**Requirements Document: Inventory Management & Analytics System**

**1. Project Objective**

The client requires a **centralized, analytics-driven inventory management system** capable of handling both **product-based** and **service-based inventories**, with real-time insights, historical tracking, and operational automation.

**2. Functional Requirements**

**2.1 Inventory Product Module**

The system should allow:

* Tracking of inventory across warehouses and retailers
* Management of product categories, product statuses, wholesalers, and order statuses
* Monitoring of purchases, product lifecycle, and delivery flows
* Agent-level tracking and performance reporting

**2.2 Inventory Service Module**

The system should allow:

* Management of service categories and service-level inventory tracking
* Integration of customer data, payment modes, and service agents
* Recording and analysis of service transactions

**3. Data Requirements**

The client expects:

* **Structured schema design** using **star schema modeling**
* Creation of dimension and fact tables for both product and service modules:

**3.1 Inventory Product**

* **Dimensions**: Customer, Product Category, Product, Warehouse, Retailer, Agent, Payment, Date, Product Status, Wholesaler, Order Status, Location
* **Facts**: Product, Product Purchase, Product Status, Order Status

**3.2 Inventory Service**

* **Dimensions**: Customer, Service, Service Category, Date, Payment Mode, Agent, Retailer
* **Facts**: Inventory Service

**4. Reporting & Visualization Requirements**

The client expects:

* Interactive dashboards for:
  + Product/service category performance
  + Revenue and order trends over time
  + Agent performance tracking
  + Payment mode distributions
  + Order and product status analytics
* Dashboards must be built using **Power BI**

**5. Technical Requirements**

The client specifies use of the following tools and platforms:

| **Tool** | **Purpose** |
| --- | --- |
| **Databricks** | Data generation, modeling, ETL, automation |
| **Power BI** | Business intelligence and visual reporting |
| **Delta Lake** | Storage layer for scalable data processing |
| **SQL** | Schema design and data transformation |
| **Python** | Data generation and workflow scripting |

**6. Automation Requirements**

* Data pipelines should be automated within **Databricks**
* ETL processes must be scheduled and scalable
* Workflows should handle simulation, ingestion, transformation, and model population

**7. Non-Functional Requirements**

* The system must be **modular**, **scalable**, and easy to maintain
* Data updates must be reflected in reports **in near real-time**
* Must support **historical tracking** and trend analysis

**8. Deliverables**

* Fully functional data model with ER diagrams
* Databricks notebooks or scripts for data generation and processing
* Delta Lake storage and partitioning strategy
* Power BI reports with navigation and interactivity
* Documentation (README, Report)