

Ardyan Syahputra

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Summary

Software Engineer with **2+ years** specialising in high-throughput manufacturing infrastructure — building a large-scale ERP spanning 3 production plants, QR-driven traceability engines, and real-time shop-floor systems. Proficient in **Laravel**, WebSockets, event-driven architecture, REST APIs, and MySQL.

Experience

PT Mada Wikri Tunggal

West Java, Indonesia

Software Engineer

Mar 2025 – Present

- Engineered S2SMFG, an enterprise manufacturing ERP scaling across 3 production plants; developed a QR-driven traceability engine with Forward/Backward search algorithms, reducing quality investigation time from hours to seconds.
- Designed and developed a real-time MES integrating Laravel Observers, WebSockets, and TCP/IP for sub-second latency ZPL auto-printing directly to shop-floor Zebra printers, eliminating manual labeling bottlenecks.
- Built a logistics fleet tracking backend using Flutter and GPS telemetry, implementing stale-connection detection algorithms to ensure real-time spatial logging precision across operational delivery routes.
- Deployed ASAKAI, an AI-powered operations dashboard integrating Google Gemini API with server-side caching; orchestrated live metrics from 12 departments via event-driven architecture, enabling uninterrupted monitoring on factory displays.

Software Engineer Intern

Feb 2024 – Feb 2025

- Re-engineered a legacy procedural inspection platform into a high-performance digital verification system; wrote dynamic SQL aggregations capable of sustaining concurrent polling from dozens of warehouse scanners.
- Designed and developed an asynchronous corporate attendance system using Laravel Queue & Job Processing; embedded inline QR codes via CID for universal email client compatibility, distributing thousands of invitations without server blocking.
- Built a smart scheduling algorithm evaluating real-time time-slot intersections with asynchronous Google Calendar API synchronization, eliminating double-booking conflicts across multiple factory facilities.

Technical Skills

Languages & Frameworks: PHP, JavaScript, Dart, Laravel, Livewire, Flutter, React.js, Node.js.

Databases: MySQL, Eloquent ORM, Complex SQL (CTEs, Advanced Joins).

Architecture & Systems: MVC, Event-Driven, REST API, WebSockets, Background Jobs/Queues.

Infrastructure & Integrations: Git, Docker, TCP/IP Socket Programming, GPS Telemetry, Zebra ZPL.

Education

Bachelor of Applied Science, Automotive Industry Information Systems

Sep 2021 – Jul 2025

Politeknik STMI Jakarta

Certification

Database Administration Competency

Valid until Oct 2025

BNSP – LSP Politeknik STMI Jakarta

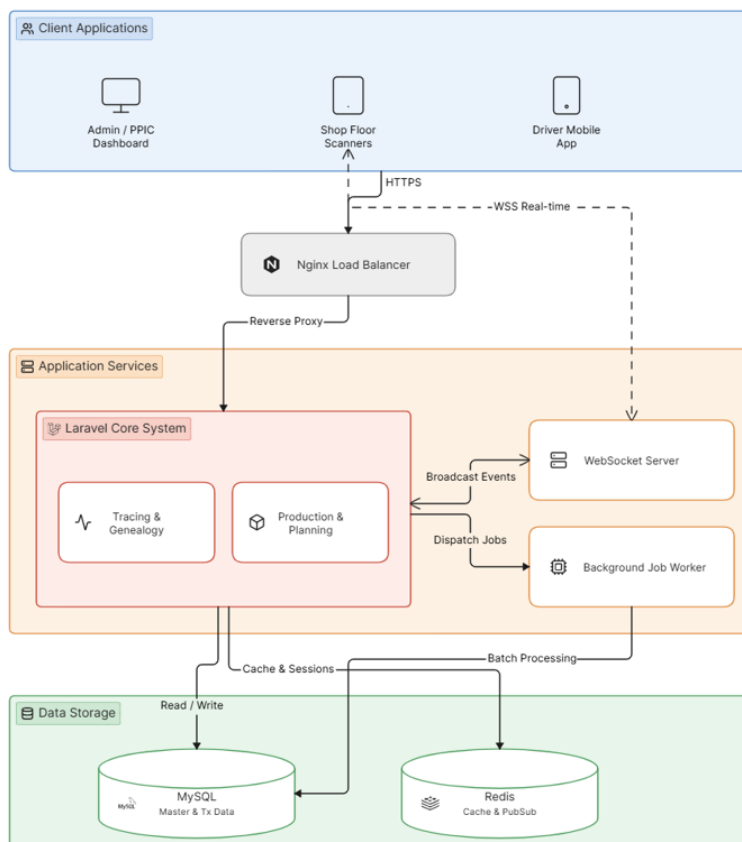
Ardyan Syahputra Portofolio

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Summary Source to Shipping Manufacturing (S2SMFG)

Engineered and deployed S2SMFG, a large-scale ERP digitizing the automotive manufacturing lifecycle from raw material receiving to shipment across 3 production plants and 7 departments. Built on a tech stack of PHP, Laravel, WebSockets, Flutter, MySQL (80+ relational tables), and TCP/IP Sockets, the system sustains 50+ concurrent daily users. This high-throughput architecture drove critical operational impact, reducing quality investigation time from hours to seconds via a Forward/Backward QR traceability engine and cutting SPK document distribution time by 90% through automated sub-10 second execution.

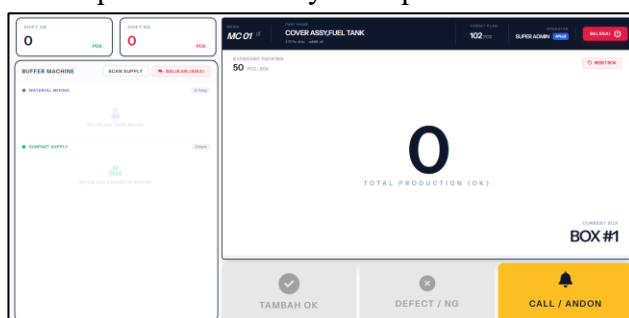
Architecture



Core Technical Challenges & Engineering Solutions

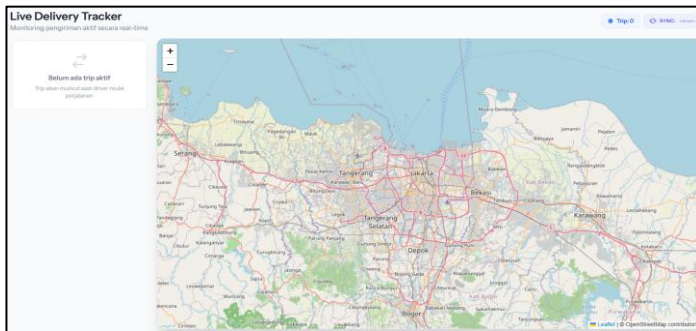
Challenge A: Manual Labeling Bottlenecks on the Production Floor

- Problem:** Printing hundreds of labels daily by manually downloading PDFs interrupted the Injection Molding machine rhythm, costing minutes per label.
- Solution:** Engineered a real-time Manufacturing Execution System (MES) utilizing Laravel Observers. Upon registering an 'OK' product status in the database, the system automatically renders ZPL code and dispatches it directly to IP printers via TCP/IP Socket (Port 9100), achieving near-zero latency.



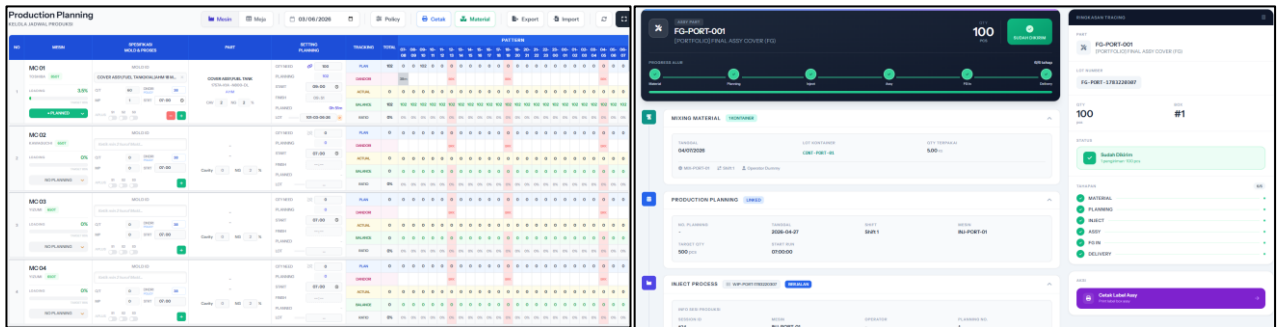
Challenge B: Data Visibility in Network Blank Spots

- Problem: Delivery trucks frequently traversed signal dead zones, causing GPS telemetry drops and corrupting the central logistics logs.
- Solution: Developed an offline-first mobile architecture using Flutter's local storage. Implemented a stale-connection detection algorithm to queue payload data asynchronously, securely synchronizing it to the Traccar VPS backend without duplication once network connectivity was restored.



Challenge C: Concurrency on a 80+ Table Relational Schema

- Problem: Processing 500+ daily cross-departmental transactions risked database deadlocks when accessed concurrently by dozens of warehouse scanners.
- Solution: Built a Poka-Yoke validation pipeline (Receiving → Mixing → Assembly). Optimized data retrieval using complex SQL aggregations (GROUP_CONCAT) and advanced joints to prevent N+1 query problems, ensuring stability during peak load times.



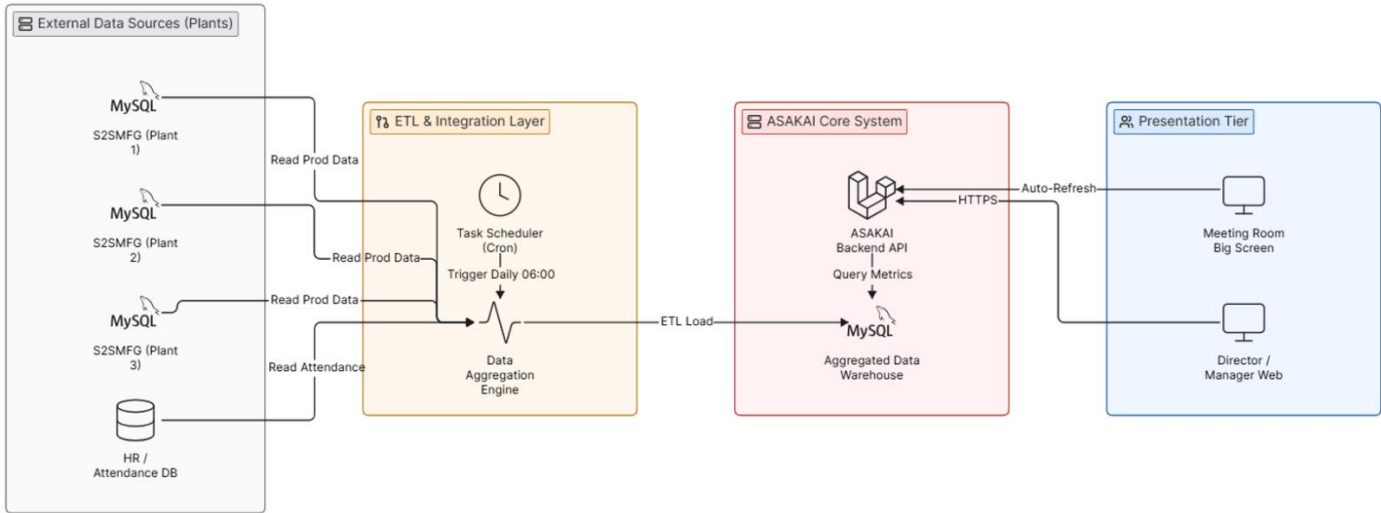
Outcomes & Final Metrics

- Reliability: Achieved 97% operational accuracy in material inventory tracking and logistics loading precision.
- Adoption: Reached 100% systemic adoption across all departments, completely eliminating legacy paper-based tracking.

Summary ASAKAI

Deployed ASAKAI, an AI-powered operations dashboard engineered to centralize and broadcast live metrics from 12 independent factory departments. Built with Laravel, WebSockets, Redis (Server-Side Caching), and the Google Gemini API, the system orchestrates real-time data streams for unattended factory displays. This event-driven architecture ensures uninterrupted monitoring and autonomously transforms raw, cross-departmental telemetry into actionable AI-driven insights for daily executive morning briefings.

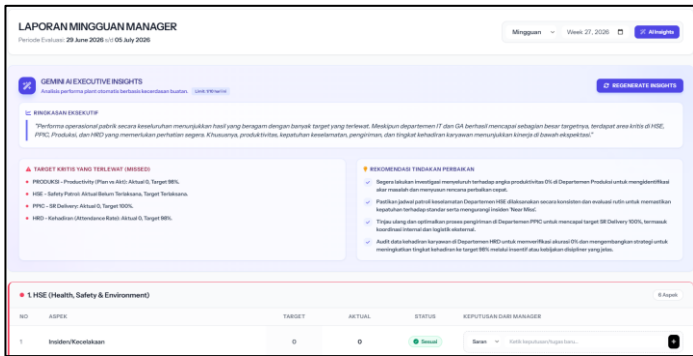
Architecture



Core Technical Challenges & Engineering Solutions

Challenge A: LLM Latency & API Rate Limiting

- Problem: Fetching real-time analytical summaries from the Google Gemini API for 12 departments simultaneously risked severe dashboard rendering latency and hitting strict third-party API rate limits during peak morning hours.
- Solution: Engineered an asynchronous data pipeline using Laravel Background Jobs to pre-compute AI insights during off-peak hours. Implemented aggressive server-side caching (Redis) for the generated payloads, reducing dashboard load times from several seconds to single-digit milliseconds and drastically cutting API request costs.



Challenge B: Uninterrupted Factory Display Synchronization

- Problem: Factory floor Smart TVs are unattended devices that cannot rely on manual page refreshes or heavy client-side HTTP polling (which would choke the internal network with thousands of empty requests).
- Solution: Orchestrated an event-driven architecture utilizing WebSockets. Instead of clients querying the database for updates, the backend actively broadcasts lightweight, incremental state mutations instantly to all connected displays whenever new departmental data is ingested, ensuring sub-second latency visibility.

Challenge C: Cross-Departmental Data Aggregation

- Problem: Compiling live metrics from 12 isolated departments required complex database queries that threatened to degrade the performance of the main ERP transaction database.
- Solution: Designed a materialized view strategy and dedicated summary tables updated via database triggers/observers. This isolated the heavy read-operations of the dashboard from the high-throughput write-operations of the factory floor.

Outcomes & Final Metrics

- Efficiency: Fully automated the daily cross-departmental reporting process, eliminating hours of manual data compilation for executive morning briefing.
- Stability: Maintained 100% display uptime across all factory monitors with highly optimized server memory consumption due to cached WebSocket broadcasting.