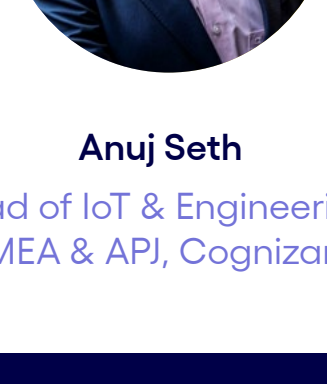


Physical AI:

Where insight becomes action

Close the smart manufacturing gap and turn potential into performance, with expert advice from Cognizant.



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Most large-scale manufacturers are looking beyond pilot programs and investing in the digital infrastructure they need to take AI initiatives enterprise-wide.

But if solutions aren't embedded into actual systems, workflows and decision loops, the benefits can't translate into full-scale operational success.

75% of manufacturers plan to increase AI investment over the next 12 months.*

* Business Insider

Failure to embed AI is often caused by:

- Businesses not being ready or knowing how to ingrain it, or being overwhelmed by choice
- A lack of strong leadership alignment and guidance to counter workforce unpreparedness
- Difficulty justifying further investment when pilot programs deliver isolated value
- Increased distrust and AI reluctance caused by many initiatives stalling before they start

To make investment worthwhile—and avoid losing out to agile, decisive competitors—manufacturers must move from digital insight to physical intelligence.

The focus needs to be less on simply having the technology in place, and more on the actual outcomes it can power across their business.

From smart factory to ingrained intelligence

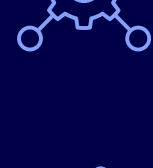
AI's next phase is physical, not digital.

Today, AI's role in manufacturing is typically to analyze data and predict issues to optimize operations, reduce downtime and improve efficiency and demand forecasting. Using AI as a 'brain' to support decisions with insights and recommendations is beneficial, but the next phase goes a step further.

Physical AI embeds intelligence directly into the systems that run production operations, from robots and drones to self-driving vehicles and industrial automation. For manufacturers, this creates real value:



Equipment and machinery can make and execute decisions in real time



There's less need for manual input or oversight, so workers can focus efforts elsewhere



Quality issues are resolved in-line, without halting production or creating downtime



Hazardous tasks can be performed by AI-enabled systems to protect human wellbeing



Tests can be run and rerun and parameters adjusted automatically

Physical AI marks the shift from observing to intervening, from recommending to responding and from offering insight to taking action.



Case study:

A global climate innovation leader partnered with Cognizant to modernize its digital factory modeling and simulation capabilities, using a high-fidelity twin within the NVIDIA Omniverse.

This approach reduced certain modeling timelines from over six months to six weeks and significantly decreased the risk of costly rework and deployment errors.

Create impact in every corner of your factory

It's time to leave limits behind.

Technology is becoming simpler to use, easier to integrate into workflows and more capable of operating within real environments. At the same time, machines, sensors and connected systems are generating richer, more usable signals, empowering AI to interpret and integrate data for informed, impactful decision-making.

This creates a unique opportunity.

AI and physical systems can now work harmoniously, meaning those that directly connect intelligence to their operations are able to successfully scale it across their organization. We know the impact is tangible. But to reap the rewards, organizations must create the right conditions for ingrained implementation.

70%

of manufacturers that adopt intelligent assistants, predictive tools and automated workflows have reported productivity gains.*

75%

have seen a reduction in onboarding time.*

78%

of Microsoft Azure customers also expect to reduce energy consumption.*

* The ROI of AI

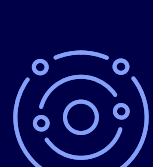
Greasing the wheels of change

Where should leaders start?

If the move from insight to action within machinery, environments and frontline operations is to be successful, manufacturing leaders should:



Employ digital twins and high-fidelity simulations, to allow safe testing and evaluate how physical AI should be deployed before implementation



Recognize that—despite the complexity created by legacy systems, mixed technology and uneven connectivity—AI must be embedded into existing workflows rather than layered on top



Design use cases that work across variations—not just ideal conditions—to build trust and create evidence for securing investment



Ensure decision-making by physical AI is trackable and understandable, with visibility across the system to prevent the introduction of operational and compliance risk rather than resilience



Align with other senior stakeholders to make clear choices about their AI investments, remaining committed to them to avoid wasting resources and generating further reluctance

Case study:

GENTHERM

Global leader in thermal management and pneumatic comfort tech, Gentherm, partnered with Cognizant and Sensory to create a voice-enabled massage seat designed to reduce driver fatigue and improve safety.

Cognizant embedded a mid-sized LLM using Sensory's Voice SDK, creating a custom Python script to map natural language to the seat functions and removing the distraction of driver activation.



Leaders don't have to go it alone. Cognizant acts as a partner to help close the gap between pilot and production, empowering manufacturers to achieve meaningful outcomes.

Embed AI across your enterprise

Take our builder-led approach to intelligence.

Think of Cognizant as your AI builder. For physical AI to be effective, it must connect data, operations and intelligence across the enterprise.

We simplify this process by integrating everything you need—from the technology itself to engineering and operational expertise—to make physical AI a success for your manufacturing business. So you can trade in your siloed programs for embedded solutions that can be easily distributed across your enterprise.

Microsoft helps manufacturers move from fragmented data and isolated pilots to a fully integrated physical AI operating model, which combines simulation (digital twins), AI agents and cloud-to-edge infrastructure.

Close the smart manufacturing gap with physical AI

Want to delve deeper into how you can move from pilot to progress?