This is the **Technical Functional Specification (TFS)** for Cipree. This document provides developers with the granular detail needed to build the database, logic controllers, and UI/UX without ambiguity.

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1. System Architecture & Multi-Tenancy

Cipree must follow a **Siloed Multi-Tenancy** approach.

- **Database Level:** Each Organization (Tenant) must have a unique Organization_ID. Every query for inventory, users, or assets must include a mandatory WHERE Organization_ID = X clause to prevent data leakage.
- **Super Admin Control:** This is a global "God Mode" for managing the SaaS itself (creating tenants, monitoring system health, and setting global limit defaults).

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2. Master Data Forms & Field Definitions

All forms require a **Single Entry UI** and a **Bulk Upload API** (CSV/XLSX).

A. Inventory Item Master (Stock)

This form defines the catalog.

- **Item Code (SKU):** String (Unique, Indexed).
- **Item Name:** String.
- **Category:** Enum (Consumables, Tools, Spare Parts, Fixed Assets).
- **Unit of Measure (UoM):** Enum (Each, Box, Litre, Kg, Pack).
- **Reorder Point (Min):** Integer. **Default: 10**. (Super Admin configurable).
- **Maximum Stock Level:** Integer. **Default: 100**.
- **Lead Time (Days):** Integer. **Default: 7**.
- **Valuation Method:** Enum (FIFO, LIFO, Weighted Average). **Default: FIFO**.

B. Personnel End-User Form

Personnel are recipients of stock, not system users (though they can be both).

- **Staff ID:** String (Unique).
- **Full Name:** String.
- **Department ID:** Foreign Key.
- **Cost Center:** String (Standard accounting field).
- **Status:** Enum (Active, Inactive).

C. Fixed Asset End-User Form

Items issued to an "Asset" (e.g., oil issued to a vehicle).

- **Asset Tag Number:** String (Unique).
- **Asset Name:** String (e.g., Toyota Hilux GH-102).
- **Asset Category:** Enum (Vehicle, Building, Machinery, IT Hardware).
- **Location/Sub-location:** String.
- **Responsible Person:** Foreign Key (Link to Personnel).

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3. Workflow & Approval Limits

Defaults are set by the Super Admin at the system level; Org Admins can refine them.

Parameter	Standard Default Value	Logic/Usage
Max Request Qty	50 Units	Prevents bulk requisition errors by end-users.
Approval Threshold 1	$500.00	Requester Authorizer can approve up to this amount.
Approval Threshold 2	Above $500.00	Routes to Warehouse Manager Authorizer.
Auto-Reorder Trigger	15% of Max Stock	Sends notification to Warehouse Officer.

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4. The Inter-Warehouse Waybill System

When moving stock between two warehouses owned by the same organization, the system must maintain a **"Stock in Transit"** status.

Waybill Generation Steps:

1. **Transfer Initiation:** Store Assistant selects Source Warehouse, Destination Warehouse, and Items.
2. **Dispatch:** System deducts from Source Warehouse "Available" stock and adds to "In Transit" stock.
3. **Waybill PDF:** Generated with a unique QR code for the driver.
   - *Fields:* Date, Waybill #, Carrier Name, Vehicle ID, Item List, Quantity, Sign-off fields for Dispatcher/Receiver.
4. **Receipt:** Destination Store Assistant scans QR code and clicks "Receive All" or "Flag Discrepancy."
5. **Completion:** Stock moves from "In Transit" to Destination Warehouse "Available."

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5. Role-Specific Dashboards (UI Modules)

The UI must filter "Widgets" based on the Role_ID.

- **Requester:**
  - o Widget: Status of current requests (Pending, Approved, Out for Delivery).
  - o Action: "New Material Requisition" button.
- **Requester Authorizer:**
  - o Widget: List of pending MRNs requiring signature.
  - o Widget: Monthly budget utilization for their department.
- **Warehouse Officer/Assistant:**
  - o Widget: Low Stock Alerts (Items below reorder point).
  - o Widget: Pending Pick-Lists (Approved requests not yet issued).
  - o Widget: Pending Waybills (Inbound transfers from other warehouses).
- **Warehouse Manager Authorizer:**
  - o Widget: High-value issue requests (> Threshold).
  - o Widget: Inventory Turnover Ratio (Standard supply chain KPI).

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6. Compliance & Technical Standards

1. **Audit Logs:** Every record must have created_at, updated_at, and performed_by_user_id.
2. **Financial Integrity:** All stock movements must generate a ledger entry.
   - o *Debit:* Inventory Expense (or End-User Account).
   - o *Credit:* Warehouse Inventory Account.
3. **Security:** Role-Based Access Control (RBAC) must be strictly enforced at the API level (JWT tokens with role claims).