1.2 trillion on digital transformation technology alone (IDC, 2017). It makes sense, given the opportunities:

- 8 billion connected devices in 2017, growing to 50 billion connected devices by 2020 (Gartner, June 2017)
- Largest IOT segments in 2017: manufacturing operations: \$105 billion; smart grids for utilities: \$56 billion; freight monitoring: \$50 billion; product asset management: \$45 billion; smart building tech: \$40 billion, (IDC, June 2017)
- Industrial Internet of Things \$11 trillion over 10 years (GE, McKinsey 2015)
- Home and office \$450 billion; Factory operations \$3.7 trillion; Retail \$1.2 trillion; Healthcare \$1.4 trillion; Logistics transport \$850 billion; Smart cities \$1.7 trillion

Despite these promises, numerous studies have shown that companies in transformation feel like they're struggling against barriers. The source of those barriers are rooted in the people dimension:

- 84% of executives believe that their organizations do not have the skills and capabilities to deliver on digital ambitions.
- 63% of executives believe their digital transformation efforts are stalled because of difficulties in "changing company culture to be agile."

Sustainable victory and return on investment, then, belongs to those companies who demonstrate strength in key areas of leadership, culture, and the workforce. (Korn Ferry, Digital Sustainability Index, 2017).

This means, in addition to the strategy, people and culture are key enablers. Another way to say it is: Strategy execution cannot be outsourced. It must come from within the organization. Therefore, industrial manufacturers who want to transform their factories must examine their leaders, talent, and culture and ask: If there are barriers, how do I shift them to become enablers?

In the last 50+ years the industrial workforce has been developed, wired, and rewarded to continuously improve business processes, taking risk out, and building quality in. This pursuit of performance optimization has allowed scalability, repeatable process, and predictable outcomes. These conditions did not create an empowering environment for, or experience with, risk taking (learning, failing fast, design thinking) to fuel continuous innovation.

Linda Culliton
Senior Partner, Korn Ferry

The transformation success differentiator is people.

As we've seen, a transformation strategy can be approached in more than one way. The path will be unique to each company; there is no one-size-fits-all. Yet, once determined, execution success or failure strongly correlates to people.

But getting the right people, starts with a critical talent requisite: digital leadership. Easier said than done. The qualities, traits, and competencies that comprise digital leadership are scarce (Korn Ferry, 2016, "Leaders for a digital transformation").

This creates an imperative to accurately identify the right leadership talent for the organization, plus develop existing leaders and high-potential leaders of the future in the right ways.

While leaders of industrial companies are typically wired to drive continuous innovation, and incremental improvement, the new digital world makes different demands. Digital requires leaders embrace agile methods and innovate in new ways. They must be curious about new technologies, feel comfortable taking and tolerating risks, ready to empower their employees to try new ideas, and capable of driving breakthrough innovation.

The work is not done with a single leader, however. Organizational leaders must collectively share a vision of digital transformation and remain in alignment, even as the forces of change exert pressures. This type of alignment goes beyond effectively coordinating and integrating goals, or even budgets. It requires applying transformational principles at deeply personal and team levels, which in turn may plumb the depths of professional relationships, strain commitments, and alter careers.

Further, the organizational environment must be supporting and enabling. Otherwise, traditional pathways will throw up road blocks and hurdles that impede return on the transformation investment.

The environment is the culture. A culture that advances a transformation requires a thoughtful and comprehensive approach (Korn Ferry Digital Sustainability Index, 2017).

Leaderships Attributes for Digital

Our analysis concludes that successful digital and IOT organizations are driven by leaders who are

- 1. Agile**
- 2. Connected**
- 3. Open and transparent**
- 4. Ready to empower their employees**
- 5. Disciplined and focused**

The transformation advantage of culture.

A company is recognized as having a sustainable competitive advantage when its competitors are unable to duplicate the benefits and business outcomes of the firm's strategy. There is nothing more sustaining or difficult to duplicate than culture.

Being deliberate about culture is the key. The organizational culture must be in line with the transformation agenda (IDC, 2017).

What's more, culture is strongly shaped by how leaders behave (Forbes, 2013). Therefore, the right leaders must bring to life the right attributes of culture. For example, they can model transformation and reinforce the culture by:

- Structuring and delivering communication that engages, inspires, and has impact
- Maintaining awareness and enabling understanding, showcasing wins and spotlighting desirable behaviors
- Encouraging innovative thinking and ensuring that disruption is valued as an opportunity
- Removing roadblocks and safeguarding structures and programs that pave paths to transformation

So, culture relies on a leader-culture cohesion. Ultimately, this cohesion is perceived and felt by people. And it is having the right people or talent inside the organization that is the next critical enabler of the transformation.

Figure 5

Is your culture fit for transformation?

Our research shows that cultures that encompass the following elements are best fit to thrive in the digital world:



The right talent.

As we've seen, many companies have started their journey towards building IOT organizations. The journey roadmap navigates strategy execution, leadership, and culture. The route must also include the workforce itself.

Here are some statistics related to digital transformation and the roadblock: People.

- 63% of executives believe their digital transformation efforts are stalled because of difficulties in “changing company culture to be agile.”
- 39% of executives see “resistance to new ways of working” as a primary challenge to digital transformation efforts.
- One in five executives secretly believes digital transformation projects are a waste of time.

For the manufacturing organization contemplating becoming smarter, the question is: What makes their workforce “right” in their digital transformation context?

Korn Ferry research has revealed four digital transformation talent categories that consistently correlate with transformation success or failure:

- **Accelerators:** Talent that is already digital and is willing to try new ideas and can help accelerate a company's IOT and digital journey.
- **Learners:** Talent that is interested in joining the digital journey but has some skills gaps. Such people need to be trained for specific skills.

- **Blockers and derailers:** Talent that does not believe in the digital journey and tries to throw curveballs to stop progress. Such talent needs to be identified and removed from the organization.
- **New talent:** Talent with skills and competencies that do not exist in the organization. Such talent needs to be brought in from the outside. There are multiple ways to import such talent, including traditional hiring approaches and, as a trending practice, through strategic partnerships with technology firms and other companies.

The industrial manufacturer needs to assess the current workforce in terms of these categories to more confidently predict transformational outcomes and, through this exercise, identify the opportunities to drive change within the workforce with confidence.

Bringing it all together.

The IIOT positions industrial manufacturers to seize the benefits of digital transformations that lead to new opportunities, build new interconnected ecosystems, and enable new reach, products, and services. The transformation is embodied in the exciting vision of the smart factory of the future.

Taking advantage of these promises and realizing return on investment will require identifying the right targets and formulating a digital strategy that reflects the uniqueness of each organization and remains focused, in spite of disruption, on achieving business outcomes.

The strategy, however, needs attention and execution from the inside. Strategy execution cannot be “outsourced.” Results, therefore, require top leadership that is digitally capable, aligned, and able to change as individuals and as a team throughout the transformation journey.

But even the best digital transformation leaders will not advance the strategy, unless the culture is intentionally designed to enable progress—which means putting the

spotlight on those cultural signals that the workforce needs to see and emulate. This requires leaders to commit to modeling the right behaviors and equipping them with the right resources and tools to maximize their impact.

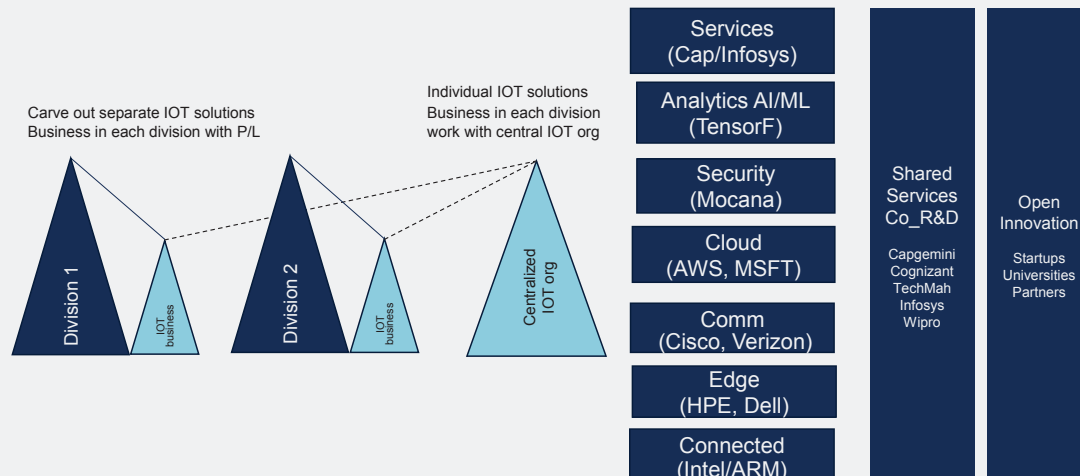
Finally, the workforce must be considered for capabilities and readiness for change. An assessment based on a model of talent will indicate where there are blockers or gaps. These must be addressed through transitions and acquisitions, recognizing that acquisitions can happen in traditional and newer ways.

It takes intention and persistence to drive a transformation. The benefits, however, are too substantial to ignore—improved business outcomes, greater productivity, reduced costs, increased operational efficiencies, new revenue streams, continuous delivery of software services, new product/service innovation, greater focus on client/customer needs, and more.

Are you ready to embrace IIOT and create a bold vision for a new future?

Figure 6

Bringing it all together.



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About Korn Ferry

Korn Ferry is a global organizational consulting firm. We help clients synchronize strategy and talent to drive superior performance. We work with organizations to design their structures, roles, and responsibilities. We help them hire the right people to bring their strategy to life. And we advise them on how to reward, develop, and motivate their people.

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The Korn Ferry Institute, our research and analytics arm, was established to share intelligence and expert points of view on talent and leadership. Through studies, books, and a quarterly magazine, *Briefings*, we aim to increase understanding of how strategic talent decisions contribute to competitive advantage, growth, and success. Visit kornferryinstitute.com for more information.