

**Version 1.1**

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Abstract

**In organizations with significant stocking volumes, it is imperative that a formal warehouse Management System (WMS) be in place. This, to ensure good governance and service levels to dependent sub systems are maintained.**

Warehouse Management

*Describe the purpose & functions found in the ePart Warehouse Management Environment*

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# Document approval and distribution list

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# Introduction

Stock assurance is a requirement, especially at year end where the Organisations stock is to checked for presence.

# Audience

Procurement

Receiving

Sales

Accounts receivable

# Objectives

<https://en.wikipedia.org/wiki/Warehouse_management_system>

A warehouse management system (WMS) is a software application, designed to support and optimize warehouse functionality and distribution centre management. These systems facilitate management in their daily planning, organizing, staffing, directing, and controlling the utilization of available resources, to move and store materials into, within, and out of a [warehouse](https://en.wikipedia.org/wiki/Warehouse), while supporting staff in the performance of material movement and storage in and around a warehouse.

In the ePart system, this is developed in-house whereas there are numerous instances found in the industry where so-called ***best of breed*** WMS systems are deployed separate from the rest of the ERP implementation. This deployment model requires integration services to sustain cohesive sub-system integrity and often a source of risk during sub system upgrades

# Dependencies

WMS systems cannot operate in isolation, especially in the area of planning and optimisation. In this aspect ***procurement*** plays an active role requiring insight to goods in transit with supplier delivery cycles and advisories being influencers on key performance measurements.

Customer orders, delivery requirements and stock profiles have a decided impact on warehouse space organisation and resource planning.

Customer order fulfilment optimisation is essential when looking at the picking processes. Pickers need to be directed to the stocking items in a manner that provides an efficient stock movement profiles and in the event of pick failures, have access to resources to obtain an equitable solution.

Key to a well governed warehouse is the space utilisation, appropriate stock storage facilities and well-trained staff.

I the ePart system, most functions related to warehousing will be found under the menu item ***Stock***.

Ensuring that goods ordered by customers is well organised and is despatched on time, using the appropriate service provider and controlling that customer delivery expectations are met with.

# Business Flow

Insert diagram as a part of the end to end business flow diagram

# Detail description of functionality

* 1. Warehouse overview

The ePart sub-system is designed around the need to support multiple warehouses in the same governing legal entity. The number of warehouses is unlimited and usually defined using a 3-character designator i.e. BFN = Bloemfontein and I the past DBN = Burban etc

Each warehouse is isolated physically with separation of transactional activities.

* 1. Warehouse area bin structure overview

It must be recognised that Engineparts has had to contend with as many as 63,000 individual parts (SKU’s) it is imperative for the implementation of storage design using structured bin codes as is the case with standard stock and warehouse management systems

A further concept is that bin coding identifies where stocking items can be found and MUST follow a physical layout pattern for picker staff to logically follow.

Engineparts does follow the notion of chaotic binning where the same stocking item can be found in multiple locations. Warehouse admin staff are able to use the system to identify a priority around ***pick from sequence*** and a ***bin to sequence***.

* ***Bin to sequence*** allows for the receiving of new stock to be directed to a specific set of bins to be filled by ***binning staff*** as printed on the binning job report. To note the current level of implementation will designate only 1 bin for the binning process. However, this can be overridden by the receiving staff should the designated bin be full.
* ***Pick from sequence*** is automated and picking slips will direct pickers to multiple bins for the same stocking unit to fulfil the ordered quantity. By way of an example; the order for a part 3500-0110 is for 10 units 4 found in bin 1 and the rest in bin 2. These 2 picking lines (not restricted to 2 lines) is printed on the picking slip

The physical design, using a ***structured bin code*** implementation allows space to be mapped into zones / areas

In the same context, storage facilities can be mapped in finer grained elements

ePart is designed to be able to print picking slips in designated areas; often used for highly valuable pilferable sections with security fence in place. This allows for picking jobs to be filtered and split by area where resources are dedicated and only the section of the picking job released to the designated area as depicted by the structured bin code. Only items pertaining to the said area is printed on the picking job.

* 1. Bin content management

Bins are not restricted to 1 part per bin, any number of items can be located in the same bin. However, the number of items per bin must be a logical choice as too many items in a bin will result in a physical search, errors and consummation of time.

Bin to bin transfers is an ePart function and confirms the physical movement between bins electronically. Sales orders released for picking and pick jobs in process have their quantities ***on hold*** to prevent selling more of an item than is available. In the instances the bin 2 bin transfer is not allowed to transact more than is available for sale.

Currently, the bin location is printed on the item label to assist in the binning process. However, there is good reason to consider this to be omitted as the binning report contains the same detail.

Bin2bin transfers make the detail redundant and confusing should the stock in locations be optimised to increase picker performance

Inter branch transfers do not follow the same bin mappings and for that reason should be discontinued.

A more recent and justifiable change is to locate stock items in supplier sequence. This has numerous benefits operationally. However, bin mapping remains the priority as this is key to manage bin overflow situations and to optimise space provisioning with limited space wastage.

* 1. Bulk bin to fine pick replenishment

ePart can monitor the need to replenish fine pick bins and to raise an alert for this be tasked using the bin2bin transfer process.

* 1. Branch replenishment

By design ePart is well placed to support a multiple branch model and was deployed in such a capacity.

The branch requirements were assessed against a AMS (Average Monthly Sales) strategy and picking instructions issued to fulfil the shortfall demand from central (BFN). In the instances where stock on hand is less than demand, a ratio of allocation applies to best assure availability at each branch.

There is no functionality in ePart to ***balance*** stock on hand between branches with overstock / understock positions

* 1. Stock damaged / faulty / critical failure

To contend with stock on hand that is faulty, received back as damaged or found to have critical defects can be isolated to so called non-sellable stock bin locations.

Bin locations flagged in this manner will not reflect on the sales support systems as available to sell stock.

* 1. Stock adjustments

Stock adjustments is considered a journalising transaction where the quantity on hand and or the average unit cost is adjusted.

These transactions yield journal entries to the General Ledger and affect the stock value consequently.

It is imperative that the warehouse stock value at sub-ledger balances to the value in the general ledger control account.

Most often this transaction type is used where the physical stock on hand differs from the theoretical on hand. To comply with auditing requirements, the adjustments are defined by warehouse clerks, approved by management and posted by the finance department.

* 1. Binning

Physical stock is introduced into the warehouse from external in 3 ways:

* Replenishment / inter-branch transfers using internal sales orders
* Goods returned from customers after vetting and generation /approval of credit notes
* Supplier goods received, checked and asserted OK

All these procedures result in the stocking entries consolidated into a ***binning job*** and the job is picked up by the warehouse clerical staff for execution.

The stocking items are place in their appropriate bin locations as directed by the binning job. On completion of the binning job, the quantities per item are confirmed ready for sale (subject to the bin sellable status) and not before. The reason for this is that the time between acknowledging stock-receipt and actually binned might cause a stock availability problem to the sales staff and picker workforce due to the items not being available at the fine-pick face

# Cycle counting

Cycle counting of stock on hand is where all items are counted over a pre-determined time and subject to on hand value (average cost \* qty on hand) counted multiple times.

ePart has a sub system that is initiated at the end of each cycle count interval. This function extracts all items on hand, calculates the value on hand and orders it in descending sequence by value on hand.

Formulations in the sub-system then groups these items in 4 categories and allocates cycle count events per item category where items with higher value are counted more often than items with lower value.

The cycle count events per item are determined against human resource allocated to the process.

In summary:

* ‘A’ items are to be counted 4 time in the cycle count period
* ‘B’ items are to be counted 3 time in the cycle count period
* ‘C’ items are to be counted 2 time in the cycle count period
* ‘D’ items are to be counted once in the cycle count period

The resource resolver will suggest the number of items that need to be counted per working day

Management need to assure that enough human resources are made available to content with the predicted workload.

If the workload is beyond available resources, the cycle count model is changes and recalculated.

On finalisation, the elected model for execution is confirmed and the required cycle count sheets produced daily

To note:

Any picking and related deviations detected are automatically injected into the daily cycle count schedule for deviation resolution.

Should the daily cycle count schedule not be completed, the items not counted on the day are passed on to the next day.

To note is that ePart is designed to remain fully operational during the cycle count. The count found is captured and reconciled against the start of day on hand count pus or minus the day movement at the time and this is compared to the actual on hand as counted.

The obvious dilemma is that the cycle count is not capture in real-time consequently there will be time-of-day-based deviations which is operationally catered for by doing the cycle counts off peak production time.

As detailed in the separate document dealing with mobility optimisations and real-time capturing of data, this will be catered for by such an implementation as the quantity counted will be done in real-time and consequently follow the system transaction sequences accurately

# Wall to wall stock take

The wall to wall stock take requires the operations to be fully shut down to ascertain the reasonable value of stock on hand.

The separate set of documents is available and deals dealing with wall to wall stock take preparation, procedures and eventual finalisation and integration.

As per the requirements detailed post liquidation, a full wall to wall sub system was developed and is inclusive of all needed reports, capturing of team counts, allocation of teams, correlating sheets issued to teams etc

Inclusive of this part of the ePart system is the generating of stock journals to reposition the stock quantities and values accordingly.

# Dependencies - technical

|  |  |  |
| --- | --- | --- |
| # | Description | Action / By whom |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |

# Risks and mitigation

|  |  |  |
| --- | --- | --- |
| # | Risk | Mitigation |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |

# Acceptance

I hereby confirm that I have been fully informed of the documents content and, received training to understand how the detailed instructions are to be applied

Name …………………………………………………………………………….

Job Title ………………………………………………………………………….

Signed ……………………………………………………………………………

Date ………………………………………………………………………………