# Automated BOM Management Workflow with Version Control

## 1. BOM Creation and Versioning Workflow

### Step 1: BOM Initiation

- Engineering team designs the initial product structure.  
- Create the first BOM (Version 1.0) with detailed parts, assemblies, and materials.  
- Assign unique BOM ID and Version Number.

### Step 2: Automated Data Input

- Integration with CAD Tools (AutoCAD, SolidWorks) auto-populates BOM with design data.  
- Pulls standard parts/components from existing libraries.  
- Validates the addition of new parts.

### Step 3: Approval Workflow

- BOM is sent for automated approval routing to Engineering, Supply Chain, and Quality teams.  
- Conditional triggers notify approvers based on part types and criticality.

### Step 4: Version Control Management

- Engineering Change Orders (ECO/ECN) are submitted for updates.  
- System auto-generates new versions, locking previous versions for audit purposes.  
- All changes are tracked in a Version History Log.

### Step 5: Integration with Supply Chain

- Automated BOM syncs with Procurement and Inventory systems.  
- Triggers purchase orders (POs) based on BOM updates.  
- Alerts for parts with long lead times.

### Step 6: Real-Time BOM Tracking

- Live dashboards display BOM statuses across design, procurement, and production stages.  
- Color-coded alerts for pending approvals, material shortages, and changes.

### Step 7: Compliance and Audit Trail

- Every BOM version and change is recorded for regulatory compliance.  
- Full audit trail with timestamps, user logs, and approval history.

## 2. Workflow Visualization

[Start] → [BOM Drafting] → [Automated Data Input] → [Approval Workflow] → [Version Control] → [Supply Chain Integration] → [Real-Time Tracking] → [Compliance & Audit]