Harnessing AI ROI in Industrials

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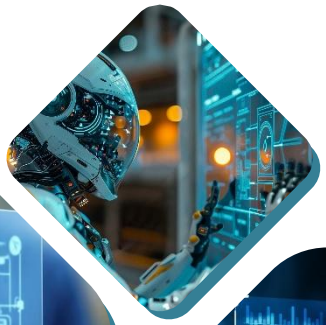
Artificial intelligence (AI) has firmly moved beyond the hype cycle. Recent breakthroughs—from agentic AI tools to advanced application-layer solutions—are already generating tangible results across industries. In our previous article, *The Promise of AI in Industrials – Rethinking ROI, July 9, 2025*, we highlighted how AI is enabling leaders in the industrial sector to unlock new levels of productivity, efficiency, and innovation. Yet, we also found that these successes are still isolated rather than industry wide.



Unlike sectors such as tech, media, finance, and professional services—where AI adoption is swift and returns are scaling—most industrial companies are lagging.

The reasons are structural: fragmented data systems, siloed pilots, and underpowered change management. But the opportunity is enormous. When deployed correctly, AI can transform every function of an industrial business—from manufacturing and R&D to SG&A, sales, and customer service. In fact, leaders like Caterpillar, ABB, and Schneider Electric (explored in this article), as well as Micron and Siemens (discussed in our previous piece), have already begun demonstrating AI's ability to drive real operational and financial impact.

FOR INSTANCE:

Caterpillar's use of generative AI to improve product design and service diagnostics is accelerating time to market and increasing asset uptime.

ABB's knowledge vault uses generative AI to preserve and disseminate domain expertise at scale—critical in a workforce where retirements risk large-scale knowledge loss.

Micron has deployed AI for advanced manufacturing analytics, resulting in better yield and higher throughput, while reducing scrap.

In each case, ROI is achieved not just through technology, but through thoughtful integration into the business model. And yet, for most industrial companies, realizing AI's ROI remains elusive. This article aims to answer the central question: How can industrials truly harness AI to deliver sustainable, compounding ROI?

We break the answer down into three critical parts:

Avoiding Common Pitfalls

We unpack the “Pilot Traps” that are stalling ROI across the sector.

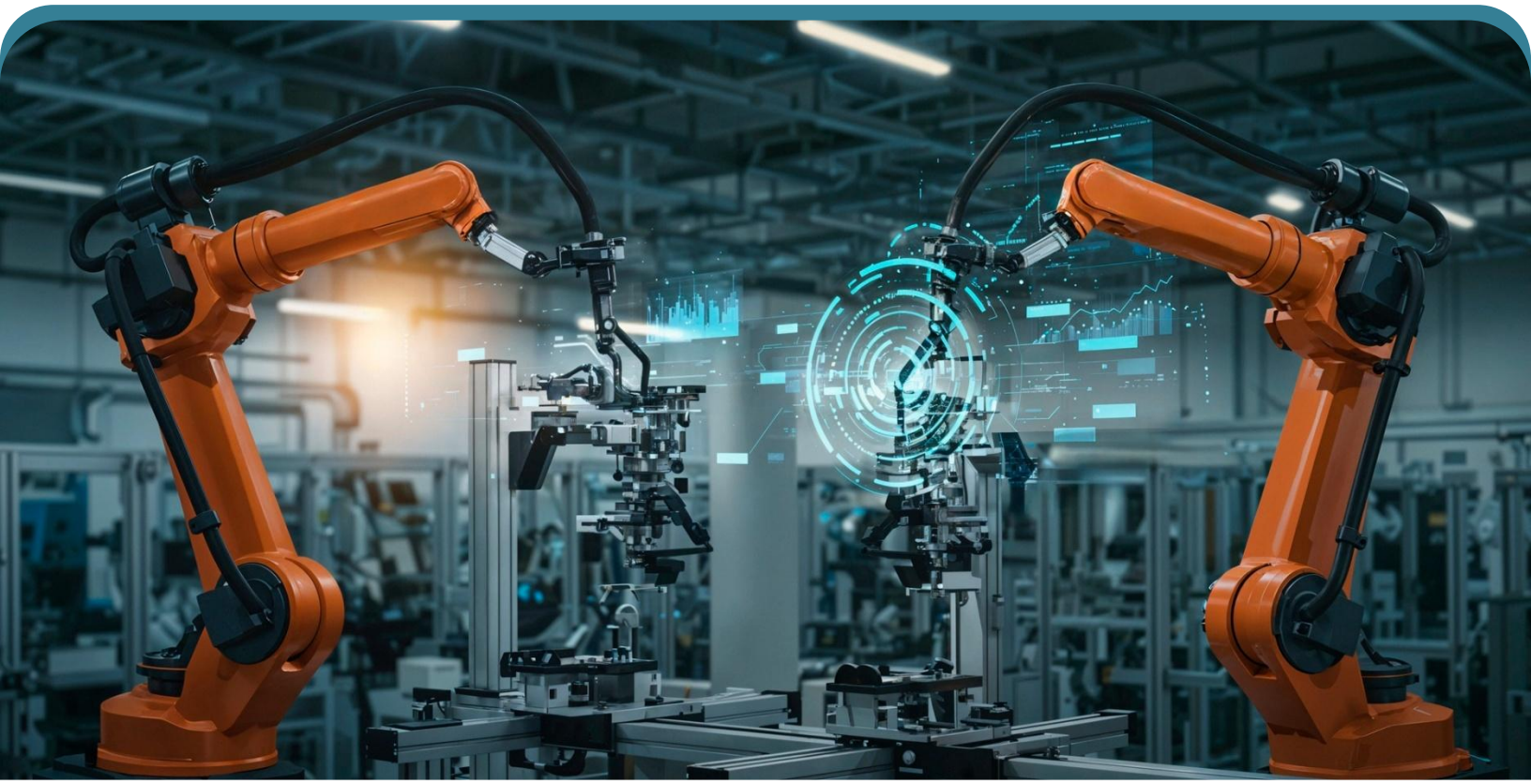
Treating AI as a Capital Asset

We propose a framework for investing in AI with the same rigor and ROI discipline used for traditional capital assets.

Unlocking Value Through Data, Use Cases, and Org Design

We explore how targeted data transformation, functional AI use-case deployment, and smarter org design can accelerate outcomes.

In short, the industrial sector’s challenge is no longer about whether AI works—it does. The challenge is to operate it on a scale. This article offers a playbook to do just that.



The Failure of AI in Industrials

Most industrial companies today are failing to realize ROI from AI—not because the technology doesn't work, but because they're using the wrong deployment framework. Instead of being embedded into core business processes, AI often becomes a side project, disconnected from strategy, operations, and measurable outcomes. This disconnection results in the all-too-common "pilot trap." A cautionary example is GE's Predix platform, once hailed as the centerpiece of the company's industrial digital strategy. Despite billions in investment, GE Digital struggled to integrate the platform effectively across customer systems. Over-customization, poor alignment with user needs, and lack of clarity on use-case ownership led to stalled deployments and poor ROI. What initially looked like a bold leap into the digital future became an unscalable solution, and GE had to restructure its digital business and divest parts of it in 2019.[1]

Siloed pilots like this are nearly impossible to scale, often giving leadership a false sense of progress. When these initiatives don't embed into the core business model or operational workflows, they collapse under the weight of technical debt and disconnected decision-making. Crucially, this is not a failure of technology—but of strategic integration and organizational readiness.

[1]Ted Mann and Thomas Gryta, "The Dimming of GE's Bold Digital Dreams," *Wall Street Journal*, July 18, 2020, https://www.wsj.com/articles/the-dimming-of-ges-bold-digital-dreams-11595044802.

From our work, we've identified four common "Pilot Traps" that consistently derail AI efforts in the industrial sector:

Hammer Looking for a Nail:

AI is deployed for the sake of being "innovative," not to solve a defined business problem. Without a clear use case or metric of success, the project flounders.

Archaic Data Infrastructure:

Legacy systems and unstructured data create a "garbage in, garbage out" loop. Even the best AI models are useless if fed poor-quality or incomplete data.

Siloed Pilots:

Projects are confined to individual functions—customer service, supply chain, SG&A—without cross-functional alignment or shared architecture. These silos block scale.

Skill Gaps and Change Fatigue:

A shortage of internal AI fluency leads to poor execution and weak change management. Talent gaps persist in both technical and business teams, leaving initiatives adrift.

These pitfalls are especially costly in the industrial sector, where margins are tight and resources are finite. AI is no longer optional—it's becoming a baseline capability. As discussed in The Promise of AI in Industrials – Rethinking ROI, the cost of doing nothing is rising quickly. Companies that don't deploy AI effectively risk falling permanently behind.

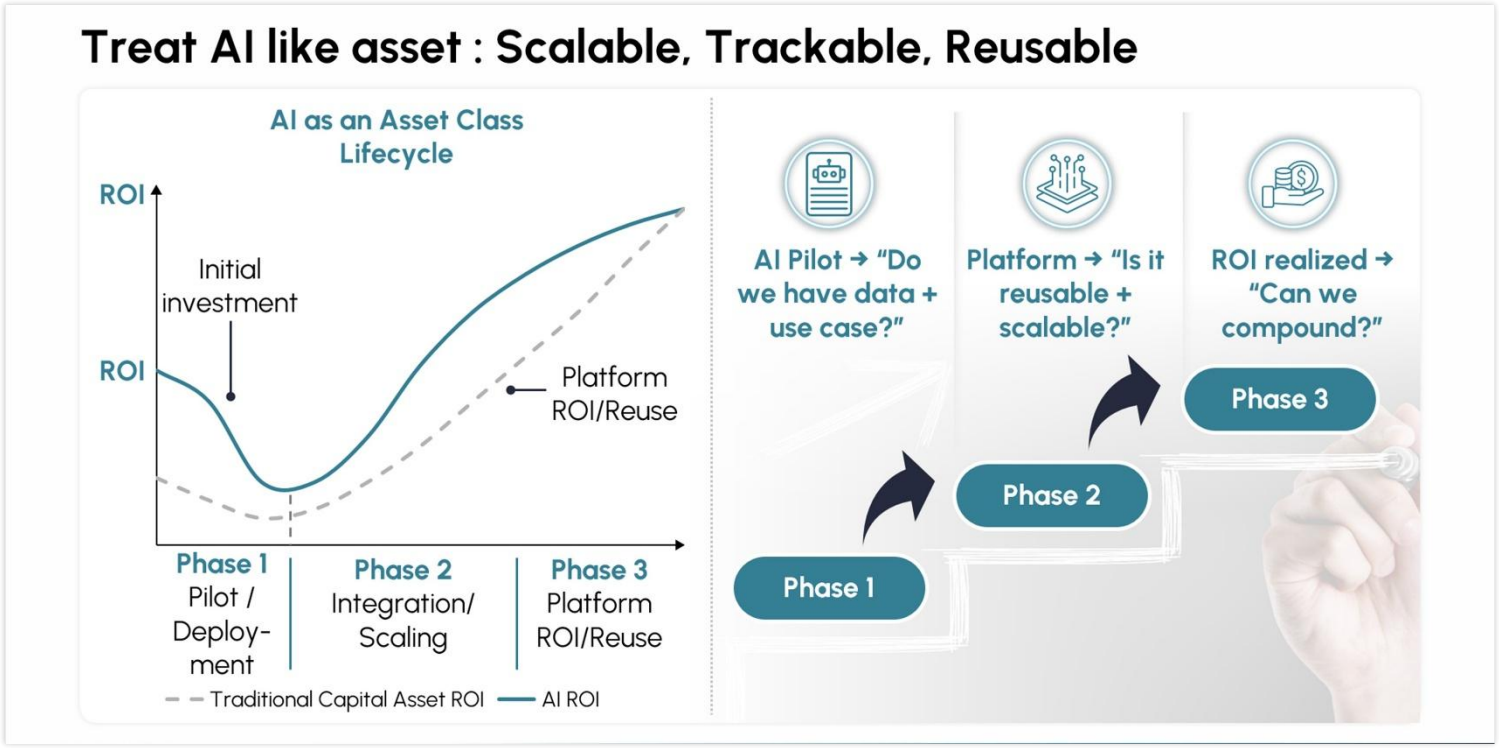
To break out of this cycle, industrial leaders must take a deliberate, disciplined approach to capturing value from AI. In the following sections of this article, we lay out a practical playbook that talks about three areas.

1. Treating AI as an Asset – A Framework for Success

Traditional industrial assets, like manufacturing plants, follow a well-understood ROI trajectory. Initial investments generate negative returns, but over time, as systems are integrated and operations scale, the asset yields consistent and increasing returns. Industrial firms are experts at managing this curve, knowing how and when to invest, optimize, and extract value over time.

AI should be viewed through the same lens—treated as a long-term asset rather than a quick win. The first step is to ask, "Do we have the right data and a clear use case?" Only then can companies begin building the necessary tech stack, talent, and leadership support. Like capital assets, AI needs to be reusable, scalable, and integrated into the core business model. As a result, the AI ROI curve may require a higher initial investment at first but will have higher ROI at scaling before flattening out. (See Exhibit 1)

Exhibit 1



2. Targeted Data Transformation

Industrial companies often struggle with fragmented, inconsistent data due to frequent M&A and legacy systems. Compared to peers in other sectors, industrials rank first in M&A out of all industries since 1985[2] — this leads to scattered ERPs, MES, CRMs, and siloed data practices. Roughly 70% of industrial companies operate with multiple major systems, creating interoperability nightmares.[3]

The fix isn't ripping and replacing IT infrastructure. It's addressing the data itself. Companies should build data lakes that aggregate inputs from legacy systems, enabling real-time insights across revenue, materials, and headcount. These clean datasets power diagnostic and decision-support AI applications without massive IT overhauls.

Enabling more streamlined AI development and integration through targeted data transformation unlocks an abundance of use cases with substantial business impact. We have identified ~50 such use cases across all parts R&D, operations, and sales and marketing that have tangible impact on industrial businesses (Table 1).

[2]Institute for Mergers, Acquisitions and Alliances (IMAA). "M&A Statistics by Industries." *Institute for Mergers, Acquisitions and Alliances*. Accessed July 21, 2025. https://imaa-institute.org/mergers-and-acquisitions-statistics/ma-statistics-by-industries/.

[3]"Study: Most ERP Inadequate for Global, Complex Business," *Manufacturing.net*, December 4, 2013, https://www.manufacturing.net/home/news/13235764/study-most-erp-inadequate-for-global-complex-business.

Table 1: ~50 Use Cases for Generative AI in Industrials, by Function

Function and Use case	AI Application	Potential Impact
Sales & Marketing		
Aftermarket growth	BOM-based parts listings, sales leads from installed base, AI chatbots for customers	30-40% boost
Quoting automation	AI-driven tech doc parsing; tailored proposals based on customer behavior	2x-3x incr. in quoting volumes
Product configuration	Leverage multilingual prompts, purchase history, and product portfolio for smart recommendations	Time-to-quote reduced by 80%+
Pricing improvement	Use market and competitor insights for dynamic pricing and quoting	5-10% price realization
Lead generation	Exhaustive customer scan for high quality leads	15-30% increase in lead conversion rate
Email campaigns	Plan outreach campaigns with personalized info, automated follow-ups, and recommendations to nurture leads	15-35% increase in email open rates
Up-sell and cross-sell	Analyze purchasing behavior of existing customer base to drive future buying behavior	20-50% boost in CLV
E-commerce channel optimization	Build interactive websites, chatbots for customer management, and analytics for customer engagement	10-25% boost in search to purchase ratio
Global market expansion enablement	Instantly translate and culturally adapt marketing content for global markets	30-50% faster entry into new markets;10-20% increase in international revenue contribution

Function and Use case	AI Application	Potential Impact
Sales & Marketing [Cont'd...]		
Campaign performance optimization	Auto-generate, deploy, and analyze multiple content variants to optimize campaign performance in real-time	5-15% increase in marketing function productivity
Organic traffic growth	Optimized metadata, headlines, and descriptions to improve organic search rankings and drive inbound traffic	GenAI traffic growing 165x faster than organic search; 23% higher conversion rate compared to organic traffic
R&D		
Product design iterations	Real-time generation of options based on product parameters	40-50% reduction in R&D cycle time
Unlock new product design ideas	Custom designs allows more experimentation	5-10x increase in number of design concepts explored
Predictive Materials Modelling	Predicts material behavior under stress, reducing test cycles	20–30% faster material qualification
Reverse engineering from 3D scans	Converts physical parts into digital CAD models	30–60% faster part digitization vs manual CAD modeling
Patent Scanning	Uses NLP to identify innovation gaps and patent risks	10–30% faster IP risk assessment
Design feedback	Incorporates real-world usage data to improve future designs	20–40% faster design improvement cycles

Function and Use case	AI Application	Potential Impact
Operations		
SOP effectiveness	Chatbots to explain production process, handle routine queries	20-30% improvement in process compliance
Quality control	Detect errors and quality issues for example in materials from images	10-15% improvement in defect detection rate
Institutionalize SOP	Train labor on mfg. SOP with images and videos	50% faster onboarding
Parts availability	Real-time material and parts availability, automated ordering	50%+ reduction in stock out rates
Supplier selection & onboarding	Chatbots for RFQs/RFPs, contracts and SOPs for suppliers	30%+ reduction in onboarding time
Supplier engagement	Automate buying process (raising POs, invoicing, payments)	10-20% improvement in on-time delivery
Predictive maintenance	Detects early signs of equipment failure using sensor data to reduce unplanned downtime and extend asset life	10–40% reduction in unplanned downtime; 3–10% increase in asset life
MES scheduling	Dynamically adjusts production schedules in real time based on floor conditions, order priorities, and resource shifts	10–20% reduction in schedule-related delays
Self-optimizing robotic systems	Empowers robotic systems to self-adjust parameters for efficiency and resilience, reducing manual reconfiguration	10–25% improvement in production flexibility and uptime; 15–30% reduction in manual reconfiguration time

Function and Use case	AI Application	Potential Impact
Operations [Cont'd...]		
Defect prioritization	Clusters and ranks defects by frequency, severity, or recurrence, streamlines root cause targeting and faster resolution	20–60% faster root cause identification; 30–70% improvement in issue resolution velocity
Maintenance simulation	Virtually tests different maintenance schedules, strategies, or failure scenarios; helps optimize resource use and prevent trial-and-error on live assets	10–25% planning efficiency gain; 5–15% maintenance cost reduction
Supply Chain and Logistics		
Inventory optimization	Anticipates customer demand and balances inventory costs using AI-driven replenishment and safety stock recommendations	5–15% inventory cost reduction
Risk simulation	Simulates disruption scenarios to identify vulnerabilities and optimize recovery strategies across the supply network	30–60% faster risk identification
Storage optimization	Optimizes item placement in storage locations based on real-time picking patterns	10–30% increase in picking productivity; 5–15% reduction in storage space usage
Cold chain quality assurance	AI Monitors temperature-sensitive zones and alerts deviations; ensures product quality for perishables	5–10% reduction in regulatory compliance costs
Inventory automation	Uses drones or robots to perform cycle counts and stock audits	5–15% improvement in inventory record accuracy

Function and Use case	AI Application	Potential Impact
Supply Chain and Logistics [Cont'd...]		
Dock optimization	AI Forecasts arrival/departure timing to allocate dock doors efficiently; reduces bottlenecks and truck idle time	15–30% reduction in truck wait times
Labor planning	Predicts workload trends to align workforce levels; reduces overstaffing and overtime	5–15% improvement in labor utilization
Document parsing	Extracts structured data from handwritten or unstructured delivery slips; accelerates receiving and improves record accuracy.	80–95% reduction in manual data entry
Support Functions		
Streamline receivables collection process	Automated follow-ups and reminders	20-30% DSO reduction
Enhance finance performance visibility	Chatbots connecting disparate data sources (BI tools, multiple ERP systems)	50-60% faster monthly reporting
Profitability modeling	Identifies true cost drivers for product/customer segments improving margin management	3-5% EBITDA margin improvement
Forward-Looking Forecasting	AI models analyze historical financials, market trends, and real-time data to generate more accurate revenue, cost, and cash flow projections	20-30% improvement in forecast accuracy

Function and Use case	AI Application	Potential Impact
Support Functions [Cont'd...]		
Vendor fraud detection	AI systems analyze invoices and transaction patterns to detect duplicate billings or unauthorized payments; reducing financial leakages and compliance risks	10-20% reduction in payment errors
Recruitment automation	Automated review of resumes, candidate recommendations, interview scheduling	50-70% faster hiring
Address routine employee queries	Paid vacation, sick leave, onboarding, benefits	80-90% faster response time
Employee training materials	Images and video-based content for different functions	30-40% reduction in time spent on training
Automated IT help desk responses	GenAI chatbots resolve routine IT issues (password resets, app access, FAQs) to reduce human workload	25-35% reduction in help desk ticket volume
Identity Threat Detection	AI monitors access patterns to identify unauthorized, suspicious, or insider activity — reducing data breach risks	30-40% reduction in security incident costs

Here are a few examples from leading industrials that are adopting several of these use-cases,

ABB – GenAI for Workforce Training: ABB's "Knowledge Vault" uses GenAI to store and retrieve mission-critical know-how. Employees can ask natural language queries and receive instant, context-rich answers—dramatically reducing training time and safeguarding against knowledge loss[4].

Caterpillar – AI for Design & Diagnostics: AI powers Caterpillar's autonomous truck programs and supports its Condition Monitoring Advisors. By summarizing asset data and generating automated maintenance recommendations, GenAI allows advisors to spend less time compiling data and more time on action[5].

GE Aerospace – AI in Quality Control: GE Aerospace deploys AI-assisted inspection tools that reduce engine inspection time by 50% while increasing accuracy. These tools prioritize images for technician review, boosting consistency and reducing engine turnaround time[6].

Honeywell – AI-Driven Sales Insights: With AI-powered deal inspection and CRM integration, Honeywell gives sales teams and leadership unified pipeline views. This helps surface opportunities in real time and enables faster decision-making on deal prioritization[7].

Protolabs – AI-Powered Product Design: To eliminate bottlenecks in custom part production, Protolabs uses AI to analyze CAD designs, create digital twins, and optimize manufacturing. The result is faster time-to-market, improved part quality, and continuous learning across designs[8].

Schneider Electric – AI-Powered Customer Support: Schneider uses AI chatbots to handle over 7.5 million customer queries annually. Its "Jo Virtual Agent" triages and routes issues instantly, freeing agents to focus on complex and higher-value customer interactions[9].

[4] "ABB Launches ABB Ability Industrial Knowledge Vault, a Generative AI Solution to Safeguard Expertise and Empower Workforces," *ABB News* (Zurich), March 31, 2025.

[5] Caterpillar Inc., "The Future of Artificial Intelligence (AI) at Caterpillar," *Caterpillar News*, April 16, 2024, https://www.caterpillar.com/en/news/caterpillarNews/2024/future-of-ai-at-caterpillar.html.

[6] "GE Aerospace Deploys AI-Driven Inspection Tool to Maximize Narrowbody Engine Time on Wing," *GE Aerospace News*, February 13, 2025.

[7] Aviso, "Why Did Honeywell Choose Aviso for AI Sales Guidance?," *Aviso Case Study*, accessed July 21, 2025, https://www.aviso.com/case-study/why-did-honeywell-choose-aviso-for-ai-sales-guidance.

[8] Rob Bodor and Rich Baker, "Artificial Intelligence Brings Efficiencies to Digital Manufacturing," *Protolabs Blog*, July 28, 2020, https://www.protolabs.com/resources/blog/artificial-intelligence-brings-efficiencies-to-digital-manufacturing/

[9] Schneider Electric, "Artificial Intelligence Solutions and AI Use Cases," *Schneider Electric*, accessed July 21, 2025, https://www.se.com/us/en/work/solutions/artificial-intelligence/solutions.jsp.

How a Human-Centric Approach Turned Oshkosh into a Digitization Leader

Anu Khare, Chief Information Officer at Oshkosh Corporation, recently sat down with Ayna CTO Parthesh Shastri to discuss how Oshkosh—one of the most respected names in specialty vehicles and access equipment—is building next-gen digital capabilities with AI, automation, and advanced analytics. Since joining in 2018, Anu has led the company through a sweeping transformation, with a focus on co-creating solutions with the business, embedding intelligence into the shop floor, and scaling human-centric adoption of digital tools.

Under his leadership, Oshkosh's digital team has earned the CIO 100 award for seven consecutive years and was named a finalist for the MIT Sloan CIO Leadership Award. In this conversation, he shares what it really takes to move from pilot projects to production-grade transformation—starting small, earning trust, and treating digital as a team sport.
(This interview has been edited for clarity and length.)

Start Small, Scale Fast

Oshkosh's digital journey didn't begin with a large budget or a sweeping enterprise-wide strategy. It started with one data scientist.

> *My first data hire was a single data scientist solving real problems for the business. Today, that team has grown to 65. Once people see the productivity gains, demand explodes.*

By focusing early efforts on solving pain points at the shop floor—such as tool location tracking, predictive inspection, and maintenance alerts—Anu's team-built credibility. These localized wins created momentum that enabled larger investments in line-wide digitization and eventually fully digital greenfield plants like the USPS facility in Spartanburg.

Build with, Not For

A defining feature of Oshkosh's success has been a deep belief in co-creation.

> *We didn't bring in digital experts to force change. We hired people from manufacturing into the digital team—trusted by the shop floor, curious about tech.*

From day one, Anu involved manufacturing teams in identifying use cases, co-developing solutions and even showcasing successes to leadership. Through inclusive workshops and hands-on vendor demos, the digital team turned skeptics into champions.

> *We don't pitch projects—we pitch possibilities. People adopt technology faster when they feel it's built for their problems.*

Human-Centered Intelligence

At Oshkosh, AI isn't viewed as a system that replaces people—it augments them. AI is used to predict stock levels, optimize order quantities, and dynamically schedule production. Across the supply chain, it's helping unlock major productivity gains.

> *Supply chain is 70–80% of our cost. If it runs smarter, we win everywhere—production, quality, cost.*

Anu also sees opportunities in under-digitized functions like finance and SG&A, noting these areas are ripe for AI-driven gains but often overlooked.

Creating a Culture of Digital Champions

To embed digital DNA, Oshkosh launched a "digital champions" initiative—training employees across the business to identify opportunities and think like technologists.

> *A digital champion isn't someone who knows how AI works. It's someone who knows where to apply it.*

Backed by the CEO and supported with contextual learning programs, these champions now drive frontline innovation across the organization.

> *We started with a few. Now we have hundreds.*

The Road Ahead

Anu is optimistic about what's next—not just for Oshkosh, but for the entire industrial sector.

> *Digitization is no longer back-office. It's front and center. As labor shortages grow and the next generation demands tech-forward workplaces, digital will become a business necessity, not a nice-to-have.*

For industrial companies still hesitant about where to begin, his advice is simple:

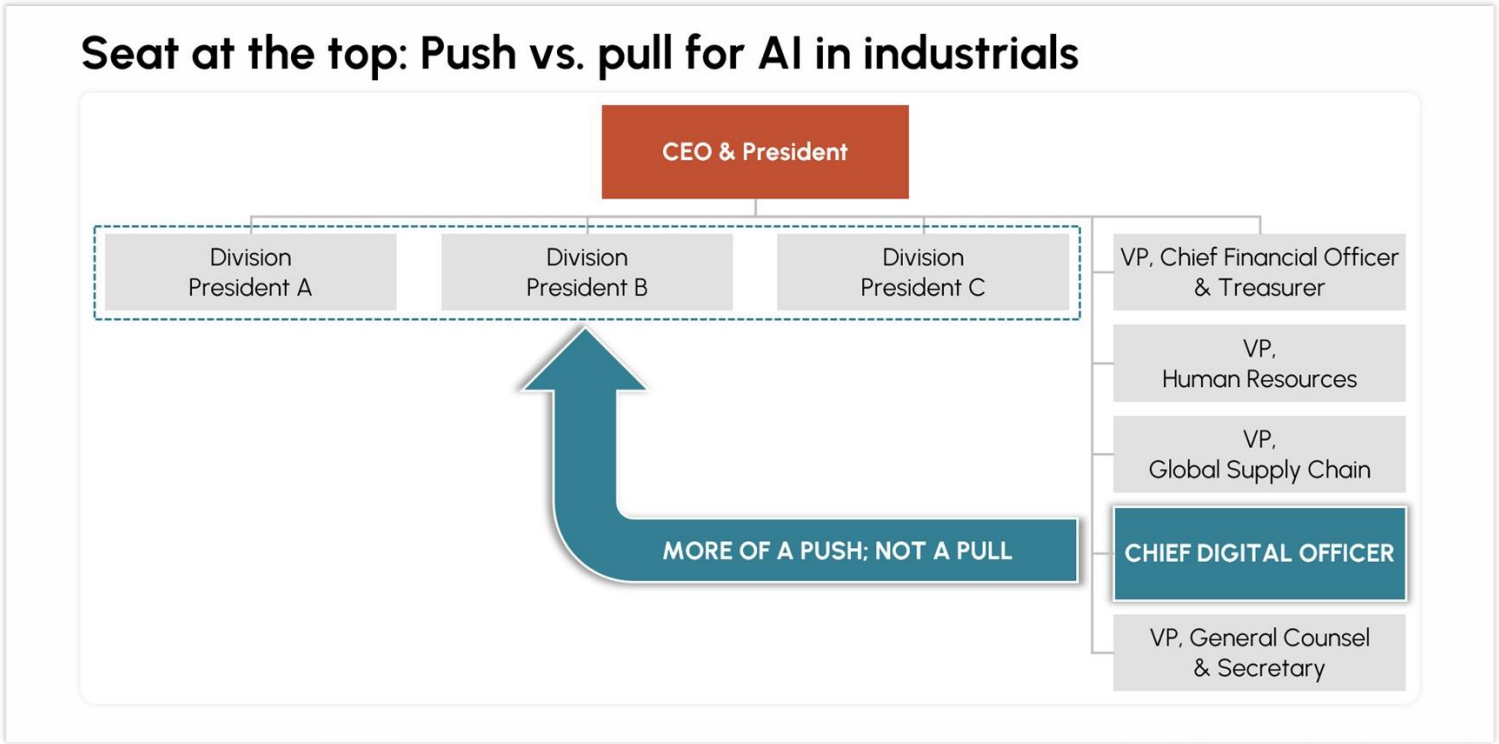
> *Don't wait. Start with one use case. Solve one problem. That's how the transformation begins.*

3. Rewiring the Org Chart: AI Needs a Seat at the Top

The AI talent gap is shrinking—84% of public companies now have a Chief Digital Officer (CDO) or equivalent, up from just 12% in 2012[10]. Yet most CDOs still report into IT or finance, which makes them responders, not changemakers.

To truly embed AI into the fabric of the company, industrial firms need to elevate the CDO role as a peer to other top executives (Exhibit 2). Reporting directly to the CEO, the CDO can then take a proactive role in identifying new use cases, driving innovation, and operationalizing AI as a business lever—not just a tech tool.

Exhibit 2



Source: Public data, where available. N=96

[10] Ryan den Rooijen, Wade Munsie, and Randy Bean, "The Chief Data Officer Role: What's Next," *MIT Sloan Management Review*, February 24, 2025, https://sloanreview.mit.edu/article/the-chief-data-officer-role-whats-next/.

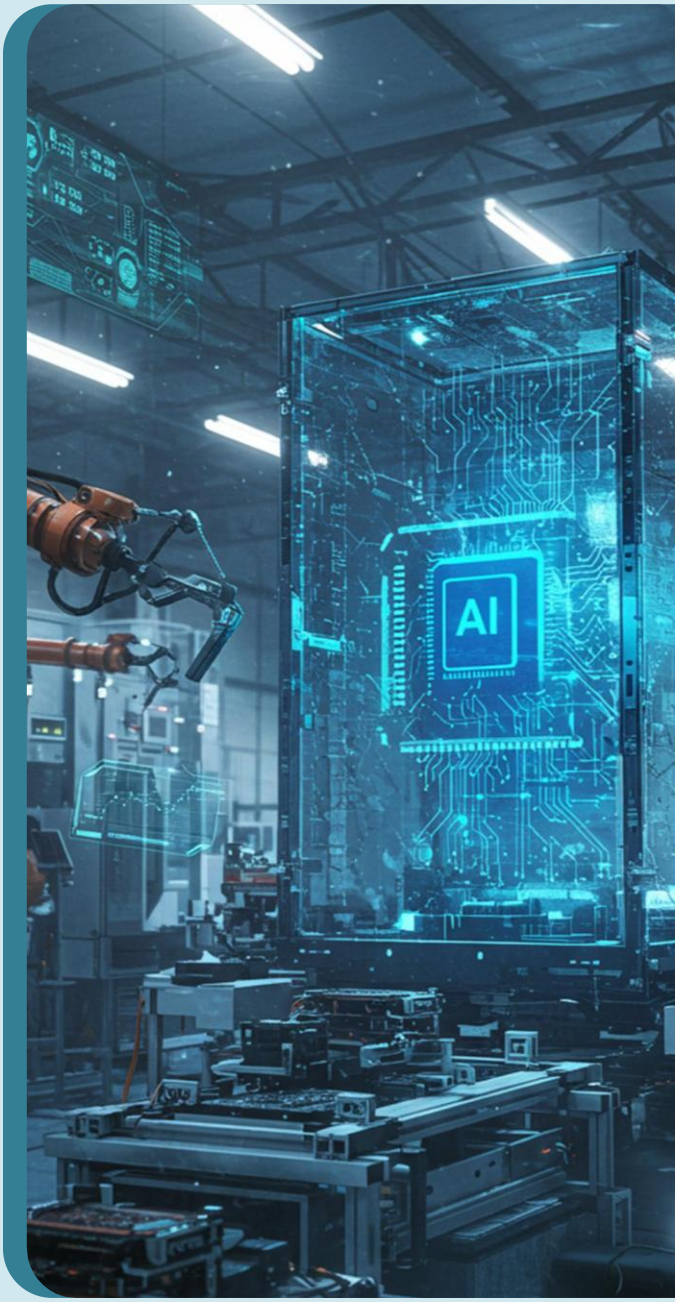
Conclusion: From Pilot to P&L – Realizing the Full Promise of AI

AI in Industrials has reached a turning point. Technology has matured, the use cases are proven, and the early adopters are seeing real returns. But the gap between potential and performance persists—not because of technology failure, but because of leadership missteps, fragmented execution, and outdated organizational design.

To close this gap, industrial companies must rethink how they treat AI—not as a project or experiment, but as a strategic asset. That requires a clear framework for investment, targeted data modernization, and structural changes to embed digital into the fabric of the enterprise.

The good news: the roadmap is clearer than ever. From Protolabs to Caterpillar, from Honeywell to GE Aerospace, leading firms are showing that ROI from AI isn't just possible—it's repeatable. What's needed now is not more experimentation, but more conviction.

For Industrials, the question is no longer if AI can deliver returns. It's whether they're willing to invest—and lead—like it will.



THANK YOU