Warehouse Management System [WMS]
System Overview
The objective of this overview paper is to identify and highlight the high level scope of our software product in the area of Managed Warehousing and 3PL (Third Party Logistics).

WMS - Document objectives

In essence the WMS allows for the:
- Configuration of inventory in a Multi Store Configuration for inventory holding;
- Multiple Contracting options per client for the storage of goods for third parties and leading to a billing mechanism for each separate inventory lot/receipt per client;
- Multi-modal accepting of goods (receipts) from client’s inbound deliveries;
- Holding of inventory for third party clients within the managed warehouse internal store room configuration;
- Allowing for on-line third party client visibility of goods and balances while in hand at the WMS operation;
- Billing for goods in store as per predefined client contracts and billing frequency;
- Export of Billing data to third party accounting systems;
- Issuing of goods for onward outbound distribution towards the third party client’s own delivery destinations;
- 3PL – the logistics administration for management of Inbound and Outbound inventory in a scheduled calendar view
The system allows for the receipt of inbound goods and cargo through both manual as well as electronic upload format: manual receipts are done via a manual data input function whereas the electronic route is executed via an electronic data upload typically supplied by the client holding the goods at the third party logistics site.

1. Inventory Receipt – Incoming Goods
The system allows user to input data of inbound cargo, manually (via an input screen), or through an Excel sheet or CSV file import provided by the client. Various upload functions can exist to allow system integration to client third party applications.

Once data is included a Good Received Notes (GRN) is issued and delivery documentation is produced. There are systems to control the order with which cargo is collected for the client.

This system also requires the user to input the data for the individual pieces of inbound cargo. Each item of cargo is given a unique identifier within the system that can be printed as a barcode to be affixed to the item itself for future identification processes. Each piece of cargo can also optionally be given one or more barcode numbers detailing the inner contents of each piece of cargo.

The system caters for expiry and batch management for perishable goods.

For better management and operational flexibility, WMS allows the user to divide cargo into more item details. By way of example, a receipt created with an item having 95 boxes can be broken down into 10 different pallets of 10 boxes each, the system will return 9 full pallets with 10 boxes and 1 pallet with the remaining 5 boxes.

Once data is completely input, the user may issue the appropriate Good Received Notes (GRN) for the inbound delivery. Warehouse coordinators use this document to tally the cargo vs. the actual items received and documents the reported variances.

All cargo can also carry the supplier name or supplier ref code, as well as having a particular product code.

Incoming cargo is allocated to coded shelves/containers within the selected warehouse location. This storage location data is also gathered using a barcode scanner and then input in the system. This can lead to the development of the schematics that give a pictorial representation of inventory holding. The system allows also for the management of received items down to unit serial number. Single units can be input through this system thus being managed individually. This applies mostly to relatively high value items held in inventory such as electronics, communications and automotive industry components.
2. Inventory Holding

As part of the stock holding process, the WMS user may:

- Transfer inventory within warehouses and pre-coded shelving/locations
- Issue Stock Location reports (detailing the positions within the warehouses of each individual item by location) for the full inventory or by selected client
- Issue Stock Position reports (detailing the quantities in stock of each individual item) from the full inventory or by selected client
- Issue Stock in Hand reports (detailing the amount, location and client) of items in the warehouse
- Warehouse utilisation report (detailing the capacity used of each warehouse and shelf). This option will allow users to optimise and maximise the utilisation of the warehouse and reduce holding costs, detailing where cargo can be located in order to use less space in the warehouse
3. Inventory Issue

Once a client decides to issue cargo from the system, the user can:

- Manually or electronically (via Excel sheet or Barcode scanner) create pick lists detailing item, quantity and location of cargo to be extracted from the warehouse
- Attach serial numbers of individual items being issued (*where applicable*)
- Generate pick lists, print Inventory Release Notes and Delivery Chits for all outbound cargo and transmit electronically to client
4. Billing Engine

The billing function is triggered by the initial receipt of goods into store. Various contract models are supported by the system to accommodate the various client contract types.

Once any cargo is moved into/out of the warehouse, the user can start the billing process. This allows a user to:

- Issue invoices to the warehousing client or a third-party client;
- Run a customised billing process according to:
  - Flexible billing contracts defined by holding duration: Daily, Weekly, Monthly and variants thereof
  - Quantities of cargo present in the warehouse: Volume, Colli & Colli Type, Cargo Type (including Temperature controlled cargo etc.)
  - Stepped billing contracts where cargo prices vary according to specified quantity/volume ranges
  - Additional service charges for all ancillary services rendered as part of the holding process
  - Addition of VAT amount according to client type and location (Foreigner & EU based)
  - Issue Invoice templates to client specifications
- Interfacing to finance packages:
  - The system is also able to interface billing financial transaction data to third party ERP systems for financial management and control
5. General Items in System

The system has a number of other features that are imperative for the use of the WMS system.

Access and Credentials:
To use the WMS system, each user has to be provided with the appropriate credentials through a separate username and password, together with being given a particular role within the system. These credentials/roles allow/limit users to use different areas of the application.

A user with administrative rights can also:
- Manage a client list, detailing the client information for all the clients participating in the system
- Manage cargo type list and categories that will be available at Receipt stage to group inventory into set categories
- Manage pharmaceutical type list (where applicable) also to be available at the Receipt stage
- Manage/map warehouse list, together with individual warehouse aisles and shelves (this will be used when allocating the location to the individual items input into the system)
6. Current development and Improvements

The system is now shifting towards the web version and as such will be enhanced with better options such as:

- Web-based infrastructure to move all operations to a clouded system
- Creation of web-portal in conjunction with the above to allow clients to access their data remotely and in real time
- Automatic reports requested by clients
- Global & user specific notification system (allowing system to inform/alert users of particular transactions happening in the system)
- End of month processes to “close off” the stock positions for the individuals
- Audit and control enhancements to log who did what and when within the system
- Improved graphical aides to indicate occupied and free warehouse space
7. Target Clients

The system is geared for operators who manage a single or multi-site managed warehousing project for third party clients.

The proposed infrastructure that is aimed to support the newer version of the software revolves around the cloud framework design and is supported at the user end via a normal Internet browser. It is however being planned that local/hybrid deployments can also be supported. We are also assessing the possibility to add the weight factor into the stored receipts so that we can support an insurance feature that is supported in the UK that manages insurance premia and claims on a weight factor and formula.