TURNING DATA INTO FLOW

PFEP + AI Agent for Manufacturing Intelligence

Capture

All part data in one structured model

Control

Inventory, flow, and replenishment

Accelerate

Faster decisions from daily AI analysis

Executive summary

WHAT MATTERS

Why PFEP

A structured master data model that connects every part to its supplier, storage, usage, and replenishment logic — in one governed place.

WHY THE AI AGENT

Daily intelligence

A fast method to analyse PFEP data daily, detect buffer breaches, excess exposure, and supplier risk — and generate clear action outputs.

WHY IT MATTERS

Operational impact

Improves flow protection, reduces working capital risk, and gives planners a decision-grade view of what needs action today.

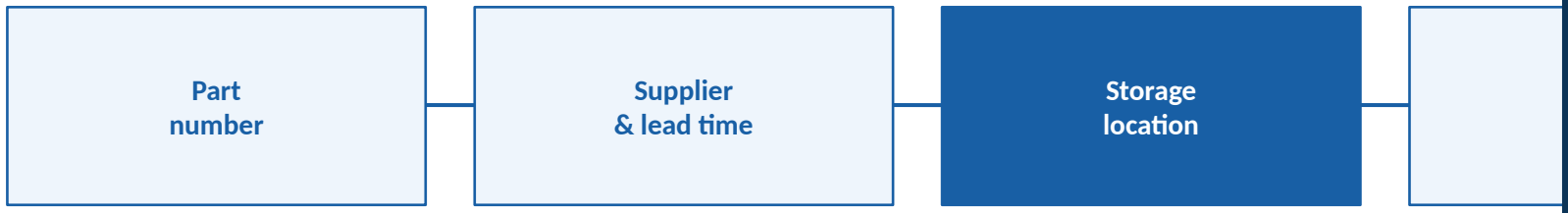
STORYLINE Part data → PFEP model → AI analysis → Daily action

The objective is not more reporting. The objective is a cleaner path from part data to daily operational action.

What is PFEP?

CONCEPT

A master data discipline that captures all relevant information for every part number in a facility — connecting supplier, logistics, storage, usage, and replenishment logic into a single structured model.



Key point

PFEP is not an inventory list.

It is the operating system of your material flow — the single source of truth that makes lean replenishment, DDMRP buffers, and supplier management possible.

"What's needed instead is system kaizen in which the material-handling system for an entire facility, supplying every value stream, is redesigned to create a bulletproof delivery process that is utterly precise and stable … Such a system must include a plan for every part that documents all relevant information about each part number in the facility, including its storage location and points of use."

— Jim Womack, Gemba Walks, 2nd Edition, 2013

The DNA

Every part's identity, attributes, and supply chain logic — in one record.

The operating system

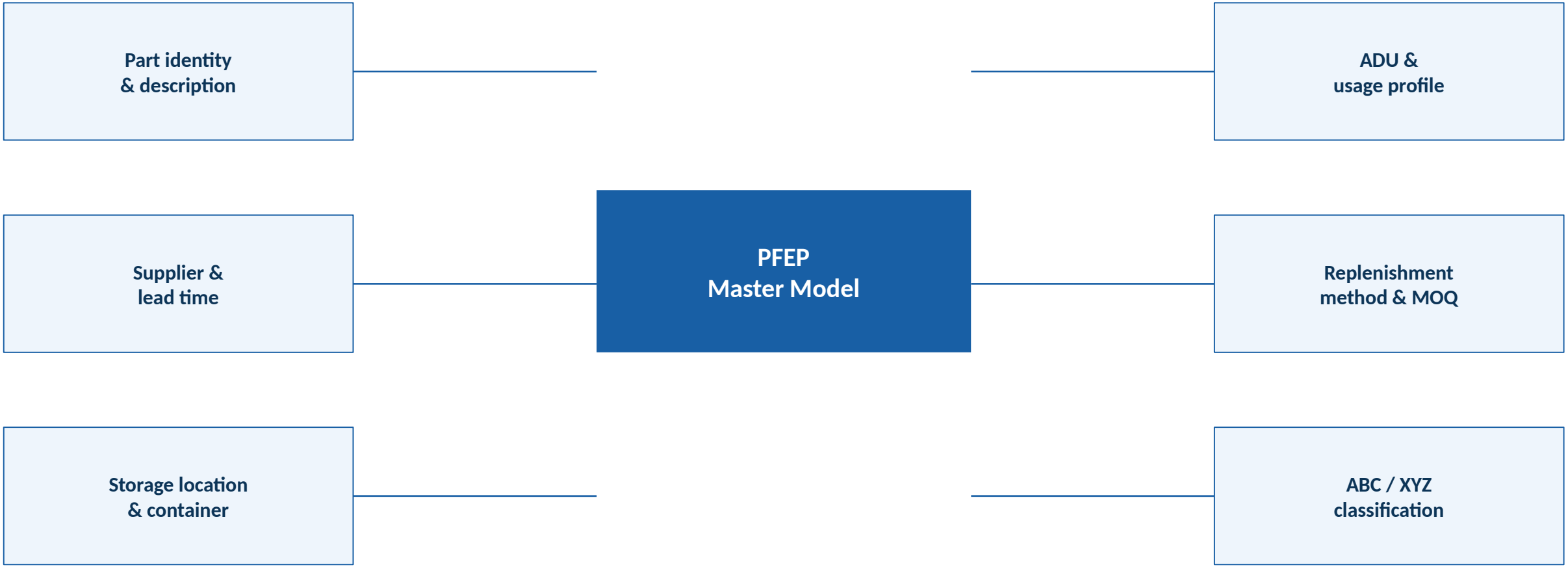
Connects procurement, storage, and production into a single governed model.

The data foundation

Without it, lean initiatives, DDMRP buffers, and AI analysis all fail.

The PFEP data architecture

The master data model that makes every downstream decision possible



- No ADU = no buffer zone
- No supplier = no risk flag
- No classification = no policy

Benefits of PFEP

01

Single source of truth

All part data — supplier, storage, usage, cost — in one model. Planning, procurement, and operations aligned on the same numbers.

02

Right-sized inventory

Eliminates both stockouts and overstock by grounding replenishment in actual ADU data and DDMRP buffer logic — not intuition.

03

Lean material flow

Enables precise delivery routes, Kanban design, and point-of-use replenishment — replacing tribal knowledge with structured data.

04

Supplier discipline

Exposes single-source risk, MOQ-driven overstock, and lead time drift before they become line-stoppage events.

05

ABC/XYZ-informed policy

Matches inventory policy to part value and demand behaviour — A-class parts get maximum attention; C-class parts get minimal overhead.

06

AI analysis foundation

A well-structured PFEP is the data layer that makes daily AI intelligence possible. Garbage in, garbage out — quality data drives quality insight.

The challenge today

DATA EXISTS. But the signal is fragmented across spreadsheets, ERP extracts, and manual trackers.

COMMON FAILURE MODES

- No single source of truth for part data
- ADU estimates not refreshed to reflect demand shifts
- Buffer zones calculated once — never updated
- MOQ-driven overstock misread as planning success
- Single-source supplier risk invisible until breach

WHAT PLANNERS FACE

- Daily firefighting replaces structured analysis
- Excess and shortage coexist in the same facility
- Lean initiatives stall without part-level data discipline
- ABC classification not connected to replenishment policy
- Supplier lead time drift not detected until stockout

WHAT IS NEEDED

- A single structured PFEP model as the data foundation
- Daily automated analysis under DDMRP principles
- Buffer status visible by part, zone, and supplier
- Actionable output — not more reporting layers
- Clear ownership: what to order, when, and why

That is where the AI agent changes the operating model.

The AI agent: from data to daily intelligence

01	02	03	04	05
Data intake	**Validation**	**Buffer analysis**	**Risk detection**	**Daily output**
Ingest Excel-based PFEP model	Schema check and data quality audit	DDMRP zones calculated per part	Breach, excess, supplier, mismatch	Action-ready report for planners

WHAT IT DETECTS

- Red Zone breaches
- Buffer overstock
- Dead stock
- MOQ excess
- Supplier risk
- ABC/XYZ mismatch

The agent is positioned as a flow-protection and capital-risk detector — not just another reporting layer.

8-SECTION DAILY REPORT:

1. Buffer status summary
2. Critical actions today
3. Excess & obsolescence
4. Replenishment signals
5. ABC/XYZ misalignment
6. Supplier risk flags
7. Working capital snapshot
8. Trend observations

What the agent enables for manufacturing

1	Assimilates PFEP data at upload — part count, supplier count, data quality issues surfaced immediately	Faster intelligence
2	Surfaces buffer breaches and overstock requiring immediate action — ranked by financial exposure	Risk visibility
3	Supports daily planner review with structured replenishment signals, quantities, and owner assignment	Cleaner governance
4	Improves working capital visibility — excess value, Red Zone exposure, and DOH tracked by ABC class	Action-ready outputs
5	Reduces manual effort to find gaps — dead stock, MOQ excess, single-source risk flagged automatically	PLANNER + AGENT

PFEP intelligence dashboard

Illustrative layout — replace placeholders with live values from PFEP data model

Green buffer	Red Zone breaches	Working capital exposure	Dead stock value	Supplier risk flags
XX%	XX	€XXk	€XXk	XX
illustrative	*illustrative*	*illustrative*	*illustrative*	*illustrative*

Buffer zone summary

GREEN — Normal	XX%	€XX,XXX
YELLOW — Alert	XX%	€XX,XXX
RED — Breach	XX%	€XX,XXX
OVER — Excess	XX%	€XX,XXX

Top risk watchlist

P/N XXXXX	Red Zone breach — A class	Buyer A	RED
P/N XXXXX	MOQ excess > 90 days cover	Planner B	AMBER
P/N XXXXX	Single source — Yellow zone	Buyer C	AMBER

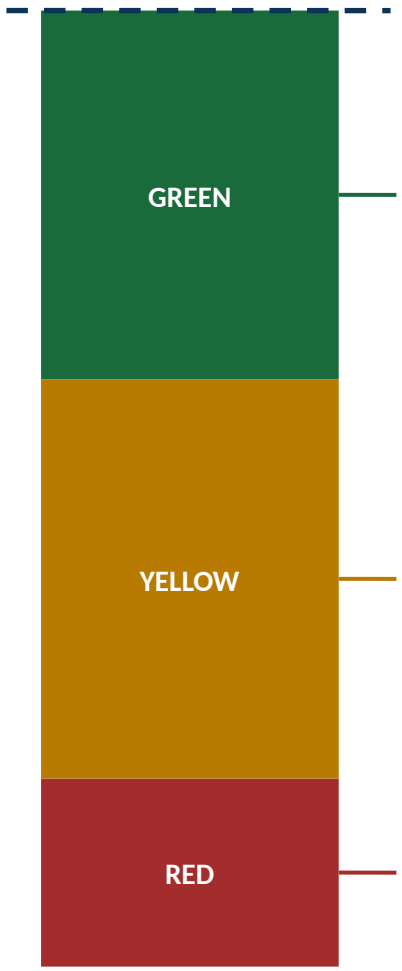
Replenishment signals today

Part#	On-hand	Red floor	Order qty	Supplier	LT
P/N XXXXX	XX units	XX units	XX units	Sup. A	XX d
P/N XXXXX	XX units	XX units	XX units	Sup. A	XX d
P/N XXXXX	XX units	XX units	XX units	Sup. A	XX d

Excess & obsolescence exposure

Parts above TOG (overstock)	XX
Dead stock (90d+ zero usage)	XX
MOQ-driven excess (>90d supply)	XX
Single-source A/B class parts	XX

DDMRP buffer logic — how the agent calculates



Green zone
max(MOQ, ADU × LT × LTF)

Yellow zone
ADU × Decoupled Lead Time

Red zone
Yellow × Variability Factor

Buffer status thresholds

RED — Breach	OH < Red Zone	Immediate PO. Escalate today.
YELLOW — Alert	OH 33–66% TOG	Monitor. Initiate if LT exceeds buffer.
GREEN — Normal	OH 66–100% TOG	No action. Routine schedule applies.
OVER — Excess	OH > TOG	Hold PO. Review MOQ and ADU.

Default parameters
Lead Time Factor: 0.5 | Variability Factor: 0.5 (low CV) / 0.75 (CV >0.5)
Max DOH: A-class 30d | B-class 60d | C-class 90d | Dead stock: 90d zero usage

What changes for manufacturing operations

Before	With PFEP only	With PFEP + AI agent
Fragmented part data across spreadsheets	Single source of truth for every part	Daily automated analysis — no manual effort
No single replenishment policy per part	ADU-based replenishment for all part numbers	Breach and excess flagged with root cause
Buffer zones calculated once, never refreshed	Structured buffer zones by ABC/XYZ class	Replenishment signals with owner assignment
Excess and shortage coexist undetected	Lean material flow and Kanban-ready data	What-if scenarios run in seconds
Planning driven by firefighting and experience	Supplier risk visible in one governed model	Action-ready report delivered every session

Bottom line: PFEP creates the data foundation. The AI agent makes that foundation more scalable, more visible, and more useful to manufacturing leadership.