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ASIS

Differentiation between the functional scope of IT / control of the new automated warehouse systems and Rossmann's existing ERP / WMS systems

This document lists currently known functions on various IT systems. These functions are assigned to Rossmann's existing IT systems (ERP system and WMS) and one (or more) material flow computers for the new automated warehouse / conveyor systems.

This allocation is an initial proposal and is intended to serve as preparation for the planned workshop, in which the allocation of the functions to the different IT systems to be taken into account will then be jointly determined.

These initial proposals in the following overviews are to be checked by the Rossmann team with regard to the allocation of the various functionalities and comments regarding changes in the allocation from Rossmann's point of view can also be made known before the planned workshop, so that Metroplan can also prepare for the planned workshop accordingly.

Dictionary:

Rossmann ERP – SNAP

TMS – Transport Management System (separate system, not ERP element)

Rossmann WMS – LFS

Rossmann Apps – Applications

Pack Tech – external warehouse for storage of technical articles – store equipment

Resources management – where mentioned concerns technical resources, not stuffing

NOK/NIO – not ok station

PBL – Pick By Light

PNG – Paper on Top (adding large in size materials – paper – on top of HU)

Note:

There are functional differences between each automatic installation (e.g. on-screen dialogues, level of involvement in optimization processes).

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1. Higher-level IT systems

Function	Rossmann Systems			MFC	Comments
	ERP	WMS	Apps		
Link to higher-level ERP systems from Rossmann	no	yes	yes	yes (TMS)	TMS is sending data directly to PMS (MFC – Koerber, Shipping Warehouse) – only for outbound
Mapping of ERP data: Document types, date types, item types, partner functions, routes, owners	yes	yes	no (ERP/WMS client)	no	
Interfaces to other ERP systems	no	no	no	no	No other ERP systems in place
Interfaces to internal IT systems	yes	yes	yes	yes	For details see systems architecture: M_WMS_1-2024 Architektura Systemo
Interfaces to external IT systems (third parties outside the Rossmann organization)	yes	no	no	no	
Interfaces to other WMS systems	yes (Pack Tech)	no	no	no	Pack Tech – external warehouse, technical articles, store equipment

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2. User interfaces

Function	Rossmann Systems			MFC	Comments
	ERP	WMS	Apps		
Interfaces and connection of radio frequency devices such as mobile terminals, tablets in conjunction with workstation dialogues for processing orders	no	yes (PBV, VC, Point Mobile – Moha TN5250)	yes (Mag Droid, 3XP, Horizontal Transport, Kontrola Pakunków)	yes (TGW, Light House)	TGW – communication with tablets for servicing lifts, Stingray's strollers. Light House – automation interface access (AKL2) For details see systems architecture – LFS connections: M_WMS_3-2024 Architektura Systemo
On-screen dialogues at the stationary workstations	no	yes (ACS - IBM, RPI – TN5250J)	yes (Mini Load 2, NIO, KonKom, Wizualizacja Przepaków, Reporting: Warehouse Architecture, Warehouse Manager)	yes	MFC – each installation how its own system for purpose of reporting, maintenance strategy, mechanical – in most cases more than only visualization.
Interface to mobile terminals in connection with the maintenance / servicing of the new automatic system	no	no	no	no	Maint Master solution in place to collect all of the issues from each of the automations. Future – each locations will have own team for maintenance, managed under central in LDZ. From operational point of view there should also be an access for the team which will manage

Commented [KZ1]: -Connection to a system that supports PBV

-TGW communicates with tablets for automation, elevators, Stingray trucks

- Access to the entire LightHouse interface (SSI installation - AKL2) is via the webserver, so from every laptop and tablet in the ROSS domain

Commented [AJ3]: Kamil Jabłoński: PMW, WAMAS etc.

Commented [KZ4R3]: Korber - PMS & Visu
Vanderlande - VISION
SSI - LH
Etc.
Purpose: reporting, maintenance strategy, mechanical pov – in most cases more then only visualisation. Split details per case.

Commented [AJ2]: Paweł Wysocki:
PBV's sysytem have also dialogue beetween user and PBV

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					processes from LDZ level for all locations. There should be two way access to data (LDZ <–> PYS), level and details to be aligned.
Interface to Infokiosk (for printing ZMM docs upon loading completion)	yes	no	yes (Infokiosk)	no	No direct connection from Infokiosk to WMS & MFC, only using data from it through other systems.

Commented [AJ5]: Kamil Jabłoński:
For printing transport documents

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3. Subordinate control level

Function	Rossmann Systems			MFC	Comments
	ERP	WMS	Apps		
Communication with the subordinate control systems for the automatic storage and retrieval machines	no	no	no	yes	
Communication with the subordinate control systems of the automatic conveyor systems	no	no	no	yes	
Communication with the subordinate AGV control system (if available)	no	no	no	no	No AGV control system in place. Future - system should allow connecting AGV system (should be no block here).
Communication with a forklift terminal control system (if available)	no	no	no	no	Forklift Control System: communication to forklift terminal, coordination and planning of the transportations with usage of forklifts (WMS level). Transport optimization solution. Note: PYS – Jungheinrich system connected to LFS (screen reading solution) for forklift navigation (self-driving).

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Communication with a pick-by-light system	no	no	no	yes (AKL1, AKL2)	Orders (pick lists level) from WMS goes to (specific) MFC and MFC handles PBL. Strategy comes from WMS, MFC is executing it Involvement in optimization depends on automation. Preferred solution to be decided – strategy to be included in tender. Future – implementing PBL external solution (LUCA) under consideration for non-automated areas (expensive). Solution would be exchanging telegrams with WMS (WMS – pick lists, LUCA – optimization, execution, confirmation).

Commented [AJ6]: Paweł Wysocki:
Yes. There is comunnication beetween MFC and WMS eg. after press button in picking location or change the quantity we have some correct in WMS (only notification to WMS)

Commented [AJ7]: Pedro Inacio:
communication from LFS is to the installations MFCs than then communicate with the PbL itself but LFS has a separate communication channel for each PbL, not the same as for the miniload (client – server, two channels – two channel to MiniLoad an two channels to PBL)

Commented [AJ8]: E.g. Security - creating a regulatory map, daily monitoring of anomalies.

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4. Warehouse organization and master data

4.1. Warehouse organization

Function	Rossmann Systems			MFC	Comments
	ERP	WMS	Apps		
Set-up of storage types (HBW, AKL, sequencer) automatic areas	no	yes	no	no	Master data comes from WMS – MFC uses this data for the purposes for it to function properly. WMS have full visibility while each MFC controls only single automation. Standard setup: ERP – company level, WMS – site level, MFC – automation level ASIS – MFC executes tasks from WMS (e.g. it does not overwrites WMS decision if pallet is too high for location). Future – MFC to be able to decide on how to execute tasks (e.g. overwrite decision depending on pallet dimensions). Dangerous/Hazardous/Flammable goods – currently control of it is on the WMS side, for future we could have it included in MFC.

Commented [AJ9]: Paweł Wysocki:
Yes, that is true: both HBW, both AKL, DIP, repacking and sorting area (AKL1). There is no sequencer

4.2. Warehouse master data and warehouse rules

Function	Rossmann Systems			MFC	Comments
	ERP	WMS	Apps		
Storage topology for all automated storage areas (customizing storage type, storage area, storage bin type)	no	yes	no	yes	Same topology needs to be in WMS (source) and MFC (client). See comments on 4.1
Workstation dialogues for goods receipt, repacking, order picking AKL, packing of parcels, shipment consolidation, etc.	yes (KWT, Cubi Scan)	yes	yes (Mag Droid, Sorter)	no	
Creating and maintaining master data for the products	yes (PIM, Cubi Scan)	yes	yes (Hit Kody)	no	
Definition of palletizing, repacking and packing instructions	no	yes	no	no	Loose containers – inbound team builds pallets based available warehouse spots (in terms of height).
Definition of handling units (HU), packaging material types, HU types, assignment of HU types to storage types	yes (capacity)	yes (assignment)	no	no	MFC tracks entering HU correctness (based of prefix number), if wrong HU enters it sends it to NOK/NIO. HU prefix is defined at WMS level.
Process-orientated warehouse control for the relevant areas of the MFC	no	yes	yes (Mini Load)	yes	Process orientated = process sequence.

Commented [AJ10]: Suspended - Totes application - verification of correct orientation of litter boxes, currently not used.

Commented [AJ11]: Kamil Jabłoński: HIT_Kody?

Commented [AJ12R11]: The machine plus the application – only for LDZ – sends data on dimensions, weights and other parameters to ERP (and then transferred to LFS). Delay of 1-2 minutes from entry.

Commented [AJ13]: Kamil Jabłoński: NIO stations (Vision i WAMAS)

Commented [AJ14R13]: PLC – verifies whether the container is built correctly and can provide information about an error (Wamas – Light House).

Commented [KZ15]: Each automation area has an MFC that controls the behavior of devices and the transport of units

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Layout-orientated warehouse control for relevant areas of the MFC	no	yes	yes (Mini Load)	yes	Layout orientated = arrangement. WMS locations naming vs MFC locations naming is equal.
Definition and management of the creation of warehouse tasks, warehouse orders, limit values, rules for the creation of warehouse orders, warehouse process types	yes	yes	yes (Mini Load, Batcher)	yes	
Resource management, definition of resource types, work queues for MFC-relevant areas	no	yes	no	yes (MFC selects the station)	Resources management – equipment, technical (stacker cranes, conveyors etc.). Not the stuff. Direct station (for picking) is decided at the MFC level: definition on which station is prepared for repacking (MFC assign tasks to specific stations, live decision), WMS – how many pallets we can send for repacking area (what I have to re-pack, send to repacking area). Possible to set up some counters for installations from the level of WMS.
Activate actions and define conditions under which certain processes are to be	yes (PNG)	yes	yes (Mini Load)	yes	PMS – triggers consolidation process (two not full totes gets combined into one).

Commented [AJ16]: Kamil Jabłoński: Only sequencioner and MW

Commented [AJ17]: Krzysztof Zborowski: Counters, e.g. of orders, appear in LFS for AKL1&2, but management inside the device is in MFC

The same story with the movements of AKLi MFC stacker cranes optimizes their movements inside the rack

Commented [AJ18]: Automations have built-in logic for repeating tasks.

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executed in the warehouse					Manual stacking – creation of dolly – if not enough totes it goes to manual stacking (PMS trigger). Flags comes WMS.
Basic settings Radio Frequency Framework and set up mobile functionality for the RF devices	no	yes	yes	yes	

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5. Inventory management

Function	Rossmann Systems			MFC	Comments
	ERP	WMS	Apps		
Inventory management	yes (settlements)	yes (managment)	no	no	Inventory management is always triggered by the WMS. MFC – standard replenishment process (position -> position movements only). Future – some support on MFC side could be useful.
Stock types	no	yes	no	no	Stock types – available vs blocked stock (for quality, other conditions). Communication – blocks are done in WMS but no communication goes to MFC. ERP gets data from WMS but no communication back from ERP on blocks. Future – could be included in MFC.
Inventory transfers	yes	yes	no	no	
Inventory synchronization between Rossmann's ERP / WMS and MFC for automated storage areas	yes	yes	no (only getting data from WMS)	no (only reporting to WMS)	
Stocktaking process					To be discussed and included in TOBE

Commented [AJ19]: Krzysztof Zborowski:
MFC - AKL1&2 can manage inventory by relocating reserve bins between stacker cranes

MFC - HBW1&2 does not reallocate pallets automatically (must be forced by LFS)

MFC - Shuttle does not reallocate litter boxes after they are placed in the rack (without external forcing)

MFC - Shipping Stacker Crane - keeps track of the order in which the units are placed within its rack, nothing else

Commented [AJ20]: At the ERP level stock blocks are not performed.
Information about stock types is taken from LFS trough ERP for planning system purposes. EPR itself is not using this data, only acts as pass-trough point.

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6. Incoming goods processes

Function	Rossmann Systems			MFC	Comments
	ERP	WMS	Apps		
Definition of inbound delivery processes and their document and item types	yes	yes	no	no	
HU creation in the ERP system or in the WMS	yes (master data – amount per HU)	yes	no	no	
Dialogues for goods receipt processes	yes	yes	no	no	
Transmission of HU number for created HU in goods receipt	no	yes	no	no	HU number = ID Any unit put in installation gets the data at the stage of scanning it at check points.
Feedback of received HU numbers from the MFC to Rossmann's ERP system / WMS	no	yes (receiving confirmation)	no	yes (sending confirmation)	HBW – only this installation can notify WMS if HU is lower than original setup (overwrites data). Order level to suppliers – pallets should be not higher than XX, in general we do not get higher but shorter can happen. If pallet is higher we either accept or rebuild – we do not ship back. WMS manages directing goods to proper locations in terms of height.

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7. Quality management

Function	Rossmann Systems			MFC	Comments
	ERP	WMS	Apps		
Definition of processes for quality assurance	yes	yes	yes (MagDroid, KonKom)	no	Any quality controls are based on manual triggers. Future – needs to be included.
Dialogues for the implementation of quality assurance processes	yes	yes	yes	no	Systems have quality options (quality control, quality blocks) but no automatic communication and triggers between system

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8. Storage in automated storage areas

Function	Rossmann Systems			MFC	Comments
	ERP	WMS	Apps		
Definition and implementation of the rules for determining the storage type, the storage area and the storage location (equal distribution of articles, height structure HU, ABC distribution in the aisles, etc.)	no	yes	yes (Mini Load – reorg - ABC)	yes (shuttle area)	Shuttle area – decides itself, others – only executing WMS decision.
Goods receipt: feedback of the stored HU to Rossmann's ERP / WMS	no	yes (receiving confirmation)	no	yes (sending confirmation)	WMS – sends confirmation to ERP that pallet is on the warehouse stock (total amount, not HU split). See comments 6 (point 5).
Recording the HU and destination of the HU on the conveyor system with control of the HU to the specified destination	no	yes (only specified control points are mapped – only decisive ones)	no	yes (based on control points)	
For automatic storage process: Identification of the HU at the automatic identification point in the conveyor system in front of the automatic storage area; with recording of the weight and contour of the HU	no	yes (products directed to NIO if conditions not met)	no	yes (level depends on the installation)	WMS sends info to MFC (with expectations), MFC gives feedback if there any condition is not met.

Commented [AJ21]: Paweł Wysocki:
Yes but we have some „remains" for ABC, height fort he pallets but we can switch off/on this.

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Put away strategy for automated storage areas: Determination and execution of bin location according to defined put away strategies	no	yes	no	yes (shuttle area)	MFC – only for shuttle area (PMS have internal data for storage and put away), others based on WMS.

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9. Order disposition

Function	Rossmann Systems			MFC	Comments
	ERP	WMS	Apps		
Preparation of stock removal orders for customer orders	yes (order level)	yes (pick list level)	no	no	
Definition of the stock / HU in the automated storage areas from which the customer order is to be satisfied	yes (LDZ – PYS – GRD level)	yes (area, station level)	no	no	WMS: Primary area and station to pick goods from – configuration level.
Defining the retrieval strategy or the order in which HUs are retrieved or the picking order in the picking zones in the Pick Gallery (automatic areas only)	no	yes	yes (Mini Load)	no	No shipments of full pallet to the stores. WMS – automatic decision on replenishment. Mini Load app – trigger for totes repacking.
Resource control in the automated storage areas for retrieval: storage and retrieval machines, conveyor technology, storage locations in the racking, etc.	no	no	no	yes	

Commented [AJ22]: Tags 101-102-103-104 ERP – LFS (LDZ, PYS…).

Items are assigned to picking locations - set at the configuration level.

Commented [KZ23]: Yes - the best example is PMS and working with litter boxes in a shuttle

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10. Retrieval, order picking and goods issue

Function	Rossmann Systems			MFC	Comments
	ERP	WMS	Apps		
Carrying out the transport of pallets, storage totes und shipping totes	yes	yes	yes (Horizontal Transport)	yes	Answers done at the level of whole site (each system involved at different level of decision – site based, area based, station based). Within automatic system – only on MFC side as it controls physical transport (ERP not involved, WMS – only at decisive points level).
Dialogs and displays for pick-by-light picking	no	no	no	yes (included in MFC functionalities)	
Dialogs and displays for packaging, order consolidation, shipping	no	yes	yes (SBM)	no	SBM – shipping warehouse, loading process executed by drivers, RFID gate (split per store, split per loaded/to be loaded etc.). PBL is not included in this point.
Printing labels and documents	no	yes	yes (Infokiosk)	no	Infokiosk – for printing dispatch documents post loading (driver scans ID) Exception: PNG – label is printed by PMS. All other labels are printed trough WMS.

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11. Internal warehouse processes

Function	Rossmann Systems			MFC	Comments
	ERP	WMS	Apps		
Inventories (with / without stock corrections)	yes	yes	no	no	MFC always contacts WMS (either with telegram for stock correction or with notification of differences).
Stock transfer (within an aisle, between different aisles, from picking, etc.)	no	yes (trigger)	no	yes (execution with exception on shuttle area)	
Replenishment pick zones in gallery picking	no	yes (trigger)	yes (Mini Load)	yes (execution)	From reserves to picking locations, from high bay to other areas (automated, manual).
Scrapping	yes	yes	no	no	Scrapping (removal of damaged, post MHD etc. goods).

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12. Material flow control

Function	Rossmann Systems			MFC	Comments
	ERP	WMS	Apps		
Direct and indirect interfaces to the subordinate controls of the automatic systems	no	yes	no	yes	WMS needed for the NIO stations (master data discrepancies). Flows on automatic installation in general is controlled trough MFC. WMS acts as a bridge in case of transfers between installations.
Resource management Automatic areas with operating statuses (storage and retrieval machines, conveyor systems, etc.)	no	yes	no	yes	MFC communicates problems to WMS.
Double-play logic in the automatic storage areas	no	no	no	yes	Double – play logic = double cycles.
Material flow control, functionality of error cases (e.g. compartment full, compartment empty, alternative location determination), consideration of system statuses, consideration of current utilization of conveyor lines, etc.	no	yes (getting data from MFC)	no	yes (sending data to WMS)	MFC – can change direction if sees backlogs without notification to WMS (more than one way to reach location) plus reporting.
Control of HUs to exit points (leaving the automatic storage area)	no	yes (trigger)	no	yes (executing and reporting)	MFC tracks HU until they exit of automatic storage area.

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Sequencing from the conveyor to the workstations based on a specified sequence	no	yes (trigger)	no	yes (deciding, executing and reporting)	MFC – decisive on the sequence within installation.