

KDD014 - Future-proof Warehouse Operations

Status	Approved
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Issue

Syensqo currently operates on the SAP ECC platform, utilizing the SAP Warehouse Management (WM) solution for its logistics and inventory management processes in some of its locations.

SAP WM is the backbone of the warehouse operations for packed items which includes goods receipt, putaway, picking, packing and inventory tracking.

As part of the transition into SAP S/4HANA, the SAP WM module is obsolete and has been replaced with alternate options. Therefore, a decision is required on the future Warehouse Management System of Syensqo.

Recommendation

The recommendation is to implement the basic SAP Extended Warehouse Management module and functionality (Option B) as this will support Syensqo's current and likely future warehouse management requirements.

Background & Context

Below an overview of the SAP Warehouse Management Systems (WMS) are displayed:

Acronym / Term	System	Definition
SAP Warehouse Management (WM)	ECC	SAP ECC warehouse management solution as currently used in some of the Syensqo entities. Has been phased-out in S/4HANA.
SAP Stock Room Management	S/4 HANA	SAP S/4HANA potential replacement for old SAP ECC WM solution. Is a more basic and simple version of SAP ECC WM.
SAP Extended Warehouse Management (EWM)	S/4 HANA	SAP's new warehouse management solution in S/4HANA. More modern and comprehensive warehouse management solution compared to the old SAP ECC WM solution. It is considered to be a full warehouse management solution and has two flavours: Basic EWM and Advanced EWM (explored further in options below).

Not all warehouses at Syensqo are required to use a Warehouse Management System. Warehouses which are not using a Warehouse Management Solution will manage stock at Inventory Management level:

Acronym / Term	System	Definition
SAP Inventory Management (IM)	ECC and S/4 HANA	You manage stocks on a site and storage location level, and can assign each site a number of storage locations. If you want to manage a warehouse complex within a storage location, you can link Warehouse Management to Inventory Management.

A additional comparison between Warehouse Management Systems and Inventory Management is displayed:

Criteria	Inventory Management (IM)	Warehouse Management Systems
General	Focuses on overseeing and controlling inventory.	Deals with the physical aspects of storing and moving goods within a facility.

Stock Accuracy	Further segregation of inventory is possible on the level of: • Batch • Stock type level (e.g. quality inspection stock, blocked stock) • Special stocks (e.g. consignment stock, project stock)	In addition to the levels of IM, a WMS will add the physical location component for detailed stock monitoring.
Warehouse Execution	Registration of goods receipts, goods issues and stock corrections. Also managing the different stock types (e.g. quality inspection stock, blocked stock).	In addition to the levels of IM, a WMS is used to manage warehouse processes in more detail. This means the system will guide the warehouse operator during picking, packing and putaway execution.
Real Time Visibility	Real time visibility of in and out movements.	In addition to the levels of IM, every physical movement from location A to location B in the warehouse is registered. This provides real time visibility on a more detailed level.

Assumptions

- The SAP S/4 HANA implementation is a green field implementation.
- To be in line with the standardization goals of Syensqo, only one of the options outlined in this document will be selected for implementation.
- Not every warehouse will require a Warehouse Management System. These decisions on warehouse level will be taken during detailed design based on the business rules described in this document. Warehouses which do not require a WMS, will manage their inventory on storage location level (Inventory Management).
 - Note:
 - This also includes the warehouses which are currently using Lean Warehouse Management in WP1. This is a simplified approach for Warehouse Management which won't be used anymore in the future.
 - This also includes spare parts warehouses.
 - R&I Centers are assumed to be handled in Inventory Management.
- In general, Warehouse Management is not considered for 3PL warehouses because the equivalent functionalities can be achieved in 3PL systems. However there might be exceptions. These decisions will be taken during detailed design based on the business rules described in this document.
- SAP EWM offers different deployment options. Based on below explanation and assumptions, decentral EWM is not further considered in this document.
 - **Embedded EWM:** EWM is embedded within the SAP S/4HANA system. Embedded EWM is suitable for simpler warehouse processes and organizations looking for tighter integration between logistics and other business processes.
 - **Decentral EWM:** EWM is deployed as a standalone system separate from the core SAP S/4HANA system. It provides advanced warehouse management capabilities. Main reasons to implement Decentral EWM:
 - WMS should integrate with multiple ERP systems.
 - Integration of 1 ERP system with multiple WMS.
 - High throughput, high volumes.
 - High automation and integration.

Assumptions:

- For Syensqo it is assumed that the transactional volumes can be handled in an Embedded EWM system. Further analysis is in progress to confirm this statement.
- So far no requirements have been identified for the other functionalities mentioned above.
- To ensure a successful cutover and deployment of a warehouse management system, the quality of data during stock migration is crucial. We assume that Syensqo can provide accurate and realistic data.
- Some Syensqo warehouses operate on a 24-hour basis, however all warehouses and warehouse related business processes are able to accommodate system maintenance windows on weekends.
- The developments required to integrate basic EWM with advanced TM has limited complexity, impact and risk on the overall solution.
- No inventory quantity differentiation per GBU required on warehouse management level. This means that e.g.:
 - GBU information is not directly available in all reports on Warehouse Management level e.g. inbound deliveries, outbound deliveries and stocklists.
 - GBU information is not available to plan the Warehouse Management activities like picking, putaway and physical inventory.

Constraints

- Refer to impact: By default, there is no integration between advanced TM and basic EWM. In case TM information (e.g. freight order, carrier) is required in EWM, this will be built using custom development.

Impacts

- **Change Management:**
 - The future proof EWM solution offers greater flexibility. However, this increased flexibility also introduces complexity. To strike the right balance, our implementation approach will prioritize simplicity. We'll provide sufficient training to ensure users become proficient in the new terminology and Fiori tiles.

- Change Management is an important aspect. Note that the degree of change will be highly impacted by the Mobility Solutions which will be used in the warehouse. A separate [KDD exists on Mobility Solutions in Logistics and Warehouse Management](#).
- **Data Migration:**
 - Today, the material master data of SAP WM is exclusively covered by transaction MM01 (Warehouse Management 1 and 2). In SAP EWM, the material master data has to be maintained separately. A development can facilitate this data maintenance; this will be discussed further during detailed design.
 - Data migration for EWM involves adapting to its distinct data structures, which will require additional effort.
- **Integrations:**
 - SAP TM: The implementation of Basic EWM will impact the integration of EWM and TM. A separate [KDD exists on the decision between advanced and basic TM](#).
 - Basic EWM can integrate with basic TM.
The benefit is that the information of the freight order - this is similar to shipment - is visible during monitoring and execution of warehouse activities. This functionality is called Advanced Shipping and Receiving. Some of the advantage are:
 - The freight order is visible in warehouse reporting.
 - Loading can be done on the level of freight order.
 - Advanced EWM can integrate with advanced TM.
 - There is no integration between basic EWM and advanced TM.
This means that all warehouse activities will be executed on the level of deliveries since freight orders are not visible. Extra developments will be required for this solution.
- **Process:**
 - Yard Management: The basic EWM implementation doesn't provide Yard Management functionalities in the SAP system.
 - Syensqo currently relies on various solutions for this purpose. Initial high-level analysis identified the use of Selfy, Simba, and Google Docs. To determine the optimal solution moving forward, a more detailed assessment of current usage and future yard management needs is essential.
- **System downtime:**
 - If the WMS is embedded in the S/4HANA system, then any planned/unplanned outage to S/4HANA will also affect all warehouses.

Business Rules

As mentioned before, a Warehouse Management System is not required in all warehouses.

- These 4 criteria will be used during detailed design to determine if a warehouse* **requires a warehouse management system**.
**Note: These criteria will also be used for spare parts warehouses. These criteria are not relevant for 3PL warehouses.*
- 1. **Stock visibility:** Real time visibility on the physical locations of goods in the warehouse is required.
Knowing the exact location of materials is critical.
- 2. **Warehouse execution:**
 - a. [Automated putaway and picking strategies based on business rules](#).
E.g. The system can suggest relevant putaway or picking locations.
 - b. The warehouse operator requires guidance from the system during execution of the warehouse processes.
E.g. The system will guide the operator to the area/ location in the warehouse where the goods need to be picked or putaway.
- 3. **Number of storage bins:** More than X storage bins are required. The specific number of storage bins will be determined during detailed design.
This can deviate between manufacturing warehouses and spare parts or R&I centers.
- 4. **Number of warehouse operators:** More than X warehouse operators are working in the warehouse.
The specific number of warehouse operators will be determined during detailed design.
This can deviate between manufacturing warehouses and spare parts or R&I centers.
- There are guidelines on how to **manage 3PL warehouses**.

In general, for 3PL warehouses handling the execution of the warehouse processes and having their own WMS, stock can be handled on higher level in the Syensqo system using Inventory Management. This means no setup of Warehouse Management is required. To optimize efficiency and stock accuracy, updates of stock levels and other registrations are posted automatically using an interface.

However, reasons can be identified to manage stock in 3PL warehouses on Warehouse Management level. Some valid reasons are:

- Syensqo is handling the execution of the processes internally in the 3PL warehouses.
- Syensqo requires more detailed visibility of 3PL stock in the Syensqo system.
- There is no interface created with the 3PL warehouses.
The 3PL is expected to do double registration; registration in their own WMS and directly in the Syensqo system.

These are some of the reasons no interface is created with 3PL warehouses:

- Limited maturity/ capabilities of 3PL sites.
- Limited term of agreement with 3PL.
- Limited volume processed by 3PL.
- Type of activities performed by 3PL.

Options considered

There are 4 options considered.

Option A relates to the SRM solution, Option B and C related to the two flavours of EWM and Option D considers a potential external (best of breed) warehouse management solution.

Option A: Stock Room Management

+ A basic version of the current SAP WM solution used at Syensqo.
This means that the terminology and processes would be similar for the users.

- Functionalities in Stock Room Management are more limited compared to SAP WM functionalities.
By going from SAP WM to Stock Room Management, these are some of the functionalities that will be lost:

- Value Added Services
- Yard Management
- Cross-Docking
- Wave Management

- This solution is no longer on the roadmap of SAP.
This means that SAP won't further invest in this solutions and no more improvements are expected.

Option B: Basic Extended Warehouse Management

+ The new Warehouse Management Solution in S/4 HANA to support basic warehouse processes.
No extra licenses are required. There is the option to use extra functionalities and go to advanced EWM if required (Option C).

+ More extended monitoring functionalities compared to Stock Room Management.

- The terminology and processes are different for the users compared to SAP WM in ECC.
Sufficient training is required. Complexity can be limited by keeping it light during the design.

Option C: Advanced Extended Warehouse Management

+ This advanced option is adding advanced Warehouse Management functionalities on top of the basic ones of option B.
Some of the functionalities:

- Value Added Services, e.g. Kit to order
- Yard Management
- Cross-Docking
- Wave Management

- Extra licenses required.

Option D: Non-SAP Warehouse Management System/ Best-in-class WMS

Example of a Best-in-class WMS [Körber](#).

- Working with a non-SAP solution require extra interfaces to SAP S/4 HANA.

- The terminology and processes are different for the users compared to SAP WM in ECC.
Sufficient training is required.

+ Advanced Warehouse Management functionalities.

Evaluation

Given the fact that Warehouse Management is not Syensqo's core business, the suggested approach is to support all basic warehouse processes and avoid adding complexity of advanced warehouse management solutions.

Implementing Basic SAP EWM provides a future-proof solution to support Syensqo's warehouse management processes (Option B).

Additional functionalities and complexity can be added where needed in later phases (Option C).

	Option A: SRM	Option B: Basic EWM	Option C: Advanced EWM	Option D: Non-SAP WMS/ Best-in-class WMS

Functionalities	⊖ Less functionalities compared to the old SAP WM solution in ECC. ⊖ Only supports basic warehouse management processes.	⊕ Better monitoring capabilities. ⊖ Only supports basic warehouse management processes.	⊕ Supports advanced warehouse management processes.	⊕ Supports advanced warehouse management processes.
Integration	⊕ Embedded in S/4 HANA	⊕ Embedded in S/4 HANA	⊕ Embedded in S/4 HANA	⊖ Interface with S/4 HANA is required.
Scalability and future growth	⊖ Not on the future roadmap of SAP, so no more improvements.	⊕ Future proof SAP solution.	⊕ Future proof SAP solution.	⊕ Future proof solution.
Implementing effort and Change Management	⊕ Terminology and processes would be similar for the users. ⊕ Less implementation effort e.g. less training required.	⊖ Sufficient training required for the users. ⊕ Limited scope of EWM implementation will limit complexity.	⊖ Sufficient training required for the users. ⊖ More implementation effort because of extensive scope. ⊕ Limit increased complexity of advanced functionalities by using a phased approach; first Option B, Option C in a later phase if required.	⊖ Sufficient training required for the users. ⊖ Interface with S/4 HANA adds complexity to the solution landscape.

See also

1. Reference to KDD Transportation Management:
[KDD030 - SAP Transportation Management version](#)
2. Reference to KDD Logistics:
[Logistics - Global Track & Trace Options: Batch vs Serial Number - ERP Rebuild - Syensqo - Wiki knowledge base](#)
3. Reference to Körber website:
[WMS for SMB Businesses \(koerber-supplychain-software.com\)](#)
4. Reference to KDD Mobility solutions in Warehousing:
[KDD025 - Mobility Solutions in Logistics and Warehouse Management Processes](#)
5. Overview of advanced EWM functionalities to compare Option B and Option C:
[Functionalities advanced EWM - Google Sheets](#)

Change log

Version	Published	Changed By	Comment
CURRENT (v. 88)	Mar 25, 2026 10:20	WENNINGER-ext, Sascha	updated template
v. 87	Aug 22, 2024 09:53	KHOOS-ext, Ayaka	
v. 86	Aug 20, 2024 15:35	KHOOS-ext, Ayaka	
v. 85	Aug 16, 2024 10:43	KHOOS-ext, Ayaka	
v. 84	Aug 16, 2024 09:46	KHOOS-ext, Ayaka	
v. 83	Aug 15, 2024 06:41	KHOOS-ext, Ayaka	
v. 82	Aug 07, 2024 12:23	WENNINGER-ext, Sascha	
v. 81	Aug 06, 2024 07:54	KHOOS-ext, Ayaka	
v. 80	Aug 02, 2024 13:19	WENNINGER-ext, Sascha	
v. 79	Aug 01, 2024 13:39	KHOOS-ext, Ayaka	

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Workflow history

This view shows the 5 most recent entries. The complete workflow log is available from the 'Document Activity' menu item.

Mar 25, 2026	Actor	Type	Activity	Version
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Approved	WENNINGER-ext, Sascha	Edit	updated the page at 10:20 am	
			updated template	
Edited following Approval	WENNINGER-ext, Sascha	State	changed state to Approved at 9:20 am	v88
		State	gave <i>Minor change</i> approval at 9:20 am	
		State	changed state to Edited following Approval at 9:20 am	v88
Sept 12, 2024				
Approved	 FALL-ext, Cheikh	State	changed state to Approved at 10:24 am	v87
Pending SteerCo Review	 FALL-ext, Cheikh	State	gave <i>Final Approval</i> approval at 10:24 am	
	WENNINGER-ext, Sascha	State	changed expiry date to '26 Sept, 2024 02:27 am' at 2:27 am	
		State	changed state to Pending SteerCo Review at 2:27 am	v87