🚀 DelaySense Masterplan

A real-time delay impact and SKU prioritization platform tailored for large-scale retail logistics (e.g. Walmart).

📌 Objective

Build a scalable, real-time dashboard that helps store managers identify, understand, and act on the impact of delayed deliveries—especially at the SKU level—to reduce loss, improve cold-chain handling, and optimize return pickups.

🧩 Core Features

1. Delay Detection Engine

- Compares ETA vs ATA of each truck.

- Flags delays (> threshold minutes)

- Maps truck to store and origin DC.

2. SKU Impact Analyzer

- Pulls digital manifest of each delayed truck.

- Cross-references delayed SKUs with store's shelf/backroom stock.

- Tags SKUs as:

    - Out-of-stock

    - Cold-chain

    - Pickup-linked

- ○ Perishable

3. Loss Estimator

Calculates per-SKU estimated loss:

loss = demand_rate x delay_time x unit_price

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- ● Aggregates total loss per store, per truck, per region.

4. Action Recommendation System

- ● Suggests prioritized unload order.

- ● Flags critical cold chain & high-demand SKUs.

- ● Notifies pickup order handlers if delays affect fulfillment.

5. Return Pickup Prioritizer

- ● Identifies ready-to-return SKUs in backroom.

- ● Scores return value based on urgency, condition, resale value.

- ● Suggests optimal return items to send back based on truck space and return value.

6. Live Dashboard & Visuals

- ● Interactive store map with delay markers.

- ● Popup with:

  - ○ Delay time

  - ○ Est. loss

  - ○ Top SKUs

  - ○ Action suggestions

- Charts:

  - SKU loss trends

  - Cold vs dry item breakdown

🎨 UI/UX Layout Plan

Top Section

- Summary Tiles:

  - Total Delays

  - Est. Loss Today

Middle Section

- **Option A:** Split View

  - Left: Interactive Map (Leaflet)

  - Right: Store/Truck detail panel

Bottom Section

- Charts:

  - Weekly Loss Trend

  - Top 5 SKUs at Risk

  - Store Loss Leaderboard

⚙️ Tech Stack

Layer	Tools
Frontend	React.js + Tailwind CSS
Charts	Chart.js or Recharts
Backend	Node.js + Express
DB	PostgreSQL / Firebase
Realtime	Socket.IO (optional)
Hosting	Vercel (FE) + Railway

🎯 End Users

- **Primary**: Store Operations Manager

🔁 Future Expansion

- Predictive delay forecasting (ML)

- Vendor scoring & accountability

- Sustainability: carbon saved via optimizations

- Deep DC dispatch integration