2027 Supply Chain Outlook

From AI insights to AI agents

LeanDNA | APEX

Our speaker



Richard Lebovitz

LeanDNA

Founder & Chief Strategy Officer

- 30+ years in manufacturing, supply chain, and lean strategy
- Founded Factory Logic (acquired by SAP)
- Shingo Prize recipient
- Board member of the Association for Manufacturing Excellence

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The perspective behind today's session
Patterns across discrete manufacturing

500+
manufacturing sites connected

40+
ERP systems integrated

30+
countries

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What you'll learn

- The forces shaping 2027 and which risks you can anticipate
- Where AI belongs, and why agents are the key innovation for 2027
- What to put in place now for a more predictive 2027

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The 2027 landscape

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Manufacturers see AI as the path forward
Readiness is lacking

92%

of leaders agree that AI-driven insights are essential for predicting and preventing disruptions

19%

of companies have successfully digitized their manufacturing and supply chain operations

Research from 2026 Wakefield Study

76%

Of manufacturing executives say they don’t have a predictive view of supply and demand.

Planners spend hours cleaning data and reconciling conflicting spreadsheets instead of planning.

Buyers sift through thousands of POs to figure out which shortages actually matter.

Supply Chain Managers rely on manual “what-if” analysis to understand the impact of disruptions.

Executives wait for weekly reports to learn what already went wrong.

AI is starting to fill these gaps.

Source: LeanDNA and Wakefield Research survey of manufacturing supply chain leaders, 2026

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LIVE POLL 1 OF 4

Which of the following poses the biggest risk to your supply chain in 2027?

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The forces shaping 2027

Outside your control, but not all unforeseeable

You can see these coming

Plan ahead: model scenarios before they hit

Tariff and trade policy
Changes are usually announced first. Model landed cost by part and supplier.

Supplier concentration
Already visible in your BOM and spend data. Find single-source parts now.

Demand volatility
Leading indicators help, but swings still outrun forecasts.

You can’t see these coming

Detect the impact fast and respond

Geopolitical conflict and sanctions
Can cut off a region or supplier with little warning.

Cyberattacks
Can take down your systems, suppliers, or logistics partners overnight.

Logistics disruptions
Port, freight, and shipping-lane shocks ripple into lead times.

The real question: not which disruption comes next, but how fast you see its impact on your parts and orders.

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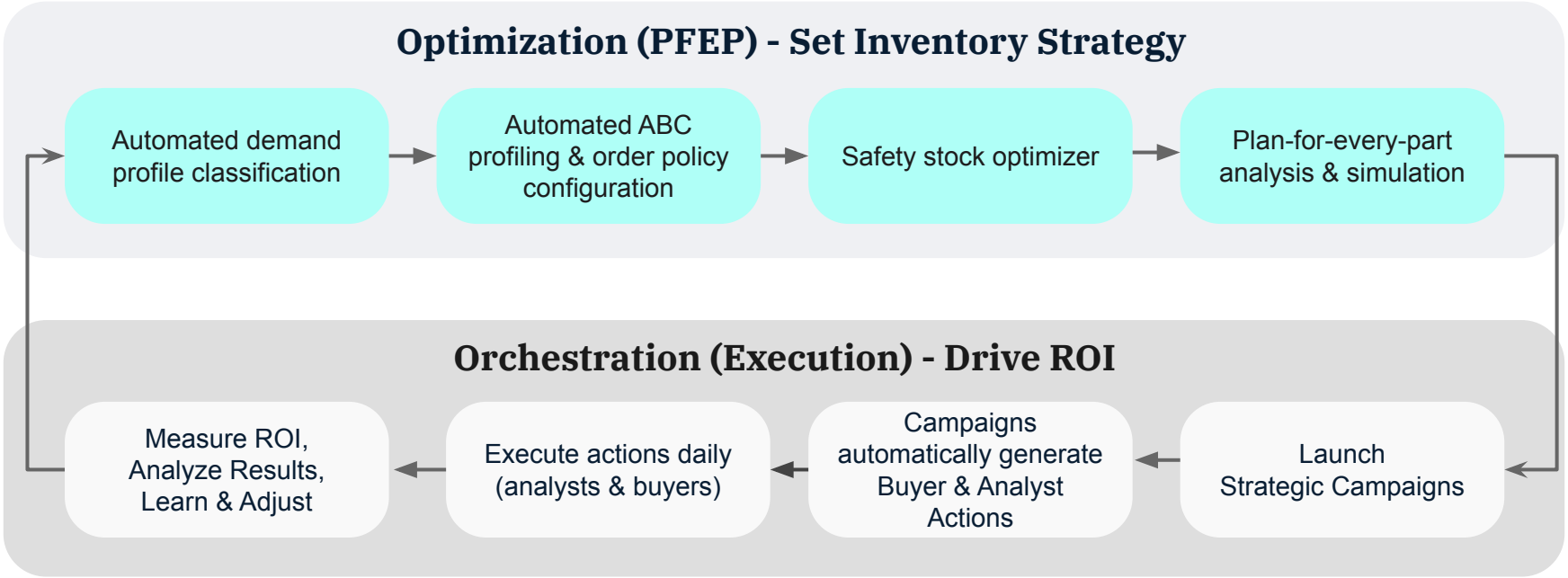
In 2027, advantage won't come from predicting every disruption.

It will come from linking optimization and execution.



The future of supply chain: optimized execution

Optimize the strategy. Execute to drive ROI.



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LIVE POLL 2 OF 4

How far ahead can your organization reliably anticipate supply, demand, or inventory risk today?

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The gap isn't planning effort. It's detection speed.

74%

prioritized improving forecasting over the past two years

72%

discovered a shortage too late to prevent production delays

47%

say 10%+ of annual revenue is lost or at risk from materials misalignment

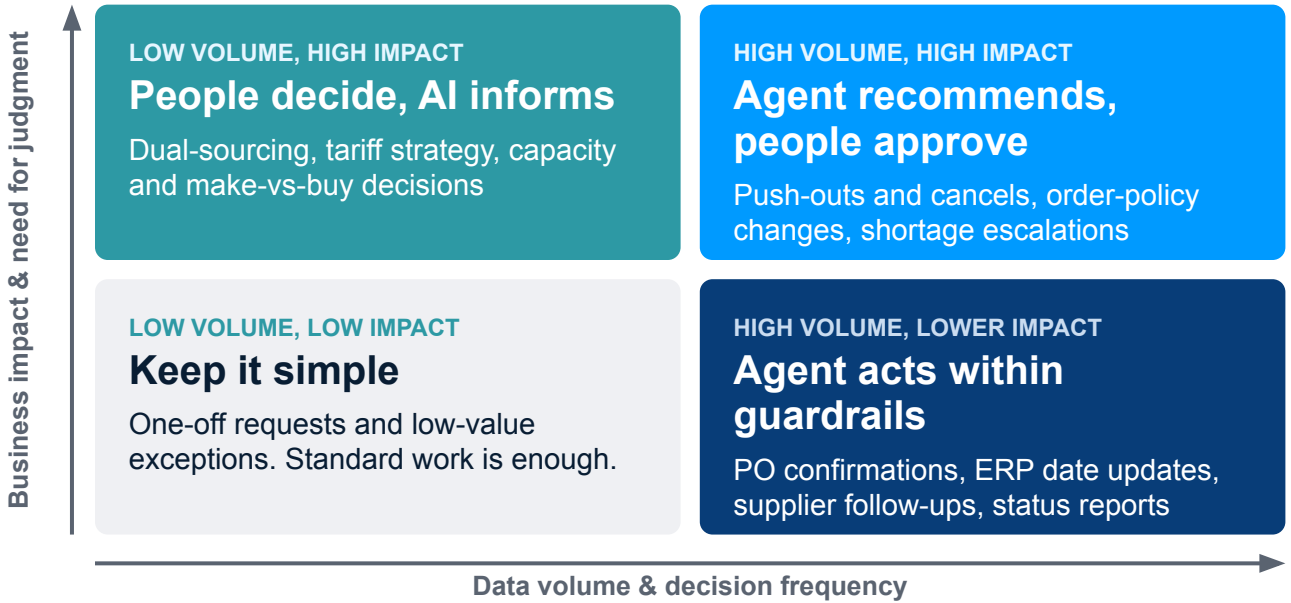
Source: LeanDNA and Wakefield Research survey of manufacturing supply chain leaders, 2026

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Where AI belongs: The rise of agents

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Where AI belongs
Match autonomy to the decision



Rules of thumb

- Start bottom-right, where volume is high and risk is low
- Move up as trust and results build
- Require explainability: every action shows why
- People own high-impact calls

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AI is evolving fast
The future is agents

Impact

2023 – 2024
Chatbots

Answer questions. People do the work.

“What’s the lead time on part VSD2056 ?”

2025 – 2026
Copilots

Help with tasks. People drive every step.

- Draft expedite emails
- Suggest policy changes
- Summarize shortages

2027
AI Agents

Own outcomes. People set direction and review.

- Monitor shortages 24/7
- Chase suppliers, update ERP
- Take a goal, plan the actions
- Escalate only exceptions

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Today: firefighting and routine work
2027: agents take on the routine

- Firefighting & routine work
- Strategic, high-value work

Buyers sift through thousands of POs to find which shortages actually matter.

	Today	2027 with agents
8am	Expedite overnight shortages	Review prioritized actions
9am	Shortage / hot-list meeting	Approve exceptions
10am	Chase PO confirmations	
11am	Supplier negotiation	
12pm	Reconcile spreadsheets	
1pm	Update ERP dates & policies	
2pm	Plan next quarter	
3pm	Sift POs for what matters	
4pm	Status report for leadership	

More capacity for

- Supplier development
- Cost & risk reduction
- S&OP and scenarios

Raise the bar

- Every shortage managed
- Better OTD, lower DOH

Agents working 24/7

- Shortage monitor
- Supplier follow-up
- Policy optimizer
- ERP sync
- Morning briefing

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The challenge with Agents today
Why most supply chain pilots stall

Most Agent pilots stall before they scale

What agents need:

- Connected, trusted data
- An optimization engine
- Guardrails & approvals
- Measured outcomes

- X **Fragmented data.** Demand, POs, and supplier commitments live across ERPs, portals, and spreadsheets.
- X **Not supply chain aware.** Generic agents can write an email, but can't trade off shortages against excess.
- X **Complicated setup.** Rules, ERP access, and approvals must be defined, and tribal knowledge made explicit.
- X **Constant babysitting.** If people check every output, the time saved disappears.
- X **No proof of impact (ROI).** Without outcome tracking, no one can show the action fixed the shortage.

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Agents in action: 2027 examples
People stay in the loop

Shortage escalation
EXECUTION

Spots aging and unable-to-fix actions, escalates them with context, and follows up until resolved.

PO confirmation
EXECUTION

Requests promise dates, reads supplier replies, updates the ERP, and flags exceptions.

Policy optimization
OPTIMIZATION

Re-optimizes safety stock and order policies, simulates impact, and proposes updates for approval.

Excess campaigns
OPTIMIZATION

Sequences push-outs and cancels in time-bound waves; tracks fix rate and cash released.

Goal-driven planning
EXECUTION

Give it a goal: “Prioritize our top two aerospace customers this month.” It plans clear-to-build and allocation.

ROI explainability
OPTIMIZATION

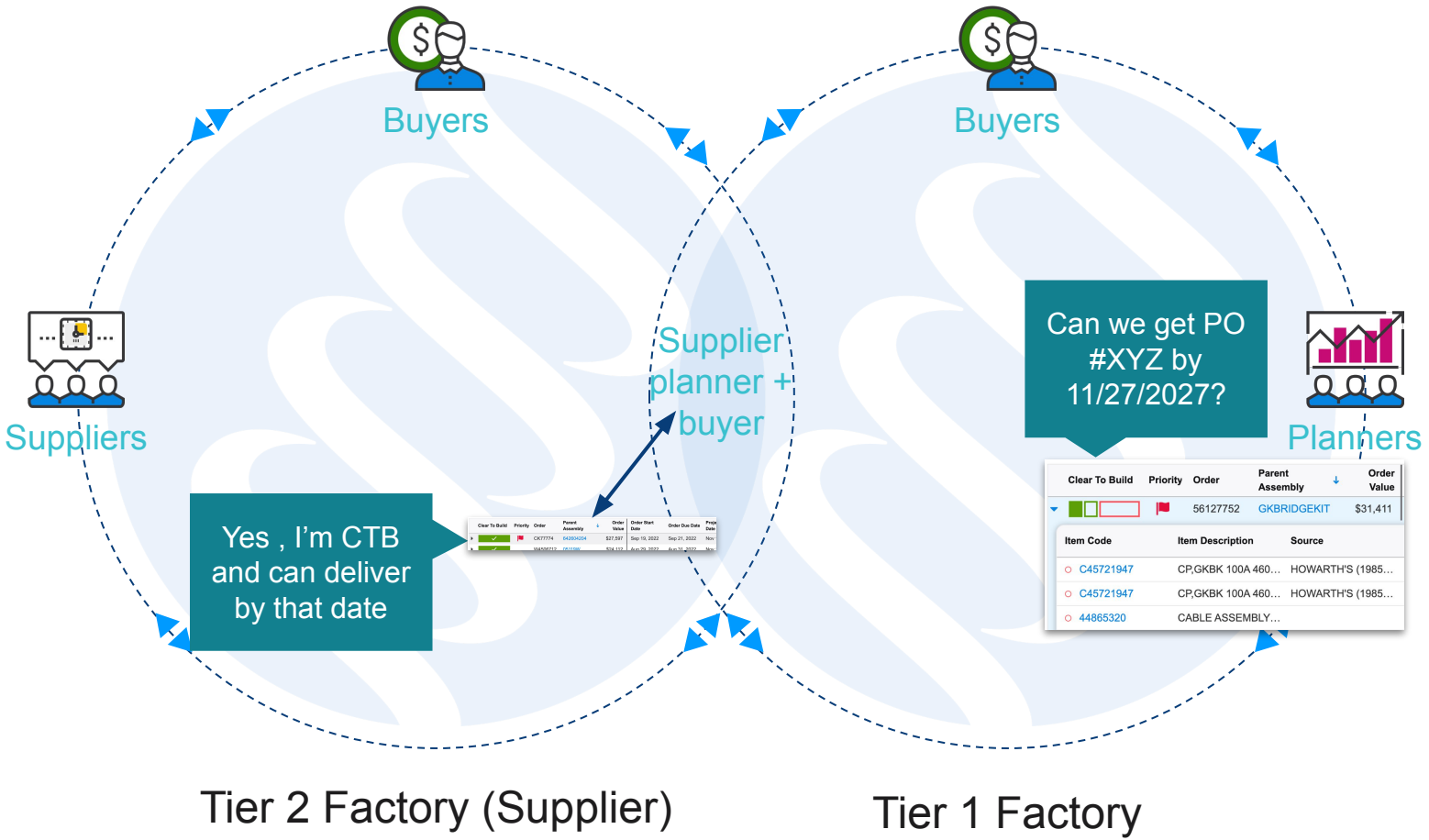
Answers “What did our actions save last quarter?” in plain language, with the evidence behind every result.

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The future

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The Future: Collaborative Multi-Agent Systems



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Where S&OE fits

Closing the gap between plan and execution

PLANNING

S&OP / IBP

Monthly · 3 to 24 months

What should we build?

Demand, supply, capacity, and the financial plan

THE GAP

S&OE: Sales & Operations Execution

Daily and weekly · 0 to 13 weeks

Can we actually build it? Priorities?

Shortages, clear-to-build, inventory actions, supplier commits

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SYSTEM OF RECORD

ERP

MRP and transactions · every day

What's ordered, built, and on hand?

MRP, POs, work orders, and inventory by site

What falls through the gap

- X Shortages found too late to recover
- X Thousands of MRP messages, no priorities
- X Excess building quietly from stale policies
- X Buyers working from spreadsheets
- X Plan and execution never reconcile

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S&OE without optimization is faster firefighting

Fix the policies, not just the symptoms

ROOT CAUSE

Inventory policies

- Safety stock levels
- Demand analytics
- Order policies, lot sizes, and MOQs
- Lead times
- Push vs. pull replenishment

Wrong policies create both problems at once.

SYMPTOM

Shortages

Safety stock too low, wrong order policy, stale lead times

SYMPTOM

Excess

Safety stock too high, oversized order policies, push where pull fits

TYPICAL S&OE

Treats the symptom

Expedite and cancel, week after week. The same problems come back.

OPTIMIZED S&OE

Fixes the cause too

Right-size policies, add pull where it fits, execute prioritized actions, and measure the business impact.

The result: fewer shortages and less excess at the same time, instead of trading one for the other.

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Complementing ERP and planning
The layer that makes the plan executable



Complement, don't replace: keep your ERP and planning investments, and connect them to daily execution.

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LIVE POLL 3 OF 4

Which workflow would you hand to an agent first?

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What to put in place now

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Getting started: give each agent a job

One role, one workflow, one metric

Planning
Planners

Order policies re-optimized overnight against PFEP targets, simulated, and staged for ERP sync.

Metric: Inventory vs. PFEP target (Days on Hand)

AGENTS

- Policy optimizer
- Demand profiler

Procurement
Buyers

A short, prioritized action list each morning: expedite, push out, or cancel. Supplier follow-ups done.

Metric: Inventory Action fix rate

AGENTS

- PO action agent
- Supplier follow-up

Materials
Production control

Clear-to-build checked overnight, shortages ranked by impact, escalations routed before standup.

Metric: Clear-to-build %

AGENTS

- CTB monitor
- Shortage escalation

Leadership
Executives

Morning briefing on OTD risk, inventory, and fix rate, with realized ROI tracked automatically.

Metric: On-time delivery and realized ROI

AGENTS

- Morning briefing
- ROI tracker

Start small: pick one high-volume workflow, keep a human approval step, and expand once results are proven.

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LIVE POLL 4 OF 4

Which best describes the state of your supply chain data today?

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AI and Agent Readiness Checklist

Assess your organization’s readiness for AI adoption

Data & Systems

- ➔ ERP system with 12+ months of transaction data
- ➔ Digital records of supplier performance
- ➔ Demand history and forecast data available
- ➔ Ability to extract and share data (API, exports)

People & Culture

- ➔ Leadership support for AI initiatives
- ➔ Team openness to new technologies
- ➔ Identify AI champion or sponsor with supply chain domain knowledge and AI technology expertise
- ➔ Willingness to start small and iterate

Business Case

- ➔ Clear pain points identified (excess inventory, critical shortages, efficiency)
- ➔ Baseline metrics established
- ➔ ROI targets identified
- ➔ First agent workflow selected

Technical Readiness

- ➔ IT support for data integration projects
- ➔ Cloud infrastructure and willingness to adopt
- ➔ Basic data governance policies
- ➔ Security protocols for data sharing

The people side of AI
What you'll hear, and what works

WHAT YOU'LL HEAR	WHAT WORKS
"I'm not technical." *"It changes every day."*	**Start with the tools you have** Start small and iterate. Mastery isn't required to begin, and yesterday's best decision is today's baseline.
"AI will take our jobs." *"AI does all their work now."*	**Celebrate knowledge, not activity** Hand AI the routine work. Reward results and know-how, not POs cut or transactions made.
"I don't have time to trust a robot." *"MRP says expedite, I expedite."*	**Make space and time to learn** Give planners and buyers coverage to step out of the daily fight, try things and share what works.

All management is change management: the technology is the easy part.

Your roadmap to 2027

What to start now, and what comes next

Next 90 days
Baseline and select

- Baseline OTD, shortages, inventory, and routine work time
- Buy, don't build: pre-built workflows
- Choose a partner with deep supply chain expertise
- Pilot on your own ERP data in weeks, not months

Next 6 months
Pilot and prove

- Run agents on one high-impact workflow, with human approval
- Track every action to an outcome and ROI
- Connect all sites and ERPs into one data foundation
- Expand to a second role

By 2027
Scale with agents

- Agents across planning, procurement, materials
- Exception-only review of routine actions
- Supplier collaboration across tiers
- ROI reported automatically

The test for every step and every partner: can you show the business result, not just the activity?

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What this looks like in practice
Results from discrete manufacturers

27%
fewer shortages at Johnson Controls, plus 700K+ manual ERP updates eliminated per year

20%
lower inventory at Cirtec Medical while improving on-time delivery

85%
fewer shortages at Daikin Applied, with a 10% inventory reduction

Source: published LeanDNA customer case studies

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Key takeaways
What to act on before 2027

01

Plan for detection speed, not perfect prediction

2027’s biggest risks won’t announce themselves. Leaders will see the impact sooner and respond faster.

02

Put AI where volume and complexity are high

Match each decision to the right level of autonomy, and require explainability.

03

Give each agent a job

Start with one role, one workflow, and one metric. Keep people in the loop.

04

Build the foundation now

Connected data, defined decisions, and baseline metrics decide whether AI pays off in 2027.

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Questions?

LeanDNA | APEX

Keep the conversation going

Talk with Richard

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Learn more at leandna.com

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Thank you

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Why AI? Why Now?

The perfect storm of technology, data, and business need

Recent Breakthroughs

- ➔ LLMs understand supply chain language and context
- ➔ AI models can now handle complex, multi-variable optimization at scale
- ➔ Pre-trained industry models shorten implementation time
- ➔ Agentic AI for workflow execution

Data Availability

- ➔ Modern ERPs capture rich transactional data
- ➔ More sensors and sources provide real-time intelligence
- ➔ Digital supplier collaboration creates data streams
- ➔ Historical data now sufficient for accurate AI training

Competitive Pressure

- ➔ Early adopters pulling ahead
- ➔ Customer expectations for faster, accurate delivery rising
- ➔ Talent shortage makes automation essential
- ➔ AI-assisted development speeds up new applications
- ➔ ROI proven one use case at a time

AI Through a Supply Chain Lens

Translating AI concepts into practical supply chain applications

Artificial Intelligence

The broad science of building smart machines that can perform tasks requiring human-like intelligence.

Large Language Models

An intelligent chatbot that understands order policy optimization, demand plans, and procurement terminology to answer questions and provide insights

Machine Learning

A smart analyst that learns from your historical data to predict shortages, optimize inventory levels, and identify demand patterns

Generative AI

AI assistant that drafts supplier emails, creates procurement reports, and generates policy documentation from simple prompts

Agentic AI

Your virtual co-worker that not only advises but takes action - escalating PO risks, updating order policies, and executing inventory action workflows

Common AI Misconceptions

Separating AI facts from fiction in supply chain

~~MYTH: "AI will replace supply chain professionals"~~

TRUTH: AI augments human expertise

AI handles repetitive analysis and pattern recognition, freeing buyers and planners to focus on strategic decisions, relationship building, and complex problem-solving that requires human judgement.

~~MYTH: "We need perfect data before starting with AI"~~

TRUTH: AI works with your existing data

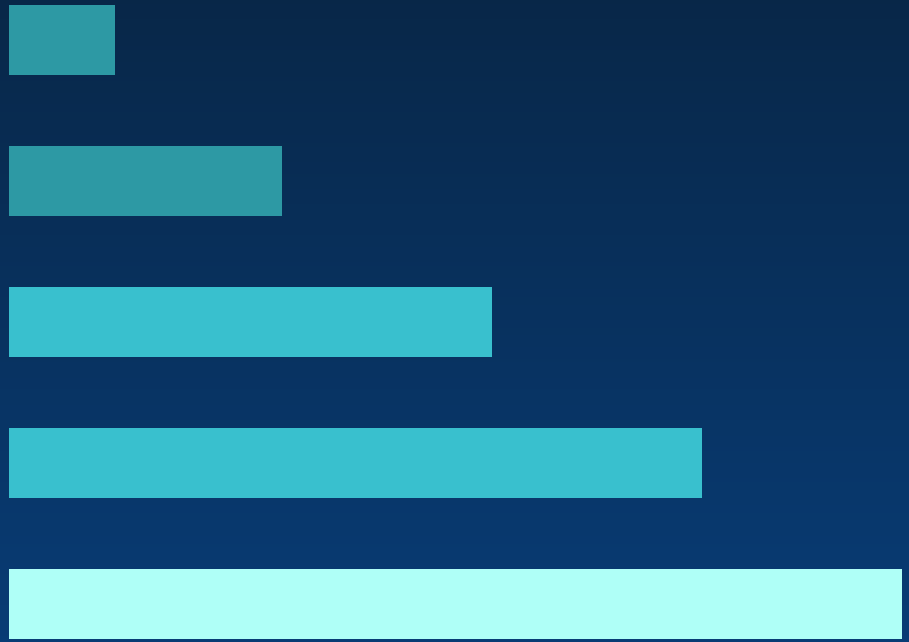
Modern AI can handle incomplete and imperfect data. Start where you are - AI actually helps identify and fix data quality issues over time through pattern recognition and analysis.

~~MYTH: "AI requires massive upfront investment"~~

TRUTH: ROI can be achieved incrementally

Start small with high-impact use cases. A focused first project can show results within months. Then expand based on proven success.

How the team changes



All-Day Firefighting
Chasing & expediting; loudest part wins

Calmer Fire Drill
Still reactive, same static rules

Value-weighted priority
Less time wasted on low-value parts

Right Playbook
Cohort-based logic means the buyer isn't applying one gut instinct to every part

Optimization + Campaigns
Room to focus on the parts that matter

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Execution vs. Planning over time
From today's build to the long-term plan

SHORT-TERM — **LeanDNA** · S&OE

Execution

Demand is known. Make sure every part is there to build it.

Clear-to-Build every part on hand

Clear-to-Commit supplier PO dates confirmed

Supplier collaboration prioritized actions & campaigns

MID-TERM

Optimization

Size order policies and safety stock, written back to ERP.

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IOP · PFEP

LONG-TERM

Plan

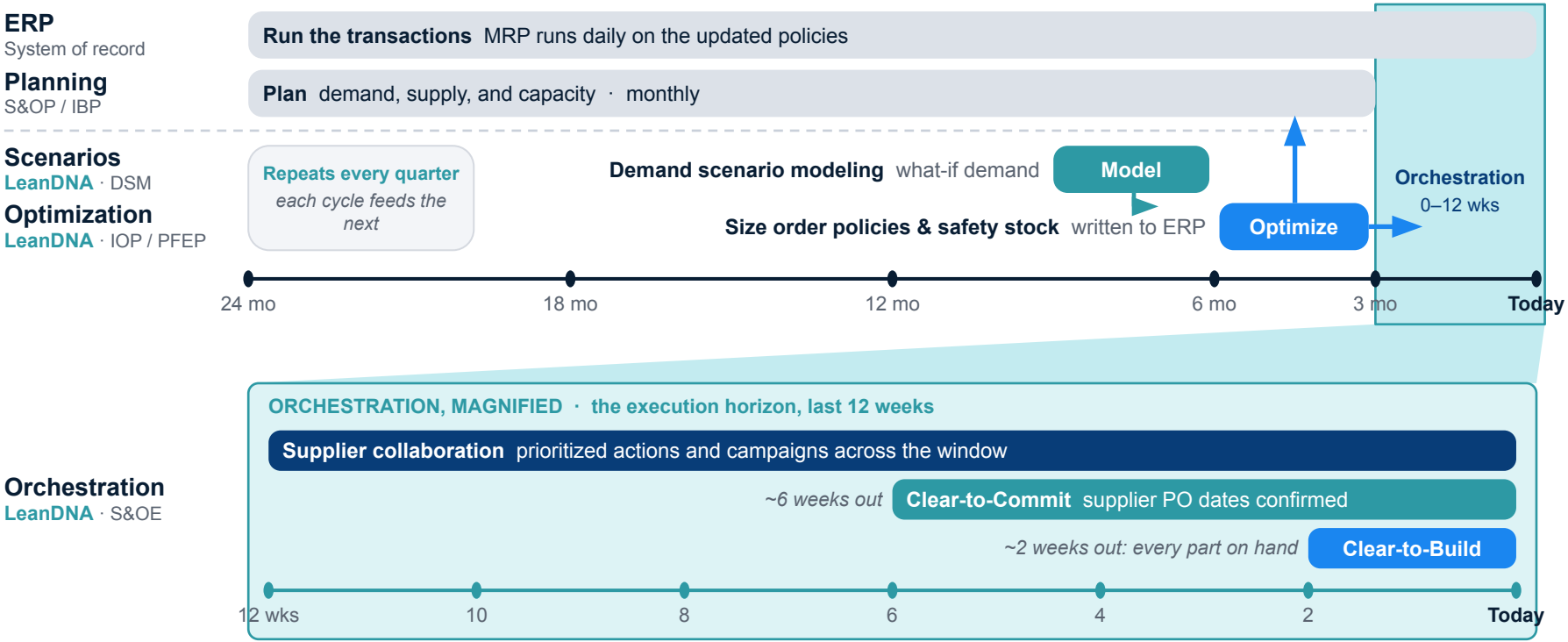
Model what-if demand and align demand, supply, and capacity.

Today — **Short-term** — **Mid-term** — **Long-term**

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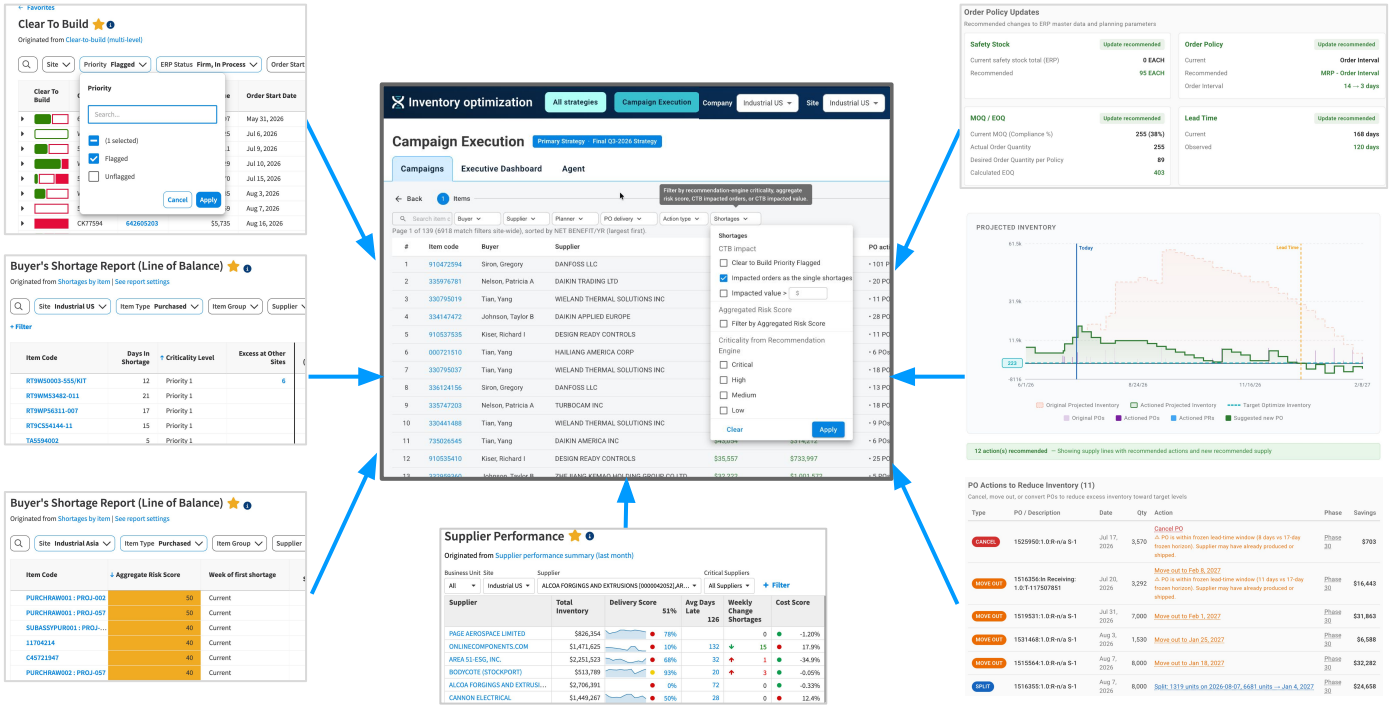
Planning vs. execution over time

From the 24-month plan to today's build



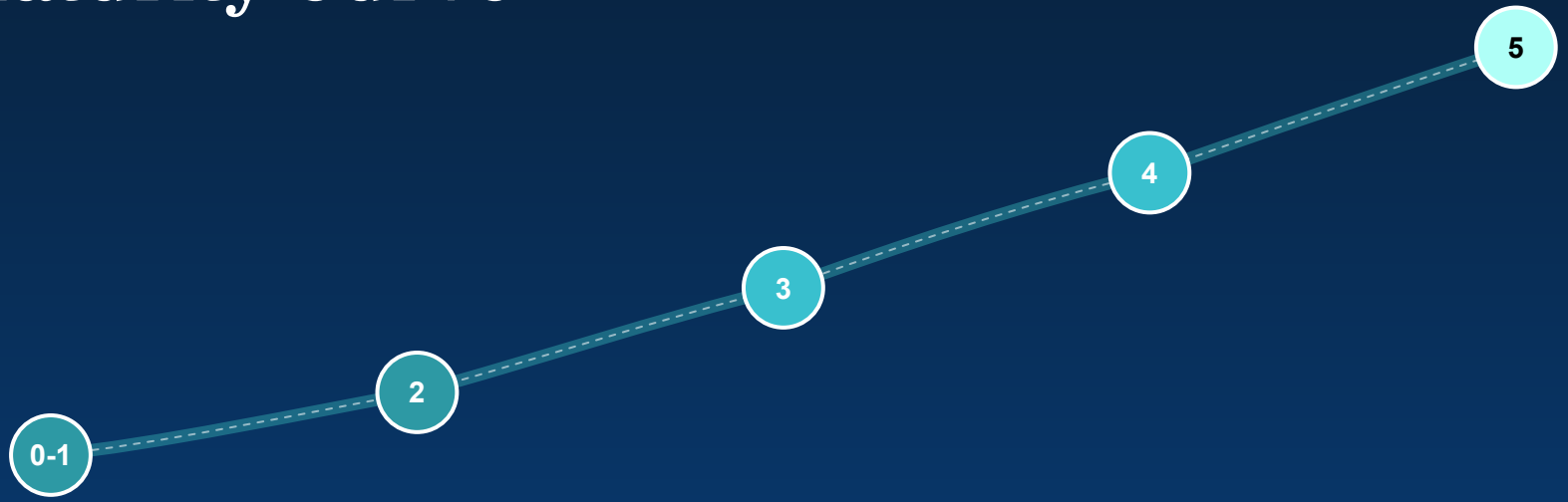
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Kei AI: Orchestrating execution to drive ROI



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Optimized Orchestration Maturity Curve



Level 0–1
ERP order policies exist, but nobody's actively managing them.

Level 2
Parameters get reviewed on some cadence, but the rules are still global, one-size-fits-all.

Level 3
Decisions start factoring in real economic value, (part value, order policy trade-offs) instead of flat thresholds.

Level 4
Rules support different logic, instead of one blanket rule for everything.

Level 5
Prioritized, trackable action plans with a real feedback loop; AI explaining every recommendation; the whole thing measured end to end.

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