

Black Book **Insights**

AI-ENABLED RESHORING

WHY AMERICA'S MANUFACTURING RETURN REQUIRES AN INTELLIGENT OPERATING SYSTEM

Findings from Q2 2026 polling of 229 manufacturing executives
and 92 AI professionals in the manufacturing industry

*A joint AI Reshoring survey and analysis by
Black Book Insights LLC and Applied Artificial Intelligence LLC*

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CORE THESIS

Reshoring does not fail because companies lack slogans, incentives, or factory announcements. It fails when the new domestic plant is designed around labor, data, supplier, and planning assumptions that cannot survive contact with operating reality. AI is the control layer that turns reshoring from a capital project into a competitive production system.

The Black Book of Reshoring frames reshoring as a business, workforce, technology, supply-chain, and policy transformation. This joint Black Book Insights and Applied Artificial Intelligence LLC analysis extends that argument into the AI architecture now required for U.S. factory competitiveness.

01

EXECUTIVE SUMMARY

*The factory can come home before the economics are ready.
AI is what closes the gap.*

America's reshoring movement has moved beyond intent. The pressing question is whether manufacturers can bring production back at competitive cost while absorbing labor scarcity, technical-skill shortages, supplier gaps, power constraints, data fragmentation, and ramp-up risk. Black Book Insights and Applied Artificial Intelligence LLC polling of 321 industry respondents: 229 manufacturing executives and 92 AI professionals in manufacturing, shows that AI has crossed from optional technology to reshoring infrastructure.

The central finding is stark: 88% of manufacturing executives say their reshoring or nearshoring strategy depends materially on AI-enabled automation, analytics, or digital operations. Seventy-four percent say at least one reshoring business case would fail, stall, or require major redesign without AI or automation productivity offsets. Among AI professionals, 96% say most reshoring projects underestimate data-readiness requirements.

The implication is not that AI eliminates workers. It is that reshoring cannot be built on a labor model that no longer exists. The U.S. Bureau of Labor Statistics projects that production occupations will generate about 963,400 openings each year, on average, during 2024-2034, even as overall employment in production occupations is projected to decline. The labor pipeline therefore cannot simply recreate the offshore production model onshore. AI must augment scarce technicians, engineers, supervisors, quality teams, maintenance teams, planners, and operators. [R1]

The second implication is that capital announcements are not evidence of competitiveness. A plant announcement is a promise. Competitive domestic output is the proof. To move from one to the other, companies need AI-enabled total-cost modeling, site and power analytics, digital twins, machine vision, predictive maintenance, autonomous scheduling, supplier-risk intelligence, and human-in-the-loop governance.

The third implication is that reshoring has become an AI vendor and ecosystem decision. The strongest manufacturers will not pick a single AI product. They will assemble a stack that spans industrial automation, OT data integration, edge inference, cloud AI, digital twins, robotics, machine vision, planning, maintenance, and workforce augmentation.

**A RESHORING PLAN WITHOUT AN AI ARCHITECTURE IS
NOT A STRATEGY. IT IS A CAPITAL REQUEST WITH AN
UNPRICED EXECUTION RISK.**

02

JOINT Q2 2026 SURVEY FINDINGS AND STRATEGIC IMPLICATIONS

All survey counts use n=229 manufacturing executives and n=92 AI professionals. Percentages are rounded to the nearest whole point; respondent counts are rounded to the nearest person. Multi-select questions are identified as nonexclusive.

The survey universe is 321 total respondents: 229 manufacturing executives and 92 AI professionals working in or serving the manufacturing industry. The results below are the controlling Q2 2026 topline for external use by Black Book Insights and Applied Artificial Intelligence LLC.

Executive Findings: Manufacturing Leaders	Q2 2026 Result	Rounded Count
Reshoring or nearshoring strategy depends materially on AI-enabled automation, analytics, or digital operations	88%	202 of 229
At least one reshoring business case would fail, stall, or require major redesign without AI or automation productivity offsets	74%	169 of 229
Labor availability or technical skills shortages are a top-two reshoring constraint	79%	181 of 229
Traditional landed-cost models understate the full cost and risk of offshore production	75%	172 of 229
ERP, MES, supply-chain, or plant-floor data is not clean or integrated enough to scale AI confidently	69%	158 of 229
AI-enabled quality inspection, predictive maintenance, scheduling, or technician support will deliver measurable ROI within 24 months	52%	119 of 229
State and local reshoring incentives should be tied to workforce, power, permitting, and automation-readiness support, not only tax abatements	70%	160 of 229

AI Professional Findings	Q2 2026 Result	Rounded Count
Most reshoring projects underestimate data-readiness requirements	96%	88 of 92
Legacy operational technology integration is the most common barrier to AI deployment in factories	83%	76 of 92
Human-in-the-loop AI governance is essential in safety-, quality-, or compliance-sensitive factories	86%	79 of 92
AI-enabled production planning, scheduling, and demand sensing are among the fastest-deployable reshoring use cases	78%	72 of 92
Digital twins or simulation can reduce commissioning and ramp-up risk for reshored production lines	71%	65 of 92
Cybersecurity and OT security are material constraints on AI-enabled factory modernization	77%	71 of 92

These findings create the report's governing thesis: AI is not a peripheral tool in the reshoring debate. It is the mechanism that converts reshoring from aspiration into productive capacity.

FIVE FINDINGS THAT SHOULD CHANGE THE BOARD CONVERSATION

The survey results are not a generic endorsement of technology. They identify the operating constraints that determine whether a reshored factory becomes productive capacity or a stranded capital project. The five findings below are the pressure points boards should treat as capital-allocation tests.

Board-level Finding	Survey Proof Point	Operating Consequence
AI is now a reshoring dependency	88% of executives say reshoring or nearshoring strategy depends materially on AI-enabled automation, analytics, or digital operations.	Reshoring proposals should include an AI architecture, not merely an automation budget.
AI is protecting the business case	74% say at least one reshoring business case would fail, stall, or require major redesign without AI or automation productivity offsets.	The productivity assumption is no longer an operations detail; it is a board-level investment condition.
Labor is the forcing function	79% identify labor availability or technical skills shortages as a top-two constraint.	Factories must be designed around worker augmentation, technician copilots, guided work, and automation supervision.
The old cost model is inadequate	75% say traditional landed-cost models understate the full cost and risk of offshore production.	TCO models must price risk, latency, quality leakage, inventory, supplier concentration, power, and ramp-up uncertainty.
Data readiness is the hidden gate	96% of AI professionals say most reshoring projects underestimate data-readiness requirements.	No AI-enabled plant can scale without governed data from ERP, MES, QMS, CMMS, historians, PLC/SCADA, and supplier systems.

THE EXECUTIVE-AI PROFESSIONAL GAP IS THE STORY

Executives are focused on the visible business-case pressure: labor, productivity, cost, and site feasibility. AI professionals are focused on the less visible failure modes: data quality, OT integration, cybersecurity, model governance, and production deployment. The gap between those two perspectives is where many reshoring programs will succeed or fail.

Board-level finding	Survey proof point	Operating consequence
Business-case optimism	52% of executives expect AI-enabled quality, maintenance, scheduling, or technician support to deliver measurable ROI within 24 months.	AI teams warn that ROI depends on data access, integration, validation, and workflow adoption; the timeline is achievable only if data work starts early.
Data-readiness warning	69% of executives report that enterprise or plant data is not clean or integrated enough to scale AI confidently; 96% of AI professionals say the problem is underestimated.	The survey shows a severe readiness gap: manufacturers want AI outcomes faster than their current data architecture may allow.
Governance requirement	86% of AI professionals say human-in-the-loop AI governance is essential in safety-, quality-, or compliance-sensitive factories.	AI-enabled reshoring must be designed as supervised industrial intelligence, not uncontrolled autonomy.
Deployment priority	78% of AI professionals rate production planning, scheduling, and demand sensing among the fastest-deployable reshoring use cases.	The first AI wins may come from flow, planning, and constraints before the factory reaches full robotics autonomy.

WHAT THE FINDINGS PROVE

RESHORING IS NO LONGER A GEOGRAPHY DECISION.

It is a systems-engineering decision involving cost, labor, automation, data, power, supplier depth, and cyber resilience.

AI IS THE TRANSLATION LAYER BETWEEN STRATEGY AND EXECUTION.

It converts supplier risk, quality leakage, labor scarcity, and schedule volatility into measurable operating decisions.

THE CREDIBLE RESHORING PLAN NOW HAS A TECHNICAL SIGNATURE.

It includes a data backbone, AI/TCO model, digital twin, machine vision, predictive maintenance, scheduling intelligence, technician augmentation, and governed human approval gates.

THE FACTORY LAUNCH IS NOT THE FINISH LINE.

AI must continue to update the total-cost model, re-score suppliers, monitor quality, forecast downtime, and adjust production flow after ramp-up.

03

THE RESHORING DEBATE HAS THE WRONG CENTER OF GRAVITY

*Geography is no longer the hard question.
Operating economics are.*

For a decade, reshoring was often argued as a moral, political, tariff, or patriotic case. Those arguments may influence board sentiment, but they do not by themselves solve production physics. A reshored factory still needs trained labor, industrial controls, stable utilities, qualified suppliers, secure data flows, credible maintenance models, quality systems, and operating discipline.

The Black Book of Reshoring reframes the issue correctly: reshoring is not merely relocation. It is a redesign of production networks, business cases, workforce strategy, data infrastructure, and supply-chain resilience. That redesign now has an AI layer because the operating variables are too numerous, dynamic, and interdependent for a static spreadsheet to manage.

The uncomfortable truth is that many reshoring plans are still designed as if the United States can import the offshore plant blueprint and replace low-cost labor with slightly more expensive local labor. That is not a strategy. It is an arithmetic error. The new domestic model must use fewer workers per unit of output, higher technical skill per worker, better scheduling, tighter quality control, faster engineering feedback, and more disciplined supplier visibility.

Black Book Insights and Applied Artificial Intelligence LLC polling confirms that executives see the shift: 81% say automation must offset a meaningful portion of the labor-cost disadvantage, 79% say AI-enabled planning and analytics are needed to model total cost accurately, and 82% say power availability or utility timelines now influence site selection.

Reshoring Posture Indicator	Q2 2026 Result
Active reshoring or nearshoring project underway	38% (87 of 229)
Evaluating reshoring or nearshoring within 24 months	68% (156 of 229)
Monitoring reshoring but not committed capital	20% (46 of 229)
No current reshoring or nearshoring plan	5% (11 of 229)

Execution Condition	Q2 2026 Result
Domestic labor availability must improve for reshoring to scale	83% (190 of 229)
Automation must offset a meaningful portion of the labor-cost disadvantage	81% (185 of 229)
AI-enabled planning and analytics are needed to model total cost accurately	79% (181 of 229)
Supplier depth must improve before critical components can be localized	68% (156 of 229)
Power availability and utility timelines now influence site selection	82% (188 of 229)

04

THE WORKFORCE GAP MAKES AI A RESHORING REQUIREMENT

A factory cannot be reshored with a labor model that no longer exists.

The core reshoring constraint is not headcount alone. It is the availability of people who can run modern production systems: controls technicians, skilled trades, maintenance technicians, machinists, welders, automation engineers, production supervisors, quality engineers, cybersecurity-aware OT specialists, and data-capable operations leaders.

The joint survey found that 79% of manufacturing executives identify labor availability or technical skills shortages as a top-two reshoring constraint. This finding is consistent with the public labor-market backdrop: BLS projects roughly 963,400 production-occupation openings per year during 2024-2034, largely due to replacement needs, even as overall production-occupation employment is projected to decline. [R1]

AI does not erase that labor challenge. It changes the productivity equation. The reshored factory needs workers who are augmented by digital work instructions, AI-guided troubleshooting, predictive maintenance recommendations, machine vision, digital twins, and planning optimization. The winning plant will not ask scarce technicians to memorize every failure mode. It will put institutional knowledge into systems that make every technician more capable.

Labor-related Reshoring Finding	Q2 2026 Result
Labor availability or technical skills shortages are a top-two reshoring constraint	79% (181 of 229)
Skilled trades, maintenance, machinists, and controls roles are harder to fill than production-operator roles	66% (151 of 229)
Automation and controls technicians are the most difficult technical role to recruit	58% (133 of 229)
Workforce training must be built into reshoring incentives	67% (153 of 229)
AI-enabled work instructions, copilots, or guided troubleshooting will be needed to raise technician productivity	55% (126 of 229)
Domestic production plans assume fewer workers per unit of output than comparable offshore production	61% (140 of 229)

AI-professional Workforce Finding	Q2 2026 Result
AI will primarily augment scarce skilled workers rather than replace them outright	79% (73 of 92)
Technician copilots can reduce troubleshooting time in many plants within 12-24 months	62% (57 of 92)
AI-based skills mapping and adaptive training are underused in manufacturing workforce planning	71% (65 of 92)
Human-in-the-loop supervision remains essential for quality, safety, and regulatory accountability	86% (79 of 92)

WORKFORCE IMPLICATION

The U.S. reshoring problem is not solved by saying jobs will come back. It is solved by designing factories where scarce people are made more productive by AI-enabled systems.

04

AI IS THE PRODUCTIVITY OFFSET THAT MAKES DOMESTIC PRODUCTION VIABLE

The economics of reshoring depend on intelligent automation, not nostalgia.

The old offshore model converted wage arbitrage into unit-cost advantage. The new reshoring model must convert intelligence into productivity advantage. That means higher throughput, fewer defects, lower downtime, tighter scheduling, faster changeovers, better energy discipline, and better supplier response. AI is the connective tissue that makes those outcomes measurable and repeatable.

In the survey, 74% of executives say at least one reshoring business case would fail, stall, or require major redesign without AI or automation productivity offsets. That is a board-level finding. It means AI has moved from technology roadmap to capital-allocation gate.

AI Use Case Selected As High-value For Reshoring Economics	Executive Selection	Reshoring Value
AI-enabled quality inspection and machine vision	74% (169 of 229)	Defect reduction, faster inspection, lower rework, better first-pass yield
Predictive maintenance and downtime reduction	62% (142 of 229)	Higher uptime, lower emergency maintenance, fewer production losses
Production scheduling and constraint optimization	59% (135 of 229)	Improved throughput, schedule adherence, and capacity utilization
AI-assisted technician troubleshooting and work instructions	55% (126 of 229)	Faster onboarding, lower mean time to repair, knowledge capture
Demand sensing and inventory optimization	51% (117 of 229)	Lower buffer inventory with better domestic responsiveness
Supplier-risk monitoring and alternative-source identification	46% (105 of 229)	Lower disruption exposure and faster qualification paths
Digital twins for reshored line design and ramp-up simulation	39% (89 of 229)	Less commissioning risk and more accurate capital planning
Autonomous material movement and warehouse orchestration	36% (82 of 229)	Labor relief and improved flow inside the plant

Use Case Rated Deployable Within 24 Months	AI-professional Selection	Interpretation
Production planning, scheduling, and demand sensing	78% (72 of 92)	Fastest-deployable operational AI because it can often begin with existing ERP, MES, and order data
Predictive maintenance	64% (59 of 92)	Deployable where machine histories, sensor streams, and maintenance records are accessible
AI quality analytics and computer vision	63% (58 of 92)	Strong ROI when defect modes are costly and visual evidence is available
Technician copilots and guided troubleshooting	56% (52 of 92)	Useful where tribal knowledge and maintenance manuals can be governed and retrieved
Supplier-risk intelligence	52% (48 of 92)	More valuable as imported component exposure and qualification complexity rise
Digital twins and commissioning simulation	71% (65 of 92)	High value for new lines, high-mix operations, robotics, and complex material flow

05

TOTAL COST OF OWNERSHIP MUST BECOME AI-ENABLED

AI makes reshoring more viable, but it also raises the bar for infrastructure readiness.

The offshore business case often won because companies compared visible unit price against domestic cost. The more sophisticated question is different: what is the risk-adjusted cost of supply when tariffs, freight, inventory, engineering-change latency, quality leakage, expedite shipments, field failures, supplier concentration, geopolitical exposure, and downtime are priced into the model?

The joint survey found that 75% of executives say traditional landed-cost models understate the full cost and risk of offshore production. Seventy-nine percent say AI-enabled planning and analytics are needed to model total cost accurately. This is one of the most important findings in the poll because it attacks the accounting foundation of offshoring, not merely the geography.

A reshoring business case should not be a static spreadsheet prepared once for the board. It should be a living model that continuously updates as tariffs, demand, supplier reliability, quality, inventory, freight, power costs, and labor assumptions change. AI is suited to this problem because the cost drivers are dynamic, correlated, and scenario-dependent.

Total-cost Finding	Q2 2026 Result
Traditional landed-cost models understate the full cost and risk of offshore production	75% (172 of 229)
AI-enabled planning and analytics are needed to model total cost accurately	79% (181 of 229)
Company lacks a continuously updated total-cost model for reshoring decisions	57% (131 of 229)
Tariff, freight, inventory, expedite, defect, and downtime risks are not consistently converted into financial scenarios	61% (140 of 229)
AI-enabled scenario modeling would improve board confidence in reshoring investment cases	72% (165 of 229)
Supplier-risk, logistics-risk, and policy-risk scoring should be embedded into reshoring business cases	76% (174 of 229)

Cost/Risk Category	What the AI-enabled reshoring model should price
Unit cost	Labor, automation, energy, tooling, cycle time, yield, burden rate, and learning-curve assumptions
Inventory cost	Buffer stock, obsolescence, carrying cost, safety-stock policy, and working capital
Lead-time variance	Financial value of shorter domestic replenishment and lower schedule uncertainty
Quality leakage	Defects, rework, scrap, warranty exposure, returns, and field failures
Tariff and policy exposure	Rules of origin, tariff regimes, compliance costs, and policy volatility
Supplier resilience	Supplier concentration, geographic risk, qualification timelines, and alternate-source readiness
Freight and expedite risk	Container volatility, air freight, port disruptions, emergency replenishment, and mode switching
Ramp-up risk	Commissioning delays, yield stabilization, staffing curves, and equipment readiness
Power and utility constraints	Utility interconnection timing, energy cost, backup power, cooling, and site load growth
Automation payback	Robotics, cobots, computer vision, predictive maintenance, worker augmentation, and digital labor

06

**POWER, CHIPS, AND INDUSTRIAL
INFRASTRUCTURE ARE NOW PART OF
THE AI BUSINESS CASE**

The unit price was never the full cost. AI makes the hidden cost visible.

A modern AI-enabled factory is not just a building with machines. It is a high-dependency system that requires reliable power, edge compute, networking, sensors, controllers, cybersecurity, data pipelines, and semiconductor-dependent automation. This is why 82% of executives in the Black Book Insights survey say power availability and utility timelines now influence site selection.

The public energy outlook reinforces the concern. The U.S. Energy Information Administration forecast in January 2026 that U.S. electricity use would grow 1% in 2026 and 3% in 2027, marking the strongest four-year growth period since 2000. EIA attributed the surge largely to increasing demand from large computing centers. [R2]

The semiconductor buildout also illustrates why AI and reshoring are mutually reinforcing. NIST reports that the CHIPS for America award for TSMC Arizona provides up to \$6.6 billion in direct funding to support more than \$65 billion in planned investment across three greenfield leading-edge fabs in Phoenix. These fabs are designed around advanced nodes that support high-performance computing, AI, and industrial digitization. [R3]

Infrastructure Finding	Q2 2026 Executive Result
Power availability or utility timelines now influence reshoring site selection	82% (188 of 229)
Data-center, compute, or edge-infrastructure availability will affect manufacturing AI deployment	41% (94 of 229)
States and communities should package power, workforce, permitting, and automation support together	70% (160 of 229)
Semiconductor supply and industrial electronics availability are board-level reshoring concerns	52% (119 of 229)

AI-infrastructure Finding	Q2 2026 AI-professional Result
Edge AI will be required for many factory use cases	62% (57 of 92)
Power and cooling constraints will influence factory AI architecture	46% (42 of 92)
Semiconductor and industrial-control supply-chain resilience should be part of AI governance	53% (49 of 92)
Cybersecurity and OT security are material constraints on AI-enabled factory modernization	77% (71 of 92)

INFRASTRUCTURE IMPLICATION

Reshoring site selection can no longer stop at land, labor, logistics, and incentives. It must score power, compute, connectivity, OT cybersecurity, automation ecosystem depth, and technical workforce density.

Infrastructure determines whether an AI-enabled factory can run. Data determines whether it can learn. That distinction makes data readiness the next gating issue in any reshoring plan that depends on intelligent automation or analytics.

07

DATA READINESS IS THE HIDDEN RESHORING CONSTRAINT

AI cannot optimize what the enterprise cannot see.

The most dangerous reshoring failure mode is not the factory that cannot buy robots. It is the factory whose data cannot support intelligent operation. AI requires clean asset hierarchies, sensor streams, maintenance histories, quality records, routing data, supplier master data, material genealogy, work-in-process visibility, and governed access to enterprise systems.

The survey results are severe. Sixty-nine percent of executives report that ERP, MES, supply-chain, or plant-floor data is not clean or integrated enough to scale AI confidently. Among AI professionals, 96% say most reshoring projects underestimate data-readiness requirements, and 83% identify legacy OT integration as the most common barrier to factory AI deployment.

Data-readiness Issue	Q2 2026 Executive Result
ERP, MES, quality, and supply-chain data are not integrated enough to scale AI confidently	69% (158 of 229)
Plant-floor data lacks standardization across facilities	59% (135 of 229)
Supplier data is not current enough to support reliable AI risk scoring	54% (124 of 229)
Maintenance data quality limits predictive maintenance accuracy	49% (112 of 229)
AI pilots have been delayed by data-cleansing or systems-integration problems	42% (96 of 229)

AI-professional Data Finding	Q2 2026 Result
Most reshoring projects underestimate data-readiness requirements	96% (88 of 92)
Legacy OT integration is a more common barrier than model selection	83% (76 of 92)
Poor master data is a leading reason AI pilots fail to scale in manufacturing	69% (63 of 92)
Edge architecture will be required for many factory AI use cases because of latency, uptime, or data-sovereignty needs	62% (57 of 92)

The data-readiness conclusion is direct: the AI-reshoring agenda must begin before the plant is built or expanded. Data architecture, sensor strategy, MES integration, quality data, maintenance taxonomy, supplier master data, and cybersecurity controls should be designed into reshoring plans from the outset.

Once the data constraint is visible, the architecture question becomes unavoidable. Manufacturers must decide where AI belongs, how it connects to OT and enterprise systems, which decisions remain deterministic, and which recommendations require human approval.

08

THE AI ARCHITECTURE FOR RESHORED U.S. FACTORIES

This is the operating blueprint: the plant, the data layer, the AI layer, and the governance layer must be designed together.

A serious AI-enabled reshoring program requires a technical architecture that connects board-level strategy to plant-floor execution. The architecture must respect the difference between deterministic industrial control and AI-assisted decisioning. PLCs, DCS, CNCs, robotics controllers, and safety systems should continue to handle deterministic, real-time control. AI should be used to perceive, predict, optimize, recommend, simulate, and orchestrate within properly governed boundaries.

REFERENCE ARCHITECTURE

Architecture Layer	Core Components	Reshoring Role
Strategic decision layer	AI total-cost model, site-scoring engine, supplier-risk graph, capital allocation scenarios	Decides what to reshore, where, and under which risk-adjusted assumptions
Enterprise systems layer	ERP, SCM, PLM, QMS, EAM/CMMS, WMS, finance, HR/workforce systems	Provides master data, cost, orders, routings, bills of material, maintenance, and quality context
Manufacturing operations layer	MES/MOM, APS, recipe/batch systems, electronic work instructions, dispatching, OEE	Turns orders into controlled production activity and captures execution data
OT and asset layer	PLCs, CNCs, DCS, SCADA, HMIs, robots, AMRs, sensors, machine vision, test systems	Generates plant-floor signals and executes real-time control under industrial constraints
Edge and connectivity layer	Industrial gateways, historians, OPC UA, MQTT, MTConnect, time-series databases, private 5G or industrial Wi-Fi	Moves data safely from machines to analytics while supporting low-latency inference
AI and optimization layer	ML models, generative AI assistants, optimization solvers, anomaly detection, computer vision, agentic workflows	Predicts failures, improves schedules, inspects quality, recommends actions, and automates decision support
Digital twin and simulation layer	CAD/CAE, physics simulation, discrete-event simulation, plant-layout twin, robot simulation, process twin	De-risks line design, commissioning, flow, ergonomics, and capacity before capital is spent
Governance and security layer	Identity, access control, model registry, audit trails, human approval gates, OT segmentation, incident response	Keeps AI explainable, secure, auditable, and safe in regulated or safety-critical operations

LATENCY AND DEPLOYMENT PATTERNS

The reshored AI factory should not treat every AI use case as a cloud use case. Latency, safety, uptime, and data-governance requirements determine where inference and decisioning should run.

Decision Class	Time Scale	Likely Deployment Location	Example Use Cases
Real-time control	Milliseconds to sub-second	PLC, robot controller, DCS, safety PLC	Deterministic automation, interlocks, emergency stops, motion control
Edge AI inference	Sub-second to several seconds	Industrial edge server or gateway	Machine vision, anomaly detection, vibration monitoring, line-side recommendations
Plant operations AI	Seconds to minutes	Plant data platform, MES, local historian, edge-cloud hybrid	Scheduling adjustments, maintenance recommendations, quality analytics, energy optimization
Enterprise optimization	Minutes to days	Cloud or enterprise data platform	Demand sensing, supplier-risk scoring, inventory policy, capital scenarios
Board and strategy analytics	Weeks to quarters	AI total-cost model and scenario engine	What to reshore, where to invest, which suppliers to localize

DATA MODEL REQUIREMENTS

The AI factory needs a shared industrial semantic model. Without it, AI tools become isolated pilots. The minimum data model should connect asset hierarchy, product hierarchy, process routing, work order, quality characteristic, maintenance event, operator action, supplier, lot, serial number, energy meter, and cost center.

ASSET HIERARCHY

Every machine, line, cell, robot, sensor, tool, and fixture should map to a governed hierarchy.

QUALITY LABELS

Computer vision and anomaly models require labeled examples, defect taxonomies, acceptance rules, and human adjudication history.

PRODUCT AND PROCESS CONTEXT

Bills of material, routings, recipes, tolerances, inspection plans, and process parameters must be linked.

MAINTENANCE HISTORY

Predictive maintenance requires usable failure codes, work-order discipline, parts usage, downtime reason codes, and sensor streams.

TIME SYNCHRONIZATION

Machine, quality, maintenance, and order events must share reliable timestamps so root-cause analysis is possible.

DATA CONTRACTS

IT and OT teams should define owners, update cadence, lineage, retention, access, and quality thresholds for each core data object.

MATERIAL GENEALOGY

Lots, serials, suppliers, revisions, and inspection results must remain traceable.

AI GOVERNANCE AND SAFETY

Reshored factories will rely on AI, but they cannot become uncontrolled AI environments. Human-in-the-loop governance is not a compliance afterthought; 86% of AI professionals in the survey say it is essential in safety-, quality-, or compliance-sensitive factories.

Governance Control	Factory Requirement
Model registry	Every production model has an owner, version, purpose, validation record, and rollback path
Human approval gates	AI can recommend or pre-fill actions, but defined thresholds require human signoff
Audit trails	Every AI recommendation, override, and automated action is logged and reviewable
Cyber segmentation	AI systems that touch OT networks are isolated by zones, conduits, least privilege, and monitored access
Prompt and data controls	Generative AI use cases prevent sensitive drawings, customer data, pricing, or process secrets from leaking
Fail-safe behavior	If AI inference or connectivity fails, the line continues under deterministic control or falls back to defined manual processes
Model drift monitoring	Quality, maintenance, planning, and vision models are tested against process changes, product changes, and sensor drift
Operational validation	AI performance is measured against OEE, first-pass yield, MTBF, MTTR, scrap, schedule adherence, and labor productivity

THE MINIMUM VIABLE AI PLANT BLUEPRINT

For a reshored plant or major line expansion, Black Book Insights and Applied Artificial Intelligence LLC recommend a minimum viable AI architecture before full production ramp.

AI TOTAL-COST MODEL

A living model for labor, automation, quality, inventory, freight, tariffs, power, supplier risk, and ramp-up risk.

INDUSTRIAL DATA BACKBONE

A governed connection among ERP, MES, QMS, CMMS/EAM, historian, PLC/SCADA, and supplier data.

DIGITAL TWIN BEFORE LAUNCH

Simulation of plant layout, material flow, line balancing, robotics cells, operator ergonomics, and capacity.

QUALITY AI

Machine vision or statistical anomaly detection for the highest-cost defect modes.

MAINTENANCE AI

Predictive maintenance for bottleneck assets and robotics cells.

SCHEDULING AI

Constraint-aware production scheduling connected to actual routing, capacity, labor, and material availability.

TECHNICIAN COPILOT

A governed assistant trained on manuals, tribal knowledge, work orders, alarm histories, and approved procedures.

OT CYBERSECURITY BASELINE

Network segmentation, asset inventory, access controls, backup and recovery, and AI-specific monitoring.

09

THE NEW AI-ENABLED RESHORING STACK

A reshored factory is a stack, not a site.

Layer	Function	Reshoring Value
Strategic AI/TCO layer	Scenario modeling, tariff exposure, supplier-risk scoring, capital allocation	Decides what to reshore and when
Site-selection intelligence layer	Labor, power, logistics, incentives, permitting, supplier proximity	Identifies viable locations
Digital-thread layer	ERP, MES, PLM, QMS, CMMS, WMS, supplier systems	Connects decisions to execution
Factory AI layer	Quality vision, predictive maintenance, scheduling, process optimization	Raises output and reduces downtime
Workforce augmentation layer	Technician copilots, digital work instructions, skills mapping, training	Multiplies scarce labor
Supplier-intelligence layer	Qualification tracking, alternate sourcing, geopolitical risk, capacity signals	Builds domestic resilience
Governance and security layer	Human-in-the-loop controls, model risk, cybersecurity, auditability	Makes AI safe, explainable, and compliant

This stack is the operating model for reshoring. Without it, companies risk building domestic factories that inherit offshore complexity without offshore cost advantages.

10

THE AI-RESHORING MATURITY GAP

Most companies have pilots. Few have an AI-enabled reshoring operating model.

The survey shows a maturity gap between AI awareness and AI operating capability. Many manufacturers have tried AI in quality, maintenance, planning, or analytics. Far fewer have connected AI to capital allocation, site selection, workforce design, supplier localization, and factory execution.

Maturity Level	Description	Executive Share
0 - Manual reshoring	Reshoring discussed strategically, but cost modeling remains spreadsheet-driven	14% (32 of 229)
1 - TCO-aware reshoring	Company considers broader cost and risk, but modeling remains periodic and manual	23% (53 of 229)
2 - AI pilots	AI pilots exist in quality, maintenance, planning, or analytics, but are not integrated into reshoring decisions	36% (82 of 229)
3 - Integrated AI workflows	AI supports multiple operating workflows and informs selected reshoring business cases	21% (48 of 229)
4 - Digital-thread reshoring	AI connects supply chain, plant operations, quality, workforce, and financial modeling	5% (11 of 229)
5 - Adaptive reshored network	AI continuously optimizes production footprint, suppliers, inventory, quality, and capacity	1% (2 of 229)

Only 6% of manufacturing executives place their organizations at Level 4 or Level 5. This is the gap between talking about AI and using AI as the operating system of reshoring.

AI-professional assessment of typical manufacturing-client maturity	Q2 2026 Result
Level 0 or 1	44% (40 of 92)
Level 2	38% (35 of 92)
Level 3	16% (15 of 92)
Level 4 or 5	2% (2 of 92)

MATURITY IMPLICATION

The risk is not that manufacturers lack AI pilots. The risk is that pilots remain detached from capital planning, workforce design, site selection, line commissioning, and supplier localization. That gap turns AI enthusiasm into reshoring execution risk.

- **For Boards:** Do not approve reshoring capital without an AI/data readiness score and a quantified automation-productivity assumption.
- **For Operations Leaders:** Prioritize AI where downtime, scrap, bottleneck assets, schedule volatility, and technician scarcity create measurable losses.
- **For Technology Leaders:** Move from proofs of concept to governed workflows integrated with MES, CMMS, QMS, ERP, and OT systems.

After maturity is defined, vendor selection becomes a systems-design exercise rather than a software shopping exercise. The next section maps vendor roles against the stack manufacturers must assemble to convert AI pilots into reshoring execution capability.

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TOP MANUFACTURING AI SUPPORT VENDORS AND THEIR ROLE IN RESHORING

The market signal is not that one vendor wins. It is that reshoring now requires a coordinated AI stack.

The table below is not a ranking by revenue. It is a reshoring relevance map. Vendors are grouped by the role they can play in an AI-enabled U.S. factory program: industrial automation, digital twins, cloud and data foundation, planning, maintenance, computer vision, robotics, and frontline operations. Recent public signals show that the AI factory ecosystem is moving rapidly from pilots toward deployable industrial platforms.

Vendor	Role In Ai-enabled Reshoring	Recent Signal	Recommended Engagement Contact Path
Siemens	Industrial AI, automation engineering, digital twins, PLM/MES, industrial copilot	CES 2026 materials emphasize Siemens and NVIDIA expansion to an industrial AI operating-system concept; Siemens Industrial Copilot focuses on automation code, diagnostics, and lifecycle productivity. [R5]	Engage Digital Industries manufacturing lead, automation architect, PLM/MES architect, and industrial AI solution lead.
Rockwell Automation	Controls, smart manufacturing, OT integration, edge AI, AMRs, connected enterprise	Rockwell expanded collaboration with NVIDIA for intelligent automation and mobile robotics; its AI materials focus on performance, throughput, quality, and maintenance across the asset lifecycle. [R6]	Engage account team, PartnerNetwork lead, controls architect, OT security lead, and FactoryTalk/Plex technical lead.
NVIDIA	Accelerated compute, Omniverse digital twins, Isaac robotics, Metropolis vision AI, physical AI	NVIDIA 2026 materials emphasize industrial AI, digital twins, AI physics, and simulation for products, processes, and facilities before real-world buildout. [R7]	Engage enterprise manufacturing team, Omniverse specialist, robotics/Isaac solution architect, and GPU infrastructure partner.
Microsoft	Azure AI, Fabric data layer, edge-to-cloud manufacturing, agentic AI, enterprise copilots	Microsoft 2026 manufacturing materials emphasize agentic AI, digital twins, edge AI, and end-to-end intelligent orchestration across factory and supply-chain workflows. [R8]	Engage Microsoft manufacturing industry team, Azure solution architect, security architect, and certified manufacturing partners.
AWS	Cloud AI, industrial data strategy, IoT, generative AI, model hosting, digital thread support	AWS manufacturing materials position generative AI for factory productivity, product quality, worker onboarding, and secure industrial AI workloads. [R9]	Engage AWS industry sales, manufacturing solution architect, industrial data partner, security lead, and AWS Marketplace ecosystem.
Google Cloud	Manufacturing Data Engine, Gemini/Vertex AI, data unification, analytics, factory-to-cloud connectivity	Google Cloud Manufacturing Data Engine connects factory-floor data to cloud analytics and AI, addressing the data-access barrier that blocks scaling. [R10]	Engage Google Cloud manufacturing team, data engineering lead, OT data integration partner, and AI/ML solution architect.
IBM	Asset performance management, Maximo, predictive maintenance, reliability workflows	IBM Maximo combines EAM, APM, and reliability workflows; Maximo Predict applies AI to maintenance, inspections, operational data, and failure prediction. [R11]	Engage Maximo product specialists, reliability leader, maintenance transformation lead, and implementation partner.
PTC	ThingWorx IIoT, Windchill PLM, Vuforia AR, digital thread, connected worker	ThingWorx 10 positions IIoT and AI as a foundation for turning data from products, people, and processes into actionable manufacturing intelligence. [R12]	Engage ThingWorx/PLM lead, digital thread architect, connected worker lead, and AR/work-instruction specialist.

Vendor	Role In Ai-enabled Reshoring	Recent Signal	Recommended Engagement Contact Path
SAP	Digital Manufacturing, supply-chain AI agents, Joule, ERP/MES integration, planning	SAP Hannover Messe 2026 materials highlight AI agents for planning, service, and manufacturing operations to stabilize supply chains and improve service levels. [R13]	Engage SAP Digital Manufacturing, Business Data Cloud, Joule, IBP, and S/4HANA manufacturing leaders.
Oracle	Fusion Cloud SCM, manufacturing, maintenance, logistics, AI agents, planning	Oracle announced 2026 AI agents across planning, procurement, manufacturing, maintenance, and logistics to accelerate decisions and strengthen resilience. [R14]	Engage Oracle SCM/manufacturing sales, planning lead, maintenance lead, and data-security architect.
ABB Robotics	Industrial robots, cobots, AMRs, RobotStudio, physical AI and simulation	ABB Robotics announced a 2026 NVIDIA partnership to integrate Omniverse libraries into RobotStudio and support industrial-grade physical AI at scale. [R15]	Engage robotics solution lead, RobotStudio specialist, application cell integrator, and safety engineer.
FANUC America	Robotics, CNC, predictive robot maintenance, production automation	FANUC Zero Down Time applies predictive analytics to reduce downtime and enhance robot performance. [R16]	Engage robotics automation lead, CNC lead, ZDT specialist, and local authorized automation partner.
Cognex	Machine vision, deep learning inspection, edge learning, defect detection	Cognex 2026 AI machine-vision research reports that 57% of surveyed respondents already use AI in machine vision, with another 30% planning deployments. [R17]	Engage machine-vision application engineer, quality leader, controls engineer, and line-integration partner.
LandingAI	AI visual inspection, data-centric computer vision, model training and deployment	LandingAI positions LandingLens for fast model training and deployment in manufacturing quality-control use cases. [R18]	Engage visual inspection lead, quality engineering, data labeling owner, and validation engineer.
Tulip	Frontline operations, composable apps, connected worker, AI-assisted work instructions	Tulip 2026 materials argue that AI platforms must be context-rich, human-first, and usable by frontline teams rather than monolithic systems. [R19]	Engage frontline operations lead, quality operations owner, MES lead, and production supervisor champions.
Sight Machine	Industrial data foundation, plant data contextualization, production agents, factory analytics	Sight Machine announced autonomous industrial AI agent crews in April 2026 to monitor and optimize production performance. [R20]	Engage industrial data platform lead, plant analytics owner, OT data engineer, and operations excellence team.
Augury	Machine health, process health, predictive and prescriptive maintenance	Augury positions industrial AI around machine-health insights, prescriptive maintenance, and reductions in unplanned downtime. [R21]	Engage reliability engineering, maintenance director, plant manager, and production-loss owner.
o9 Solutions	AI planning, enterprise planning and execution, supply-chain and operations decision models	o9 positions its AI-powered planning platform around connecting strategy, supply chain, finance, and operations for faster decisions. [R22]	Engage supply-chain planning, S&OP/IBP leader, finance planning owner, and manufacturing network strategist.
Palantir	Operational AI platform, ontology, enterprise data integration, governed workflows	Palantir AIP connects AI with operational data and workflows, enabling AI applications anchored in enterprise operating reality. [R23]	Engage operations transformation owner, data-governance lead, security lead, and high-value use-case owner.
C3 AI	Enterprise AI applications for predictive maintenance, inventory optimization, schedule optimization, and supply chain	C3 AI manufacturing materials position enterprise AI applications for global manufacturing and supply-chain operations. [R24]	Engage manufacturing applications lead, data platform owner, reliability lead, and supply-chain optimization owner.

11

RECENT MARKET SIGNALS PROVING THE THESIS

The AI factory ecosystem is no longer theoretical.

The following recent public signals reinforce the joint thesis that AI is becoming the operating layer for factory competitiveness rather than a narrow analytics add-on.

Signal	Date	What happened	Why it matters for reshoring
Siemens and NVIDIA	2026	Expanded industrial AI positioning around an end-to-end industrial AI operating system, digital twins, automation, production, operations, and supply chains. [R5]	Industrial AI is moving from software feature to factory architecture.
Rockwell Automation and NVIDIA	2026	Expanded collaboration around intelligent automation, AMRs, and NVIDIA Isaac robotics integration. [R6]	Automation vendors are moving toward AI-enabled autonomy and robotics orchestration.
NVIDIA Omniverse and industrial AI	2026	Industrial AI, digital twins, AI physics, and accelerated computing are being positioned to simulate and optimize facilities before physical buildout. [R7]	Digital twins are becoming a capital-risk tool for reshoring.
Microsoft manufacturing AI	2026	Manufacturing materials emphasize agentic AI, digital twins, edge AI, and intelligent orchestration across operations. [R8]	Enterprise AI is shifting from copilots to workflow-level orchestration.
AWS industrial generative AI	2026	AWS positions generative AI for factory productivity, product quality, onboarding, and secure industrial AI workloads. [R9]	Cloud AI is becoming a shop-floor productivity enabler when paired with industrial data.
Google Cloud Manufacturing Data Engine	2026	Google Cloud positions MDE as a route to connect factory-floor data to cloud analytics and AI. [R10]	Data integration is the practical bottleneck in factory AI.
SAP and Oracle supply-chain AI agents	2026	Both platforms are moving AI into planning, manufacturing, maintenance, and supply-chain workflows. [R13] [R14]	AI is entering the systems that decide production flow and supply resilience.
ABB Robotics and NVIDIA	2026	ABB Robotics announced industrial-grade physical AI work with NVIDIA Omniverse libraries in RobotStudio. [R15]	Robot simulation and physical AI are converging for faster commissioning and scale-up.
Cognex AI machine vision	2026	Cognex reported that 57% of surveyed machine-vision respondents already use AI, with another 30% planning deployments. [R17]	AI vision is becoming a mainstream quality-control layer.

The market signals establish that the AI-enabled factory ecosystem is maturing. The practical challenge is sequencing: manufacturers must move from announcement to data readiness, from pilots to governed workflows, and from one plant to an adaptive production network.

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IMPLEMENTATION ROADMAP: FROM RESHORING ANNOUNCEMENT TO AI-ENABLED FACTORY

The sequence matters. AI must shape capital decisions before the plant is locked.

The following recent public signals reinforce the joint thesis that AI is becoming the operating layer for factory competitiveness rather than a narrow analytics add-on.

Phase	Window	Action	Output
Phase 0: Board mandate	0-30 days	Require every reshoring proposal to include AI architecture, labor productivity assumptions, data-readiness score, power-risk score, and automation payback model.	AI/TCO scenario model, executive dashboard, risk register
Phase 1: Data-readiness audit	30-90 days	Inventory ERP, MES, QMS, CMMS/EAM, historian, PLC/SCADA, supplier, quality, and maintenance data. Assign data owners and fix master-data gaps.	Data maturity heat map, integration backlog, governance plan
Phase 2: Use-case portfolio	60-120 days	Rank use cases by value, feasibility, data availability, cyber risk, and time-to-impact.	Use-case portfolio with ROI ranges and dependencies
Phase 3: Digital twin and site model	90-180 days	Simulate material flow, labor, robotics cells, line balancing, utilities, power, and ramp-up scenarios before committing irreversible capital.	Line model, layout twin, site-capacity model
Phase 4: Pilot on bottleneck assets	120-240 days	Deploy computer vision, predictive maintenance, technician copilot, or scheduling optimization against one high-value constraint.	Measured pilot with OEE, FPY, MTTR, downtime, and productivity baselines
Phase 5: Scale factory AI	6-18 months	Integrate pilots into MES, CMMS, quality, planning, and work-instruction workflows. Implement MLOps/LLMOps and human approval gates.	Production AI workflows with audit trails and performance monitoring
Phase 6: Network optimization	12-24 months	Extend models across suppliers, inventory, sites, and product families. Continuously update TCO and supplier-risk scoring.	Adaptive reshoring network operating model

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PRIORITY AI-RESHORING PROJECTS FOR U.S. FACTORIES

The roadmap becomes investable only when it is translated into funded projects with owners, metrics, data dependencies, and governance gates.

The most effective AI-reshoring programs do not begin with a vendor bake-off. They begin with a portfolio of factory and network projects tied to measurable operating constraints. The project portfolio below is designed for manufacturers that need to convert reshoring intent into domestic output, higher first-pass yield, lower downtime, shorter ramp-up cycles, and better labor productivity.

#	Project	Strategic Purpose	Core Data and Technical Inputs	First Deliverable	Likely Owners
1	AI total-cost control tower	Convert reshoring from a static spreadsheet to a living risk-adjusted model.	Landed cost, tariffs, freight, inventory, quality, labor, power, supplier risk, capital, ramp-up scenarios.	Board TCO dashboard; scenario model for product families and sites.	CFO, COO, supply chain, plant finance
2	Data-readiness and industrial semantic layer	Make factory AI deployable by standardizing the data foundation.	ERP, MES, QMS, CMMS/EAM, historian, PLC/SCADA, supplier master, asset hierarchy.	Data maturity heat map; prioritized integration backlog; named data owners.	CIO, plant IT/OT, operations excellence
3	Site, power, and utility intelligence model	Avoid choosing a site whose power, permitting, or workforce assumptions break the business case.	Utility capacity, interconnection timing, tariffs, substation constraints, labor pools, logistics, supplier proximity.	Site scorecard with power-risk and workforce-risk indices.	Real estate, engineering, energy, economic development
4	Digital twin commissioning lab	Simulate the factory before irreversible capital is locked.	Line balancing, robot cells, material flow, buffers, labor movement, bottleneck assets, energy load.	Layout twin; throughput model; commissioning risk register.	Engineering, manufacturing technology, automation integrator
5	AI quality and machine-vision launch cell	Attack the defect modes that destroy domestic margin.	Vision cameras, labeled defect library, inspection rules, QMS link, edge inference, human adjudication.	First-pass yield baseline; defect detection model; closed-loop quality workflow.	Quality, controls, process engineering
6	Predictive maintenance on bottleneck assets	Reduce downtime where a single asset can stop the reshored line.	Sensor streams, historian data, failure codes, CMMS work orders, spare-parts data.	Asset-criticality map; predictive alerts; MTTR/MTBF dashboard.	Maintenance, reliability, plant manager
7	Constraint-aware scheduling and demand sensing	Turn domestic proximity into speed and schedule reliability.	Orders, routings, capacity, labor availability, material constraints, supplier signals, demand forecast.	Finite-capacity scheduling pilot; schedule-adherence scorecard.	Supply chain, production planning, plant operations
8	Technician copilot and guided work program	Scale scarce expertise across shifts and sites.	Approved SOPs, manuals, work orders, alarm histories, tribal knowledge, safety rules, escalation workflows.	Governed copilot; digital work instructions; onboarding and troubleshooting metrics.	Operations, maintenance, HR training, safety
9	Supplier localization intelligence graph	Identify which suppliers, parts, and materials must be localized first.	BOMs, supplier locations, spend, risk scores, lead times, qualification status, substitute parts.	Supplier risk graph; alternate-source pipeline; localization sequence.	Procurement, supply chain, engineering
10	AI/OT cybersecurity and governance baseline	Prevent the AI-enabled factory from becoming a new attack surface.	Network segmentation, asset inventory, identity, access control, model registry, incident response, audit trails.	AI governance playbook; OT cyber controls; model approval workflow.	CISO, OT security, plant engineering, legal

PROJECT SEQUENCING: DO NOT AUTOMATE CHAOS

The sequencing rule is simple: stabilize the data and operating model before scaling high-consequence AI. The first wave should prove visibility and control. The second wave should prove productivity. The third wave should optimize the network.

Window	Project Focus	Decision Output
First 90 days	TCO model, data-readiness audit, power/site risk score, use-case portfolio, AI governance baseline.	A board-ready investment case that names the constraints and prices the risk.
90-180 days	Digital twin, quality vision cell, predictive maintenance pilot, scheduling pilot, technician copilot prototype.	Measured pilots tied to OEE, first-pass yield, MTTR, schedule adherence, and labor productivity.
6-18 months	Integrate pilots into MES, CMMS, QMS, planning, work instructions, supplier risk, and executive dashboards.	Production AI workflows with audit trails, performance monitoring, and multi-site scaling logic.
18-36 months	Supplier localization graph, adaptive network optimization, AI energy model, continuous TCO refresh.	A resilient domestic production network that learns faster than offshore disruption can accumulate.

MINIMUM FUNDING TEST FOR EACH PROJECT

Every project should pass a funding test before procurement. If the project cannot identify the KPI it will move, the data it requires, the human approval gates it needs, and the operational workflow it will change, it should not be funded as an AI-reshoring project.

Workflow integration	MES, CMMS, QMS, ERP, planning, work instruction, supplier qualification, or board reporting workflow.
Human-in-the-loop gate	Decision thresholds for human review, exception handling, escalation, override capture, and auditability.
Cyber and resilience test	OT segmentation, identity/access control, backup, incident response, model fallback, and fail-safe behavior.
Scale path	Evidence that the use case can move from one line or asset to a plant, then to a multi-site operating model.
Workflow integration	MES, CMMS, QMS, ERP, planning, work instruction, supplier qualification, or board reporting workflow.

The winning reshoring program is not the one with the most AI pilots. It is the one that converts AI projects into production control, labor leverage, lower risk, and faster domestic ramp-up.

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BOARD-LEVEL RECOMMENDATIONS

The board should treat AI as a condition of reshoring capital approval.

RECOMMENDATION 1

TREAT AI AS CORE RESHORING INFRASTRUCTURE

AI should be embedded into reshoring strategy, business-case modeling, site selection, factory design, workforce planning, supplier qualification, and plant operations. The joint survey found that 88% of manufacturing executives say reshoring depends materially on AI-enabled automation, analytics, or digital operations.

RECOMMENDATION 4

USE DIGITAL TWINS TO DE-RISK RAMP-UP BEFORE CAPITAL IS LOCKED

Companies should use simulation, digital twins, robotics modeling, process simulation, and commissioning analytics before opening or expanding domestic plants. Seventy-one percent of AI professionals say digital twins or simulation can reduce commissioning and ramp-up risk for reshored lines.

RECOMMENDATION 2

REPLACE STATIC LANDED-COST MODELS WITH LIVING AI TOTAL-COST SYSTEMS

Executives should require cost models that include tariff volatility, freight risk, inventory exposure, quality leakage, downtime, supplier concentration, expedite cost, engineering-change latency, and power constraints. Seventy-five percent of executives say traditional landed-cost models understate full offshore cost and risk.

RECOMMENDATION 5

REQUIRE DATA-READINESS AUDITS BEFORE PUBLIC PLANT ANNOUNCEMENTS

Data readiness should be treated as a condition of a credible reshoring announcement. Ninety-six percent of AI professionals say most reshoring projects underestimate data-readiness requirements.

RECOMMENDATION 3

BUILD THE WORKFORCE PLAN AND AI PLAN TOGETHER

The workforce problem cannot be solved through hiring alone. Reshored factories need AI-assisted work instructions, technician copilots, predictive maintenance, automated inspection, simulation-based training, and human-in-the-loop production systems. Fifty-five percent of executives say AI-enabled work instructions, copilots, or guided troubleshooting will be needed to raise technician productivity.

RECOMMENDATION 6

REDESIGN ECONOMIC DEVELOPMENT PACKAGES AROUND AI READINESS

State and local leaders should move beyond land and tax incentives. The competitive community of the next decade will offer workforce pipelines, power readiness, permitting speed, automation partners, technical training, cybersecurity support, data infrastructure, and supplier-development capacity. Seventy percent of executives say incentives should be tied to workforce, power, permitting, and automation readiness, not only tax abatements.

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**CONCLUSION:
RESHORING BRINGS PRODUCTION CLOSER.
AI MAKES IT COMPETITIVE.**

The next manufacturing race is an operating-model race.

The first phase of reshoring was about recognizing the fragility of extended global supply chains. The next phase is about execution. Companies cannot simply reverse the offshore model and expect domestic production to work. U.S. reshoring must overcome labor scarcity, technical skills gaps, higher operating costs, supplier fragmentation, power constraints, data immaturity, cybersecurity exposure, and ramp-up risk.

The joint survey results establish a harder conclusion: AI is not an efficiency layer added after the plant opens. It is the architecture that determines whether the reshoring business case survives. The numbers are too large to dismiss as technology enthusiasm: 88% of executives make AI material to their reshoring strategy, 74% say at least one business case would fail or stall without AI or automation productivity offsets, and 96% of AI professionals warn that reshoring teams underestimate data readiness.

WHAT THE REPORT PROVES

Conclusion	Implication
Capital conclusion	A plant announcement is not proof of competitiveness. The proof is an AI-enabled operating system that converts capital into output, quality, uptime, and schedule reliability.
Labor conclusion	The reshored factory cannot be staffed like an offshore labor-arbitrage operation. Scarce workers must be augmented through guided work, technician copilots, machine vision, predictive maintenance, and automation supervision.
Data conclusion	Data readiness is the hidden gate. Without a governed industrial data backbone, AI remains trapped in pilots and cannot support a reshored production system.
Technical conclusion	Deterministic controls, edge AI, cloud AI, digital twins, cybersecurity, and human approval gates must be designed as one industrial architecture.
Board conclusion	A reshoring proposal without quantified AI productivity assumptions, data-readiness scoring, and automation payback is incomplete.
Community conclusion	The winning reshoring locations will be those that can offer power readiness, technical labor, permitting discipline, automation ecosystem depth, cybersecurity support, and supplier-development capacity.

THE OPERATING-MODEL CONCLUSION

AI is the practical mechanism for solving the reshoring constraints identified throughout this report. It models true total cost instead of chasing nominal unit price. It offsets labor scarcity with automation and worker augmentation. It improves quality through machine vision and anomaly detection. It reduces downtime through predictive maintenance. It improves production flow through scheduling and constraint optimization. It de-risks capital investment through simulation and digital twins. It strengthens supplier resilience through risk intelligence. It improves workforce productivity through copilots and guided work. It governs reshored operations with traceability, auditability, and human oversight.

THE INVESTMENT CONCLUSION

The next manufacturing race is not simply about who brings the most production back. It is about who can build the most intelligent, resilient, auditable, and productive domestic operating model. Companies that treat AI as a pilot portfolio will move more slowly than companies that treat AI as the operating system of reshoring. The difference will show up in ramp-up time, defect cost, maintenance losses, inventory exposure, labor productivity, and supplier disruption.

THE FINAL THESIS

The conclusion for boards, policymakers, manufacturers, and economic development leaders is direct: reshoring is not only a supply-chain strategy. It is an AI-enabled industrial operating model. The strongest companies will not merely announce domestic production. They will combine capital, workforce, automation, data, AI, power, suppliers, and governance into one coherent production system.

CLOSING

Reshoring brings the factory home. AI makes the factory work. The country can reshore factories before it can make them competitive; AI is the difference.

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APPENDIX

SELECTED SOURCES AND VENDOR REFERENCE LINKS

External references used to support public facts and vendor-market context.

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ABOUT BLACK BOOK INSIGHTS LLC AND THE BLACK BOOK OF RESHORING (WILEY PUBLISHERS)

Black Book Insights is a reshoring and manufacturing advisory and think tank providing research, analysis, and strategic insight on industrial policy, supply-chain redesign, factory investment, domestic manufacturing momentum, and the evolving economics of global production. Its work is intended for corporate executives, investors, manufacturers, supply-chain leaders, policymakers, economic development organizations, and media covering the industrial economy.

The Black Book of Reshoring: The Essential Guide to America's New Manufacturing Boom, written by Douglas Brown and published by Wiley in 2026, extends that work into a practical decision guide for leaders evaluating where production is moving, how trade and industrial policy are changing business strategy, and what the next era of factory growth means for companies, regions, and global supply networks.

Consultant assessments for reshoring readiness, industrial strategy, supply-chain localization, site-readiness, and related manufacturing competitiveness questions are available by contacting Black Book Insights directly.

ABOUT APPLIED ARTIFICIAL INTELLIGENCE LLC

Applied Artificial Intelligence LLC, represented in this report by founder Vasyl Harasymiv, focuses on helping organizations translate artificial intelligence from concept into practical operating capability. Its work centers on AI strategy, readiness assessment, governance, automation, analytics, workflow design, and implementation planning for organizations seeking measurable AI outcomes.

Consultant assessments for AI readiness, AI operating-model design, implementation planning, workflow automation, and AI governance are available by contacting Applied Artificial Intelligence LLC directly.

CONSULTANT ASSESSMENT AVAILABILITY

Organizations evaluating readiness for reshoring, AI-enabled manufacturing, or AI-driven operational transformation should contact the respective organization for assessment scoping: Black Book Insights for reshoring readiness and manufacturing strategy, and Applied Artificial Intelligence LLC for AI readiness and applied AI implementation planning.