# Warehouse Management Overview

from

The Systems House, Inc.

# Warehouse Management Overview

- Business Benefits
- Wireless Solutions
- Warehouse Preparation
- Receiving and Put Away
- Picking and Replenishment
- Physical Inventory
- Inventory Movement & Adjustments
- Shipping and Delivery

# Benefits of MDS-WMS





- Improved inventory accuracy
- Improve personnel performance and accuracy
- Determine time to pick by individual
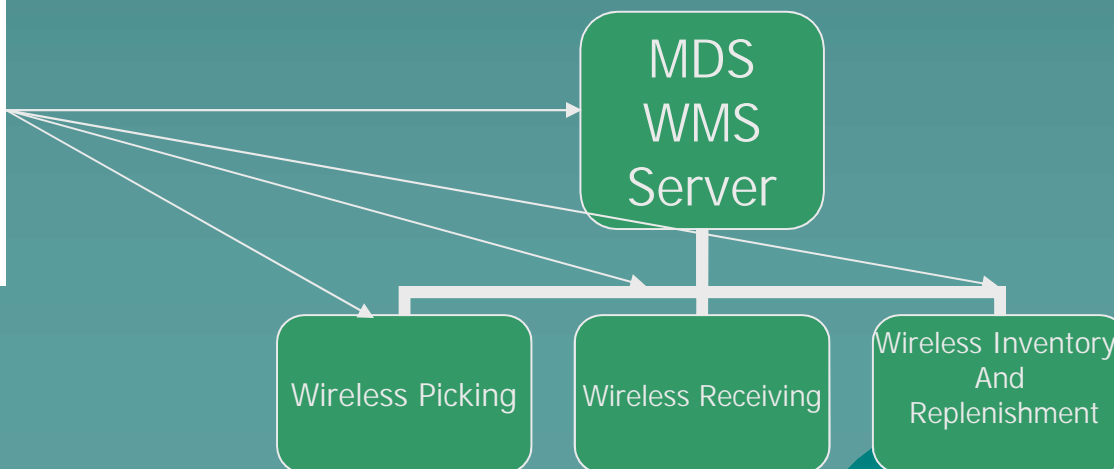- Better utilization of warehouse space
- More flexible scheduling

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# Wireless Warehouse Management Solutions

◆ Managing the Warehouse
  – Product or Location Bar Coding
  – Receiving and Put Away
  – WiFi or RF Picking
  – Replenishment
  – Shipping
  – Physical Inventory/ Movements / Adjustment

◆ Delivery Route Management (Standalone or Integrated
  – Manifest System
  – Proof of Delivery (Signature capture)
  – Package Tracking with Multiple Stops

# WiFi Equipment Schematic

# WiFi PDT Handheld/ Equipment

# Warehouse Preparation

◆ The Warehouse
  – Multiple Warehouses
  – Multiple Locations within warehouse
  – Primary & Backup Locations
  – Low Unit vs. Bulk Picking
  – Environmental & Security Considerations
  – Lot#, Serial#, Expiration Date control

◆ Product Barcoding
  – Manufacturer can label products
  – Significant cost to barcode Items upon receipt
  – Bar Codes do not define Unit of Measure
  – Alternate: Barcode Locations
  – Maintain Product by Location (one item per location)

# Warehouse Management Selector

# Location Control and Setup

**LOCATION MASTER FILE**

| Warehouse | 002 | CLIFTON, NJ |
|---|---|---|
| Location | A-001 | |

| | | |
|---|---|---|
| 1.Physical Location | PRIMARY PICK | |
| 2.Environment Code | 01 STD WAREHOUSE | |
| 3.Type | P | |
| 4.Size | | Note: Environment and Type cannot |
| 5.Limit | 0 | be changed if this Location |
| 6.Levels | 1 | is not empty. |
| 7.Bulk Pick | | |
| 8.Multiple Products | | |
| 9.Products | | |

| Products | | OnHand | OnHand Volume | % Capacity |
|---|---|---|---|---|
| ARWKSILF | STICK UP DEOD EVERGREEN | 50 | 3.000 | 25.00 |
| ARWKSU-L | STICK UP DEOD LEMON | 500 | 5.000 | 41.67 |
| GLVB650130 | GLOVE NS LTX SM PWDRFREE | 25 | 1.250 | 10.42 |
| | | | 0.000 | 0.00 |
| | | | 0.000 | 0.00 |

| | | | | |
|---|---|---|---|---|
| 10.Length | 48 | | | |
| 11.Width | 36 | Totals | 575 | 9.250 | 77.08 |
| 12.Height | 12 | | | |
| Total Volume (Cubic Feet) | 12.000 | | | |

ENTER LINE # TO CHANGE,DELETE TO DELETE,0 TO ACCEPT :  XXXXX

| HELP | OK/END | INSERT | LDELETE | PREV PG | NEXT PG | INQUIRY | CANCEL | Off | | | Popup |
|---|---|---|---|---|---|---|---|---|---|---|---|

# Inventory Information

File  Edit  Settings  View  Reset   Tools  GUI  FDA  Standard Functions  Special Functions  Help

**Product Detail Maintenance**

| Warehouse # | 002 | CLIFTON, N.I |
|---|---|---|

Product #    GLVE650130                    GLOVE NS LTX SM PWDRFREE

1.Last Cost

2.STD Cost

3.Message

4.OH Negative Ind          Y

5.Lot/Serial Logic         N                                       Loc

6.Auto Lot Select          U          16.Locations              Type

7.Unit/Len Qty             U

8.Cycle Count Code

9.Multi-Location Pick in Use   Y           1.   A-001        P

10.Solid Case Pick in Use      N           2.   A-006        D

11.Solid Case Maximum Pick                 3.   A-100

                                           4.

12.Primary Location Minimum        10

13.Primary Location Maximum        40

14.Solid Case Location Minimum

15.Solid Case Location Maximum

Enter Line# to Change, Delete to delete, OK to Accept:        XXXXXX        PAGE 1 OF 2

| HELP | OK/END | INSERT | LDELETE | PREV PG | NEXT PG | INQUIRY | CANCEL | Off | | Popup |

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# Receiving and Put Away

- ◆ Paperless receiving using Portable Data Terminals (PDTs)
- ◆ Recall Purchase Order(s) to PDT
- ◆ Receive to "Receiving Location"
- ◆ Inspect & approve receipt
- ◆ Put away merchandise and record bin locations using PDT based on
  - Available space in primary location
  - Existing backup location
  - Additional backup location
- ◆ Generate bar coded labels at receiving (Option)
  - Product Labels
  - Lot#, expiration date, weight
  - Pallet Labels
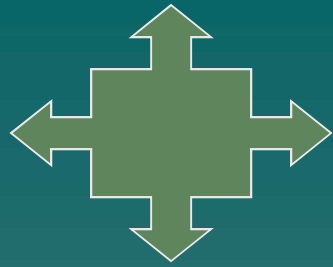
# WiFi or RF Picking

WiFi

- MDS splits order into bulk and low unit picks
- Warehouse manager assigns pickers
- Picker obtains next assigned order from PDT
- Display in pick sequence – picker can change sequence
- Picker verifies picked items & quantities by barcode (Item or Location)
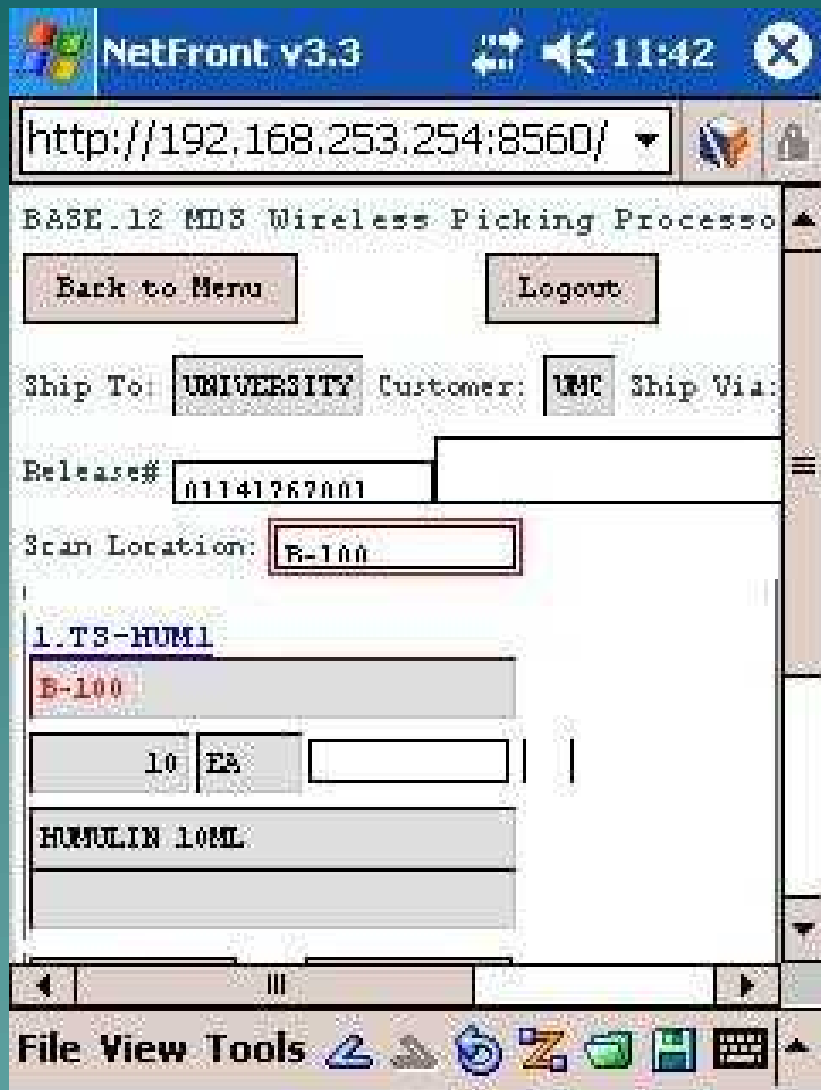- Discrepancies noted for review and correction
- Labor tracking by picker

# Picking Ticket Assignment

# Wireless Menu

## Customizable HTML Menu by Operator

# Wireless Picking Using Scanners
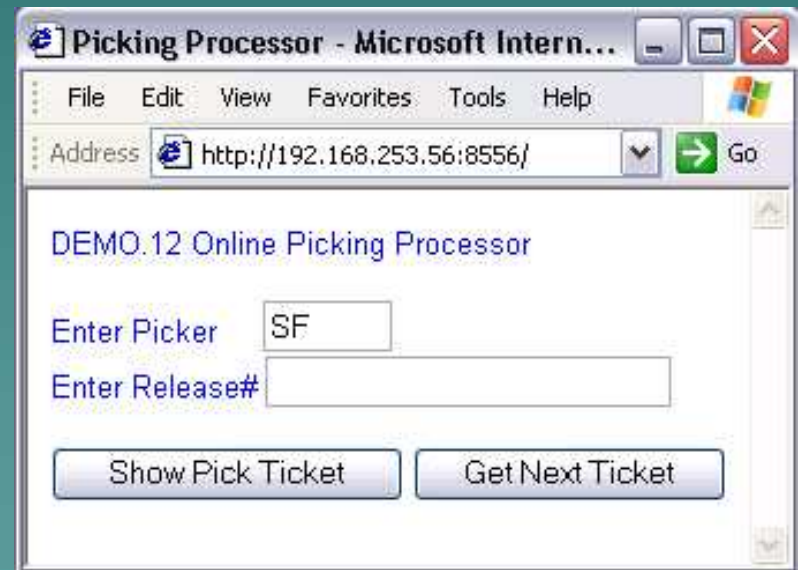
# Picker Statistics Report

| PICKER.... | LOGON.TIME | LOGON.DATE | TERMINAL.ID........ | LOGOFF.TIME | LOGOFF.DATE | ELAPSED.TIME | PICK.LINES | AVG.LINES. | PICK.QTY.. |
|---|---|---|---|---|---|---|---|---|---|
| 22 | 07:12:41am | 12/01/06 | 192.168.168.163 | 09:11:38am | 12/01/06 | 1.98 | 64 | 32 | 1023 |
| 22 | 09:12:41am | 12/01/06 | 192.168.168.178 | 10:38:28am | 12/01/06 | 1.43 | 89 | 62 | 1313 |
| 22 | 11:16:15am | 12/01/06 | 192.168.168.163 | 11:17:05am | 12/01/06 | 0.01 | 0 | 0 | 0 |
| 22 | 12:30:11pm | 12/01/06 | 192.168.168.163 | 01:30:29pm | 12/01/06 | 1.01 | 57 | 56 | 654 |
| 22 | 06:49:13am | 12/06/06 | 192.168.168.163 | 08:33:52am | 12/06/06 | 1.74 | 80 | 45 | 1733 |
| 22 | 10:06:53am | 12/06/06 | 192.168.168.198 | 10:06:53am | 12/06/06 | 0.00 | 0 | 0 | 0 |
| 22 | 10:08:03am | 12/06/06 | 192.168.168.163 | 10:34:50am | 12/06/06 | 0.45 | 29 | 64 | 269 |
| 22 | 10:35:21am | 12/06/06 | 192.168.168.163 | 10:42:55am | 12/06/06 | 0.13 | 8 | 61 | 69 |
| 22 | 11:20:30am | 12/06/06 | 192.168.168.163 | 11:56:10am | 12/06/06 | 0.59 | 42 | 71 | 408 |
| 22 | 11:59:12am | 12/06/06 | 192.168.168.163 | 12:43:58pm | 12/06/06 | 0.75 | 33 | 44 | 355 |
| 22 | 12:47:11pm | 12/06/06 | 192.168.168.194 | 01:06:02pm | 12/06/06 | 0.31 | 7 | 22 | 38 |
| 22 | 01:23:57pm | 12/06/06 | 192.168.168.194 | 02:33:19pm | 12/06/06 | 1.16 | 43 | 37 | 531 |
| *** | | | | | | 9.56 | 452 | 47 | 6393 |
| | | | | | | 9.56 | 452 | 47 | 6393 |

# Replenishment Process

- Daily and Just in Time replenishment
- Daily – Restock all primary pick locations up to pre-determined level (i.e. 2 days supplies)
- During day – replenish locations falling below minimum
- Transfer request generated on paper & electronically
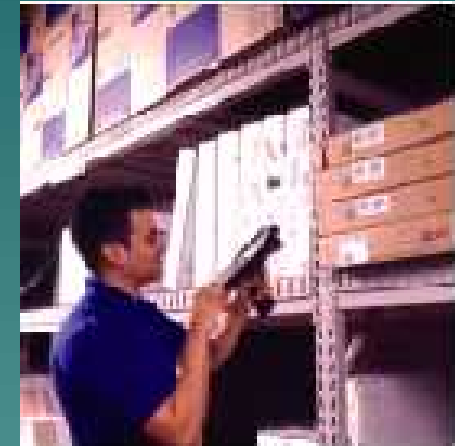- Transfers verified by barcode (Item or Location)

Stock Falls Below Minimum Levels

Transfer Request is Automatically Generated

Transfer is Picked and Verified by Barcode (Item/Location)
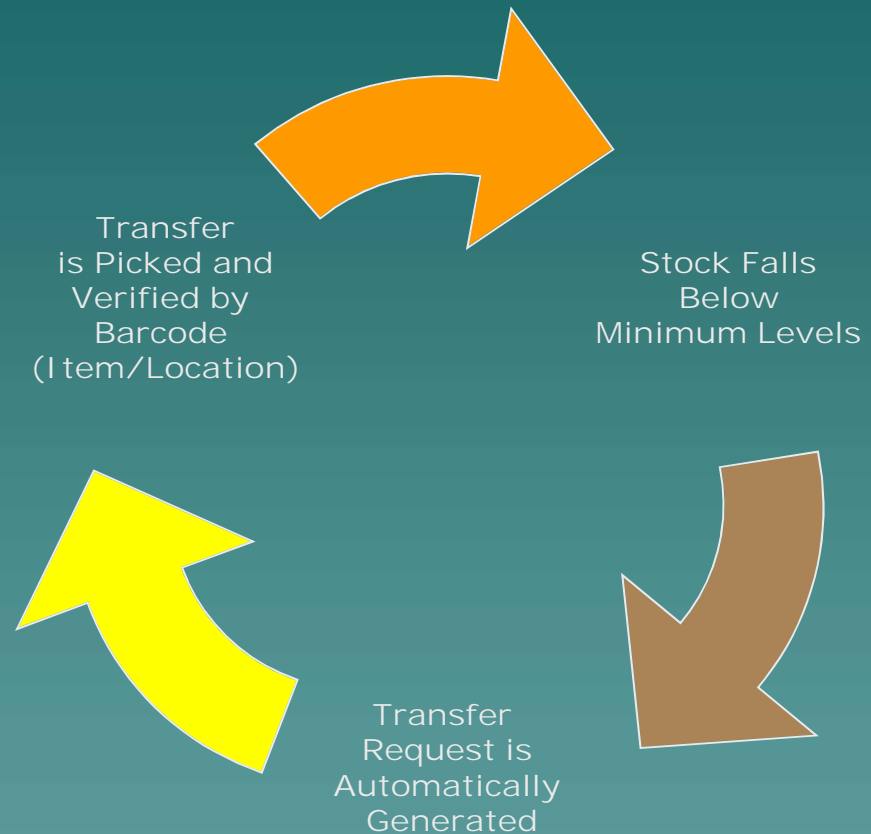
# Replenishment



- Transfer ID is scanned.
- On the replenishment picking, each "from" location is scanned.
- On the replenishment put-away, each "to" location is scanned.
- After scanning the "to" location,  the product is moved in the system to the new location and an inventory audit is created.

# Warehouse & Inventory Procedures

◆ Other Procedures
- Cycle Counts
- Physical Inventory
- Inventory Adjustments

*mds* **Warehouse**
from The Systems House, Inc.

# Physical Inventory

# Physical Inventory

## Scan tag, location or product and enter counts.

# Inventory Movements & Adjustments

# Shipping and Delivery

- Warehouse picks, packs, and verifies orders
- MDS WMS has two methodologies available– for customers who deliver via
    - Customer owned trucks
    - Third Party Shipping systems
    - (UPS, FedEx)
- Either approach generates shipping papers, carton labels and ASN's as result of shipping operation

# Shipping Interface

- Warehouse picks, packs, and verifies order
- MDS includes interface to Third-Party Shipping Systems (UPS Worldship, FedEx, DHL, Kewill)
- Carton placed on shipping scale
- MDS provides shipping information to manifest system (address method of shipment etc.)
- Manifest System uploads tracking number, number of cartons, weight and cost
- Based on customer profile MDS applies shipping charge to invoice
- Invoice or Pack Slip printed at the shipping station
- Shipment status inquiry available from within the MDS application

# Shipment Drill Down

# Package Tracking

# Delivery Master

- Initial routing information in the customer file
- Warehouse picks, packs, and verifies order
- Bar code label generated for each package
- Shipping manager reviews truck loads and adjusts routes and stops (initially assigned from customer profile) based upon schedule, truck loading etc.
- Paper manifests are printed to serve as a backup if needed

# Routing Information on each Order

# Truck Route Assignment



WinMDS_RS6000 - [rs6000d.tshinc.com-3756 demo.12-MANIFEST.XREF.MAINT012$1]

File   Edit   Settings   View   Reset   Tools   GUI   PDA   Standard Functions   Special Functions   Help

**Daily Manifest Maintenance**

| Truck Route | NY | NY ROUTE | | Ship Date | 10/05/04 |

| LN# | RELEASE# | Customer | Route | Stop | SHIP DATE |
|-----|----------|----------|-------|------|-----------|
| 1 | 01141688001 | UHS | NY | 15 | 10/05/04 |
| | | UNIVERSAL HOSPITAL SERVIC | NY ROUTE | | |
| 2 | 01141687001 | UHS | NY | 15 | 10/05/04 |
| | | UNIVERSAL HOSPITAL SERVIC | NY ROUTE | | |
| 3 | 01141686001 | NYU | NY | 12 | 10/05/04 |
| | | NEW YORK UNIVERSITY | NY ROUTE | | |
| 4 | 01141685001 | NYU | NY | 12 | 10/05/04 |
| | | NEW YORK UNIVERSITY | NY ROUTE | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |

ENTER LINE # TO CHANGE,DELETE TO DELETE,0 TO ACCEPT :          Xxxxxxx

| HELP | OK/END | INSERT | LDELETE | PREV PG | NEXT PG | INQUIRY | CANCEL | | | | Popup |

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# Loading the Truck

◆ Each carton is scanned as truck is being loaded to insure that all packages have been loaded on the right truck.

◆ Driver downloads the electronic manifest to handheld device, enabling the device to record delivery and stop information

# PDA Displays Manifest by Route and Stop

# Customer Deliveries

◆ Driver scans each carton's barcode as it is being delivered to insure that the right boxes are being delivered, and that no cartons have been missed.

◆ Driver captures customers' signatures on the handheld device

◆ Upon return, the device in placed in cradle (docked) mode, the signature and delivery information is uploaded to the server when the truck returns to the warehouse

# Driver Route Management

Delivery information is captured on each driver's handheld device. Upon return information in the handheld device is uploaded to the MDS system.



Signature data is uploaded upon driver return to the warehouse.

# Benefits of Delivery Master

– Improved delivery service
– Ability to capture signature when packages are delivered.
– Provides Proof of Delivery
– Insure that all packages have been delivered to the right customer.
– Maintain history of all packages delivered by customer and driver.

# Benefits of MDS-WMS

- Improved inventory accuracy
- Improve personnel performance and accuracy
- Determine time to pick by individual
- Better utilization of warehouse space
- More flexible scheduling