Real-Time Warehouse Management

Dynamics Software Real-Time Warehouse Management for Microsoft Dynamics™ AX supports your logistics processes with extensive functionality for goods receipt; put-away bulk storage and picking warehouses; replenishment orders; inventory movement; order picking; packaging and shipment confirmation; cross docking; item tracking; real-time cycle counting; and returned items.

Real-Time Warehouse Management is completely paperless and fully integrated with Microsoft Dynamics™ AX. This software is critical to successful implementation of "Real-Time Enterprise", where all data is accurate and available immediately.

Main benefits:

- Fully integrated ERP and WMS functionality in one single system facilitating seamless operations, reduction of potential redundancies and elimination of inventory discrepancies

- Mature WMS functionality supporting both logistics and financial warehouse management processes extensively

- Complete paperless operating warehouse system supported by barcode scanning; PDA's controlling and registering all logistics; financial processes; and transactions real-time

- Support of both License Plates warehouses as well as single item warehouses

- Reliable production and purchase proposals as a result of real-time actualized inventory information

- Improvement of order fulfillment rates; accuracy; and cycle times resulting in fewer returned items, unpaid invoices and charge backs
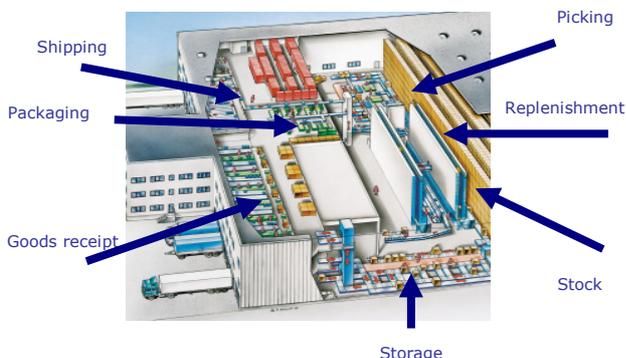

Figure: Overview WMS Processes

- Increased customer satisfaction & retention; generation of positive referrals and enhancement of reputation

- Quick and reliable registration of data supported by barcode scanning and/or RF devices or RFID systems; minimization of data entry errors resulting in optimization of labor resources, synchronization of product movement, and reduction of paperwork

- Increased efficiency and productivity with "voice directed order picking" feature

- Insightful intelligence about capacity of warehouse employees and materials facilitating optimal usage of resources

- Simplified item and location control

- Optimization of put-away routes based on system determinations of item and location criteria.

- More efficient time management through determination of optimal storage location and reconfiguration of different warehouse tasks (a.o replenishment, bulk picking)

- Increased warehouse and storage utilization through more efficient bulk storage, timely replenishment proposals and optimal picking routes

- Complete Tracking & Tracing of all movements

- Intelligent system determinations minimize item searches and facilitate lower safety stock levels

- Meets customer specific and outbound transportation requirements with product identification options, load documentation, parcel manifesting support, and bill of lading information.

Support of all WMS-processes

One of the major characteristics of Real-Time Warehouse Management is the offering of mature WMS-functionality and the complete integration with Microsoft Dynamics™ AX.

Because a separate WMS system interfaced with Microsoft Dynamics™ AX is no longer required, users can take advantage of the benefits offered by integrated systems: actual, accurate and reliable data stored and edited in one database.

A second important characteristic of Real-Time Warehouse Management is the usage of wireless handheld terminals, including barcode scanners, to register and process all transactions. Managing and informing the warehouse workers is also done via handheld terminals, realizing

optimal anticipation to actual circumstances continuously. This allows better management and coordination of put-away and pick-up routes preventing empty drives.

Logistics model
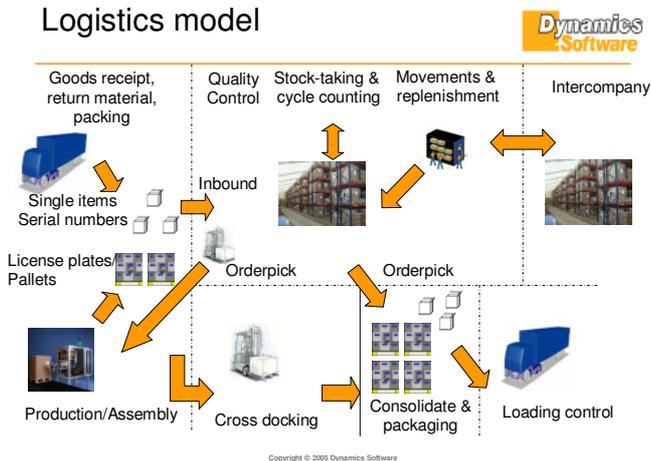
Figure: Goods Flow Real-Time Warehouse Management

Real-Time Warehouse Management offers extensive functionality for all warehousing or distribution center processes. Real-Time Warehouse Management supports palletized (or other license plates) environments but also single item environments or mixed situations in parallel. For each item, it is possible to define if batch or serial numbers should be used.

Goods Receipt

Users can receive goods from purchase orders or production orders. It is possible to use Advanced Shipment Notifications (ASN), reducing the time to create and scan the pallet label, Serial Shipment Container Code (SSCC).

Real-Time Warehouse Management supports the usage of quality management. Users can execute inspections (the system will instruct the warehouse worker to move goods to the inspection location) and register several quality codes. Recording various kinds of pallets and packaging with different dimensions is possible.
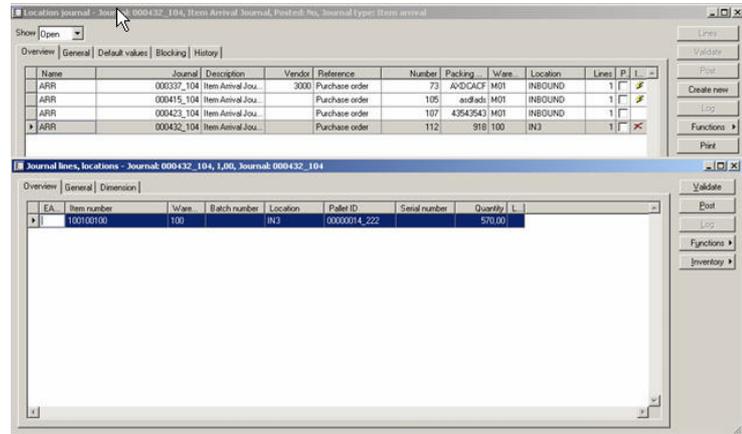
Figure: Goods Receipt Journal

Put-Away Storage

After acceptance of the goods, the system will create tasks to store the received goods into the warehouse.
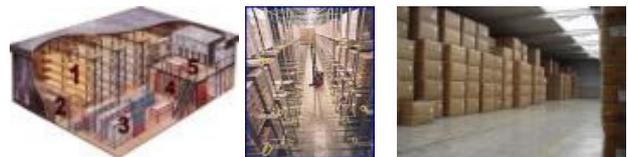
The system is able to define separate bulk and pick-up locations. Real-Time Warehouse Management will define the best available storage location, calculate turnover rates of each item and optimize warehouse routing.
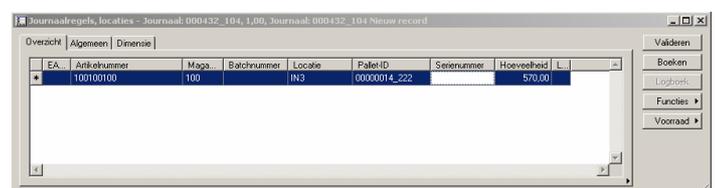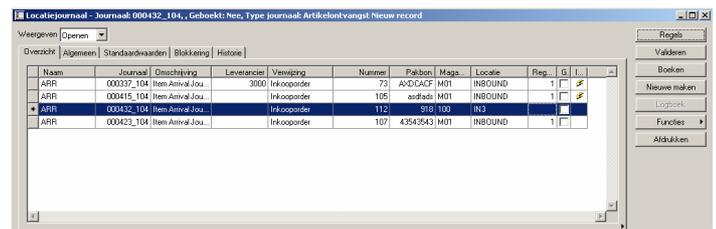

Figure: Location Journal

Replenishment, Inventory Movements

Real-Time Warehouse Management creates automatically generated tasks for movements from bulk storage locations to the picking locations. These tasks are created with intelligence in order to reach the service delivery levels with the customers.
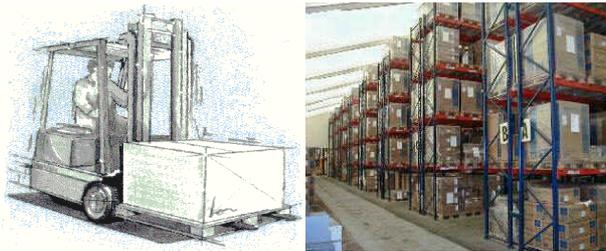
Order Picking

Naturally Real-Time Warehouse Management offers extensive support for the order picking process, both for sales orders as well as for production orders. Also support for optimization of picking routes, parallel picking of multiple orders and picking of order lines until shipment is complete.

Real-Time Warehouse Management offers insight in the quantity of the work in progress and the required capacity in order to scale up or scale down resources in time. Goods can be blocked in order to avoid sending them to customers, one can think of passing the expiration date.

Cross-Docking and Outbound Shipping

Direct deliveries of received goods without storage in the warehouse (cross docking) are also supported. Real-Time Warehouse Management enables you to finalize orders for shipment. Besides controlling the order pick teams, it is also possible to instruct them and send management attentions, like packaging advisements or other workflow actions (i.e. assembly). Printing of packing and freight slips and routing the shipments to the right dock shelter for truck loading is fully supported. Meet customer specific and outbound transportation requirements with product identification options, load documentation, parcel manifesting support, and bill of lading information.

Returned Items

Tracking of returned items to suppliers or from customers is supported. Received returned items can be automatically blocked or placed in quarantine to avoid transport and a work order for inspection control can generated before definitive acceptance. After approval, the returned items can be registered in inventory.

Barcodes

Crucial for today's warehousing is the extensive possibility to print barcode labels for items, pallets and packaging. Real-Time Warehouse Management supports a number of standard barcode labels (EAN-128 or Odette standard), but also enables customers to create and use any label required.

Pallet label EAN 128

Making use of barcode scanning enables customers to incorporate control checks in each process. This avoids storing items on the wrong location or picking wrong items. Fewer errors in logistics processes mean fewer errors in

customer delivery performance. This will reduce customer complaints, returned items, and unpaid invoices. Simply put, more satisfied customers and repeat business translates into increased revenue.

Paperless Operation and Managing the Workforce

Real-Time Warehouse Management is 100% integrated Microsoft Dynamics™ AX warehouse management system enabling paperless operations in all logistics processes.

Logistics processes at the shop floor can be controlled via handheld or reach truck terminals. Logistics transactions are registered through scanning of barcodes of items, packaging and locations.
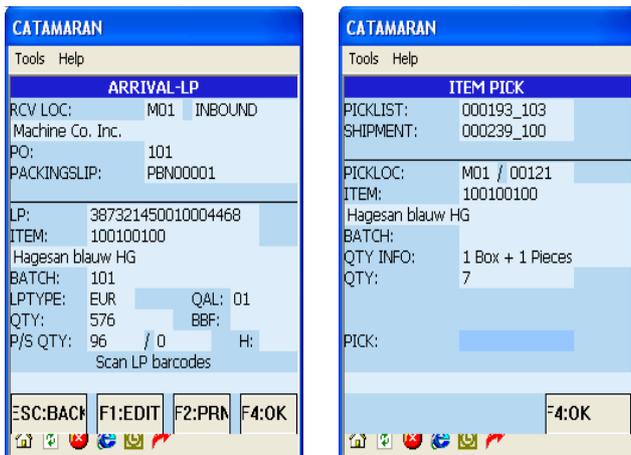
Figure: Screen Dump PDA

For example immediate registration of pallet, license plate or item transport (inbound, outbound, replenishment or location change) is done by scanning the barcode sticker on the item, on the old storage location and the new storage location. It is not necessary to edit the item and location number in the warehouse office afterwards. Barcode scanning of items or pallets at goods reception is sufficient for administrative registration of the items in inventory at once. The system will generate location advisements that can be overridden as necessary.

Real-Time Warehouse Management automatically generates work orders for the warehouse workers encountering orders being executed (distance, type of work, size of loading unit, warehouse type). Even if Real-Time Warehouse

Management receives several orders, these orders will be divided in single instruction orders and dispatched to the warehouse workers. Real-Time Warehouse Management is integrated with the Microsoft Dynamics AX modules WMS I and WMS II.

Improved Inventory Management

The integration of ERP and WMS not only enables customer to register inventory accurate, but to control and manage inventory. Besides registering which items will enter or leave the warehouse, the system will calculate the optimal required inventory level of an item and define the optimal purchase order levels.

Management Information

Real-Time Warehouse Management supports extensive analyses of:

- Order pick efficiency per employee
- Bulk storage utilization
- Reach truck usage
- Returned items cause analysis
- ABC classification of locations and items
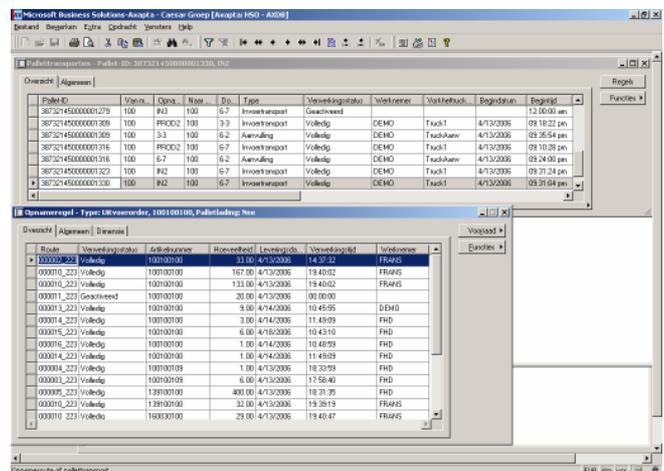
Figure: Report Pallet Transport Picking

Error Reduction and Value Added Logistics

Usability is key in order to avoid errors as much as possible. By means of Value Added Logistics, functionality items can have special treatment instruction during or after picking, like adding cables, user's manuals in a certain language, a promotion sticker, etc. This instruction will be visible on the PDA during the order picking.

These attention codes will be automatically activated for a pre defined (set of) customers during a defined period. These notifications can also be used for typical item related instruction like 'Please wear gloves' or 'Extra cleaning' if a

certain customer complaint about last time delivery. If customers check their latest errors and customer complaints more potential applications will be found.

The major features:

- ERP and WMS integrated into one system; this eliminates inventory differences

- Usage of wireless handheld and reach truck terminals with barcode scanner enabling complete paperless operations

- Combination of both Pallet / License Plate items (with unique packaging codes) i.e. item quantity environments

- Usage of dangerous goods (hazardous material) classification

- Volume accelerator factor for stackable items

- Simple management of item data per warehouse

- Forecast overview of required warehouse capacity in order to improve planning and scheduling of warehouse workers and other resources

- Support of barcodes on pallet, item and 'omdoos level

- Support of RFID and Voice-Directed Order Picking

- Support of ASN's (Advanced Shipment Notification)

- Support of Odette labels

- Support of SSCC labels

- EDI connection

- Ability to create customer specific labels or instructions on the PDA for the end user

- Third party logistics support

- Ability to promise based on turnaround time and required delivery dates

- Improved bulk storage advisements. For example, the bulk location closest to the pick location is selected as the refilling pick location after consideration of limitation factors like temperature control or storage without light, etc.

About Dynamics Software

Dynamics Software Real-Time Warehouse Management is developed and maintained by Dynamics Software AG. Dynamics Software is a certified Microsoft Dynamics™ AX Independent Software Vendor (ISV). For more details you can contact the Dynamics Software Sales team.

Microsoft Dynamics™ AX is developed by Microsoft Corporation and marketed and distributed worldwide.

This information is based on Dynamics Software Real-Time Warehouse Management for Microsoft Dynamics™ AX, version 4.0 and 3.0. The solution is available in multiple languages.

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Dynamics Software Real-Time Management for Microsoft Dynamics™ AX

Main Features	Description
GOODS RECEIPT	♦ Advanced Shipment Notification (ASN's) ♦ Scan pallet label (SSCC) ♦ Receipt from purchase order ♦ Receipt from production order ♦ Weight control ♦ Support of dangerous/hazardous goods classification ♦ Quality Management (inspections) ♦ Registration on quality code ♦ Insight in available locations ♦ Inbound advisements ♦ Direct delivery as shipment ♦ Instructions /notifications
STORAGE	♦ Location management ♦ Definition of pallet types and different sized packaging ♦ Inbound advisements to bulk storage ♦ Inbound advice to order pick locations ♦ Ability to keep items from transport or place them in quarantine ♦ Print location labels ♦ Print pallet labels ♦ Volume factor for stackable items
REPLENISHMENT	♦ Planned replenishment ♦ Refill advisements ♦ Elimination of empty rides through optimization of put-away and pick-up routes
ORDER PICKING	♦ Paperless and Real-Time order picking ♦ Usage of PDA's ♦ Barcode support ♦ RFID support ♦ Voice-Directed Order Picking support ♦ Simultaneous picking of multiple orders from different locations ♦ Outbound advisement from bulk storage ♦ Instructions/notifications ♦ Print labels for items ♦ Route optimization
CROSSDOCKING AND SHIPPING	♦ Direct deliveries from goods receipt ♦ Packaging ♦ Preparation for outbound pallet, license plate or item transport ♦ Instructions/notifications ♦ Printing freight slips and labels

Data summary sheet

Dynamics Software Real-Time Warehouse Management for Microsoft Dynamics™ AX

Main Features	Description
RETURNED ITEMS	♦ Tracking of returned items from customers ♦ Tracking of returned items to supplier
BARCODES	♦ Workflow control steps ♦ Item and packaging level ♦ Pallets ♦ Locations ♦ Support industry standards (EAN 128, et cetera)
MANAGEMENT INFORMATION	♦ Standard and user specific queries ♦ Standard and user specific reports ♦ Pick efficiency per employee ♦ Bulk storage utilization ♦ Reach truck usage ♦ Returned items cause flow analysis ♦ ABC classification of locations and items ♦ OLAP ♦ Documents per order
INTEGRATION	♦ Microsoft Dynamics™ AX: WMS I ♦ Microsoft Dynamics™ AX: WMS II
REMAINING	♦ Inventory registration, control and management ♦ Optimized warehouse and asset management ♦ Extensive inventory cycle counting and item tracking functionality including inventory valuation ♦ Direct registration pallet, license plate or item transport (inbound, outbound, replenishment or location change) ♦ Seamless inventory journals from warehouse to warehouse or location ♦ Simplified maintenance item data per warehouse ♦ Combination of Pallet / License Plate items (with unique packaging codes) like item/quantity situations ♦ Odette label support ♦ Improved Serial Shipment Container Code (SSCC) label support ♦ EDI interfacing ♦ Ability to create customer specific labels or instructions on the PDA for the end user ♦ Basic support of third party logistics ♦ Ability to promise based on turnaround time and required delivery dates ♦ Improved bulk storage advisements. For example, the bulk location closest to the pick location is selected as the refilling pick location after consideration of limitation factors like temperature control or storage without light, etc.