Log Book

List of tools and technologies used during training and skills gained:

- Testing using Microsoft SQL Server
- Use of WEB screens (AGS/SOA)
- Use of PCOM Screens
- Automated Gatehouses
- Setting up of PDEs and installing environments
- Basic Linux
- Basic AIX
- Quality Control at Unilever
- L5 and BK25 Simulators
- Database export programs on AIX and Linux in C
- Adding new editable fields to PCOM
- Database conversion of existing database
- Use configuration and started to write screens on LOIs
- Write Screens on MOIs
- Blockade and Recirculations
- Report Writing using SQL and queries
- Matflo-C

Factory testing of added functionality to warehouse management system: Testing for 1109-v212 (Lever Faberge)

Undertook testing of added functionality where a new message type was implemented which defines a quality status change and provides quality status confirmation message as part of a revision to the customer Stock status interface. The added messaging allowed the support of stock to be blocked on the system.

Using a test specification and simulators to undertake system tests for a functionality change made to the DHL Unilever Best Foods and DHL Lever Faberge warehouse automation system, in order to show the changes made correctly implement the functions defined in the change specification and the Functional Design Specification (FDS). The simulators (L5 and BK25) replaced the Host and TMS systems (Mechanical equipment, controllers and external system interfaces) as well as Level 3 in order to allow complete end to end testing of HOST in isolation.

Iron Mountain Database conversion:

Writing an export program which read and converted data from a database file from one system (AIX) into .csv format, and then writing another program to import/read data from a .csv file and populate the database on a different system (Linux) with the information from the .csv file.

Functionality change of WMS automation process (Lever Faberge):

Changing the functionality of the highbay storage process in which the current process by which a pallet being put into a highbay storage location will immediately be sent to the next highbay storage location if there is a blockade on route to the current selected location, no matter how temporary/permanent the blockade situation is. This may be unnecessary if the blockade is only relatively temporary, and therefore the functionality change allows the pallet to be held at position for 10 seconds, and then retried periodically (i.e every 10 seconds) at the same location for a predefined time before being sent to the next location if unsuccessful. This included the use of simulators to replace the host and TMS systems as well as Level 3, in order to test the changes made to the system.

This included writing a database conversion programs in C and writing a routine which modified the process of putting pallets in the highbay storage and testing of my code using simulators (L5 and BK25).

Additional Functionality to Hermes YMS (1732 – C031)   (Asset Selection and Additional Reasons)

Adding functionality to a YMS which allows the different assets (i.e. different types of transport modules such as cages, pallets, boxes etc) and quantities, which are loaded onto/unloaded from trailers at the depot, to be recorded as well as allowing information (including predefined statements) to be recorded in various documentation generated for Hermes by the YMS (such as truck manifests).

This project included adding new databases which would be populated on the WEB-OM screen by users with sufficient security privileges. It also required the modification of the MOI screen in which additional states were added and other states were changed in order to accommodate the added functionality.

The additional data which is collected (i.e. asset names and quantities) are to be logged to the Management Information System (MIS), from which different daily and weekly reports are automatically generated for inbound and outbound trailers. This required use of SQL and queries to filter the data from the MIS, with the creation of the automatically generated reports being accomplished directly from the WEB-OM.

Also added functionality to enable an additional reason to be selected on loading onto a trailer, of which the information (selected from a predefined list or added in a custom field) was printed onto the Trucks departure manifest. This required a the used of HTML and CSS to obtain the information from the OI screen and hence the database, and subsequently add it directly to the truck manifest

Creation of MIS Reports for 1732-C038 (Hermes YMS)

This required the use of SQL and microsoft SQL server to create queries which extracted specific information from the MIS. This included creating daily and weekly reports which displayed certain trailer information during a specified period of time. It also required filtering and categorising information from the MIS to display summed and averages of the data from raw data in the MIS, including numerical, alphanumerical and temporal data.

Hermes YMS (GP barcodes)

Added functionality of an OI screen to enable a supervisor to obtain a list of all the loads which are outbound or scheduled to be outbound, (including from a specific location) and obtain their corresponding Grandparenting barcode for a load (which is already defined in the database) in order to manage the outgoing loads at any given time, including any damages and mis-configurations of stock.

Hermes YMS (Testing of changes for System update YMS 2.0)

Testing of system changes before a full system update was released. This included reading through change specifications provided for each of the changes included, and then going through a structured method of testing the various situations in order to verify the functionality changes and detect and fix any bugs found in the system update. This included adding custom data into the MIS and then determining the data was displayed, used and verified in the correct areas of the system updates. Report functionality by adding custom data to the database and tracking the data in the various reports which they should be updated into.

- C026 – Import trailer master data via json v2

Testing of CSV import functionality, in which trailer data (provided in CSV format) for the YMS is now automatically imported into the system as compared to the manual input of the information.

- C037 - Concise trailer history v1

Testing of a report in which a simplified but detailed trailer history that allows all trailers in a given time frame to be queried by client or trailer id

- C038 - Mis reports 2 v2

Testing of the reports which I had created (see above section)

- C039 - Early allocation of Grand Parenting v1

Testing of the GP functionality I made (see above section)

- C040 – Multiple capacity locations v1

Testing of added functionality to enable locations to have multiple trailers located there and the knock on effects of determining trailer activity for each trailer in the multiple capacity location.

- C041 - Client selection v1

Testing of added functionality to force supervisors to identify which customers trailers had arrived (previously enabled but not mandatory)

- C042 - Depot Hub address v1

Testing of added information displayed on the truck manifest

- · C044 – Location Search v2

Testing of a new search facility added which allows a location-based query to be run. The location and number of days to go back is selected via a dropdown box. The YMS then creates a list of all trailers that have used that location sorted by and grouped by day.

- · C047 – Scheduled close down v1

Testing of functionality to the control room display screens which highlighted loads which were scheduled to depart within the next 30 minutes and had not yet been loaded onto a truck

- · C048 – Last minute changes v1

Testing some changes made after meeting with the client before the new system release

This also required the creation of Release notes which explained and highlight the changes which had been made to the system to the client. This required using language with limited technicality that provided accurate and concise information about the changes whilst also being easily understood by the client.

Nordstrom

Customer was undertaking a supply chain transformation project, the West Coast Omni-Channel DC (WCOC), which is responsible for the fulfilment of both ECommerce and store orders. The solution is provided by a WMS (from Dematic – hereby referenced as WMS), and a WES (Warehouse Execution System) from Dematic which is responsible for all the site automation, inventory storage and fulfilment.

Involved in project Software Development (post design), Commissioning (On site and remote), Low level automation system testing, low (PLC and automation) and high (host system messaging) level system integration testing, software functionality development, changes, and software fault investigation, root-cause analysis and subsequent fault fixing, site go-live & post go-live maintenance, software deployments & releases and technical support for mainly the Warehouse Execution System which included a Dematic Multi-Shuttle System, Dematic Pouch Sortation System, MHE DCI conveyor system and DDI/DLI PTL devices as well as a Management Information System for data management.

Nordstrom - Entity Query MOI

Wrote Entity Query MOI in which products, locations and TMs can be scanned, with the appropriate information related to the barcode scanned is shown.

Also wrote the tests for the MOI in to confirm it works for all the different combinations of products, TMs and locations.

Nordstrom – OSR and APR Picking MOI

Wrote the picking MOI in which the state diagrams and SFS were used in order to design the flow and appropriate dialog as an operator works through a pick run.

Testing

Learnt to use the Automated testing framework (ATF) (designed and built in house) to generate data and run automated tests with the aid of simulators (also designed and built in house). This aids in automating the processes of cleaning the system, creating data in specified states for pre-defined tests designed based on the System's Functional Specification, change specification, or to aid in the diagnosis and testing of faults. Also to help build up a suite of tests to improve confidence in regression testing (new code not breaking the existing system). (Involved in developing the QA Process).

Nordstrom – OSR and APR Putaway MOI

Rewrote/fixed the putaway MOI which was not working as expected. Fixed it with reference to the SFS (System Functional Specification), and to a level which passed the ATS requirements for the putaway screens.

Nordstrom Commissioning and End to End Testing

Conducted commissioning tasks for various sections of the highly automated warehouse which I have been part of the team to develop Warehouse Execution System (WES). Commissioning tasks included:

- Testing aspects of the Put to Light by using back end scripts to test the DLI communication between the GTP PTL device mapping to the WES. (Decant and consolidation)

- Issues involved with PTL testing included lag (found to be partly due to API faults which serve the front end of GTP devices),

- Testing various routing of TMs via the automation system and the integration with the WES and determining issues including identifying failures in scanning points, conveyor dead spots, timing issues with conveyor diverts etc

- Testing the Dematic Multishuttle (MHE) comms

- Testing various conveyor MHE comms (Decant lanes and sorter, consolidation sorter)

- Workstation Dialog (Operator interface) testing

- Low level comms testing

- High level inventory storage and order processing at DMS testing (also Using exerciser)

- Handheld device testing

Consolidation of issues found during E2E testing for analysis and investigation by software development team back in the office

Conducted daily reporting of the various tasks and involved in the planning of other commissioning tasks by working in tandem with the hardware automation installation teams.

Preparing system for customer Functional Verification Testing, SIT and Unit Acceptance Testing which included basic volume testing

Remote commissioning (working from different time zones) due to COVID restrictions.

Customer Testing

Assisted customer with training and usage of WES for use with Simulators and building tests for use with Automated testing framework software to work through Unit acceptance testing and consultation with Functional specification to identify issues as further software faults or inconsistencies with customer testing to determine software changes.

Assisted testing with Software integration and message communication to higher level customer inventory management software.

Nordstrom Fault Fixing and Ramp up

Involved in Investigation and root cause analysis of various logged software faults and subsequent fixing of said faults to facilitate ongoing testing and ramp up of site throughput in preparation for site going live.

Went through the list of faults in the system, tracked by redmine. Logged by various people on a range of environments. Exercise involved investigating specific scenarios and replication of issues if possible before committing code or configuration changes to solve faults, or advising customer on operational mistakes which lead to reported unexpected software behaviour.

Included fixing faults on OI and OM screens, background processes, adding actions in Manta etc.

(list of faults fixed from OneNote)

Involved in helping site go live, and post go live software maintenance.

Major Software Functionality Changes:

Nordstrom Garments on Hanger Inbound functionality

In charge of developing a set of Operator Interface screens to handle inbound stock being decanted onto hangers, routing of items to a chosen Manual storage aisle based on pre defined specifications such as aisle availability, quantity of items in location/on route etc.

Inbound stock which requires routing to an area of the warehouse responsible for decanting onto hangers (via conveyor automation) and then routing to an autobagging system to automatically add plastic bag protection covers to specified items, and then routing to an area of the warehouse responsible for manual storage of garments on hangers (via pouch sortation automation) where it is then put away into manual locations ready to be picked manually for orders/replen etc.

Development of background processes involved in determining optimum storage aisles and locations for stock was required which were implemented to recalculate and update the destination of pouches at specified points along the automation.

Development of Operator interface screens for the pouch decanting and manual pouch putaway processes was required as well as added functionality requirements such as to send empty pouches from the decant area to the manual storage aisles, exception handling etc.

Nordstrom Autocarton Exception screens

In charge of developing a set of screens for handling exception scenarios which occur for an autocarton machine, designed for increased automation in packing of items for orders.

The autocarton machine would automatically unfold, transfer and pack cartons via conveyor as well as conduct printing of slips, labels etc. Any exception in any of these processes would require manual intervention at a specified location where this exception carton needs to be handled. Analysis of possible exception scenarios and required solutions to the problems was done. Back end Capability to resolve these issues to complete the packing process required screens to prompt and operator to inspect the exception parcel and resolve the issue using the capability provided at the exception station. This was then tested with a series of tests created to test as many different exception scenarios as possible (with the aid of simulators), first with a clean system and then through a regression suite. A user guide was produced to provide operator instruction for navigating through the screens developed to handle exception scenarios in the correct manner.

Nordstrom Returns Logistics Operations processes

Assisted the team with resolution of faults from a system upgrade which involved adding functionality to accept and process returns items into the Distribution Centre.

Nordstrom Direct Receiving Functionality Change

Independently developed the code changes to facilitate this change to enable the distribution center to handle receive stock from suppliers directly (where the facility had previously been designed to receive stock from other Nordstrom DCs only); particularly in readiness for the exceptions that are to be expected once suppliers can ship directly to the facility.

Developed Test suite and data to demonstrate changes and created User guides for testing and control room use

Nordstrom GOH Solution Document

Due to commercial reasons, previously developed GOH solution was not integrated with the warehouse, and at this point the functionality was largely obsolete. This endeavor was to figure out the state of the GOH functionality, the technical requirements for completion including incorporating functionality changes made since the development of the previous iteration of the GOH design,

Nordstrom GOH Solution Update

Update the existing solution

JD Sports

Create New Hazardous SKU message

Developed code changes to cater for the addition of product attribute information in SKU updates from the Host systems. Detail included in the updated messaging will be included in stored records in WMS. Before this change, the SKU records were not stored in WMS with attributes that provide Hazardous Material information. This information may be required to correctly identify despatch methodology and additional paperwork requirements. Receiving product information for hazardous SKU was achieved by implementing a new message to be received from host systems

Create New Discovered Item Action Button (Loose stock identification change) on different MOI screens

Developed code changes to provide a systemic process that will allow loose stock found on the floor to be located and subsequent inventory management triggered. This change added a new MOI and an action menu item in the Putaway MOI to process these found loose stock. A change to Storage Area was be made to control pick sequence limits.

Complete 4 phase Inventory Management change

Developed and tested significant targeted improvements to the Inventory Management MOI and the reporting that was being sent to the data warehouse for it. Before the change, inventory management actions performed on-system it is not clear or recorded what the reason for the action is. Other information, such as who is performing the action is also not logged in a way that allows for auditing from the data warehouse. The change involved updating and adding various data structures, flags and hooks as well as updating Picking and Inventory Management MOI processes and updating all the

logging being sent to the data warehouse. Planning of how code in earlier phases of the development of this change which would be necessary and likely require amendment was demonstrated.

Senior engineering roles

Lead software development for less experienced members of the team, working alongside some and allowing others to figure things out depending on their experience/ability etc.

Completed software deployments to customer testing and live systems.

Completed Investigation of live faults in the WMS

Exercise involved investigating specific scenarios and replication of issues if possible before committing code or configuration changes to solve faults, or advising customer on operational mistakes which lead to reported unexpected software behaviour.

Build Front End Dashboards/Summary Screens using HTML and Javascript

A myriad number of summary screens currently available in the WMS Matflo screens. None of these are streamlined and suitable for the current required use in viewing systemic despatch progress in the warehouse.

The aim of this change is to standardise the set of summary screens to provide a more effective and streamlined experience when viewing systemic despatch progress in the warehouse. This is to be used in the control room as part of daily operations to expedite the identification of bottlenecks and other issues within the warehouse operation despatch process.