CONF42 CLOUD NATIVE 2026

Building a Computer Vision Verification System for Warehouse Receiving.

A real-world case of building and operating a computer vision verification service for warehouse receiving.

- Workflow Design & Production Integration
- Reliability Trade-offs (Automation vs. Human Oversight)
- And a **99%** reduction in spare-parts mismatches.

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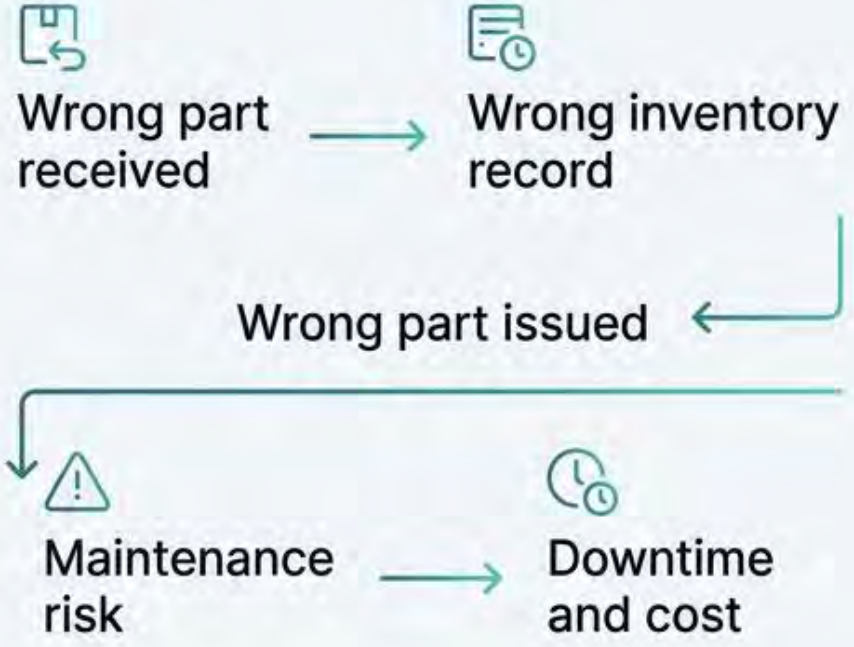
Why Spare Parts Mismatches Became a Critical Operational Problem

Imported receiving errors created downstream operational and service risks.



- High volume of imported spare parts
- Visually similar components are hard to distinguish manually
- Even small receiving mistakes create expensive downstream consequences

Why the Existing Receiving Process Could Not Reliably Prevent Errors

Operational Reality

- High volume of inbound shipments
- Limited receiving time
- Pressure on warehouse staff
- Large and complex spare-parts catalog
- Manual catalog checks and measurements are too slow

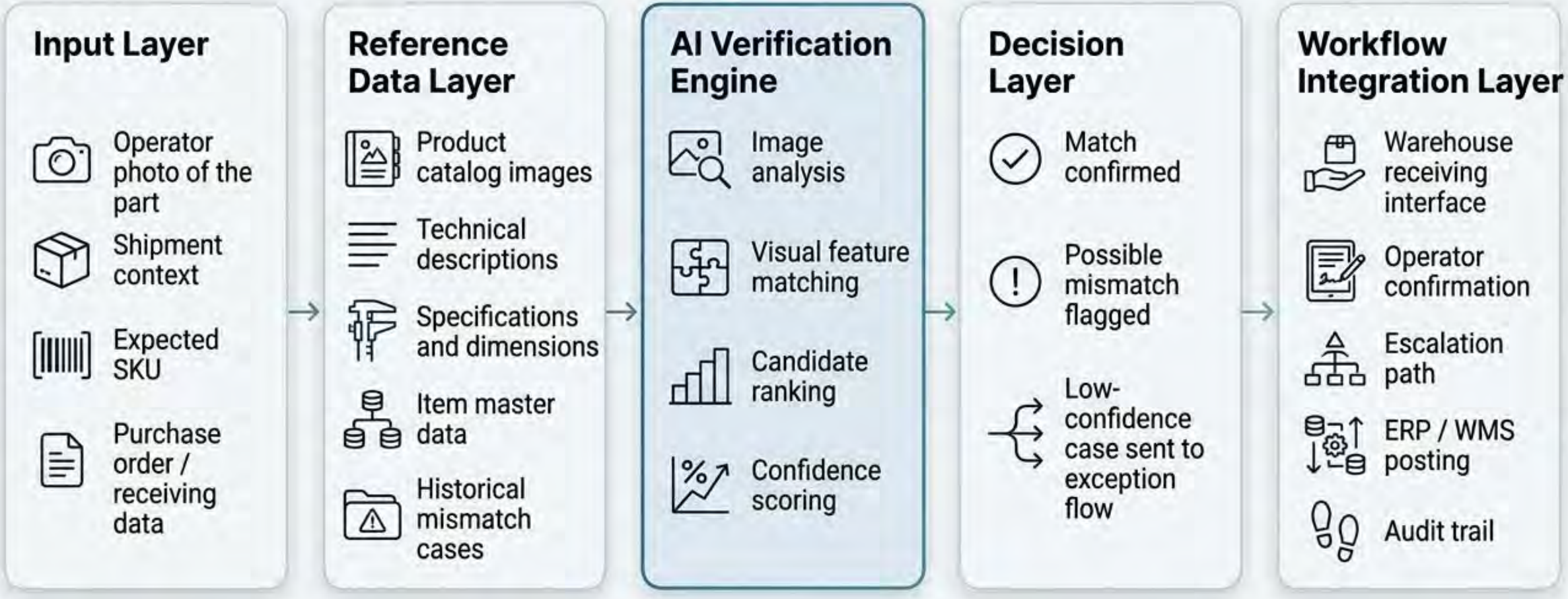
What This Caused

- Visual inspection alone was not reliable
- Human-only verification could not scale
- Accuracy and speed were in conflict
- The process needed decision support at the point of receiving

The issue was not people — the issue was a process that demanded more speed and precision than manual verification could consistently deliver.

Architecture of the AI-Assisted Verification System

Professional to-wito-layed enterprise solution architecture



This was not just a computer vision model — it was a verification service embedded into a warehouse receiving workflow.

From Computer Vision to Real Operations

The AI verification service operatts within a live manufacturing and receiving workflow

Shipment arrives

Operator opens receiving task

Photo of the part is captured

System compares image with expected SKU and reference data

Confidence-based result is returned

Operator confirms, reviews flagged differences, or escalates

Item is posted into inventory

Production Design Principles

- Fast enough for warehouse operations
- High-confidence automation only where safe
- Human-in-the-loop for uncertain cases
- Human-in-the-loop for user trust
- Explainable output for user trust
- Fallback path for exception handling

Green: match confirmed

Yellow: possible mismatch

Red: manual review required

Business Impact and Key Engineering Lessons

Summary of value and takeaways

KPI: 99% reduction in spare parts mismatches at receiving

Impact on inventory quality and risk

Higher receiving accuracy
Fewer technical errors at receiving

Lower dependence on expert staff
Process scalable with standard operators

Fewer downstream inventory and service errors
Reduced risk for maintenance and operations

More stable and scalable warehouse operations
Reliable throughput even with high volumes

Lessons Learned

AI creates value when embedded into a real operational decision point

Computer vision works best when combined with reference data and workflow context

Production AI depends on reliability, integration, and user trust — not just model accuracy

From computer vision to operations: AI becomes valuable when it fits the workflow.