

Application of AI to Support Proactive Materials Management Issue Resolution

Our speakers



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Founder & Chief Strategy Officer



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Sr Director Material Planning &
Operational Excellence



30+

Countries
deployed

500+

Global sites

14,000+

Global Users

40+

ERP systems



LeanDNA overview

LeanDNA's **APEX platform** empowers supply chain professionals to

- dramatically reduce excess inventory
- improve on-time delivery
- establish operational command



New Research: Supply Planning is Failing the Factory Floor

What 150 Manufacturing Leaders Reveal About
the Gap Between Demand Plans and Production

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

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 reduce implementation time from years to weeks
- 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

- Industry leaders already seeing 20-30% efficiency gains
- Customer expectations for faster, accurate delivery rising
- Talent shortage makes automation essential
- Applications built in 1/10 of time and effort
- ROI typically achieved within 6-12 months

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

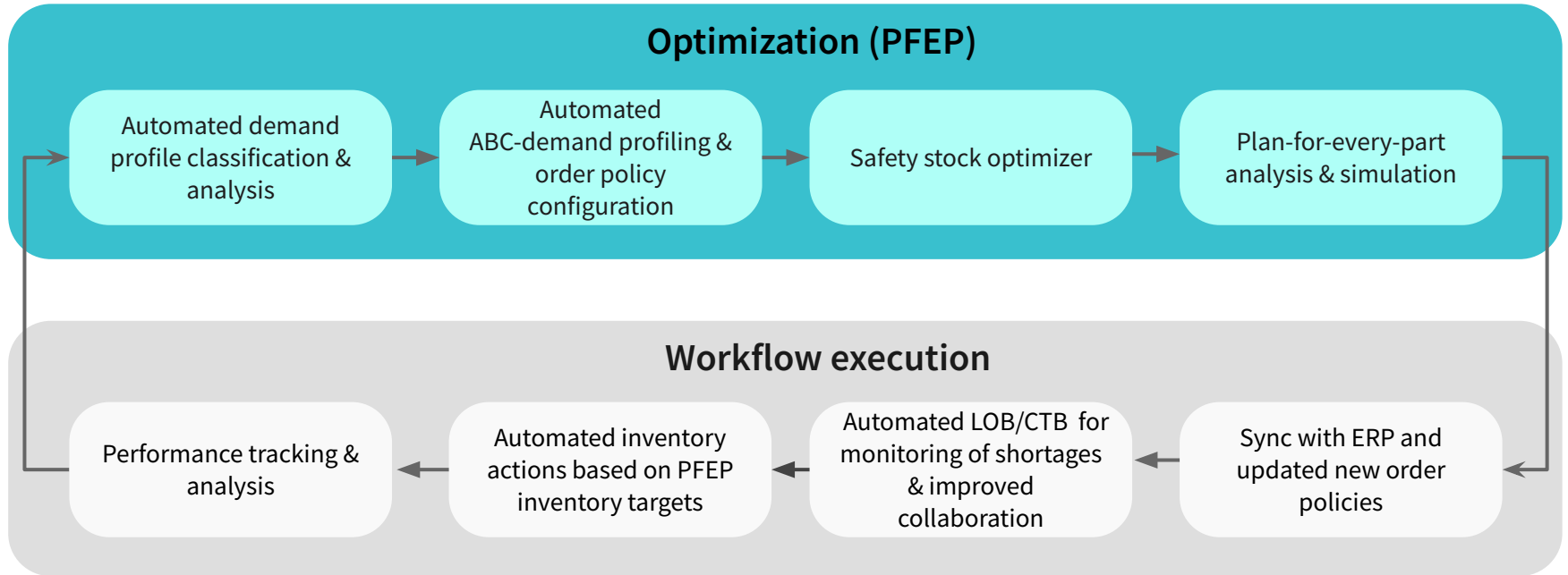
AI assistant that drafts supplier emails, creates procurement reports, and generates policy documentation from simple prompts

Agentic AI

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

The future of supply chain: optimized execution

Manufacturers can use AI to build a best-in-class inventory strategy by focusing on key areas individually and then employing an overarching strategy



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. Most companies see positive ROI within 3-6 months on their first AI project, then expand based on proven success.



AI is no longer about efficiency experiments. It's becoming table stakes, and teams without it are falling behind.

Data

ization



Kei AI Assistant

Shortage Management
Improve

Increase Inventory
Working Capital

Line of Balance

Item code	Current shortage		
G05742200-027-01-3HKWS	-1	0	
G05742400-030-01-71867	-2	0	
G02700011-005-82106	-2	-1	
G02700009-005-82106	-41	35	
G05770102-009-80378	-1	8	

How can we proactively manage shortages?

Line of Balance + Projections

Clear to build

Order	Customer order	Order value
Item code	Requirement date	Supply

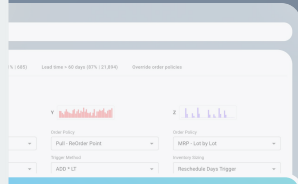
When will we be ready to build?

Clear to Build

U Who are the suppliers causing the biggest impact on shortages and excess inventory?

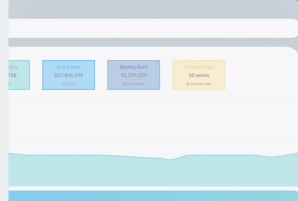
K Based on the data, here's an analysis of suppliers causing the most significant impact:

1. [Redacted]



What actions should my team take?

Projections + Recommendations



What plan for every part?

For Every Part

Kei AI

Demand Analytics | Order Policy Configuration | Safety Stock Optimization | PFEF Analysis | Simulation | **Kei AI**

Total Items: **24,484** | Avg Service Level: **99.6%** | Current Inventory: **\$12,409,435**
 ↑ \$-6,216,760 vs Target

K Hello, my name is Kei and and I'm here to help you understand your inventory optimization analysis. What would you like to know?

U What are the top 10 items that are having the most critical impact on CTB ?

K To determine the top 10 items with the most critical impact on Clear-to-Build (CTB), I'll analyze the data based on the "CTB Impacted Orders" and "CTB Shortage Impacted Value" columns. Here's the ranking from most critical to least:

- TY-7540-A (Item Code 10806)
 - CTB Impacted Orders: 2
 - CTB Shortage Impacted Value: 10,194,160
- PP-29870 (Item Code 4771)
 - CTB Impacted Orders: 5
 - CTB Shortage Impacted Value: 3,512,524
- VD-42674 (Item Code 20058)
 - CTB Impacted Orders: N/A
 - CTB Shortage Impacted Value: 3,254,631
- PP-57613 (Item Code 11070)

Stable | Variable | Intermittent | Sporadic

Order Policy: Full - Backorder Point | Full - Backorder Point | WSP - Order Interval | WSP - Lot by Lot

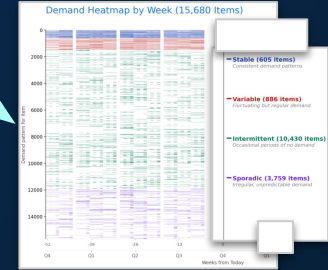
Trigger: AEO * LT | AEO * LT | Order Interval: 15 | Inventory Status: Order Frequency

Safety Stock: Lead DMA SL | Lead DMA SL

Order Qty: AEO * LT * (Lead Cost... | AEO * LT * (Lead Cost... | Order Qty: | Safety Stock: Lead DMA SL

Days Coverage: 15 | Days Coverage: 15

Safety Stock: Lead DMA SL | Lead DMA SL



Clear To Build

Original from Clear to Build (Multi Level)

Customer Order | Filter

Clear To Build	Customer Name	Order	Parent Assembly	Order Value	Order Date	Order Quant	Order Type	Locals
▶	Foreign Army Navy	647-05943...	DEFAS5737 - P80...	\$2,400,000	Apr	5	Production Order	Del/Dps
▶	US Navy	647-05943...	DEFAS5737 - P80...	\$2,400,000	Apr	5	Production Order	Del/Dps
▶	Customer Name	W6021401	FS-26448	\$138,764	Jun	250	Production Order	Workce
▶	Customer Name	W6021403	FS-26442	\$138,764	Jun	250	Production Order	Workce
▶	Customer Name	W6021402	FS-26443	\$138,764	Jun	250	Production Order	Workce
▶	Customer Name	W6021400	FS-26444	\$138,764	Jun	250	Production Order	Workce
▶	BridgeCo	94327752	GRBRIDGEKIT	\$33,451	May	6	Production Order	Workce
▶	Johnson and S...	W6096711	05119W	\$24,112	Jun	25	Production Order	Workce
▶	Johnson and S...	W6096712	05119W	\$24,112	Jun	25	Production Order	Workce

Supplier Performance

Original from Supplier performance summary (Last month)

Business Unit: Site | Supplier: Critical Suppliers

Supplier	Total Inventory	Sp-Spend Current Fiscal Year	On Order Value	Avg Lead Time	Total Items Supplied	Delivery Score	Avg Days Late	Qual (DPP)
VAAG AEROSPACE LIMITED	\$820,354	\$21,425,822	\$38,175,754	200 Days	14	76%	74	●
VALINGCOMPONENTS.COM	\$1,471,429	\$11,990,231	\$2,265,512	194 Days	684	82%	137	●
WEA & ENG INC.	\$2,263,823	\$11,341,294	\$8,022,289	214 Days	89	79%	32	●
CANULITE (AM)	\$227,475	\$6,646,206	\$4,843,104	120 Days	1	80%	1	●
ROBOFORM (SPROCKETS)	\$513,789	\$6,278,831	\$6,128,247	277 Days	40	62%	26	●
ALCOA FORMING AND EXTRUSION	\$2,706,791	\$6,202,480	\$28,789,216	247 Days	11	62%	62	●
NADEX AEROSPACE COMP.	\$1,431,480	\$6,071,818	\$9,212,480	84 Days	771	62%	62	●
SANDON ELECTRICAL	\$1,449,267	\$1,772,009	\$8,312,264	96 Days	21	50%	28	●
ALBANY SOFTWARE LTD	\$288,583	\$1,746,141	\$2,166,516	217 Days	39	65%	14	●
AIR COST CONTROL USA LLC	\$300,441	\$1,215,210	\$2,585,952	127 Days	20	50%	20	●
CONNECTOR DISTRIBUTION CO.	\$891,388	\$6,208,879	\$18,104,812	234 Days	8	50%	12	●
ATTENBELL LIMITED	\$24,821	\$6,916,618	\$11,980,603	200 Days	28	65%	28	●
BOEING	\$990,513	\$6,965,212	\$28,184,516	124 Days	243	26%	42	●

Kei AI

U Who are the suppliers that are causing the biggest impact on shortages and excess inventory?

K Based on the data, here's an analysis of suppliers causing the most significant impact:

Top Suppliers by CTB Shortage Impact:

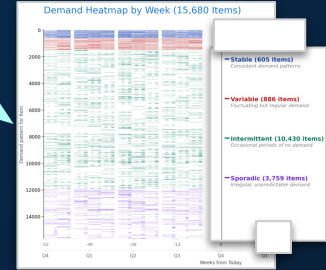
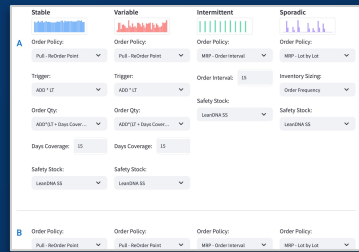
- European Controls Inc.
 - Highest number of CTB Impacted Orders: 107
 - CTB Shortage Impacted Value: \$3,374,471
 - Total Shortage Occurrences: 1,488
- Precision Manufacturing Co.
 - CTB Impacted Orders: 12
 - CTB Shortage Impacted Value: \$13,082,691
 - Total Shortage Occurrences: 563
 - Highest single supplier shortage value
- Premier Industrial Co.
 - CTB Impacted Orders: 24
 - CTB Shortage Impacted Value: \$6,977,084
 - Total Shortage Occurrences: 1,436

Key Observations:

- European Controls Inc. has the most CTB Impacted Orders
- Precision Manufacturing Co. has the highest shortage value
- Premier Industrial Co. has a high number of shortage occurrences

Recommended Actions:

- Conduct a detailed review of supplier performance, especially for European Controls Inc., Precision Manufacturing Co., and Premier Industrial Co.
- Investigate the root causes of high shortage occurrences



Clear To Build

Customer Order	Customer Name	Order	Parent Assembly	Order Value	Order Date	Order Quant	Order Type	Localtc
467-059543	Foreign Army Navy	467-059543	DEFAS9331 - PRO...	\$2,400,000	Apr	5	Production Order	DefDps
467-059543	US Navy	467-059543	DEFAS9331 - PRO...	\$2,400,000	Apr	5	Production Order	DefDps
W6021401	Customer Name	W6021401	FS-35440	\$138,764	Jun	250	Production Order	Workice
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61327753	BridgeCo	61327753	GRBRIDGEKIT	\$31,411	May	6	Production Order	Workice
W609711	Johnson and S...	W609711	05119W	\$24,112	Jun	25	Production Order	Workice
W609712	Johnson and S...	W609712	05119W	\$24,112	Jun	25	Production Order	Workice

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AREA 51 INC. INC.	\$2,251,523	\$11,341,296	\$10,892,289	284 Days	88	60%	32	
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BOEING	\$990,513	\$6,965,232	\$18,184,516	124 Days	243	76%	74	

AI-Driven Optimized Execution of Inventory Actions

Simulation name: Increased Volatility

[See all simulations](#)

Summary

Inventory Projection

All Items

Optimized Safety Stock

Optimized Order Policies

Review MOQ

CTB Impacted Orders

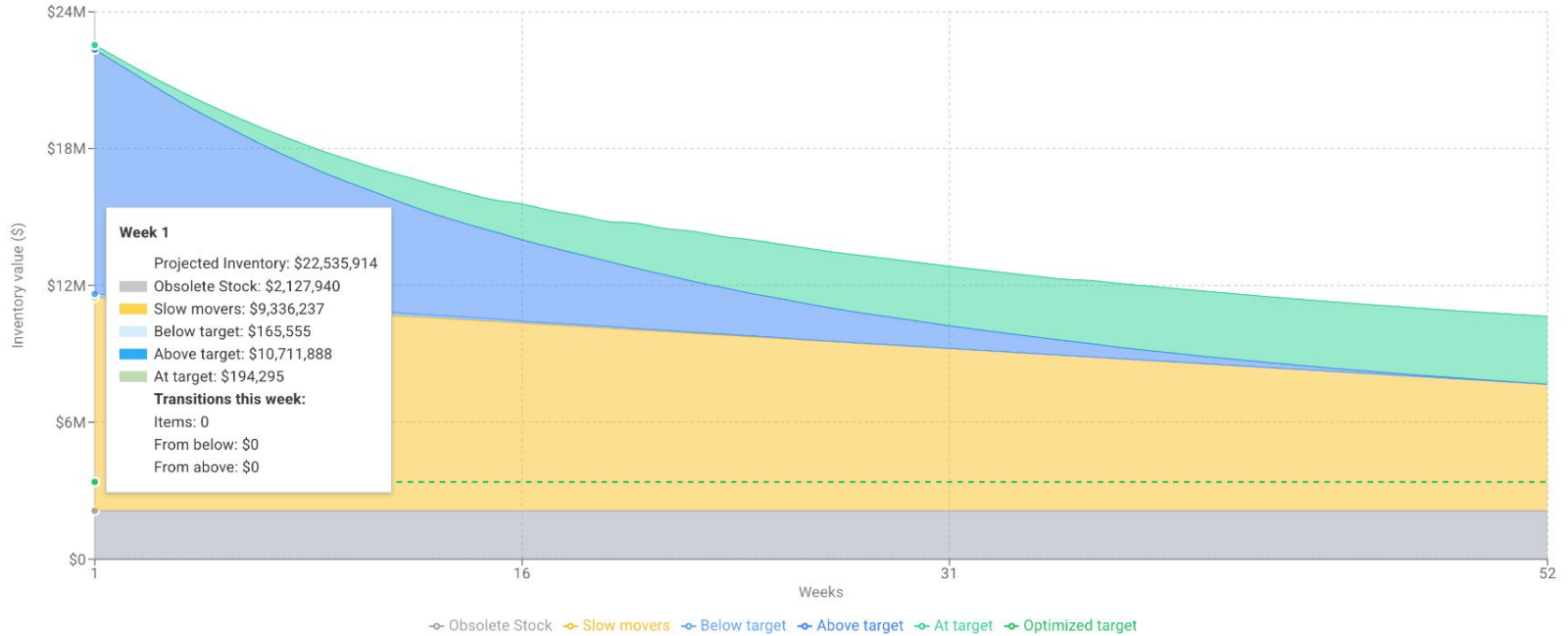
Obsolete Stock
\$2,127,940
(9.4%)

Slow movers
\$9,368,108
(41.5%)

Quick wins
\$9,088,970
(< 6 months)

Weekly burn
\$230,166
Active items

Time to target
> 52 weeks
@ current rate



Simulation name: Increased Volatility

[See all simulations](#)

Summary

Inventory Projection

All Items

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Weekly burn

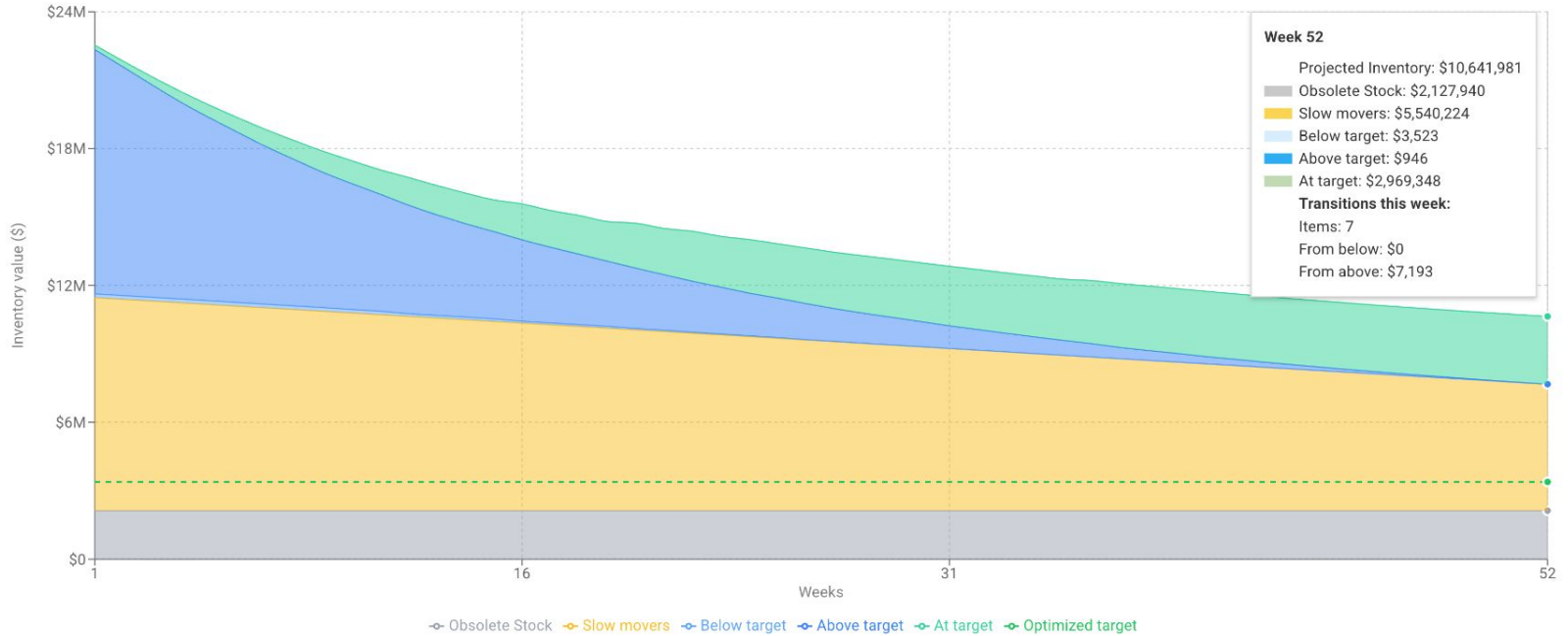
\$230,166

Active items

Time to target

> 52 weeks

@ current rate



Simulation name: Increased Volatility [See all simulations](#)

Summary Inventory Projection **All Items** Optimized Safety Stock

Buyer Supplier Material Type Inventory Position Category

Item code	Actionability Priority	Total on hand \$
ITM-0000500010	1	\$545,969
PAR8D8508-003	2	\$394,392
17B8N1002-001	3	\$344,559
ITM-0000500010	4	\$278,432
ITM-0000500031	5	\$673,835
ITM-7262202827	6	\$289,056
ITM-7250001006	7	\$365,439
ITM-0000500009	8	\$206,532
PAR8D8525-503-	9	\$580,469
PI710155-101	10	\$202,349
ITM-0000500010	11	\$246,044
17B8D8620-001	12	\$225,184
PAR8D8538-501-	13	\$174,609
ITM-0000500028	14	\$589,460
RT9WM51623-01	15	\$153,276
3671263L01002-	16	\$161,623
PAR8D8541-001-	17	\$431,741
PAR8D9557-501-	18	\$1,193,194
PI754022-004	19	\$198,994
PAR8D8507-505-	20	\$148,514
ITM-7252400840	21	\$127,024

33,290 total rows Page

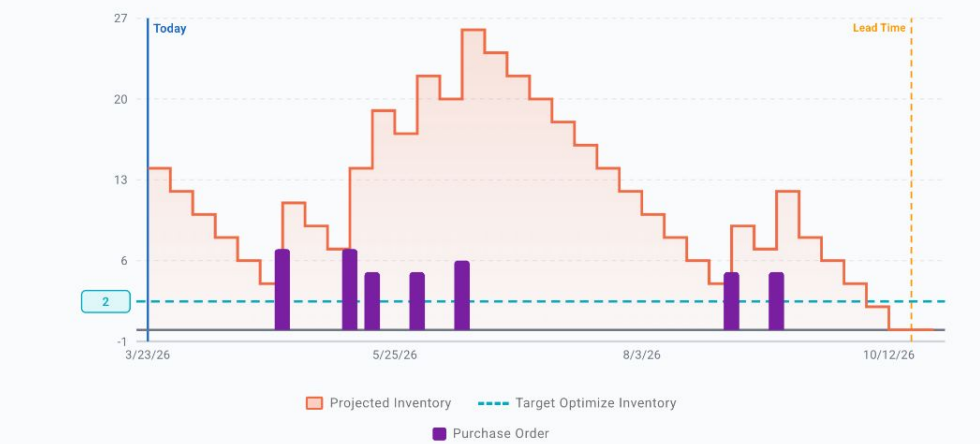
Item Details: 17B8N1002-001

Summary **Supply & Demand** Actions Insights by Key **Advanced**

Outstanding PO Value \$934,667	On order inside lead time \$934,667	CTB Shortage Impacted Value \$0.00	Near-Term PR Value \$0.00
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CURRENT ACTION SUMMARY ACTION DETAIL

PROJECTED INVENTORY



Type	Description	Date	Qty	Net Qty	LeanDNA Action
OH		Mar 23	16	16	
PO	4500061019:50:0019	Mar 3, 2026	2	18	Move out to May 4, 2026
Rqmt	Weekly Requirement	Mar 16, 2026	-2	16	
Rqmt	Weekly Requirement	Mar 23, 2026	-2	14	

Simulation name: Increased Volatility [See all simulations](#)

Summary Inventory Projection **All Items** Optimized Safety

Buyer Supplier Material Type Inventory Position Category

Item code	Actionability Priority	Total on hand \$
ITM-0000500010	1	\$545,969
PAR8D8508-003	2	\$394,392
17B8N1002-001	3	\$344,559
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33,290 total rows

Item Details: 17B8N1002-001

Summary **Supply & Demand** Actions Insights by Key **Advanced**

Outstanding PO Value
\$934,667

On order inside lead time
\$934,667

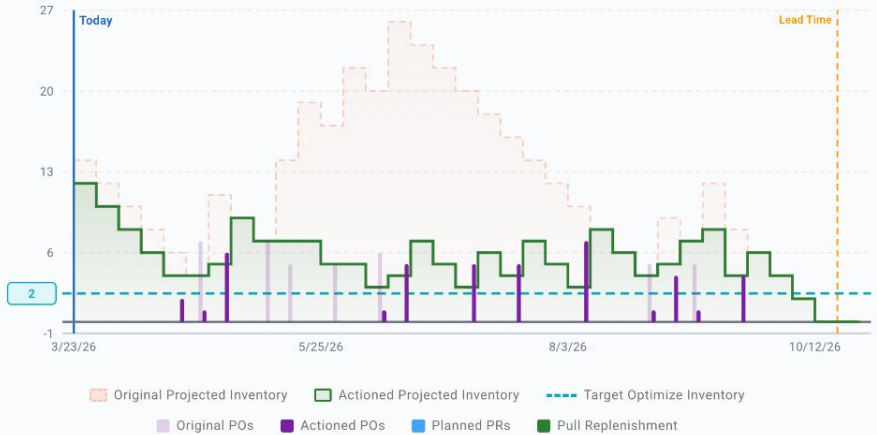
CTB Shortage Impacted Value
\$0.00

Near-Term PR Value
\$0.00

8 action(s) recommended · Net benefit: \$9,006

CURRENT ACTION SUMMARY ACTION DETAIL

PROJECTED INVENTORY



8 action(s) recommended — Showing only POs with recommended actions

Type	Description	Date	Qty	LeanDNA Action
PO	4500061019:50:0019	Mar 3, 2026	2	Move out to May 4, 2026
PO	4500067178:50:0004	May 7, 2026	7	Split: 1 units on May 7, 2026, 6 units → May 11, 2026
PO	4500067178:50:0003	May 22, 2026	7	Move out to Aug 10, 2026

Simulation name: Increased Volatility [See all simulations](#)

Summary Inventory Projection **All Items** Optimized Safety

Buyer Supplier Material Type Inventory Position Category

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33,290 total rows

Item Details: 17B8N1002-001

Summary Supply & Demand **Actions** Insights by Key **Advanced**

Benefit Summary

Combined savings from all recommended inventory actions

52-week Potential Savings **\$291,619**
 On Hand: \$344,559 → Target: \$52,940
 PO Actions Net Benefit (annual) **\$9,006**
 8 actions recommended - \$133,643 working capital freed

Action	Inventory \$	Savings
Move out (4)	\$409,163	\$8,206
Split (4)	\$495,303	\$801
Carrying savings (12%)	\$904,466	\$9,246
Additional ordering costs		-\$240
Net benefit (annual)		\$9,006
Working capital reduction (one-time)		\$133,643
Avg. inventory \$ removed over planning horizon: 1380		

Order Policy Updates

Recommended changes to ERP master

Safety Stock

Current (ERP)

Recommended

Order Policy **No change**

Order Interval **30 days**

MOQ / EOQ

Current MOQ

Actual Order Quantity

Desired Order Quantity per Policy

Calculated EOQ

No change

1

5

5

2

Lead Time

Current

Observed

No change

312 days

Not enough data

PO Actions to Reduce Inventory (8)

Cancel, move out, or convert POs to reduce excess inventory toward target levels

Type	PO / Description	Date	Qty	Action	Phase	Savings
MOVE OUT	4500061019:50:0019	Mar 3, 2026	2	Move out to May 4, 2026 ▲ PO is within frozen lead-time window (-20 days vs 31-day frozen horizon). Supplier may have already produced or shipped.	Phase 30	\$877.92
SPLIT	4500067178:50:0004	May 7, 2026	7	Split: 1 units on May 7, 2026, 6 units → May 11, 2026	Phase 30	\$169.92

Company

Industrial US

Site

Industrial US

ERP type

Other ERP

▶ Run analysis

🏠 Back to platform

Log out

Simulation name: Increased Volatility

[See all simulations](#)

Summary

Inventory Projection

All Items

Optimized Safety



Buyer

Supplier

Material Type

Inventory Position Category

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ITM-7262202827	21	\$127,024



Summary

Supply & Demand

Actions

Insights by Kei **Advanced**

Summary analysis

This high-value A-class valve (item 17B8N1002-001) shows intermittent demand patterns with moderate variability. The unit price of \$21,535 makes inventory management decisions particularly impactful on working capital.

Demand and ordering characteristics

- Average daily demand: 0.16 units
- Demand pattern: Intermittent with 54% frequency
- Coefficient of variation: 1.03 (indicating high variability)
- Lead time: 312 days (very long)
- Current order policy: Order Interval (30-day review period)

Inventory position analysis

Current on-hand inventory of 16 units (\$344,559) is significantly above the optimized target quantity of 2.46 units (\$52,940)

The excess position appears concerning, however several factors provide context:

- Outstanding POs valued at \$934,667 indicate expected future demand
- The extremely long lead time (312 days) requires careful pipeline inventory management
- ABC-XYZ classification shows this as an AY item, suggesting important but variable demand

Recommendations

1. Review the outstanding purchase orders given the high current inventory position
2. Consider reducing the order interval from 30 days to better match the demand pattern
3. Implement the calculated safety stock of 5 units to protect against the long lead time
4. Monitor demand patterns closely as the confidence score of 0.49 suggests potential forecasting challenges

The current inventory position category shows as "Above Target" with a "Quick Win" burn rate category, indicating good opportunity for inventory optimization without service level risk.

Applying AI to Proactive Materials Management Issue Resolution

Where do materials issues typically start, and how do you detect them earlier today?

What signals are hardest for humans to detect without AI?

**What decisions should AI make vs
what decisions should humans
make?**

How does improved materials
visibility strengthen the SIO P
process?

How does AI improve collaboration across teams?

What capabilities should companies look for when evaluating AI solutions?

Audience Poll

Where do you see the biggest opportunity for AI in supply chain execution?

Key Takeaways

AI is becoming table stakes for supply chain execution

The complexity of most supply chains makes manual analysis too slow. AI helps teams detect risk earlier and prioritize the actions that matter most.

AI works best when it augments human judgment

AI can scan massive volumes of supply chain data and surface priorities, while supply chain professionals apply context, relationships, and business tradeoffs.

The real value of AI is turning data into action

Organizations that connect data, insights, and operational actions can reduce shortages, optimize inventory, and improve delivery performance.

Questions?

Thank you