**Product Requirements Document: Warehouse Audit & Inventory Count Feature (MVP - Phase 1)**

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**1. Introduction**This document outlines the requirements for the initial MVP (Minimum Viable Product) release of a new Warehouse Audit & Inventory Count feature within the MANAGE Warehouse Management System (WMS). This feature aims to enhance inventory accuracy, streamline the audit process with a dedicated Handheld Device (HHD) module, and provide robust mechanisms for recording and resolving discrepancies (Lost, Damaged, Overages, Batch Discrepancies, Wrong SKU/Product, Wrong Box Location). A critical aspect is the implementation of a multi-layered mutual exclusion mechanism to prevent conflicts between audit and picking operations on the same racks.

\* 1.1. Purpose:

To establish a systematic, digital process for inventory auditing and discrepancy resolution, replacing inefficient manual methods, to achieve high inventory accuracy and reliable financial data in Distribution Centers (DCs).

\* 1.2. Scope (MVP - Phase 1):

\* Basic Cycle Count (CC) and Selective Bin Count (SBC) functionalities.

\* Manual creation (by Supervisor/BA via "Audit Task Management Panel") and assignment of Audit Work Tasks (WTs) for specific racks.

\* HHD-driven audit execution:

\* Scanning of Rack, Box Code.

\* Mandatory EAN verification (with visual tick/cross feedback) against expected SKU for the Work Order (WO).

\* Input of counted quantity, damaged quantity, physical MRP, Mfg Date, Exp Date.

\* Flagging of discrepancies: Lost, Damaged, Overage (for expected items); Batch Discrepancies (Mfg/Exp/MRP); Wrong SKU/Product (unexpected EAN found); Wrong Box Location.

\* HHD Overage Handling (Truly Unexpected SKU/Batch): If EAN scan reveals an SKU/Batch different from WO's expectation \*and\* this item is determined to be truly unexpected for the rack, HHD enables flow to scan a designated "Overage Crate" and confirm the quantity & attributes of this \*found item\* into that crate. Event flagged.

\* HHD Skip Functionality: "Skip Rack" (WOs flagged for Supervisor follow-up), "Skip WO" (unscannable, flagged). \*Skipped WOs considered for future WT generation.\*

\* HHD Reset Options: "Reset Current Rack" (clears HHD session for rack, WOs need re-audit, flags remain), "Reset Entire Work Task" (reverts WOs & flags for current WT session, WT to 'ASSIGNED', rack locks to 'AUDIT\\_WT\\_CREATED').

\* Multi-Layered Rack Blocking:

\* Generation-Level: Prevents new picklist generation by Picking Module for racks with an 'ASSIGNED' (or 'AUDITING\\_IN\\_PROGRESS') Audit WT. (Triggered when Audit WT is assigned).

\* Execution-Level: Prevents starting picking on racks 'AUDITING\\_IN\\_PROGRESS'; prevents starting audit on racks 'PICKING\\_IN\\_PROGRESS'. (Audit WT remains 'ASSIGNED' if blocked by picking).

\* Supervisor-initiated GON Creation: All Goods Outward Notes (GONs) are created via Supervisor action on the "Flags Panel" after reviewing flagged discrepancies.

\* SAP posting for inventory adjustments (Lost, Damaged, Overages) using predefined movement types (e.g., 311, 701), triggered by Supervisor-approved GONs.

\* Batch Discrepancy Resolution: Supervisor-led "New Batch Creation" (MANAGE initiated for local WH need, SAP create, Webhook confirm) or "Batch Updation Request" (to SWAT team for global SAP Batch Master change, SAP update, Webhook confirm) via Flags Panel.

\* Supervisor Flags Panel: Central point for resolution of all flags; displays GON statuses.

\* Basic reporting/visibility of audit task status.

\* 1.3. Goals (MVP - Phase 1):

\* Establish foundational digital inventory count process.

\* Enable accurate recording & systematic adjustment for common discrepancies.

\* Manage complex discrepancies (Batch, Wrong SKU/Location, Unexpected Items) via flagging & supervisor resolution.

\* Ensure data integrity via rack blocking.

\* Provide initial discrepancy visibility & ensure basic SAP alignment.

\* Streamline supervisor-led resolution.

\* Systematically handle batch discrepancies, including SAP integration and external team workflows.

\* Allow auditors to physically segregate & digitally record truly unexpected items.

**2. Definitions & Acronyms**\* **CC:** Cycle Count  
\* **SBC:** Selective Bin Count  
\* **WO:** Work Order: Smallest auditable unit (SKU in Box on Rack).  
\* **WT:** Work Task: Bundle of WOs assigned to an Auditor.  
\* **HHD:** Handheld Device  
\* **GON:** Goods Outward Note  
\* **MANAGE:** Internal WMS  
\* **SAP:** Centralized ERP  
\* **Rack:** Physical storage unit  
\* **Box / Box Code:** Physical container  
\* **EAN:** Barcode  
\* **MRP:** Maximum Retail Price  
\* **Mfg/Exp Date:** Manufacturing/Expiry Date  
\* **Flags Panel:** Supervisor UI in MANAGE  
\* **Truly Unexpected SKU/Batch:** Item (SKU+Batch) not expected anywhere on the audited rack per MANAGE records.  
\* **Overage Crate:** Designated crate for truly unexpected items.  
\* **Damaged/Quarantine Crate:** Designated crate for damaged/expired items.  
\* **Generation-Level Blocking:** Prevents new picklist creation for racks involved in an assigned audit.  
\* **Execution-Level Blocking:** Prevents concurrent audit/picking on a rack.  
\* **SWAT Team:** Central data governance team for SAP Batch Master.  
\* **LODC/TGDC:** Logical locations for "Lost on Dock/Discrepancy" and "To Good Stock Discrepancy."

**3. Problem Statement & Opportunity**Current manual, paper-based audit processes are inefficient, error-prone, and lack systematic data integration, leading to inventory inaccuracy, financial discrepancies, and operational delays. A digitized, HHD-driven audit system will improve accuracy, reduce costs, provide timely discrepancy visibility, and enhance operational control. SAP is the source of truth for initial expected quantities; MANAGE provides granular box-level details.

**4. Solution Overview (Overall Flow)**

| Audit v/s Pick control checks: |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Activity: Audit | Pick Status | | | | | | |
| Audit Stages | Creation | Ready | Assigned | Picking | Incomplete | Complete | Cancelled |
| WO Creation | Y | Y | Y | Y | Y | Y | Y |
| WT Creation | Y | Y | Y | Y | Y | Y | Y |
| WT Assignment | Y | Y | Y | Y | Y | Y | Y |
| WO Picked | Y | Y | N | N | Y | Y | Y |
| WO In Process | Y | Y | Y | N | Y | Y | Y |
| WO Completed | Y | Y | Y | N | Y | Y | Y |
|  |  |  |  |  |  |  |  |
| Activity: Pick | Audit Stages | | | | | |  |
| Pick Status | WO Creation | WT Creation | WT Assignment | WO Picked | WO In Process | WO Completed |  |
| Creation | Y | Y | Y | Y | Y | Y |  |
| Ready | Y | Y | Y | Y | Y | Y |  |
| Assigned | Y | Y | Y | Y | Y | Y |  |
| Picking | Y | Y | Y | N | N | Y |  |
| Incomplete | Y | Y | Y | Y | N | Y |  |
| Complete | Y | Y | Y | Y | N | Y |  |
| Cancelled | Y | Y | Y | Y | Y | Y |  |
|  |  |  |  |  |  |  |  |

The Warehouse Audit feature digitizes inventory counts. Supervisors manually create & assign Audit Work Tasks (WTs) for racks via a MANAGE panel. This assignment blocks new picklist generation for those racks. Auditors use HHDs: they select an assigned WT. Starting the WT blocks active picking on the rack. The HHD guides rack, then box scans. For each Work Order (WO per sku), expected details are shown. The auditor verifies EAN (tick/cross).  
\* **If EAN matches:** Auditor inputs counted Qty, Damaged Qty, & physical MRP/Mfg/Exp for the *expected SKU*.  
\* **If EAN mismatches (Wrong SKU):** Auditor inputs Qty, Damaged Qty, & attributes for the *found SKU*.

\* **Damaged/Expired (for any item being processed):** If items are damaged or entered Mfg/Exp indicates expiry, HHD prompts to scan a "Damaged/Quarantine Crate" for these specific units.  
Auditors can Skip WOs (unscannable box) or Racks (flagged for supervisor). HHD "Home" button resets current WO inputs; "Reset Rack" clears HHD session for current rack (flags remain); "Reset WT" reverts entire WT to 'ASSIGNED' and clears session flags.  
All discrepancies (Quantity, Batch, Wrong SKU, Wrong Location, items to Overage/Damaged Crates, Skips) are flagged.  
Upon WT completion, racks are unblocked. The Supervisor uses the "Flags Panel" to resolve all flags. This includes:  
\* **Lost:** Initiating "Lost GON".  
\* **Damaged/Expired (in Crate):** Confirming Qty, selecting Disposition GON Type (Scrap, RTV etc.).  
\* **Batch Discrepancy:** Initiating "New Batch Creation" (MANAGE to SAP) or "Batch Updation Request" (to SWAT team, then SAP to MANAGE via Webhook).  
\* **Excess/Overage ( simple overage of expected item):** Check for "Recovery from GON". If not, true overages of *unexpected* items from Overage Crate are processed as "New Inward GON"; true overages of *expected* items (if not crated by auditor) are flagged and Supervisor directs team to use standard "Inward Panel".  
All Supervisor-approved GONs trigger MANAGE inventory updates & SAP postings.

## **5. User Roles & Responsibilities**

The system is designed for three distinct user roles, each with specific permissions and responsibilities:

* **Audit Manager/Supervisor (Assignment Panel):** Responsible for overseeing the entire audit schedule. Their primary tasks include monitoring work task generation, assigning tasks to auditors, and tracking the overall progress of audits.
* **Auditor (HHD Panel):** The on-the-floor personnel who execute the physical inventory counts. They use a Hand-Held Device (HHD) to follow a guided workflow, scan items, and report their findings in real-time.
* **Supervisor (Flag Panel):** Responsible for investigating and resolving all inventory discrepancies flagged by auditors. They have the authority to approve inventory adjustments, initiate goods movement, and reject erroneous flags, serving as the final point of validation.

## **6. System Components & Architecture**

The system consists of a central database and three interconnected user-facing components that work in concert.

### **6.1. Audit Work Task Assignment Panel**

A web-based dashboard for audit managers providing a high-level view of all audit activities.

* **Target User:** Audit Manager
* **Core Purpose:** Workload management and progress tracking.
* **Key Features:**
  + **Centralized Task List:** Displays all Work Tasks generated from the Work Order table.
  + **Dynamic Filtering & Search:** Allows managers to quickly find tasks by Status (Pending, Assigned, In Progress, Completed), Auditor, Work Task ID, or Rack Name.
  + **Auditor Assignment:** An intuitive interface to assign PENDING tasks to available auditors from a dropdown list.
  + **Task Details Modal:** Provides a detailed view of any Work Task, including the specific Work Orders (items) it contains, without leaving the main screen.
  + **Pagination:** Efficiently handles a large number of tasks for better performance and usability.

### **6.2. Auditor HHD (Hand-Held Device) Panel**

A mobile-first web application designed for rugged hand-held devices, guiding auditors through the physical audit process.

* **Target User:** Auditor
* **Core Purpose:** On-floor data capture and execution.
* **Key Features:**
  + **Guided Workflow:** A step-by-step process that moves from task selection -> rack scan -> box scan -> item verification.
  + **Rack Validation:** Forces the auditor to be at the correct physical location by requiring a successful rack barcode scan. Includes a **"Skip Rack"** function to handle exceptions, which automatically flags the rack as "Unaudited" and creates a new Work Order.
  + **Item Detail Display:** After a box scan, it presents the auditor with the expected product details, including SKU, EAN, Batch, and an image for visual confirmation.
  + **Discrepancy Capture:** Provides dedicated input fields for Physical Count Qty and Damaged Qty, automatically calculating discrepancies against the system's expected quantity.
  + **Crate Workflow:** When handling **Excess** or **Damaged** items, the UI prompts the auditor to scan a separate Crate ID, ensuring physical segregation and accurate tracking of non-standard stock.

### **6.3. Supervisor Discrepancy Flag Panel**

A powerful web-based interface for resolving exceptions identified during the audit. It serves as the single source of truth for all inventory discrepancies.

* **Target User:** Supervisor
* **Core Purpose:** Discrepancy investigation and resolution.
* **Key Features:**
  + **Real-time Flag Dashboard:** All discrepancies flagged on the HHD appear here instantly for review.
  + **Advanced Filtering:** Supervisors can isolate flags by Type (Lost, Damaged, Excess, etc.), Status (Pending, Resolved, Rejected), Crate/WT ID, and Date.
  + **Tailored Resolution Modals:** Clicking "Resolve" on a flag opens a modal specific to that discrepancy type, presenting only the relevant information and actions.
  + **Guided Resolution Paths:** The system guides the supervisor through logical resolution steps. For example, when resolving an EXCESS flag, it first prompts a check for a matching "Lost" GON before allowing a fresh inward.
  + **Approve/Reject Workflow:** Provides a clear, binary choice to either **Approve** a flag (triggering a backend inventory process) or **Reject** it with a mandatory reason, ensuring full accountability.

## **7. End-to-End Operational Workflow**

The audit process flows sequentially through the system components in four distinct stages.

1. **Stage 1: Task Generation & Assignment (Assignment Panel)**
   * Work Tasks are system-generated from the Work Order table based on configured business rules.
   * They appear on the **Assignment Panel** as PENDING.
   * An Audit Manager filters for pending tasks and assigns them to an available Auditor. The task status transitions to ASSIGNED.
2. **Stage 2: On-Floor Execution (HHD Panel)**
   * The Auditor sees the ASSIGNED task on their HHD and starts the audit.
   * They navigate to the location, scan the rack, and then begin scanning each box within that rack.
   * For each box, they verify the product, count the quantity, and submit the data.
3. **Stage 3: Real-time Discrepancy Capture (HHD Panel -> Flag Panel)**
   * If an auditor's count or verification does not match the system data, a discrepancy is noted.
   * Upon submitting this discrepancy (e.g., a count of 8 when 10 was expected), the HHD application automatically generates a **Flag**.
   * This Flag immediately appears on the **Supervisor Flag Panel** with a PENDING status.
4. **Stage 4: Supervisor Review & Resolution (Flag Panel)**
   * A Supervisor reviews the PENDING flag on their panel.
   * They investigate the issue, potentially communicating with the auditor or checking other system data.
   * The Supervisor then makes a final decision to **Approve** or **Reject** the flag. This action is final and triggers the corresponding backend business process (e.g., inventory adjustment), changing the flag's status to RESOLVED or REJECTED.

## **8. Discrepancy Management Lifecycle**

This table details the complete lifecycle for each type of discrepancy, from auditor action to final business outcome.

| Discrepancy Type | Auditor Action (on HHD) | System Response & Flag Creation | Supervisor Resolution (on Flag Panel) | Final Business Outcome |
| --- | --- | --- | --- | --- |
| **Lost / Shortage** | Enters a Physical Count Qty that is less than the system's Expected Qty. | A **LOST** flag is generated for the deficit quantity. The audited item is marked as COMPLETE. | Opens the "Resolve Lost Item" modal. The Supervisor reviews the details and selects **"Approve & Create 'Lost' GON"**. | A Goods Outward Note (GON) is created, and the system inventory is adjusted downwards to reflect the physical reality. |
| **Damaged** | Enters the Physical Count Qty and specifies a non-zero Damaged Qty. The HHD then prompts for a **Crate ID** scan. | A **DAMAGED** flag is generated and linked to the scanned Crate ID. The remaining "good" quantity is processed, while the damaged quantity is queued for supervisor action. | Opens the "Resolve Damaged Item" modal. The supervisor confirms the quantities and damage reasons, then selects **"Approve & Process GON"**. | A write-off GON is created for the damaged stock. The remaining expected quantity is queued in the **"Manage Inward"** panel for reconciliation. |
| **Excess** | Enters a Physical Count Qty greater than the Expected Qty. The HHD prompts for a **Crate ID** scan for the excess units. | An **EXCESS** flag is generated, linked to the scanned Crate ID and the excess quantity. | Opens the "Resolve Excess Item" modal. The system first checks for a matching LOST GON. The supervisor **Approves** the resolution path presented (Recovery vs. Fresh Inward). | The excess stock is either used to fulfill a LOST GON (recovery) or is processed as a new item via the **"Manage Inward"** panel (fresh inward). |
| **SKU Mismatch** | The scanned EAN fails verification (eanVerificationState === 'fail'). The auditor submits the count for the incorrect item found. | A **SKU\_MISMATCH** flag is generated. The original, expected SKU for that box is internally flagged as "Not Found". | Opens the "Resolve SKU Mismatch" modal. The Supervisor enters the **correct SKU ID** and **Batch ID** for the found item and selects **"Approve SKU Updation"**. | The system triggers a backend process to update the inventory record, associating the found quantity with the correct SKU provided by the supervisor. |
| **Batch Discrepancy** | Finds a product with a different batch number than expected in the system. | A **BATCH\_DISCREPANCY** flag is generated with both the expected and found batch numbers. | Opens the "Resolve Batch Discrepancy" modal. The Supervisor has two resolution paths: <br>1. **Batch Creation:** Confirms the new batch ID and enters its Mfg/Exp dates. <br>2. **Batch Updation:** A webhook is triggered for the SWAT team to investigate and update manually. | An **API call is made to SAP** to create the new batch, or a **webhook is triggered** for a manual update. *The update itself is not performed in the UI.* |

**Handling of Damaged Qty Picked :**

1. **Review & Confirmation:** The Supervisor reviews the flag details, including the SKU, Batch, the quantity reported as damaged by the auditor (AuditorReportedDamagedQty), the reason (e.g., physical, expired), and the DamagedCrateID.
2. **Input GON Quantity & Type:** The Supervisor determines the actual quantity to be processed via a Goods Outward Note (SupervisorConfirmedGONQty) for a specific disposition (e.g., Scrap, Return to Vendor). They select the appropriate "Disposition GON Type."
3. **System Processing:**
   * **A. If AuditorReportedDamagedQty == SupervisorConfirmedGONQty:**
     + A GON of the selected type is created for the SupervisorConfirmedGONQty.
     + The inventory for this quantity is adjusted from its original system location (e.g., the audited box/rack) and posted to SAP according to the GON type.
     + The items physically in the DamagedCrateID are now fully accounted for by this GON. The flag is resolved.
   * **B. If AuditorReportedDamagedQty != SupervisorConfirmedGONQty :** 
     + (Typically, SupervisorConfirmedGONQty will be <= AuditorReportedDamagedQty, as items can't be GON'd if not physically segregated by the auditor).
     + A GON of the selected type is created for the SupervisorConfirmedGONQty.
     + The inventory for the SupervisorConfirmedGONQty is adjusted from its original system location and posted to SAP.
     + **The Discrepant Quantity (AuditorReportedDamagedQty - SupervisorConfirmedGONQty)**, which represents items physically moved to the DamagedCrateID by the auditor but *not* included in the immediate GON, is handled as follows:
       - These items (SKU, Batch, Discrepant Quantity, original WT ID as reference, and DamagedCrateID as their current physical source) are systematically made available on the **"Manage Return Inward Panel"** . (Over here the WT id will be the reference).
       - These items will appear on the Inward Panel in a status indicating they require further disposition or potential return to good stock (e.g., "Awaiting Disposition from Audit Crate").
       - The original 'DAMAGED\_ITEMS\_TO\_CRATE' flag is resolved (as the initial report has been actioned).
       - The items physically remain in the DamagedCrateID but are now represented in the Inward Panel queue for a separate operational process to action.

**Handling of SKU mismatch Case :**

In case of an SKU mismatch, a flag will first be raised against the respective box code. This will appear as a discrepancy flag in the flag panel. The user will then input the actual SKU(Mandatory) and actual Batch ID(Not Mandatory).

On the backend, the following steps will occur:

* The box will be marked as GON, with the type set to Audit\_SKU\_Change.
* The SAP response number will be used as a reference for the purchase ID.
* The old box code will be renamed following the format: boxcode\_asc.
* The updated details will be posted to SAP.
* The box will be mapped back to its previous rack ID.
* All existing details such as EXP/MFG dates and MRP will remain unchanged.

In case of selection of Batch Updation Request :

The action here will not be changed to Processed. Instead, a Resolve button will be available, which the user can click. After that, the user can again select the Batch Creation button, where a popup will appear containing a Close Request button.

This Close Request button will be manually selected by the user and will update the action status from ‘Awaiting SWAT Approval’ to ‘Resolved’.

Figma Link for Reference : <https://www.figma.com/design/RuDRXLFtWrgJBG5UUbqWQb/Untitled?node-id=0-1&t=5dgvSHfnETUBM0wL-1>

**Enhancement**

**Reassign and Hold Functionality**

Before the audit begins, the auditor should have the option to either reassign or hold the audit task:

Reassign: The audit task (Work Task ID) can be reassigned to another auditor. When this happens, the previous auditor will be unassigned, and the newly selected auditor will be assigned to the task.

Hold: The audit task can be put on hold. In this case, the current auditor is released, and no auditor will be assigned until the task is not unhold.  
  
**UI References :**

<https://www.figma.com/design/RuDRXLFtWrgJBG5UUbqWQb/Untitled?node-id=0-1&t=5dgvSHfnETUBM0wL-1>

UI :

Assignment Panel : <https://drive.google.com/file/d/1KypoDJ8TgBOkq5rs9oMbvDzTkf1-uhRX/view?usp=drive_link>

HHD Panel : <https://drive.google.com/file/d/1WBXeyKunBawRexBNVCWG6BWrhQNE_NCc/view?usp=drive_link>

Flag Panel: <https://drive.google.com/file/d/1cdigH5yLstkr3JQKXu-A7Mf9NC4c0Rnj/view?usp=sharing>