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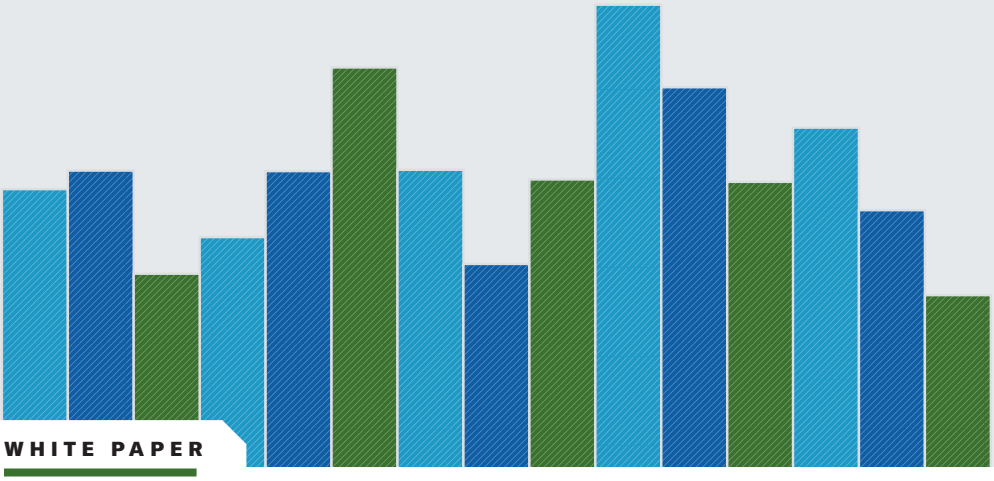
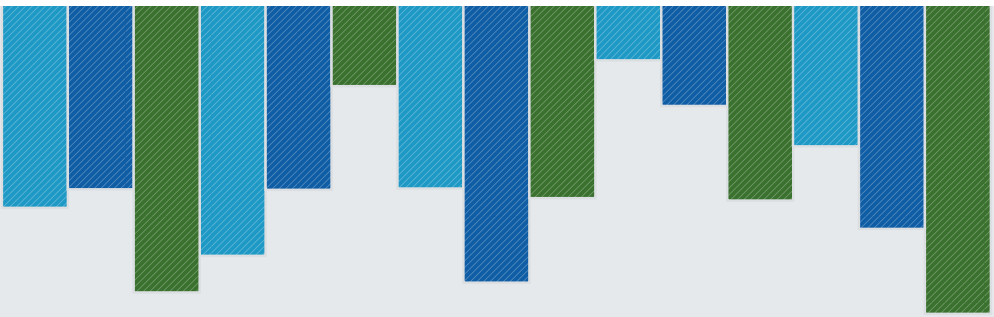


WHITE PAPER

Digital Transformations in Industrial Companies



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Chief Technology Officer and Chief Strategy Officer

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Digital Transformations in Industrial Companies

Industrial companies in fields such as manufacturing, transportation, and infrastructure undertake digital transformations for various reasons: To build the digital sophistication needed to survive and thrive in a connected technological world. To simplify unwieldy systems or overlapping, repetitive processes. To respond to the new challenges and increased digital expectations resulting from the Covid-19 pandemic. To use digital capabilities such as smart buildings, smart infrastructure, digital twins, and the internet of things (IoT)—and the enormous amount of real-time data they generate—to make their operations smarter, more efficient, and more resilient. To seize competitive advantage by creating new business models or lines of revenue. Or for all of these reasons and more.

But transforming an industrial organization is no easy task. Only 30% of transformations for all companies achieve their objectives, according to recent research from Boston Consulting Group.[1]

To transform their firms successfully, executives leading these massive change efforts must set the goals and priorities, align all levels of the company, communicate changes to employees, update legacy systems, invest in new tools and new skills, and choose a digital partner that can help the effort succeed. In addition, leaders must know the security risks of connecting information technologies (IT) and operational technologies (OT) through the internet, as the 2021 Colonial Pipeline ransomware attack

HIGHLIGHTS

There is no one-size-fits-all approach to digital transformation. Each company's **approach to strategy, processes, and staffing must be connected to its unique goals**.

While cyber risk looks similar for many organizations, **sustainability concerns vary widely by industry** and even by company.

Some companies attempt to undertake a digital transformation alone, but **working with a partner can help with such initiatives as setting the change effort's strategy, building technology solutions, and supporting culture shifts**.

To transform their firms successfully, executives leading these massive change efforts must set the goals and priorities, align all levels of the company, communicate changes to employees, update legacy systems, invest in new tools and new skills, and choose a digital partner that can help the effort succeed.

brought starkly to light. And they must do all this under rising pressure from customers, regulators, and investors to meet new environmental standards. Getting all of these details right is a challenge—but companies that do may see improved operational efficiencies, cost savings, and long-term business viability.

"In about one to two years' time, we get to a point where abundant data will come from our machines," says Matthias Kuss, CEO of Berlin-based Fresenius Medical Care Data Solutions. "If we want to be ready then, we need to build our capabilities and business models up until then, and we need to just get started now."

Setting Goals and Getting Started

Industrial companies that pull off successful transformations know exactly what they are trying to achieve with the change effort. While this may sound obvious, there is no one-size-fits-all approach to digital transformation; each company's approach to strategy, processes, and staffing must be connected to its unique goals. Crucially, the approach should account not just for the company's current products and services, customers, and markets, but also for its future ones.

A common goal for transformations is to build a "digital backbone," the core infrastructure needed to carry out a tech-enabled change effort. Every company's digital sophistication is different, and ensuring the right technology and systems are in place depends on what the firm has and what it doesn't.

For industrial companies starting from a place of limited digital expertise, this backbone is the key to staying competitive with more agile, higher-tech peers. The Oman-based Zubair Corp., a conglomerate that operates in sectors including energy, engineering, and automotive, found a few years ago that its systems were far behind customer and market demands. Years of acquisitions had resulted in its companies having a range of technologies and processes.

"It became harder and harder for the businesses themselves to access the data, never mind the head office," says Abdullah Al Balushi, board adviser and leader of Zubair's transformation. It could take a week for Zubair to tell customers what it had, whether it was available, and what it cost. As cloud, mobile, and other technologies grew, so did the gap between Zubair and its competitors. "We had to reinvent ourselves to face this new reality," he says.

For organizations with a stronger technology foundation, a digital backbone supports their transformations' main objectives. When Volkswagen (VW) aimed to improve the productivity of its manufacturing systems by 30% by 2025, leaders quickly realized that business as usual wouldn't get the company all the way there, explains Nihar Patel, executive vice president of new business development. Reaching the goal would require VW to digitize its production and manufacturing systems—and doing so would require an additional initiative. So VW set out to build "the industrial cloud," a platform that lets plants and vendors share challenges and tested solutions. "You would be able to go there and say … 'VW uses that [solution] across 20 or 30 plants—that's a pretty good seal of approval,'" Patel says. As contributors share more use cases, VW expects the platform to become increasingly valuable over time to all parts of its supply chain.

While planning their digital efforts, industrial companies should also consider how new capabilities can unlock new business models and revenue streams.

Airborne—a technology leader in the field of robotic platforms for the manufacturing of composite materials and components for high-performance industries such as aerospace, automotive, maritime, and new energy—is building digital and fully automated factory lines as well as complete digital factories. Historically, manufacturers of composite components produced their composite products manually, using a process with mostly standardized steps, with little room for innovation. While the industry nowadays automates factory processes, automation normally comes before digitization. But The Hague, Netherlands-based Airborne leapfrogged the usual approach by integrating both automation and digitization from the start, so it can respond quickly to unexpected developments— and this is essential to working with specialized, sensitive materials like composites.

"Our robots need to be able to reprogram themselves on the spot," says Airborne CEO Arno Van Mourik. "For us, it's pretty clear that a digital production system is the only way to fully automate composite production."

Some newer companies don’t mind how the composites are made as long as they function as expected and are economical. In these cases, Airborne can either make the composite components or, in a departure from past processes, build a fully digital and automated production line for the customer in-house and then help to run and optimize it: “composites as a service,” as Van Mourik calls it. Traditional composite companies might find this approach threatening because their knowledge and intellectual property live in the clean rooms where the products are made, Van Mourik says. Still, he believes composites as a service will work for most markets. “That’s actually the type of modern production that we want to see,” he says. “We think this is the future.”

Working with Complementary Firms

Industrial companies in many sectors are awash in data, and they can develop new business models by finding creative ways to use or sell it. Infrastructure companies may have any number of sensors collecting real-world data. As products become smarter, their sensor-collected information can help companies create smart ecosystems for those products to operate in. Carmakers mainly make money by selling cars; for connected autonomous vehicles to add greater value, roads will need to become smarter, as well—“otherwise, you’re still driving around on dumb pipes,” says Peter Adriaens, director of the Center for Smart Infrastructure Finance at the University of Michigan. Smarter roads, he says, could track which kinds of vehicles are going over them, where, and how often, collecting data carmakers might find useful in production, or delivering value-added services for customers or fleet management. Without smart roads, however, the upside of autonomous vehicles is limited, Adriaens says. And since “the bottleneck lies outside of the corporation,” companies need partnerships to accomplish jointly what they can’t do alone in an increasingly digital service economy.

Sharing data and its insights can open up partnerships that have never existed. Original equipment manufacturers for electric vehicles are now signing agreements with energy, telecom, IT, and software companies, Adriaens says—well beyond partnerships they’ve made in the past. “These new engagements in this digital economy are going to completely transform not just how you make things, but also how you are going to operate. Where’s your future revenue going to come from?” Adriaens says. “Those are going to be the big questions of the future.”

Industrial companies that aim to transform their processes and businesses should prepare to show customers and partners the value of this transformation to get them on board. Airborne has a return-on-investment (ROI) calculation for its digital production system, but it finds its customers better understand the benefits in terms of human work hours saved. Additional benefits include significantly increased efficiency, decreased waste, and the flexibility to make changes in all the logistics leading up to production. “It takes a lot of rethinking by a company to be able to address that kind of business interaction, because this is not what they’re used to,” says Van Mourik.

Prioritizing Cybersecurity

One critical area for digital transformations is the security of digital operations.

Most business leaders know that their company's cyber risk increases as they connect more processes and workflows to the internet. Digital processes often depend on the open flow of data and information, such as when sharing data or sending updates to smart machines. But mitigating the risks involved is challenging; because attackers are constantly looking for new ways past defenses, threats arrive from unexpected sources. "The problem in the cybersecurity community is that it's very difficult to anticipate unknown attacks," says Yiheng Feng, assistant professor of civil engineering at Purdue University.

Yet even though companies across industries and countries face cyberthreats, some executives are reluctant to commit resources to fight them, viewing security as a cost rather than an investment. "If they had a million dollars, would they go and open a new office or put better cybersecurity in the existing office?" asks Zubair's Al Balushi. "They will always take the million dollars and open a new business."

But waiting to prioritize security until after an attack is the wrong approach, Al Balushi says—not least because the company might never know it has been hit. Without cybersecurity barriers, hackers may be able to access systems and valuable data without triggering alarms. While there are no easy solutions, making cybersecurity anything less than a core component of a digital transformation will backfire, and senior leaders have to be fluent in these issues to lead the way.

"Businesses will do themselves a big favor if they have somebody at the board level who fully understands cyber risks, and then equally have somebody at the executive committee level," Al Balushi says. The National Association of Corporate Directors has published *NACD Director's Handbook on Cyber-Risk Oversight*, which details a set of principles that all corporate boards should adopt (see sidebar).[2]

Security is also paramount because the nature of connected technologies means problems can create ripple effects beyond any one company. Cybersecurity in autonomous vehicles is not only about transportation and automotive, Feng says—other sectors such as communications and insurance may be drawn in when something goes wrong. If a hacker causes an autonomous vehicle to crash, Feng says, "Whose fault is that?" The answer could affect insurance costs and other factors. A security breach like this, Feng says, can harm "an ecosystem that involves multiple industries. It's not only in transportation."

A digital transformation offers a chance for a company to rethink its approach to security. The decision to implement new technologies could be the ideal situation to streamline systems and make them easier to defend. Before its transformation, Zubair had dozens of systems to protect, and Al Balushi knew that attending to them all individually would be extremely expensive: "You end up paying more than you would … [versus] unifying under a single platform." He recommended to the board that Zubair build a new security system from the ground up and partner with a cloud company to protect its digital assets. This approach both improved Zubair's cybersecurity and positioned it to save money in the long term.

CYBER-RISK OVERSIGHT

Five Principles for Corporate Boards

The National Association of Corporate Directors (NACD), in conjunction with AIG and the Internet Security Alliance, has published five principles that all corporate boards should adopt to enhance their oversight of cyber risks.

1. Directors need to understand and approach cybersecurity as an enterprise-wide risk management issue, not just an IT issue.
2. Directors should understand the legal implications of cyber risks as they relate to their company's specific circumstances.
3. Boards should have adequate access to cybersecurity expertise, and discussions about cyber-risk management should be given regular and adequate time on the board meeting agenda.
4. Directors should set the expectation that management will establish an enterprise-wide cyber-risk management framework with adequate staffing and budget.
5. Board-management discussion of cyber risk should include identification of which risks to avoid, accept, mitigate, or transfer through insurance, as well as specific plans associated with each approach.

Learn more at hbr.org/sponsored/2019/02/cybersecurity-in-the-modern-industrial-world.

Given the ever-evolving nature of cybersecurity, leaders of digital transformations should plan how to respond to a breach. Chief among the considerations, Feng says, should be not just maintaining operations but also maintaining the trust of partners and customers. "If an attack happens, what is the mitigation plan? What can you apply to protect your customer to the greatest extent?" he asks. Business leaders should have frank conversations with vendors and partners to make sure everyone has similar views about cyber risk.

And although having a partner is essential to bring in skills and expertise to protect the company, Airborne's Van Mourik says, organizations can't outsource cybersecurity entirely. Finding a balance is crucial. "We need to have our own capabilities, but companies that are specialized are, of course, much better equipped to address it," he says. "So it's a partnership—it has to be."

Making Sustainability a Core Competency

Addressing sustainability may be even trickier than addressing cybersecurity. While cyber risk looks similar for many organizations, sustainability concerns vary widely by industry and even by company.

Historically, environmental, social, and governance (ESG) initiatives have been largely a voluntary effort—companies took action if customers or the market demanded it. More recently, national governments are discussing mandates for ESG disclosures, though the ESG concerns of a food-and-beverage company differ sharply from those of an industrial company.

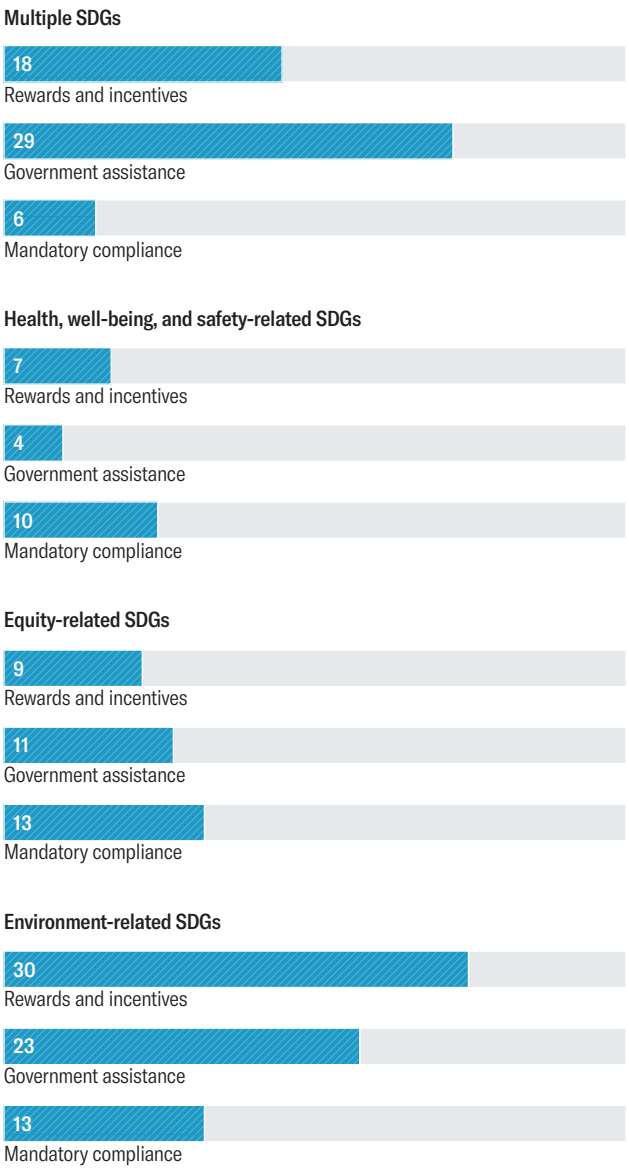
The United Nations, too, is encouraging action on sustainability with its 17 sustainable development goals (SDGs). In a 2021 report, the Organization for Economic Co-operation and Development (OECD) outlines how governments in Canada, Costa Rica, France, Germany, Japan, New Zealand, and South Korea, as well as the European Union, are using a mix of financial incentives, government assistance, and regulations to encourage companies to adhere to the SDGs.[3] **FIGURE 1**

While businesses can choose how much to emphasize their sustainability efforts, it's worth noting how sustainability is evolving with digital technologies and ecosystems, says Adriaens at the University of Michigan. Some banks are starting to tie interest rates on business loans to externally verified ESG metrics; such loans reached $52 billion in volume in the first five months of 2021, a 292% increase over all of 2020, according to Bloomberg.[4] One result, Adriaens says, is that business leaders have to start thinking about the bottom-line financials related to their sustainability efforts. A digital twin might collect metrics and data related to ESG goals, so physical assets that are tied to a digital twin are in turn tied to financial results. "ESG is not this add-on

FIGURE 1

How Governments Support the UN's Sustainability Goals

Number of policy instruments used to support different types of sustainable development goals (SDGs)



Source: OECD, *Industrial Policy for the Sustainable Development Goals: Increasing the Private Sector's Contribution*, 2021

“We need to have our own capabilities [for cybersecurity], but companies that are specialized are, of course, much better equipped to address it. So it’s a partnership—it has to be.”

Arno Van Mourik, CEO, Airborne

thing," Adriaens says. "It is actually fully integrated into your business operations, and therefore fully integrated into your [profit and loss statement]."

Reducing Waste and Energy Usage

Two common sustainability goals for industrial companies are reducing waste and reducing energy usage. Digital transformations can help with both.

VW's sustainability effort, which connects to its goal of improving productivity, also depends on creating transparency in its production processes' energy consumption. The company sets key performance indicators (KPIs) to guide this initiative, and its plants can access dashboards that compare those KPIs with real-time usage data. VW aims to make its entire supply chain greener, from plants to partners and beyond, and its digital systems underpin the effort. "If it's not happening on a real-time basis, you're reactive—you're creating waste in the plant," VW's Patel says.

Data sharing also helps the company stay ahead of machines' maintenance needs, which contributes to greater efficiency. In addition, performance monitoring through digital twins and logistics controls can help identify other areas for improvement. As plants figure out how to optimize their energy usage, for example, they can upload that knowledge to the industrial cloud, where others can learn from and adopt it.

Airborne's digital production system can adapt to changing production requirements and conditions, which helps the company keep production local. While some firms source materials from countries where the resources are cheapest and send parts around the world to set prices acceptable to consumers, Airborne cuts costs by increasing efficiency in-house, Van Mourik says. Its production system is the cornerstone of its effort, because the company needs to produce orders of any size without a large increase in waste, he adds. "You need to be as efficient in producing 10 pieces as you would be in a thousand or a hundred thousand."

Another pressing need—to make its composites lighter without making them more expensive—spans industries including aerospace, mobility, and infrastructure. Here, too, the adaptability of its digital production system helps Airborne produce light materials in a cost-effective way. "There are many angles by which sustainability drives digitization and lightweighting together," Van Mourik says. "The one cannot exist without the other."

Al Balushi admits that business leaders, especially in industrial companies, haven't always prioritized sustainability. Often in the past, he says, "we manufactured goods that would bring us the best return on our investments. We never considered … clean energy or protecting the environment from any harm from chemicals." That's why Zubair is using its digital efforts to reverse the trend. Collecting historical data on energy and product usage helps the corporation predict "any harm you may be doing," Al Balushi says.

"ESG is not this add-on thing. It is actually fully integrated into your business operations, and therefore fully integrated into your [profit and loss statement]," says Peter Adriaens, director of the Center for Smart Infrastructure Finance at the University of Michigan.

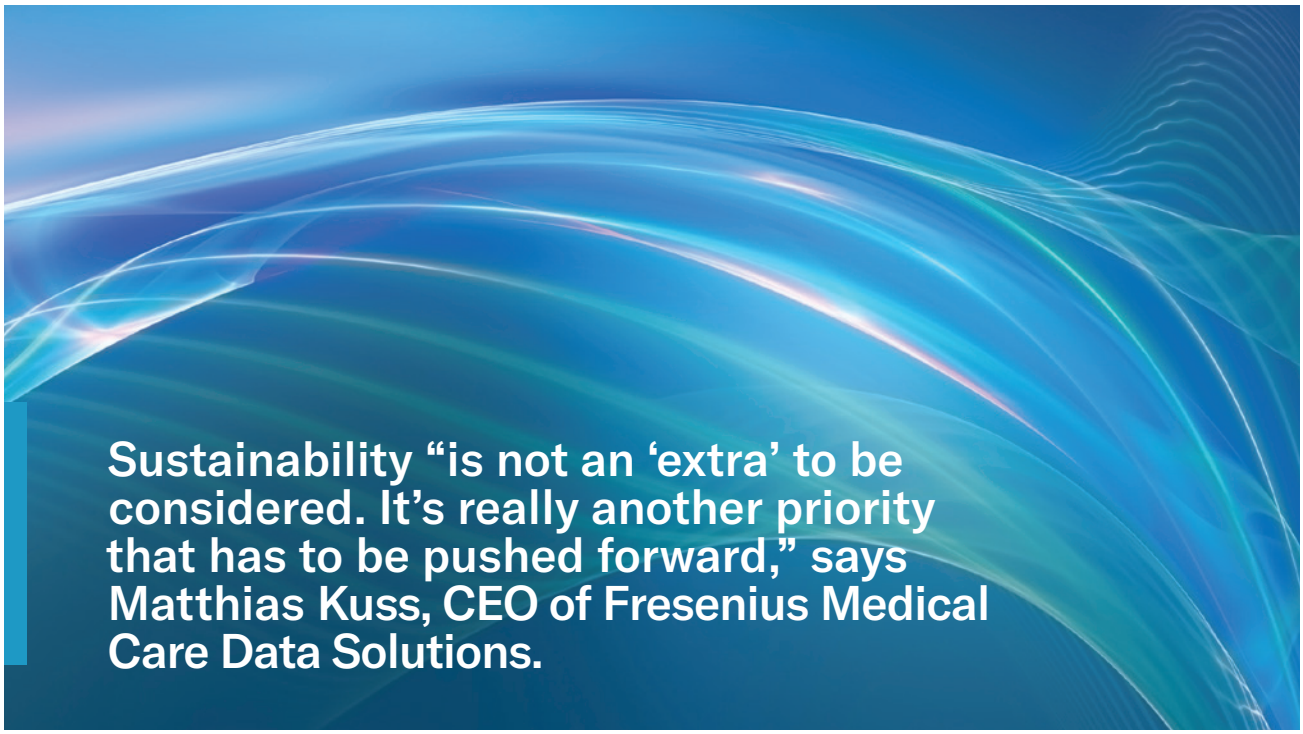
Zubair also collects data on how people react to its products, with a team that continuously reviews and revisits product designs with these insights to make them more environmentally friendly. It also works with nonprofits that advise Zubair on products' life cycles—how people use their products and where they end up. The company wants to know whether a product is "creating any waste at the end of its life, and how can we improve that by … bringing it back and recycling it, or maybe we even design it [again from scratch]," Al Balushi says.

Fresenius, too, is focused on reducing waste, which is a large undertaking, Kuss says, as medical devices involve many single-use goods. The company is trying to reduce its burden on the environment by recycling—or even avoiding—such items as plastic shipping containers for dialysis needles, as well as old dialysis machines, whose parts can be reused to keep plastic and metal out of landfills. Fresenius is working to make these kinds of changes economically viable in both the short and long term. Sustainability "is not an 'extra' to be considered," says Kuss. "It's really another priority that has to be pushed forward."

Addressing Challenges Along the Way

Any change effort faces challenges like keeping functions aligned, communicating the goals and strategy, and investing in new skills. Leaders of industrial companies are likely familiar with these sorts of tasks, but they must address them in ways that support digital transformation while meeting the unique challenges they will face.

One challenge is the potential clash between IT and OT. Traditionally, IT has dealt with areas such as tech infrastructure



and cybersecurity, while OT has focused on running physical systems. With the advent of Industry 4.0 and the industrial internet of things (IIoT), however, physical production systems are becoming smarter and more connected, so IT and OT are less rigidly defined and even overlap.

Business leaders should help the two departments find common ground by communicating their shared goals and continually emphasizing that digital transformation is a joint effort. Rather than any one function succeeding at others’ expense, the entire company thrives—or fails—as one. While IT and OT teams may not be used to working together closely, in many companies the needs of the digital transformation will demand that they do, both now and in the future. That reality means leaders must take action to smooth the path to their collaboration. “We need people who tear down the walls [between functions] and help us move in a more fluid manner,” says Patel. “The wall creators are no longer in business.”

Getting and widely communicating proof points about the transformation’s early wins can help to keep the workforce aligned for the road ahead. Any large-scale transformation takes years, and executives should expect to continually point employees and senior leaders toward the effort’s goals and accomplishments—especially when the major wins are still to come. Zubair shares information through town hall meetings, workshops, group chats, and other standard methods, but Al Balushi also visits a different company each week to personally sit down with any employees who want to talk about the project’s purpose. “I always tell them: This is like climbing a mountain,” he says. “Once you reach the top, you see the green valley on the other end. I’m trying as much as possible to make them imagine what this green valley looks like.” Al Balushi has found that keeping up regular communication can assuage doubts—and even build excitement for what comes next.

Keeping everyone focused on joint goals is also important when working with partners, especially when an organization has multiple partners and multiple long-term objectives. Patel recommends continually making sure the company is focused on joint objectives, and that neither the company nor its partners have taken priority. VW uses monthly governance forums to stay aligned with its partners and engages an onboarding team to help new partners get up to speed quickly and figure out how they can contribute.

Govia Thameslink Railway (GTR), the U.K.–based train operator, had several partners for the transformation program to implement the European Train Control System (ETCS), the digital in-cab signaling system that provides drivers between St. Pancras International and London Bridge in-cab signaling and allows trains to run closer together. These improvements give passengers a more reliable, flexible, and frequent service. The U.K. provided funding and long-term vision; GTR acted as the government’s delivery agent for the brand-new trains, which it now operates, and which in turn were procured and financed by a separate company; Network Rail owned and maintained the train tracks; and another partner built the

trains. "At one point, I remember being in a room with at least 30 people representing the various work streams within the larger program," says CEO Patrick Verwer.

With big, ambitious projects, Verwer says, it's essential for partners to work together to make things simpler. "There are few people who focus on simplification," he says. "When things don't run smoothly in a change program, instead of bringing more people in to dig in and make it more detailed, step back and look at it again and simplify it."

Focusing on People

Sharing information can help organizations overcome resistance to change. For industrial companies, resistance may come from employees who don't have backgrounds in technology, who fear their jobs are in jeopardy, or who feel the transformation is taking attention away from their own projects. At Fresenius, employees have had a range of responses to its digital efforts, Kuss says. "Some see it as an opportunity; some see it as a threat; some are more indifferent." Leaders have to have responses ready for all reactions, which requires listening to employees' concerns and talking through what the changes mean for their jobs.

GTR included train drivers on its implementation team to make sure their voices were heard and to show them how the project would make their roles safer and more predictable. Because the ETCS technology changes how drivers do their jobs, GTR was conscious of involving them right from the start. Too often, Verwer says, "change is implemented very top-down by people who understand systems and technology, but don't necessarily understand the needs and considerations of people who have a job to do."

Employees can pick up new tech skills or shift into new roles, and companies should help them do so wherever possible. Part of Zubair's transformation has been automating back-office tasks such as finance and accounting. For some tasks, automation has cut down processing time by 80%, Al Balushi says—certainly an improvement, but one that makes some jobs obsolete. Zubair leaders are looking for ways to move affected employees into new roles the transformation is creating, or into existing roles that are expanding, such as sales and marketing.

For more tech-enabled jobs, bringing on new skills can help the company shore up expertise where it may be lacking. Airborne has found that people who have digital skills that senior leaders don't can offer new perspectives on its digital production system, which is itself a break from how the industry traditionally designs composites. "We are not hindered by … preconceived ideas … of 'This is how you do it,'" says Van Mourik. "We basically told our teams, 'This is what we want to achieve: If this goes in, here's what you do, and this is what I need out. So tell me what kind of structure we need.'"

"We need people who tear down the walls [between functions] and help us move in a more fluid manner. The wall creators are no longer in business," says Nihar Patel, executive vice president of new business development at Volkswagen.

Zubair is working with universities in Oman to train people in the technology skills it will need. Many of its new initiatives are data-driven, and the company knows it doesn't have the capabilities it needs in analytics, security, and collection for the huge amount of data its businesses deal with. After Zubair's digital backbone is finished, allowing it to break down its businesses' data silos, "Just accessing our own legacy data for the first time … will be a shock to the system," says Al Balushi. "Many current employees just can't cope with that." Unless people are hired or retrained accordingly, he says, the company can't effectively use the data it has. "You might as well not have it," he says. "It will become a barrier. It'll slow you down."

To support its digital change efforts, Zubair is creating a chief transformation officer role that will report to the executive committee and will be responsible for working with business units to come up with approaches to serving markets and customers. Other industrial companies may benefit from creating similar roles, because, while a given change effort will eventually end, transformation is an ongoing process. A senior leader who can head up all change efforts can ensure the company effectively reuses its knowledge of how to make change stick. This kind of role is critical, because one reason transformations fail is that business leaders may lose faith when the process gets difficult, and they don't commit to seeing it through.

"Many people give up too early because it's easier to give into an old way of working than to push that through … to get the really new way of working," says Kuss.

Choosing a Transformation Partner

Some companies attempt to undertake a digital transformation alone, but working with a partner can help with such initiatives as setting the change effort's strategy, building technology

"[Suppliers] expect solutions they can apply across platforms, similar to how apps work across phones. The solution has to be scalable, it has to be in building blocks, and it has to work flawlessly even with modules from the competition," says Arno Van Mourik, CEO of Airborne.

solutions, and supporting culture shifts. A good partner can be invaluable—but industrial companies must know which type of partner they need, and why.

The first step is to honestly assess the company's strengths and weaknesses, so leaders understand how a partner can fill gaps.

When starting its transformation around the industrial cloud, VW's leaders knew what the company was good at: manufacturing and supply-chain logistics. They also knew building the industrial cloud would require outside expertise from both a technology partner and an integration partner. "We looked at ourselves in the mirror and said, 'The right partner is going to be critical for us to be able to create this platform,'" says Patel.

Kuss recommends finding a partner whose experience and skills complement and build on the company's strengths. Fresenius had an extensive knowledge base around artificial intelligence (AI), medical machinery, and using data to personalize patient treatments. But the company had less expertise in building sensors for predictive maintenance. What it needed, Kuss says, was "a partner who has done that several times before, so that it's not [a research] exercise, but really a development exercise." The partner had to match Fresenius's capabilities on the AI side and help the company upgrade the skills and knowledge it was lacking.

Zubair aimed to find a partner that had demonstrated it could do what the company needed. Leaders at Zubair decided against working with partners that didn't have their own businesses beyond consulting; they chose one that could offer real-world solutions drawn from its own businesses. This factor was important to the corporation because many of its companies across multiple industries were so old that they had to be either transformed or eliminated.

Airborne had a unique challenge for a partner to help with. While some digital transformations focus on streamlining a company's technology or aligning with its vendors under a single system, Airborne needed to connect to any system its suppliers were using. Suppliers don't want to switch enterprise resource planning (ERP) or supervisory control and data acquisition (SCADA) platforms to make Airborne's life easier, Van Mourik says. "They expect solutions they can apply across platforms, similar to how apps work across phones. The solution has to be scalable, it has to be in building blocks, and it has to work flawlessly even with modules from the competition," he explains. "That's a very complex thing to do, but you still want to have the new capabilities."

After choosing a partner, bringing it on board early in the planning process is essential. When VW started pursuing its goal of improving productivity, its technology partner had to create new services and tools for the effort—"not just take off-the-shelf stuff and see if the round peg fits into the square hole," Patel says. VW worked with its partner to tailor solutions that met its plants' true needs. "We had to … make sure it's helping, and not just some technology that we're putting together for technology's sake," he says. Later, VW and its partner planned the next stages of the change effort, setting goals for how many plants and use cases it could expand to in the next few years.

Similarly, Zubair needed a partner that could assist with the complete planning process, assessing its businesses on factors such as leadership, processes, policy, and technology, to understand how they needed to change. In later stages, Zubair wanted the partner to work on the implementation plan for the change effort, including strategy, operating model, processes, and roles and responsibilities for the remainder of the transformation.

Finally, many transformations involve culture shifts, and industrial companies should consider how a partner can help there as well. Company cultures, of course, are notoriously slow to change, but speed is often a critical component of transformation efforts. "When you're 670,000 people, globally spread, with decades and decades of history, the ship doesn't change [course] very fast," Patel says. VW's leaders knew they would need a partner that could "kick-start a culture change" by launching early pilots to test the initial steps of the digital journey, learn what works and what doesn't, and iterate on it to keep improving. VW has found this kind of approach very useful for getting everyone on board with the transformation, especially those who were skeptical of the project's goals at first.

"More and more senior executives who may have been sitting on the sidelines, waiting for the proof points … now start coming into the journey and they say, 'Wow, this is pretty neat stuff; we've got to push this,'" Patel explains. "You can now start seeing the journey taking place."

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Conclusion

There is no shortage of pressing needs for industrial companies to address with their digital transformations. Strategy, business models, technology, cybersecurity, staffing, sustainability—business leaders must address them all at once. Working with a partner can help a company beat the odds and pull off a successful transformation, but it's just as important for the company to set itself up to learn and keep transforming in the future.

As new technologies emerge and the demands of customers and markets change, industrial companies have to be ready to change along with them. Those that do will be positioned to maintain a competitive edge, no matter what comes their way. As Patel puts it, "If we were not evolving, then I think we would not be in business."

Endnotes

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