Integrated Assets Management / Inventory / Shipping/Receiving System
Scope Of Work (SOW)

Introduction

The Albuquerque Seismological Laboratory (ASL) operates equipment in over 60 countries around the world and maintains a depot in Albuquerque, NM. In order to effectively manage the equipment the ASL has a requirement to combine the functions of the Assets Management, Inventory Management and Shipping/Receiving databases into an integrated system.

The goal is to provide an easy to use system for tracking items (assets and inventory) from the initial order through the final disposal. Assets are defined as items uniquely identified with individual barcodes and/or serial numbers, while Inventory is defined as common items that exist in multiple quantities. The system must be user-friendly, based on pull-down fields, check boxes, and push buttons and radio buttons inputs for commonly used actions. The system must have an easy to navigate and intuitive user graphic user interface (GUI). A shallow learning curve is necessary for users who may need to use the system on short notice. It is desirable on entry forms to use color-coding of the changes on a form before posting the record to the database. Context sensitive help text must be available and editable by administrators.

The ASL currently has an assets database and a shipping database with an address book. These databases were developed as separate systems in MS Access. The ASL seeks a system that builds on this existing capability to create an integrated system and incorporates new features such as barcode scanners and printers to facilitate equipment control.

Overview

Functionally, the system will consist of several components:

- The Purchase Order (PO) component to track orders.
- An Equipment Glossary composed of all asset items identifying vendor(s), manufacturer(s), part number, equipment category, and, when available, a photograph of the item.
- The Asset component to track equipment by type, by location, by status and to review history, track failure and replacement rates.
- The Inventory component for managing like items that have no unique serial number.
- The Shipping/Receiving component to assemble a shipment from individual items with a Parent/Child/Grandchild scheme (i.e., Assets or Inventory items packed in Pieces, pieces packed in Crates, crates combine for a Shipment…)
- The Address Book component, containing all addresses to which we ship.

The system shall support multiple levels of user access. The access should be configurable by a "system administrator". At a minimum, the system should support read and read/write access for each component on a per-user basis.

The system shall support import of data in order to populate the databases with existing assets.

Data input shall be either through keyboard entry, barcode scanner or other data entry device.

The system shall also have the ability for users to design custom queries and reports.

The system shall generate output reports based on a subset of pre-defined queries (i.e. asset inventories, asset history, shipping documents, customs declarations, Shippers Export Declaration (SED), commercial invoices).

It shall be possible to develop additional user configurable reports for specific needs..

Printer outputs shall be commercial standard such as MSWindows compatible. Printer selections will be from the available printers on the ASL network.

Source code for the application shall be furnished to ASL. ASL may freely re-distribute copies of the source code to our operating partners or other interested parties. ASL and any parties that ASL distributes source code to may freely modify the source code as they wish.

Reports shall be generated by exporting query CSV results to commercial PC-based office software.

The system shall support Boolean-type queries in order to extract specific data for customized reporting.

Functional specifications
In the discussion below we identify key functionality as well as essential components of some of the database tables.

Purchase Order Component
This component shall allow the user to enter information about items ordered including PO number, delivery order number, vendor, project, and owner.

This component shall generate purchase orders in a set of specified formats.

As items are received, they will be migrated into the Asset or Inventory database and unique barcodes will be assigned, printed and attached to the items.

The system must also support entry of items that are deployed in the field and cannot readily have barcodes physically attached.
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Cloning or Batch Processing of these entries is necessary when multiple items of the same type are received under the same PO.

When all items are received, the entire PO will be archived.

Required queries and reports for Purchase Orders
>View or print purchase orders by PO number.
>View or print purchase orders by vendor and date or date range.
>View or print purchase orders by funding source and date or date range.
>View or print purchase orders by owner.
>View or print purchase orders by project.
>View or print purchase orders by specific Asset or Inventory item.

Assets Management Component and Equipment Glossary Component

The Asset component shall track equipment by type, by location, by status and to review history and track failure and replacement rates.

All station hardware exist in an Equipment Glossary, composed of all asset and inventory items identifying vendor(s), manufacturer(s), part number, equipment category, government property number, and, when available, a photograph of the item. There must be a way to easily attach files, such as calibration documents or spec sheets, to an asset.

It must be easy to add items to the Glossary and items must exist in the Glossary before they can be added to Assets or Inventory.

A list (table) shall be developed of tests necessary for specific Glossary item Assets which they must pass before they are deployable. These tests will be printed on a sticker that will attach to a sign-off tag on the asset. This list will be modified very often so a form for editing the type of asset and the tests required is needed. We will work with the developer to initially populate this list.

We must maintain the maintenance history for each asset including at a minimum: action date, action taken, by whom, location, current status. Easy information transfer from the Glossary as well as to the Shipping/Receiving Component is required.

The system shall support Child/Parent relationships (Hierarchical Assets Nesting or Kitting) with a top level assembly and two additional sub-levels are required. Location changes for the Parent asset also moves all related sub-level assets. Required Parent/Child relationship actions: Lock to parent, Unlock, Remove from parent, Reassign child to another parent.

The system shall track Mean Time Between Failures (MTBF) and Mean Time Between Replacement (MTBR) for like assets. This will also be used to determine the actual time an asset is in use or deployed at a location.

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Required data entry forms for Assets Management
> Add / Edit Glossary items.
> Add / Edit a new asset item.
> Add / Edit / Update asset history information, including any asset failures, repairs, test results, or location changes.

Required queries and reports for Assets Management
> History of an asset by serial number, including the maintenance or testing history.
> Current assets at a location.
> Current locations which have a given asset.
> Assets received by purchase order.
> Mean Time Between Failures (MTBF) for an asset or for like assets.
> View or print the Mean Time Between Replacement (MTBR) for an asset or like assets.
> Time in service an Asset was operational at a location(s).
> Receiving and Maintenance Tags for Asset showing tests required for deployment.

Inventory Component
The Inventory component is for managing like items that have no unique serial number. The database shall track the part number, alternate part number, description, SKU or UPC, cost, Unit of Issue (UI), vendor or supplier, last order date, last received date, quantity on hand and the re-order level as minimum fields of information.

The inventory of consumable parts will be used on a daily basis. Parts will not ship every day but forms for easy withdrawal and transfer to the Shipping/Receiving Component are necessary.

Item stock levels shall be calculated when the item is withdrawn from inventory.

Required queries and reports for Inventory Management
> Inventory items in a category.
> Items that have reached their re-order level.
> Inventory by selected locations.
> Empty inventory locations.
> Items received by Purchase Order.

Shipping/Receiving Component

Shipping
The ASL needs to be able to track shipments down to individual items. The Shipping/Receiving component will allow a shipment to be built from individual items with a Parent/Child/Grandchild scheme (i.e., Assets or Inventory items packed in Pieces, pieces packed in Crates, crates combine for a Shipment…).

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Each package of a shipment shall have the shipment number and its relationship to the total number of packages. For example: #5656 2/5 indicating package number 2 of 5 in shipment number 5656.

Every shipment shall have a unique identifier number with a barcode to be printed on all shipping documents. Every item in a shipment is linked to the shipment.

A form shall be used to enter or edit information for a shipment.

When the shipment is complete it shall be archived.

An administrator level of access shall be required to edit archived shipments.

Assets included in shipment are linked to the Assets Tracking Database where the current location and status shall be updated when the shipment leaves ASL. Inventory item levels would have already been deducted when the item was withdrawn from inventory.

There shall be a way to easily attach files to shipments is necessary. These may be graphic files to record the physical conditions of outbound or inbound shipments.

Required queries and reports for Shipments
> Select a shipment by date or shipments within a data range.
> Select a shipment by identifier number.
> Select shipments to a location by name.
> Select shipments to a location within a date range.
> Select shipments to a location within a date range and the costs.
> Report for a shipment in work for making pencil notes.
> Commercial Invoice (CI) for a shipment.
> Shippers Export Declaration (SED) for a shipment.
> Shipping Labels for boxes or crates View/Print a unique sticker for each package with a barcode.
> Report for shipments to a location within a date range and the total costs.
> Documentation for archived shipments by date.
> Documentation for archived shipments by shipment identifier.
> Documents for archived shipments by location / destination.
> Retrieve the data and re-create the shipping documents from the archive.

Receiving
When assets arrive that have been previously tagged with an ASL barcode they will be entered as "Received" in the Assets Management component. If the asset does not have an ASL barcode it will need to be assigned a barcode upon arrival.

Address Book

The Address Book component contains all addresses to which we ship (including stations, vendors, depots, and networks, for example). There shall be an intuitive interface for editing, updating and adding or deleteing these addresses.

Each address must be categorized for example; Stations, Manufacturers, Suppliers/Vendors, Repair Facility and other types of locations.

The listing shall include location, network code, complete delivery address, contact information, transshipment addresses including contact information for personnel at each location etc.

All locations shall include the complete address and transshipment addresses including contact information for personnel at each location.

A form interface shall be used to edit or update the Address Book information.

The preferred shipping method for each location; postal service, express courier, air freight, ocean freight, surface freight, etc. shall be easily selectable.

Notices to be displayed on packing and crating online forms as reminders for a particular location.
> Shipping size or weight limitations to a location (L x W x H and Weight)
> Maximum value declaration limit specific to this location
> Other restrictions for shipping

Required queries and reports for the Address Book
> Address Book pages for a single Location
> PDF files of specific pages or the entire Address Book
> Addresses from selectable categories