**Proposal: Enhanced Supply Chain Ontology – Logistics Automation**

**Objective**

To strengthen the existing supply chain ontology by incorporating **supplier** and **transportation cost** data, enabling end-to-end logistics automation with improved efficiency, cost optimization, and risk management.

**Key Data Additions**

**1. Supplier Integration**

Introduce entities for **Supplier** and **Product-Supplier relationships** that capture:

* Lead times & minimum order quantities
* Unit costs & bulk discounts
* Reliability & quality performance scores
* Location & payment terms

**Impact:**

* Enables **smarter supplier selection** based on cost, lead time, and quality.
* Supports **automated purchase order generation** aligned with demand forecasts.
* Improves **procurement risk management** through performance tracking.

**2. Transportation Cost Matrix**

Incorporate structured data for transportation cost modeling, including:

* Route-level costs (per unit, per kg, minimum charges)
* Transit times & service levels by carrier
* Origin → warehouse route mapping

**Impact:**

* Optimizes **total landed cost** by balancing supplier price with transportation expenses.
* Improves **carrier and route selection** to meet service-level and cost objectives.
* Reduces **emergency shipping costs** through proactive planning.

**Expected Benefits**

* **Operational Efficiency:** Automation of procurement decisions and logistics workflows.
* **Cost Optimization:** Smarter supplier and route selection lowers procurement and shipping costs.
* **Strategic Agility:** Improved visibility into supplier reliability and transportation trade-offs.