aptean

DHL

Allow Pallet Opening

Functional Specification

6th February 2020 - 1.0
Reference: FS 369552

Contents

1 TECHNICAL NOTES

1.1 Modules Changed

Module Name	Module Type	Notes
LOCATION.fmb	C-TMS Form	
DP_MCS	C-TMS Package	
V_MCS_SITE	C-TMS View	
(As required)	SQL	Database modification script.
VMcsSiteDAL1.cs	MCS Server code	
VMcsSiteDAL1_Gen.cs	MCS Server code	
VMcsSite1_Gen.cs	MCS Server code	
McsDatabase.js	MCS Device code	
m004a01t_uc_pallets.js	MCS Device code	

1.2 Table Updates

Table GEO_LOCATION will change to add the following field:

Name	Type	Nullable	Default	Storage	Comments
MCS_PALLET_BUILD_PROCESS	VARCHAR2(1)	N	N		

1.3 Developer Notes

To achieve this, we must make the following changes:

- New Location configuration required (i.e. applicable for C3, not C1). "Pallet Building Process", values "Continuous" (default) or "Single" (new process).
  - Modify C-TMS Location form MCS tab.
  - Modify DB table
  - Modify V_MCS_SITE
  - Modify MCS to add the new flag.
- In MCS Pallet Building:
  - After palletising a package, check the new location flag is "Single". If so, blank the package information and selected pallet and return to the package prompt.

1.3.1 C-TMS Database Changes

The existing view V_MCS_SITE will be modified to return new MCS location flag, as follows:

```
CREATE OR REPLACE VIEW V_MCS_SITE AS
SELECT DEPOT SIT_DEPOT, LOCATION_ID SIT_LOCATION_ID, LOCATION_NAME SIT_LOCATION_NAME,
MCS_PRINT_PALLET_LABEL SIT_PALLET_LABEL,
MCS_PALLET_CLOSURE SIT_PALLET_CLOSURE,
MCS_PALLET_SEAL_REQD SIT_PALLET_SEAL_REQD,
MCS_TRANS_SHIP SIT_TRANS_SHIP,
MCS_PALLET_BUILD_PROCESS SIT_PALLET_BUILD_PROCESS,
NVL(UPDATED_DATE,CREATED_DATE) SIT_UPDATED_DATE
FROM GEO_LOCATION
WHERE DEPOT = 'RDC'
AND NVL(MCS_ACTIVE,'N') = 'Y'
ORDER BY LOCATION_ID
```

This change and the database table change will be added to a database modification script, to be used during implementation.

1.3.2 C-TMS Locations Form Changes

The C-TMS Locations Maintenance form will be modified to add a new drop-down list, labelled as "Pallet Building Process". This will default in the database to a value of "C".

The field will be added under the existing "Pallet Building Validation" field.

The drop-down list will be populated with the descriptions of the field values below:

- "C" - Continuous (the default value).
- "S" - Single.

The following existing fields will be moved to the right in a new column:

- Set Trip Status at Receipt.
- Set Trip Status at Despatch.

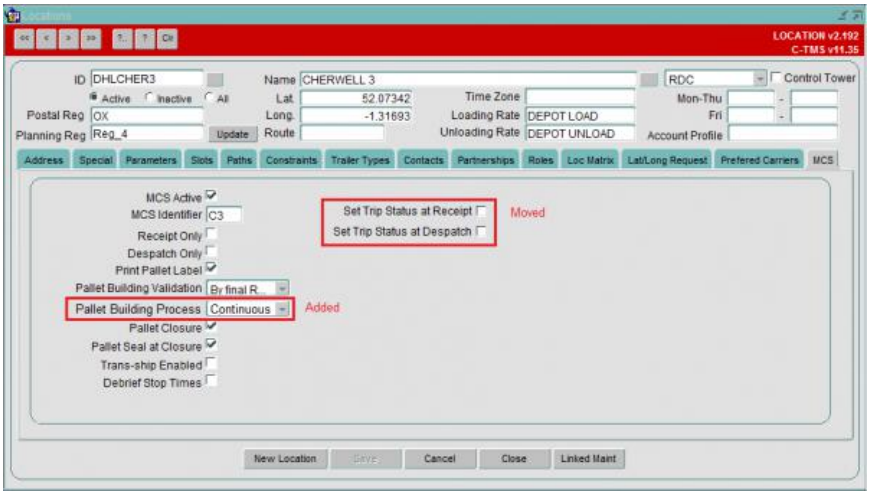

Figure 6: *Locations maintenance - MCS tab changes*

1.3.3 MCS DAL Changes

At login, MCS must receive the location (depot) configuration flags from C-TMS.

- SIT_PALLET_BUILD_PROCESS - this flag controls whether pallets built through C-MCS at this location will stick to a pallet (C), or will require pallet confirmation after each scan (S).

These will be received as part of the logon procedure.

The location configuration flags will be received on the list of depots received when calling V_MCS_SITE and will be stored on the local database in new fields. The new flag will be accessible under the MCS.App object directly i.e. MCS.App.SIT_PALLET_BUILD_PROCESS.

Affected code modules:

- VMcsSiteDAL1.cs - add the new fields as XML tags.
- VMcsSiteDAL1_Gen.cs - add the new flags to the read data.
- VMcsSite1_Gen.cs - add the new fields.
- McsDatabase.js - add the new flag.

1.3.4 MCS Pallet Building Screen

Pallet building package information to be changed to:

- when package palletised, return to initial prompt, only if configured to do so.

The process will check MCS.App.SIT_PALLET_BUILD_PROCESS. If set to "C", it will work as now. If set to "S", it will:

- Reset the selected pallet ID.
- Reset the pallet ID field.
- Clear the package display.
- Return to the package prompt.

This will occur at the end of the following events:

- On entering a valid pallet for a new package scan.
- On creating a new pallet.

Function funAddItemToPalletCallback is usually called in response to adding packages to pallets, and currently resets the displayed items. Modifying this process should cover all eventualities.

Affected code modules:

- m004a01t_uc_pallets.js

2 TEST PLAN

Test Script / Scenario Reference	*Cage Confirmation Scans*	**Call Number(s): 369101 UAT-67**
Test Script / Scenario Description	*Confirm pallet after each package in pallet building.*	**PASS / ISSUES / FAIL**
Menu Access	*Pallet Building*	
Pre-requisites	*A configured C-TMS and MCS.*	**Tested By:**
Test Objective	*Test that; locations can be configured to confirm pallet after each package and; pallet building confirms the pallet after each package at configured locations only.*	**Date:**

Step	Action	Result	Remarks	P/F
1	**C-TMS Location Form**			
1.01	Check existing MCS-enabled locations, that the Pallet Building Process is set to "Continuous".	All existing MCS-enabled locations have the value set to "Continuous" on the screen and "C" in the database.		
1.02	Change a location to Pallet Building Process "Single". Save and re-find.	The location value should be saved as "S" and shown as "Single" in the Locations form.		

Step	Action	Result	Remarks	P/F
2	**MCS Pallet Building**			
	Ensure that there are two locations configured, one with Continuous process and one with Single process. Ensure that there are multiple packages on an order, planned through both locations.			
2.01	On a site configured to Single process, start pallet building and scan a package.	The package details are displayed. Any suitable pallets are shown.		
2.02	Create a new pallet and confirm.	The device shows a message that the package is on the pallet. The package details are blanked, the pallet is removed and the device is prompting for package again.		
2.03	Scan another package.	The package details are displayed. Any suitable pallets are shown, including the new pallet.		
2.04	Enter the new pallet and confirm.			

		The device shows a message that the package is on the pallet. The package details are blanked, the pallet is removed and the device is prompting for package again.		
2.05	On a site configured to Continuous process, start pallet building and scan a package.	The package details are displayed. Any suitable pallets are shown.		
2.06	Create a new pallet and confirm.	The device shows a message that the package is on the pallet. The package details are blanked, but the pallet remains. The device is prompting for package again.		
2.07	Scan another package.	The device shows a message that the package is on the pallet. The package details are blanked, but the pallet remains. The device is prompting for package again.		

3 APPENDIX A: QUOTE & DOCUMENT HISTORY

Cost Details				
Activity	**Estimate No. of Days**	**No. of Days**	**Rate per Day (?)**	**Cost (? Exc. VAT)**
Requirements	0.00	0.00	820	?0.00
Change Request Evaluation	0.25	0.25	0	?0.00
Functional Specification	1.00	1.00	820	?820.00
Technical Specification	0.00	0.00	820	?0.00
Development	4.25	4.25	790	?3,357.50
Testing and Release	2.00	2.00	790	?1,580.00
Implementation	0.50	0.50	820	?410.00
Project Management	0.50	0.50	830	?415.00
TOTAL	8.50	8.50		?6,582.50

Estimate excludes training, release to live and go live support.

References

Ref No	Document Title & ID	Version	Date
1	SCR 369080 MCS Scan Printer	1.0	24/01/2020

Glossary

Term or Acronym	Meaning
AWB	Airway Bill; a receipt of goods required by airline carriers. It also serves as the carriage contract between the carrier and the shipper.
C-MCS	*CALIDUS* MCS, OBS Logistics Mobile Control System. See also MCS.
Carrier	The carrier completing the trip. Can comprise any carrier configured in the system, but normally Home Fleet (usually a carrier per depot), 3rd-party carriers, supplier-/customer-own transport, own collection, etc.
Consolidating Centre	A depot that takes delivery of goods from several origins and consolidates them for trunking to outbases (q.v.) or final delivery to destinations. See also Consolidation.
Consolidation	In execution terms, this is the act of taking several jobs and combining them into a single execution job. This can be by several criteria but is broadly defined as: Same Location consolidation, where the delivery/collection points are identical; Linked Location, where the deliver/collection points have been configured to be seen as the same point within C-TMS and; Manual (Ad Hoc) Consolidation, where the driver decides that two jobs should be delivered/collected at the same time. In general transport terms, this is the act of taking like product from several sources (originating depots, warehouses, orders) going to the same destination or on the same vehicle and placing them on a transportable media. See also containerisation.
Containerisation	The action of taking items and placing them inside another item for tracking purposes. See also Asset.
Cost Centre	A part of an organisation to which costs may be charged for accounting purposes. For C-TMS, this is used for accounting purposes, and also to generally configure the system.
C-TMS	*CALIDUS* TMS, OBS Logistics' Transport Management System.
Cross-Dock	Also a specific location at which product is exchanged.
Customer	In 3PL terms, the customer on behalf of which the transport is being operated.
DDL	Drop-down list - a series of pre-designated answers to a particular question on a device, rather than requiring the user to key the answer in in full.
Debrief	Comprises 2 parts: Stop debrief, where actual arrival and departure times against a trip are entered; Order debrief, where actual product and item quantities are entered; Driver/Trip debrief, where additional information is captured from the driver relating to the trip.
Depot	Any location that schedules and controls transport.
Despatch	In transport terms, the process of loading and despatching items out of a depot. In this implementation, the process of loading and despatching is predominantly controlled by C-MCS

Term or Acronym	Meaning
	(q.v.). See also Loading.
Driver	Comprising drivers and crew assigned to a trip.
DU	Distribution/Deliverable Unit - Pallet, Package, etc.; Also Asset, Asset Type.
Fixed Route	In transport terms, a fixed route is a trip comprised of a series of fixed stops that are typically always visited. A C-TMS fixed route template (q.v.) can be used to create these.
Item	A single item for delivery/collection. A general terms, distinct from the DU of the deliverable item e.g. Pallet, Package, etc.
Loading	In transport terms, the process of loading and despatching items out of a depot. In this implementation, the process of loading and despatching is predominantly controlled by C-MCS (q.v.). See also Despatch.
Location	In C-TMS terms, a trip comprises visits or drops to many locations. A location can be of many different types.
Location Types	Usually one of: Depot, Customer, Delivery/Collection Location, Store, etc.
MCS	Mobile Control System, an application to execute mobile tasks, as opposed to transport management tasks from a console. For OBS Logistics, transport depot mobile tasks are handles by *CALIDUS* MCS.
OMS Ref	A unique transport movement ID, referring to a single transport movement request.
Optimisation	Route building and optimisation of stops on a trip.
Order	Equiv: OMS Ref; a transport movement.
Order Status	The lifecycle of an order.
Outbase	A depot whose purpose is to deliver to final delivery destination within a geographically-restricted subsection of the whole catchment area; also ROC.
Reason Codes	Of many types: Adjustment, Non-conformance, Order.
Receipt	In transport terms, the process of receiving and uploading items into a depot. In this implementation, the process of receipt and unloading is predominantly controlled by C-MCS (q.v.). See also Unloading.
Region; Postal Region	Geographical Region.
Resources	Drivers, Crew, Tractors, Vehicles, Trailers (q.v.).
Route	A route is a fixed route that is repeated. A Trip is a unique trip, which may be created from a route.
ROC	Regional Operating Centre; a depot whose purpose is to deliver to final delivery destination within a geographically-restricted subsection of the whole catchment area; also Outbase.
RPE	Roll-pallet Equivalent - This is used to estimate volume and therefore capacity of vehicles within C-TMS.
Schedule	A day's plan, usually consisting of 24 hours, not necessarily from midnight to midnight.
Shunt	A trunk (q.v.) movement between depots using the trunk network, typically of a much shorter length than a trunk movement.
TLM	Transport Logistics Manager
Tractor	The driver cab, pulling the trailer.
Trailer	The trailer carrying the goods. Can be several types.
Trans-Ship	The process of receiving, cross-docking and despatching items within a depot, usually within a single transaction. In this implementation, this is the process at the ROC (q.v.).
Transport	Transport operations.
Trip	C-TMS: A selection of work to be completed, specifically a workload that lasts for an entire shift for a driver.
Trip Status	The lifecycle of a trip.
Trunk	A route between depots, transporting goods usually to be delivered from the destination depot, but any transfer of goods from the original receiving or originating depot in the network to the final delivery depot (the outbase).
Unloading	The process of receiving and uploading items into a depot. In this implementation, the process of receipt and unloading is predominantly controlled by C-MCS (q.v.). See also Receiving.
Vehicle	A generic term for the resource assigned to a trip. Can be tractor (q.v.), tractor plus trailer (q.v.), fixed vehicle (e.g. van). In C-TMS terms, the tractor ID is considered the vehicle ID, usually the registration.
Warehouse	This is a depot in C-TMS that is seen to be a warehouse, or origin and storage point for product for delivery.

Authorised By

Julie Scott	OBS Project Manager	_____
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Pallet closure - existing screen

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Pallet closure - new pop-up (prototype)

Figure 2: *Cherwell 3 Pallet Closure process*

4 TECHNICAL NOTES

4.1 Modules Changed

Module Name	Module Type	Notes
DP_MCS_SCANNING	C-TMS Package	
(As required)	SQL	Database modification script.
m004a01t_uc_pallet_closure.js	MCS Device code	
m004a01t_uc_pallet_closure.ascx	MCS Device code	

4.2 Table Updates

None.

4.3 Developer Notes

To achieve this, we must make the following changes:

- Change MCS to check the pallet status and allow the user the choice to open the pallet.
- New message from MCS to C-TMS to open a package.
- New C-TMS procedure to re-open a pallet, deleting any seal information if present.

4.3.1 C-TMS DP_MCS_SCANNING Changes

The existing procedure DP_MCS_SCANNING.FN_UPDATE_PALLET_STATUS will be modified to open a closed pallet. The procedure already achieves much of what is required, but the seal number processing must be modified.

Currently, the process does the following:

- Status requested must be a valid status i.e. OPEN or CLOSED.
- Checks seal.
- Checks status of despatching trip - not EN-ROUTE, COMPLETED, CONFIRMED.
- Create seal.
- Lock pallet record and change status.

The process will be modified as follows:

- Status requested must be a valid status i.e. OPEN or CLOSED.
- Check seal - only required if CLOSING a pallet. This is currently controlled by no seal parameter being present and can continue this way.
- Checks status of despatching trip - not EN-ROUTE, COMPLETED, CONFIRMED.
- Create seal - only required if CLOSING a pallet. This is currently controlled by no seal parameter being present and can continue this way.
- Delete existing seal - only required if OPENING a pallet. The process should check that the required status is "OPEN" and, if so, check whether there is a seal for this pallet (checking on SCH_SHIP_AWB_CON_CONT). If found and type "S", delete the record. If there are no more records on the seal (i.e. SCH_SHIP_AWB_CON), delete the seal.
- Lock pallet record and change status.

Appropriate error messages will be returned if there are failures opening the pallet, through the same method that the package does when closing pallets.

4.3.2 MCS Pallet Closure Screen

The process for pallet closure will change to allow a pallet to be opened. The flow of the process is as follows:

On the device:

- Keying enter on pallet field calls
- MCSUI.PalletClosure.funCheckPalletClick() (in m023a01t_uc_pallet_closure.js) which calls
- MCSWS.Requests.PalletRequest(strSiteId, strPalletId, MCSUI.PalletClosure.funCheckPalletRequestCallback) in webServiceRequests.js

On the server:

- PalletRequest is dealt with by PalletRequest in MCSService.cs.
- This selects the details of the pallet from V_MCS_PALLET, including the status.

On the device:

- MCSUI.PalletClosure.funCheckPalletRequestCallback in m023a01t_uc_pallet_closure.js
- This checks the status - if CLOSED it issues an error.

This should no longer do that.

The process will now:

- display the details as per the following block, then within that block:
    - ♦ if the status is not CLOSED, do as now
    - ♦ if the status is CLOSED,
        - ◊ do not display the seal number and Pallet Close button (i.e. hide them).
        - ◊ do not set the default button or default focus (i.e. do not call this code).
        - ◊ display a dialogue box:
            - · message id, level and description as "This pallet is already closed - do you want to open it?", options "Yes"/"No" (MCSUI.Messages.ButtonTypes.YesNo).
            - · If No is clicked, close the dialogue box - no further actions required.
            - · If Yes is clicked, close the dialogue box and call new function to open pallet and remove seals.

The required MCS development is as follows:

A dialogue will be added to the Pallet Closure process, if the pallet is considered to be status CLOSED.

Dialogue control code can be seen in MCS Damages function, when confirming marking an item as damaged (funConfirmMarkDamaged in m009a01t_uc_damages.js)

Dialogues may be shown with:

- MCSUI.Common.objScreen.MessageDialogue.showQuestion(strMessage)

A new dialogue will be configured - set in m023a01t_uc_pallet_closure.ascx, through common code:

- MCSUI.Common.objScreen.MessageDialogue.yesClicked = MCSUI.PalletClosure.funConfirmReopenPallet

This then links to a new function funConfirmReopenPallet in m023a01t_uc_pallet_closure.js when **Yes** is clicked. The process will:

- Close the dialogue box,
- Calls MCSWS.Requests.PalletUpdate with status set to OPEN and no seal. Set callback as now, to MCSUI.PalletClosure.funPalletUpdateRequestCallback
- On successful result, display a toast message that the pallet is closed. Clear the pallet details

To be clear, when **No** is clicked, the dialogue box will be removed, but the pallet details will remain. The user can only click the **Cancel Entry** button to enter a pallet again.

Function MCSUI.PalletClosure.funPalletUpdateRequestCallback in m023a01t_uc_pallet_closure.js will be modified. It's a minor modification to what it already does, based on the status of the pallet being actioned:

- Check error status.
  - If OK, display message "Pallet X opened" and clear back to normal entry.
  - If not, display error message. Clear back to normal entry.

All pallet details should be removed.

Affected code modules:

- m023a01t_uc_pallet_closure.js
- m023a01t_uc_pallet_closure.ascx

5 TEST PLAN

Test Script / Scenario Reference	*Allow Pallet Opening*	**Call Number(s): 369552**
Test Script / Scenario Description	*Pallet Re-opening*	**PASS / ISSUES / FAIL**
Menu Access	*Pallet Closure*	
Pre-requisites	*A configured C-TMS and MCS.*	**Tested By:**
Test Objective	*Test that pallets that are scanned again can be re-opened.*	**Date:**

Step	Action	Result	Remarks	P/F
1	**MCS Pallet Closure**			
	Ensure that there are two locations configured, both with pallet closure enabled, one with Pallet Seal required and one without.			
1.01	Location configured for seals at pallet closure. Scan pallet	The application displays a text box for seal number, a **Close Pallet** and **Cancel Entry** button.		
1.02	Enter a seal number and click **Close Pallet**.	The pallet is closed and the device informs you so. The seal is created in C-TMS. The device is prompting for pallet again.		
1.03	Scan the pallet again.	All pallet details are shown. No seal number text box nor **Close Pallet** button is displayed, just a **Cancel Entry** button. A dialogue is shown, asking the user to confirm opening the pallet, with Yes and No options.		
1.04	Click **No**	The dialogue box is hidden.		
1.05	Click **Cancel Entry**.	The device is prompting for pallet again. The pallet details are removed.		
1.06	Scan the pallet again. Click **Yes**	The dialogue box is hidden. The pallet is opened and the device informs you so. The seal is deleted in C-TMS. The device is prompting for pallet again. Pallet details are no longer displayed.		
1.07	Location configured for no seals at pallet closure. Scan pallet	The application displays a **Close Pallet** and **Cancel Entry** button.		
1.08	Click **Close Pallet**.	The pallet is closed and the device informs you so. No seal is created in C-TMS. The device is prompting for pallet again.		

1.09	Scan the pallet again.	All pallet details are shown. No seal number text box nor **Close Pallet** button is displayed, just a **Cancel Entry** button. A dialogue is shown, asking the user to confirm opening the pallet, with Yes and No options.		
1.10	Click **No**	The dialogue box is hidden.		
1.11	Click **Cancel Entry**.	The device is prompting for pallet again. The pallet details are removed.		
1.12	Scan the pallet again. Click **Yes**	The dialogue box is hidden. The pallet is opened and the device informs you so. The device is prompting for pallet again. Pallet details are no longer displayed.		

6 APPENDIX A: QUOTE & DOCUMENT HISTORY

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Activity	**Estimate No. of Days**	**No. of Days**	**Rate per Day (?)**	**Cost (? Exc. VAT)**
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Implementation	0.50	0.50	820	?410.00
Project Management	0.50	0.50	830	?415.00
TOTAL	11.00	11.00		?8,572.50

Estimate excludes training, release to live and go live support.

References

Ref No	Document Title & ID	Version	Date
1			

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Optimisation	Route building and optimisation of stops on a trip.
Order	Equiv: OMS Ref; a transport movement.
Order Status	The lifecycle of an order.
Outbase	A depot whose purpose is to deliver to final delivery destination within a geographically-restricted subsection of the whole catchment area; also ROC.
Reason Codes	Of many types: Adjustment, Non-conformance, Order.
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Region; Postal Region	Geographical Region.
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Route	A route is a fixed route that is repeated. A Trip is a unique trip, which may be created from a route.
ROC	Regional Operating Centre; a depot whose purpose is to deliver to final delivery destination within a geographically-restricted subsection of the whole catchment area; also Outbase.
RPE	Roll-pallet Equivalent - This is used to estimate volume and therefore capacity of vehicles within C-TMS.
Schedule	A day's plan, usually consisting of 24 hours, not necessarily from midnight to midnight.
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Trunk	A route between depots, transporting goods usually to be delivered from the destination depot, but any transfer of goods from the original receiving or originating depot in the network to the final delivery depot (the outbase).
Unloading	The process of receiving and uploading items into a depot. In this implementation, the process of receipt and unloading is predominantly controlled by C-MCS (q.v.). See also Receiving.
Vehicle	A generic term for the resource assigned to a trip. Can be tractor (q.v.), tractor plus trailer (q.v.), fixed vehicle (e.g. van). In C-TMS terms, the tractor ID is considered the vehicle ID, usually the registration.
Warehouse	This is a depot in C-TMS that is seen to be a warehouse, or origin and storage point for product for delivery.

Authorised By

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