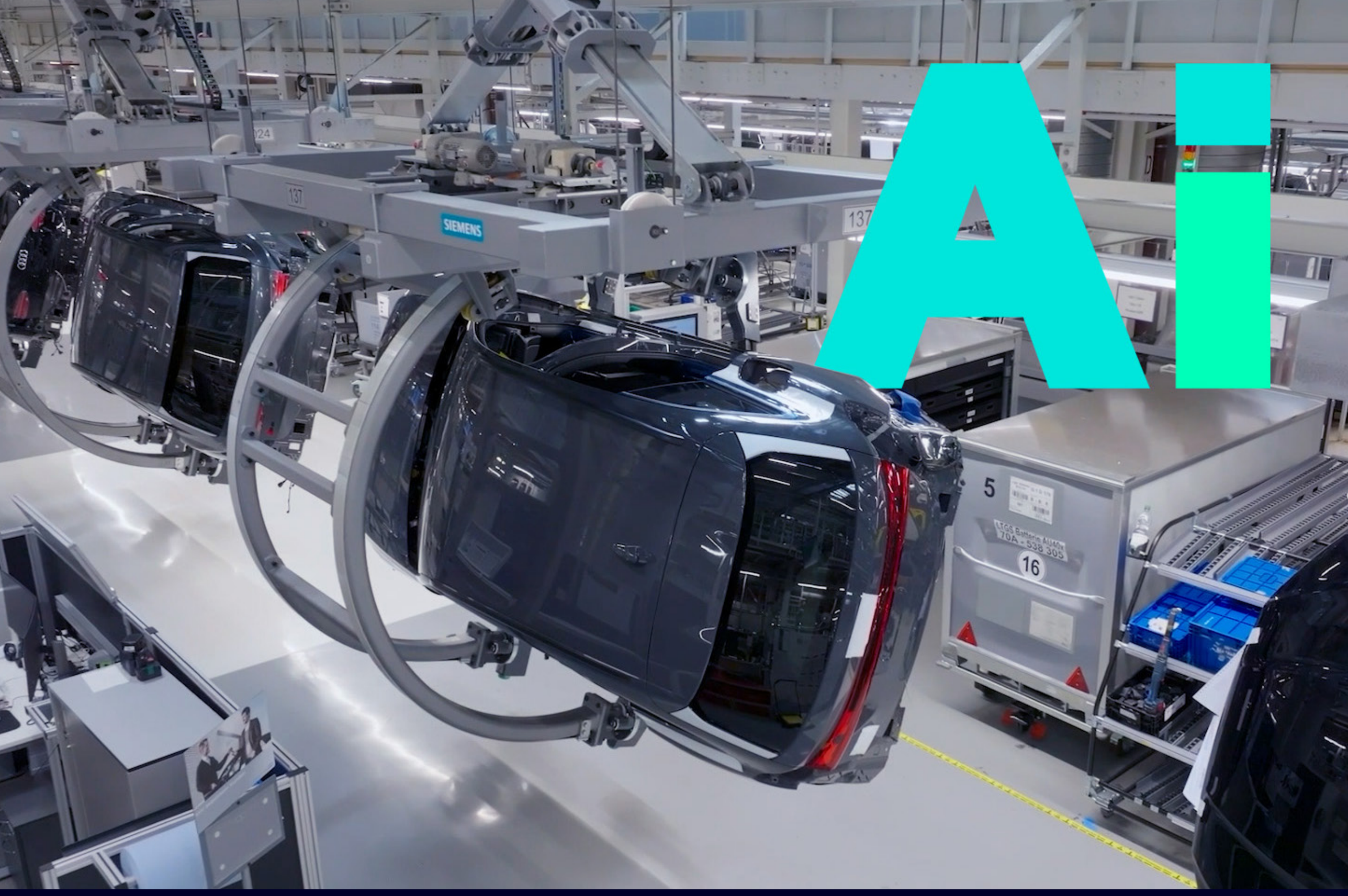


AI is powering smarter, faster automotive manufacturing – **right now**

Are you ready to pioneer new manufacturing methods?

What sets the pioneers apart in automotive manufacturing? It’s their mindset. While others see AI as a risk, they see potential. They bring AI out of the lab and onto the shop floor – where milliseconds, microns, and millions of data points matter. Turning data into action, they move beyond pilots to real impact.

SIEMENS

From peak automation to data-driven breakthroughs

Gain new insights into your production

Automotive production is already a benchmark for efficiency and reliability – but today, flexibility is key. By bringing IT to the shop floor and tapping into real-time data, manufacturers can gain deep process insights and unlock new potential for agile, optimized operations.

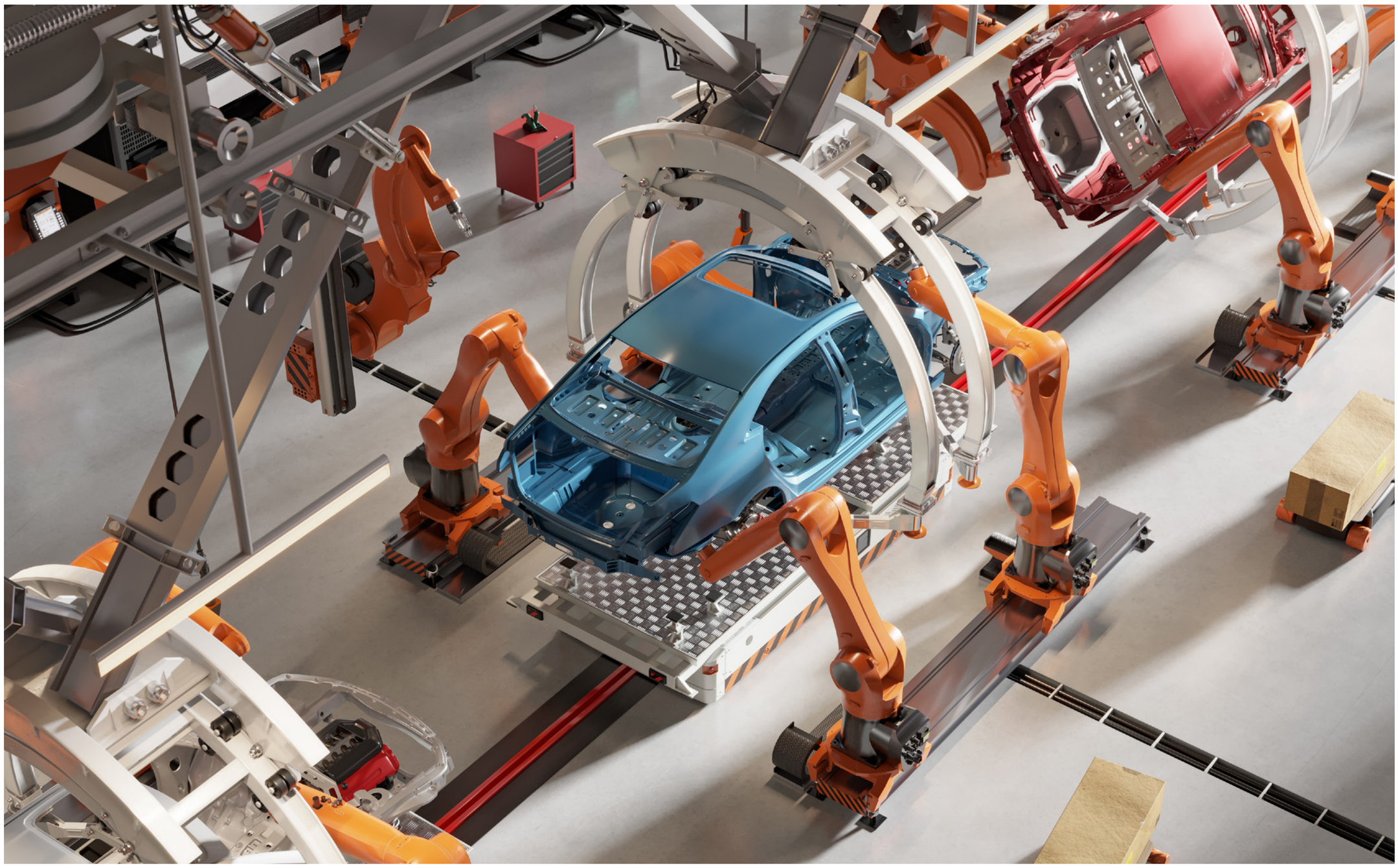
Increase availability

Maximizing availability is essential to keep production lines running like clockwork. But bringing IT to the shop floor raises tough questions: how do you maintain ultra-low latency and meet strict cycle times?

Automation isn’t the finish line – data is

They say automotive automation has already reached its peak. That there’s no more room to push further. But the real game-changer? It’s not more robots – it’s data. Terabytes of it, every single day. The quest for greater flexibility and availability will inevitably lead here. Because when IT and software join forces with traditional automation, the rules of the game change.

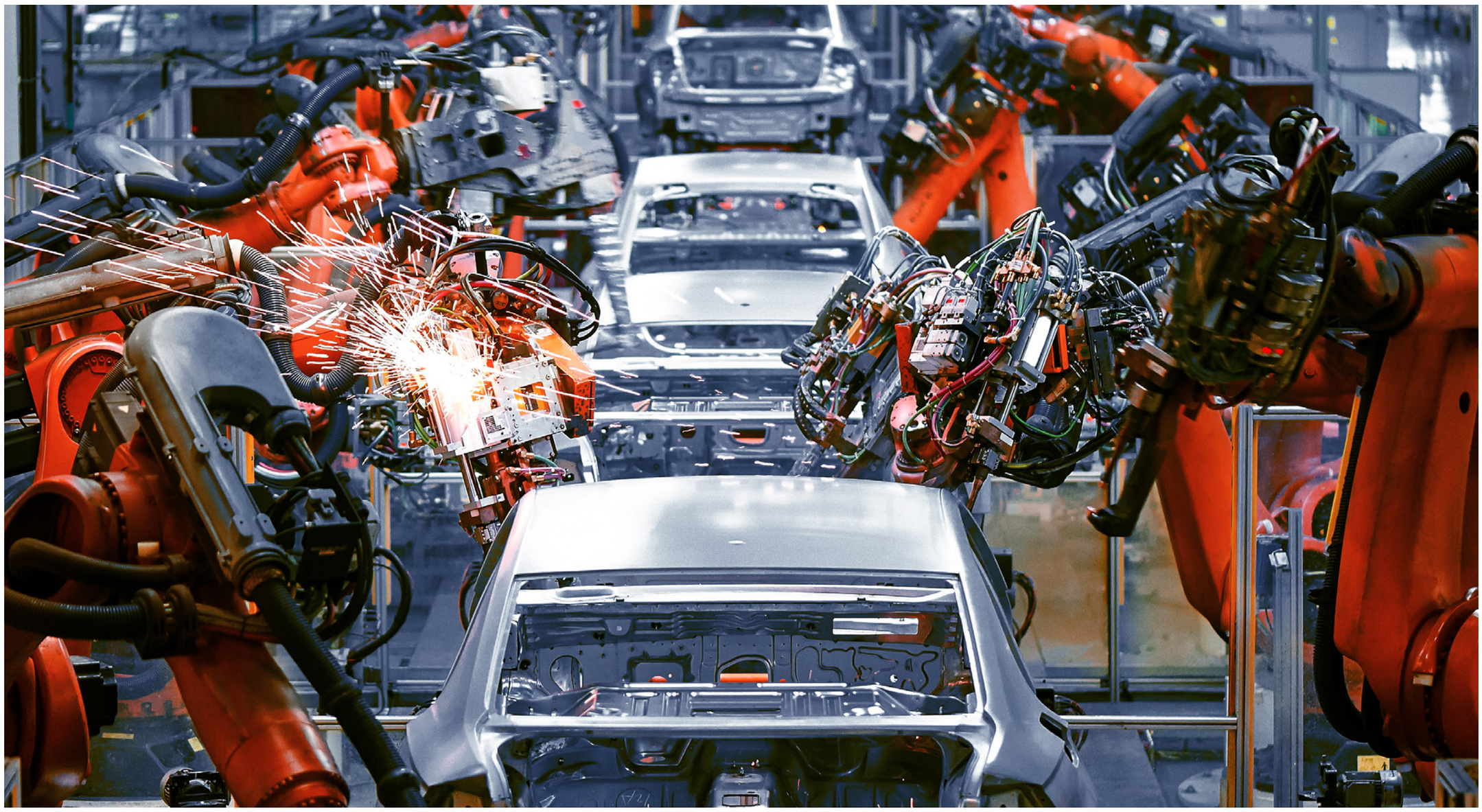
Collecting raw shop-floor data isn’t enough. You need the right infrastructure to capture and analyze it against all relevant information – only then can you conquer the toughest challenges on the shop floor.



Boost productivity and flexibility with Smart Manufacturing

“Smart Manufacturing” isn’t just a buzzword – it’s your next competitive edge. Why waste time with outdated processes when you could plan, validate, and optimize your entire production virtually – before a single part hits the line? Virtual Manufacturing Engineering slashes ramp-up time, cuts costs, and eliminates guesswork.

Now take it further: Rapid factory transformation with modular systems, standardization, and deep IT/OT integration is the foundation that sets your AI free – powering real-time optimization, seamless changeovers, smarter energy use, and adaptive logistics. Make it flexible, resilient, intelligent.
Don’t wait for the future to happen. Build it.



Rapid factory transformation

Electric vehicles are rewriting the rules of manufacturing – and speed is everything. To keep pace, manufacturers must rapidly transform their factories. The key? Standardization, modularity, and most importantly, seamless IT/OT integration – the foundation that unlocks the power of AI on the shop floor.

With AI, machine learning, and edge computing, you gain real-time insights and adaptive control over cost, quality, and efficiency. A unified data backbone ensures the reuse of best practices and drives continuous improvement across operations.

Immersive tools like AR and VR accelerate training and reduce errors, while scalable frameworks and end-to-end simulation empower everyone from operators to integrators.

This isn’t just modernization – it’s how you stay competitive. This is smart manufacturing, redefined.

AI makes your production smart – and adaptive

AI-based solution

Is AI really ready for the shop floor? Sure, we all use large language models and generative AI for text, images – even code. But applying it to automotive production? That's an entirely different playing field. The stakes are higher, the risks real, and the environment less forgiving. Who would take that chance?

Own AI model

And yet, your data scientists, AI specialists, and production experts have done the hard part. They've trained a powerful AI model using real production data. It's tested. It performs. It's ready to make a real impact – optimizing quality, cutting downtime, improving yield. But then comes the next challenge: Where do you actually deploy it? How do you bring that model to life on the shop floor – securely, reliably, and at scale?

How to deploy it?

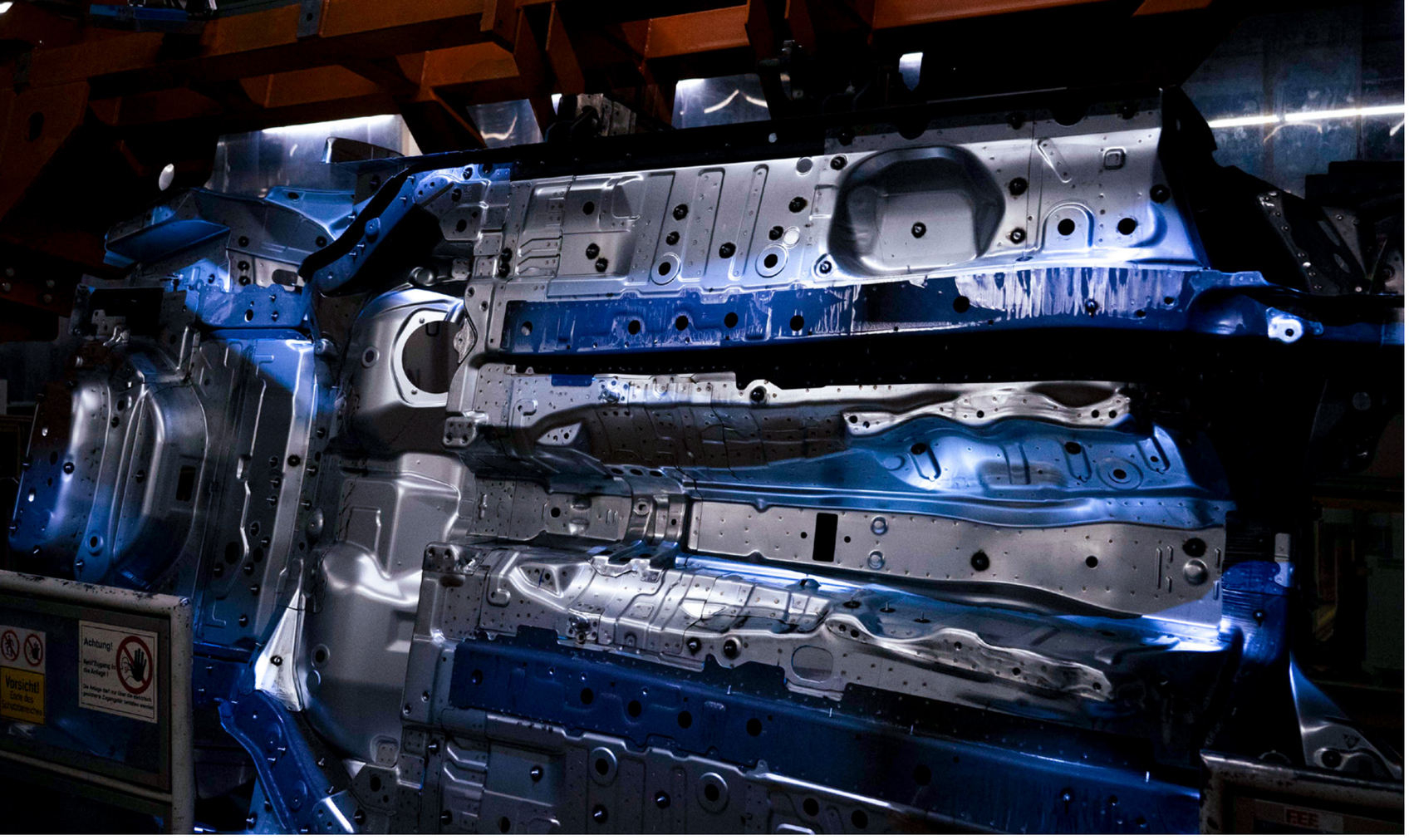
It's not just about developing intelligent algorithms. It's about unleashing them into real operations, seamlessly integrated with IT and OT systems, capable of running under real-world constraints, and delivering trusted insights in real time.

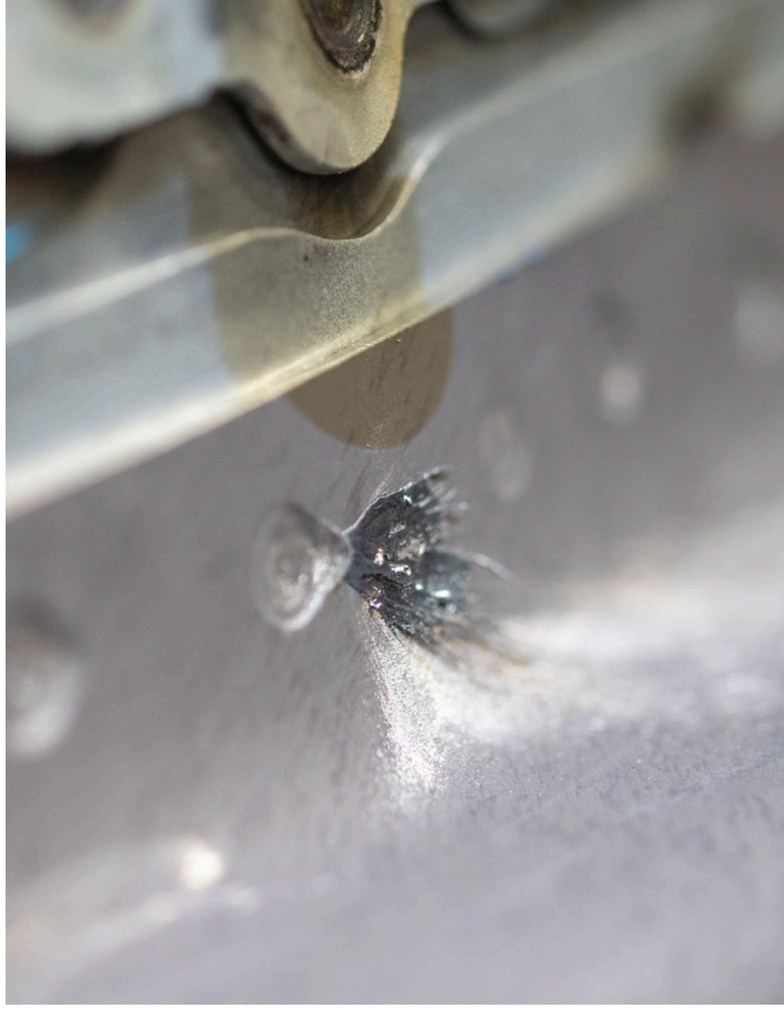
That's exactly what German car manufacturer Audi did.

Audi and Siemens combined AI and edge computing for faster and better quality control

Audi is turning one of its German factories into a software-driven production site by replacing traditional PLC hardware with virtual PLCs running in data centers. Powered by Siemens' TÜV-certified failsafe virtual PLC and hosted on Siemens Industrial Edge, the system offers greater flexibility and scalability. When more computing power or memory is needed, Audi can scale the infrastructure just like in the cloud.

Even more, the Edge platform enables AI applications already in use: in the press shop, AI detects cracks; in the body shop, it identifies weld splatter. This shift not only simplifies infrastructure but also creates a solid foundation for advanced, intelligent manufacturing, marking a bold step toward the factory of the future.





Audi's AI model uses blue light to highlight areas with weld splatters so workers can easily remove them

AI-based weld splatter detection at Audi Neckarsulm

Weld splatter? It's not a customer issue – but it's sharp, potentially damaging the wiring, and dangerous for the people who work with precision on the line. Now imagine this: 1,000 cars a day, 5,000 welds per car, and a 60-second cycle time. Manual inspection? Time-consuming.

So Audi turned to AI.

Their own AI model, running on Siemens Industrial Edge and the Industrial AI Suite, processes camera images in real time, flagging any splatter immediately. Workers can remove it safely and quickly. And soon, robots will take over that task entirely – so human experts can focus on what really matters.

Smarter production, safer factories, and no compromises. That's what happens when AI meets the shop floor.

Mathias Mayer,
Innovation Manager, Audi

"The Siemens Industrial AI Suite and Industrial Edge help us deploy future AI use cases in our factories."

What a scalable AI infrastructure looks like

Hardware foundation

Audi didn't wait for the perfect moment – they made it. Their AI models aren't stuck in research labs or test benches. They're live, on the shop floor, doing real work. How? With a standardized, future-ready solution from Siemens. At the core: Industrial Edge. It puts powerful AI models right where they're needed: at the machine. No lag, no detours, no compromises. When cloud latency is a deal-breaker, Industrial Edge steps in with speed and scalability that grows with your factory.

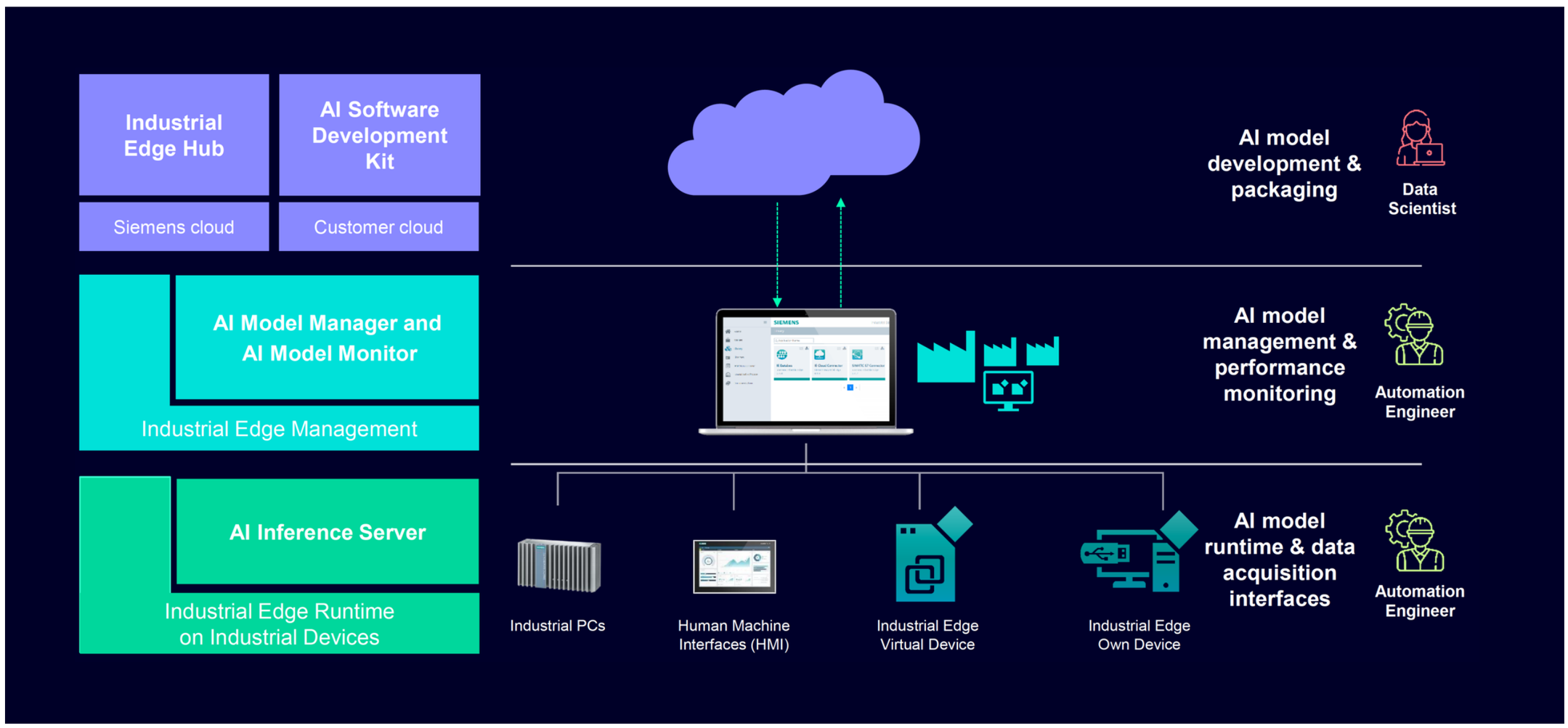
Deployed and monitored, from cloud to shop floor. With Industrial Edge, bringing intelligence to production is no longer a hurdle. It's a rollout.

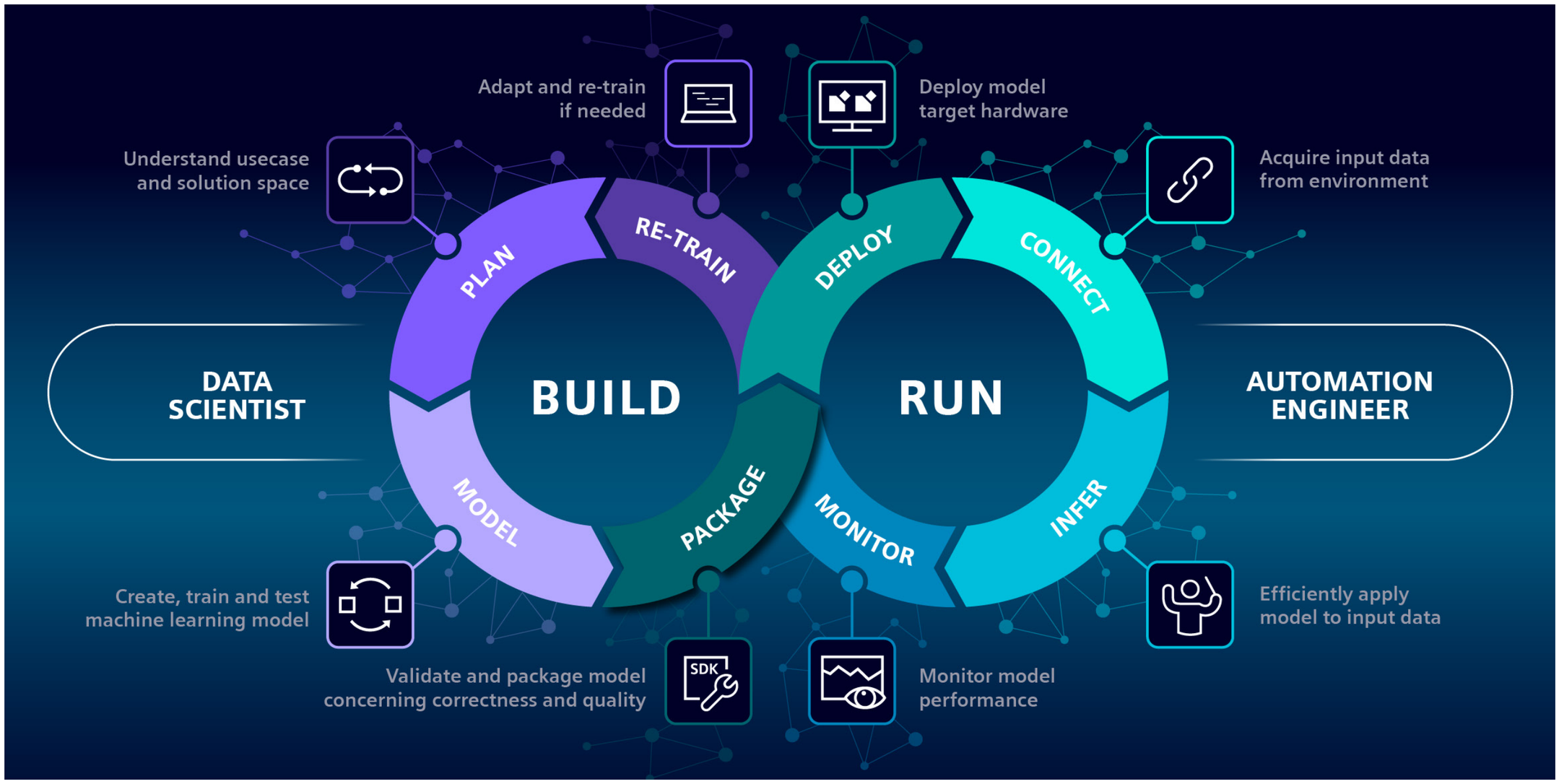
Easy connectivity

Everyone talks about connecting the shop floor to the cloud – but few actually do it. Too many systems. Too many formats. Too many headaches. But what if it didn't have to be that way? With Industrial Edge, it's not. You get built-in IT/OT connectors, ready-to-run integration apps, and full control over your data, whether you use what's in the box or build your own. From field to cloud, it's seamless.

Centralized management

Edge computing only works if you can manage it at scale. That's why Industrial Edge Management exists: not just as a tool, but as your command center. One place to deploy, update, and orchestrate your entire edge infrastructure. Forget tedious rollouts and fragmented maintenance. With Industrial Edge Management, you control apps and devices across machines, lines, even entire sites.





With Industrial AI Suite and Industrial Edge, data scientists and automation engineers can truly join forces. One speaks AI, the other automation – now they build solutions together, deployable at scale, right on the shop floor.

Industrial AI Suite – everything you need to deploy AI on the shop floor

You've built the AI models. Now what? The Industrial AI Suite is your launchpad – from pilot to plant-wide rollout. It's the most complete infrastructure to integrate and operate AI in manufacturing, built to scale across lines, sites, and continents. Seamlessly connect to cloud-based AI environments for training. Effortlessly manage, deploy, and monitor your models, right where the action happens.

Inference of AI models directly on the shop floor

AI Inference Server is a ready-to-use Edge App that runs AI models directly on Industrial Edge – no app development needed. It efficiently orchestrates multi-step AI pipelines, leverages existing hardware, and connects easily to data sources via standard Industrial Edge connectors. Feed results back into automation for closed-loop AI, monitor performance and inference results in real time, and visualize the entire data flow. Supporting up to three pipelines per device and frameworks like TensorFlow and PyTorch, it accelerates deployment and reduces integration time, bringing AI from concept to execution, fast.

Integrate cloud-to-edge and keep track of edge deployments

AI Model Manager bridges your model repository and Edge Devices, securely and reliably. Built as an extension of Industrial Edge Management, it streamlines the deployment of AI models to the shop floor. It works cloud-agnostically, offering a clear overview of available models, fast downloads, and easy deployment configuration to selected Edge devices. Maintenance and production personnel do not need any AI skills. Monitor model performance at scale with built-in fleet dashboards, and simplify the integration process to speed up AI implementation across operations.

Monitor edge infrastructure, inference performance and data quality

AI Model Monitor closes the loop, bringing performance insights from the shop floor back to model development. It continuously tracks AI accuracy in real time, helping you stay ahead of drift and degradation. With seamless integration into Industrial Edge Metric Collector and Microsoft Azure, it simplifies everything from setup to scaling. Use cloud features, tap into historical data, and customize alerts with ease. Whether you're monitoring one model or a fleet, AI Model Monitor ensures your AI runs reliably – so your production stays smart, responsive, and resilient.

Make image and video data accessible with the Industrial Edge Vision Connector

Vision Connector bridges industrial cameras and Industrial Edge with plug-and-play simplicity. Supporting the GenICAM standard, it connects to vision systems like GigE and RTSP cameras and streams image or video data through high-throughput data buses like ZeroMQ or MQTT. Whether you need low-latency feeds or high-throughput analysis, Vision Connector delivers. Configure parameters via UI or config files, view live streams directly, and connect multiple cameras with ease. It's the fast lane to camera integration, so your AI and automation apps get the visual data they need, right when they need it.

Easily package your ML model for inference serving on Industrial Edge

The **AI Software Development Kit (SDK)** helps you turn Python-based AI models into deployable shopfloor solutions – fast. Use familiar tools like VS Code, JupyterLab, or Azure ML Studio to build, package, and test inference pipelines for the AI Inference Server. Ready-to-use templates and examples speed up development, while local testing and CI/CD integration ensure smooth deployment. Whether for image classification or time-series analysis, the SDK gets your AI from lab to line, securely, reliably, and efficiently.

Become a Digital Enterprise faster
With Siemens Xcelerator, our easily accessible, flexible, and open digital business platform, we support our customers in managing complexity by enabling rapid progress across the product and production lifecycle and supply chain. The ability to design, manufacture and deliver products faster translates directly into competitive advantage. With this holistic and end-to-end approach to digital transformation, we help our customers realize their sustainable Digital Enterprise faster and transform their everyday business.