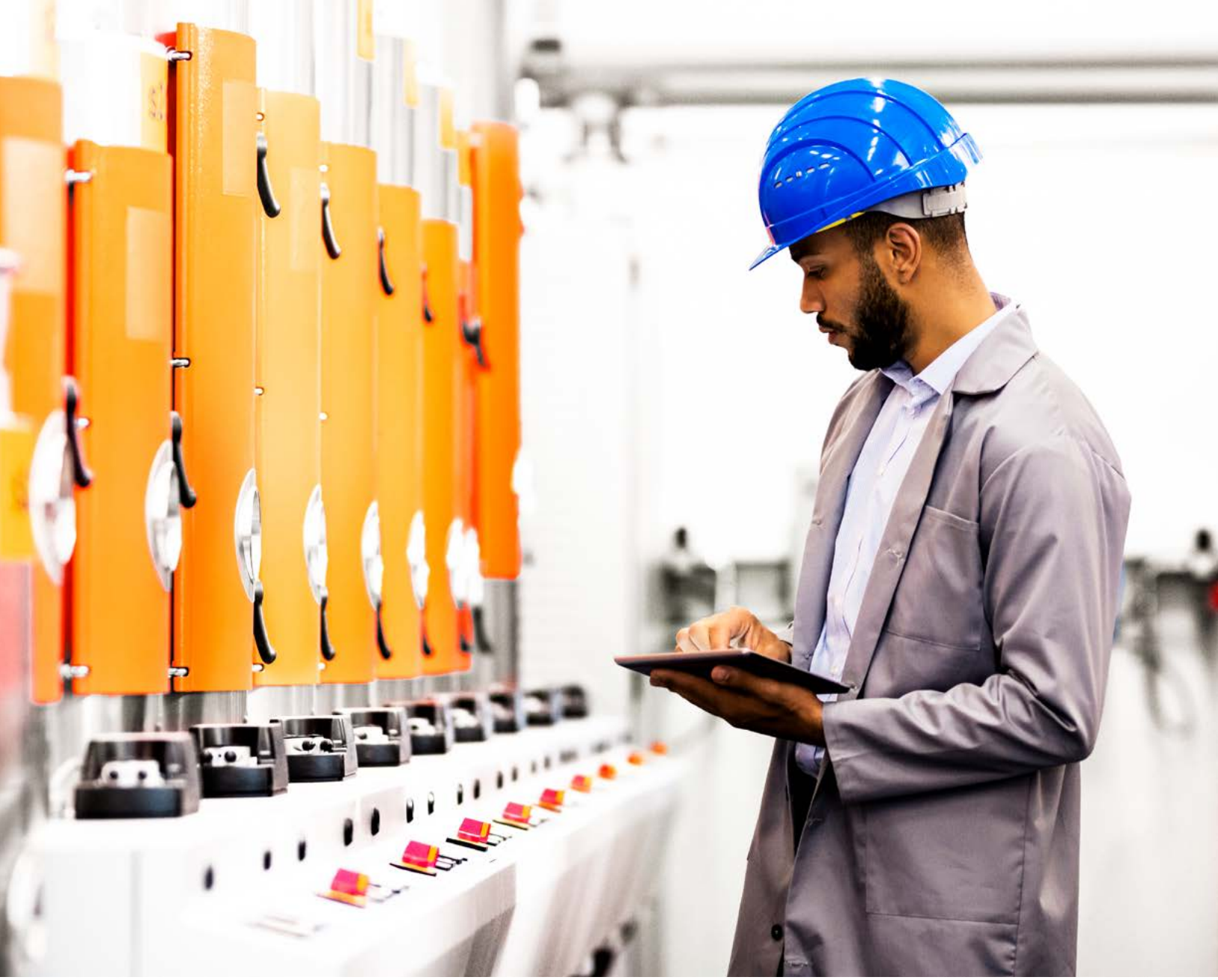
Successful ways to adopt smart manufacturing

verizon business



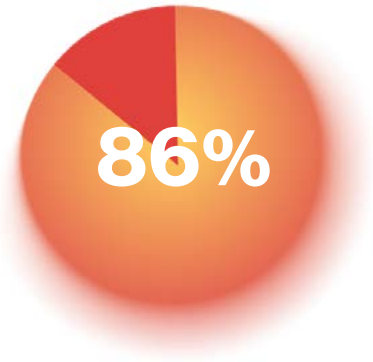
The benefits of connected manufacturing are clear

But transformation can be complex and time-consuming. Here, industry experts discuss how manufacturers are ensuring the success and effectiveness of adopting smart production processes.

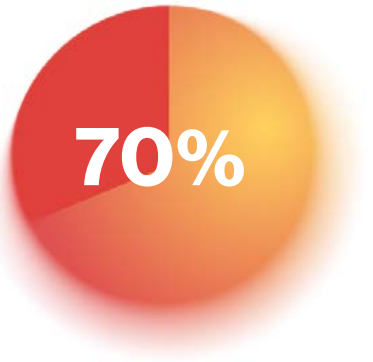
The benefits of digitalization

As technologies like artificial intelligence (AI), machine learning (ML) and industrial automation continue to advance, manufacturers are realizing the benefits of digitalization and embracing smart manufacturing. Often referred to as Industry 4.0 (or even 5.0), connected manufacturers can transform operations by integrating AI and ML as part of the Industrial Internet of Things (IIoT), helping them improve operational efficiency, production attainment and flexibility as well as make more informed decisions based on real-time insights.

Deloitte survey:



86% of surveyed manufacturers believed that smart factory solutions would be the primary drivers of competitiveness in the next five years.[1]



70% have already woven technologies such as data analytics and cloud computing into their processes, and nearly half are already harnessing the power of IoT sensors, devices and systems.[1]

1. "2024 manufacturing industry outlook," Deloitte, Oct 30, 2023. https://www2.deloitte.com/us/en/insights/industry/manufacturing/manufacturing-industry-outlook-2024.html

The obvious choice

For many, it's not a question of whether they should adopt smart manufacturing but how quickly they can achieve it.

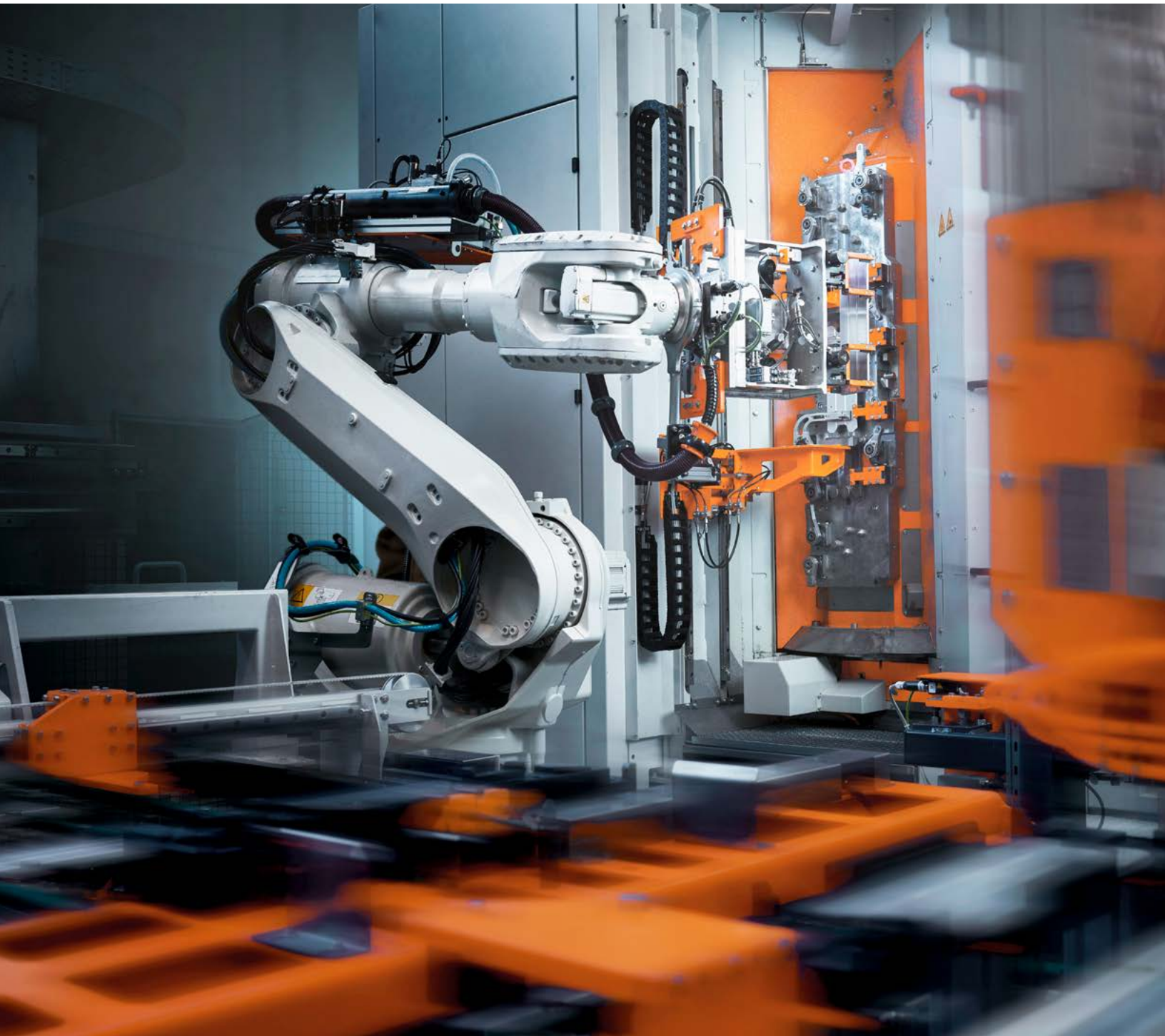
> They've embraced the concept, so virtually every manufacturer we speak to is on a journey. They're all at very different stages on that journey, but they're committed to it."
>
> **Henry Anson**
> Publisher of The Manufacturer

Transitioning to smart manufacturing is not a quick, simple process, however. It requires time, investment and new ways of working – with increased collaboration across silos. But although there are challenges, there are also opportunities to accelerate the journey to digitalization.

Breaking free of pilot purgatory

One thing that often slows or prevents digital transformation is "pilot purgatory." This term refers to organizations that want to integrate new technologies but invariably get stuck in the pilot phase. Although most manufacturers believe in integrating new digital technologies into their processes, they often get stuck in the piloting phase and, for many reasons, fail to ever fully roll the transformation out across their organization.

While the appetite for change is there, joining everything up can be hard. "Many organizations are stuck piloting a part of the site or one site, and they're not connecting it all together," said Sundeep Samra, Verizon Business's Manufacturing Client Partner. "The question is, how do you get the road map to Industry 4.0 or 5.0? It's about how you make progress – that's the big challenge."



How do organizations free themselves from this purgatory and accelerate their digital transformation?

1. Ensure that your infrastructure supports change.

Smart factory technology needs a network infrastructure with the power to support it. If the infrastructure isn't ready or the connectivity isn't strong enough, data gathering, communication and analysis won't work effectively, and problems can arise. So having the right network as the foundation for smart manufacturing is critical.

For example, an automotive manufacturer was hoping to employ a digital twin in its factory. The digital model was used to replicate the plant's physical machinery, with sensors that enabled the manufacturer to monitor performance in real time. It could spot issues before they happened and make informed decisions on the running of the machines. However, the company soon saw discrepancies – the digital twin was reporting a different yield to what the physical machine produced.

When the problem arose, Philip Horn, Verizon Business's Head of Digital Transformation and Innovation, was asked to investigate. "You could see the digital twin of that production line with 300 pieces. But at the end of the actual production line, there were only 260 pieces produced," he said. This led the company to lose faith in the project. "They said that's it, we're going to kill the digital transformation."

But Philip discovered the problem was with the network. The connectivity kept dropping in and out, creating gaps that meant the data reported was inaccurate. And this is something that Philip sees time and again – a problem with the infrastructure halting the progress of transformation. It also shows the importance of keeping infrastructure expertise involved at all times throughout a digitalization project. "A bad wireless LAN was the culprit," said Philip. "This discrepancy is just one out of probably 20 examples."

2. Don’t be afraid to think big.

Organizations are often wary about investing too much, so they start on a small scale. But if the transformation is too small, it’s hard to deliver a return on investment (ROI).

> Often the vision is too small.”
>
> **Sundeep Samra**
> Verizon Business’s Manufacturing Client Partner

One example is a health and nutrition brands manufacturer that wanted to deploy automated robots to move goods through its production line – a job that was being done by up to 22 people. “We met with them and said, ‘You need to extend this beyond that one particular function,’” said Sundeep. “We can reduce [your head count] by automating one stage of this process, and that’s great. But actually the scope [is] larger, because you’re replacing a function with a machine that can do twice as many things and it’s twice as efficient. But you’re not really capturing that additional value in your business case.”

3. Prepare for the long haul.

Businesses also need to think of transformation as a marathon, not a sprint. The return may not be immediate, but by laying the right foundations, it will come in time. When a U.K. engineering firm secured a contract to build the next generation of frigates, it invested in new systems and machines to help deliver the quality and speed required.

> Getting the right cloud infrastructure in place allows them to leverage the latest machine learning."
>
> **Sundeep Samra**
> Verizon Business's Manufacturing Client Partner

With such a large investment, the engineering firm knew it wouldn't see a quick return, so it was harder to build the business case. But the investment was essential. "They were asked to create a business case and give them return on investment in a couple of years," said Sundeep. "But what they're laying the foundation for was enabling shipbuilding for the next 20."

4. Lose the silos.

Like many industries, manufacturers can be held back by working in silos, with various departments operating disparately. The board might be more concerned with business strategy, while operational technology (OT) has the responsibility for managing plant and production machines. Then there's IT, which focuses on connectivity and keeping everything secure. For smart manufacturing to work, these business functions need to collaborate with the same shared vision.

"25% of the problem is technology – bringing what we can to the table with good services," said Philip. "For a project to succeed, 75% is mindset and culture. We need to train the people and help them embrace change by highlighting the personal benefits they will gain."

5. Get OT and IT on the same page.

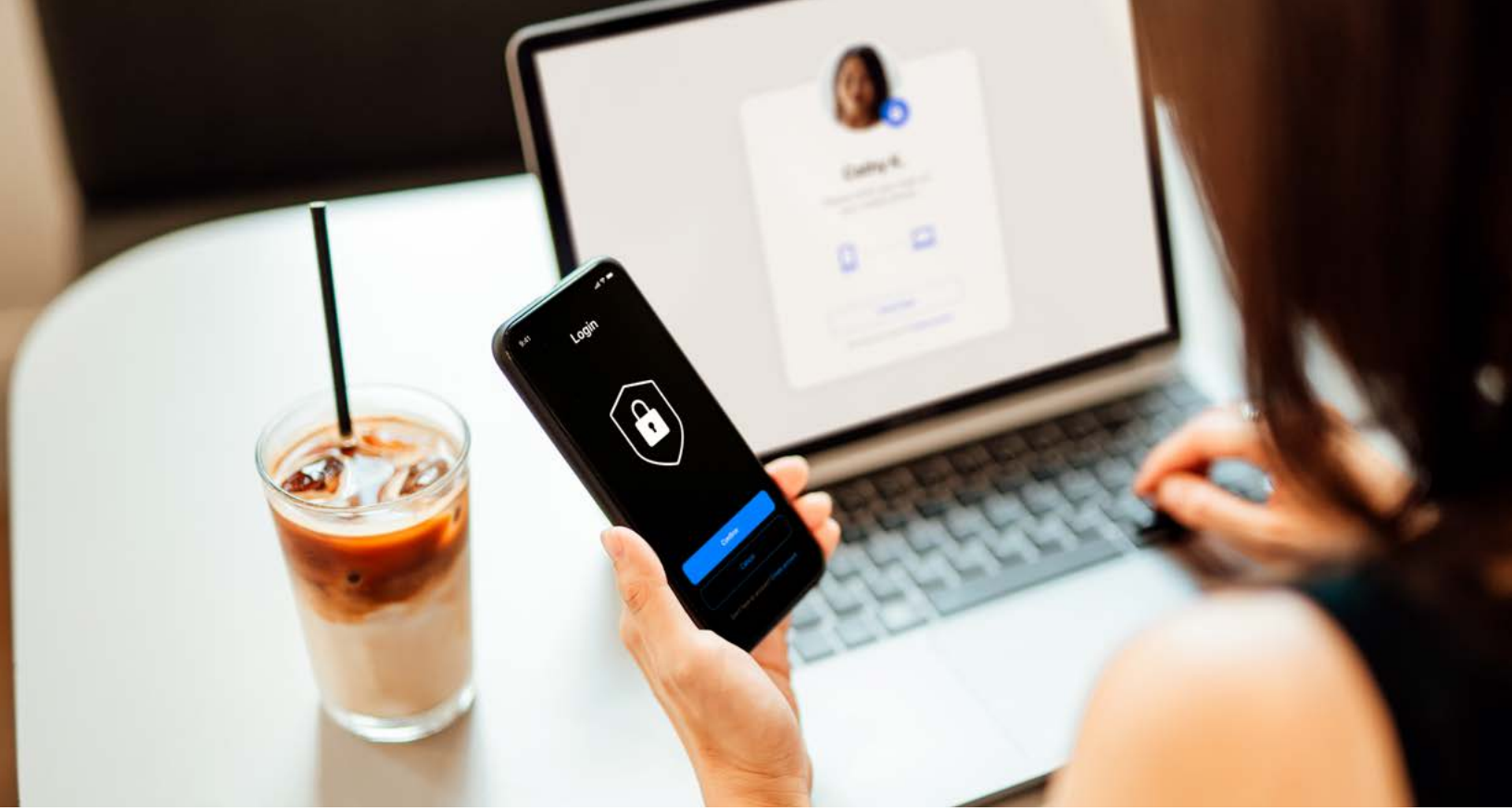
For smart manufacturing to be effective, OT and IT need to work together. In an automated production line, data flows seamlessly between machines. Typically, OT would be responsible for maintaining the running of manufacturing equipment and IT would be focused on connectivity, security and data management. The Purdue model for enterprise architecture in computer integrated manufacturing shows how the different elements of the two functions sit.[2]

Although there used to be a clear demarcation line, many of these functions now overlap. “This overlap grew bigger and bigger and bigger,” said Philip, “because it’s not clear whose responsibility it is.” So now, OT and IT need to converge – working together, managing responsibilities and collaborating toward a shared end goal.

“I’m sure the Verizon Business experts have been hearing about IT/OT convergence for 20 years,” said Henry Anson. “And it is starting to happen.” To aid this convergence, manufacturers have developed a new way to solve the issue – employing a champion who coordinates innovation across teams like OT and IT and facilitates collaboration.

“They are still siloed in a lot of cases,” said Henry, “but most organizations now have what we call a change agent. So there’s no uniformity or conformity of titles, but it’s that director of digital transformation whose role is to try and pull these silos together. Make sure they’re operating with common interests.”

2. “What Is the Purdue Model for ICS Security?” Zscaler Zpedia, accessed Apr 21, 2025. https://www.zscaler.com/resources/security-terms-glossary/what-is-purdue-model-ics-security



6. Keep everything secure.

With increased digitalization and automation and using new tools like AI and ML, organizations open themselves up to greater potential cyberthreats. Manufacturers operating smart production processes will naturally have larger amounts of data stored in the cloud. Plus, with remote access essential for seamless management of machinery, an organization's potential surface area of attack also increases.

"Some machines have a digital twin of themselves running in a cloud that constantly needs information about how the machine operates and even can change configuration settings in the digital twin, which will be propagated back to the machine," said Philip. "So if you have 100 machines on the shop floor and all are connected that way, then you have 100 holes in your security shield, which increases the risk."

To mitigate this, manufacturers need robust, up-to-date cybersecurity. Once again, this requires collaboration between OT and IT. As Philip said, manufacturers need to "open up communications between IT and OT and learn from each other."

Although OT knows how to manage machines in constant operation for years at a time, it's not as used to dealing with things such as attacks or downtime. IT on the other hand, knows exactly how to prioritize and mitigate cyberthreats. By working together, the teams can ensure smooth running of the plant while keeping incursions to a minimum and avoiding downtime.

7. Share and share alike.

To really transform their operations, manufacturers need to think on a larger scale – creating not just one or two digital factories but instead building a fully connected, end-to-end enterprise. This means standardizing and coordinating tools, technology and practices throughout the organization, ensuring seamless sharing of data and learnings.

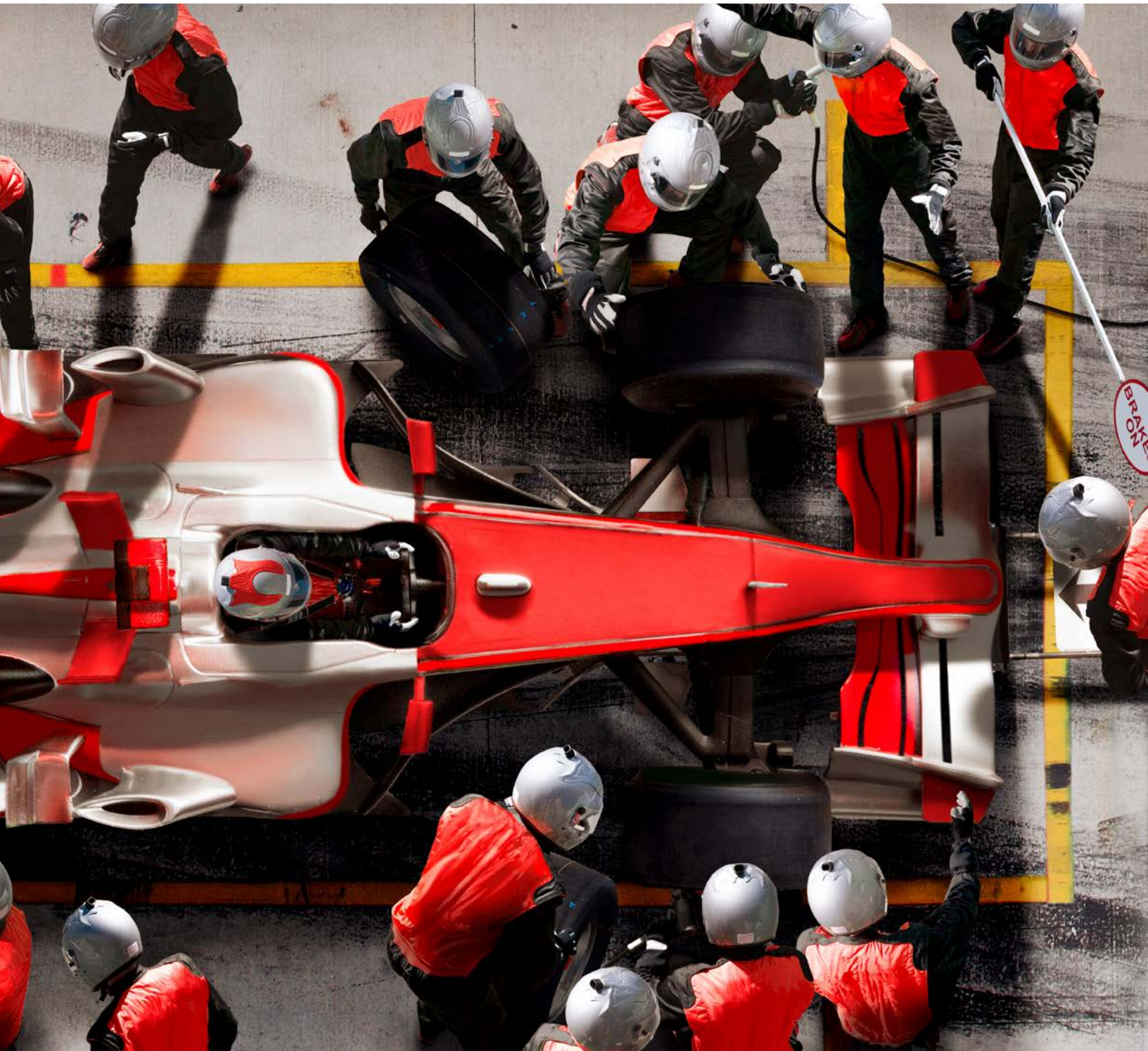
“It’s not just putting a wire between their factories, because all the factories are connected to a network,” said Sundeep. “It’s how they share live data and information across their factories so they can make intelligent decisions around production, demand, supply chain and logistics and make the best decision to increase the productivity and reduce the cost.”

Indeed, the better an organization is at sharing data and harmonizing its operations, the greater its chance of success. “Some very large organizations are still wrestling with governance issues, ownership issues – really quite basic issues around data,” said Henry. “But they all accept and understand that data has to be at the heart of any of these transformation programs.”

8. Get the right people (and only the right people) on board.

For a successful transformation, organizations need to work with vendors that help them invest in, and get more out of, the right technologies. So it's essential to partner with the right providers. However, bringing too many partners on board can be detrimental, causing extra complexity and slowing things down.

For example, in one innovation project, a manager audited the number of vendors the company was using, reducing them from 20 down to just two allowed on the shop floor. With fewer different protocols, the company streamlined the project, making it more manageable.



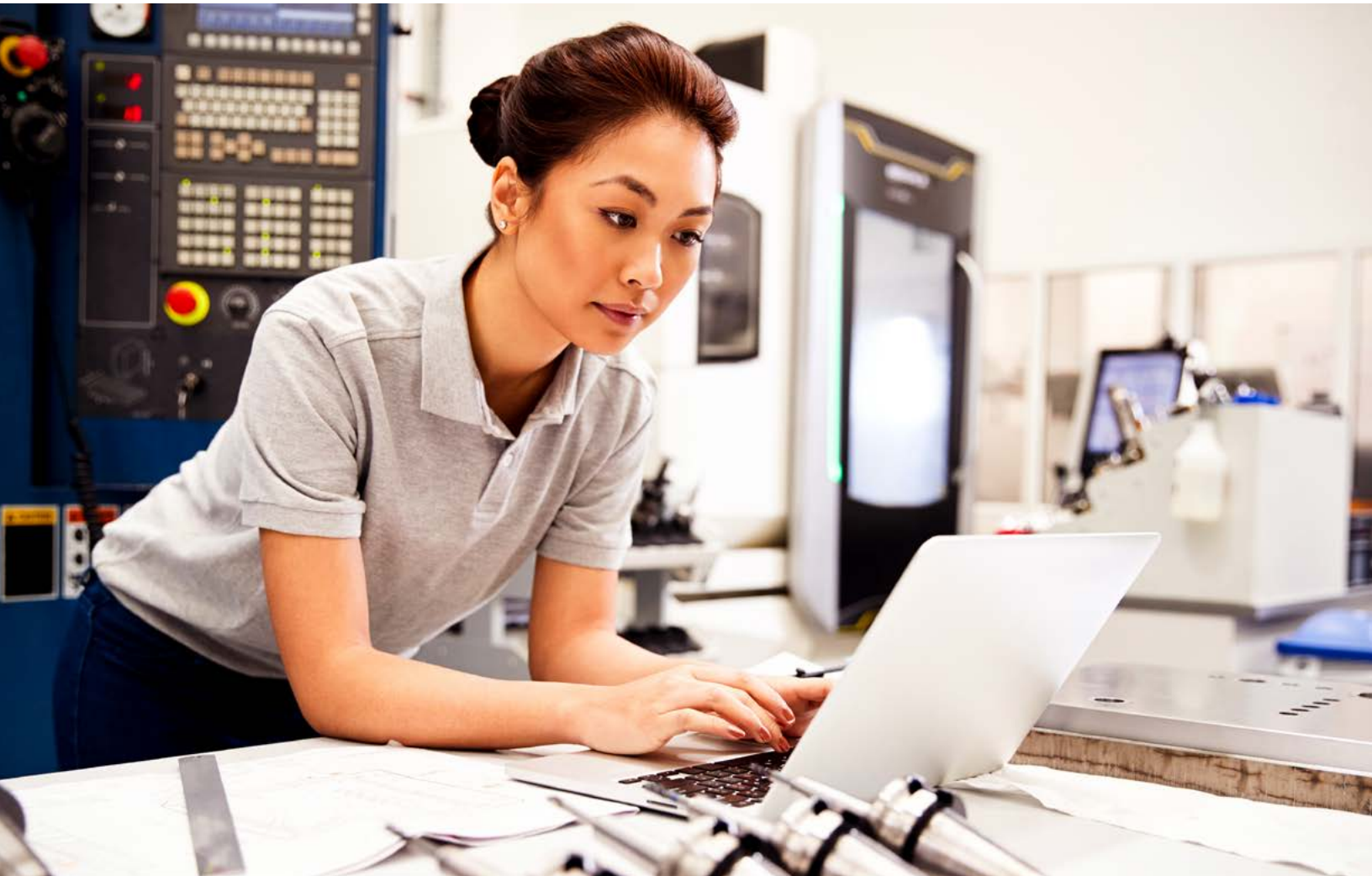
9. Give yourself a head start.

Getting the infrastructure right at the start is key to success. If it's not capable of running new technologies, the project won't succeed. So manufacturers need to work with a partner that can help them shore up an existing network architecture, or create a new one, that helps unlock the value of smart manufacturing.

Security is essential. It can't be an afterthought; it needs to be built into the project from the outset, protecting the whole organization. And it needs to be scalable so as the business grows and exposure increases, the protection grows to match it.

Choice of partner is also key. Manufacturers need to work with a provider that has expertise and experience not only in providing the solutions they require but also in going the extra mile to make sure that what it offers perfectly meets their needs – not just for today but for years to come. That might mean changing the initial brief or scope of the job. And it means finding a partner they can collaborate with honestly and effectively.

"One of my big mantras is that no single provider has the entire solution," said Henry. "I think a more collaborative approach from the people looking to service and sell products and software into manufacturing would help." This is where working with a partner like Verizon Business, which offers bespoke solutions, can be highly beneficial.



Working with Verizon Business

Verizon Business works closely with manufacturers to assess their individual needs and then design, deploy and support an end-to-end solution that enables smarter processes throughout the production ecosystem. Our experts understand the importance of building the right infrastructure to create a digital thread – enabling manufacturers to use digital tools for design, evaluation and life-cycle management throughout their factories.

We help businesses adopt the technology that enables them to improve productivity, reduce waste and boost the profitability of the products they make. We also help align the IT and OT functions, enabling greater collaboration and helping protect the OT assets from cyberthreats. So businesses can maintain production and reduce downtime.

“We are the experts of digital infrastructure,” said Philip. “We know what state of the art is and what’s possible. We help businesses differentiate between what’s just hype and what is real.”

Learn more about how Verizon Business can help you explore and adopt the technology that’s making manufacturing smarter at verizon.com/manufacturing.

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