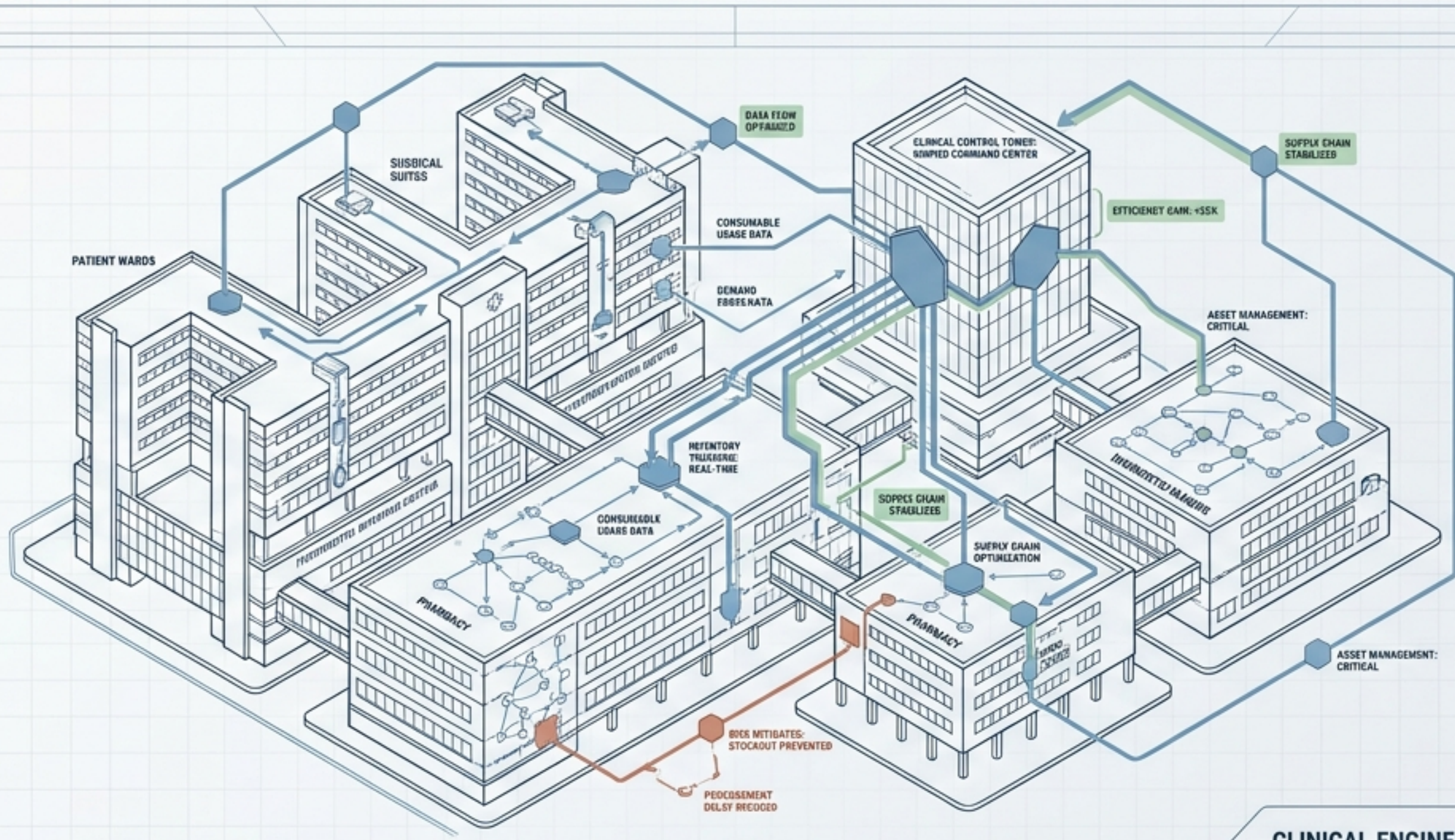
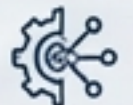


The Clinical Control Tower

Engineering a unified nervous system for medical consumables across Singapore public hospital clusters.



CLINICAL ENGINEERING
SOLUTIONS - SINGAPORE CLUSTERS

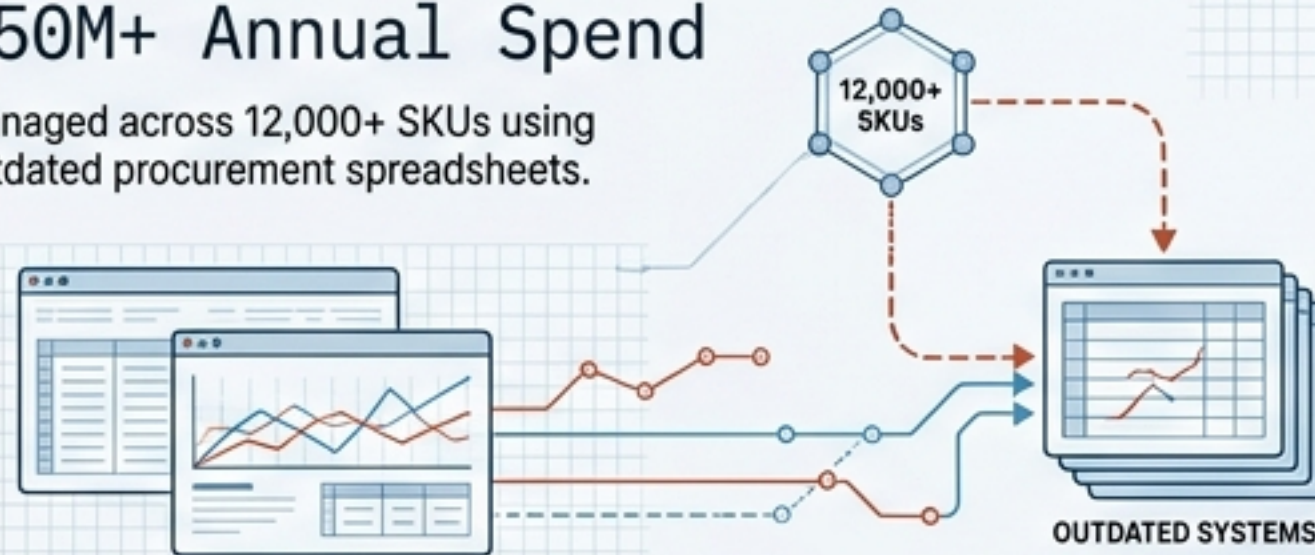


Managing \$50M in medical consumables on reactive, disconnected systems.

Singapore hospitals manage massive inventory volumes, yet operational visibility is hindered by fragmented tools, manual spreadsheets, and data silos.

\$50M+ Annual Spend

Managed across 12,000+ SKUs using outdated procurement spreadsheets.



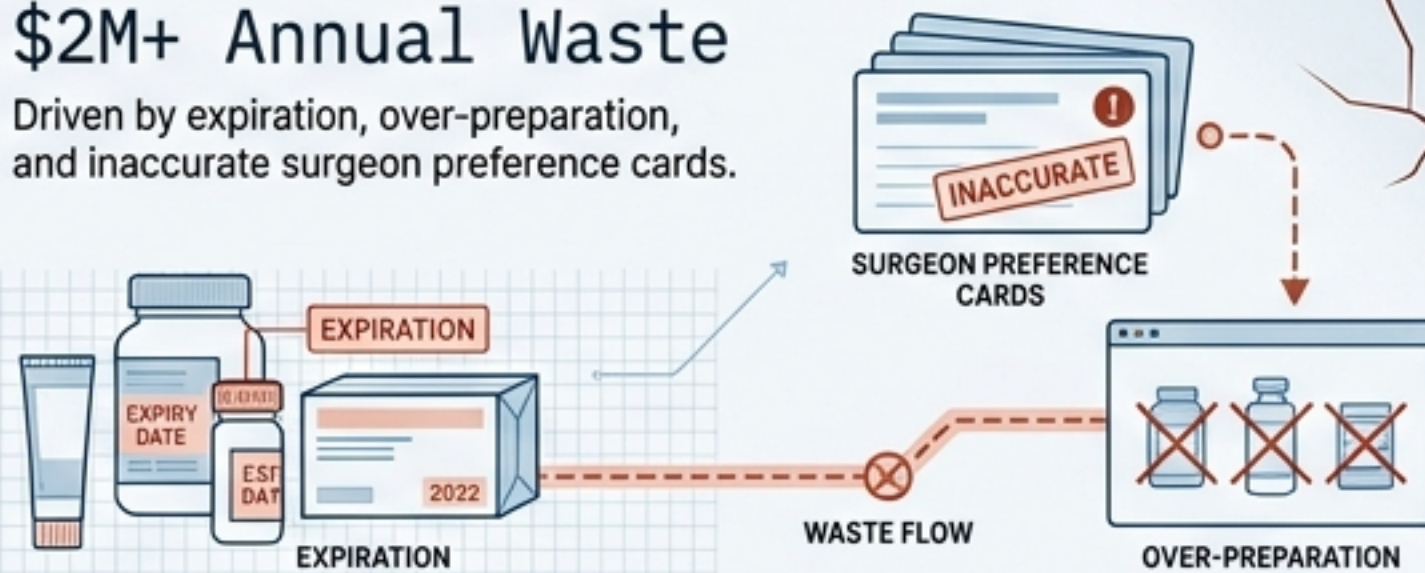
Critical Stockouts

Disrupting procedures because inventory counts fail during emergency OR codes.



\$2M+ Annual Waste

Driven by expiration, over-preparation, and inaccurate surgeon preference cards.



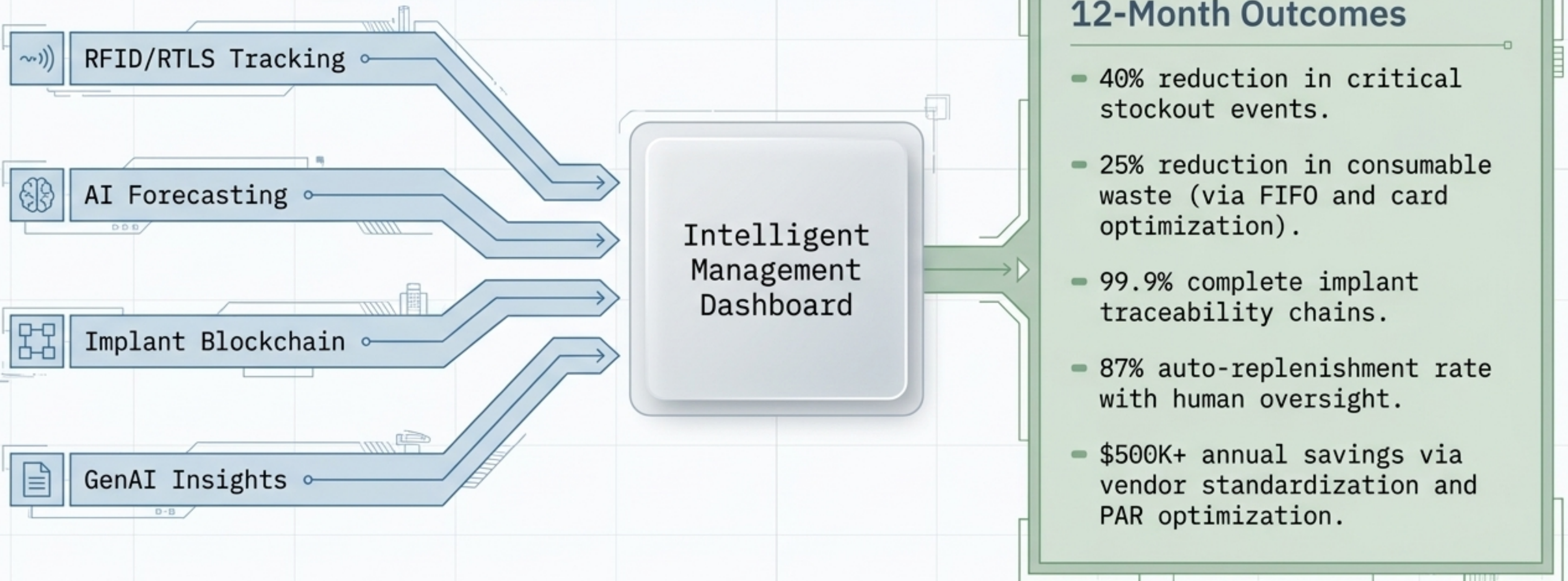
Regulatory Risk

Fragmented implant traceability spanning three different systems, delaying HSA recall compliance.



An intelligent, centralized platform driving predictive hospital operations

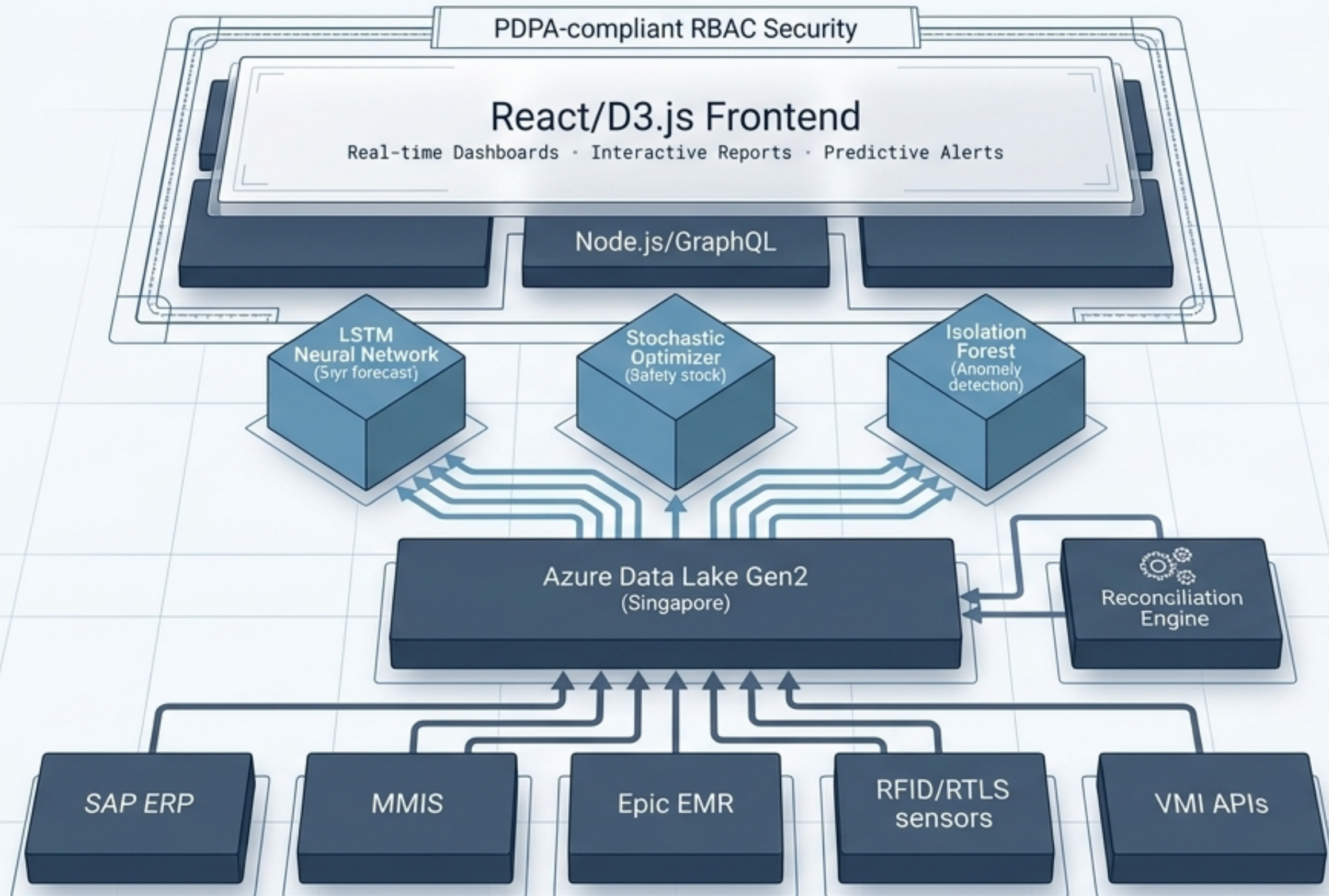
Integrating real-time sensor data, AI demand forecasting, and blockchain traceability into a single decision-support interface.



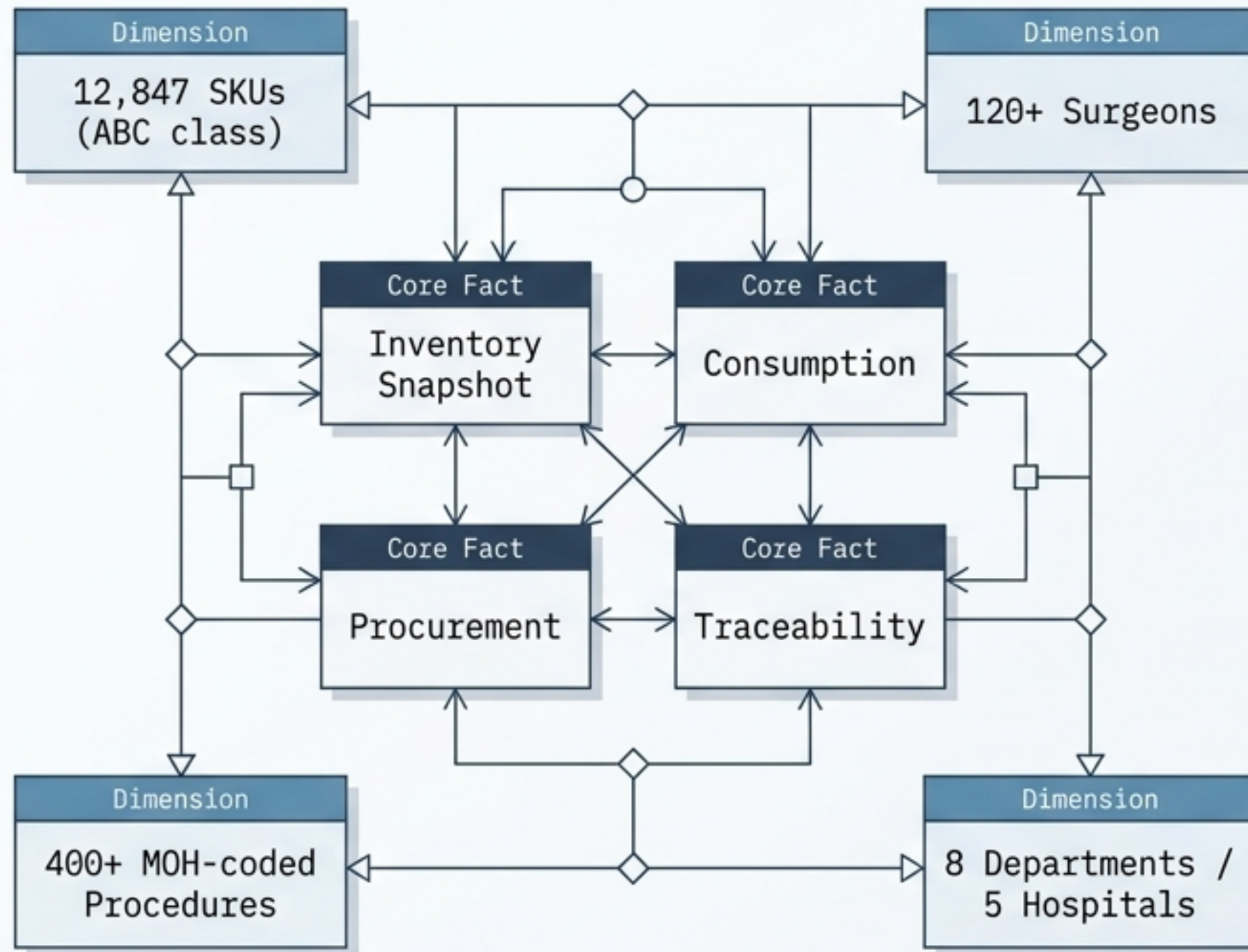
Resolving competing priorities across the clinical and operational ecosystem

Role	Primary Friction	System Resolution	Key Metric Improved	Empowered Action
Materials Manager	Vendor lead times change; safety stock is wrong	Stochastic safety stock optimizer	Stockout rate	Predictive procurement queue
OR Nurse	Emergency cases destroy manual inventory counts	Real-time RFID/RTLS tracking	Case cart accuracy	Voice-activated emergency documentation
Surgeon / Dept Head	Told I use "too many" sutures, no data	Anonymized peer comparison	Complexity-adjusted variance	Self-service variance analysis
CFO	Waste is a black hole	Waste decomposition & price tracking	Cost per case	Vendor price variance tracking
Procurement Officer	Guessing safety stock based on outdated lead times	LSTM demand forecasting	Auto-replenishment rate	Automated PO drafting
Quality / Risk Officer	Traceability data in three systems during recalls	Blockchain-verified chain of custody	HSA response time	One-click patient identification

The Data Refinery translating raw hospital activity into operational insight



A foundational data model mapping 12,847 SKUs across every clinical event



Sensor Realism & Synthetic Training Environment

Historical Data: 2023-2025
(includes supply chain shocks)

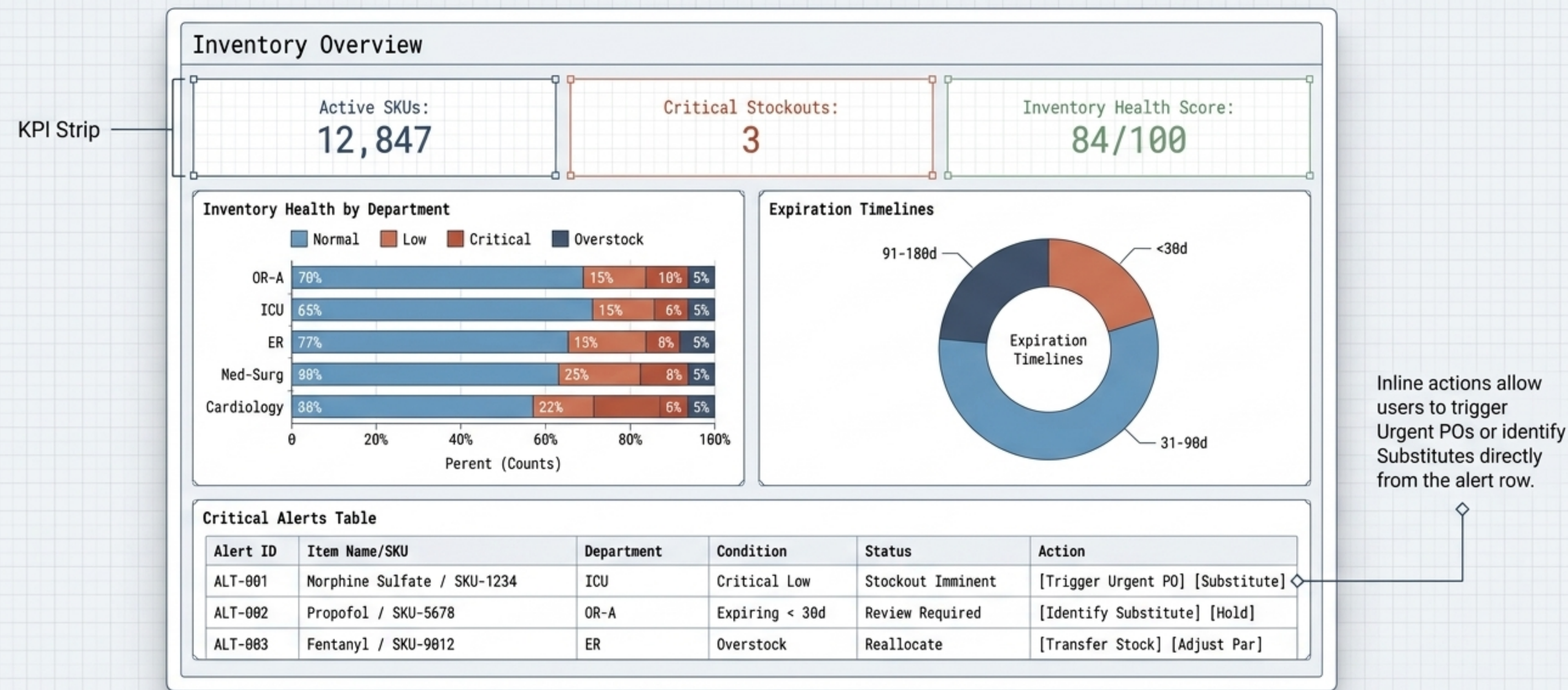
Sensor Realism Metrics:

RFID 92% normal operation

40% emergency read rate

85% OR turnover rate

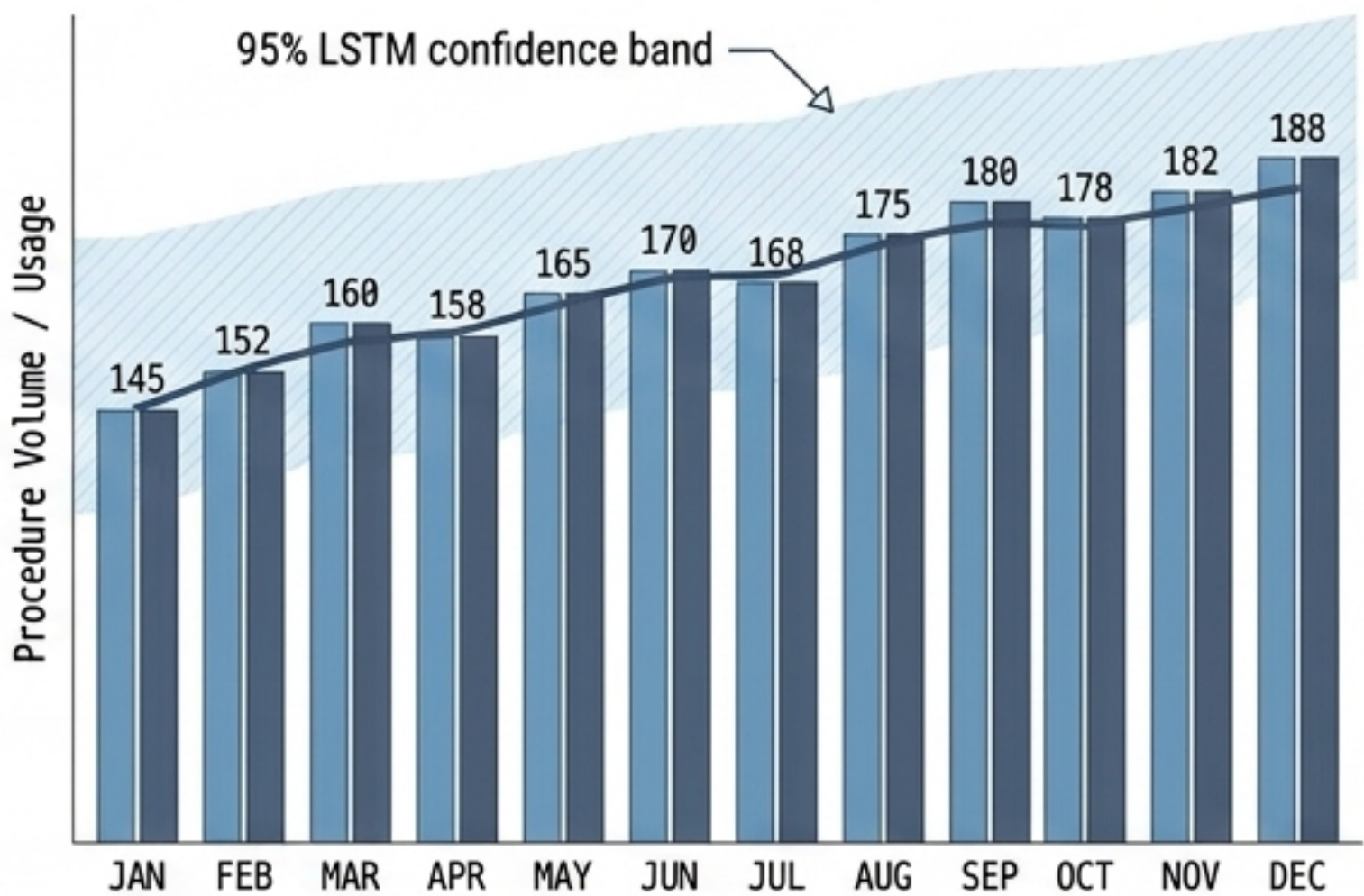
Tab 1: Real-time inventory overview and critical stockout triage



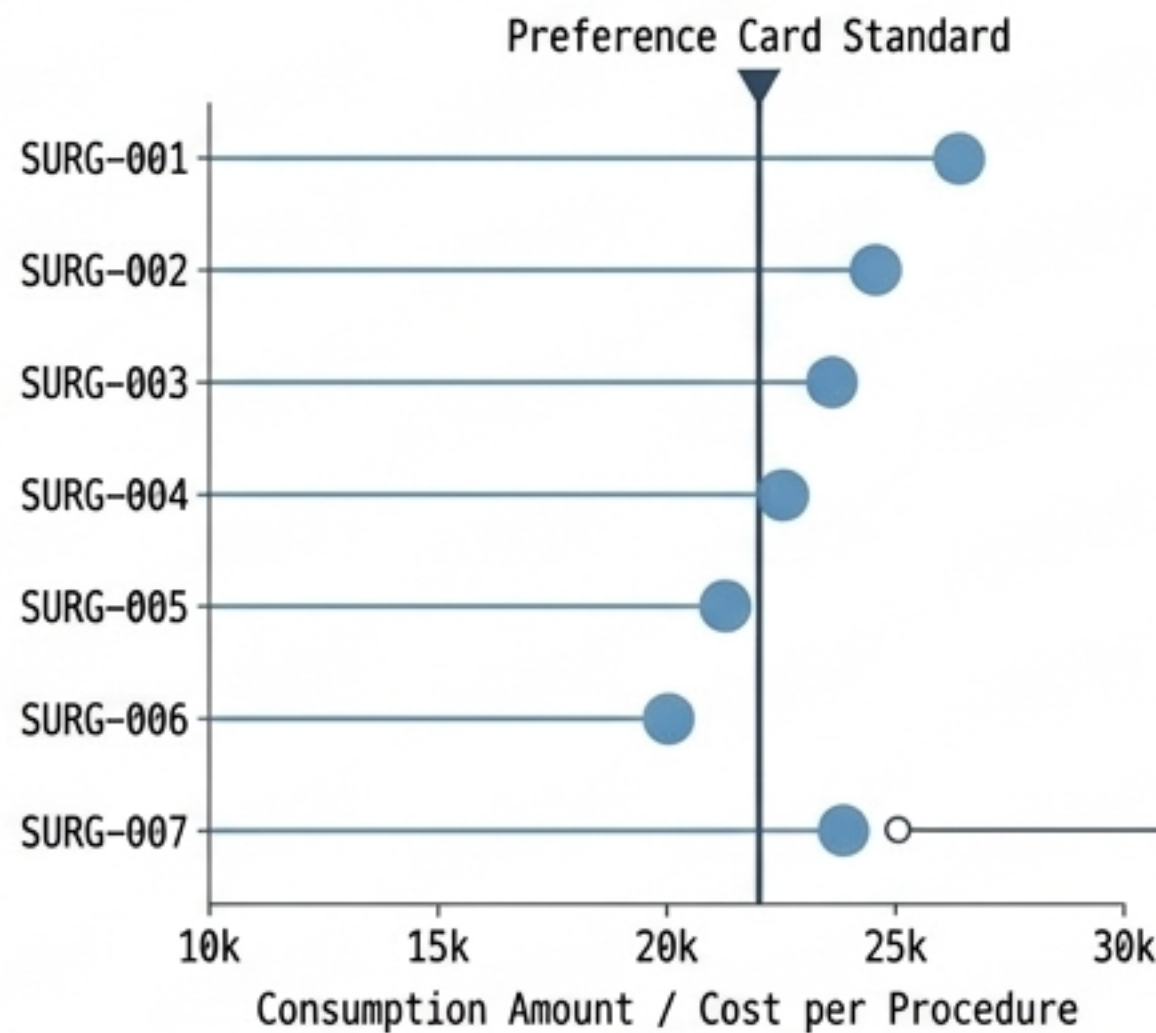
Tab 2: Predicting procedure demand and mapping clinical variance

Usage Prediction

Actual vs. Forecast by month

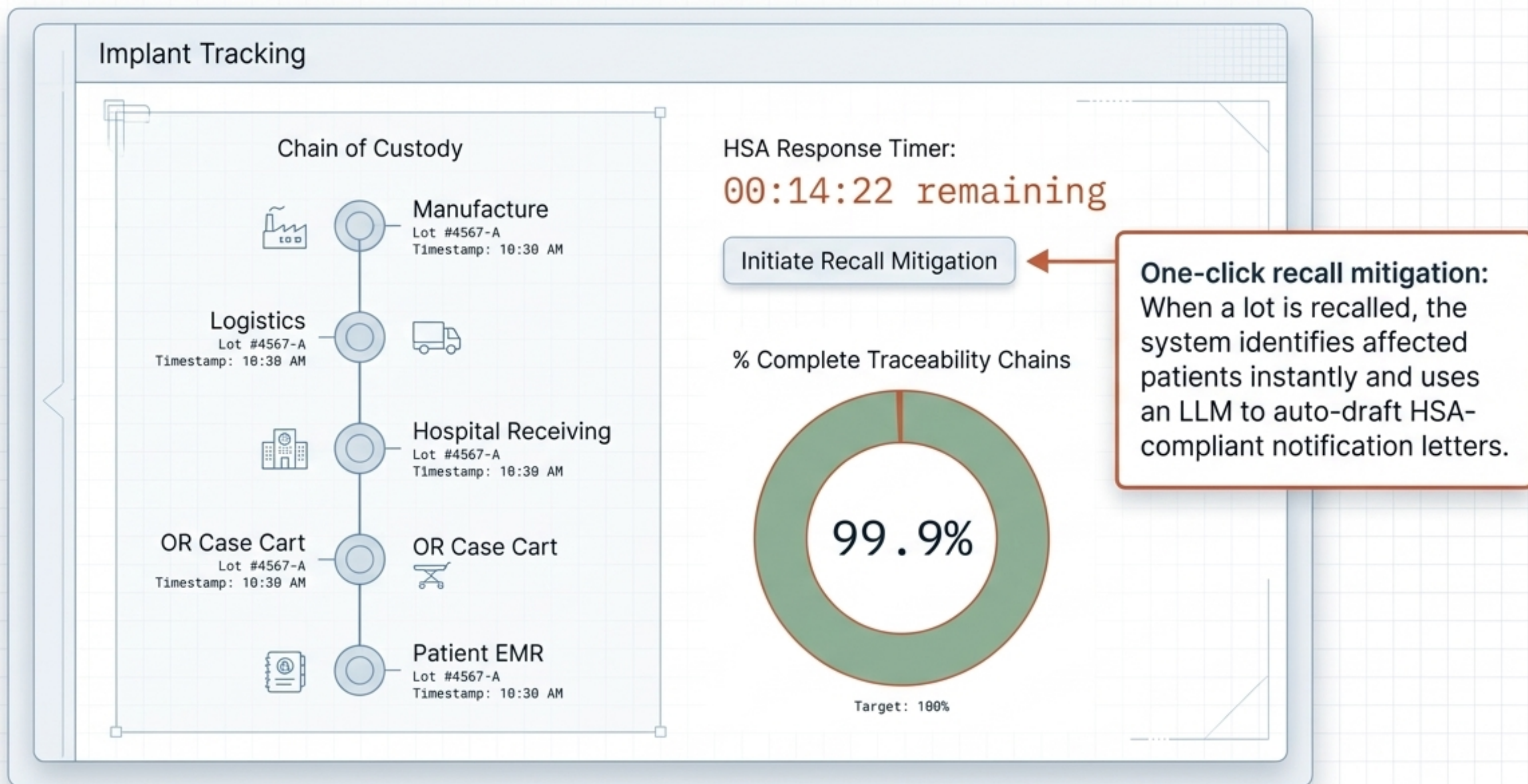


Surgeon Consumption & Variance



Complexity-adjusted benchmark dots allow surgeons to compare their usage to anonymized peer data, driving self-directed standardization without top-down mandates.

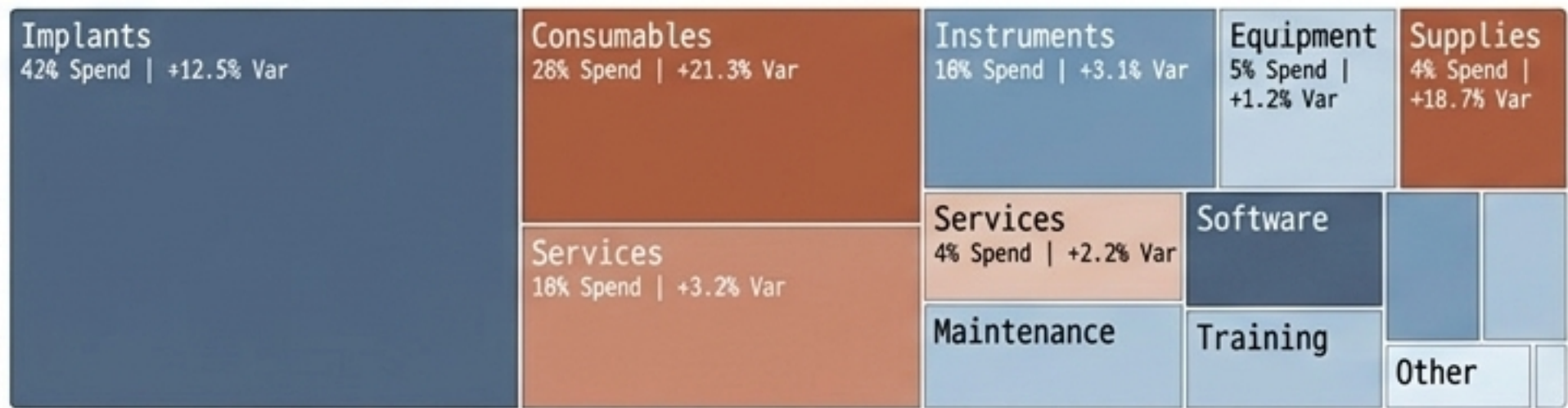
Tab 3: Isolating patient risk with unbroken implant traceability



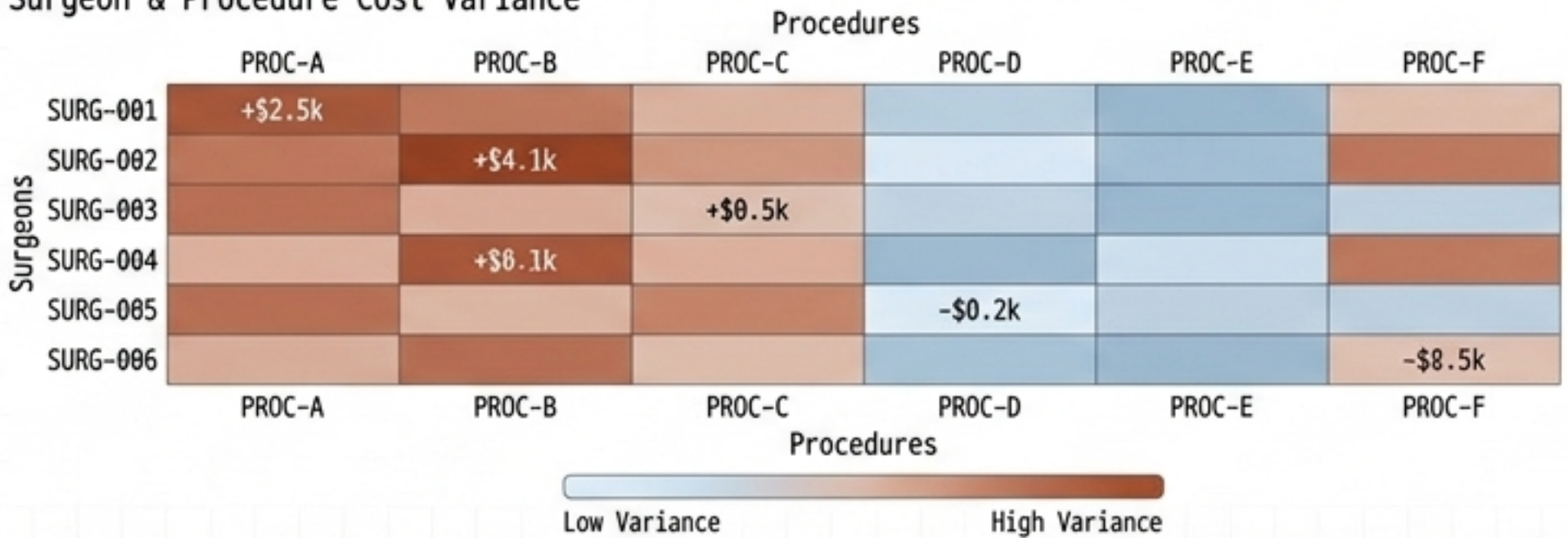
Tab 4: Decomposing waste and standardizing high-variance clinical spend

Cost Analytics

Cost Breakdown by Category

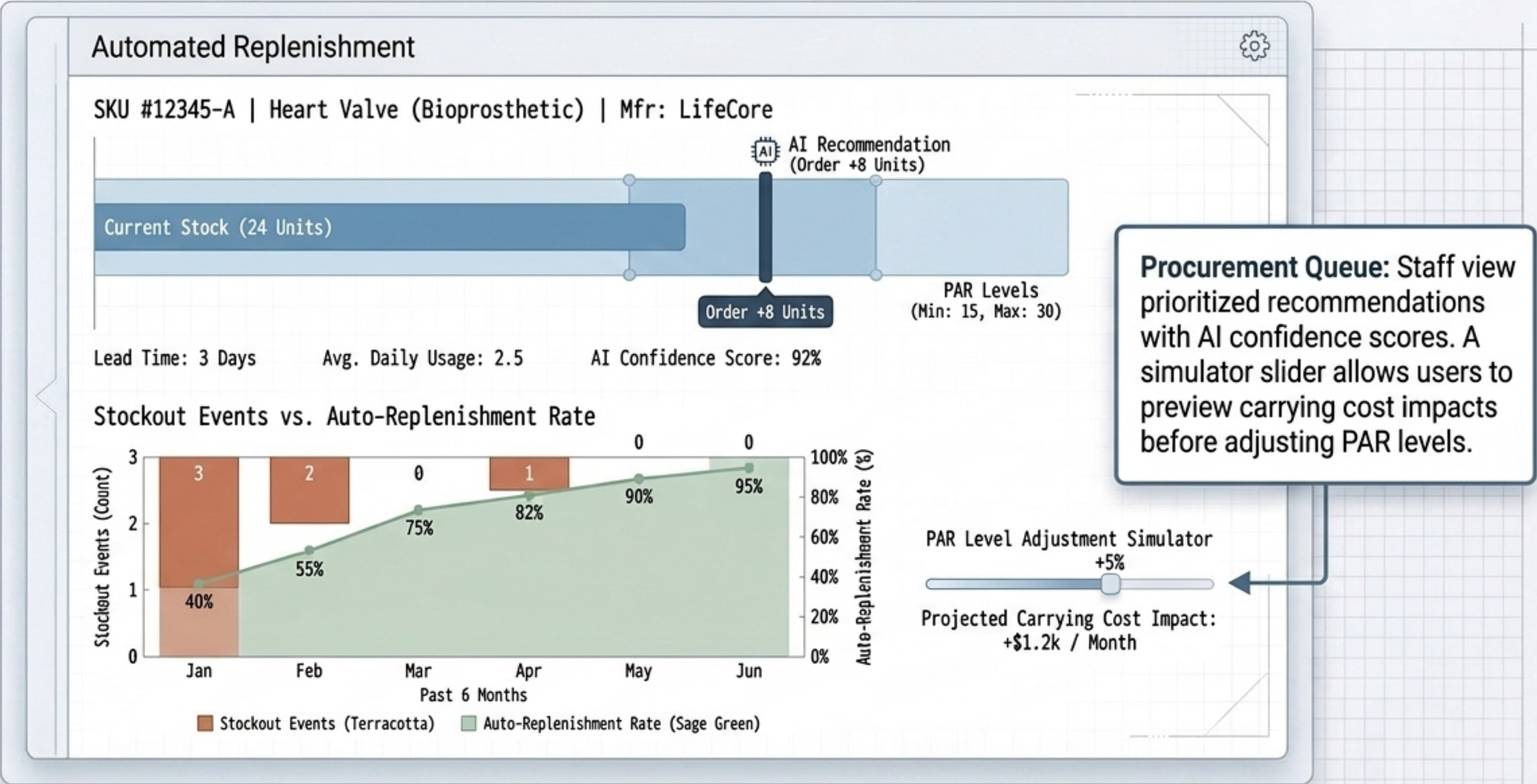


Surgeon & Procedure Cost Variance



Line chart overlay visualizes the exact correlation between cost per procedure and the documented waste rate, eliminating the 'black hole' of consumable spending.

Tab 5: Automating replenishment while preserving human procurement oversight



Tab 6: Contextual operational insights powered by natural language GenAI

AI Insights Hub

CRITICAL

VENDOR CONTRACT ANOMALY DETECTED

Why?

ANALYSIS: Recent procurement data indicates a 15% price increase for 'Ortho-Pro 3D Implants' by vendor 'Apex Medical Solutions', exceeding the annual contract adjustment cap of 5%. This deviation deviates from the signed contract clause 4.2b and hospital procurement policy HP-2024-001.

SUGGESTED ACTION: Review contract terms and initiate vendor communication to rectify the pricing error or initiate a temporary hold on future orders for this SKU.

Approve

Dismiss

Defer

HIGH

Supply Chain Risk - Potential stockout of critical IV tubing due to supplier delay. Action required.

INFORMATIONAL

Procedure Volume Trend - 10% increase in outpatient procedures observed. Resource all...

INFORMATIONAL

Procedure Volume Trend - 10% increase in outpatient procedures observed. Resource allocation review suggested.

HIGH

Equipment Maintenance Due - 3 MRI scanners approaching maintenance cycle. Schedule service.

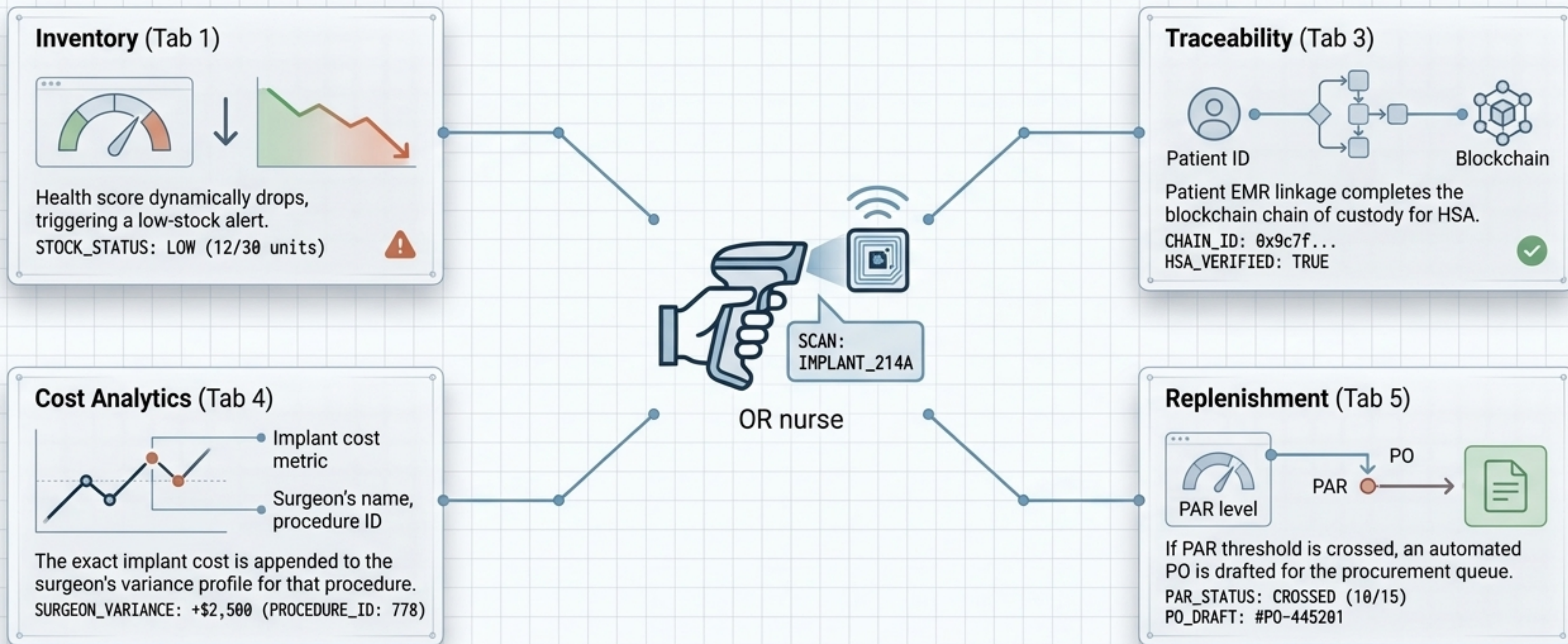
INFORMATIONAL

Procedure Volume Trend - 10% increase in outpatient procedures observed. Resource all...

The 'Why?' button unpacks the LLM's reasoning, citing specific hospital policies, HSA regulations, or vendor contract clauses.

The Unified Reality: One physical action, four simultaneous system updates

The true power of the platform lies in eliminating redundant documentation. A single physical event instantly updates the entire operational ecosystem.



Evolving from reactive spreadsheets to an intelligent operational nervous system

THE SPREADSHEET ERA



Data

Siloed ERP, MMIS, and EMR data.

DATA_STATUS: DISCONNECTED |
REFRESH_RATE: WEEKLY/DAILY



Action

Manual daily counts,
paralyzed by emergency codes.

TASK_TYPE: MANUAL |
EMERGENCY_CODES: BLOCKING_ACTION



Procurement

Guesswork safety stock based
on outdated lead times.

METHOD: ESTIMATE | LEAD_TIMES:
OUTDATED (6+ MONTHS)



Risk

Recall tracing takes hours
across multiple systems.

MITIGATION_TIME: >4 HOURS |
VISIBILITY: LOW

THE INTELLIGENT DASHBOARD ERA



Data

Integrated data lake with
real-time sensor reconciliation.

DATA_STATUS: INTEGRATED |
REFRESH_RATE: REAL-TIME (MILLISECONDS)



Action

Automated alerts with
emergency code tolerance built-in.

TASK_TYPE: AUTONATED |
EMERGENCY_CODES: BUILT-IN_TOLERANCE



Procurement

AI-driven stochastic PAR
optimization and automated POs.

METHOD: AI-STOCHASTIC | PAR_OPTINIZATION:
DYNAMIC | PO_AUTO: TRUE



Risk

Blockchain-verified recall
mitigation executed in minutes.

MITIGATION_TIME: <10 MINUTES |
VISIBILITY: BLOCKCHAIN_VERIFIED

A structured five-phase rollout to cluster-wide operational intelligence

