

Warehouse Management (WM)

Curriculum: Introduction to S/4HANA using Global Bike

Teaching material - Information



Teaching material - Version

- 3.3 (July 2019)
- Software used
 - SAP S/4HANA 1809
- Model
 - Global Bike
- Prerequisites
 - No Prerequisites needed

Module Information



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Target Audience

- Beginner

Module Information



Learning Objectives

You are able to

- name some functionalities of the WM module.
- define the central organizational structures of the WM module.
- summarize the master data which is most important for the WM module.
- explain standard Warehouse Management processes.

Functionality

- Goods Receipt
- Goods Issue
- Picking
- Packing
- Shipping
- Physical Inventory

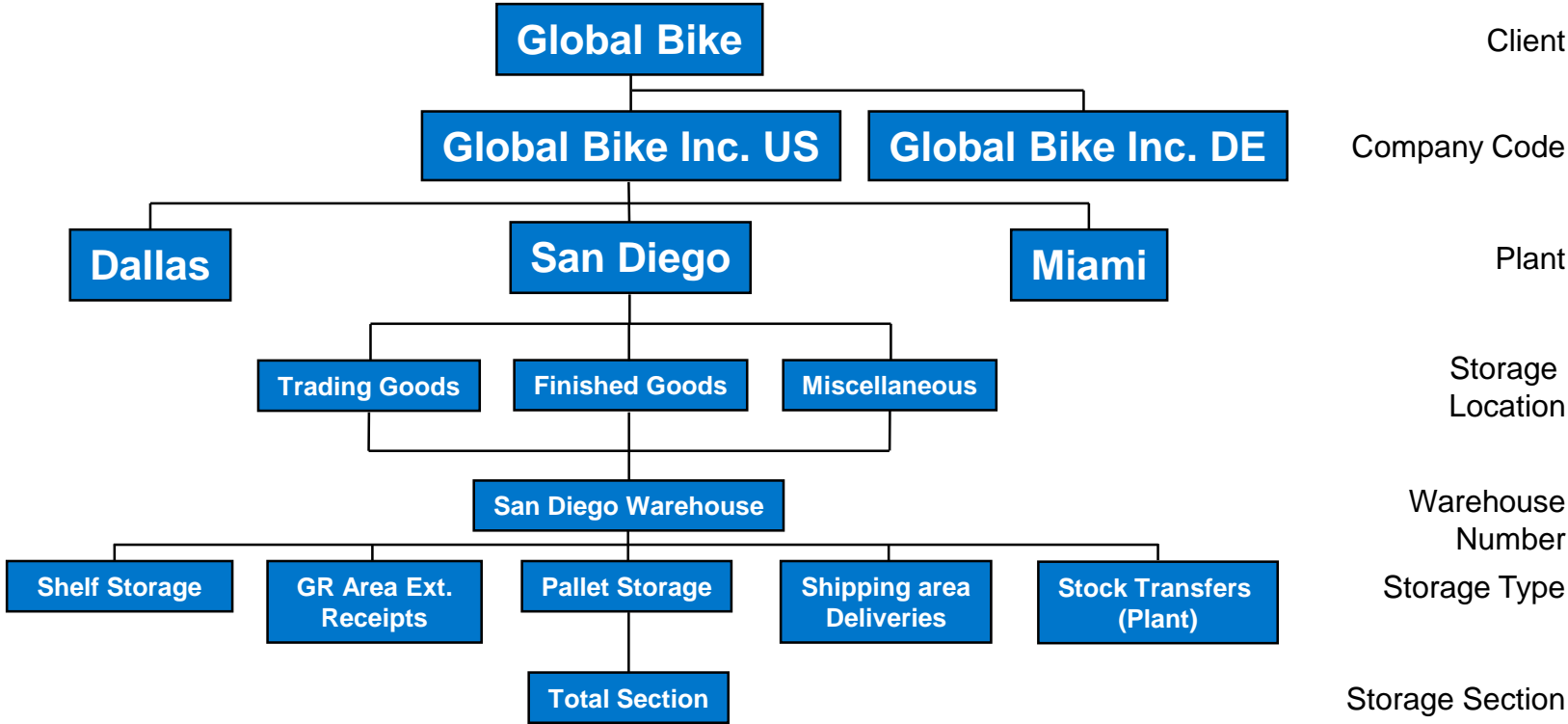
Agenda

- WM Organizational Structure
- WM Master Data
- WM Process Management and Control
- Innovations in S/4HANA

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- WM Organizational Structure
- WM Master Data
- WM Process Management and Control
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WM Organizational Structure



WM Organizational Structure

- Client
 - An independent environment in the system
- Company Code
 - Smallest org unit for which you can maintain a legal set of books
- Plant
 - Operating area or branch within a company
 - Manufacturing, distribution, purchasing or maintenance facility
- Storage Location
 - An organizational unit allowing differentiation between the various stocks of a material in a plant

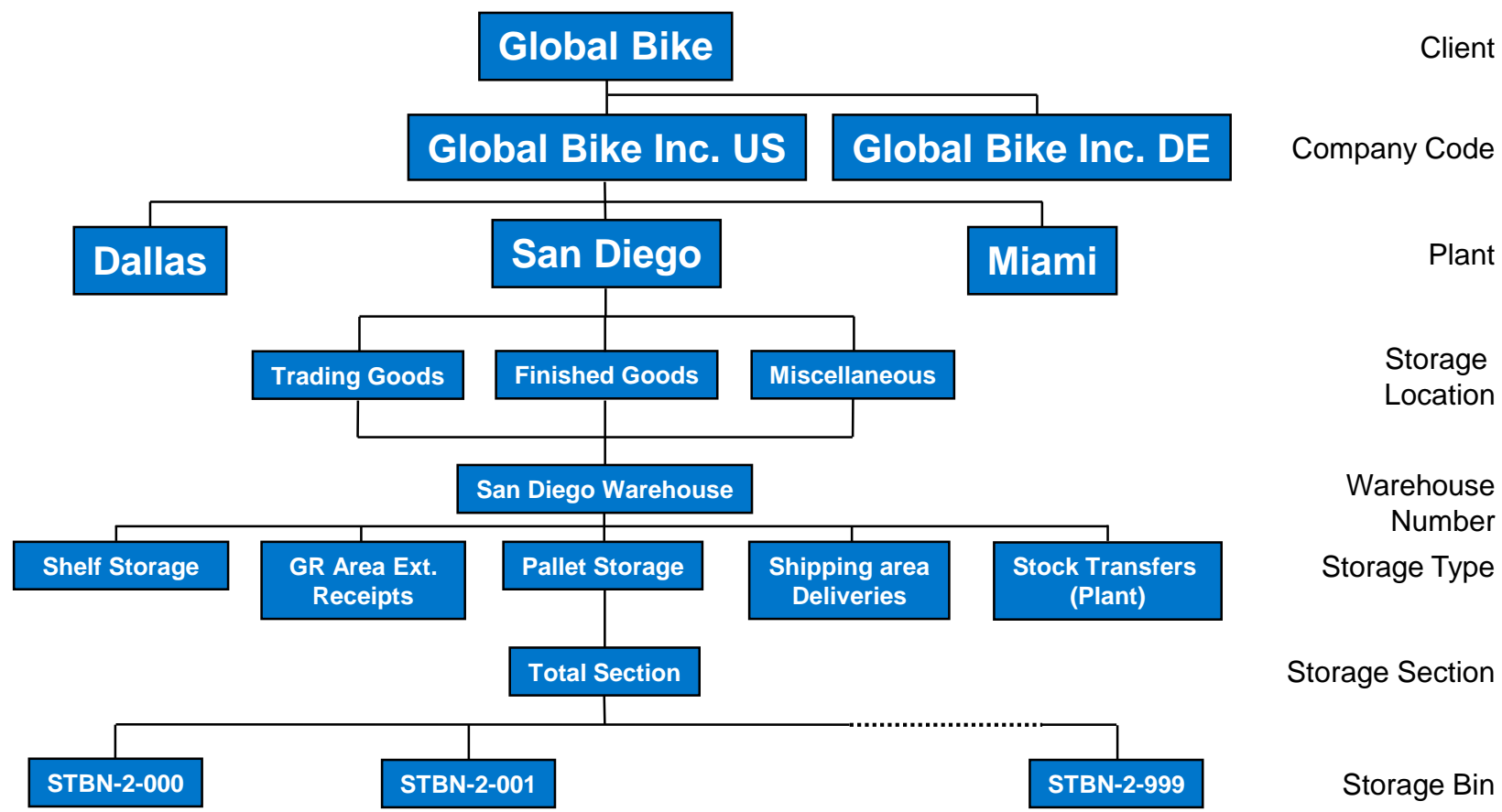
WM Organizational Structure

- Warehouse Number
 - Number that identifies a complex, physical warehouse structure within the warehouse management system
- Storage Type
 - Subdivision of a complex, physical warehouse
 - Is identified by its warehousing technique, form of organization, or its function
- Storage Section
 - Logical or physical subdivision of a storage type
 - Groups together a series of similar storage bins
- Picking Area
 - Groups storage bins together from the standpoint of picking strategies

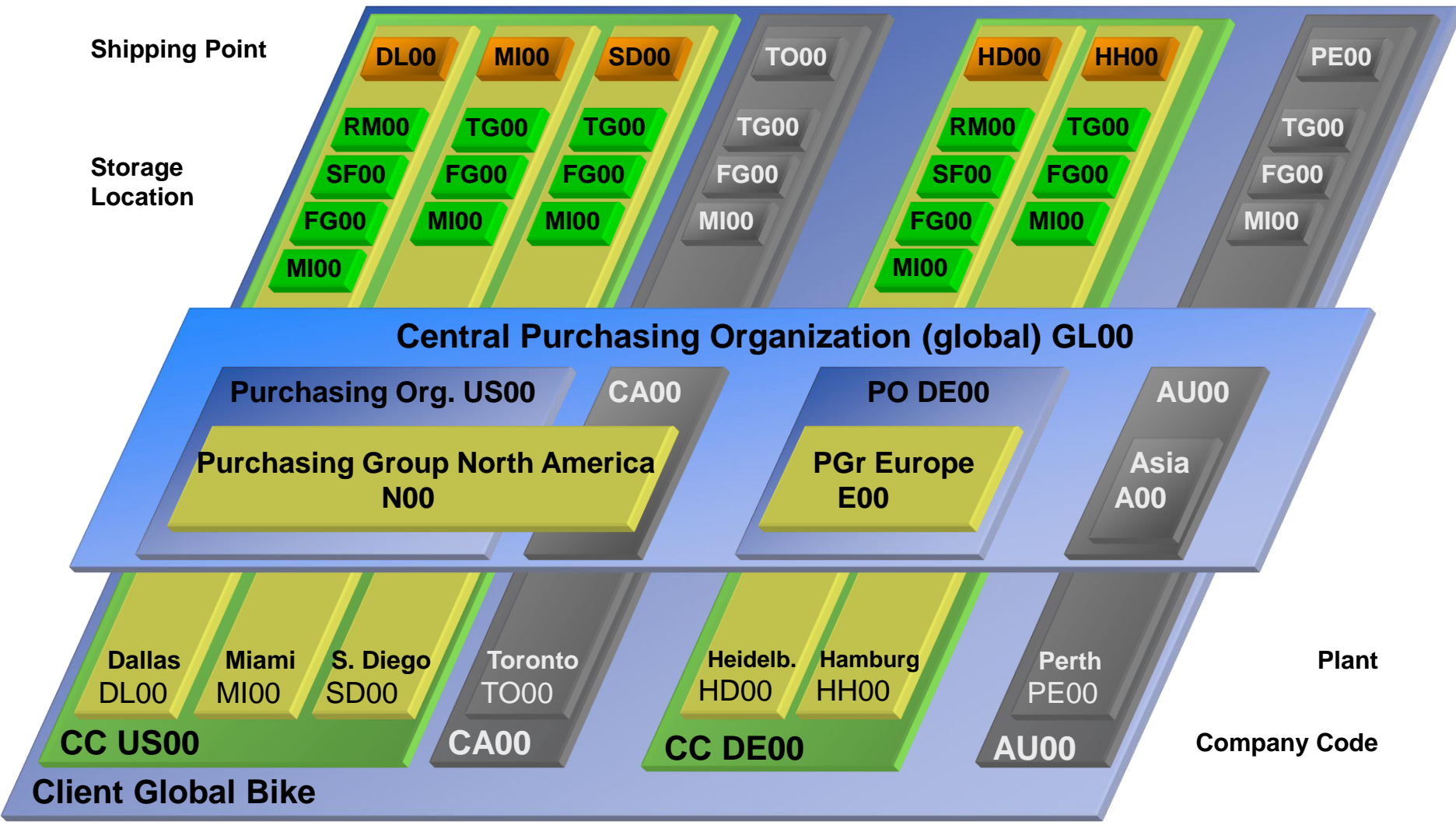
WM Organizational Structure

- Warehouse door
 - Marks the point where the means of transport changes to an internal transportation
- Allocation Zone
 - Temporary storage of goods, which have just arrived or will be shipped soon
- Shipping Point
 - Is the part of the company responsible for the type of shipping, the necessary shipping materials and the means of transport
- Storage Bin
 - Smallest addressable unit in a warehouse, which identifies the exact location in the warehouse where goods can be stored
 - Master Data

Global Bike Structure for Warehouse Management



Global Bike Enterprise Structure in SAP ERP (Logistics)



Agenda

- WM Organizational Structure
- **WM Master Data**
- WM Process Management and Control
- Innovations in S/4HANA

WM Master Data

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SAP

Display Transfer Requirement: List for Material

More

Exit

Warehouse Number

100

Material

DXTR1000

Plant

SD00

Stor. location

FG00

Batch

Shipment Type

*

Stock Segment:

Stock Cat.

*

Special Stock

*

Status of Movement

☐ Processing Complete

General Selection Criteria

Transfer Priority:

☐

Execute From (Date):

Execute to (Date):

Requirement Number:

Additional Number:

Source Storage Type:

Dest. Storage Type:

Layout:

Storage Bin Master Data

Material Master Data

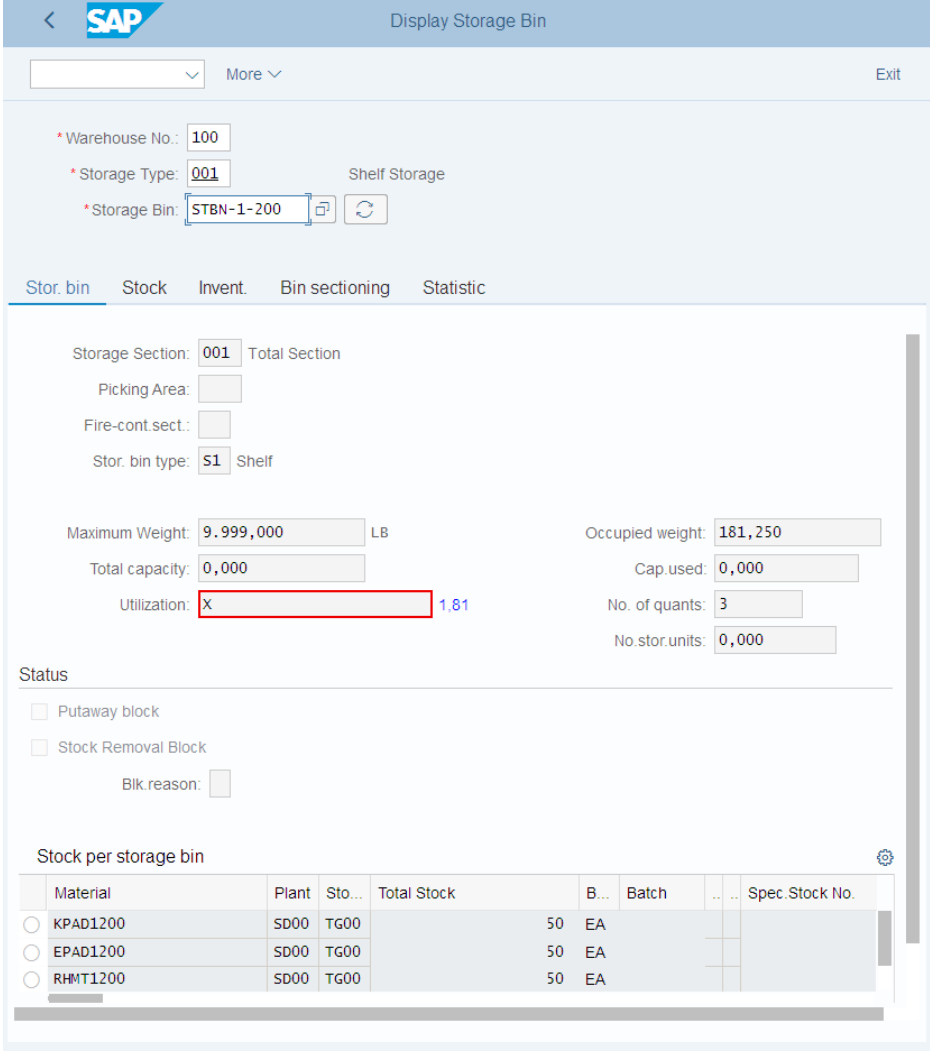
Hazard Master Data

Batch Master Data

Storage Bin Master Data

■ Storage Bin Master Data

- Two different organizational levels
 - Warehouse Level:
All indicators and fields which are valid for the whole warehouse
 - Storage Type Level:
All indicators which are only valid for specific storage types
- Also includes Storage Bins and Quants



The screenshot shows the SAP 'Display Storage Bin' interface. At the top, the SAP logo and title 'Display Storage Bin' are visible. Below the title bar, there are input fields for 'Warehouse No.' (100), 'Storage Type' (001), and 'Storage Bin' (STBN-1-200). The 'Storage Type' is labeled 'Shelf Storage'. Below these fields, there are tabs for 'Stor. bin', 'Stock', 'Invent.', 'Bin sectioning', and 'Statistic'. The 'Stor. bin' tab is active. Under this tab, there are fields for 'Storage Section' (001), 'Picking Area', 'Fire-cont. sect.', and 'Stor. bin type' (S1 Shelf). Below these, there are weight and capacity fields: 'Maximum Weight' (9.999,000 LB), 'Total capacity' (0,000), 'Utilization' (X, 1.81), 'Occupied weight' (181,250), 'Cap. used' (0,000), 'No. of quants' (3), and 'No. stor. units' (0,000). Below the utilization field, there is a 'Status' section with checkboxes for 'Putaway block' and 'Stock Removal Block', and a 'Blk. reason' field. At the bottom, there is a table titled 'Stock per storage bin' with columns for Material, Plant, Sto..., Total Stock, B..., Batch, and Spec. Stock No. The table contains three rows of data for materials KPAD1200, EPAD1200, and RHMT1200, all with plant SD00 and storage bin TG00.

Material	Plant	Sto...	Total Stock	B...	Batch	Spec. Stock No.
KPAD1200	SD00	TG00	50	EA		
EPAD1200	SD00	TG00	50	EA		
RHMT1200	SD00	TG00	50	EA		

Storage Bin Master Data

- Storage Bin

- Smallest addressable unit in a warehouse

- General Data

- Warehouse
- Storage type
- Storage bin number

- Storage Bin Data

- Storage section
- Picking area
- Fire-containment section
- Bin type
- Max. weight

- Status

- Blocked for putaway
- Stock removal block
- Blocking reason

General Data

Storage Bin Data (WM)

Status (MM)

Storage Bin Master Data

- Quant
 - Smallest addressable unit of measure for a material in SAP S/4HANA

- General Data
 - Material
 - Plant / Storage location
 - Batch
 - Warehouse
 - Storage type
 - Storage bin

- Stock Data
 - Total stock
 - Available stock

- Block Indicator
 - Block
 - Putaway/removal status

General Data

Stock Data (MM)

Blocking Indicator (MM)

Material Master Data

■ Material Master

- Contains all the information a company needs to manage a material
 - Sales and Distribution
 - Materials Management
 - Production
 - Plant Maintenance
 - Accounting/Controlling
 - Quality Management
- Material master data is stored in functional segments called Views

The screenshot displays the SAP Material Master Data for material DXTR1000, titled "Display Material DXTR1000 (Finished Product)". The interface includes a navigation bar with tabs for "Basic data 1", "Basic data 2", "Sales: sales org. 1", "Sales: sales org. 2", and "Sales: General/Plant". The material is identified as "DXTR1000" with the description "Deluxe Touring Bike (black)".

General Data

Base Unit of Measure: EA	each	Material Group: BIKES
Old material number:		Ext. Matl Group:
Division: BI		Lab/Office:
Product allocation:		Prod.hierarchy:
X-plant matl status:		Valid from:
Assign effect. vals:		GenItemCatGroup: NORM
		Standard item

Material authorization group

Authorization Group:

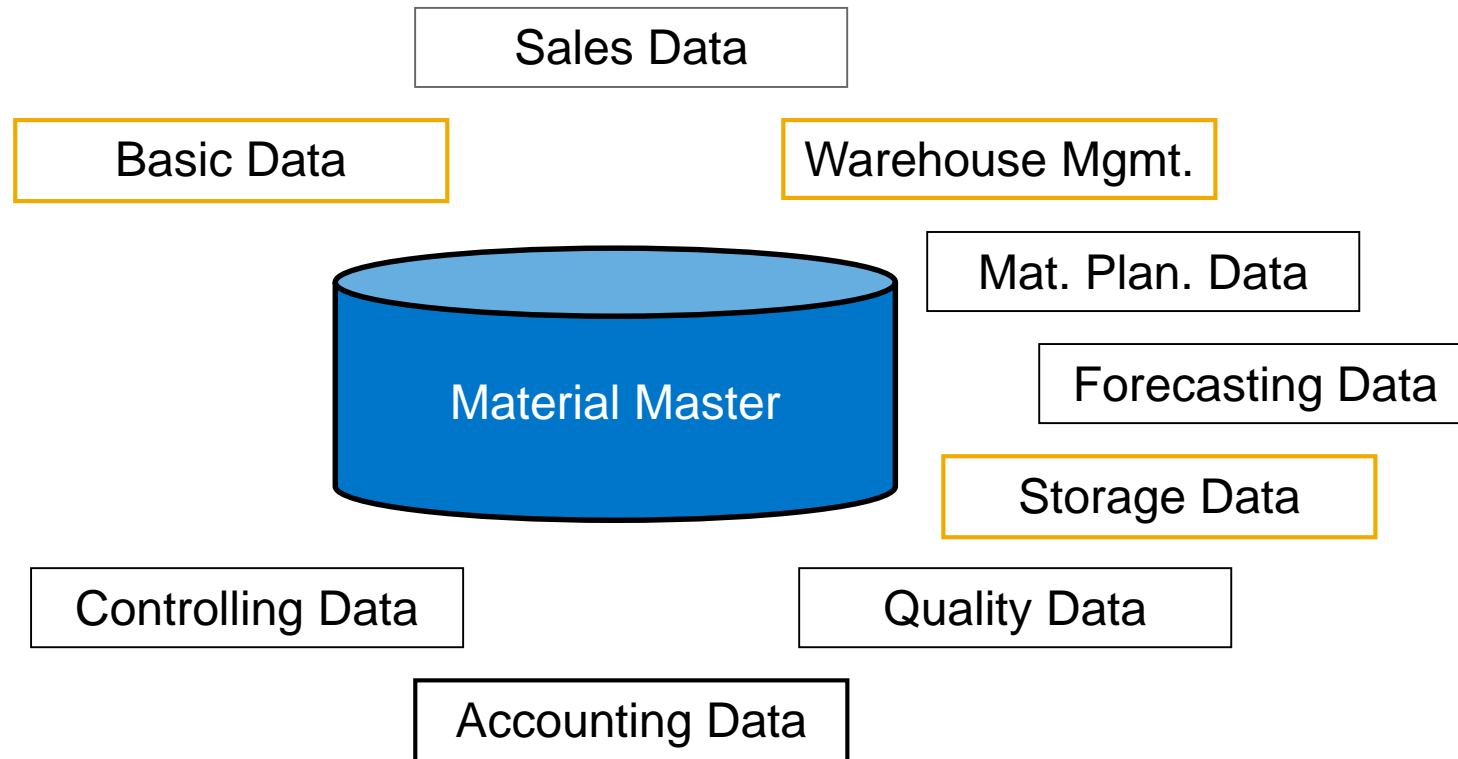
Dimensions/EANs

Gross weight: 8.510	Weight unit: G
Net weight: 8.510	
Volume: 0,000	Volume unit:
Size/dimensions:	
EAN/UPC:	EAN category:

Packaging material data

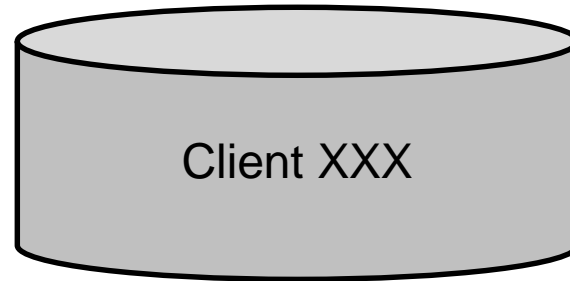
Matl Grp Pack.Matls:

Material Master Views



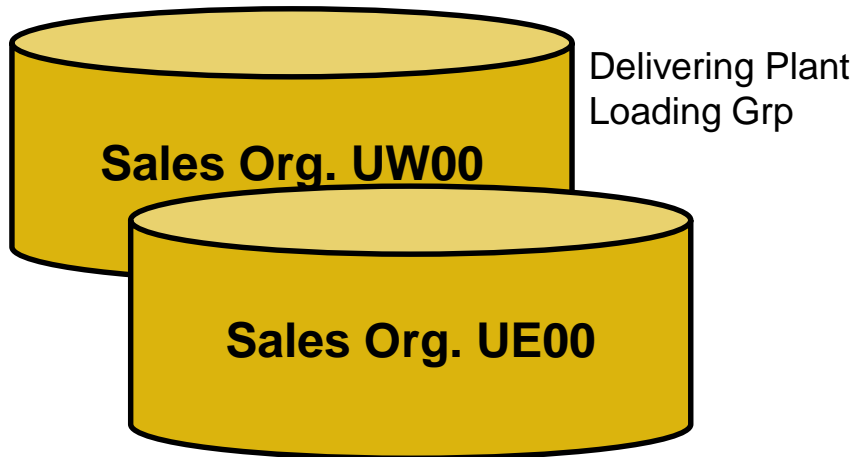
Material Master

General Information relevant for the entire organization:

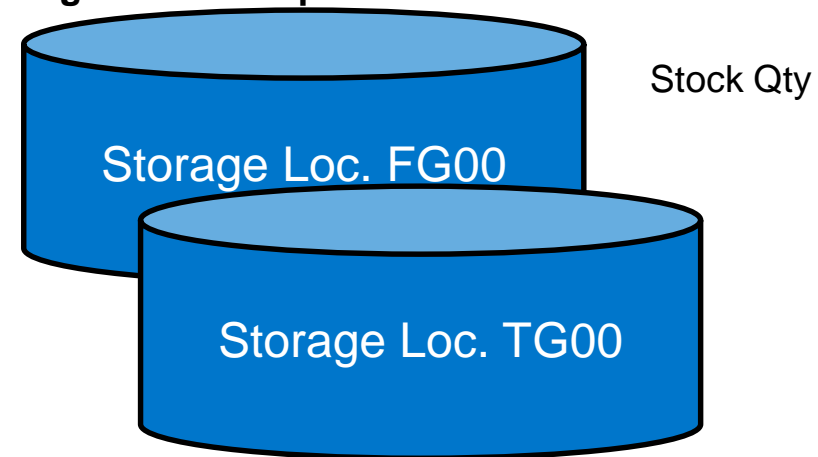


Name
Weight
Unit of Measure

Sales specific information:



Storage Location specific information:



Hazard Master Data

- Storage area for hazardous materials
 - Flammable liquids
 - Toxic materials
 - Radioactive materials
- General Data
 - Storage class
 - Water pollution class
 - Flash point
 - Aggregate state
 - Hazardous material warning
 - Hazardous substance number

The screenshot displays the SAP Hazardous material warning (1) interface. At the top, it shows 'Hazardous material warning (1)' and '2 Entries found'. Below this, the 'Restrictions' section is visible. A toolbar with various icons (checkmark, close, print, search, zoom, star, help, printer, dropdown, and refresh) is present. The main table lists two entries under the 'HW' (Hazardous material warning) column and the 'Danger' column. Entry 01 is 'Use gloves' and entry 02 is 'Careful: corrosive !'.

HW	Danger
01	Use gloves
02	Careful: corrosive !

Batch Master Data

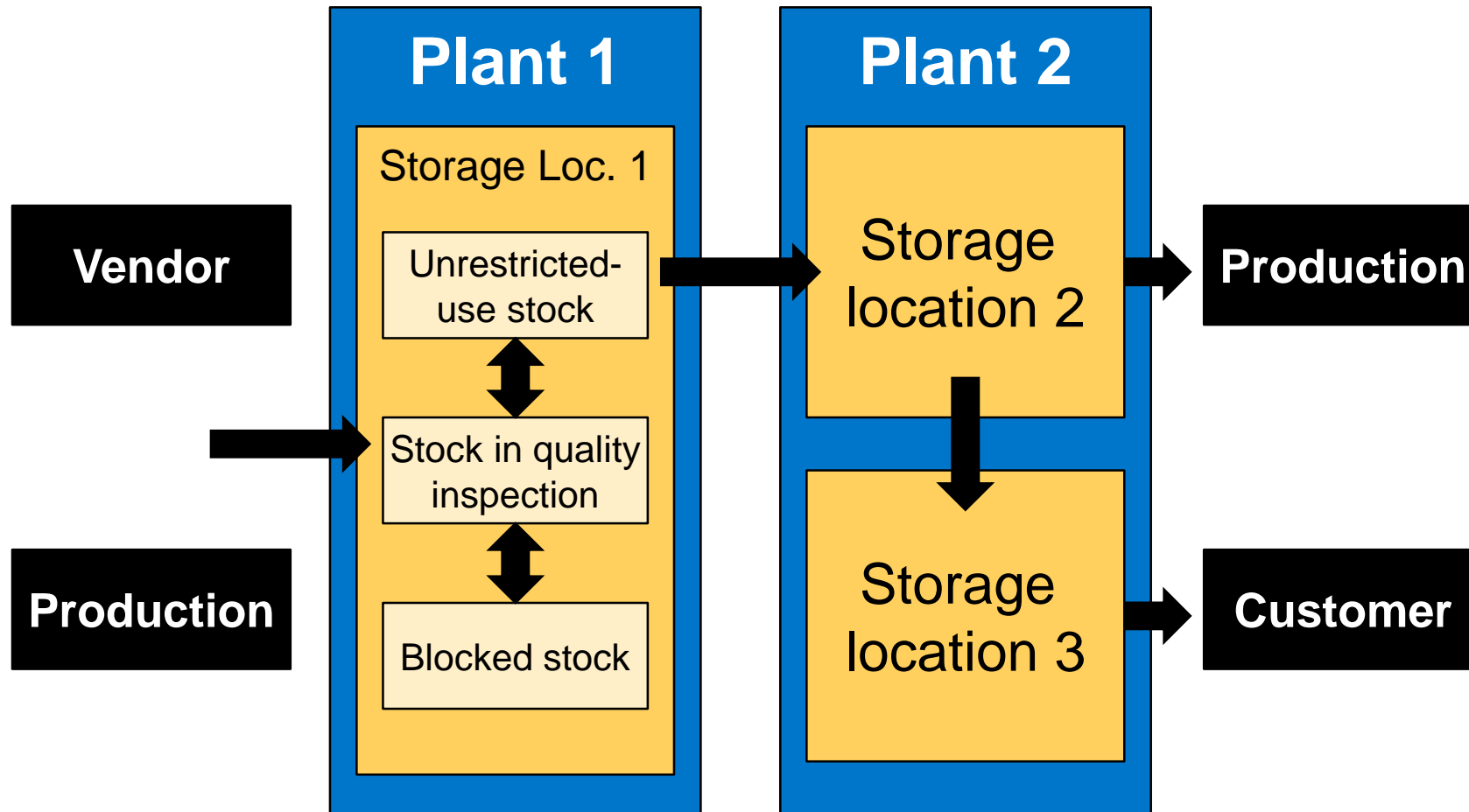
- Subset of Material
 - homogeneous series of unreproducible units with a unique specification
- Basic Data 1 & 2
 - Expiration date
 - Inspection date
 - Trading data
 - Administration data
 - Text data
- Classification of Batch
- Material data

The screenshot shows the SAP 'Create Batch' transaction interface. At the top, there is a navigation bar with the SAP logo and the title 'Create Batch'. Below this, there is a dropdown menu and several action buttons: 'Create with Template', 'Change', 'Display', 'More', and 'Exit'. The main area contains two input fields: 'Material:' with the value 'TEST_CB' and 'Batch:' with the value '1'. Below these fields, there are four tabs: 'Basic Data 1', 'Basic Data 2', 'Classification', and 'Material Data'. The 'Basic Data 1' tab is currently selected. Under this tab, there is a section titled 'Shelf Life Expiration/Best Before Date' which includes a 'Date:' field with a calendar icon, a 'Date of Manufacture:' field, an 'Available From:' field, and a 'Period Indicator:' field with the value 'D'. Below this section is a 'Miscellaneous' section with a 'Next Inspection:' field and a 'Certified on:' field.

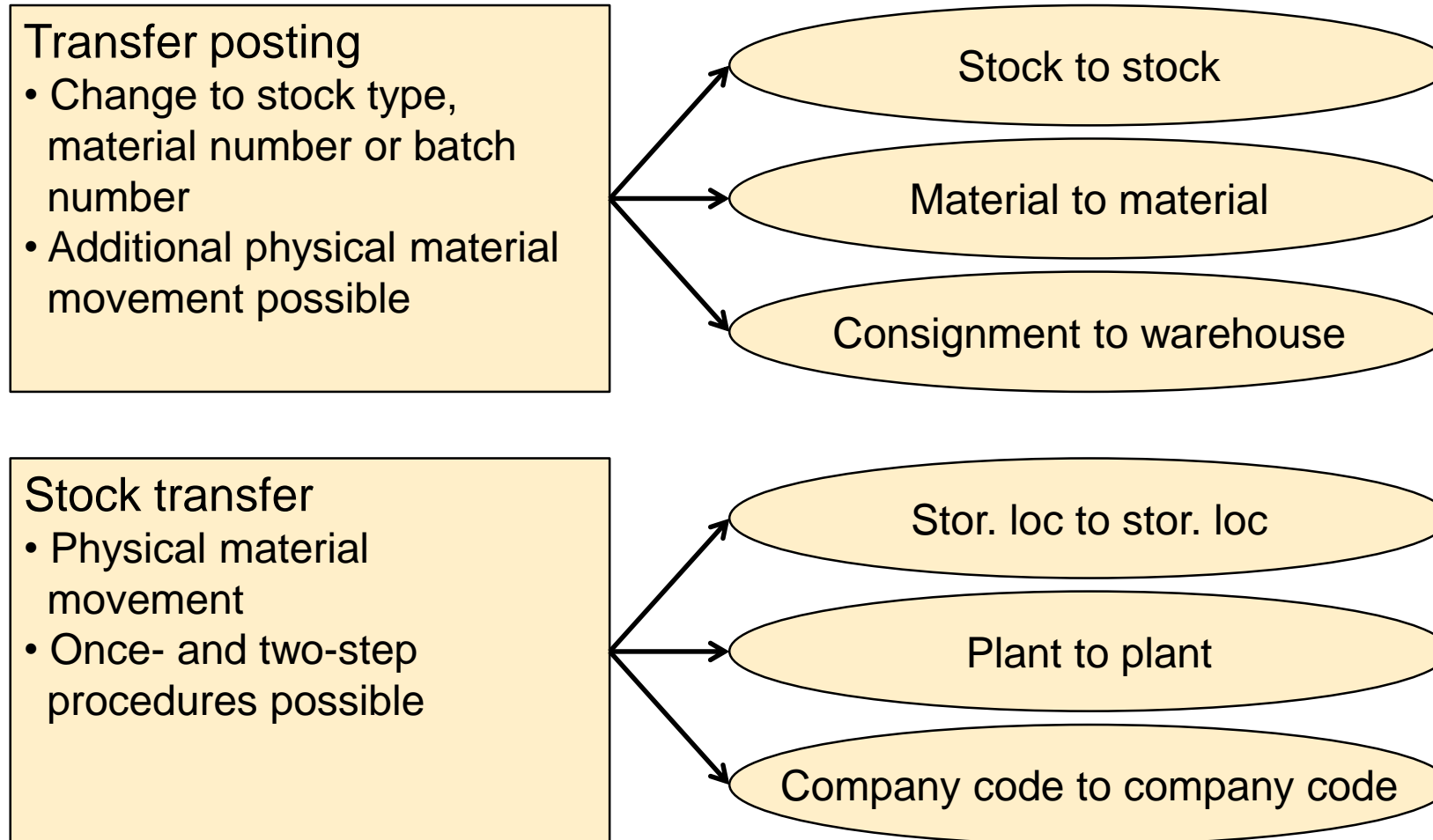
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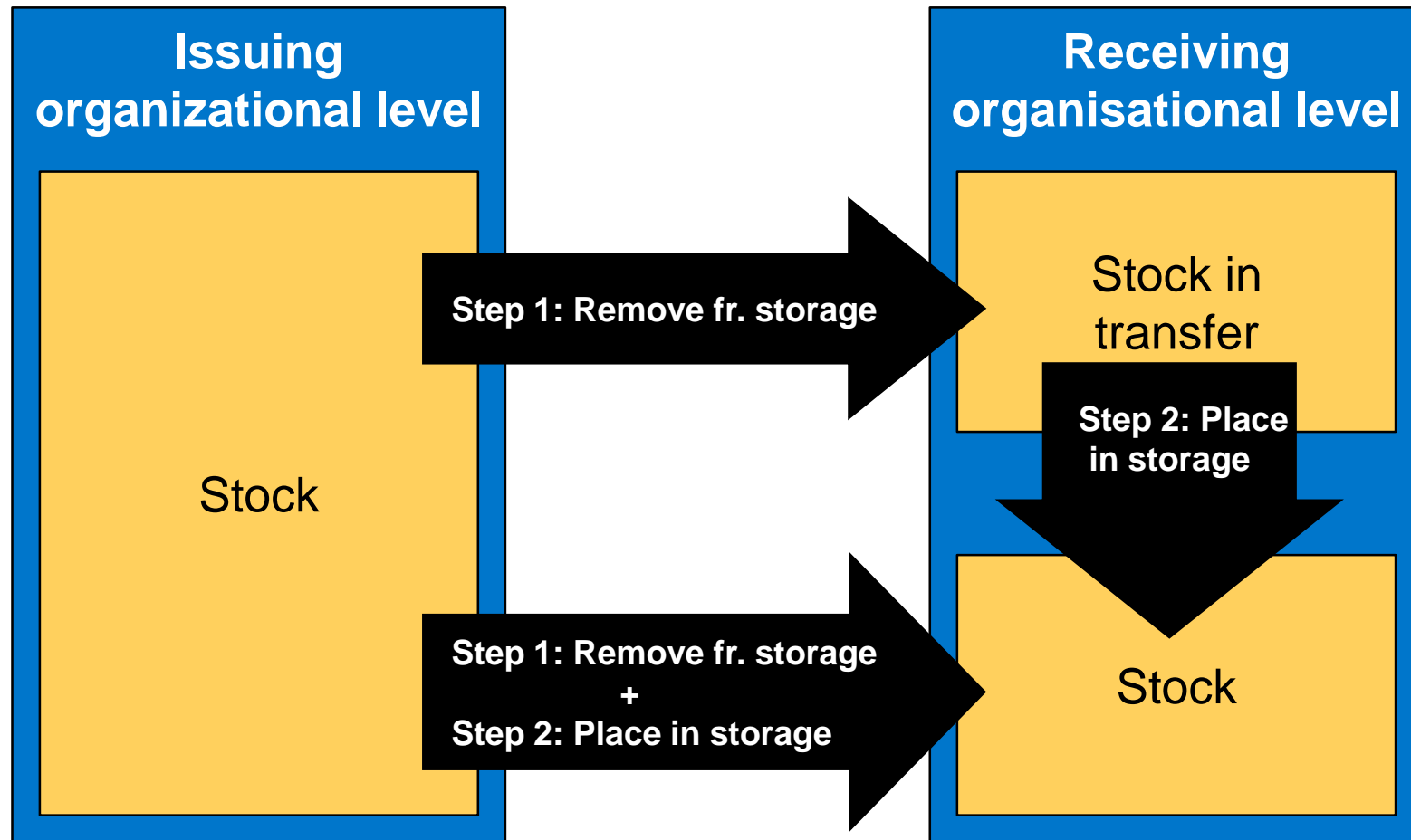
WM Types of goods movements



Transfer posting and stock transfer



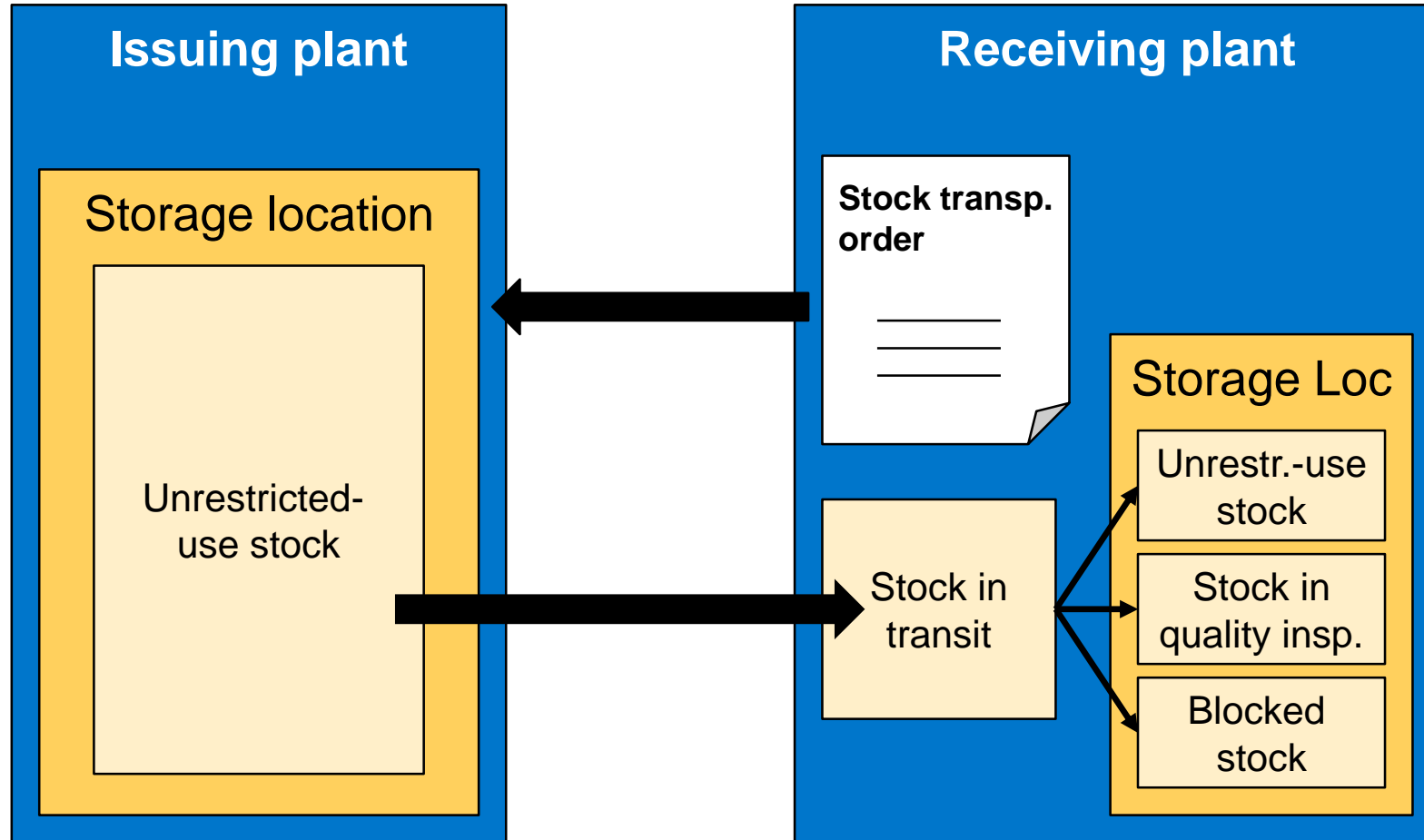
One-Step/Two-Step Procedures



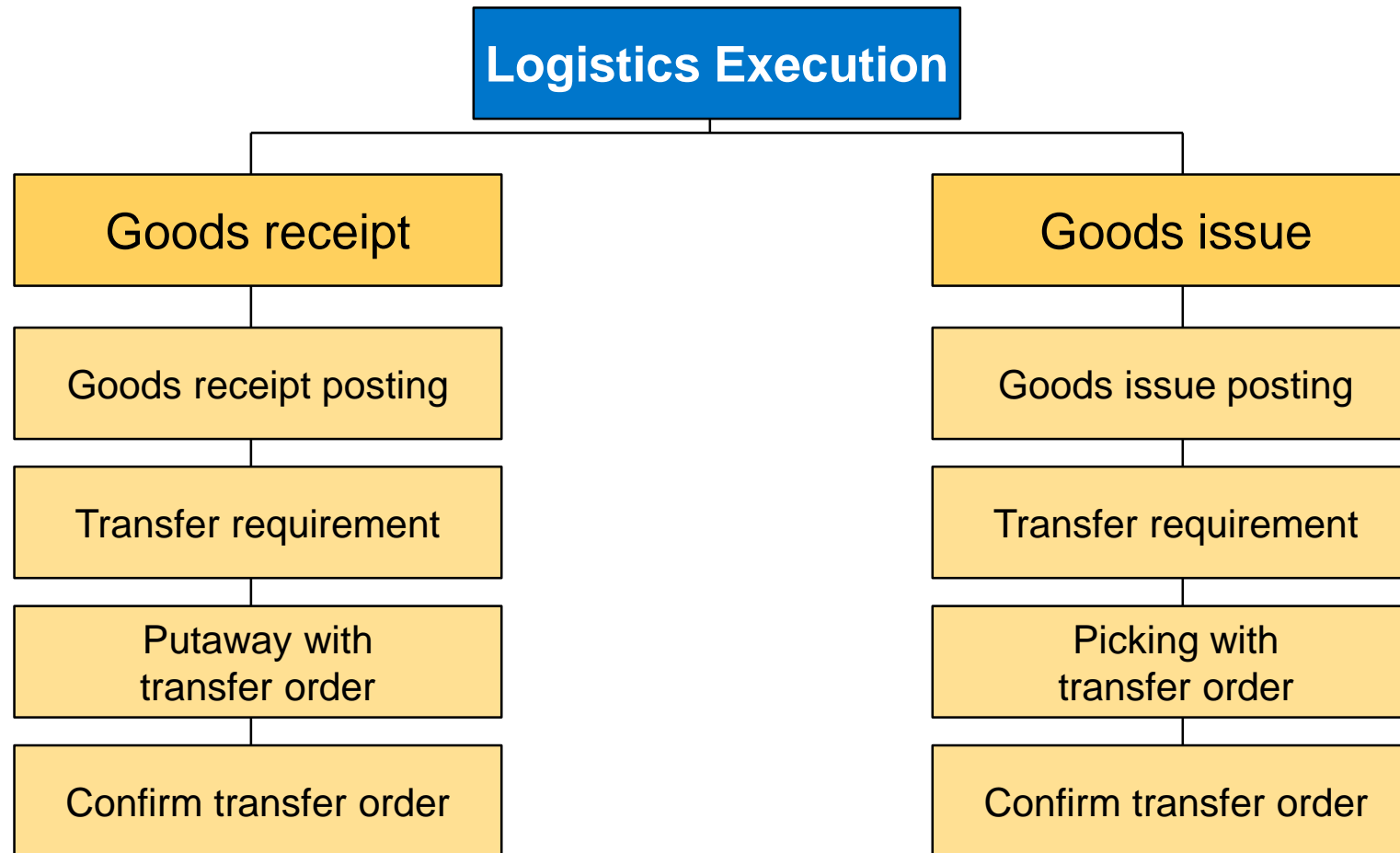
Stock transport order

A Stock Transport Order (STO) is a purchase order used to request or instruct a plant to transport material from one plant to another (that is, to effect a long distance physical stock transfer) within the same corporate enterprise.

The stock transport order allows delivery costs incurred as a result of the stock transfer to be charged to the material transported.



WM Processes



WM Process Management and Control

- Posting change notice (PCN)
 - Generated by posting change processes in WM-administrated stocks
 - Functionality similar to transfer requests
 - Not necessarily combined with a physical goods movement
- Transfer requirement (TR)
 - A request to transfer materials at a particular time from a source storage bin to a destination storage bin in a warehouse complex
 - Represents the expected and scheduled goods movements in WM
 - Normally generated by postings in the inventory management
 - Consists of transfer request header and line items
- Transfer order (TO)
 - Central documents for WM
 - Every material movement requires a transfer order
 - No difference between real and logical movement

Transfer Order

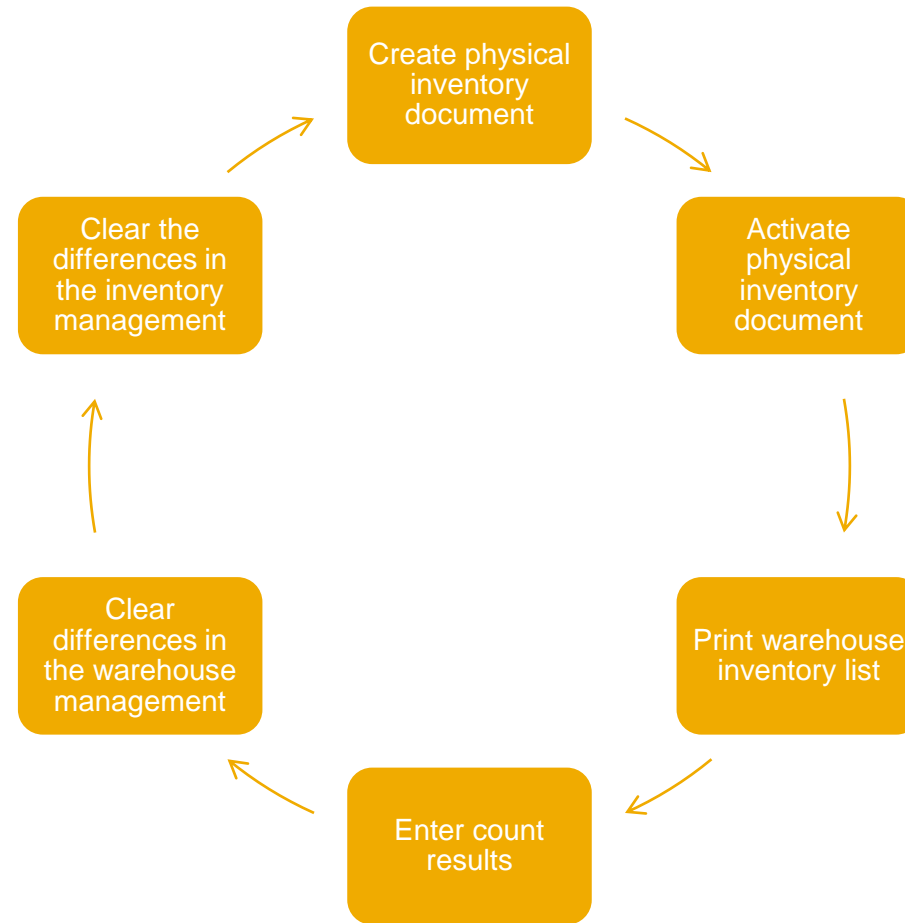
- Creation of transfer order depends on preceding document
 - Transfer request
 - Posting change notice
 - Outbound delivery
 - Inbound delivery

- Types of Transfer Order Creation
 - Manual (TR, PCN, material document)
 - Direct TO-Creation
 - Automatic TO-Creation
 - Manual (Delivery Monitor)

Inventory

- Periodic inventory
- Continuous inventory
- Inventory on putaway
- Zero stock check
- Sample-based physical inventory
- Cycle-Counting

Physical inventory process



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Innovations in S/4HANA

Extended Warehouse Management (EWM)

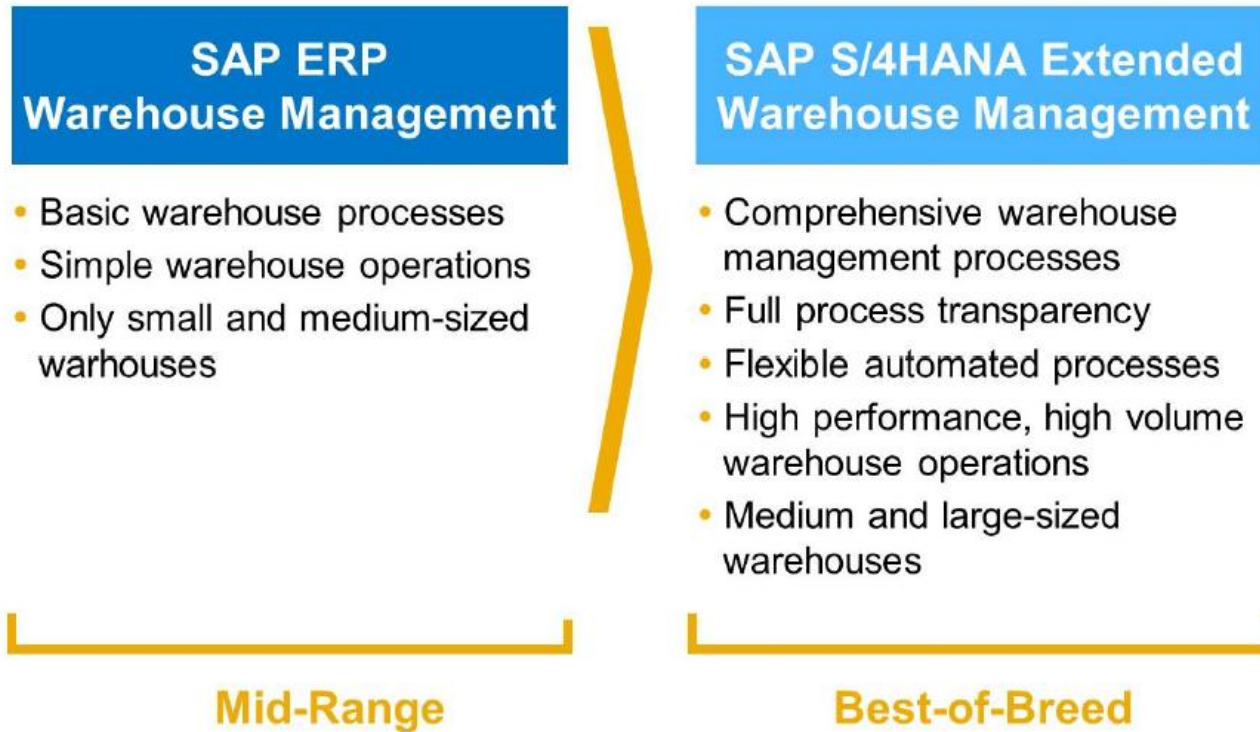
- Long-term the central warehouse management system from SAP
- Part of the Supply Chain Execution (SCE) from SAP in contrast to the WM standard
- Significant difference: WM system concentrates on internal functions
 - Little functionality that provides link to external processes (i.e. contract packaging or transportation)
- In addition to the classical properties for structuring and warehouse control → EWM contains Instruments for strategic placement of the warehouse within the supply chain
- Detailed picture of the complete warehouse complex → improves the overview of the total quantity of the product in the warehouse
- Holdings from several plants can be stored together

Innovations in S/4HANA

Extended Warehouse Management (EWM)

SAP WMS products: from ERP WM to S/4 HANA EWM

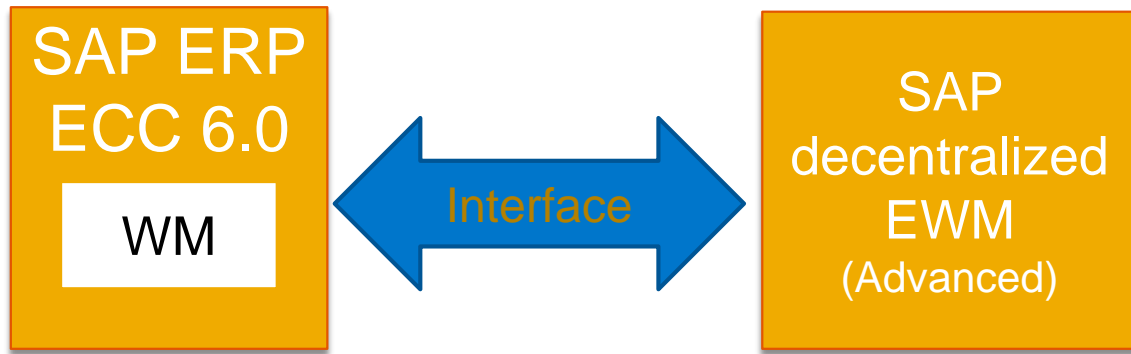
New generation warehouse process flexibility, performance and coverage



Innovations in S/4HANA

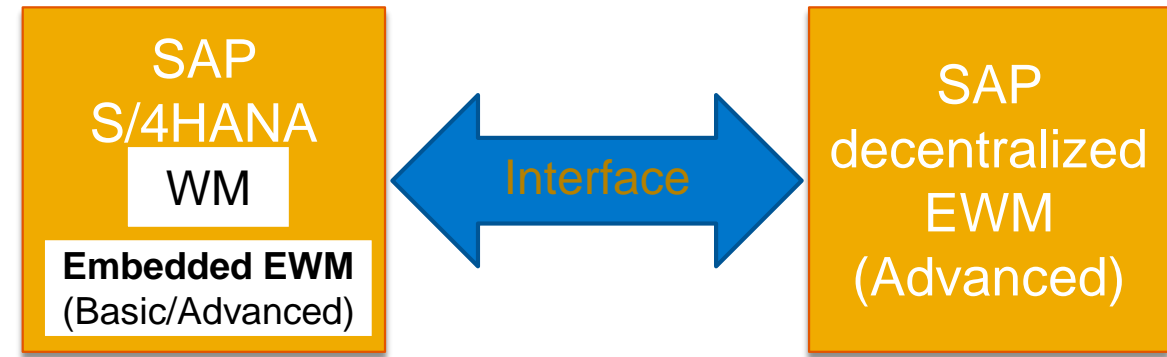
Extended Warehouse Management (EWM)

Scenarios with ECC 6.0



- Classic illustration with an ERP ECC system
- License costs for EWM (decentralized EWM)
- WM can be used indefinitely for new launches (as long as ECC 6.0 is still in use)
- **No SAP support for ERP WM from 2025 onwards**

Scenarios with S/4HANA



- Illustration based on S/4HANA
- No EWM license costs for the „Basic Version“ of the integrated EWM
- **WM usage rights in S/4HANA ends 2025**
- A change from ECC 6.0 to S/4HANA requires a change to EWM from this point onwards

Innovations in S/4HANA

Extended Warehouse Management (EWM)



Extended Warehouse Management

- Optimization of inventory management (e.g., slotting)
- Inbound process optimization (e.g., deconsolidation)
- Outbound process optimization (e.g., wave management)
- Material Flow Control (MFC)
- Yard management (e.g., TU processing, DAS)
- Laboratory management
- Logistic additional services (VAS, for example, Kitting processing)
- Cross docking
- Inventory process cost accounting

Optimization of
warehousing
processes

Basic Warehouse Management

- Inventory management
- Inbound processing
- Outbound processing
- Internal stock movements
- inventory procedures
- Reporting

Stock security
and transparency

Innovations in S/4HANA

Extended Warehouse Management - Scope of functions

WM		EWM		WM		EWM	
Internal Routing				Cross-Docking			
Putaway Strategies				Dynamic Cycle Counting			
Removal Strategies				Unloading of Transport Units			
Wave Management				Deconsolidation			
Replenishment				Slotting/ Rearrangement			
Handling Unit Management				Labor Management			
Yard Management				Decentral Quality Inspection			
RF Technology				Multi-Client Warehousing			
Ressource Management				Flexible Process Modelling			
Expected Goods Receipt				Layout Modelling			
Value Added Services / Kitting				Warehouse Automation (MFS)			

- SAP EWM is the strategic warehouse management solution for SAP S/4HANA
- SAP EWM offers enhanced visibility and flexibility
- Labor Management is part of SAP EWM

Innovations in S/4HANA

Extended Warehouse Management - Scope of functions

- Optimized warehouse space management
 - Different storage facilities (automatic bearings,...) can be arranged in different storage types according to their own requirements
 - Stock movements can be better understood as each storage location is mapped in the system
 - In addition, each product will receive an optimal storage location according to its size and access frequency

- Goods movements
 - EWM is used to process all goods movements that affect the warehouse
 - Storage capacity and material flows are optimized using put away and removal strategies
 - Optimizing takes place individually as required or by using handling units

Innovations in S/4HANA

Extended Warehouse Management - Scope of functions

- Stocktaking
 - Product related or storage related
 - Different monitor with adjustable tolerance groups, over which maximum values can be configured for the calculation of differences
 - Additional extras: automatic close out after time limits, inventory procedures according to different priorities, zero check, low stock control
 - Radio frequency functionality is integrated in for example Cycle Counting
- Planning and monitoring
 - Forward-looking load analysis and early intervention in case of faulty warehouse processes
 - Extensive monitor functions project a up-to-date picture of all activities in the warehouse
 - Actual work in the warehouse can be controlled this way

Innovations in S/4HANA

Extended Warehouse Management - Scope of functions

- Wireless data connection
 - Controlling the work steps via mobile radio terminals → clear and economical
 - The radio frequency connection (RF connection) for mobile data acquisition ensures a fast data transmission
 - RF devices receive data from the SAP system and transmit data back, e.g. through barcodes

- Warehouse control
 - EWM has interfaces to external systems (storage controllers)
 - e.g. automated storage and retrieval systems can be integrated for all storage movements

Innovations in S/4HANA

Reasons to Switch to EWM

- Reduce costs through better warehouse efficiency, increased labor productivity, and better space utilization
- Increase transparency in stock and processes
- Increase flexibility in warehouse process modeling
- Implement customer specific put-away and retrieval strategies
- Quickly onboard new customers
- Better manage value added distribution processes
- Strong integration with other SAP solutions
- Integrated Material Flow System (MFS) for automated storage and retrieval



Thank you!

