

# LeanPulse

— AI-AUGMENTED LEAN OPERATIONS PLATFORM

VSM · OEE · A3/PDCA · Huddles · Multi-Tenant · AI Throughout

LeanPulse digitizes the full lean operations cycle - from Value Stream Mapping with live OEE overlay to daily huddles, PDCA-driven Kaizen with effectiveness verification, and 5S audits. AI is woven throughout: root-cause coaching, natural-language analytics, OCR form extraction, and automated insights. Runs entirely on-premise, multi-tenant by design.

VSM + live OEE overlay

A3 / PDCA cycle / 5-Why / Ishikawa

Wallboard (TV)

Huddle timer

AI A3-Coach

NL analytics

OCR audit forms

Multi-tenant · site isolation

Template Marketplace

MES / ERP webhooks

100% on-premise

EN · DE · ES · DA

## FOR LEAN CONSULTANTS

Manage any number of client tenants from a single installation. Deploy your proven A3 templates, KPI definitions, and audit checklists in minutes. Consultant read-only mode - full visibility across all clients, strict data isolation between them.

## FOR PLANT OPERATIONS TEAMS

Close the loop between the gemba walk finding and the A3 corrective action inside one tool. OEE events feed the VSM overlay automatically. The wallboard updates every 60 seconds with zero operator effort - no IT ticket required.

## AI WHERE IT EARNS ITS PLACE

OCR extraction of paper audit forms. Multi-turn A3-Coach grounded in 5-Why and Ishikawa context. Natural-language KPI queries that become SQL. Current-state VSM proposals from equipment rosters. Each function replaces a real friction point.

## EXTEND IT YOURSELF

Open architecture: REST API on every module, outbound/inbound webhooks, and an agent-coding model (Claude Code) that adds new modules without vendor dependency. Your methodology can become code - and a consulting product.

# 1 The Gap Every Lean Practitioner Knows

The TPS methods are solid. The tooling never caught up.

## WITHOUT LEANPULSE

- OEE captured in Excel - aggregated weekly, never real-time
- VSM hand-drawn, obsolete before the ink dries
- Huddle action items in a whiteboard photo, lost by Thursday
- A3s in PowerPoint - no link from root cause to countermeasure evidence
- 5S audit sheets on paper, findings never linked to Kaizen
- Each client has a different spreadsheet structure - no methodology reuse
- KPI dashboard requires IT every time a metric changes
- Gemba walk → Word report → email → lost in inbox

## WITH LEANPULSE

- OEE events captured per shift; VSM overlay updates automatically
- VSM is a live digital map - bottleneck flags a one-click A3
- Huddle actions assigned, owned, tracked - closing rate visible daily
- A3 in-tool: hypothesis → 5-Why → Ishikawa → PDCA board (Plan-Do-Check-Act) → standardize / next cycle
- 5S / LPA / Gemba photo → AI-classified finding → Kaizen linked
- Methodology as portable templates - deployed across all clients in minutes
- Self-service KPI boards - operations adds metrics in 60 seconds
- Wallboard feeds the floor; status visible to anyone, no IT involved

# 2 What's Inside

Nine integrated modules. No module requires another vendor.



### Value Stream Mapping

Live OEE overlay per process box. Bottleneck → A3 in one click. AI-proposed map from roster.



### OEE & Equipment

6-big-losses per shift, A/P/Q computed continuously. Fleet view, reason-code drilldown, MES webhook.



### Improvements: A3 / PDCA

5-Why, Ishikawa, and a full Plan-Do-Check-Act board: target metric, action checklist, OEE-fed effectiveness check, then standardize as an SOP or spawn the next cycle. AI coach + similar past A3s.



### Audits: 5S / LPA / Gemba

Photo → AI severity + category → Kaizen. OCR extraction from paper audit forms.



### KPI Pulse Boards

Self-service metrics in 60 sec. Manual, DB-query, or webhook-fed. NL trend queries and anomaly insights.



### Daily Huddles

Live timer · agenda checklist · action items with owners and due dates. 30-day analytics.



### Wallboard: TV Display

Token URL, no login on floor. Live KPIs + sparklines + huddle card. OLED-safe, 60 s refresh.



### Standards: SOP / OPL

Versioned SOPs with supersession and effective dates. Employee acknowledgment and sign-off.



### Skill Matrix

Proficiency levels, expiry tracking, supervisor sign-off. Integrated with huddle attendance.

### 3 OEE: Continuous, Not Weekly

6-big-losses model. Per-shift granularity. No spreadsheet step between the event and the insight.



# 67.5%

**OEE · Line A**  
Current shift · 06:00–14:00

LOSS	CATEGORY	DURATION	STATUS
Changeover	Planned stop	42 min	Closed
Conveyor jam	Unplanned DT	18 min	Open A3
Speed loss	Performance	31 min	Monitoring
Startup scrap	Quality	9 min	Controlled
Tool wear	Unplanned DT	12 min	In 5-Why

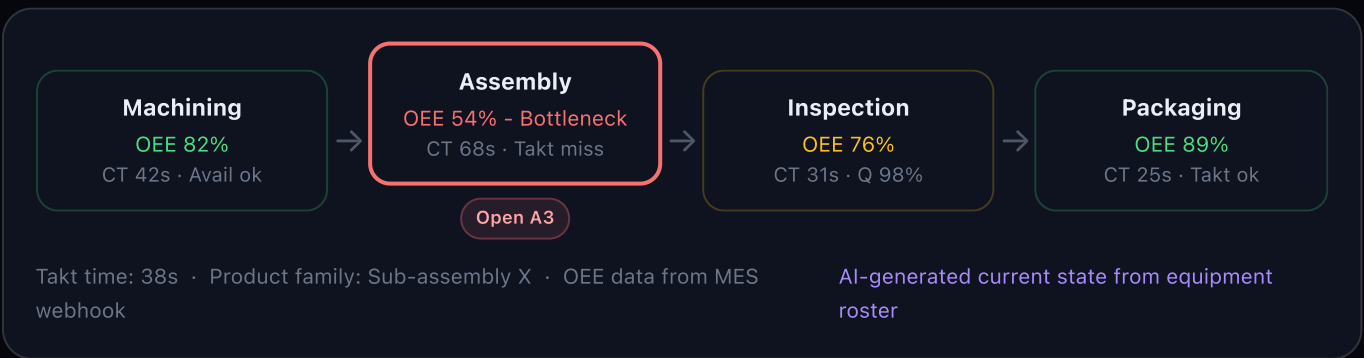
**MES Inbound Webhook**  
Push events from MES or PLC historian. No polling, no manual entry. Token-authenticated, retry-capable.

**Bottleneck → A3 in One Click**  
Fleet view ranks equipment by OEE. Tap the worst performer - LeanPulse pre-fills an A3 with equipment data, recent losses, and linked findings.

Reason codes are fully configurable. Ships with the standard TPM six-big-losses set (breakdowns · setup · minor stops · speed · defects · start-up) - rename, translate or extend per plant.

### 4 Value Stream Map: Live, Not Static

Current and future-state maps. Real OEE data overlays each process box. Bottlenecks surface automatically.



**AI Current-State Generation**  
Provide equipment list and product family. LeanPulse proposes the VSM topology and cycle times. Adjust; the OEE data is already wired in.

**Future-State Planning**  
Current and future states stored side by side. Link future-state improvements to open A3s. Track closure rate against the future-state target.

## 5 AI That Knows Lean

Every feature replaces a real friction point. All models run locally - no data leaves the premises.

### A3 COACH

#### Multi-Turn Root-Cause Dialog

The coach knows your current A3 - problem statement, 5-Why progress, linked equipment losses, similar past cases. Ask "what systemic cause am I missing?" and get a reasoned answer grounded in your own plant data. Retrieves top-3 similar past A3s via embedding search (pgvector, on-premise).

### TREND CHAT

#### Natural Language → SQL Analytics

"Which line had the most unplanned downtime in Q1?" LeanPulse translates to SQL, executes against your data, and answers in plain language. No BI tool needed for ad-hoc analysis. Operations asks; LeanPulse answers - without a data analyst in the loop.

### OCR FORM EXTRACTION

#### Paper Audit Forms → Structured Data

Photograph a paper 5S or LPA form. OCR extracts fields against your custom form schema. Results feed directly into the audit run - no manual re-entry. Particularly useful during GMP site audits where paper records are a regulatory requirement.

### INSIGHTS REPORT

#### Anomaly Detection & Trend Summary

On-demand or scheduled: LeanPulse scans KPI series for anomalies, ranks deteriorating metrics, and produces a plain-language summary. Ready for the Monday management review without analyst preparation time.

### AUDIT FINDING CLASSIFIER

#### Auto-Severity + Category from Photos

Upload a finding photo during a gemba walk. LLM assigns severity (minor / major / critical) and category (safety, quality, flow, 5S). Pre-fills the finding form - inspector reviews and confirms in two taps. Critical findings trigger an improvement automatically.

### EXCEL IMPORT MAPPER

#### AI-Assisted Column → Field Mapping

Paste a client's OEE spreadsheet or equipment roster. LeanPulse suggests which column maps to which field. Dry-run shows row-level validation errors before any data is committed. Onboarding a new client takes an afternoon - not a week of IT work.

### Institutional Memory: Compounding Over Time

Every closed A3 is embedded into a vector store (pgvector, on-premise). When a new improvement is opened, the system retrieves the three most similar past cases - problem statement, root causes, countermeasures, outcome. The A3-Coach uses these as grounding context. Failure knowledge compounds over time instead of leaving with the retiring engineer.





### Configurable Local Models: No Lock-In

Each AI function uses a dedicated model role ( **big** , **fast** , **ocr** , **turbo** ). Assign any Ollama or LM Studio model per role. Heavy reasoning (A3 Coach) runs a 70B model; the finding classifier uses a 7B for latency. Swap models without changing any code.

<b>8</b> AI FUNCTIONS	<b>100%</b> ON-PREMISE	<b>0</b> CLOUD DEPS
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## 6 Daily Huddle: 15-Minute Discipline, Not Wishful Thinking




Structured, timed, closed-loop. The tool enforces the standard so the facilitator doesn't have to.

 <p><b>Live Timer: Toyota Discipline</b> Green/amber/red at 13/15 min. Visible to all on any screen. No dedicated timekeeper required.</p>	 <p><b>Agenda Checklist</b> Pre-defined items per huddle type. Each topic marked as covered with a timestamp. Feeds 30-day coverage analysis.</p>
 <p><b>Actions: Owner + Due Date + Category</b> Owner and due date assigned before the huddle closes. Optionally linked to a formal improvement. Close rate auto-tracked.</p>	 <p><b>30-Day Cadence Analytics</b> Frequency, attendance, actions-per-huddle, close rate. Leaderboard shows top contributors across all sites.</p>

## 7 Wallboard: The Floor Sees the Pulse

Token-based public URL · No login on the floor · OLED-burn-in-safe · Auto-refresh every 60 seconds

LEANPULSE WALLBOARD · LINE A · MÜNCHEN · 2026-05-12 · 14:37 ● LIVE ⌵ 60S

<p>OEE TODAY</p> <p style="font-size: 24px; font-weight: bold; color: #008000;">67.5%</p> <p>Target: 75%</p> 	<p>UNITS / HOUR</p> <p style="font-size: 24px; font-weight: bold; color: #008000;">84</p> <p>Target: 80</p> 	<p>SCRAP RATE</p> <p style="font-size: 24px; font-weight: bold; color: #FF0000;">4.2%</p> <p>Target: &lt;2.5%</p> 
<p>OPEN A3S</p> <p style="font-size: 24px; font-weight: bold; color: #FF0000;">7</p> <p>3 overdue</p>	<p>5S SCORE</p> <p style="font-size: 24px; font-weight: bold; color: #008000;">4.1/5</p> <p>Last audit: Mon</p>	<p>ACTIONS CLOSED</p> <p style="font-size: 24px; font-weight: bold; color: #008000;">73%</p> <p>30-day rolling</p>

NEXT HUDDLE

Morning Stand-up · Line A

Starts: 07:30 · Facilitator: K. Weber

OPEN ACTIONS

3

TV / projector: share URL once - nothing to install, no account required on the floor

OLED-safe: 90 s pixel-shift + 15-min dark-refresh

EN / DE / ES / DA

## 8 Built for Consultants Managing Multiple Clients

One LeanPulse installation. Unlimited tenants. Full schema-level data isolation.

YOUR LEANPULSE INSTALLATION - SINGLE HOST, MULTIPLE CLIENTS

### CLIENT A - Automotive

3 sites · 12 users

München Leipzig  
Bratislava

### CLIENT B - Food & Bev

1 site · 6 users

Barcelona

### CLIENT C - Pharma / GMP

2 sites · 20 users

Dublin Singapore

### + New Client

Onboard < 1 day

SQL never crosses tenant boundary

Consultant read-only mode across all tenants

Per-site timezone, shifts, KPI targets



### Template Marketplace

Export A3 templates, KPI bundles, 5S checklists, and SOP sets as portable JSON. Import to any tenant in one step. Your methodology is a product, not a spreadsheet.



### Industry Presets

Automotive (IATF-aligned), pharma (GMP), food (HACCP) and generic ISO 9001 bundles pre-loaded - each with sector KPI sets, 5S/LPA checklists and SOP templates. Override anything per client.



### AI-Assisted Client Onboarding

AI maps their Excel columns to LeanPulse fields. Dry-run validation before commit. Equipment rosters, employees, OEE history - migrated in an afternoon.



### Immutable Audit Trail

Hash-chain verified event log on every change - actor, timestamp, before/after snapshot. Required for GMP clients. Integrity verifiable; no post-hoc modification possible.

## 9 From Finding to Verified CAPA: Fully Traced

### Finding ✓

Audit / Gemba / OEE

### A3 Created ✓

Problem, scope, owner

### Root Cause ✓

5-Why / Ishikawa / AI

### PDCA: Plan & Do

Hypothesis, actions, owners

### PDCA: Check

Baseline vs. result, OEE pull

### PDCA: Act

SOP from cycle, or next cycle

### Yokoten

Template → other sites

**Plan:** hypothesis · target metric (baseline→target) · actions | **Do:** execution with progress bar | **Check:** result vs. baseline, one-click OEE pull | **Act:** draft SOP from the cycle, or a linked follow-up cycle. Every phase write in the hash-chain audit log.

### ENGAGEMENT

#### Leaderboard & Points

Improvements created, closed, audits run, huddles attended - 30-day top-contributor view. Drives participation without enforcement.

### APPROVAL CHAINS

#### Configurable Workflows

Bind approval steps to improvement type or severity. SLA-tracked per step. Pending approvals in each user's worklist.

### NOTIFICATIONS

#### In-App + Email Alerts

Assignment, state change, overdue action, high-severity finding. Per-user subscription - engineers aren't drowned in noise.

## 10 LeanPulse Lives Inside kAlra

kAlra is a self-hosted AI operations platform. LeanPulse is the lean manufacturing module. The rest of the platform is included.



### 40+ Office AI Tools Included

Document summarization, translation (with terminology glossary), meeting transcription, slide generation, code analysis - available to every user. LeanPulse users get these without additional licensing.



### RAG Knowledge Base

Upload internal docs - SOPs, product specs, failure histories. Ask questions in natural language. Answers cite the source document and page number. No hallucinated references.



### Privacy-First Architecture

No cloud dependency. All LLM inference runs locally (Ollama / LM Studio). Compliant with GDPR, NIS2, and strict on-premise data residency requirements.

### KAIRA PLATFORM MODULES

- **LeanPulse** this module
- **DeviTrack** GMP deviation management
- **VendorCore** supplier qualification
- **Chat + RAG** knowledge base + AI chat
- **Voice Studio** local transcription
- **SlideCraft** PPTX generation
- **DB Dashboard** SQL → chart, no BI tool
- **+ 30 further** translate, summarize, ...

## 11 Complementary Quality Operations Modules

### DEVITRACK - GMP DEVIATION MANAGEMENT

Full FDA 21 CFR Part 11 / EMA GMP deviation lifecycle: investigation, CAPA, effectiveness review, configurable approval chains, electronic signature, PDF export for regulatory submissions. Hash-chain audit trail.

**Shared with LeanPulse:** Tenant/site structure, A3/PDCA engine, audit trail, notification system, approval workflows, skill matrix.

### VENDORCORE - SUPPLIER QUALIFICATION

GMP supplier qualification pipeline: initial assessment, on-site audit (reuses LeanPulse audit forms), document management, expiry tracking, risk scoring, and re-qualification scheduling.

**Cross-module potential:** Supplier OEE data from LeanPulse → VendorCore risk score. Supplier-caused events → DeviTrack CAPA.

## 12 External Integrations

Your client's IT doesn't have to rip anything out. LeanPulse reads from the shop floor and the back office, and exposes everything it knows over a REST API and read-only SQL.



### MES / SCADA

Inbound webhook from the PLC historian - downtime, changeover and scrap with zero operator entry



### ERP (SAP / Oracle / ...)

Planned quantities, orders and target KPIs in - OEE denominators stay in sync, no re-keying



### HRIS

Roster sync drives the skill matrix, training records and audit ownership; role changes propagate



### Teams / Slack

Outbound alerts on state changes, overdue actions and high-severity findings - per module and severity



### BI / Power BI / Grafana

REST API plus read-only SQL on every module - build dashboards with no separate ETL layer



### LIMS

Incoming- and final-QC results feed quality losses straight onto the live KPI boards



### LDAP / Active Directory

User provisioning by directory sync; AD groups map to LeanPulse roles and site access



### DMS / SharePoint

SOPs and OPLs link to the live file in your DMS - no copies, no version drift

## 13 No Vendor Lock-In: Extend It Yourself

Every module is a Python/FastAPI router with an OpenAPI schema. Your methodology can become code - and a repeatable consulting product, not a black box you have to defend.



### Agent-Coding Ready

Extend with Claude Code or Cursor. New modules follow a documented router/template pattern that coding agents generate correctly - no scaffolding to hand-write. Add a module without touching the core.



### REST API on Every Module

Full OpenAPI schema exposed at runtime. Drive a custom wallboard, feed Power BI, pull data into your own report. The API isn't an afterthought - it's the same interface every screen already uses.



### Webhook Infrastructure

Outbound: improvement state changes, high-severity findings, audit events - HMAC-signed, retried via the job queue, logged per event. Inbound: tokenised endpoints for MES, ERP and roster pushes.



### Methodology as IP

Export audit templates, KPI sets, SOP structures and A3 playbooks as portable JSON bundles. Import to any tenant in one step - deploy your method to a new client in minutes, not weeks.

## 14 Deployment

Self-hosted on any hardware that runs Docker. No cloud subscription, no per-seat fee.

### INFRASTRUCTURE

#### Docker Compose

Single-node or two-node cluster. Mac mini, NUC, rack server - 16 GB RAM + SSD. Install script provided. Update in one command.

### DATA PERSISTENCE

#### Bind-Mounted

All data survives container rebuilds. Postgres (tenant schemas), pgvector (embeddings), file attachments, config - on host disk, fully restorable.

### NETWORK

#### HTTPS + Tunnel

nginx TLS for LAN. Optional Cloudflare Tunnel for remote access - no open inbound ports. Works behind corporate firewalls.

### AI MODELS

#### Ollama / LM Studio

Any GGUF or MLX model. Assign models per function role. Swap without code changes. Works CPU-only - GPU optional for speed.

### SECURITY

#### RBAC + MFA

Role-based access (admin / user), section-gated modules, TOTP MFA per user. Session cookies, rate-limited API, nginx WAF rules.

### LOCALIZATION

#### EN · DE · ES · DA

Full UI and AI response localization. Language switchable per user account - including AI-generated content in the user's language.

### KAIRA PLATFORM

#### One installation. Every tool your client needs.

LeanPulse runs inside kAlra - a full AI operations suite for industrial teams. The same on-premise instance includes **DeviTrack** (deviation & CAPA management), **VendorCore** (supplier qualification), AI Chat, Voice Studio, Document Intelligence, and more. One license, unlimited users, zero cloud dependency.

### kAlra Tools

Demo installation on request

9

MODULES

8

AI FUNCTIONS

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TENANTS / SITES

4

LANGUAGES

0

CLOUD DEPS

### Ready to run LeanPulse on your next engagement?

We offer a guided pilot: a working installation on your hardware, pre-loaded with industry templates matched to your client's sector. Typically running within one business day. Implementation consulting available for custom module development, ERP integration, and methodology codification.

EMAIL

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PLATFORM

**kAlra Tools**

WEB

[freshlab.es](https://freshlab.es)

DEMO

**Available on request**