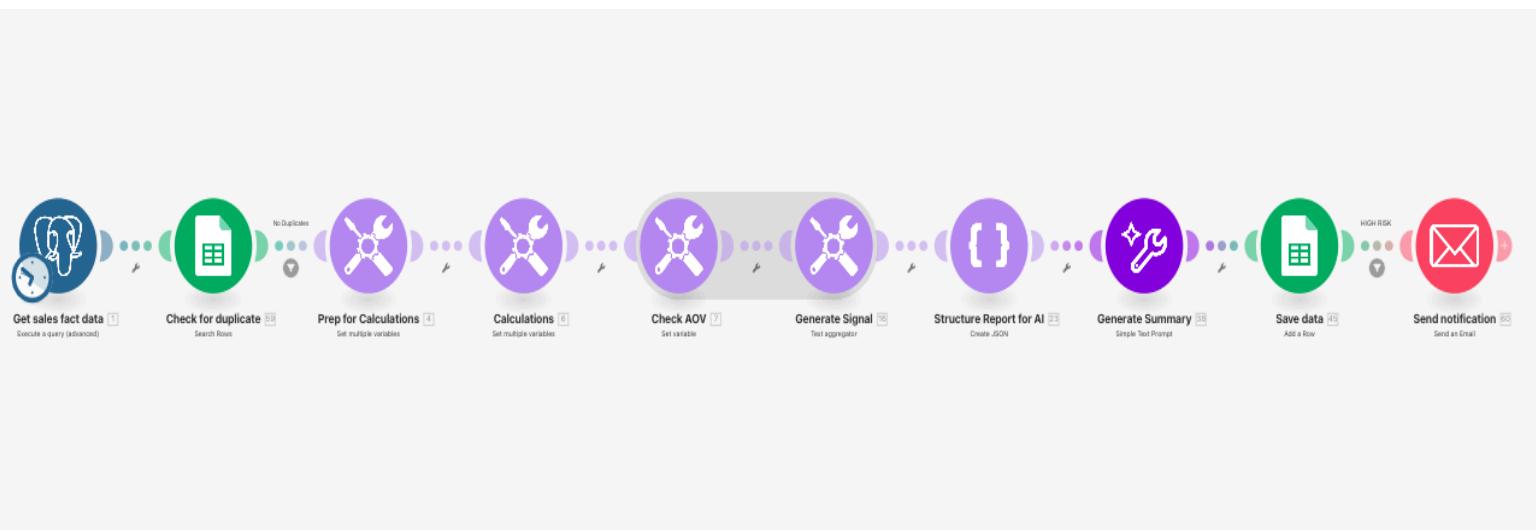# AI Intelligence Layer

AI Layer – Automated Revenue Intelligence

Overview

The AI layer transforms weekly aggregated revenue data into **actionable business insights**.
 Rather than generating generic summaries, the AI is tightly constrained by **structured inputs, deterministic logic, and validation rules** to ensure reliable outputs.

This layer is orchestrated using **Make.com**, acting as the automation backbone between PostgreSQL and the AI model.

Data Flow

```
PostgreSQL (Weekly Aggregation)

        ↓
Make.com (Validation + Logic)

        ↓
AI Analysis Module

        ↓
Google Sheets (Executive Output)
```

Input Data (Strictly Controlled)

The AI receives **one bundle per week**, containing:

- week_start

- total_orders

- total_revenue

- total_payments

- avg_order_value

This prevents bundle explosions and avoids misleading AI conclusions caused by row-level noise.

Data Validation Layer (Pre-AI)

Before invoking AI, the scenario enforces:

- Non-null revenue and order counts

- Valid numeric values (no negative revenue)

- Minimum historical window for comparison

If validation fails, the automation **halts** and logs the issue instead of generating insights.

Business Logic Layer (Make.com)

Key logic includes:

- Week-over-week percentage change calculations

- Revenue vs payment discrepancy detection

- Threshold-based risk classification:

  - Revenue decline

  - Order volume decline

  - Cash-flow mismatch

All classification logic is executed **before AI**, ensuring the model explains results rather than inventing them.

AI Role (Constrained Intelligence)

The AI **does not calculate metrics**.

Its responsibilities are limited to:

- Interpreting pre-calculated metrics

- Explaining business implications

- Suggesting corrective actions

The prompt explicitly prohibits assumptions when historical data is insufficient.

Output Format

AI outputs are structured into:

- Performance summary

- Trend direction

- Risk flags

- Recommended actions

This output is written to **Google Sheets**, enabling easy review by executives and non-technical stakeholders.

Why This Design Works

- Prevents hallucinations

- Ensures repeatable results

- Scales cleanly with time-series data

- Aligns AI output with business decision-making