

## DNA ERP – Warehouse Management System

### DNA ERP Warehouse Management System

The Warehouse Management System (WMS) product is developed by ITACME Informatica for the full coverage of the logistic needs of a company.

The product is divided into following sections:

- Acceptance logistic
- Stock logistic
- Production withdrawal logistic
- Production deposit logistic
- Logistics of customer shipments
- Outsourcing logistic

The purpose of all procedures is to perform all logistic steps which are carried out, daily, in the different company departments and which only a marginal part are handled in the ERP. The basic philosophy of all WMS applications is to collect management data from the physical steps carried out in the factory or in the warehouse recording them in the ERP, when needed.

As a direct result you will get a higher timeliness and accuracy of management, because the data is taken directly from the source and not inserted later into the system.

The different modules have functionality dedicated to:

- Environment parameterization
- Handling lists
- Application functions for mobile devices

It should be stressed that developed functions for the mobile can be used in client mode (PC), with the obvious operating limitations due to windows which are designed to operate on small screens.

Mobile applications require the RDP client (Remote Desktop Protocol) and Windows Server sessions with Terminal Server, but do not require any installation on the mobile itself.

### Integration of WMS with DNA MS

The WMS procedures interact directly with the database of DNA MS. It is never necessary, therefore, a duplication and redundancy of data with ERP, as the database is shared. For the same reason there is a real-time alignment of data between logistics and warehouse bookings.

For batch items the necessary data are automatically recognized and managed both by DNA MS and WMS, thus ensuring absolute control of both the logistics and bookings created by batch transactions; for these items batch quantity reservation can be useful both to suggest the items to be submitted to the picker and to handle the quantity before the physical withdrawal.

## DESCRIPTION OF MODULE FUNCTIONS

### Acceptance logistics

It allows you to control and detect the typical activities of incoming acceptance from purchase order or outsourcing. It allows the creation of loading units and the detection of compliant and non-compliant quantities.

The procedure is based on acceptance lists automatically created by document inserting or subsequently created by the head of acceptance department. For batch items the loading units are tracked.

The acceptance procedures interact with DNA Quality Management System.

### On-hand logistics

It is used to detect the activity of planting, the content transfer from one to another loading unit, the adjustment of quantities on the loading units, the

transfer of loading units from one area to another area, the list of loading units out of place, printing of labels.

Handling activities carried out by mobile applications, in particular for the transfer between zones of different accounting warehouses, automatically create transfer documents useful for the alignment of inventory accounting in DNA MS.

#### Logistics of production withdrawals

Used to handle and detect all picking activities for items required by production, included the missing parts and automatic warehouse handling. It is able to carry out both the transfer to production line that the direct discharge to production.

Handling activities carried out by mobile applications, particularly for the transfers between zones of different accounting warehouses, automatically generate transfer documents necessary for the realignment of inventory stock in DNA MS.

#### Logistics of production deposits

It allows to detect the production orders deposit, inserting loading units of compliant and non-compliant quantities, the emptying of the production picking loading unit and automatically provides the data to the production advancement procedure of DNA.

#### Logistics of customer shipping

It allows you to detect and control activities related to picking of products required by the customer orders, the handling of missing parts, the dealing with automatic warehouses, the management of packaging stages and loading units, the creation of shipping documents.

#### Logistics of outsourcing

It enables you to detect and control activities related to the picking of required items by the outsourcing orders, the phases of packing and closing of packages, the loading lists management, the creation of shipping documents.

In the current version the lists of picking and packing, necessary in order to send the packages to the outsourcer can be obtained in three different places, to allow a choice as much as possible adapted to business needs:

- From the manufacturing documentation print (print production operations).
- From the specific window of Warehouse Management module.

From a specific function located in the context menu of the detail of the outsourcing order. After picking the shipment is completed by creating a packing list and a corresponding transfer document that can be obtained by:

- From loading lists management (as per shipping sales).
- From the Packing List management and automatic creation from "Advanced Document Management" module.

### Product architecture

WMS module is developed as an extension of DNA Manufacturing Solutions, sharing the data base. Thus you do not need data integration or migration for ERP, effectively eliminating the weakness of external systems. It should be pointed out, however, that WMS application also has its own autonomy and only if it is necessary it automatically produces bookings affecting warehouse accounting. All mobile applications are able to read a bar code that represents one of the following entities of DNA/WMS:

- Item Code-variant-version
- Batch ID and number
- Serial number
- Document header and row
- Manufacturing order ID
- Production order references
- Code of logistic zone
- WMS Site code

- DNA MS Site code
- Loading unit code
- Package ID and number
- DNA EAN code

WMS procedures are based on the following hierarchy:

**Zone.** It is a code that identifies a logistics area. An area belongs to a DNA deposit. The transition of items between zones belonging to different warehouses always triggers an automatic transfer document, to balance inventory accounting. The zones can be of different types:

- Acceptance
- Stock
- Picking (of different types)
- Packing
- Shipment waiting
- Loading transports

**Locations.** It is a code that identifies a portion of a zone. A location may contain more loading units, but a loading unit resides, in the same instant, in a single zone. The locations of the WMS product are independently managed by the modules.

**LU (loading or handling unit).** The LU are "containers" of parts, no matter how many or what kind, identified by a unique code, represented by a bar code. The LU can be created automatically by the WMS applications. For each LU WMS systematically traces:

- Codes and on-hands contained in the locations.
- The exact position (zone and location).

- The status. Can be used to define it is assigned to a user or can contain particular items (scraps).

The product can use the LU explicitly or implicitly: the explicit use is made by bar codes reading; the implicit use is made by other particular procedures.

### Mobile users

They are the users enabled for mobile applications use. They must be DNA users and must have enablement for WMS module.

### Handling lists

Logistic handling (transaction) can arise from different reasons, which often match with data already present in the ERP. The handling lists (picking and packing) are produced by the same procedure and the creation rules are partially configurable.

The lists types are the following:

- Acceptance picking lists
- Shipping picking lists
- Shipping packing lists
- Transport handling lists
- Production picking lists
- Production deposit lists

### Picking lists

The picking lists are differentiated by type and encoded in a specific table, in which you can set:

**Separate Management missing.** These lists allow to keep stored the failure of one or more picking. Even when picking is finished, the items identified as "missing" are contained in the list so you can manage them.

**Stock LU.** These lists contain bulky / heavy items which must be handled through special equipments (trucks, cranes etc.). The system tracks the transfer in the destination areas and uses the available quantity during the tips of path for the picker.

**Immediate packing.** These lists contain items already packaged or which can easily be packaged. For these lists a deferred packing is not available.

**Authorized by the packing.** These lists are activated directly by packers when needed.

**Automated warehouse.** These lists contain items of automatic warehouses, for which the confirmation of picking is waiting in specific software interfacing tables.

**Virtual LU.** These lists fill in virtual loading units, so they are not handled with a barcode identifier.

### Packing lists

The packing lists are created according to system rules. They are used for loading steps and to define shipment packages. A packing list may refer to a single destination, but may feed on many picking lists.

### Loading lists

They are used by the system to manage the means loading. Loading lists are populated by packing lists or any part of them. A loading list refers to a single mean and can contain packages with different destinations. The loading list, when confirmed, can generate the "Packing list" document from which the transport document or the invoice can be obtained.

### Production deposit lists

They are used by the system to manage production deposit steps. They are automatically generated by the WMS upon request of the mobile user. These lists, if advanced with statements of compliant or scrap parts, trigger the creation of loading units and the production advancement steps with the method called "SFC" in DNA.