



Getting Started with Industrial AI Choosing a Strategy That Fits Your Readiness

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Ayna's previous two articles – “The Promise of AI in Industrials – Rethinking ROI” and “Harnessing AI ROI in Industrials” explore how AI in industrials has moved past the hype cycle — it now delivers measurable value and must be treated like a capital asset. That has prompted a new question from many leaders: “So how should we actually start?”

It's a fair question — and the biggest mistake companies now make is not picking the wrong algorithm or tool but picking a strategy they aren't ready to execute.

Some industrials jump immediately into enterprise-wide “AI transformation” programs — central hubs, clean-sheet architectures, multi-year roadmaps — and stall out after a few pilots. Others stay stuck in pilot mode indefinitely, turning high-ROI use cases into isolated experiments. Both outcomes destroy momentum.

The reason? AI strategy must fit the organization's current level of maturity. In this article, we discuss two distinct paths for industrial AI adoption - **opportunistic** and **holistic** - and offer an approach for determining which strategy fits your organization as you look to get started on your AI journey.



Two Archetypes of Industrial AI Adoption



When we look across hundreds of AI initiatives in industrial companies, two clear patterns of adoption emerge – opportunistic vs. holistic (Table 1). They aren’t “right or wrong” — they reflect different starting points.

The opportunistic approach is tactical and ROI-driven — focused on targeted, high-impact use cases (e.g., damaged goods detection, inventory counting) led by business or operations teams. It’s most effective for companies in the early stages of digital maturity that need visible wins and momentum before scaling more broadly.

The holistic approach treats AI as an enterprise capability. It requires centralized governance, a modern data foundation, and alignment across business and technology. The goal isn’t individual use-case impact, but embedding AI into decision-making across functions, from supply chain and finance to frontline operations.





Table 1: Key attributes and differences between opportunistic vs. holistic approach

OPPORTUNISTIC 	HOLISTIC 
Fast, targeted use cases with clear ROI (e.g., defect detection in a single plant; AI scheduling for one field-service business unit)	Enterprise-wide deployment of AI as a core capability (e.g., AI-driven demand planning across all divisions; predictive maintenance deployed across 10+ facilities)
Led by business units or operations teams	Requires senior-level alignment and centralized coordination
Architecture follows value (“we’ll build the platform as we go”)	Platform built first to enable reuse across functions
Works well when data is fragmented, scope is narrow, and momentum is critical	Works when data foundations exist and cross-functional governance is in place

Both models can create value — but only when they reflect where the organization is.

Trying to scale a holistic strategy in a low-maturity organization leads to platform debt and organizational backlash. Staying opportunistic in a high-maturity organization leaves value on the table.



Four Readiness Signals to Watch



There are four dimensions that help determine which path your company is equipped to follow. Think of them not as binary traits, but as signals – where you are today, not where you wish to be.

01 Scale and Complexity

The scale of operations shapes how organizations can approach AI. A single-line business with a handful of plants can move quickly, run proof-of-concepts, and iterate with minimal governance.

GE Aviation¹ demonstrates this agility. Its flagship Blade Inspection Tool — an AI application for detecting defects — has reduced inspection times by ~50%, directly accelerating throughput and contributing to shorter engine turnaround times. By carefully architecting data flows for each line, GE ensured visibility and control while scaling the solution within its focused operations.

By contrast, a global industrial OEM² operating across dozens of sites and legacy systems faces a very different challenge. Pursuing opportunistic AI in silos risks duplication, fragmentation, and technical debt. For these organizations, a centralized, holistic strategy is critical to ensure consistency, interoperability, and reuse of AI solutions across the enterprise.

These examples illustrate how scale and complexity dictate strategy: smaller footprints can move fast with targeted pilots, while global players need holistic orchestration to capture value without adding complexity.

02 Clarity of ROI

AI adoption accelerates when teams can clearly articulate the economic value of a use case.

First Solar³ pursued an opportunistic AI application with immediate ROI—using real-time analysis of performance, weather, and operational data to assess the health of its solar panels.

Walmart⁴, on the other hand, pursued a more holistic approach. Facing the complexity of coordinating inventory across distribution centers and scheduling across plants, the company leveraged proprietary AI and machine learning algorithms to improve demand forecasting and optimize goods movement throughout its vast logistics network. The payoff was substantial — delivery costs per order dropped by 40%, underscoring the scale of returns possible when AI is applied enterprise-wide.

Together, these examples highlight the spectrum: opportunistic wins can validate AI early, while holistic bets unlock transformative ROI when the organization is ready.

1. Heike Tamm, “GE Aerospace Deploys AI-Enabled Tool to Enhance Aircraft Engine Inspections,” AviTrader Aviation News, February 14, 2025, <https://avitrader.com/2025/02/14/ge-aerospace-deploys-ai-enabled-tool-to-enhance-aircraft-engine-inspections/>
2. “Paving the Future of Factories with NVIDIA Omniverse Enterprise,” NVIDIA Insights, 2025, <https://www.nvidia.com/en-us/customer-stories/paving-the-future-of-factories-with-nvidia-omniverse-enterprise/>
3. Matthew Ramirez, “First Solar: AI Use Cases 2024 - PitchGrade,” Pitchgrade.com, 2024, <https://pitchgrade.com/companies/first-solar-ai-use-cases>
4. Sarah Rudge, “Supply Chain World,” Supply Chain World magazine, July 21, 2025, <https://scw-mag.com/news/walmart-announces-major-ai-driven-supply-chain-expansion/>



03 Data Infrastructure Maturity

When systems are fragmented and data lacks structure or a unified semantic layer, holistic AI becomes nearly impossible. In those situations, it's more effective to start with localized AI applications that generate value while the broader data foundation is still being built.

Tosho Corporation⁵—a large Japanese chemicals manufacturer—tackled this challenge by layering an AI-powered planning platform on top of its legacy systems. With many data sources siloed, the company turned to a cloud-based solution to unify workflows and improve responsiveness. This approach allowed Tosho to bypass fragmented infrastructure, replacing manual processes with intelligent automation and enabling faster, more coordinated supply chain planning.

BMW⁶, by contrast, had already invested in a centralized data backbone. Leveraging this foundation, the company built a digital twin that integrates shop-floor data to redesign production schedules across assembly lines. The result: a 42% increase in manufacturing efficiency — performance gains that opportunistic, one-off AI models could never replicate without robust data infrastructure in place.

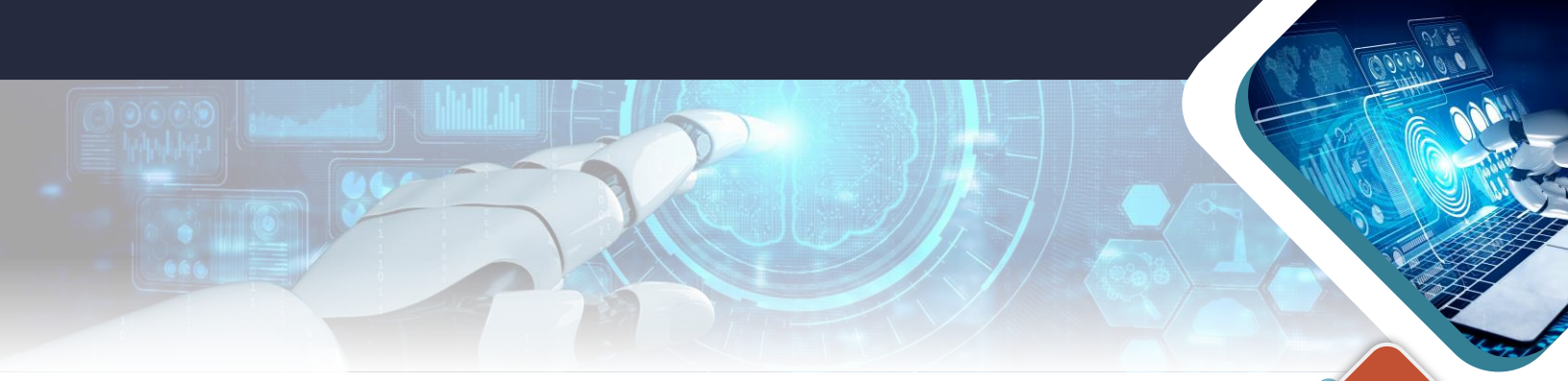
04 Leadership and Change Readiness

This is often the invisible deal breaker.

A global logistics firm⁷ ran several technically successful pilots—but because they were owned by disconnected teams, no one was accountable for scaling or sustaining them. Within 18 months, every initiative had faded out.

By contrast, a heavy equipment OEM⁸ aligned business and IT leadership from day one — appointing co-sponsors for AI initiatives, linking pilots to KPIs, and sequencing investments through funding gates. That coordination made scaling achievable and measurable ROI inevitable.

5. Kinaxis and Tosoh Corporation Formulate an AI-Powered Supply Chain Transformation,” Kinaxis.com, 2020, <https://investors.kinaxis.com/news-releases/news-release-details/2025/Kinaxis-and-Tosoh-Corporation-Formulate-an-AI-Powered-Supply-Chain-Transformation/default.aspx>
6. Future Vista Academy, “BMW’s Digital Twin: 42% Efficiency Boost 2025,” Futurevistaacademy.com, June 29, 2025, <https://www.futurevistaacademy.com/automation-rpa/bmw-digital-twin-42-efficiency-boost-2025>
7. Adam Scott, “Freight Logistics Sees Growing Divide in AI Adoption - SupplyChain 360,” Supplychain360.io, July 2025, https://supplychain360.io/freight-logistics-sees-growing-divide-in-ai-adoption/?utm_source=chatgpt.com
8. Carsten Krause, “UPS and Agentic AI: A Case Study in Logistics Innovation,” The CDO TIMES, January 6, 2025, <https://cdotimes.com/2025/01/06/ups-and-agentic-ai-a-case-study-in-logistics-innovation/>



How Starting Small Led to 100x ROI at HappyRobot

In an interview with Ayna's Parthesh Shastri, Pablo Palafox, Co-founder and CEO of HappyRobot, shared how his team shifted from building AI tools for the sake of innovation to solving real operational bottlenecks in the freight and logistics sector. Like many AI-first startups, Happy Robot initially focused on showcasing advanced capabilities (in their case, voice-based agents). But the real breakthrough came when they embedded themselves inside customer operations and started with simple, high-volume use cases.

"We started with a very simple demo of a voice agent . . . and once we put it in front of customers, we realized there were things we hadn't even considered — like payment collections or supplier coordination."

Rather than launching an enterprise-wide platform, the team started with one narrow, high ROI use case: automated payment collection. By having an AI agent reach out to overdue customers across voice, email, and text, the company delivered 100x ROI for its first industrial client — and unlocked demand for dozens of additional use cases, from supplier coordination to after-hours customer support.

The lesson? Value discovery happens in deployment, not in planning.

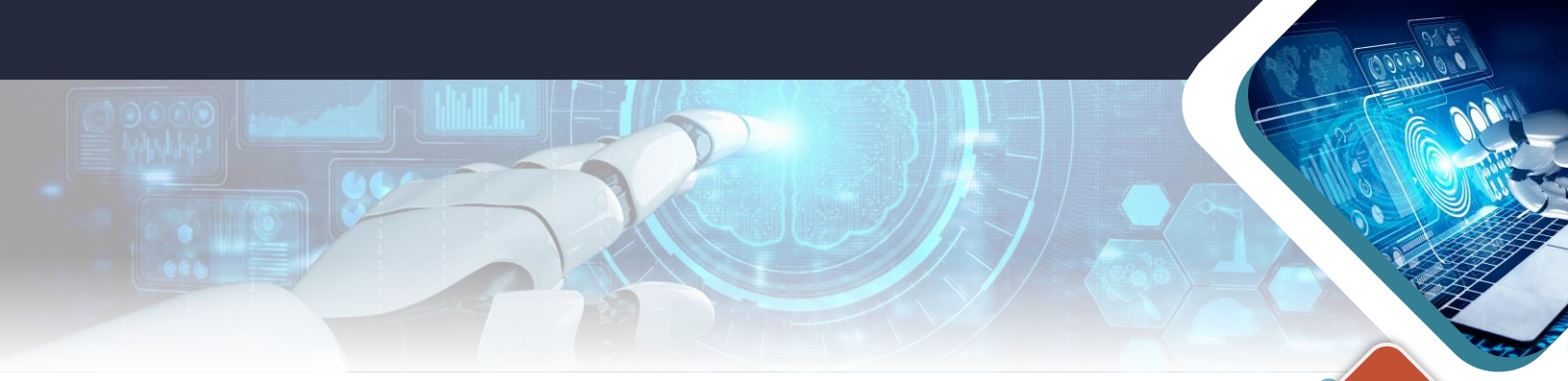
"Who wants to call a customer and tell them the bad news that they haven't paid? An AI can do that very efficiently . . . and in that specific case we saw 100x ROI."

Pablo also believes the next phase of AI isn't just automation, but autonomy — allowing AI agents to proactively check ERP systems and initiate actions (not wait for instructions).

"What we've built so far is an agentic workflow . . . but the next step is an AI worker that looks into your ERP and proactively takes action — or asks for permission before acting."

His advice to industrial leaders is blunt and practical.

"Start simple. The longer you take to make the decision, the more of a disadvantaged position you are in."



From Hype to Runtime: Industrial-Grade AI at Scale (Siemens' Gerald Kafer)

In his conversation with Ayna, Gerald Kafer, Solutions Manager & Technical Fellow at Siemens, explains why real industrial AI a runtime discipline is, not a lab experiment. The hard lessons: data strategy and OT/IT convergence are foundational, models must be monitored and refreshed continuously, and digital twins (incl. synthetic data for edge cases) plus responsible AI & cybersecurity need to be baked in from day one. “The biggest misunderstanding is thinking GenAI works without data... In manufacturing, you need the data at runtime—under real non-functional constraints.”

On ROI, Kafer sees predictive maintenance as the durable front-runner (e.g., ~20% less unplanned downtime, ~25% lower maintenance costs, ~30% lower spare-parts inventory when deployed well). He also points to energy optimization (driven by sustainability mandates), in-process quality using vision/defect detection (to reduce scrap and rework), process control gains (e.g., faster CNC cycles, material waste cuts), and supply-chain forecasting (inventory reductions that free up floor space). Agentic patterns are emerging via co-pilots across engineering, operations, and maintenance; the next step is coordinating these into a system of agents rather than isolated helpers.

Why projects stall in “pilot purgatory”: misaligned strategy (treating AI as a tactical prototype without enterprise readiness), partners with AI skill but weak domain depth, and over-indexing on hyped tools instead of the full AI toolbox. Kafer’s fix: shift from proof-of-concept to proof-of-value with real production data, stand up governance and sponsorship for scale, and invest in standardized data/edge/cloud infrastructure so models can be deployed, monitored, and updated reliably. On culture, be transparent and frame AI as workforce empowerment: “The empowered workforce will replace companies that don’t empower theirs.” His advice to CEOs: start now, define an AI strategy for your core business, and measure value end-to-end—because the most profound technologies “disappear” into everyday operations, and those who wait will lag.

“In manufacturing, every greenfield still carries its own legacy—OT/IT convergence and data readiness are non-negotiable if you want AI to work at runtime.”

“Balance the portfolio: prove value quickly with opportunistic wins, but in parallel build the enterprise foundations—data, edge, cloud—so you can actually scale.”

The Real Risk Is Misalignment



Misalignment doesn't just waste money — it breeds resistance. Failed pilots erode confidence. Over-engineered platforms without business adoption trigger skepticism. Soon, every AI project becomes harder to fund.

Before choosing a path, leadership should ask:



Can we link AI to business metrics we already track?



Do we have a centralized, accessible data foundation?



Who owns AI ROI in our company business, IT, or both?



Are our current efforts built to prove or built to scale?



If we stopped all pilots today, would anything break?

Whether you start with opportunistic use cases or a holistic roadmap isn't a question of ambition — it's a question of fit.

Because in the end, misalignment — not competition — is the biggest threat to industrial AI success.



THANK YOU