

S4HTM0023EN

SAP S/4HANA 2022 for Transportation Management - Stay Current

**PARTICIPANT HANDBOOK
INSTRUCTOR-LED TRAINING**

Course Version:

Course Duration:

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Typographic Conventions

American English is the standard used in this handbook.

The following typographic conventions are also used.

This information is displayed in the instructor's presentation



Demonstration



Procedure



Warning or Caution



Hint



Related or Additional Information



Facilitated Discussion



User interface control

Example text

Window title

Example text

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3 Lesson: What's new in SAP S/4HANA 2022 for Transportation Management?

Course Overview

TARGET AUDIENCE

This course is intended for the following audiences:

- Executive
- Application Consultant
- End User
- Super / Key / Power User
- Business User

Lesson 1

What's new in SAP S/4HANA 2022 for Transportation Management?

3

UNIT OBJECTIVES

- Learn new features and functions

Unit 1

Lesson 1

What's new in SAP S/4HANA 2022 for Transportation Management?



LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Learn new features and functions

Package Building and Load Planning



- Unified Package Building Settings
- Package Building
 - Detailed Mixed Package Building Considers Master Data Definition for Layers
 - New Consistency Checks for Package Building Constraints
 - Stackability of Packaging Materials
 - New Features in Package Building
 - Disable Layer-based Mixed PB (Embedded)
 - Disable Crown on Layer
 - Unified Package Building Profile – Package Building Settings Clean-up
 - Package Building considers Allowed Pkg. Volume in Material Master Data
- Package Building Optimizer
 - Merging Similar Products
- Load Planning
 - Selecting Container / Package Unit Stages by Load Plan Status (Packaging)
 - Load Plan Hierarchy Offers Layer-Oriented View
 - Manual Load Planning
 - Load Plan Status Management Considers Referenced Container Items
 - Create Multiple Load Plan PDF Files in Batch Run

Figure 1: Topic Overview



Figure 2: Unified Package Building Settings



- Growing number of unified package building (UPB) features require a new sub-profile in the planning profile
- New unified package building settings
 - Central definition of all unified package building settings (planning profile parameters were moved to new sub-profile)
 - UPB engine fields was added (some other fields are only relevant if package building has been chosen as engine)
 - UPB functionality stays unchanged

The screenshot shows the SAP Fiori interface for Unified Package Building. It includes several configuration tabs: Incompatibility Settings, Carrier Selection Settings, Unified Package Building Settings, Load Planning Settings, and Transport. The main area displays 'General Data' with a 'Unified Package Building Profile' set to 'PB_DEFAULT'. Below this, there are sections for 'Creation of PUs Based on Unified Package Building for FUs' and 'Parallel Processing Profiles'. The 'Creation of PUs Based on Unified Package Building for FUs' section contains various input fields like 'Default Package Unit Type' (PKD), 'Default Package Unit Creation Rule' (Create One PU per Package Item), and 'PU Type for PUs with Single Dest. Loc.' (PKG). The 'Parallel Processing Profiles' section shows input fields for 'Input Data Selection', 'Lane Determination', and 'Distance and Duration Determination'.

Figure 3: Unified Package Building SettingsMotivation and overview



Figure 4: Package Building



- It is possible on material master data level to maintain a layer definition, i.e. how many pieces of a material fit into a full layer.
 - This layer definition can differentiate from what could physically be placed into such a layer due to business reasons (e.g. holes for cooling, technical restrictions in production, handling efficiency when packing and unpacking).
 - The existing embedded (ABAP-based) "Layer-Based Mixed Package Building" already considers the layer definition.
 - If there are afterwards remaining, unpackaged quantities, then the package building (PB) process continues according to the configured mixed package building mode – volume-based or detailed.
 - In case of "Detailed Mixed Package Building", all incomplete packages created so far are cleared (incl. layers).
 - Now, the package building optimizer (PBO) is able to consume and consider layer definitions and to provide detailed results like position information.
- Full flexibility along the business process and more precise PB results

Change Material MM1_RM_BIB_SMALL									
Descriptions		Units of measure		Additional EANs		Document data		Basic data t	
Material	3002_2N_BIB_SMALL								
X	AUn	<-->	Y	BUn	Length	Width	Height	Un...	Volume
1	EA	<-->	1	EA	226	166	155	MM	5,815
	LV1	<-->	10	EA				MM	
1	OPL	<-->	100	EA				CD3	

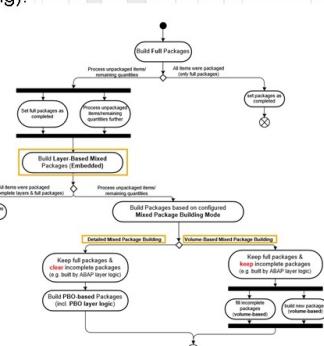


Figure 5: Detailed Mixed PB Considers Master Data Definition for Layers (1/12)Motivation and Background



- The layer unit of measure (UoM) has to be maintained in the "Layer" field of the respective (product) package type assignment (PTA).
- Layers are defined as alternative UoM of a material or a reference material
- The layer height might differ from the product height, i.e. the layer height might be higher or lower than the product. The layer length and width (if defined) are ignored.
- The master data definition for layers is considered by default.
 - This can be de-activated centrally by enhancement.

PB - Product/Reference Product Hierarchy										
Alternative UoM										
	Item Name	Quantity	UoM	Length	Width	Height	Unit Group	Unit	Volume	Weight
	MHI_PRD_BB_SMALL1	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL2	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL3	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL4	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL5	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL6	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL7	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL8	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL9	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL10	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL11	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL12	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL13	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL14	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL15	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL16	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL17	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL18	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL19	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL20	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL21	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL22	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL23	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL24	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL25	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL26	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL27	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL28	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL29	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL30	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL31	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL32	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL33	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL34	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL35	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL36	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL37	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL38	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL39	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL40	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL41	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL42	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL43	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL44	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL45	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL46	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL47	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL48	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL49	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL50	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL51	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL52	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL53	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL54	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL55	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL56	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL57	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL58	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL59	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL60	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL61	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL62	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL63	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL64	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL65	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL66	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL67	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL68	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL69	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL70	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL71	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL72	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL73	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL74	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL75	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL76	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL77	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL78	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL79	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL80	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL81	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL82	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL83	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL84	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL85	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL86	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL87	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL88	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL89	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL90	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL91	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL92	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL93	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL94	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL95	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL96	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL97	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL98	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL99	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000
	MHI_PRD_BB_SMALL100	1 EA	1.000	0.000	0.000	0.000	EA	EA	0.000	0.000

Product Number	Partner Location	Equ. Gr.	Equ. Type	Pkg. Type	Pkg. No.	Weight	Height	Width	Depth	Layer Settings
MHI_PRD_BB_PALLET	X	1.000	CPL	L	1	0.000	0.000	0.000	0.000	No Mixed Layers

Figure 6: Detailed Mixed PB Considers Master Data Definition for Layers (2/12)Activation and Master Data Setup



- 1 item: quantity = multiple times layer quantity \Rightarrow layers built by layer-based mixed PB (embedded)
- 2 items: quantity = layer quantity \Rightarrow layers built by layer-based mixed PB (embedded)
- 2 items with different quantities and total



- It is checked from bottom (material) to top (highest level reference material) for the valid layer definition
- As soon as a valid layer definition (as per PTA layer UoM) is found, this layer definition is taken as such
- Afterwards it is checked on higher level reference materials if an equivalent layer definition is defined there as well – if so the respective reference material is used as the source of the layer definition and not anymore the material or lower level reference material
- The check is stopped as soon as:
 - there is no next higher level reference material
 - there is no layer definition on the next higher reference material
 - there is a layer definition on the next level higher reference material, but the definition is different (quantity and height) to the lower level layer definition

Figure 9: Detailed Mixed PB Considers Master Data Definition for Layers (5/12)Mixed Layers with PBO - Logic to consider Reference Materials



- 2 items with different materials
- layer definition of both materials on reference material level only

PB - Product/Reference Product Hierarchy											
(Reference) Product Hierarchy		Level		Product Number		Product Description		Action		Action	
								Action		Action	
								Action		Action	
✓ MHL_RM_AMBIENT (1)		1	EA	1	Y	MHL_RM_AMBIENT	MHL Reference Material AMBIENT	1 EA	0,000	0,000	0,000
✓ MHL_RM_BBL (2)		2	EA	2	Y	MHL_RM_BBL	MHL Reference Material BBL	2 EA	0,000	0,000	0,000
✓ MHL_RM_BBL_SMALL (7)		3	MMI_RM_BBL_SMALL	3	Y	MHL_RM_BBL_SMALL	MHL Reference Material BBL_SMALL	1 EA	0,000	0,000	0,000
✓ MHL_PRD_BBL_SMALL (7)		4	MMI_PRD_BBL_SMALL	4	Y	MHL_PRD_BBL_SMALL	MHL Product BBL_SMALL_1	1 EA	0,000	0,000	0,000
✓ MHL_PRD_BBL_SMALL2 (2)		5	MMI_PRD_BBL_SMALL2	5	Y	MHL_PRD_BBL_SMALL2	MHL Product BBL_SMALL_2	1 EA	0,000	0,000	0,000
✓ MHL_PRD_BBL_SMALL3 (2)		6	MMI_PRD_BBL_SMALL3	6	Y	MHL_PRD_BBL_SMALL3	MHL Product BBL_SMALL_3	1 EA	0,000	0,000	0,000
✓ MHL_PRD_BBL_SMALL4 (2)		7	MMI_PRD_BBL_SMALL4	7	Y	MHL_PRD_BBL_SMALL4	MHL Product BBL_SMALL_4	1 EA	0,000	0,000	0,000
✓ MHL_PRD_BBL_SMALL5 (2)		8	MMI_PRD_BBL_SMALL5	8	Y	MHL_PRD_BBL_SMALL5	MHL Product BBL_SMALL_5	1 EA	0,000	0,000	0,000
✓ MHL_PRD_BBL_SMALL6 (2)		9	MMI_PRD_BBL_SMALL6	9	Y	MHL_PRD_BBL_SMALL6	MHL Product BBL_SMALL_6	1 EA	0,000	0,000	0,000
✓ MHL_PRD_BBL_SMALL7 (2)		10	MMI_PRD_BBL_SMALL7	10	Y	MHL_PRD_BBL_SMALL7	MHL Product BBL_SMALL_7	1 EA	0,000	0,000	0,000

PB - Product/Reference Product Hierarchy											
(Reference) Product Hierarchy		Level		Product Number		Product Description		Action		Action	
								Action		Action	
								Action		Action	
✓ MHL_RM_AMBIENT (1)		1	EA	1	Y	MHL_RM_AMBIENT	MHL Reference Material AMBIENT	1 EA	0,000	0,000	0,000
✓ MHL_RM_BBL (2)		2	EA	2	Y	MHL_RM_BBL	MHL Reference Material BBL	2 EA	0,000	0,000	0,000
✓ MHL_RM_BBL_SMALL (7)		3	MMI_RM_BBL_SMALL	3	Y	MHL_RM_BBL_SMALL	MHL Reference Material BBL_SMALL	1 EA	0,000	0,000	0,000
✓ MHL_PRD_BBL_SMALL (7)		4	MMI_PRD_BBL_SMALL	4	Y	MHL_PRD_BBL_SMALL	MHL Product BBL_SMALL_1	1 EA	0,000	0,000	0,000
✓ MHL_PRD_BBL_SMALL2 (2)		5	MMI_PRD_BBL_SMALL2	5	Y	MHL_PRD_BBL_SMALL2	MHL Product BBL_SMALL_2	1 EA	0,000	0,000	0,000
✓ MHL_PRD_BBL_SMALL3 (2)		6	MMI_PRD_BBL_SMALL3	6	Y	MHL_PRD_BBL_SMALL3	MHL Product BBL_SMALL_3	1 EA	0,000	0,000	0,000
✓ MHL_PRD_BBL_SMALL4 (2)		7	MMI_PRD_BBL_SMALL4	7	Y	MHL_PRD_BBL_SMALL4	MHL Product BBL_SMALL_4	1 EA	0,000	0,000	0,000
✓ MHL_PRD_BBL_SMALL5 (2)		8	MMI_PRD_BBL_SMALL5	8	Y	MHL_PRD_BBL_SMALL5	MHL Product BBL_SMALL_5	1 EA	0,000	0,000	0,000
✓ MHL_PRD_BBL_SMALL6 (2)		9	MMI_PRD_BBL_SMALL6	9	Y	MHL_PRD_BBL_SMALL6	MHL Product BBL_SMALL_6	1 EA	0,000	0,000	0,000
✓ MHL_PRD_BBL_SMALL7 (2)		10	MMI_PRD_BBL_SMALL7	10	Y	MHL_PRD_BBL_SMALL7	MHL Product BBL_SMALL_7	1 EA	0,000	0,000	0,000

Top
Bottom

⇨ 2 product-pure layers and 1 mixed layer are built

UPB Result Hierarchy											
(3D Scene: Color Settings)		(3D Scene: Show Selected Items)		Item Hierarchy		Product Number		Action		Action	
								Action		Action	
								Action		Action	
✓ Package MHL_PM_CHEP_PALLET (2)		1	MMI_PM_CHEP_PALLET	1	Y	MHL_PM_CHEP_PALLET	MHL PM CHEP PALLET	0,324	CPL	0,000	0,000
✓ Product MHL_RM_BBL (2)		2	MMI_RM_BBL	2	Y	MHL_RM_BBL	MHL Reference Material BBL	16,000	EA	0,000	0,000
✓ Position of Material MHL_RM_BBL (2)		3	MMI_RM_BBL	3	Y	MHL_RM_BBL	MHL Reference Material BBL	16,000	EA	0,000	0,000
✓ Position of Material MHL_PRD_BBL_SMALL (7)		4	MMI_PRD_BBL_SMALL	4	Y	MHL_PRD_BBL_SMALL	MHL Product BBL_SMALL_1	10,000	EA	0,000	0,000
✓ Position of Material MHL_PRD_BBL_SMALL2 (2)		5	MMI_PRD_BBL_SMALL2	5	Y	MHL_PRD_BBL_SMALL2	MHL Product BBL_SMALL_2	10,000	EA	0,000	0,000
✓ Position of Material MHL_PRD_BBL_SMALL3 (2)		6	MMI_PRD_BBL_SMALL3	6	Y	MHL_PRD_BBL_SMALL3	MHL Product BBL_SMALL_3	10,000	EA	0,000	0,000
✓ Position of Material MHL_PRD_BBL_SMALL4 (2)		7	MMI_PRD_BBL_SMALL4	7	Y	MHL_PRD_BBL_SMALL4	MHL Product BBL_SMALL_4	10,000	EA	0,000	0,000
✓ Position of Material MHL_PRD_BBL_SMALL5 (2)		8	MMI_PRD_BBL_SMALL5	8	Y	MHL_PRD_BBL_SMALL5	MHL Product BBL_SMALL_5	10,000	EA	0,000	0,000
✓ Position of Material MHL_PRD_BBL_SMALL6 (2)		9	MMI_PRD_BBL_SMALL6	9	Y	MHL_PRD_BBL_SMALL6	MHL Product BBL_SMALL_6	10,000	EA	0,000	0,000
✓ Position of Material MHL_PRD_BBL_SMALL7 (2)		10	MMI_PRD_BBL_SMALL7	10	Y	MHL_PRD_BBL_SMALL7	MHL Product BBL_SMALL_7	10,000	EA	0,000	0,000

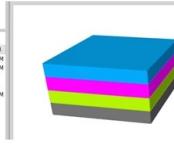


Figure 10: Detailed Mixed PB Considers Master Data Definition for Layers (6/12)Mixed Layers with PBO - Example 1



- 2 items with different materials
- The layer definition of one material is directly on material level and on reference material level and of the other material only on reference product level – all layer definitions are the same.

UPB Result Hierarchy											
(3D Scene: Color Settings)		(3D Scene: Show Selected Items)		Item Hierarchy		Product Number		Action		Action	
								Action		Action	
								Action		Action	
✓ Package MHL_PM_CHEP_PALLET (2)		1	MMI_PM_CHEP_PALLET	1	Y	MHL_PM_CHEP_PALLET	MHL PM CHEP PALLET	0,324	CPL	0,000	0,000
✓ Product MHL_RM_BBL (2)		2	MMI_RM_BBL	2	Y	MHL_RM_BBL	MHL Reference Material BBL	16,000	EA	0,000	0,000
✓ Position of Material MHL_RM_BBL (2)		3	MMI_RM_BBL	3	Y	MHL_RM_BBL	MHL Reference Material BBL	16,000	EA	0,000	0,000
✓ Position of Material MHL_PRD_BBL_SMALL (7)		4	MMI_PRD_BBL_SMALL	4	Y	MHL_PRD_BBL_SMALL	MHL Product BBL_SMALL_1	10,000	EA	0,000	0,000
✓ Position of Material MHL_PRD_BBL_SMALL2 (2)		5	MMI_PRD_BBL_SMALL2	5	Y	MHL_PRD_BBL_SMALL2	MHL Product BBL_SMALL_2	10,000	EA	0,000	0,000
✓ Position of Material MHL_PRD_BBL_SMALL3 (2)		6	MMI_PRD_BBL_SMALL3	6	Y	MHL_PRD_BBL_SMALL3	MHL Product BBL_SMALL_3	10,000	EA	0,000	0,000
✓ Position of Material MHL_PRD_BBL_SMALL4 (2)		7	MMI_PRD_BBL_SMALL4	7	Y	MHL_PRD_BBL_SMALL4	MHL Product BBL_SMALL_4	10,000	EA	0,000	0,000
✓ Position of Material MHL_PRD_BBL_SMALL5 (2)		8	MMI_PRD_BBL_SMALL5	8	Y	MHL_PRD_BBL_SMALL5	MHL Product BBL_SMALL_5	10,000	EA	0,000	0,000
✓ Position of Material MHL_PRD_BBL_SMALL6 (2)		9	MMI_PRD_BBL_SMALL6	9	Y	MHL_PRD_BBL_SMALL6	MHL Product BBL_SMALL_6	10,000	EA	0,000	0,000
✓ Position of Material MHL_PRD_BBL_SMALL7 (2)		10	MMI_PRD_BBL_SMALL7	10	Y	MHL_PRD_BBL_SMALL7	MHL Product BBL_SMALL_7	10,000	EA	0,000	0,000



Figure 11: Detailed Mixed PB Considers Master Data Definition for Layers (7/12)Mixed Layers with PBO - Example 2



- 2 items with different materials
 - The layer definition of both material is directly on material level and on reference material level – all layer definitions are the same.

⇒ 2 product-pure layers and 1 mixed layer are built

UPB Result Hierarchy																
	Item Hierarchy		3D Scene: Color Settings		3D Scene: Show Selected Items											
	Category	Item Name	Quantity	UAM (QV)	X Pos.	Y Pos.	Z Pos.	Ornx	Orny	Ornz	Grpdx	Group Def.	Group H...	Length	Width	Height
•	Package	MHM_PRD_BB_PALET_1	0.324	CPL	0	0	0	0	0	0	0	0.00000	1165.00000	1.165.00000	615.00000	
•	Product	MHM_PRD_BB_SMALLS	16.000	M	0	0	0	0	0	0	0	0.00000	2265.00000	166.00000	155.00000	
•	Product	MHM_PRD_BB_M	1.000	M	0	0	0	150.000	0	0	11.111	2.111	155.00000	166.00000	155.00000	
•	Product	MHM_PRD_BB_SMALL	14.000	M	0	0	0	0	0	0	0	0.00000	2265.00000	166.00000	155.00000	
•	Position	Material_MHM_PRD_BB	18.000	M	0	0	0	150.000	21	LY	3.111	155.00000	M	0.00000	0.00000	
•	Position	Material_MHM_PRD_BB_4	4.000	M	0	0	0	150.000	11	ML	2.111	155.00000	M	0.00000	0.00000	



Figure 12: Detailed Mixed PB Considers Master Data Definition for Layers (8/12)Mixed Layers with PBO -
ple 3



- 2 items with different materials
 - The layer definition of both materials is directly on material level and on reference material level
 - The layer height is defined for one material and is different to the material height

Product Hierarchy and Height is defined for this material and is also used in Open Package Type Assignment Transaction										
Produkt Hierarchy und Höhe ist für dieses Material definiert und wird auch im Open Package Type Assignment Transaction benutzt										
Produkt Hierarchy and Height is defined for this material and is also used in Open Package Type Assignment Transaction										
Level	Product Number	Product Description	Action	Action	Action	Action	(Avg) Base	Length	Width	Height
1	HMI_BR_ABIMENT (1)	HMI_BR_ABIMENT	Insert	Accept	Reject	Ignore	EA	0,000	0,000	0,000
2	HMI_BR_ABIMENT (2)	HMI_BR_ABIMENT	Insert	Accept	Reject	Ignore	EA	0,000	0,000	0,000
3	HMI_BR_BI_SMALL (2)	HMI_BR_BI_SMALL	Insert	Accept	Reject	Ignore	EA	226,000	166,000	150,000
4	HMI_BR_BI_SMALL (3)	HMI_BR_BI_SMALL	Insert	Accept	Reject	Ignore	EA	226,000	166,000	150,000
5	HMI_BR_BI_SMALL (4)	HMI_BR_BI_SMALL	Insert	Accept	Reject	Ignore	EA	226,000	166,000	150,000

⇒ 2 product pure layers and a crown is built instead of a mixed layer

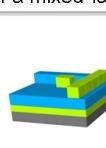


Figure 13: Detailed Mixed PB Considers Master Data Definition for Layers (9/12)Mixed Layers with PBO -
ple 4



- 2 items with different materials
 - layer definition of both materials is directly on material level and on reference material level
 - layer quantity of one material differs from the reference material layer definition

► Some best management practices include the utilization of a mixed layer.

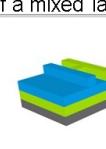


Figure 14: Detailed Mixed PB Considers Master Data Definition for Layers (10/12)Mixed Layers with PBO -
ple 5

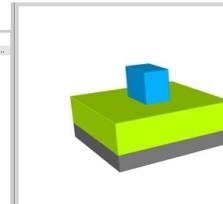


- The layer definition logic that applies to one-level packaging hierarchies (e.g. material → pallet) also applies to multi-level (nested) packaging hierarchies (e.g. material → carton → pallet).
 - The layer definition has to be maintained in the material master of the lower level packaging material (e.g. carton) and the respective layer UoM has to be maintained in the relevant product package type assignment.
 - The package level aggregation logic is considered as well in case it is activated in the PB settings of the

Figure 15: Detailed Mixed PB Considers Master Data Definition for Layers (11/12)Multi-level Hierarchies - Overview



1. material → carton → pallet



2. material → carton → pallet & package level aggregation active on level "1"

UPB Result Hierarchy													
	3D Scene: Color Settings			3D Scene: Show Selected Items									
Item Branch	Quantity	UOM (QTY)	X Pos.	Y Pos.	Z Pos.	Orientation	Sequence	Reps.	Group	Group Def.	Group H...	Length	Width
+ Pkg_MHI_FH_COFF_PALLET (2)	0.4500	KAR	0	0	0	0	0	0	0	0.000000	1,160.000000	1,165.000000	70
+ Pkg_MHI_FH_COFF_STOCK_CARTON (1)	0.0000	KAR	0	0	0	0	0	0	1	1 LVS	200.000000	100.000000	30
+ Pkg_MHI_FH_COFF_STOCK_CARTON (1)	120.0000	KVR	0	0	0	0	0	0	0	0.000000	135.000000	100.000000	32
+ Pkg_MHI_FH_COFF_CARTON (1)	1.0000	KAR	450	377	282	282 Botto...	13	0	0	0.000000	410.000000	250.000000	31
+ Pkg_MHI_FH_COFF_CARTON (1)	0.0000	KVR	0	0	0	0	0	0	0	0.000000	135.000000	100.000000	31

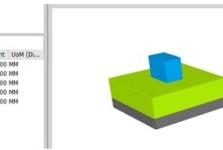


Figure 16: Detailed Mixed PB Considers Master Data Definition for Layers (12/12) Multi-level Hierarchies Examples



- Report /SCMB/CHECK_PB_DEFINITIONS (transaction: /SCMB/CHECK_PB_CONS) provides the possibility to statically check respective material master data according their details and feasibility.
 - New checks available in category "Package Type Assignments" to statically check the master data setup with regards to layer definitions.

→ Improved master data consistency

Figure 17: New Consistency Checks for Package Building ConstraintsNew Static Checks for Layer Definition



- The PB uses stacking factors defined for (packaging) materials when building packages. These factors influence both product-pure and mixed packages. The result attributes of the PB contain an indicator per package item if something can be stacked onto it or not (stackable = true = something can be stacked on top). Depending on the application using the PB, the indicator can be taken over into business documents and be processed further (e.g. load planning in S/4 TM).
- The packaging material relevant stacking factor is now also considered for open packages (e.g. pallets) when building layer-based packages with PBO through "Detailed Mixed Package Building".
 - So far the stacking factor for open package was only determined through creation on full packages and during ABAP-based "Layer-based Mixed PB (Embedded)"
 - No change for closed packages (e.g. pallet cage), i.e. the determination of the stacking factor of closed packaging materials is independent from the contained products.
- ⇒ Consistent behavior irrespective of the chosen mixed package building mode.

Figure 18: Stackability of Packaging Materials (1/8) Overview



- A material is stackable if its stacking factor is > 1:
 - The stacking factor can be maintained in the respective material master data as follows:
 - Material header: general stackability factor defined in the packaging material settings of the product master
 - Units of Measure (UoM): the stacking factor can be defined per alternative UoM via the full package quantity entry (as per package type assignment packaging material UoM)
 - Due to compatibility reasons, PB ignores stacking factor definitions for UoM when a stacking factor is defined > 0 on the material header
- If at least one non-stackable product (stacking factor <=1) is contained, the package is non-stackable.
- The following cases assume that all contained products are stackable:
 - Case 1a: full-quantity pallet is stackable
 - Case 1b: pallet with volume-based portion is not stackable
 - Case 1c: pure layered pallet (built by PBO or PB) is stackable
 - Pure layered means that all layers are complete and there is no crown above the layers.
 - Case 1d: pallet contains a crown (built by PB) is non-stackable, irrespective of the product arrangement (undefined, towers, layered)
 - Such a pallet could contain 0, 1 or multiple layers, but these do not matter for the stackability definition.
 - Case 1e: layered pallet with one consolidation layer (on top of complete layers) (built by PB)
 - If the consolidation layer is non-flat or its surface is below or equals the layer threshold, the package is non-stackable.
 - If the consolidation layer is flat and its surface is above the layer threshold, the package is stackable
- The stacking factor of the packaging material does not matter for open packaging material

Figure 19: Stackability of Packaging Materials (2/8) Definition - Case 1: Open Packaging Material



- A packaging material is stackable if its stacking factor is > 1:
 - The stacking factor can be maintained in the respective material master data as follows:
 - Material header: general stackability factor defined in the packaging material settings of the packaging material master
 - Units of measure (UoM): the stacking factor can be defined per base or alternative UoM
 - If both values are > 0, then the lower value is taken into consideration for the overall stacking factor
- If stacking factor of packaging material > 1, the package is stackable
- If stacking factor of packaging material <= 1, the package is non-stackable

Figure 20: Stackability of Packaging Materials (3/8) Definition - Case 2: Closed Packaging Material



- Mixed PB Mode: Detailed-Mixed Package Building
- Multiple items with same products
 - Package stacking factor of the product > 1 (= stackable)
 - Each item quantity is less than the full layer quantity
 - Total quantity is equal to the full layer quantity

⇒ stackable layer was built → stackable

Mixed Package Building											
<input type="checkbox"/> No Mixed Packages		<input checked="" type="checkbox"/> Detailed Mixed Package Building									
Descriptions Units of measure Additional EANs Document data											
Material		<input checked="" type="checkbox"/> MMU_PRD_TEST_04_RM_04_01									
Descr.		MMU_PRD_TEST_04_RM_04_01									
Units of measure grp (EA)											
Units of measure/EANs/dimensions											
X	AUn	<... Y	BUn	Length	Width	Height					
1	EA	<... 1	EA	290	190	150					
1	LY1	<... 16	EA			MM					
1	PAL	<... 160	EA								
						Max. Stack ...					
						2					

UPB Result Hierarchy						
Item Hierarchy						
3D Scene: Color Settings	3D Scene: Show Selected Items					
Quantity	Unit (Qb)	Stackable	Creation Mode	Length	Width	Height (Dim.)
0,158 PAL		X	D	1,200,0000	800,0000	300,0000 MM
8,000 EA				290,00000	190,00000	150,00000 MM
8,000 EA				290,00000	190,00000	150,00000 MM

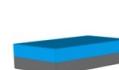


Figure 21: Stackability of Packaging Materials (4/8) Example 1



- Mixed PB Mode: Detailed-Mixed Package Building
- Multiple items with same products
 - Package stacking factor of the product > 1 (= stackable)
 - Each item quantity is less than the full layer quantity
 - Total quantity is equal to the full layer quantity

⇒ layer & crown was built → non-stackable

Mixed Package Building							
<input type="checkbox"/> No Mixed Packages <input checked="" type="checkbox"/> Mixed Package Building Mode							
<input type="checkbox"/> No Mixed Layers <input checked="" type="checkbox"/> M Detailed Mixed Package Building							
Material	M00_PRD_TEST_04_RM_04_01						
Descr.	MMU_PRD_TEST_04_RM_04_01						
Units of measure/EA/Dimensions	EA						
X	AUN <... Y	BUN	Length	Width	Height	Un...	Max. Stack...
1	EA <... 1	EA	290	190	150	MM	
1	LY1 <... 16	EA					
1	PAL <... 160	EA					2

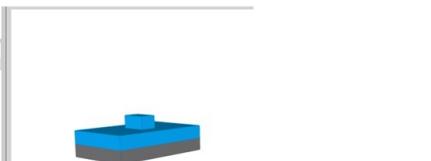


Figure 22: Stackability of Packaging Materials (5/8)Example 2



- Mixed PB Mode: Detailed-Mixed Package Building
- Multiple items with same products
 - Package stacking factor of one product <2 (= non-stackable) and one product > 1 (= stackable)
 - Both products having the same reference product containing the layer definition
 - Each item quantity is less than the full layer quantity
 - Total quantity is equal to the full layer quantity

⇒ mixed layer was built → non-stackable as per product stackability definition

Mixed Package Building							
<input type="checkbox"/> No Mixed Packages <input checked="" type="checkbox"/> Mixed Package Building Mode							
<input type="checkbox"/> No Mixed Layers <input checked="" type="checkbox"/> M Detailed Mixed Package Building							
Material	M00_PRD_TEST_04_RM_04_01						
Descr.	MMU_PRD_TEST_04_RM_04_01						
Units of measure/EA/Dimensions	EA						
X	AUN <... Y	BUN	Length	Width	Height	Un...	Max. Stack...
1	EA <... 1	EA	290	190	150	MM	
1	PAL <... 160	EA					2
Material	M00_PRD_TEST_04_RM_04_02						
Descr.	MMU_PRD_TEST_04_RM_04_02						
Units of measure/EA/Dimensions	EA						
X	AUN <... Y	BUN	Length	Width	Height	Un...	Max. Stack...
1	EA <... 1	EA	290	190	150	MM	
1	PAL <... 160	EA					2
Material	M00_RM_TEST_04_RM_04						
Descr.	MMU_RM_TEST_04_RM_04						
Units of measure/EA/Dimensions	EA						
X	AUN <... Y	BUN	Length	Width	Height	Un...	Max. Stack...
1	EA <... 1	EA	290	190	150	MM	
1	LY1 <... 16	EA					2
1	PAL <... 160	EA					2



Figure 23: Stackability of Packaging Materials (6/8)Example 3



- Mixed PB Mode: Detailed-Mixed Package Building
- Multiple items with same products
 - Package stacking factor of both products > 1 (= stackable)
 - Both products having the same reference product containing the layer definition
 - Each item quantity is less than the full layer quantity
 - Total quantity is equal to the full layer quantity

⇒ mixed layer was built → stackable as per product stackability definition

Mixed Package Building							
<input type="checkbox"/> No Mixed Packages <input checked="" type="checkbox"/> Mixed Package Building Mode							
<input type="checkbox"/> No Mixed Layers <input checked="" type="checkbox"/> M Detailed Mixed Package Building							
Material	M00_PRD_TEST_04_RM_04_01						
Descr.	MMU_PRD_TEST_04_RM_04_01						
Units of measure/EA/Dimensions	EA						
X	AUN <... Y	BUN	Length	Width	Height	Un...	Max. Stack...
1	EA <... 1	EA	290	190	150	MM	
1	PAL <... 160	EA					2
Material	M00_PRD_TEST_04_RM_04_02						
Descr.	MMU_PRD_TEST_04_RM_04_02						
Units of measure/EA/Dimensions	EA						
X	AUN <... Y	BUN	Length	Width	Height	Un...	Max. Stack...
1	EA <... 1	EA	290	190	150	MM	
1	PAL <... 160	EA					2
Material	M00_RM_TEST_04_RM_04						
Descr.	MMU_RM_TEST_04_RM_04						
Units of measure/EA/Dimensions	EA						
X	AUN <... Y	BUN	Length	Width	Height	Un...	Max. Stack...
1	EA <... 1	EA	290	190	150	MM	
1	LY1 <... 16	EA					2
1	PAL <... 160	EA					2



Figure 24: Stackability of Packaging Materials (7/8)Example 4



- Mixed PB Mode: Detailed-Mixed Package Building
- Multiple items with same products
 - Package stacking factor of both products > 1 (= stackable)
 - Both products having the same reference product containing the layer definition
 - Each item quantity is less than the full layer quantity
 - Total quantity is equal to the full layer quantity

⇒ Only crown built → non-stackable

Mixed Package Building	No Mixed Packages	No Mixed Layers
Mixed Package Building Mode		M Detailed Mixed Package Building
Descriptions	Units of Measure	Additional EANs Document data
Material: MMU_PRD_TEST_04_RM_04_01 Desc.: MMU_PRD_TEST_04_RM_04_01		Material: MMU_PRD_TEST_04_RM_04_02 Desc.: MMU_PRD_TEST_04_RM_04_02
Units of measure/EANs/dimensions		Units of measure/EANs/dimensions
X Alin <... Y Bln Length Width Height Un... Max. Stack		X Alin <... Y Bln Length Width Height Un... Max. Stack
1 EA <... 1 EA 290 190 150 MM 2		1 EA <... 1 EA 290 190 150 MM 2
PAL <... 1 EA		PAL <... 1 EA

UPB Result Hierarchy

Item Hierarchy	Quantity	UoM (Qty)	Stackable	Creation Mode	Length	Width	Height	UoM (Dim.)
> Package MMU_PRD_TEST_04_PALLET_01 (2)	0,158	PAL	<input checked="" type="checkbox"/>	D	1,200,00000	800,00000	300,00000	MM
> Product MMU_PRD_TEST_04_RM_04_01	7,000	EA			290,00000	190,00000	150,00000	MM
> Product MMU_PRD_TEST_04_RM_04_02	8,000	EA			290,00000	190,00000	150,00000	MM

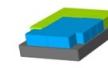


Figure 25: Stackability of Packaging Materials (8/8)Example 5



- The ABAP-based “Layer-based Mixed PB (Embedded)” can be switched off via parameter “Disable Embedded Layer-based Mixed PB” in the PB settings of the UPB profile

Layer Settings	<input type="checkbox"/> No Mixed Layers	<input type="checkbox"/> Disable Crown on Layer
Layer-Based Mixed Package Building (Embedded)		
<input checked="" type="checkbox"/> Disable Embedded Layer-Based Mixed PB	<input type="checkbox"/> Ignore Product Height	<input type="checkbox"/> Single Mixed Layer
Layer Completeness Threshold		
0,00		

- If enabled (default): PB tries to build packages based on existing ABAP-based layer logic
- If disabled: PB skips the existing ABAP-based layer logic and directly continues with building packages based on the configured mixed PB mode (detailed or volume-based).
- All parameters that are only relevant for the embedded layer-based mixed PB are getting inactive as well.

⇒ More flexibility in the PB process

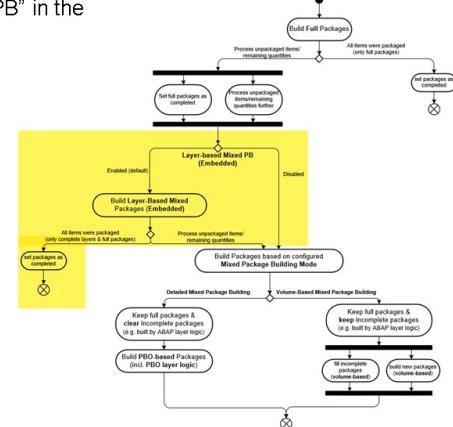


Figure 26: New Features in Package Building (1/5)Disable Layer-based Mixed PB (Embedded) - Overview

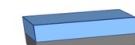


- Mixed PB Mode: Volume-based Mixed Package Building
- Embedded Layer-based Mixed PB: Enabled

Layer Settings	<input type="checkbox"/> No Mixed Layers	<input type="checkbox"/> Disable Crown on Layer
Layer-Based Mixed Package Building (Embedded)		
<input checked="" type="checkbox"/> Enable Embedded Layer-based Mixed PB	<input type="checkbox"/> Ignore Product Height	<input type="checkbox"/> Single Mixed Layer
Layer Completeness Threshold		
0,00		
Mode Settings		
<input checked="" type="checkbox"/> Volume-Based Mixed Package Building		

UPB Result Hierarchy

Item Hierarchy	Product Quantity	UoM	Creation Mode	Length	Width	Height	UoM (Dim.)
> Package MMU_PRD_TEST_04_PALLET_01 (1)	0,158	PAL	L	1,200,00000	800,00000	300,00000	MM
> Product MMU_PRD_TEST_04_RM_04_01	16,000	EA	V	290,00000	190,00000	150,00000	MM



Embedded Layer-based Mixed PB: Disabled

Layer Settings	<input type="checkbox"/> No Mixed Layers	<input type="checkbox"/> Disable Crown on Layer
Layer-Based Mixed Package Building (Embedded)		
<input checked="" type="checkbox"/> Disable Embedded Layer-based Mixed PB	<input type="checkbox"/> Ignore Product Height	<input type="checkbox"/> Single Mixed Layer
Layer Completeness Threshold		
0,00		
Mode Settings		
<input type="checkbox"/> Volume-Based Mixed Package Building		

UPB Result Hierarchy

Item Hierarchy	Quantity	UoM (Qty)	Creation Mode	Length	Width	Height	UoM (Dim.)
> Package MMU_PRD_TEST_04_PALLET_01 (1)	0,158	PAL	D	1,200,00000	800,00000	300,00000	MM
> Product MMU_PRD_TEST_04_RM_04_01	16,000	EA	V	290,00000	190,00000	150,00000	MM

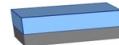
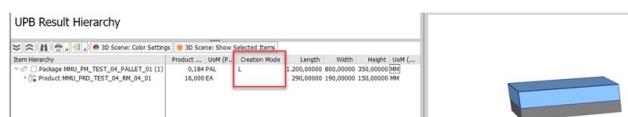


Figure 27: New Features in Package Building (2/5)Disable Layer-based Mixed PB (Embedded) - Example 1



- Mixed PB Mode: Detailed Mixed Package Building
- Embedded Layer-based Mixed PB: Enabled

Layer Settings	<input type="checkbox"/> No Mixed Layers	<input type="checkbox"/> Disable Crown on Layer
Layer-Based Mixed Package Building (Embedded)		
<input checked="" type="checkbox"/> Enable Embedded Layer-Based Mixed PB	<input type="checkbox"/> Ignore Product Height	<input type="checkbox"/> Single Mixed Layer
Layer Completeness Threshold		
Mode Settings		
<input type="radio"/> Mixed Package Building Mode <input checked="" type="radio"/> Detailed Mixed Package Building		



- Embedded Layer-based Mixed PB: Disabled

Layer Settings	<input type="checkbox"/> No Mixed Layers	<input type="checkbox"/> Disable Crown on Layer
Layer-Based Mixed Package Building (Embedded)		
<input checked="" type="checkbox"/> Enable Embedded Layer-Based Mixed PB	<input type="checkbox"/> Ignore Product Height	<input type="checkbox"/> Single Mixed Layer
Layer Completeness Threshold		
Mode Settings		
<input type="radio"/> Mixed Package Building Mode <input type="radio"/> Detailed Mixed Package Building		

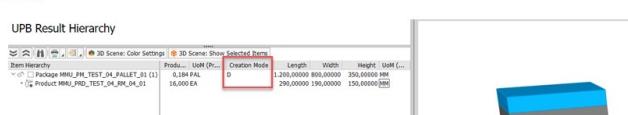


Figure 28: New Features in Package Building (3/5)Disable Layer-based Mixed PB (Embedded) - Example 2



- New option to suppress that non-layered materials (also known as "crown") can be put on top of a layer (product-pure or mixed) irrespective of the mixed PB mode.

- New parameter in the Layer Settings of the PB settings in the UPB Profile

Layer Settings	<input type="checkbox"/> No Mixed Layers	<input checked="" type="checkbox"/> Disable Crown on Layer
Layer-Based Mixed Package Building (Embedded)		
<input type="checkbox"/> Disable Embedded Layer-Based Mixed PB	<input type="checkbox"/> Ignore Product Height	<input type="checkbox"/> Single Mixed Layer
Layer Completeness Threshold		

- If enabled (default): a crown (non-layered products) is allowed to be put on layers
- If disabled: a crown (non-layered products) is NOT allowed to be put on layers. Pure layer-based packages are built and if there are remaining products or quantities that cannot be layered, then separate packages are created for these.

→ More flexibility in the PB process

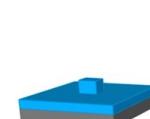
Figure 29: New Features in Package Building (4/5)Disable Crown on Layer - Overview



1. Enabled → crown on layer is allowed

UPB Result Hierarchy

Item Hierarchy	Quan... UoM (Qty)	X Pos...	Y Pos...	Z Pos...	One...	Sequ...	It...	Grou...	Group Def.	Group H...	I	Length	Width	Height	UoM (Dm.)
Product MMU_PRD_BB_SMALL1	11,000 EA	0	0	0	0	0	0	0	0	0		226,00000	166,00000	155,00000	MM
Position of Material MMU_PRD_BB	1,000	499	469	100 Botto...	11	0	0	0	0	0		0,00000	0,00000	0,00000	
Position of Material MMU_PRD_BB	10,000	0	0	0	0	0	0	1 LY1	1 LY1	1 LY1		100,00000	0,00000	0,00000	



2. Disabled → crown on layer is not allowed

UPB Result Hierarchy

Item Hierarchy	Quan... UoM (Qty)	X Pos...	Y Pos...	Z Pos...	One...	Sequ...	It...	Grou...	Group Def.	Group H...	I	Length	Width	Height	UoM (Dm.)
Product MMU_PRD_BB_SMALL1	10,000 EA	0	0	0	0	0	0	0	0	0		100,00000	226,00000	166,00000	155,00000
Position of Material MMU_PRD_BB	1,000	499	469	0 Botto...	1 LY	1 LY1	1 LY1	0	0	0		0,00000	1,285,00000	1,165,00000	305,00000
Product MMU_PRD_BB_SMALL1	1,000 EA	499	469	0 Botto...	1	0	0	0	0	0		250,00000	0,00000	0,00000	



Figure 30: New Features in Package Building (5/5)Disable Crown on Layer - Examples



- Introduction of new and restructuring of existing setting groups (e.g. layer settings or mode settings)
- Rearrangement of respective parameters according to the relevant settings group
- Parameters that are not used anymore have been removed from the PB settings:
 - Process products by layer
 - Ignore incomplete products
 - Ignore incomplete packages
- ⇒ Improved transparency and usability

Figure 31: Unified Package Building Profile Package Building Settings Clean-up



- The packaging material master data contains an allowed pkg. volume to limit the total volume of a packaging material and its cargo.
- Package building uses the max. dimensions to calculate the max. leading consumable volume (= capacity volume). Max. height is mandatory, while length and width are used, when max. length and max. width are empty.
- Allowed pkg. volume:
 - Is automatically calculated (max. dim. are fully maintained) or maintained manually
 - Open & Closed: Max. Pkg. Length * Max. Pkg. Width * Max. Pkg. Height
 - Open: Packaging material is still included for consistency reasons
- Capacity volume:
 - The max. height can be defined in material master or in the package type assignment
 - Open: Max. Pkg. Length * Max. Pkg. Width * (Max. Pkg. Height - Pkg. Material Height)
 - Closed: Max. Pkg. Length * Max. Pkg. Width * Max. Pkg. Height
- Allowed pkg. volume considered by calculating the max. height:
 - ⇒ Max. height = allowed pkg. volume / ((max.) length * (max.) width)
 - ⇒ Max. height considerer by PB = min(material master; PTA; allowed pkg. volume)

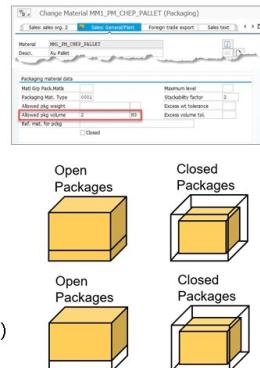


Figure 32: Package Building Considers Allowed Pkg. Volume in Material Master Data (1/6)Motivation and Background

Allowed pkg volume: this behavior is expected by PI and PS for many releases.



Package Material Master Data

Length	1.1
Width	1.1
Height	0.2
Max. Length	1
Max. Width	1
Max. Height	1
Allowed Pkg. Vol.	2

Package Building

Length	1
Width	1
Height	0.2
Max. Length	Min(1.1; 1) = 1
Max. Width	Min(1.1; 1) = 1
Max. Height	Min(1; 2 / (1*1); 3) = 1
Capacity Volume	= 1 * 1 * (1 - 0.2)

Package Type Assignment

Max. Height	3
-------------	---

Figure 33: Package Building Considers Allowed Pkg. Volume in Material Master Data (2/6)Example - Max. Height Determination

Max Length / Max Width / Max Height / Allowed Volume all refer to the load in the package



Material	Packaging Material - as per PTA	Material - Master- (max.) Length [M]	Material - Master- width [M]	Material - Master- height [M]	PTA - max. Height [M]	Material - Allowed Pkg. Volume [M]	Max. Height for Capacity (Mixed) - as per PTA [M ²]	Packaging Material	Material - Master- (max.) Length [M]	Material - Master- width [M]	Material - Master- height [M]	PTA - max. Height [M]	Material - Allowed Pkg. Volume [M]	Max. Height for Capacity (Mixed) - as per PTA [M ²]
MMU_PRD_*_01	MM1_*_PALLET_01	1	1	0	0	0	0							
MMU_PRD_*_02	MM1_*_PALLET_02	1	1	2	1.9	0	1.9							
MMU_PRD_*_03	MM1_*_PALLET_03	1	1	0	0	1.5	1.5							
MMU_PRD_*_04	MM1_*_PALLET_04	1	1	2	1.9	1.5	1.5							
MMU_PRD_*_05	MM1_*_PALLET_05	1	1	2	1.9	2.1	1.5							
MMU_PRD_*_06	MM1_*_PALLET_01	1	1	0	0	0	0	MM1_*_PALLET_01	1	1	0	0	0	0
MMU_PRD_*_07	MM1_*_PALLET_01	1	1	0	0	0	0	MM1_*_PALLET_02	1	1	2	1.9	0	1.9
MMU_PRD_*_08	MM1_*_PALLET_01	1	1	0	0	0	0	MM1_*_PALLET_03	1	1	0	0	1.5	1.5
MMU_PRD_*_09	MM1_*_PALLET_01	1	1	0	0	0	0	MM1_*_PALLET_04	1	1	2	1.9	1.5	1.5
MMU_PRD_*_10	MM1_*_PALLET_01	1	1	0	0	0	0	MM1_*_PALLET_05	1	1	2	1.9	2.1	2.1

UPB Result Hierarchy															
Item Hierarchy	Product Description	Quantity	UoM	Length	Width	Height	U...	Gross Weight	Net Weight	UoM...	Gross Volume	UoM...	Max. Length	Max. Width	Max. Height U...
• Product MMU_PRD_TEST_05_RM_01	MMU_PRD_TEST_05_RM_01	1,000	EA	299,0000	199,0000	150,0000	M	5,000,000	0,000 G	8,925,150,000 MM	0,000000	1,900,0000	1,900,0000	1,900,0000	
• Package MMU_PRD_TEST_05_PALLET_02 (1)	MMU_PRD_TEST_05_PALLET_02	1,000	EA	1,180,0000	300,0000	300,0000	M	15,000,000	0,000 G	180,450,000 MM	1,000,0000	1,000,0000	1,500,0000	1,500,0000	
• (2) Product MMU_PRD_TEST_05_RM_02	MMU_PRD_TEST_05_RM_02	1,000	EA	399,0000	199,0000	150,0000	M	5,000,000	0,000 G	8,925,150,000 MM	0,000000	0,000000	0,000000	0,000000	
• (2) Package MMU_PRD_TEST_05_PALLET_03 (1)	MMU_PRD_TEST_05_PALLET_03	2,000	PAK	1,190,0000	1,100,0000	150,0000	M	15,000,000	0,000 G	190,425,150,000 MM	1,000,0000	1,000,0000	1,500,0000	1,500,0000	
• (2) Product MMU_PRD_TEST_05_RM_03	MMU_PRD_TEST_05_RM_03	1,000	EA	299,0000	199,0000	150,0000	M	5,000,000	0,000 G	8,925,150,000 MM	0,000000	0,000000	0,000000	0,000000	
• (2) Package MMU_PRD_TEST_05_PALLET_04 (1)	MMU_PRD_TEST_05_PALLET_04	2,000	PAK	1,100,0000	300,0000	300,0000	M	15,000,000	0,000 G	190,425,150,000 MM	1,000,0000	1,000,0000	1,500,0000	1,500,0000	
• (2) Product MMU_PRD_TEST_05_RM_04	MMU_PRD_TEST_05_RM_04	1,000	EA	299,0000	199,0000	150,0000	M	5,000,000	0,000 G	8,925,150,000 MM	0,000000	0,000000	0,000000	0,000000	
• (2) Package MMU_PRD_TEST_05_PALLET_05 (1)	MMU_PRD_TEST_05_PALLET_05	1,058	PAK	1,100,0000	300,0000	300,0000	M	15,000,000	0,000 G	190,425,150,000 MM	1,000,0000	1,000,0000	1,500,0000	1,500,0000	
• (2) Product MMU_PRD_TEST_05_RM_05	MMU_PRD_TEST_05_RM_05	1,000	EA	299,0000	199,0000	150,0000	M	5,000,000	0,000 G	8,925,150,000 MM	0,000000	0,000000	0,000000	0,000000	

Figure 34: Package Building Considers Allowed Pkg. Volume in Material Master Data (3/6)Examples



- So far the “Allowed Pkg. Volume” field is not considered at all by PB, i.e. as soon as the “Allowed Pkg. Volume” is getting activated and considered by PB the results might get impacted.

⇒ calculated max. height (allowed pkg. volume) < defined max. height (PTA or Material Master)

Example: Before

Package Material Master Data	
Length	1.1
Width	1.1
Height	0.2
Max. Length	1
Max. Width	1
Max. Height	2
Allowed Pkg. Vol.	1

Package Building	
Length	1
Width	1
Height	0.2
Max. Length	Min(1; 1) = 1
Max. Width	Min(1; 1) = 1
Max. Height	Min(2; 3) = 2
Capacity Volume	= 1 * 1 * (2 - 0.2)

Package Type Assignment	
Max. Height	3

After

Package Material Master Data	
Length	1.1
Width	1.1
Height	0.2
Max. Length	1
Max. Width	1
Max. Height	2
Allowed Pkg. Vol.	1

Package Building	
Length	1
Width	1
Height	0.2
Max. Length	Min(1; 1) = 1
Max. Width	Min(1; 1) = 1
Max. Height	Min(2; 3) = 2
Capacity Volume	= 1 * 1 * (2 - 0.2)

Package Type Assignment	
Max. Height	3

Solution:

New static checks in PB master data check report “/SCMB/CHECK_PB_DEFINITIONS”

⇒ show all packaging materials where the described situation above would occur during PB execution

Figure 35: Package Building Considers Allowed Pkg. Volume in Material Master Data (4/6)Detect existing Allowed Pkg. Volume Entries that influence the PB result



1. Has the maximum Package Height been defined for the Packaging material?

⇒ checks if the max. height was defined in material master or in the Package Type Assignment

2. Is the calculated max. Package Volume smaller than the Allowed Pkg. Volume?

⇒ Checks if the max. Package Volume (calculated via the max. package dimensions) is smaller than the entered Allowed Pkg. Volume.

⇒ Only provides a result if an Allowed Pkg. Volume is maintained in the pkg. material master

3. Has the maximum Package Height been defined for the Mixed Packaging Material?

⇒ see 1.

4. Is the calculated max. Package Volume of Mixed Packaging Material smaller than the Allowed Pkg. Volume?

⇒ see 2.

Check Consistency of Package Building Constraints

Available Checks

- Does one material (base item) fit into the packaging material (volume)?
- Does one material (base UoM) fit into the packaging material (dimension)?
- Has the quantity that fits into one package been defined (full package)?
- Does the full package quantity fit into the packaging material (volume)?
- Does the layer definition (the same length as width) as the pkg material?
- Does a layer definition exist on material and reference material level?
- Is the layer defined with the same height as the material?

• Has the maximum package height been defined for the packaging material?

• Is the max. package height been defined for the needed pack. material?

• Is the calculated max. package height smaller than the allowed pkg. vol.?

• Is calc. max. volume of mixed package smaller than allowed package vol.?

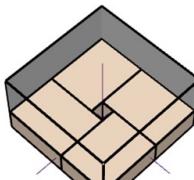
Figure 36: Package Building Considers Allowed Pkg. Volume in Material Master Data (5/6)New checks in report “Check consistency of PB constraints”

Figure 37: Package Building Considers Allowed Pkg. Volume in Material Master Data (6/6) New checks in report "Check consistency of PB constraints" - Examples

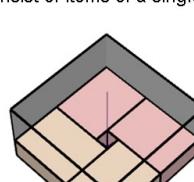


Figure 38: Package Building Optimizer

- Motivation
 - Mixed Layers: Merging is a prerequisite to support this feature in PBO
 - Runtime: PBO runtime scales with the number of different products, which can be drastically decreased by merging similar products on many scenarios
 - Solution Quality: PBO always places patterns consisting of items from a single product. Merging allows for patterns consisting of items from multiple mergeable products, which can lead to more efficient space usage
- Improved runtime and quality



Before: Patterns consist of items of a single product



Now: Patterns can consist of items from mergeable products

Figure 39: Merging Similar Products (1/3) Overview



- By default, two or more different products are mergeable if the following properties are the same:
 - Dimensions (Length, Width, Height)
 - Weight*
 - Allowed Orientations
 - *Everything* related to stacking restrictions
 - Definitions for shared mixed layers

- Exceptions for weight:
 - If products can be used in mixed layers, they will ignore weight difference when checking for being mergeable
 - Weight may differ up to a fixed difference given by parameter through BADI

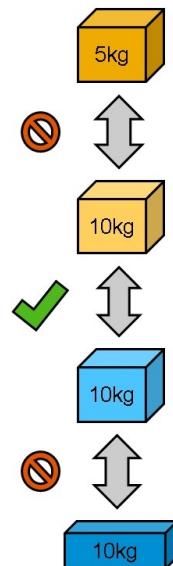


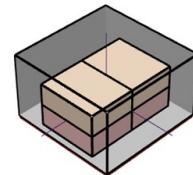
Figure 40: Merging Similar Products (2/3) Requirements for Merging



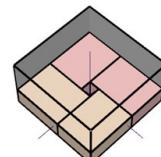
- Merging is always active by default
 - Potential speedup and solution quality improvement

- Results might differ from old behaviour
 - Expected not to worsen results

- Merging can be disabled with expert parameter (old behaviour)
 - Merging for mixed layers will still be applied (can be disabled with different expert parameter)



Before: Products are packed sequentially



After: Products are packed simultaneously

Figure 41: Merging Similar Products (3/3) Default Settings



Figure 42: Load Planning



- So far, users could not select container unit stages and package unit stages for a planning session based on the load plan status (packaging).
- Now, users can select container unit stages and package unit stages via:
 - Selection criteria screen of the transportation cockpit
 - Selection profile (additional selection attributes)
- Available for S/4 TM 2020 by the following SAP Notes:
 - SAP Note 3157207 (adding the field in TU stage TOR queries)
 - SAP Note 3157917 (data dictionary changes for the cockpit)
 - SAP Note 3158210 (necessary coding changes)

→ More fine-grained selection improves usability

Figure 43: Selecting Container / Package Unit Stages by Load Plan Status (Packaging)



- Using the package building optimizer (PBO) to create pallets considering the master data definition for layers, the user wants to review the result in a layer-oriented fashion.
- Now, the load plan hierarchy can be configured to resemble the structure of the corresponding 3D image, in which the user sees layers as "big" blocks and the crown containing individually positioned products on top (of the layers).
 - Hierarchy type customizing offers new parameter to display layers.
 - Page layout allows assigning this hierarchy type to the load plan hierarchy shown in the transportation cockpit.
- In the single document user interface, the user can switch between the existing style and the new (layer-oriented) style.
- For the transportation cockpit, the style can be configured in the page layout. Thus, dynamic switching is possible via page layout switch.

→ Improved transparency and usability

Layer-oriented hierarchy type

Define layer-oriented view in page layout

Figure 44: Load Plan Hierarchy Offers Layer-Oriented View (1/3)Overview and Configuration



Figure 45: Load Plan Hierarchy Offers Layer-Oriented View (2/3)Example 1: One Mixed Layer, Three Product Layers, and Crown

Figure 46: Load Plan Hierarchy Offers Layer-Oriented View (3/3)Example 2: Layer and Crown with Cartonized Product

Figure 47: Manual Load Planning in the Load Plan Hierarchy (1/3)Motivation and overview

Figure 48: Manual Load Planning in the Load Plan Hierarchy (2/3)Example 1

The screenshot shows the SAP S/4HANA Load Plan Hierarchy interface. On the left, there is a tree view of the load plan hierarchy under 'Active Vehicle'. A table on the right lists items with their positions and orientations. To the right of the table is a 3D visualization of a truck with a green deck, showing the physical arrangement of the items. The truck has a front deck and a rear deck, with items like Product 70, Product 80, and Product 90 placed on them.

Truck with flexible split deck (bars per row)

Figure 49: Manual Load Planning in the Load Plan Hierarchy (3/3)Example 2

The screenshot shows the SAP S/4HANA Load Plan Status Management interface. It features two main tabs: 'Planning' and 'Packaging'. The 'Planning' tab displays a tree view of active vehicles and containers, with status indicators (green for planned, yellow for unplanned) for each item. The 'Packaging' tab shows similar information but for packaging status. A note in the middle states: "→ Manual load plan status management allows new scenario involving container units".

Figure 50: Load Plan Status Management Considers Referenced Container Items

The screenshot shows the SAP S/4HANA Load Plan Printing interface. It includes sections for 'Selection Profile' (FO Selection Profile: VET_TEST_MASS_LP_PRINT_FO; TU Selection Profile: VET_TEST_MASS_LP_PRINT_CU), 'Output Device Settings' (selected output device: OUTPUT_CONTROL_PDF_PRINTER), and a list of actions under 'Output Management' (e.g., Successfully Processed, External Communication). A note at the bottom says: "→ Avoid re-creating the PDF file whenever needed" and "→ Improved usability and reduced TCO".

Figure 51: Create Multiple Load Plan PDF Files in Batch Run (1/3)Overview



- The reports offers some statistics and toolbar buttons
 - to open the archive link
 - to display the message log

- The archive link can be copied into the browser to open the load plan PDF file

The screenshot shows the SAP Fiori Launchpad with the "Load Plan Printout" application selected. The application interface includes a header with "Load Plan Printout", a progress bar at 1 / 1 - 100%, and a toolbar with various icons. The main area displays a preview of a document titled "Load Plan for Document: 4000151600" with sections for General, Document Description, Container List, Planned Departure, Shipment Address, and Stop Sequence. Below the preview is a table with columns for Stop ID, Location, Address, and Action. At the bottom, there's a toolbar with icons for Back, Forward, Home, and Help, along with a "Type Message Text" input field and a "Lang" button.

Figure 52: Create Multiple Load Plan PDF Files in Batch Run (2/3)Report



Output Conditioner: List of Spool Requests

Spool no.	Type	Date	Time	Status	Pages	Title
72255		03.06.2022	16:10	-	1	LIST1S LP01 /SCMTMS/MASS

Figure 53: Create Multiple Load Plan PDF Files in Batch Run (3/3) Report Used in Batch Processing

Planning and network



- Freight Unit Building Considers Carrier
 - Container Resources: Single versus Multi Resource
 - Driver-Related Incompatibilities
 - Scheduling
 - Vehicle Scheduling and Routing Optimizer
 - Transportation Proposal
 - Save Documents Although Checks Failed
 - Precision and Match of Geo-Coordinates

Figure 54: Topic Overview



Figure 55: Freight Unit Building



- The carrier can be maintained per item in an original requirement document (e.g. sales order, purchase order).

- This information (carrier per item) is passed to freight unit building (FUB).

- Freight unit building considers the carrier on item level as hard split criterion.

→ More accurate freight unit building regarding the given carrier

Figure 56: Freight Unit Building Considers the Carrier as Hard Split Criterion (1/3)Overview



Two freight units are created:

Figure 57: Freight Unit Building Considers the Carrier as Hard Split Criterion (2/3)Example



- The freight unit (FU) stage list in the transportation cockpit provides the carrier field (read-only):
 - If the FU stage is **unplanned**, the carrier field represents the preferred / expected carrier defined in the original requirement document.
 - If the FU stage is **planned**, the carrier field represents the carrier of the assigned capacity document.
- When creating a freight order for an unplanned FU stage, the preferred carrier is used.
- However, the user can later change the carrier in the capacity document.
 - If the assigned carrier differs from the preferred carrier, the system raises a warning message.

→ Transparency on preferred carrier

↗ Figure 58: Freight Unit Building Considers the Carrier as Hard Split Criterion (3/3)
Carrier in Freight Unit Stage List of Transportation Cockpit



↗ Figure 59: Container Resources: Single versus Multi Resource



- Previously:
 - No explicit flag to differentiate between single and multi container resource in master data.
 - The container resource was handled as single or multi resource based on assumption made for dedicated process.

- Now:
 - In resource master data, the explicit flag *Multiresource* for container resource is available to differentiate between single and multi resource.
 - Planning features consider container resource as single or multi resource depending on the *Multiresource* flag, if relevant.
 - If appropriate, both container and vehicle resources behave analogously regarding the *Multiresource* flag.
 - Note that it is not possible to limit the number of parallel documents for a multi container resource.

Resource DA_CONTAINER_X_01		Multiresource Container (Frankfurt)		Copy Equipment Group/Type Data	
General Data		Transportation		Capacity	
Basic Data		Location	DA_FRANKFURT	Carrier	Frankfurt
		Time Zone	CET		Central Europe
	<input checked="" type="checkbox"/> Multiresource				
Available Capacity		Fact. Cap.	01	Germany (Standard)	
		Act. Var.	0		

Resource DA_CONTAINER_X_01		Singleresource Container (Frankfurt)		Copy Equipment Group/Type Data	
General Data		Transportation		Capacity	
Basic Data		Location	DA_FRANKFURT	Carrier	Frankfurt
		Time Zone	CET		Central Europe
	<input type="checkbox"/> Multiresource				
Available Capacity		Fact. Cap.	01	Germany (Standard)	
		Act. Var.	0		

Multi Container Resource

Resource DA_CONTAINER_X_01		Singleresource Container (Frankfurt)		Copy Equipment Group/Type Data	
General Data		Transportation		Capacity	
Basic Data		Location	DA_FRANKFURT	Carrier	Frankfurt
		Time Zone	CET		Central Europe
	<input type="checkbox"/> Multiresource				
Available Capacity		Fact. Cap.	01	Germany (Standard)	
		Act. Var.	0		

Single Container Resource

→ Improved flexibility, consistency, transparency and usability

↗ Figure 60: Container Resource: Single versus Multi ResourceMotivation



Features	Single Container Resource	Multi Container Resource
Load Consolidation		
Load Consolidation considers <i>Multiresource</i> flag	X	X
Dialog for Change Number of Individual Resources	X	X
Transportation Cockpit		
Container List: New column <i>Multiresource</i>	X	X
Container List: Fields for Planned Location and Availability Times relevance	X	
Scenario builder		
Container Resources: New Column <i>Multiresource</i>	X	X
Upload of Container Resource considers <i>Multiresource</i> flag	X	X
Creation of Container Resource considers <i>Multiresource</i> flag	X	X

Figure 61: Feature Overview (1/2)



Features	Single Container Resource	Multi Container Resource
Gantt chart		
Container list (Document View): <i>Multiresource</i> column	X	X
Overlap Notification	X	X
Missing Empty Stage Warnings	X	
Solve Missing Stage Warning	X	
Map		
Display Resource At Depot Location	X	
Display Resource At Last Planned Location	X	
Display Resource At Last Reported Position	X	
Usage of Dialog to Report Resource Position	X	
Scheduling		
Scheduling of several capacity documents consecutively	X	

Figure 62: Feature Overview (2/2)



- Multiresource flag for container resource is considered during Load Consolidation run.
- In 'Change Number of Individual Resources' dialog:
 - Checkbox 'Multiresource' is set for multi resource container.
 - 'Number for Load Consolidation' for single resource is read only and defaulted to 1.
 - 'Number for Load Consolidation' for multiple resource is editable and defaulted to maximum possible number.
- ➔ Consistent usage of multi versus single resource

Figure 63: Load Consolidation Considers Multi Resource Flag



- New column 'Multiresource' has been offered in Container Resource List → part of standard field catalog

- Last planned location and availability time can be displayed in the container resource list.
 - Only relevant for single container resource
 - Fields can be added via enhancement (please refer to SAP note 2051868)

→ Improved transparency, consistency and usability

Figure 64: Transportation CockpitContainer Resource List



- Scenario template contains new column *MULTI_RESOURCE* in container resources list
- Scenario builder considers *Multiresource* flag of container resource
 - during resource upload into the scenario builder template,
 - and
 - during resource creation based on scenario builder template.
- Upload of container resource into scenario template:
 - In scenario template, the *MULTI_RESOURCE* flag is filled for container resource based on used resource information.
- Please note,
 - for vehicle resources, scenario builder does not offer the explicit flag to differentiate between single and multiresource like it is offered for container resource. The differentiation is done using means of transport settings which are considered during the vehicle resource creation.

Figure 65: Scenario Builder (1/2)Consider Multi Resource Flag and Upload Container Resource



- Creation of container resource based on scenario template
 - In resource master data, the *Multiresource* flag is set for multi resource according to scenario template entry.
- See the screenshots for examples for single and multi resources after creation
- Consistent usage of multiresource flag for container resources

Figure 66: Scenario Builder (2/2)Container Resource Creation



- Container resource list provides the *Multiresource* field according to resource master data

Container	Actions	Label	Multiresource	Depot Location	Max. Weight	Max. Weight UoM
Resource						
DA_CONTAINER_S_01		Singlresource Container (Frankfurt)		DA_FRANKFURT	20,000	TO
DA_CONTAINER_M_01		Multiresource Container (Frankfurt)	X	DA_FRANKFURT	20,000	TO
DA_CONTAINER_S_02		Singlresource Container			20,000	TO
DA_CONTAINER_M_02		Multiresource Container	X	DA_MUNICH	20,000	TO
DA_CONTAINER_S_03		Singlresource Container (Munich)			20,000	TO
DA_CONTAINER_S_04		Singlresource Container			20,000	TO
DA_CONTAINER_M_03		Multiresource Container (Berlin)	X	DA_BERLIN	20,000	TO
DA_CONTAINER_S_20GO		20 GO Container		DA_FRANKFURT	29,930,000	KG

- The fields can be customized in SPRO: Transportation Management → Basic Functions → Gantt Chart → Define Field Lists and Label Schemes for Gantt Chart
 - Improved usability

Figure 67: Gantt Chart: Container Resource List in Document ViewMulti Resource Field



- New field lists have been provided
 - CONTAINER_RESOURCES → for containers
 - VEHICLE_RESOURCES → for vehicles (for example: truck, trailer, locomotive, railcar)
- Old field list for resources still exists, but the new field lists are now used in all resource lists and hierarchies delivered by SAP.
- Customizing Path: Transportation Management → Basic Functions → Gantt Chart → Define Field Lists and Label Schemes for Gantt Chart → Field Lists
 - Improved usability

FIELD LIST: VEHICLE_RESOURCES			FIELD LIST: CONTAINER_RESOURCES		
Position	Field Name	Enable QV	Position	Field Name	Enable QV
10	RESOURCE		10	RESOURCE	
20	LABEL		20	LABEL	
30	LICENSE_PLATE		30	WARNING_COUNT	
40	WARRANTS_COUNT		40	MAX_WEIGHT	
50	MEANS_OF_TRANSPORT		50	MAX_WEIGHT_DOM	
60	MAX_WEIGHT		60	MAX_VOLUME	
70	MAX_WEIGHT_DOM		70	MAX_VOLUME_DOM	
80	MAX_VOLUME		80	MAX_VOLUME_DOM	
90	MAX_VOLUME_DOM		90	NORM_GVM_VAL	
100	NORM_GVM_VAL		100	NORM_GVM_DOM	
110	NORM_GVM_DOM		110	MULTI_RES	
120	MULTI_RES		120	EQUI_GROUP_R	
130	EQUI_GROUP_R		130	EQUI_TYPE_R	
140	EQUI_TYPE_R		140	EQUI_TYPE_R	

DISPLAY VIEW "HIERARCHIES": OVERVIEW		
DAILY STRUCTURE	HIERARCHIES	FIELD LIST
1. Hierarchies	1. Hierarchy Levels	CONTAINER_RESOURCES
2. Vehicles	2. Vehicle Levels	
3. Journeys	3. Journey Levels	
4. Resources	4. Resource Levels	
5. Hierarchies	5. Hierarchies	

Figure 68: Gantt Chart: Customizing New Field Lists for Vehicle and Container Resources



- Warning for missing empty stage is provided for single container resource

Container	Actions	Multiresource	Label	Depot Location	Max. Weight	Max. Weight UoM
DA_CONTAINER_S_01		Singlresource Container				
DA_CONTAINER_M_01		Multiresource Container	X	DA_FRANKFURT	20,000	TO
DA_CONTAINER_S_02		Singlresource Container			20,000	TO
DA_CONTAINER_M_02		Multiresource Container	X	DA_MUNICH	20,000	TO
DA_CONTAINER_S_03		Singlresource Container			20,000	TO

Container Units	Actions	Document Status	Source Location	Target Location	Duration
DA_CONTAINER_S_01		Planned	DA_FRANKFURT	DA_MUNICH	348 H
DA_CONTAINER_M_01		Planned	DA_FRANKFURT	DA_MUNICH	348 H
DA_CONTAINER_S_02		Planned	DA_MUNICH	DA_FRANKFURT	348 H
DA_CONTAINER_M_02		Planned	DA_MUNICH	DA_FRANKFURT	348 H
DA_CONTAINER_S_03		Planned	DA_MUNICH	DA_FRANKFURT	348 H

- Warnings
- Multiple Warnings
 - Missing Empty Stage (2)
 - Incorrect Driver Assignment (0)

Figure 69: Gantt Chart: Missing Empty Stage Warnings (1/2)Container as Single Resource



- No warning for missing empty stage issued for multi container resource

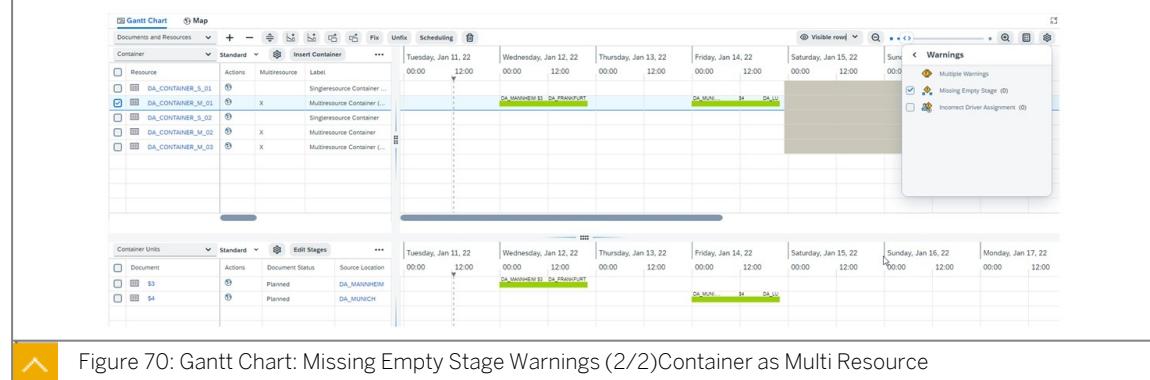


Figure 70: Gantt Chart: Missing Empty Stage Warnings (2/2)Container as Multi Resource



- Solving missing stage warning is offered for single container resource, but not for multi resources

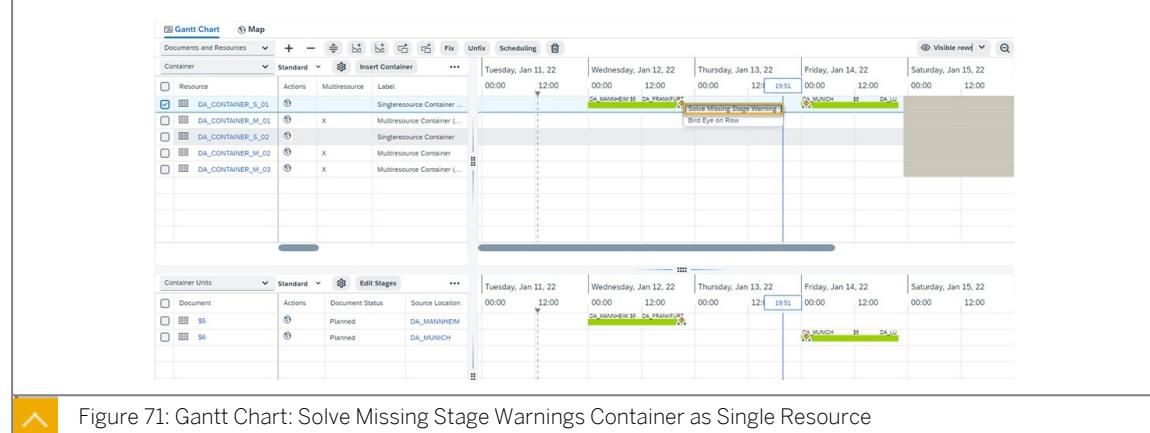


Figure 71: Gantt Chart: Solve Missing Stage Warnings Container as Single Resource



Notifications for overlap:

- Single container resource: critical overlap occurs if resource is used several times
- Multi container resource: acceptable overlap occurs if resource is used several times
 - Note that multi container resource does not offer to limit the number of parallel documents.

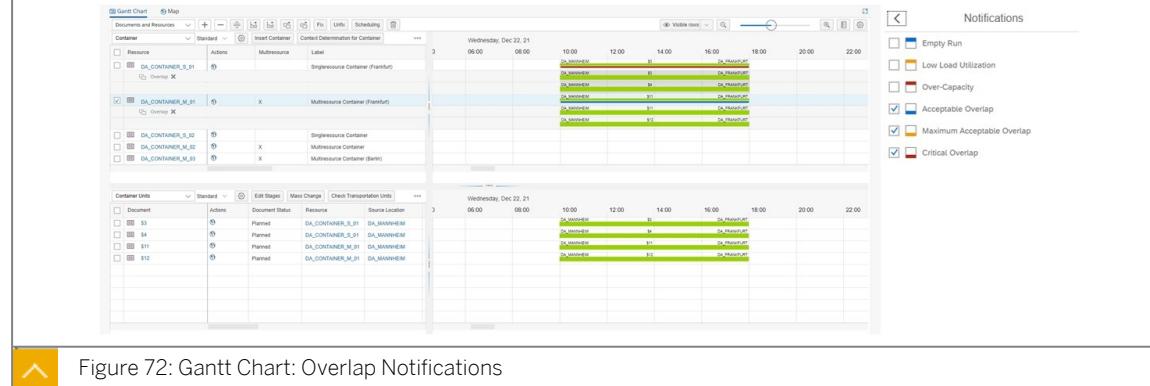


Figure 72: Gantt Chart: Overlap Notifications



- Only single resources are getting displayed on the map depending on geographical map layout.

- This applies to

- Container resource
- Vehicle resource

Geo-Map Layout

Appl.	Geo-Map Layout	DispResAt	ColorBy
SAPTM_VTC Visual Transports... v BBD_VTC	v BBD_VTC	1 Depot Location	Standard
SAPTM_VTC Visual Transports... v DA_VTC	v DA_VTC	2 Last Planned Location	Standard
SAPTM_VTC Visual Transports... v GCA_VTC	v GCA_VTC	3 Last Reported Position	Standard
SAPTM_VTC Visual Transports... v KW_VTC	v KW_VTC	4 Last Reported Position	Standard
SAPTM_VTC Visual Transports... v LT_VTC	v LT_VTC	5 Last Reported Position	Standard

- Geographical Map
- Define Settings for Geographical Map
- Define Layouts for Geographical Map

Figure 73: Transportation Cockpit: Map (1/5)Overview



- Relevant geographical map layout:

Geographical Map

- Define Settings for Geographical Map
- Define Layouts for Geographical Map

Layouts

Appl.	Geo-Map Layout	HideStages	DispResAt
SAPTM_VTC Visual Transports - BBD_VTC	Show All Stages	v 1 Depot Location	v 1 Depot Location
SAPTM_VTC Visual Transports - DA_VTC	Show All Stages	v 2 Last Planned Location	v 2 Last Planned Location

- Single container resources are displayed on the map at depot location position

- Example: single container resource on the map added using "Add to Map" action

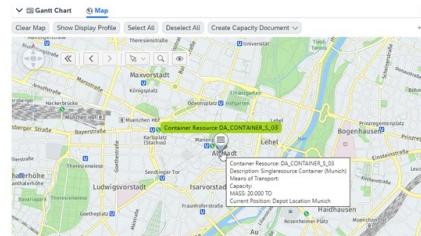


Figure 74: Transportation Cockpit: Map (2/5)Depot Location



- Relevant geographical map layout:

Geographical Map

- Define Settings for Geographical Map
- Define Layouts for Geographical Map

Layouts

Appl.	Geo-Map Layout	HideStages	DispResAt
SAPTM_VTC Visual Transports - v BBD_VTC	Show All Stages	v 1 Depot Location	v 1 Depot Location
SAPTM_VTC Visual Transports - v DA_VTC	Show All Stages	v 3 Last Reported Position	v 3 Last Reported Position

- Single container resource with reported position is displayed on the map
– for multi resources, last reported location is not relevant.

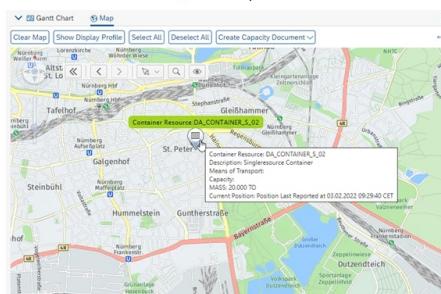


Figure 75: Transportation Cockpit: Map (3/5)Last Reported Position



- Reporting the resource position is only allowed for single container and vehicle resource. This includes:
 - the dialog on the map (see details below)
 - using functional module /SCMTMS/RES_POSITION_UPDATE (which can be used in customer projects)
- Dialog on map:
 - Context menu on map (right-click) → Report Resource Position
 - Example 1: Report resource position for single container resource

- Example 2: Report resource position for multi container resource

Figure 76: Transportation Cockpit: Map (4/5)Report Resource Position



- Relevant geographical map layout:
 - Geographical Map
 - Define Settings for Geographical Map
 - Define Layouts for Geographical Map
- Last planned location and availability times are not relevant for multi container resources
- Single container resource is displayed on the geo-map at the last planned location

Figure 77: Transportation Cockpit: Map (5/5)Last Planned Location



- Scheduling
 - Handles the container resource regarding the *Multiresource* flag analogous to vehicle resources
 - Several container units are scheduled consecutively if using single container resource.
 - Several container units can be scheduled at the same time if using multi container resource.
- Vehicle scheduling and routing (VSR) optimizer
 - The VSR optimizer doesn't consider container resources, thus will not evaluate the *Multiresource* flag.
 - Several container units can be scheduled at the same time independent of multi- or single resource.

Figure 78: Scheduling and Vehicle Scheduling and Routing OptimizerContainer Resource



Figure 79: Driver-Related Incompatibilities



- Two new incompatibility types are offered and can be used in the incompatibility settings:
 - Freight Unit – Driver
 - A driver is not allowed to transport a specific freight unit.
 - Therefore, the driver is not allowed to drive a truck that has loaded this freight unit.
 - The freight unit must not be planned on a truck that is driven by the driver.
 - Vehicle – Driver
 - A driver is not allowed to drive a certain vehicle for certain reasons (e.g. competence, qualifications)

Incomp.Typ	Description
01	Freight Unit - Freight Unit (Vehicle Level)
02	Freight Unit - Freight Unit (Compartment Level)
03	Freight Unit - Freight Unit (Means-of-Transport Combination)
30	Freight Unit - Freight Unit (Consignment Order Level)
04	Freight Unit - Vehicle Resource/Vehicle Type
05	Freight Unit - Transhipment Location
06	Freight Unit - Vehicle Compartment
28	Freight Unit - Driver
07	Vehicle Res.Veh. Type - Vehicle Res.Veh. Type
08	Vehicle Res.Veh. Type - Location (Stay Level)
09	Vehicle Res.Veh. Type - Location (Loading/Unloading Level)
16	Vehicle Res.Veh. Type - Driver
10	Vehicle Means-of-Transport Combination - Location
11	Freight Unit - Freight Booking
19	Freight Unit - Transportation Unit Resource
20	Freight Unit - Schedule
23	Container Unit - Container Unit (Vehicle Level)
24	Container Unit - Vehicle Resource/Vehicle Type
25	Container Unit - Transhipment Location

- Improved driver-oriented planning and definition of constraints

Figure 80: Manual and Automatic Planning Consider Driver-Related Incompatibilities

Two New Incompatibility Types



- The driver master data provides a new field to represent a driver type
 - Allowed values can be customized (Business Partners → Define Driver Types)
 - Use cases:
 - SAP Direct Distribution: delivery driver, van seller, merchandiser, pre-seller, mixed
 - Chemical transports: dry vs. liquids
 - Dangerous goods (DG): DG vs. non-DG
- The driver condition enables selection of drivers according to certain criteria.
- Incompatibilities can be defined based on any driver attribute.

Figure 81: Driver Condition and Type



- Manual planning considers driver incompatibilities. As usual, the user can define whether an error or a warning is issued if an incompatibility is violated.

– Error:

– Warning:

- This check is part of the regular incompatibility check, which also changes the document status.

Figure 82: Manual Planning Considers Driver-Related Incompatibilities



- Automatic planning considers the driver incompatibilities as follows (since drivers are not directly supported by automatic planning itself):
 - Automatic planning **considers** driver-related incompatibilities whenever a driver is **default driver** of a truck resource.
 - Automatic planning ignores driver-related incompatibilities, if the driver is not default driver of a truck resource in the planning session.
- Example (one freight unit (FU) and one truck with default driver that is incompatible with the FU):
 -
 -

Figure 83: Automatic Planning Considers Driver-Related Incompatibilities



- Drivers and trucks have to be selected explicitly for the planning session at hand. Thus, just planning with drivers is not sufficient.
- A new parameter is available in the transportation cockpit settings that triggers the following behavior:
 - If vehicle V is selected and D is its default driver, D gets selected, too.
 - If driver D is selected and default driver for vehicle V, then V gets selected, too.
 - This logic is performed before the "normal" (document-oriented) context determination.
- An analogous parameter is available in the automatic planning report.

→ Simplified selection of drivers and trucks

→ Improved usability

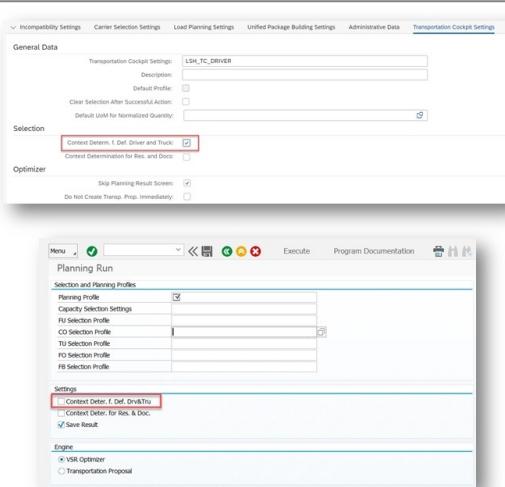


Figure 84: Context Determination for Drivers

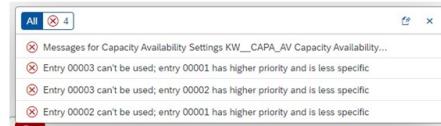


Figure 85: Scheduling



- The table entries of the capacity availability settings and scheduling settings are evaluated from top to bottom. Thus, a user could arrange the entries such that one or more entries will never be applied.
 - E.g. if the first entry is always applied
- Depending on the total number of entries adjusting them via the move to top, move up, move down and move to bottom buttons can be tedious and error-prone.
- A new check marks all key fields of any unreachable entry
 - The message text names both the unreachable entry and the overriding entry
- The new column "Processing Sequence" is editable and allows to move an entry to any index in one step
 - The long text of the "Processing Sequence" field explains the top to bottom evaluation of entries as well as the new move to index functionality.

- Users can easily find unreachable entries and rearrange them to resolve conflicts
- Improved user experience



Processing Sequence	Means of Transport	Vehicle Group	Vehicle Type	Resource	Apply to Equipment Type or Reso...	Always Available	Use Availability from Master...	Factory Calendar
00001	*	*	*	*	Both Equal	<input type="checkbox"/>	<input type="checkbox"/>	01
00002	*	YE2	*	*	Both Equal	<input type="checkbox"/>	<input type="checkbox"/>	02
00003	*	YE2	YE2_1	*	Both Equal	<input type="checkbox"/>	<input type="checkbox"/>	03

Figure 86: Improved Usability in Capacity Availability Settings and Scheduling Settings



- Motivation:** Scheduling is often called indirectly but always raised an error in case of an issue
 - It might be misleading if a planner sees an error message after creation of a freight order but the order is created
- Scheduling will raise a warning if it's only indirectly called as the main action was successful
 - E.g. called from planning strategy (VSRI_SCH), resolving a warning in Gantt chart
- It still raises an error if scheduling was called directly
 - E.g. using scheduling button, D&D in same Gantt chart line
- User is not confused by error messages not related to the main user action, but can still check the warnings raised by scheduling
 - Improved usability

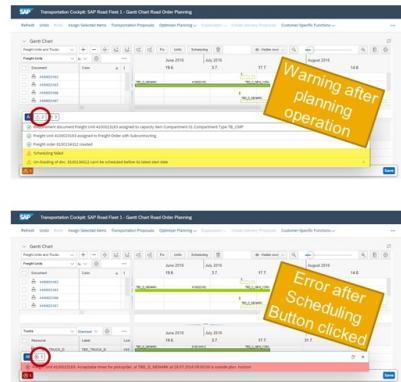


Figure 87: Indirect Scheduling Only Raises Warnings Scheduling Should Differentiate Direct and Indirect Scheduling



- Motivation:** The TM system might not be able to schedule times correctly in some rail / ocean / air processes
 - In case schedules are used the times are derived from them and scheduling doesn't take place
 - In case you don't use schedules, scheduling might be misleading due to false / missing automatic duration determination
- New option in freight document type to deactivate automatic time determinations
 - No determination of times if freight document is created from requirement document
 - No indirect scheduling (e.g. from planning strategy)
 - System raises an information message if freight documents are ignored from indirect scheduling
 - It's still possible to schedule an order via schedule button
 - Vehicle scheduling and routing optimizer ignores this setting
- Better support of manual rail / ocean / air processes without usage of schedules

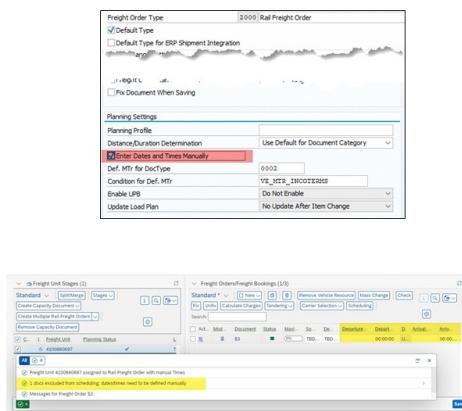


Figure 88: Freight Documents Offer Pure Manual Definition of Dates and Times Disable Automatic Scheduling of Freight Documents



Figure 89: Vehicle Scheduling and Routing Optimizer



- Previously, the situation that the optimizer did not find any solution led to a cancelled VSR background job
 - It was necessary to enter the spool to check whether just no solution is found
 - Now, there is a new option in the VSR background report not to throw an error if *only* no solution is found
 - Maintainable in /SCMTMS/VSR_OPT_BGD
 - Default behavior for /SCMTMS/PLN_OPT
- Possibility to distinguish an error and no solution found
- Improved usability and transparency

Figure 90: Improved Definition of Finished Status for Background Planning Report New Option to Deactivate the Error Message in Case of No Optimizer Solution



- Vehicle and scheduling (VSR) optimizer offers a new (improved) definition of work and driving time constraints
 - Not yet consumed by the standard application
→ long-term roadmap
 - New definition of work and driving time constraints:
 - Take a rest of *N* hours after *M* hours of accumulated activities
 - In *M* hours max. *N* hours of accumulated activities
 - See [blog](#) for more details
 - The VSR interface was enhanced by the tables for the new definitions
 - There is a example implementation for US/EU inspired rules in class /SCMTMS/CL_OPT_BADI_PRE_EX_2
 - Scheduling is not yet capable to consume the new definitions
→ long-term roadmap
- Customers can make use of the new VSR definitions in the project (via Badl implementation)

Figure 91: Extend VSR Input / Output to Consider Driving / Working Time Constraints Enable Possibility of Using the New VSR function in Badl



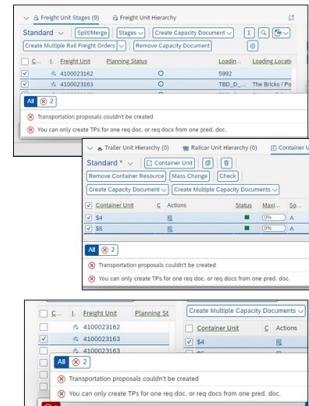
Figure 92: Transportation Proposal



- The transportation proposal (TP) was built for creating multiple different routings for **one** requirement document only.
 - In S/4, SAP discontinued the support of running the TP for multiple requirement documents.
 - The check was implemented for freight units but not for transportation units yet.

- Now, the transportation proposal will fail if you call it for multiple requirement document at once.
 - Exception: All the requirement documents are created from the same predecessor document (sales/purchase order...)
 - Also delivered by SAP Note 3197699 to lower S/4 releases

- ➔ Consistency
- ➔ Transparency for user on supported functionality



➔ You can only create TPs for one req doc. or req docs from one pred. doc.

Message no.: ZCMTMSPLN_VSR_OLOWS

Diagnosis

You have tried to create a transportation proposal for several requirement documents. This is only allowed if all requirement documents belong to the same predecessor document.

System Response

The system did not create a transportation proposal.

Procedure

Select only one requirement document or select requirement documents that belong to the same predecessor document.

Figure 93: Transportation Proposal Can Process One Requirement Document OnlyAdding Missing Check for Transportation Unit



- The new Product Compliance (PC) cloud solution provides more detailed dangerous goods (DG) status information.
- The transportation proposal shows:
 - the new DG status, if PC is active, and
 - the old DG indicator, if PC is not active.
- The backend behaves analogously.

➔ More detailed DG status information if PC is used

PC is active

PC is not active

Figure 94: Transportation Proposal: New Dangerous Goods Fields Overview and Examples

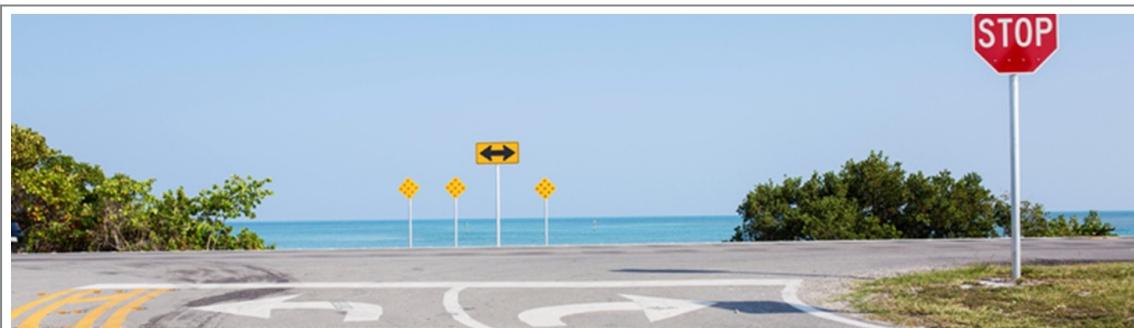


Figure 95: Save Documents although Checks Failed



▪ Motivation:

- Suppose two consecutive freight orders on the same single resource, which do not have an overlap. Now, the times of the first freight order get changed, e.g. because of an update from execution. In case of a delay of the first freight order, this causes an error triggered by the time overlap check. Due to the error, the planner cannot save this situation.
 - Planning profile offers new parameter "Allow Save After Failed Check" in the check section:
 - Default value is "Allow Save and Create Block", alternative value is "Reject Save"
 - The following checks are involved:
 - Capacity check
 - Load space capacity check
 - Incompatibility and dangerous goods check
 - Resource check
 - Change stop location check
 - The user can allow the save and care about the blocks separately
- Improved flexibility and usability

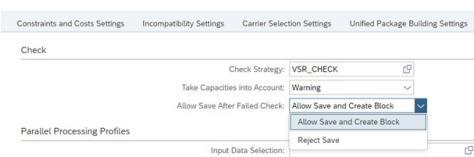


Figure 96: Save Documents although Checks Failed (1/3)Overview

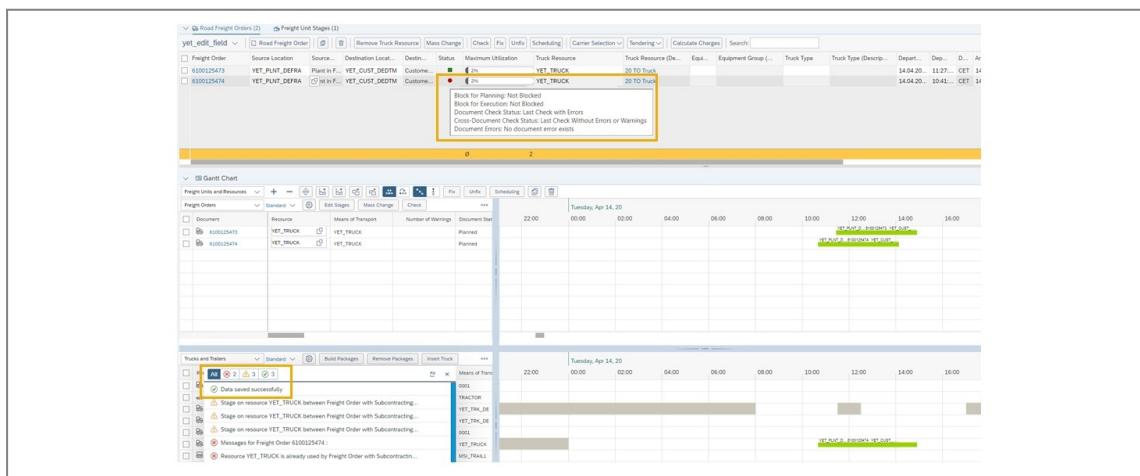


Figure 97: Save Documents although Checks Failed (2/3)Example 1: Resource Overlap - Allow Save and Create Block

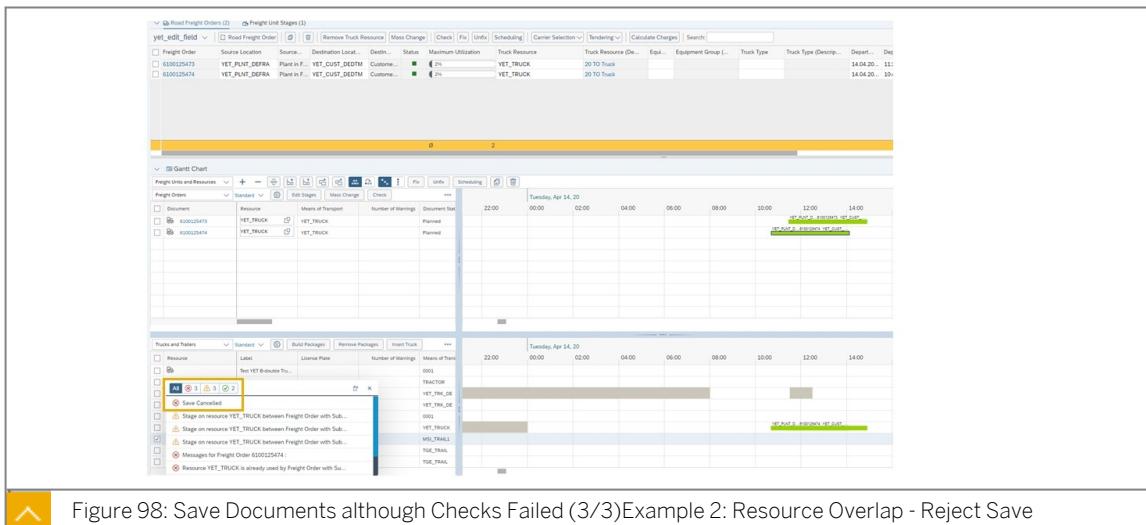


Figure 98: Save Documents although Checks Failed (3/3)Example 2: Resource Overlap - Reject Save



Figure 99: Precision and Match of Geocoordinates



- The precision of geocoordinates is already stored in location master data and represents whether the geocoordinates have been obtained e.g. on street, city or region level. A high precision level is required for planning. So far, the precision is not populated automatically.
- Now, the precision is filled automatically via GIS integration and HANA spatial services (HSS).
 - HANA spatial services offers the precision in its geocoding API by defining and returning a result property to indicate the precision obtained from a connected GIS provider (e.g. HERE).
 - The GIS integration with HANA spatial services consumes the precision and enables storing it in location master data.
- Available in S4 2020
 - User gets aware of geocoordinates' precision and can trigger necessary address changes
 - Improved handling of geocoordinates with insufficient precision

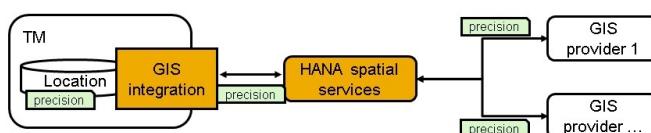


Figure 100: Geocoding Precision (1/3)Motivation and Overview



- Location master data offers the precision field
 - Its domain got extended by precision 0450 (County)

Precision	Short Description
0000	Not specified
0100	World
0200	Continent
0300	Country
0400	Region
0500	Town limits
0600	Postal Code
0700	City
0800	District
0900	Street mid-point
1000	House number range (street section) mid-point
1100	House number (interpolated)
1200	House number (exact)
1300	House number with supplement (e.g. Neurottstr. 7b)

Figure 101: Geocoding Precision (2/3)Location Master Data



Geocoding an address with an exact house number

Geocoding an address with a region

Figure 102: Geocoding Precision (3/3)Examples



- The match of geocoordinates for a location's address:
 - represents how well the obtained geocoordinates match the given address, and
 - is measured as percentage in the range 0% to 100%.
 - 100% represents a perfect match, and lower percentages indicate typos.
 - A good match is pre-requisite for good planning results. A poor match may lead to a bad and unrealistic plan.
 - Now, the match is provided in the location master data and filled automatically via GIS integration and HANA spatial services (HSS).
 - HANA spatial services offers the matchScore in its geocoding API by defining and returning a result property to indicate the match for the address (a value from 0 to 1).
 - The GIS integration with HANA spatial services consumes the match and enables storing it in location master data.
- User gets aware of geocoordinates' match and can trigger necessary address changes
- Improved handling of geocoordinates with insufficient match

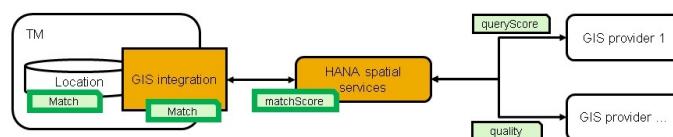


Figure 103: Geocoding Match (1/3)Motivation and Overview



- Location master data offers the match field

Change Location B001

Location	B001	CATT/VZ_B001
Location Type	1002	Distribution Center
Planning Version	000	iBTest
General Address Alt. Identifiers Calendar Resources Addit. eSPP		
Identifier	External Location Short Text	
GLN	Ext. Location	B001
DUNS-4	Bus. System Group	BG1
UNLOCODE		
IATA Code		
Geographical Data		
Longitude	+ sign 7 Deg. 46 Minutes 43 Seconds	
Latitude	+ sign 49 Deg. 9 Minutes 3 Seconds	
Altitude	Sign	
Time Zone	CET	Precision 700
Validity End	01.07.2022	Match (%) 100
<input type="checkbox"/> Lock Geo Data		
Geocoordinates		
Geocodin Strategy	Precision	Match (%) +/- Longitude Minutes Seconds +/- Latitude Minut
1 ZSCP_SS_GC	700	100
3 SCP_SS_GC	0	0
Recalculate Clear		

Figure 104: Geocoding Match (2/3)Location Master Data



Geocoding a correct address

Street Address		
Street/House Number	Hasso-Plattner-Ring	1
Postal Code/City	69190	Walldorf
Country/Reg.	DE	Germany
Region		<input type="button" value=""/>

100% Match

Geographical Data	Longitude	+ sign 8 Deg. 38 Minutes 21 Seconds
	Latitude	+ sign 49 Deg. 17 Minutes 41 Seconds
	Altitude	Sign
	Time Zone	CET Precision 1200
	Validity End	01.07.2022 Match (%) 100
	<input type="checkbox"/> Lock Geo Data	

Geocoding incorrect addresses

Street Address		
Street/House Number	Hasso-Plattner-Ding	1
Postal Code/City	69190	Walldorf
Country/Reg.	DE	Germany
Region		<input type="button" value=""/>

> 100% Match

Geographical Data	Longitude	+ sign 8 Deg. 38 Minutes 21 Seconds
	Latitude	+ sign 49 Deg. 17 Minutes 41 Seconds
	Altitude	Sign
	Time Zone	CET Precision 1200
	Validity End	01.07.2022 Match (%) 100
	<input type="checkbox"/> Lock Geo Data	

Street Address		
Street/House Number	Gatenstrasse	555
Postal Code/City	68306	Mannheim
Country/Reg.	DE	Germany
Region		<input type="button" value=""/>

< 100% Matches

Geographical Data	Longitude	+ sign 8 Deg. 30 Minutes 21 Seconds
	Latitude	+ sign 49 Deg. 30 Minutes 35 Seconds
	Altitude	Sign
	Time Zone	CET Precision 900
	Validity End	01.07.2022 Match (%) 78
	<input type="checkbox"/> Lock Geo Data	

Figure 105: Geocoding Match (3/3)Examples



- Geocoordinate maintenance for locations can be a time-consuming task, therefore we already offered a mass maintenance report for the geocoding of locations.
- Now, the match and precision fields have been added as selection criteria and result fields in the mass geocoding report.
- User can select and process locations in the mass geocoding maintenance by considering these fields in the selection and results, either with online or scheduled background processing.
- Improved mass geocoding regarding insufficient precision and match

Selection criteria

<input checked="" type="checkbox"/> Geocoding of Locations	<input type="button" value=""/>
<input checked="" type="checkbox"/> Location Selection	<input type="button" value=""/>
Location	to
Location Type	to
<input checked="" type="checkbox"/> Exclude Transp. Zones (1005)	<input type="button" value=""/>
Source	<input type="button" value=""/>
Transportation Zone	<input type="button" value=""/>
Validity End of Geographical Data	to
Precision	to
Match (%)	10 to 80

Results

Total No. of selected Locations:	GC Level	Longitude	Latitude	Precision/PrecisionDesc	Match (%)
64					
No. of Locations with SAP standard coordinates (SAPO): 6					
State/Region	GC Level	Longitude	Latitude		
0000010001	1	8.6420300000	48.3024000000	700 City	0
0000030001	1	8.6430300000	49.3026400000	700 City	43
0000030001-WALLDORF	1	8.6430300000	49.3026400000	700 City	67
0000030001	1	9.2773800000	60.2951200000	700 City	96
0000030001-BIEBERGEM	1	9.2773800000	60.2951200000	800 District	17
0000030001	1	14.0654500000	49.4996000000	1200 House number (exa.	65
0000030001-HEIDELBER	1	14.0654500000	49.4996000000	1200 House number (exa.	56
0000030001-JACSTZELL	1	10.0965000000	49.0009800000	700 City	50
0000030001-LETSCHEN	1	14.3605000000	52.8400000000	700 City	50
0000030001-SCHAUMBURG	1	9.9862400000	52.7128000000	700 City	51
0000030001-PUEBLA	1	9.9862400000	52.7128000000	700 City	51

Figure 106: Geocoding Match and Precision (1/2)Usage in Mass Geocoding Report



- The transportation network cockpit can visually represent network master data such as locations in a map.
 - Now, the match and precision fields are available as selection criteria and result fields (in results table and tooltip for location on map).
 - Users can easily identify locations with insufficient precision and match, and navigate to location maintenance to fix this.
- Improved handling of insufficient geocoding results

The screenshot shows the SAP Transportation Network Cockpit interface. At the top, there are tabs for 'Clear Map', 'Display Profile', 'Show All Transhipment Locations', and 'Search'. Below the tabs are 'Selection Criteria' and 'Standard' dropdowns. A search bar includes fields for 'Location', 'City', 'Postal Code', 'Country/Region Key', and 'Region'. Below the search bar are 'Match:' and 'Precision:' fields. To the right of these fields are 'Hide Filter Bar', 'Display Settings', and 'Adapt Filters (L)' buttons. The main area is titled 'Result Overview' and contains a table with columns: Type, ID, Precision, Precision Description, and Match. The table lists several locations with their IDs, precision values (e.g., 1200, 0700, 0400), descriptions (e.g., House number (exact), City, Region), and matches (e.g., 97, 81, 100). Below the table is a world map with various location points. A tooltip on one point in North America provides details: 'Location: 0000181421', 'Description: 2492 sales area', 'Address: B...', 'Precision: 0100', 'Precision Description: Country', and 'Match: 100'.

↗ Figure 107: Geocoding Match and Precision (2/2)Transportation Network Cockpit

Transportation Cockpit manual planning



- Page Layout
- Transportation Cockpit Settings
- Creation of Capacity Documents Based on Groups
- Manual Planning with Local Resource Items
- New and Editable Fields in the Transportation Cockpit
- Map
- Miscellaneous

↗ Figure 108: Topic Overview



↗ Figure 109: Page Layout



- While some users really like quick views, others don't.
- Now, all quick views in the transportation cockpit can easily be deactivated by one parameter in the page layout.
- The parameter "Hide Quick View" is available (but invisible by default) in the work list for page layouts for transportation cockpit
- This parameter is available in the page layout (general data).
- When planning on multiple windows, each page layout defines the quick view behavior of the respective window.
- Exception: this parameter cannot control re-used UIBBs from single document UI, e.g. cargo management or load plan.

→ Improved usability

SAP Page Layout for Transportation Cockpit

Actions	Page Layout	Description	Hide Quick ...
<input type="checkbox"/>	0 VC test		
<input type="checkbox"/>	1 MW 1 Gantt in Main		
<input type="checkbox"/>	2 MW 1 Map in Slave		
<input type="checkbox"/>	AUKU_Page Layout	Test Layout	

SAP Page Layout for Transportation Cockpit: SL_GNT Smart Add

General Data
Page Layout: SL_GNT Smart Add
Description:
Activate Command Line: <input checked="" type="checkbox"/> Hide Quick View: <input type="checkbox"/>
Transportation Proposal Layout: Standard Layout

Figure 110: Parameter to (De-)Activate All Quick Views in the Transportation Cockpit



- SAP Note [3065464](#) contains the definition of Basic Shipping vs basic TM vs advanced TM.
- Previously, it was not that transparent which page layouts can be used for the transportation cockpit with the basic variants (i.e. Basic Shipping and basic TM).
- Now, SAP delivers 5 new page layouts serving as examples representing the features available for the basic variants:
 - One page layout per transportation mode (road, rail, air, ocean)
 - One page layout including all mentioned transportation modes
- SAP delivers new hierarchy types for the basic variants, too.

Actions	Page Layout	Description	Created By	Created	Changed By	Changed
<input type="checkbox"/>	SAP Air	Air Freight Planning	SAP			
<input type="checkbox"/>	SAP Rail	Rail Freight Planning	SAP			
<input type="checkbox"/>	SAP Basic All Modes	Basic Planning for All Transportation Modes	SAP			
<input type="checkbox"/>	SAP Basic Ocean	Basic Planning for Ocean Freight Bookings	SAP			
<input type="checkbox"/>	SAP Basic Rail	Basic Planning for Rail Freight Orders	SAP			
<input type="checkbox"/>	SAP Basic Road	Basic Planning for Road Freight Orders	SAP			
<input type="checkbox"/>	SAP Congestion	Congestion Planning	SAP			

Figure 111: New Page Layouts for Transportation Cockpit in Basic TM (1/4)



Transportation Cockpit: SAP Basic All Modes - Basic Planning for All Modes														
Road Freight Order Hierarchy (1) Rail Freight Order Hierarchy (2) Air Booking Hierarchy (3) Ocean Booking Hierarchy (4)														
<input type="checkbox"/>	Road Freight Order Hierarchy	C_A..._S...	M_S...	S...	D...	M...	C...	D...	A...	A...	N...	N...	E...	A...
<input type="checkbox"/>	Rail Freight Order Hierarchy	C_A..._S...	M_S...	S...	D...	M...	C...	D...	A...	A...	N...	N...	E...	A...
<input type="checkbox"/>	Air Booking Hierarchy	C_A..._S...	M_S...	S...	D...	M...	C...	D...	A...	A...	N...	N...	E...	A...
<input type="checkbox"/>	Ocean Booking Hierarchy	C_A..._S...	M_S...	S...	D...	M...	C...	D...	A...	A...	N...	N...	E...	A...
<input type="checkbox"/>	Freight Unit Stages (10)													
	MSI ALL Standard Fields	Insert	Split/Merge	Stages	Create Capacity Document	Create Multiple Ocean Freight Bookings	Remove Capacity Document							
	Freight Unit	# Stage	# Loadin...	Unloadin...	Earliest...	Earl...	Last...	Late...	To...	To...	Grat...	Grat...	Normal...	Normal...
<input checked="" type="checkbox"/>	4000334841	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334842	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334843	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334844	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334845	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334846	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334847	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334848	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334849	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334850	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334851	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334852	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334853	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334854	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334855	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334856	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334857	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334858	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334859	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334860	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334861	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334862	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334863	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334864	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334865	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334866	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334867	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334868	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334869	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334870	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334871	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334872	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334873	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334874	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334875	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334876	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334877	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334878	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334879	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334880	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334881	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334882	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334883	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334884	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334885	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type="checkbox"/>	4000334886	0.. 10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000 M3	0000 M3	NPI	2000030914
<input type														

The screenshot shows the SAP Transportation Cockpit interface for basic planning across all modes. It includes sections for General Data, Users, Page Layout Switch, Additional Windows, and Application Toolbar. The Page Layout Switch section displays various planning options like 'Basic Planning for Air Freight', 'Basic Planning for Land Freight', etc. The Application Toolbar provides tools for map updates and selection management.

General Data:

- Page Layout: SAP Basic All Modes
- Description: Basic Planning for All Transportation Modes
- Created By: SAP
- Created On: [date]
- Changed By: [empty]
- Changed On: [empty]

Users:

- Actions: Add Entry, Remove Entry
- User Range: All Users
- User: Role

Page Layout Switch:

- Actions: Page Layout, Add Entry, Remove Entry, Add All Page Layouts
- Page Layouts:
 - SAP Basic Air
 - SAP Basic Land
 - SAP Basic Ocean
 - SAP Basic Rail
 - SAP Basic Road
- Description: Basic Planning for Air Freight, Basic Planning for Land Freight, Basic Planning for Ocean Freight, Basic Planning for Rail Freight Orders, Basic Planning for Road Freight Orders

Additional Windows:

- Actions: Page Layout, Open by Default, Comp., Description
- No data available

Application Toolbar:

- Buttons: Save, Refresh, Delete, Undo, Redo, Cut, Copy, Paste, Select All, Find, Replace, Sort Ascending, Sort Descending, Width of Area, 100%, Restore Default Values, Display Configuration Data
- Actions: Update Map - Clear Map and Add Selected Entries, Update Map - Clear Map and Add Selected Entries, Assign Selected Items, Transport Planning, Optimizer Planning - All, Optimizer Planning - Selected Entries with All Rows, Optimizer Planning - Selected Entries Only, Consolidation - All, Consolidation - Selected Entries with All Resources, Consolidation - Selected Entries Only, Explanation - Consolidation, Explanation - Transport Planning, Explanation - Optimizer Planning, Explanation - Scheduling, Create Delivery Proposes, Change Route Selection, Change Planning Settings
- Display Configuration Data: CTR Test Card, GTR Test Card, GTR Test Used, Hierarchy Type, View, Item, Col., Semantics Area, Instance ID of a UBB, Semantic Area
- Actions: Seq., Label, 1. Road Freight Order Hierarchy, 2. Freight Line Stages, 3. Freight Line Stages

Figure 113: New Page Layouts for Transportation Cockpit in Basic TM (3/4)Example 2 (Page Layout for All Modes)

This screenshot shows the configuration for basic road freight planning. It follows a similar structure to Figure 113, with sections for General Data, Users, Page Layout Switch, Additional Windows, and Application Toolbar. The Page Layout Switch section is specifically set for 'SAP Basic Road' and 'Basic Planning for Road Freight Orders'.

General Data:

- Page Layout: SAP Basic Road
- Description: Basic Planning for Road Freight Orders
- Created By: SAP
- Created On: [date]
- Changed By: [empty]
- Changed On: [empty]

Users:

- Actions: Add Entry, Remove Entry
- User Range: All Users
- User: Role

Page Layout Switch:

- Actions: Page Layout, Add Entry, Remove Entry, Add All Page Layouts
- Page Layouts:
 - SAP Basic Air
 - SAP Basic Land
 - SAP Basic Ocean
 - SAP Basic Rail
 - SAP Basic Road
- Description: Basic Planning for Air Freight, Basic Planning for Land Freight, Basic Planning for Ocean Freight, Basic Planning for Rail Freight Orders, Basic Planning for Road Freight Orders

Additional Windows:

- Actions: Page Layout, Open by Default, Comp., Description
- No data available

Application Toolbar:

- Buttons: Save, Refresh, Delete, Undo, Redo, Cut, Copy, Paste, Select All, Find, Replace, Sort Ascending, Sort Descending, Width of Area, 100%, Restore Default Values, Display Configuration Data
- Actions: Update Map - Clear Map and Add Selected Entries, Update Map - Clear Map and Add Selected Entries, Assign Selected Items, Transport Planning, Optimizer Planning - All, Optimizer Planning - Selected Entries with All Rows, Optimizer Planning - Selected Entries Only, Consolidation - All, Consolidation - Selected Entries with All Resources, Consolidation - Selected Entries Only, Explanation - Consolidation, Explanation - Transport Planning, Explanation - Optimizer Planning, Explanation - Scheduling, Create Delivery Proposes, Change Route Selection, Change Planning Settings
- Display Configuration Data: CTR Test Card, GTR Test Card, GTR Test Used, Hierarchy Type, View, Item, Col., Semantics Area, Instance ID of a UBB, Semantic Area
- Actions: Seq., Label, 1. Road Freight Order Hierarchy, 2. Freight Line Stages, 3. Freight Line Stages

Figure 114: New Page Layouts for Transportation Cockpit in Basic TM (4/4)Example 3 (Page Layout for Road)



Figure 115: Transportation Cockpit Settings



- Previously, several parameters affecting the transportation cockpit were spread across multiple places in the planning profile and its sub-profiles.
- Now, all parameters affecting the transportation cockpit are captured in the transportation cockpit settings, a new sub-profile of the planning profile.
- This enables re-use of the same parameter setup in multiple planning profiles.

Transportation Cockpit Settings

General Data

Transportation Cockpit Settings: DEFAULT_TRANSPORTATION_COCKPIT_SETTINGS
Description: Default Transportation Cockpit Settings
Default Profile:
Clear Selection After Successful Action:
Default UoM for Normalized Quantity:

Selection

Context Determination (Selection for TC):
Context Determination for Default Driver:

Optimizer

Skip Planning Result Screen:
Do Not Create Transp. Prop. Immediately:

Carrier Selection

Skip Carrier Selection Result Screen:

Figure 116: Transportation Cockpit Settings (1/2)New Sub-Profile of Planning Profile



- New parameter to clear selection after successful action
 - Some users have to clear the selection in order to prepare the next action, which costs one extra click. As the users may perform dozens of actions each day, the new option saves a lot of clicks each day, which significantly improves usability.
 - Some users would like to preserve the selection even after a successful action, e.g. if they are used to it, use quick add (for map) or smart add (for Gantt chart).
- Now, the user can choose the most efficient behavior for his daily tasks
 - This parameter can be changed in the "Change Planning Settings" pop-up in the planning session.
- Not successful actions, closing of dialog windows or result screens without action execution do not clear the selected rows of the lists and hierarchies.
- Customers can further influence the behavior:
 - For every TM standard planning action or transportation cockpit framework action it is defined whether it is possible or not to clear the selected rows.
 - Customers can overwrite this definition via a POST exit if for a specific event the definition of the TM standard is not working for them.

→ Improved flexibility and usability

Transportation Cockpit Settings

General Data

Transportation Cockpit Settings: DEFAULT_TRANSPORTATION_COCKPIT_SETTINGS
Description: Default Transportation Cockpit Settings
Default Profile:
Clear Selection After Successful Action:
Default UoM for Normalized Quantity:

Selection

Context Determination (Selection for TC):
Context Determination for Default Driver:

Optimizer

Skip Planning Result Screen:
Do Not Create Transp. Prop. Immediately:

Carrier Selection

Skip Carrier Selection Result Screen:

Figure 117: Transportation Cockpit Settings (2/2)New Parameter to Clear Selection

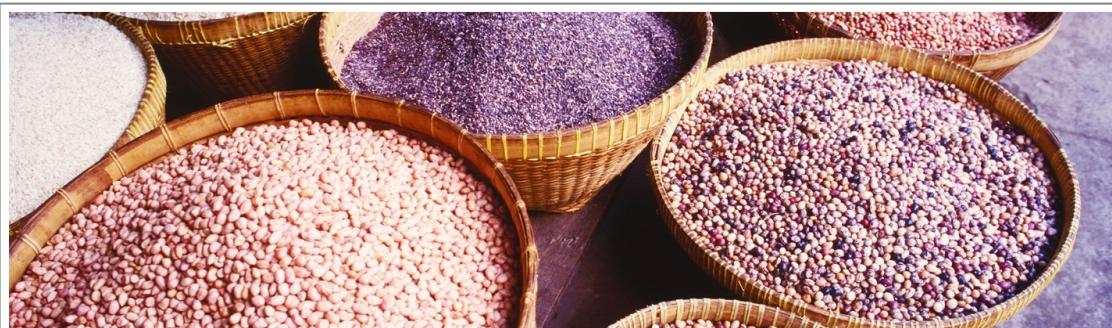


Figure 118: Creation of Capacity Documents Based on Groups



- Terminology:
 - Requirement documents: Freight units and requirement view on package / container / trailer units, ...
 - Capacity documents: Freight orders / bookings and capacity view on package / container / trailer units, ...
 - Previously, manual planning offered the following two options:
 - Creation of one capacity document **for all** selected requirement documents
 - Creation of one capacity document **for each** selected requirement document
 - Several customers and businesses would like to group requirement documents by certain attributes ("rules") and create one capacity document for a group of requirement documents.
 - This was already possible but caused a lot of manual work (when planning manually).
 - Now, the system allows to create one capacity document **for each group** of requirement documents:
 - Requirement documents are automatically grouped based on user-defined attributes ("grouping rules").
 - Different sets of grouping rules can be used per capacity document category.
 - For example, road freight orders are created based on different grouping rules than air freight bookings.
 - The creation of capacity documents based on groups is triggered by a dedicated button in the cockpit, or by a report.
 - The definition of grouping rules is done by requirement grouping profiles (new), which can be assigned to capacity document categories in the capacity document creation settings, a new sub-profile of the planning profile.
- Improved usability (less manual effort) and flexibility (by grouping rules)

Figure 119: Creation of Capacity Documents Based on Groups (1/2) Motivation and overview



Freight Unit Stages (5)

Freight Unit	P.	Loading Location	Unloading Location	Earliest...	T...	Latest...	Ti...	Gros...	G...	Gros...	G...	Execution Document	Material Freight Group
4200006500	✓	SP_1710	0010186001	06/27/2022	PST	06/28/2022	CET	90 KG	0,900 M3	\$2		MFG_1	
4200006501	✓	SP_1710	0010186001	06/27/2022	PST	06/28/2022	CET	180 KG	1,800 M3	\$5		MFG_2	
4200006600	✓	SP_1710	0010186001	06/27/2022	PST	06/28/2022	CET	90 KG	0,900 M3	\$2		MFG_1	
4200006601	✓	SP_1710	0010186001	06/28/2022	PST	06/29/2022	CET	90 KG	0,900 M3	\$4		MFG_1	
4200006602	✓	SP_1710	0017100003	06/27/2022	PST	06/27/2022	CST	90 KG	0,900 M3	\$3		MFG_1	

Air Freight Bookings (4)

Freight Booking	Actions	Status	Source Location	Destination Locat...	Departure Date
\$2	...	SP_1710	0010186001	06/27/2022	
\$3	...	SP_1710	0017100003	06/27/2022	
\$4	...	SP_1710	0010186001	06/28/2022	
\$5	...	SP_1710	0010186001	06/27/2022	

Applied Grouping Rules:

- Source Location of Stage (Loading Location)
- Destination Location of Stage (Unloading Location)
- Earliest Date for Loading
- Material Freight Group

Figure 120: Creation of Capacity Documents Based on Groups (2/2) Air Freight Example in the Transportation Cockpit



- The requirement grouping profile allows to specify attributes by which requirement documents get grouped into capacity documents, e.g.:
 - Document type
 - Source location of stage
 - Destination location of stage
 - Earliest start date for loading
 - Latest end date for loading
 - Earliest start date for unloading
 - Latest end date for unloading
 - Material freight group
 - Preferred equipment type
 - Shipping condition
 - Transportation mode
 - Carrier
 - Additionally, incompatibility settings can be used to define groups
 - E.g. ambient and cooled are incompatible and must not be combined into the same group.
- High flexibility for grouping

Requirement Grouping Profile

General Data

Requirement Grouping Profile: REQ_GRP_PROF
Description: Requirement Grouping Profile
Incompatibility Settings: INCOMP_SETTS

Grouping Rules

Grouping Rule	Grouping Rule (Description)
STG_SRC_LO	Source Location of Stage
STG_DST_LO	Destination Location of Stage
TRM	Transportation Mode

Figure 121: Requirement Grouping Profile



- New customizing activity allows defining grouping rules available in the requirement grouping profile
 - Path: Transportation Management → Planning → General Settings → Define Grouping Rules for Requirement Grouping
- The following grouping rules are available by default:
 - Document type
 - Source / destination location of stage
 - Latest end date for loading / unloading
 - Earliest start date for loading / unloading
 - Material freight group
 - Preferred equipment type
 - Shipping condition
 - Transportation mode
 - Carrier
- New rules can be defined to group by other attributes or construct more complex groups
 - New rule can be added by implementing a new class inheriting from /SCMTMS/CL_GRP_RULE_BASE
- The grouping rule INC_SET is an internal grouping rule used when incompatibility settings are defined in the requirement grouping profile
 - High flexibility for grouping

Group Rule	Description	Rule Class	IntGrpRule
DOC_TYPE	Document Type	/SCMTMS/CL_GRP_RULE_DAD_RG	<input type="checkbox"/>
INC_SET	Incompatibility	/SCMTMS/CL_GRP_RULE_INC_SET	<input checked="" type="checkbox"/>
LOAD_END	Latest End Date for Loading	/SCMTMS/CL_GRP_RULE_DAD_RG	<input type="checkbox"/>
LOAD_START	Earliest Start Date for Loading	/SCMTMS/CL_GRP_RULE_DAD_RG	<input type="checkbox"/>
MAT_FRT_GRP	Material Freight Group	/SCMTMS/CL_GRP_RULE_DAD_RG	<input type="checkbox"/>
PREF_EQ_TY	Preferred Equipment Type	/SCMTMS/CL_GRP_RULE_DAD_RG	<input type="checkbox"/>
SHIP_COND	Shipping Condition	/SCMTMS/CL_GRP_RULE_DAD_RG	<input type="checkbox"/>
STS_DST_ID	Destination Location of Stage	/SCMTMS/CL_GRP_RULE_DAD_RG	<input type="checkbox"/>
STS_SRC_ID	Source Location of Stage	/SCMTMS/CL_GRP_RULE_DAD_RG	<input type="checkbox"/>
TRM	Transportation Mode	/SCMTMS/CL_GRP_RULE_DAD_RG	<input type="checkbox"/>
TSP	Carrier	/SCMTMS/CL_GRP_RULE_DAD_RG	<input type="checkbox"/>
UNLD_END	Latest End Date for Unloading	/SCMTMS/CL_GRP_RULE_DAD_RG	<input type="checkbox"/>
UNLD_START	Earliest Start Date for Unloading	/SCMTMS/CL_GRP_RULE_DAD_RG	<input type="checkbox"/>

Figure 122: Definition of Grouping Rules Available in the Requirement Grouping Profile



- This new sub-profile of the planning profile allows assigning one requirement grouping profile (RGP) per target capacity document category
 - The RGP can stay empty.
 - One RGP instance can be used for multiple capacity document categories.
- Settings for the default business document types were moved from the planning profile to the new sub-profile for a centralized definition

Capacity Document Creation Settings					
General Data					
Capacity Document Creation Settings: TST_CDCTS					
Description: Test CDCTS demo					
Default Profile: <input type="checkbox"/>					
Default Business Document Type					
Type Determination Rule: Condition-Based					
Condition for Doc. Type Determ.: SUR_FUBR_CREATE_FB					
SUS Condition for FUBR test (create FB)					
Document Category Settings					
Standard * <input type="button" value="Create"/> <input type="button" value="Edit"/> <input type="button" value="Create All"/>					
<input type="checkbox"/> Capacity Document Category	Default Business Document Type	Default Business Document Type (Description)	Requirement Grouping Profile	Requirement Grouping Profile (Description)	Requirement Grouping Profile (Description)
<input type="checkbox"/> Road Freight Order	v 1242	124 Freight Order	KW2	Test Requirement Group Testing by RAP	Test Requirement Group Testing by RAP
<input type="checkbox"/> Rail Freight Order	v ODR1	Oils Rail Freight Order	RAP_TEST	SUR_FUBR_CREATE_FB	SUS Condition for FUBR test (create FB)
<input type="checkbox"/> Ocean Booking	v CMFB	CM Ocean Booking Type	KW_RG_PROF_rg	DEMO11	DEMO11
<input type="checkbox"/> Trailer Unit	v PR3T	GNT Transportation Unit			

Figure 123: Capacity Document Creation Settings (1/3) Motivation and Overview



Default Business Document Type	
Type Determination Rule:	Condition-Based
Condition for Doc. Type Determ.:	ZSG_FOR_DETER
Freight Order (Road):	1001 Freight Order with Internal Processing
Freight Order (Rail):	DIR Dimpurs Rail Freight Order
Booking (Air):	BAIR Air Booking
Booking (Ocean):	BSEA Ocean Booking
Trailer Unit:	HPVU Trailer Unit
Container Unit:	T42E T42E Container Unit
Railcar Unit:	T42Q T42Q Railcar Unit
Package Unit:	PKG Linear Package Unit
Consignment Order:	T42C T42C Consignment O. (Subj/Charges/Settl.)

Section previously contained in planning profile

Capacity Document Creation Settings					
General Data					
Capacity Document Creation Settings: TST_CDCTS					
Description: Test create capacity document creation settings					
Default Profile: <input type="checkbox"/>					
Default Business Document Type					
Type Determination Rule: Condition-Based					
Condition for Doc. Type Determ.: ZSG_FOR_DETER					
SG FO Determination					
Document Category Settings					
Standard * <input type="button" value="Create"/> <input type="button" value="Edit"/> <input type="button" value="Create All"/>					
<input type="checkbox"/> Capacity Document Category	Default Business Document Type	Default Business Document Type (Description)	Requirement Grouping Profile	Requirement Grouping Profile (Description)	Requirement Grouping Profile (Description)
<input type="checkbox"/> Road Freight Order	v 1001	Freight Order with Internal Processing	REQGRP1	Grouping Profile AGUE	Grouping Profile AGUE
<input type="checkbox"/> Rail Freight Order	v DIR	Dimpurs Rail Freight Order	REQGRP1	Grouping Profile AGUE	Grouping Profile AGUE
<input type="checkbox"/> Ocean Booking	v BSEA	Ocean Booking	CMR_TEST	Christina's Bedarfsgrupierung	Christina's Bedarfsgrupierung
<input type="checkbox"/> Air Booking	v BAIR	Air Booking	REQGRP2	Grouping Profile AGUE	Grouping Profile AGUE
<input type="checkbox"/> Consignment Order	v T42C	T42C Consignment Order (Subj/Charges/Settl.)	REQGRP2	Grouping Profile AGUE	Grouping Profile AGUE
<input type="checkbox"/> Trailer Unit	v HPVU	Trailer Unit			
<input type="checkbox"/> Container Unit	v T42E	T42E Container Unit			
<input type="checkbox"/> Package Unit	v PKG	Linear Package Unit			

Figure 124: Capacity Document Creation Settings (2/3) New Sub-Profile Covers the Default Business Document Type Definition from Planning Profile



Change Planning Settings

Planning Settings Manual Planning Settings **Capacity Document Creation Settings** Load Planning Settings Transportation Cockpit Settings > ...

Capacity Document Category	* Default Business Document ...	Description	Requirement Grouping Profile	Description
Road Freight Order	1000	Freight Order with Subcontract...	S_STAGE_SOURCE_DESTINA...	Group by Source & Destination
Rail Freight Order	2000	Rail Freight Order		
Ocean Booking	BSEA	Ocean Booking	TGE_OCEAN_TRANSPORT	Ocean Transport
Air Booking	BAIR	Air Booking		
Consignment Order	CONS	Consignment Order Type	S_STAGE_SOURCE_DESTINA...	Group by Source & Destination
Trailer Unit	TRLR	Trailer Unit		
Railcar Unit	RC	Railcar Unit		
Container Unit	CN	Container Unit		
Package Unit	PKG	Linear Package Unit		

OK Cancel

Figure 125: Capacity Document Creation Settings (3/3) Adjustable in the Planning Session via the Change Planning Settings Popup



- In addition to manually triggering the new functionality in the transportation cockpit, users want to perform this task automatically in a report.
 - The user just needs to review the obtained results.
 - The report can be run as a background job.
- Now, the functionality is available as a report:
 - Report name: /SCMTMS/PLN_REQ_STAGE_GROUP
 - Transaction code: /SCMTMS/PLN_REQ_GRP
 - SAP Menu Path: Logistics → Transportation Management → Administration → Background Processing → Create Capacity Documents Based on Groups
 - Freight unit stages and package unit stages can be grouped together to create capacity documents of the same category.
 - Other requirement document categories (like railcar units and trailer units) cannot be grouped together and are processed separately.

→ Improved flexibility, usability and performance

Create Capacity Documents Based On Groups

Create Capacity Documents Based On Groups

Selection Profiles

FU Selection Profile:
TU Selection Profile:
RU Selection Profile:
CU Selection Profile:
CO Selection Profile:

Capacity Document Category

Road Freight Order
Rail Freight Order
Ocean Booking
Air Booking
Trailer Unit
Railcar Unit
Container Unit
Consignment Order
Package Unit

Settings

Planning Profile:
Save Results:

Figure 126: Report to Create Capacity Documents Based on Groups



Figure 127: Manual Planning with Local Resource Items



- Trailer unit, rail car unit, container unit represent own capacity documents (= transportation units (TUs))
 - Case 1: Creation during freight unit building
 - Transportation unit (TU) planned like freight unit, no further consolidation into the TU possible
 - Case 2: Creation by planning (manual or automatic)
 - Multiple requirement document stages can get consolidated into the TU
 - Enables stage-based planning, the TU gets transported by multiple freight documents
 - Trailer, rail car and container can be represented as local resource item in a freight document
 - Multiple requirement document stages can get consolidated into this local resource item.
 - Appropriate modelling if the trailer, rail car and container do not need to get planned across multiple stages.
 - Manual planning with local trailer / rail car / container items was only possible in single document UI.
 - Now, this is possible in the transportation cockpit, which is more efficient to use for planning.
 - Note that automatic planning still does not support scenarios involving local trailer / rail car / container items.
- New scenarios supported by manual planning in transportation cockpit
→ Improved usability

Figure 128: Manual Planning with Local Resource ItemsMotivation and Overview



- In some processes you might only want to plan passive resources as local items of freight documents.
 - E.g. you want to use trailer or railcar resources but work only with road / rail freight orders as the TU level isn't needed (e.g. no decoupling, only railcar types...).
 - Manual planning settings offer new option to let a manual planning operation with a passive resource result in a freight document with a local resource unit item.
 - The local item gets the passive resource assigned.
 - VSR optimizer ignores this setting.
- Enhanced support of passive resources in manual planning scenarios

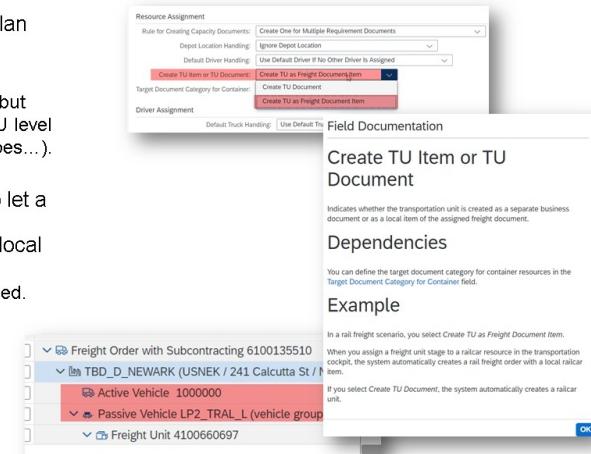


Figure 129: Create Target Capacity Document with Local Resource Item (1/2)Create Transportation Unit as Freight Document Item



- If you use "Create TU as Freight Document Item", the freight document category to be created is unclear for a container resource.
 - For trailer it's a road freight order, for railcars a rail freight order, but for a container?
 - New parameter in the manual planning settings defines which freight document category is chosen to insert the newly created local container item
 - The parameter can be changed in the "Change Planning Settings" pop-up
- The planning profile can control whether you are in a road, rail, ocean or air scenario

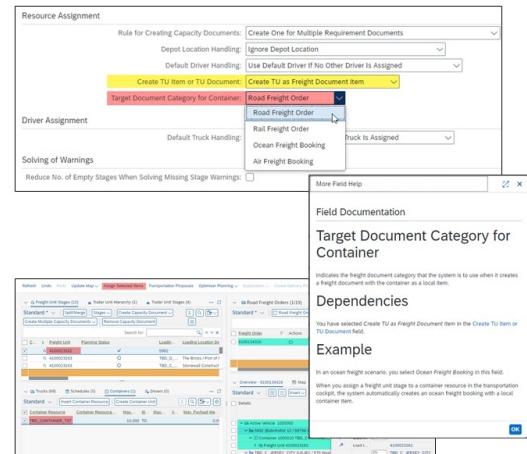


Figure 130: Create Target Capacity Document with Local Resource Item (2/2)Define Target Document Category for Container Resource Assignments



- Manual planning with local resource items:
 - Assign selected items
 - Drag & drop
 - Insert container, insert container type, and remove container type
 - Insert railcar, insert railcar type, and remove railcar type
 - Insert trailer, insert trailer type, and remove trailer type
 - Examples for drag & drop for container:
 - Freight unit stage(s) on container type → freight booking with local container item created (see upper screenshot)
 - Container type on freight booking → new local container item created in freight booking
 - Container type on local container item → container type gets assigned to container item
 - Local container item reassignment from one freight booking to another freight booking

Figure 131: Manual Planning with Local Resource Items (1/4)Manual Planning with Air / Ocean Freight Bookings and Rail / Road Freight Orders



- Air / ocean freight booking hierarchy
 - Insert container
 - Insert container with container type
 - In the dialog, you can define the container type and the number of container items to be inserted
 - Remove container type
 - Delete container item
- Rail freight order hierarchy
 - Insert railcar
 - Insert railcar with railcar type
 - In the dialog, you can define the railcar type and number of railcar items to be inserted
 - Remove railcar type
 - Delete railcar item
- Road freight order hierarchy
 - Insert trailer
 - Insert trailer with trailer type
 - In the dialog, you can define the trailer type and number of trailer items to be inserted
 - Remove trailer type
 - Delete trailer item

Figure 132: Manual Planning with Local Resource Items (2/4)New Buttons in Air / Ocean Freight Booking and Rail / Road Freight Order Hierarchies



- New fields:
 - Equipment group and its description
 - Equipment type and its description
- Manual planning with local container Items
 - Add / change / remove container type for an existing local container item:
 - Manually in equipment type field
 - Using the button 'Remove Container Type' for selected container (pls see the screenshot)
 - Drag & drop (container type on local container item)
 - Create / insert a local container item:
 - Using the button 'Insert container with container type'
 - Using the button 'Insert container'
 - Drag & drop (container type on freight booking header)
 - Assign selected items (container type and freight booking header)

Figure 133: Manual Planning with Local Resource Items (3/4)Equipment Type and Group of Container Items in Air / Ocean Freight Booking



- New fields:
 - Equipment group and its description
 - Equipment type and its description
- Manual planning with local resource items
 - Add / change / remove railcar / trailer type for an existing local railcar / trailer item
 - Manually in equipment type field
 - Using the buttons 'Remove Railcar Type' for selected railcar and 'Remove Trailer Type' for selected trailer (pls see screenshot)
 - Drag & drop (railcar / trailer type on local railcar / trailer item)
 - Create / insert a local railcar / trailer item
 - Using the buttons 'Insert railcar with railcar type' and 'Insert trailer with trailer type'
 - Using the buttons 'Insert railcar' and 'Insert trailer'
 - Drag & drop (railcar / trailer type on freight order header)
 - Assign selected items (railcar / trailer type and freight order header)

Figure 134: Manual Planning with Local Resource Items (4/4)Equipment Type and Group of Local Items in Road / Rail Freight Order Hierarchies:



- VSR Optimizer and transportation proposal do not support capacities / quantities of local items in freight orders
 - Exception: local items representing compartment items.
- Now, the system raises warnings if not supported local items are detected.
 - Previously, these local items have just been ignored.
 - 3 warnings for package, product and resource items.
 - Enhancement possibility to set such freight orders to context only, in order to avoid any changes by automatic planning(e.g. by incremental planning)
 - After constructor of //CL_PLN_OL_DATA_FILTER

→ Improved transparency and usability

Figure 135: Automatic Planning with Local Resource ItemsVehicle Scheduling and Routing (VSR) Optimizer and Transportation Proposal



- Load consolidation still does not create local resource items
 - No changes in existing logic
 - Container unit or trailer unit will be created after performing load consolidation for container / trailer resources / types
- Load planning is not possible for local container items and local trailer items
 - No changes in existing logic
 - The system raises a warning message if not supported local items are detected (see screenshots).

Figure 136: Load Consolidation and Load PlanningHandling of Local Resource Items



- No changes on existing logic
- You can manually set the load plan status for local container and trailer items using the offered load plan status related buttons, e.g. in load plan hierarchy

Load Plan		
	Load Plan Item Status (Cargo)	Load Plan Status (Capacity)
✓ Active Vehicle DA_TRUCK_04 1000000	●	●
Container 1000010	●	●
↳ Product 30 Brown Soda1 375 can	●	●
↳ Product 40 Brown Soda1 375 can	●	●
↳ Product 50 Brown Soda1 375 can	●	●
↳ Product 10 Brown Soda1 375 can	●	●
Container 1000020	●	●
↳ Product 20 Brown Soda1 375 can	●	●
↳ Product 60 Brown Soda1 375 can	●	●
↳ Product 70 Brown Soda1 375 can	●	●
↳ Product 80 Brown Soda1 375 can	●	●

Figure 137: Load Plan Status Management for Local Resource Items



- Unified package building considers the product and package items within the local container and trailer items.
- Build packages:
 - Can be performed for entire freight order document
 - Can be performed for selected local container and trailer items
- Remove packages:
 - Possible for selected local container and trailer items

→ New scenarios with local items supported by unified package building

Load Plan			
	Load Plan Item Status (Cargo)	Load Plan Status (Capacity)	Load Plan Item Status Set By (Description)
✓ Active Vehicle 1000000	●	●	
Container 1000010	●	●	
↳ Product 10 Rk Testing	●	●	
Passive Vehicle TGE_TRAILER_20TO 1000020	●	●	
↳ Product 90 Rk Testing	●	●	



Load Plan			
	Load Plan Item Status (Cargo)	Load Plan Status (Capacity)	Load Plan Item Status Set By (Description)
✓ Active Vehicle 1000000	●	●	Unified Package Building
Container 1000010	●	●	Unified Package Building
↳ Package 50 TMS_PACK01	●	●	Unified Package Building
↳ Package 60 TMS_PACK01	●	●	Unified Package Building
↳ Package 70 TMS_PACK01	●	●	Unified Package Building
↳ Package 80 TMS_PACK01	●	●	Unified Package Building
Passive Vehicle TGE_TRAILER_20TO 1000020	●	●	Unified Package Building
↳ Package 110 TMS_PACK01	●	●	Unified Package Building
↳ Package 120 TMS_PACK01	●	●	Unified Package Building

Figure 138: Unified Package Building for Local Resource Items



Figure 139: New and Editable Fields in Transportation Cockpit



- Material Freight Group in Freight Unit Stage List
- Product Description in Freight Unit / Package Unit Stage Lists
- Shipping Condition in Freight Unit Stage List and Hierarchy
- Delivery Priority in Requirement Document Stage Lists and Hierarchies
- Preferred Equipment Type and Equipment Group of Freight Unit Stage
- Weekday Fields in Requirement Document Stage Lists and Hierarchies
- Dangerous Goods Status for Freight Unit Stages and Freight Orders
- Editable Carrier Field in Popup to Create Freight Orders
- Shipping Type in Freight Document Lists and Hierarchies
- Movement Type in Freight Booking Lists
- Handling Delayed Freight Documents
- More New Fields in Lists and Hierarchies
- More Editable Fields in Capacity Document Lists and Hierarchies
- More Fields in Mass Change Popup

Figure 140: New Fields in Transportation Cockpit - Topic Overview



- The material freight group is commonly used in original requirement documents (e.g. sales order).
 - The planner would like to see it during decision-making, but it was not visible in the transportation cockpit.
 - Now, the material freight group field is provided in the freight unit (FU) stage list (for road, rail, ocean, air mode of transport)
- Improved transparency and usability

Sales Document Item		1.0	Item Category	TAN	Standart
Material		TMS_FERT01			
Shipping					
Unloading Point	UP_1		Receiving Point		
Department	0001	Werk	Delivery Prior.		
Plan	0001	Werk	Stor. Location		
Shipping Point	0001	Shipping Point 0001	Part.Dv./Item		
Route	Mat.freight.grp	0001	Freight Group 1		
MmsOfTrns Type			Order Combinat.		
MeansTransp.			Shipping Type		
POD-relevant			Spec.Processing		

Freight Unit Hierarchy (1) Freight Unit Stages (1) Freight Unit Stages (1) Freight Unit/Package Unit Stage Hierarchy (1) Freight Unit/Package Unit Stages (1) Package Unit Hierarchy (0)												
Standard * Split/Merge Stages Create Capacity Document Create Multiple Capacity Documents Create PUs Based on UPB Remove Capacity Document Exclusive Package												
Freight Unit I Stage Color I Loadin... Unloa... Earlie... E... T. Lates... L... T. Gr... G... Material Frei... Material Freight Group (Descr... Or... G...												
4100613100	I	10	SP_0001	SOB_C...	03.03.2...	14.2...	U...	03.06.2...	22.0...	U...	1.00	KG

Figure 141: Material Freight Group in Freight Unit Stage List



- The product ID is already displayed in the requirement document (stage) lists, like freight unit (FU) stage list or container unit (CU) list.
 - For some users / customers, the product ID is not meaningful and they need the product description.
 - Now, customers can easily add the product description field by an enhancement.
 - The product / material description will be determined by the UI conversion.
 - In the package unit (PU) list, the PU stage list and the combined PU / FU stage list, the field 'Product (Package)' is already available. The corresponding description field can be added by enhancement analogously.
 - The description how a customer can enhance the requirement document lists is available via SAP Note 3192807.
 - Available for S/4 TM 2021 via SAP Notes 3192312 and 3183001.
- Improved information and usability

Freight Unit Hierarchy (100) Freight Unit Stages (74/100)												
MSI Product Description * Insert Split/Merge Stages Set Of Status for FU Stages Set Of Status for PUs												
Remove Capacity Document Remove Capacity Doc. and Merge Exclusive Package												
Actions	Freight Unit	Stage	Item	Product	Product Description	Loadin...	U...	Actions	Product (Package)	Product Description ...	Product (Cargo)	Product Description (Cargo)
	4100585201	10		0331-001-001-FLG...	Forward Landing Gear	✓ DA_BER... C			4900005927	10		SS_ART_MASS_DATA...
	4100585202	10		0331-001-001-FLG...	Forward Landing Gear	✓ DA_BER... C			4900006000	10		SPKOE_02
	4100585203	10		3520	SPKOE_02	✓ DA_MAN... C			4900006001	10		SPKOE_02
	4100585204	10		3520	SPKOE_02	✓ DA_MAN... C			4900006002	10		SPKOE_02
	4100585205	10		3520	SPKOE_02	✓ DA_MAN... C			4900006003	10		SPKOE_02
	4100585206	10		3520	SPKOE_02	✓ DA_MAN... C			4900006004	10		SPKOE_02
	4100585207	10		3520	SPKOE_02	✓ DA_MAN... C			4900006005	10		SPKOE_02
	4100585208	10		3520	SPKOE_02	✓ DA_MAN... C			4900006006	10		SPKOE_02
	4100585209	10		3520	SPKOE_02	✓ DA_MAN... C			4900006007	10		SPKOE_02
	4100585210	10		3520	SPKOE_02	✓ DA_MAN... C			4900006008	10		SPKOE_02
	4100585211	10		3520	SPKOE_02	✓ DA_MAN... C			4900006009	10		SPKOE_02
	4100585212	10		3520	SPKOE_02	✓ DA_MAN... C			4900006010	10		SPKOE_02
	4100585213	10		3520	SPKOE_02	✓ DA_MAN... C			4900006011	10		SPKOE_02
	4100585214	10		3520	SPKOE_02	✓ DA_MAN... C			4900006012	10		SPKOE_02
	4100585215	10		3520	SPKOE_02	✓ DA_MAN... C			4900006013	10		SPKOE_02
	4100585216	10		3520	SPKOE_02	✓ DA_MAN... C			4900006014	10		SPKOE_02
	4100585217	10		3520	SPKOE_02	✓ DA_MAN... C			4900006015	10		SPKOE_02
	4100585218	10		3520	SPKOE_02	✓ DA_MAN... C			4900006016	10		SPKOE_02
	4100585219	10		3520	SPKOE_02	✓ DA_MAN... C			4900006017	10		SPKOE_02
	4100585220	10		3520	SPKOE_02	✓ DA_MAN... C			4900006018	10		SPKOE_02
	4100585221	10		3520	SPKOE_02	✓ DA_MAN... C			4900006019	10		SPKOE_02
	4100585222	10		3520	SPKOE_02	✓ DA_MAN... C			4900006020	10		SPKOE_02
	4100585223	10		3520	SPKOE_02	✓ DA_MAN... C			4900006021	10		SPKOE_02
	4100585224	10		3520	SPKOE_02	✓ DA_MAN... C			4900006022	10		SPKOE_02
	4100585225	10		3520	SPKOE_02	✓ DA_MAN... C			4900006023	10		SPKOE_02
	4100585226	10		3520	SPKOE_02	✓ DA_MAN... C			4900006024	10		SPKOE_02
	4100585227	10		3520	SPKOE_02	✓ DA_MAN... C			4900006025	10		SPKOE_02
	4100585228	10		3520	SPKOE_02	✓ DA_MAN... C			4900006026	10		SPKOE_02
	4100585229	10		3520	SPKOE_02	✓ DA_MAN... C			4900006027	10		SPKOE_02
	4100585230	10		3520	SPKOE_02	✓ DA_MAN... C			4900006028	10		SPKOE_02
	4100585231	10		3520	SPKOE_02	✓ DA_MAN... C			4900006029	10		SPKOE_02
	4100585232	10		3520	SPKOE_02	✓ DA_MAN... C			4900006030	10		SPKOE_02
	4100585233	10		3520	SPKOE_02	✓ DA_MAN... C			4900006031	10		SPKOE_02
	4100585234	10		3520	SPKOE_02	✓ DA_MAN... C			4900006032	10		SPKOE_02
	4100585235	10		3520	SPKOE_02	✓ DA_MAN... C			4900006033	10		SPKOE_02
	4100585236	10		3520	SPKOE_02	✓ DA_MAN... C			4900006034	10		SPKOE_02
	4100585237	10		3520	SPKOE_02	✓ DA_MAN... C			4900006035	10		SPKOE_02
	4100585238	10		3520	SPKOE_02	✓ DA_MAN... C			4900006036	10		SPKOE_02
	4100585239	10		3520	SPKOE_02	✓ DA_MAN... C			4900006037	10		SPKOE_02
	4100585240	10		3520	SPKOE_02	✓ DA_MAN... C			4900006038	10		SPKOE_02
	4100585241	10		3520	SPKOE_02	✓ DA_MAN... C			4900006039	10		SPKOE_02
	4100585242	10		3520	SPKOE_02	✓ DA_MAN... C			4900006040	10		SPKOE_02
	4100585243	10		3520	SPKOE_02	✓ DA_MAN... C			4900006041	10		SPKOE_02
	4100585244	10		3520	SPKOE_02	✓ DA_MAN... C			4900006042	10		SPKOE_02
	4100585245	10		3520	SPKOE_02	✓ DA_MAN... C			4900006043	10		SPKOE_02
	4100585246	10		3520	SPKOE_02	✓ DA_MAN... C			4900006044	10		SPKOE_02
	4100585247	10		3520	SPKOE_02	✓ DA_MAN... C			4900006045	10		SPKOE_02
	4100585248	10		3520	SPKOE_02	✓ DA_MAN... C			4900006046	10		SPKOE_02
	4100585249	10		3520	SPKOE_02	✓ DA_MAN... C			4900006047	10		SPKOE_02
	4100585250	10		3520	SPKOE_02	✓ DA_MAN... C			4900006048	10		SPKOE_02
	4100585251	10		3520	SPKOE_02	✓ DA_MAN... C			4900006049	10		SPKOE_02
	4100585252	10		3520	SPKOE_02	✓ DA_MAN... C			4900006050	10		SPKOE_02
	4100585253	10		3520	SPKOE_02	✓ DA_MAN... C			4900006051	10		SPKOE_02
	4100585254	10		3520	SPKOE_02	✓ DA_MAN... C			4900006052	10		SPKOE_02
	4100585255	10		3520	SPKOE_02	✓ DA_MAN... C			4900006053	10		SPKOE_02
	4100585256	10		3520	SPKOE_02	✓ DA_MAN... C			4900006054	10		SPKOE_02
	4100585257	10		3520	SPKOE_02	✓ DA_MAN... C			4900006055	10		SPKOE_02
	4100585258	10		3520	SPKOE_02	✓ DA_MAN... C			4900006056	10		SPKOE_02
	4100585259	10		3520	SPKOE_02	✓ DA_MAN... C			4900006057	10		SPKOE_02
	4100585260	10		3520	SPKOE_02	✓ DA_MAN... C			4900006058	10		SPKOE_02
	4100585261	10		3520	SPKOE_02	✓ DA_MAN... C			4900006059	10		SPKOE_02
	4100585262	10		3520	SPKOE_02	✓ DA_MAN... C			4900006060	10		SPKOE_02
	4100585263	10		3520	SPKOE_02	✓ DA_MAN... C			4900006061	10		SPKOE_02
	4100585264	10		3520	SPKOE_02	✓ DA_MAN... C			4900006062	10		SPKOE_02
	4100585265	10		3520	SPKOE_02	✓ DA_MAN... C			4900006063	10		SPKOE_02
	4100585266	10		3520	SPKOE_02	✓ DA_MAN... C			4900006064	10		SPKOE_02
	4100585267	10		3520	SPKOE_02	✓ DA_MAN... C			4900006065	10		SPKOE_02
	4100585268	10		3520	SPKOE_02	✓ DA_MAN... C			4900006066	10		SPKOE_02
	4100585269	10		3520	SPKOE_02	✓ DA_MAN... C			4900006067	10		SPKOE_02



- The shipping condition is specified in sales or purchasing orders. Many customers encode the mode of transport, shipping type and service level into the shipping condition. Although it is used by many customers, it is not visible in the selection, in the lists or hierarchy for freight unit stages of the transportation cockpit.
- Now, shipping condition is offered for object selection:
 - Selection criteria (name of the selection criteria: service level (sales))
 - Additional selection attribute settings (business object for selection = FU, field name = TRANSSRVLVL_CODE)
- Shipping condition and its description are available in the freight unit (FU) stage lists and the FU stage hierarchy.
 - The fields are invisible per default and can be displayed via view personalization
 - The column header is Service Level (sales)
- A grouping rule for shipping condition is also delivered, which can be used in requirement grouping profiles for the creation of capacity documents based on groups.

→ Improved transparency and usability

Figure 143: Shipping Condition in Freight Unit Stage List and Hierarchy (1/2) Motivation and Overview



Figure 144: Shipping Condition in Freight Unit Stage List and Hierarchy (2/2) Selection and FU Stage List / Hierarchy



- The delivery priority is commonly used in original requirement documents (e.g. sales order, delivery). The planner would like to see it during decision-making, but it was not visible in the transportation cockpit.
- Now, the delivery priority field and its description field are provided in the freight unit (FU) stage list/hierarchy, package unit (PU) stage list/hierarchy, container unit (CU) stage list/hierarchy, railcar unit (RU) stage list/hierarchy, trailer unit (TRU) stage list/hierarchy.
 - These fields are invisible but can be shown by personalization.
 - The delivery priority is only filled for PU, CU, RU and TRU that has been created by freight unit building.
- Document selection by the delivery priority field is supported by selection criteria and selection profiles.
- Manual planning ignores this field, it's offered for information purposes and can be used for sorting, filtering etc.

→ Improved information and usability

Figure 145: Delivery Priority in Requirement Document Stage Lists and Hierarchies



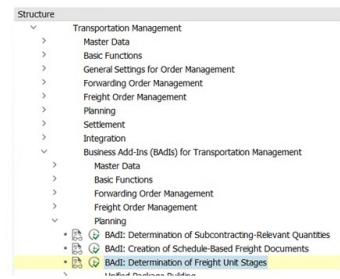
- In some cases, it is known upfront which equipment type is preferred for a freight unit stage at hand.
 - Now, the freight unit stage contains a preferred equipment group and equipment type, which are considered during the assignment of freight unit stages to freight orders / freight bookings / transportation units.
 - If a freight unit stage is assigned to a freight order / freight booking, the preferred equipment group and equipment type are considered for creating local capacity items within the freight order / freight booking and to set the vehicle type if it was not maintained before.
 - If a freight unit stage is assigned to a local capacity item or transportation unit, the preferred equipment group and equipment type are taken over if they were not maintained before.
 - When selecting an explicit resource / equipment type during the assignment of the freight unit stage to a freight order / freight booking, the explicit selection is considered instead of the preferred equipment group and equipment type of the freight unit stage.
 - Using the preferred equipment type, the planner does not need to explicitly select the resource / equipment type to be used for transporting the freight unit stage. This reduces the amount of necessary clicks and is less error-prone.
- Improved decision-making and usability

Ocean Booking Hierarchy - \$1			
Standard *			
Change Hierarchy: Ocean Freight Booking with Container and Freight Units			
<input type="checkbox"/> Ocean Booking Hierarchy	Equipment Group	Equipment Type	Action
<input type="checkbox"/> <input checked="" type="checkbox"/> Ocean Freight Booking \$1	SCN	22G0	
<input type="checkbox"/> <input checked="" type="checkbox"/> 20 ft GP Container 20x8.6...			
<input type="checkbox"/> Freight Unit 4200028318			

Figure 146: Preferred Equipment Type and Equipment Group of Freight Unit Stage (1/3)Motivation and Overview



- Customers require a flexible and convenient way to define the logic to determine the preferred equipment group and equipment type.
- Now, it is possible to implement a BAdI to determine the preferred equipment group and type.
 - This BAdI allows generic freight unit stage adjustments and is triggered for relevant document updates.
 - Currently it allows the adjustment of the following stage fields:
 - Preferred equipment group
 - Preferred equipment type
 - Stage type
 - Several freight unit fields are available as BAdI inputs, including:
 - Freight unit item fields (current and before image): material freight group, product ID
 - Freight unit stage fields (current and before image): source and destination locations, countries and regions, relevant times, transportation mode
- The field is not editable on any user interface, so the BAdI is the only input channel for it.



→ Improved flexibility

Figure 147: Preferred Equipment Type and Equipment Group of Freight Unit Stage (2/3)Determination by BAdI Implementation



- The planner wants to know the determined preferred equipment group and equipment type of a freight unit stage.
 - The transportation cockpit offers these two fields in the following lists and hierarchies (invisible, i.e. can be shown via personalization):
 - Freight unit stage lists (road, ocean, rail)
 - Freight unit hierarchy
 - The planner can consider these during manual planning and review the plan accordingly.
- Improved transparency and usability

Freight Unit Stages (5)					
Freight Unit	Items	Stage	Preferred Equipment Group	Preferred Equipment Type	Col
<input type="checkbox"/> 4100617897		10	MP5	MP5_1	
<input type="checkbox"/> 4100626817		10	CN	22G0	
<input type="checkbox"/> 4100617897		50			

Figure 148: Preferred Equipment Type and Equipment Group of Freight Unit Stage (3/3)New Fields in Transportation Cockpit



- The weekday fields of earliest / latest requested date at loading / unloading location are important fields for last-mile delivery businesses, but customers had to add them via enhancement.
 - See note 3049849 for more details.
 - Now, these weekday fields are offered in the standard field lists for:
 - Freight unit (FU) stage lists, package unit (PU) stage list, combined FU / PU stage list, rail car stage list, trailer stage list, container stage list
 - FU stage hierarchy, PU stage hierarchy, combined FU / PU stage hierarchy.
 - The weekday fields are invisible, but can be shown by personalization.
- Improved usability
- Reduced total cost of ownership (TCO) and implementation (TCI)

Monday Earliest Requested Date (Source Location)	Latest...	Monday Earliest Requested Date (Destination Location)	Latest...
25.02.2022	25.02.2022	25.02.2022	25.02.2022
Monday	Monday	Wednesday	Wednesday
26.02.2022	26.02.2022	26.02.2022	26.02.2022
Tuesday	Tuesday	Thursday	Thursday
27.02.2022	27.02.2022	27.02.2022	27.02.2022
Wednesday	Wednesday	Friday	Friday
28.02.2022	28.02.2022	28.02.2022	28.02.2022
Thursday	Thursday	Saturday	Saturday
29.02.2022	29.02.2022	29.02.2022	29.02.2022
Friday	Friday	Sunday	Sunday
01.03.2022	01.03.2022	01.03.2022	01.03.2022
Saturday	Saturday	Monday	Monday
02.03.2022	02.03.2022	02.03.2022	02.03.2022
Sunday	Sunday	Tuesday	Tuesday

Figure 149: Weekday Fields in Requirement Document Stage Lists and Hierarchies



- Previously, the DG (dangerous goods) indicator was offered ('X' = DG relevant, ' ' = not DG relevant).
 - Now, the new Product Compliance (PC) cloud solution provides more detailed DG status information.
 - The DG indicator will no longer be visible if PC is active.
 - The DG status provides more status values.
 - The DG status and its description are standard fields in the following lists and hierarchies:
 - Freight unit stage list
 - Freight unit stage hierarchies
 - Freight order list
 - Freight order hierarchies
- More detailed DG status information if PC is used

Figure 150: Dangerous Goods Status for Freight Unit Stages and Freight Orders (1/3)Motivation and Overview



Product Compliance (PC) is not active

Freight Unit Stages (4)		Freight Unit Hierarchy
yet_dg_status *	Dangerous Goods	Transport
<input type="checkbox"/> Freight Unit	<input checked="" type="checkbox"/> Dangerous Goods	
<input type="checkbox"/> 53651	<input type="checkbox"/> 01	
<input type="checkbox"/> 4100495131	<input type="checkbox"/> 01	
<input type="checkbox"/> 4100501810	<input type="checkbox"/> 01	
<input type="checkbox"/> 4100506852	<input type="checkbox"/> 01	

Product Compliance (PC) is active

Freight Unit Stages (4)		Freight Unit Hierarchy
yet_dg_status *	Dangerous Goods Stat...	Dangerous Goods Status (Description)
<input type="checkbox"/> Freight Unit	<input checked="" type="checkbox"/> Dangerous Goods Stat...	Dangerous Goods Status (Description)
<input type="checkbox"/> 53651	G	Blocked – Decision Pending
<input type="checkbox"/> 4100495131	B	OK – Transport Allowed
<input type="checkbox"/> 4100501810	B	OK – Transport Allowed
<input type="checkbox"/> 4100506852	B	OK – Transport Allowed

Product Compliance Customizing

Transportation Management

- Master Data
- Basic Functions
- General Settings
- Charge Notification Agent
- Credit Management Integration
- User Interface
- Calculation
- Cost Distribution
- Sustainability
- Security
- Dangerous Goods
 - Dangerous Goods Processing Based On PC
 - Activate Product Compliance
 - Activate Business Features for Product Compliance
 - Dangerous Goods Processing Based On PSIS

Change View "Activate Product Compliance": Details

New Entries

Activate Product Compliance

Product Compliance

DG status can have the following values

Domain	Short Description	Description
TRANSPORT/DG_STATUS	A	Dangerous Goods Status
	B	Blocked – Decision Pending
	C	Warning – Transport Restricted
	D	OK – Transport Allowed as Exemption
	E	Warning – Transport Restricted as Exemption
	F	Blocked – Transport Forbidden
	G	Blocked – Decision Pending

Figure 151: Dangerous Goods Status for Freight Unit Stages and Freight Orders (2/3)Configuration and Examples

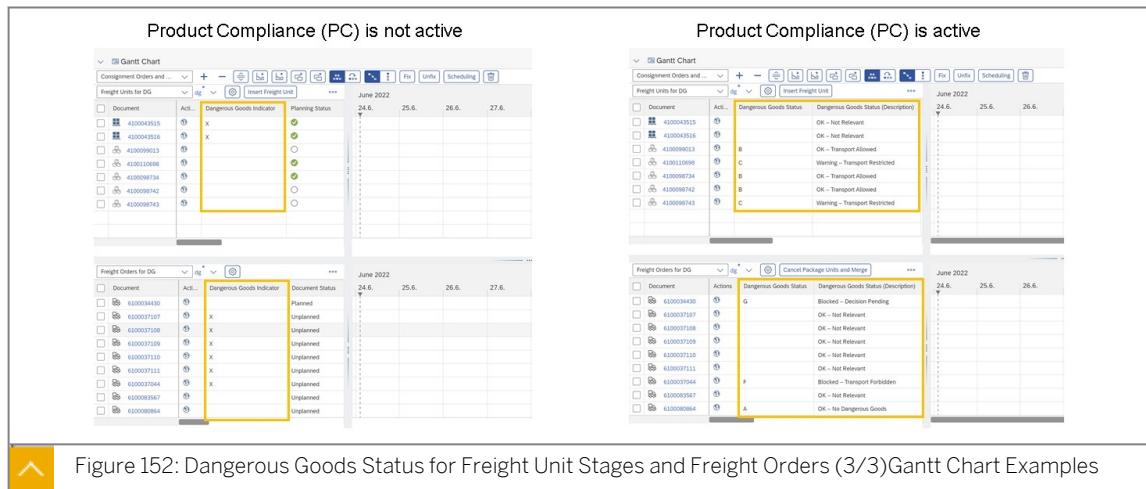


Figure 152: Dangerous Goods Status for Freight Unit Stages and Freight Orders (3/3) Gantt Chart Examples



- The carrier field was already offered in the dialogs to create ocean and air freight bookings, but it was missing in the corresponding dialogs for road and rail freight orders.
 - For consistency and completeness reasons, the carrier field is offered for the following dialogs, too:
 - Create road freight order
 - Create rail freight order
- Improved usability

Figure 153: Editable Carrier Field in Popup to Create Freight Orders Motivation and overview



- Previously, the shipping type field was mainly used in single document user interface, but not in the cockpit.
 - Now, the fields shipping type and its description are offered in the following capacity document lists and hierarchies of the transportation cockpit:
 - Road / rail freight order lists and hierarchies
 - Air / ocean freight booking lists and hierarchies
 - Combined freight order / freight booking
 - The fields are invisible but can easily be displayed by view personalization.
 - Terminology: For air bookings, the column is called loading type.
 - The shipping type is editable for air and ocean freight bookings.
- Improved usability

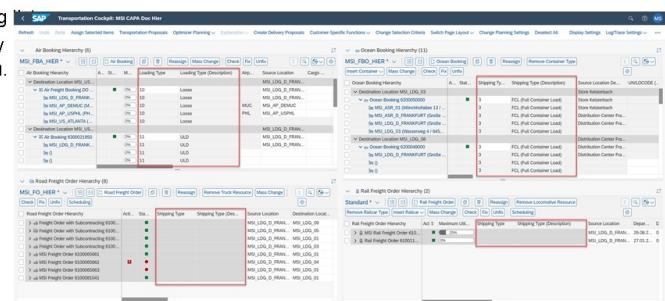


Figure 154: Shipping Type in Freight Document Lists and Hierarchies (1/2) New Fields



- New field in popups to create bookings:
 - Shipping type field is offered for ocean booking
 - Loading type field is offered for air booking
- The shipping / loading type values are taken from shipping type customizing for the dedicated transportation mode (air / ocean).
- The shipping / loading type is defaulted based on used freight booking type's settings

→ Improved usability

Figure 155: Shipping Type in Freight Document Lists and Hierarchies (2/2)Popups to Create Freight Booking Offers Shipping Type and Loading Type



- Movement type and its description are offered in:
 - Ocean freight booking list
 - Air freight booking list
- The movement type field is editable and not visible per default.
- A movement type change does not affect the consolidation level at source and destination locations.

→ Improved usability

Figure 156: Movement Type in Freight Booking Lists (1/2)Freight Booking Lists



- Movement type is offered in:
 - Create ocean booking dialog
 - Create air booking dialog
- Movement type:
 - Is defaulted based on used freight booking type's settings.
 - Can be changed manually.
 - Change does not affect consolidation level at source and destination locations.

→ Improved usability

Figure 157: Movement Type in Freight Booking Lists (2/2)Create Freight Booking Dialogs



- New events for estimated time of arrival (ETA) and estimated time of departure (ETD) are introduced for all modes of transport.
 - Scheduling is triggered automatically (when receiving these two new events) and adjusts the subsequent activities in the freight document at hand. The system triggers error handling if a time conflict is detected.
 - Error category: TM_CFL_TI - Conflict betw. planned transit times of stops within a doc.
 - The planner wants to easily identify such freight documents with time conflicts in the transportation cockpit.
 - Freight documents can be selected based on time conflicts:
 - Selection criteria screen
 - Additional selection attribute settings (business object for selection: /SCMTMS/TO, field name: ERROR_CATEGORY)
 - In the freight document lists / hierarchies, the field status is set a red icon if a time conflict exists, so the user can easily identify orders with time conflicts
 - The tooltip of this status field shows now also the error category and its description.
 - The status field is not restricted to show the time conflict error category.
 - The errors can be solved within the transportation cockpit if it is possible. If the error correction is not possible in the transportation cockpit, user have to navigate to the respective single document UI.
- Improved usability and handling of delayed freight document

Figure 158: Handling Delayed Freight Documents (1/2)Motivation and overview



Figure 159: Handling Delayed Freight Documents (2/2)Selection Capabilities and Freight Document List



- Regarding the supported scenarios in the transportation cockpit, several fields were missing that a planner would like to see in several lists and hierarchies of the transportation cockpit.
- Now, the following fields are available.
 - Rail freight order list
 - Document type description
 - Rail freight order hierarchy
 - Invoicing carrier
 - Invoicing carrier description
 - Stage invoicing carrier level → editable
 - New freight unit stage list for rail scenario
 - Contains rail specific fields
 - Ocean freight booking list
 - Document type description
 - Ocean freight booking hierarchy
 - Freight order for pickup
 - Freight order for delivery
 - Equipment type / group → editable

Figure 160: More New Fields in Lists and Hierarchies (1/2)Motivation, Rail and Ocean Scenarios



- Air freight booking list
 - Document type description
 - Carrier → editable
 - Carrier description
 - Departure date / time / time zone (source location) → editable
 - Arrival date / time / time zone (destination location) → editable
 - IATA code (source location) → editable
 - IATA code (destination location) → editable
 - Air freight booking hierarchy
 - Carrier → editable
 - Carrier description
 - Freight order for pickup
 - Freight order for delivery
 - Equipment type / group → editable
 - Freight unit stage hierarchy, package unit stage hierarchy, freight unit / package unit stage hierarchy
 - Latest requested date / time for source location
 - Earliest requested date / time for destination location

 Figure 161: More New Fields in Lists and Hierarchies (2/2) Air Freight Bookings and Latest / Earliest Date / Time for Source / Destination



- Due to the creation of capacity documents based on groups, especially when running in batch report, new capacity documents may be created for which not all relevant fields are specified. Therefore, the user needs an efficient way to complete / change these documents manually in the transportation cockpit.
 - Now, all fields in the capacity document lists and hierarchies, which are also offered on the corresponding create document dialog window, are editable:
 - Locations (source, destination, (air-)port of loading and unloading, and intermediate stops)
 - IATA code for locations
 - UN/LOCODE for locations
 - Consolidation at source / destination location
 - Previously, the location fields offered navigation via hyperlink to the location master data and the location quick view (when hovering). These functions are not available for editable fields.
 - Therefore, now the following is offered:
 - Navigation is available via context menu for locations.
 - The quick view is available via the location description field in the lists and hierarchies.
 - The navigation via context menu is available for all other editable fields referring to master data (e.g. carrier, resource) and for business documents.

Figure 162: More Editable Fields in Capacity Document Lists and Hierarchies (1/2)Motivation and Overview



Figure 163: More Editable Fields in Capacity Document Lists and Hierarchies (2/2) Examples (Editable Fields for Ocean Freight Booking, and Navigation via Context Menu)



- More editable fields have already been offered in the lists and hierarchies of the transportation cockpit.
- Now, the mass change popup of the capacity documents offers all editable fields of the lists and hierarchies.
- The following fields are offered for ocean freight bookings:
 - Shipping type
 - Movement type
- The following fields are offered for air freight bookings:
 - Loading type
 - Movement type
- The user can quickly change these fields for many documents with just one operation.

→ Improved usability

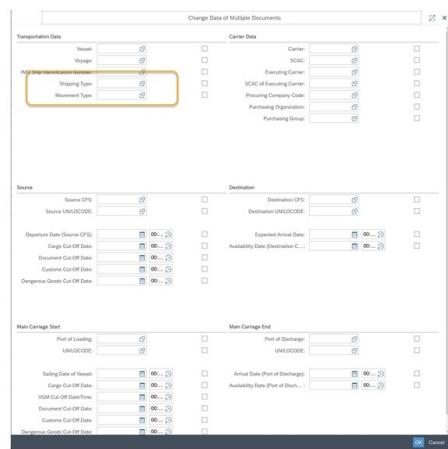


Figure 164: More Fields in Mass Change Popup



Figure 165: Map



- The planner wants to know the total weight, volume etc. of selected stops and / or selected freight orders in order to decide whether they can be assigned to another freight order with sufficient remaining capacity.
- Now, the aggregation window can be configured to provide aggregated values for all selected objects.
 - The selected stop and freight order get quantified by all assigned requirement documents. The selected requirement documents get considered, too.
 - Map layout provides new parameter "AllDocs".
 - Default value = not selected = previous behavior: Only selected requirement documents get considered.
 - If selected, the system also considers freight documents and their stops (including assigned requirement documents).
 - If the parameter "UseInfoWi" is not selected, the new parameter is disabled.

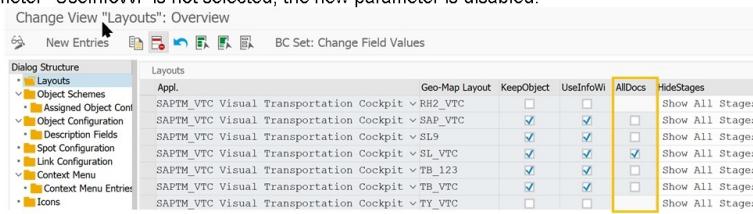


Figure 166: Aggregation Window Considers All Selected Objects on Map (1/2)Overview and Configuration



- If you select a freight order, all stops and stages of this freight document are selected. The weight and volume of the most critical stage of the freight document are considered.
- If you only select a stop, the weight and volume of the assigned requirement documents (that are loaded or unloaded at this stop) are considered.
- The "all requirements" section of the aggregation window only gets shown if the map contains at least one requirement document.

→ Improved usability and transparency



Figure 167: Aggregation Window Considers All Selected Objects on Map (2/2) New Behavior (Parameter "AllDocs" is Selected)



- A freight order can already be assigned to another freight order by drag & drop in the cockpit, but not on the map
 - This leads to a re-assignment of the requirement documents from the source to the target freight order, and the dragged freight order is deleted or cancelled.
- The planner reviewing the freight orders on the map may want to combine two neighboring or overlapping freight orders on the map.
- Now, the map allows an analogous drag & drop:
 - Map layout offers choosing the drop type:
 - "Document" is default value for capacity document, and "Stage" is default value for requirement document.
 - If the drop type is stage, the dragged document gets inserted into the stage of the target document.
 - If the drop type is document, the system uses the manual planning settings to determine the insertion position in the target document.
 - The drag type is "Document" for a capacity document and "Stage" for a requirement document

→ Improved usability

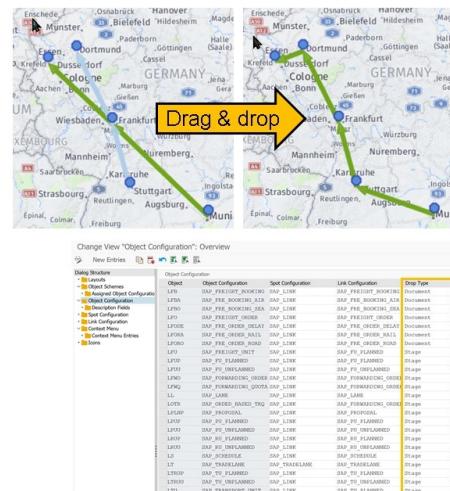


Figure 168: Map Allows Drag & Drop of a Freight Order to Another Freight Order



Figure 169: Miscellaneous



- Selection by Resource Class
- Manual Container Unit and Railcar Unit Triangulation
- Transportation Cockpit Offers More Flexibility for Planning Parameters
- Deviating Address
- Customer Enhancements in Action Processing Framework

Figure 170: Miscellaneous - Topic Overview



- Containers are used in both air and ocean freight scenarios.
 - In an ocean freight scenario, the user wants to consider only container resources and types valid for ocean transportation, but no unit load devices (ULDs) commonly used in air freight scenarios.
 - The same holds true analogously for air freight scenarios.
- Now, the selection criteria of the transportation cockpit and the selection profile provide the resource class to select container resources and types.
 - More fine-grained selection for planning session
 - Improved usability

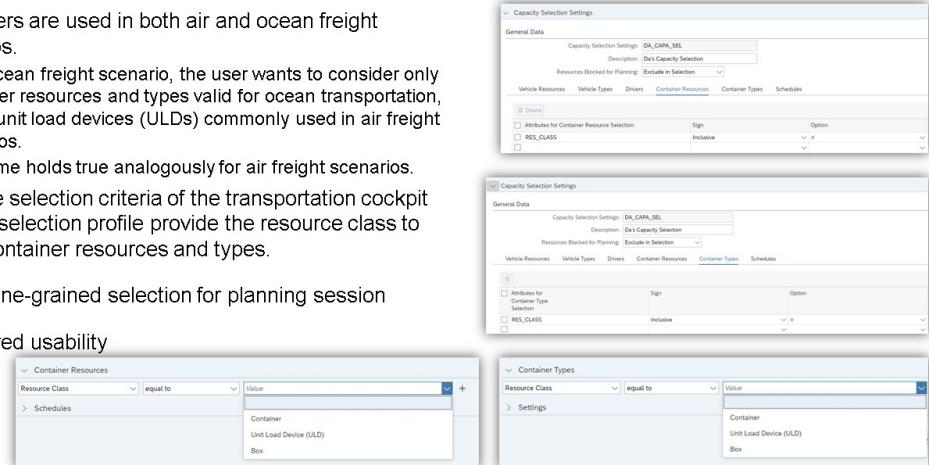
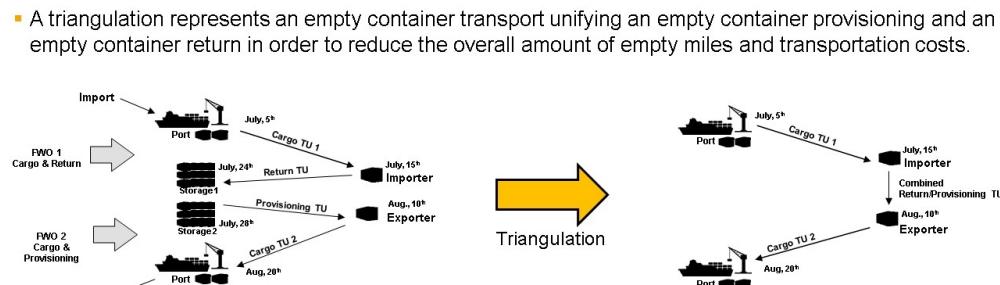


Figure 171: Selection by Resource ClassSelection Criteria and Selection Profile



- Same concept is available for rail car units

Figure 172: Manual Container Unit and Railcar Unit Triangulation (1/2)Motivation



- Previously, triangulations could be triggered only in the single document UI and the corresponding POWL.
- Now, the transportation cockpit offers:
 - Movement category is offered in selection profile and selection criteria of the cockpit, too.
 - Movement category and its description are added to container (CU) / railcar (RU) unit (stage) lists and hierarchies
 - New button to create triangulation
 - Select a CU or RU, click "Create Triangulation", then select the corresponding matched document in the popup window
 - Select two matched CUs or RUs in the list or hierarchy, then click "Create Triangulation"
 - New button to revoke triangulation

→ Improved triangulation planning and usability

Figure 173: Manual Container Unit and Railcar Unit Triangulation (2/2)
New Fields and Buttons in the Transportation Cockpit



- In a planning session in the transportation cockpit, the planner might want to change planning settings for his / her session:
 - Previously, there were multiple settings to be changed via the "Change Planning Settings" pop-up
- Now, the pop-up got re-structured to resemble the planning profile's structure:
 - Added multiple parameters (e.g. incremental planning)
 - Much more clear structure of parameters

→ Improved flexibility, transparency and usability

Figure 174: Transportation Cockpit Offers More Flexibility for Planning Parameters Adding Multiple Planning Parameters Into the "Change Planning Settings" Pop-Up



- Business documents like forwarding orders allow maintaining a deviating address for a business partner.
- Previously, the transportation cockpit displays the address information of business partners (e.g. shipper, consignee, or carrier) in the requirement lists and in quick views, but not the deviating address if one is maintained.
- Now, if a deviating address is maintained for a business partner, the deviating address is displayed on the address field of the respective business partner.
 - The business partner description contains also the description of the respective deviating address
- Additionally, the deviating address is also displayed on the quick view of the business partner if the user hovers over the business partner field on the requirement lists.

→ Improved usability

Figure 175: Deviating Address



- With S/4 TM 2021, the transportation cockpit was refactored. This involved the handling of actions / events, which changed from a single point of logic (UI Controller) to smaller action handler classes that are better testable and maintainable. With this new concept of handling the planning actions, customers need to rewrite certain enhancements after the upgrade.
 - This new structure allows structuring customer enhancements much better and easy handling of customer events. However, it was hard to overrule standard event processing, if a customer wants to use its own logic for a TM standard planning event. Customers created a new action class for the TM standard planning event, but the transportation cockpit did not consider the customer specific action class.
 - Now, we introduced a new interface method PRIORITY, which gives the possibility to set a priority for each transportation cockpit action handler class.
 - When calling an action / event within the cockpit, this priority will be considered, and the action class with the highest priority will be used.
 - All the TM standard action classes get automatically the priority 50.
 - Thus, if a customer wants to create a new action class for a TM standard action / event and set the priority to 10, this customer specific action class will be used.
- Improved support of customer enhancements in the new transportation action processing framework

Figure 176: Customer Enhancements in Action Processing Framework
Define Priority to Use Customer Specific Action Class

Unified Package building



- Unified Package Building
 - More Input Fields for EWM Processes
 - More Input Fields for LO Processes
 - Usage of Packing Instruction
 - Provide Messages According to Return Code
 - Provide Packing Status Information
 - Return Handling Unit Group Information
 - Provide Details for a Given Packing Rule
 - Unified Package Building Profile
 - Improved Material Master Data Access

Figure 177: Topic Overview

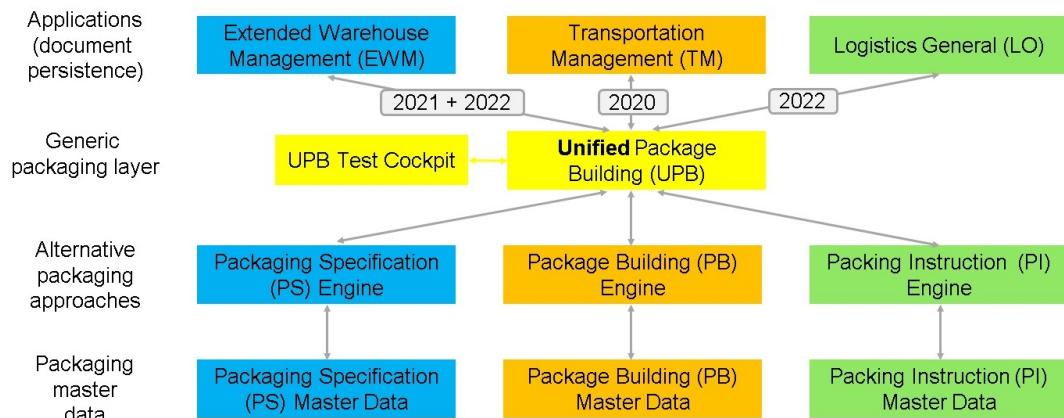


Figure 178: Unified Package Building - Roadmap



- New field "country_of_origin" in UPB API and UPB test cockpit
- Only available in packaging specification and packing instruction; not supported by package building
- Packaging specification (PS):
 - Field "PAK_CNTRY" is a part of PS determination field catalog ⇔ used for PS determination by the calling application



- Packing instruction (PI):
 - Field "COUNTRY_OF_ORIGIN" is a part of PI determination field catalog ⇔ used for PI determination by the calling application



→ Improved flexibility in EWM processes

Figure 179: More Input Fields for EWM Processes (1/3)Country of Origin (COO)



- New field "batch_id" in UPB API
- Only available in packaging specification and packing instruction; not supported by package building
- While PS is considering the batch ID (GUID), PI is working with batch number (CHAR10). In order to avoid two fields (ID and number) in the UPB API, a conversion is necessary for considering the batch information by PI.
 - PS: batch ID is directly mapped without conversion
 - PI: batch ID is converted to batch number according to the respective batch level; the result is then converted back from number to ID
- The batch number is included in UPB test cockpit as input and output parameter (conversion to / from batch ID before / after calling the UPB)

→ Improved flexibility in EWM processes

Figure 180: More Input Fields for EWM Processes (2/3)Batches - Overview (1/2)



Background on batch management in S/4:

- There are two levels of batches:
 - Batch at **plant level**: Persisted in DB-Table **MCHA**
 - Batch at **material level**: Persisted in DB-Table **MCH1**
 - Client specific setup via SAP IMG ->Logistics - General -> Batch Management
- A material is activated for batch processing via its material master (transaction codes MM0x)
- Batches for the respective material (and plant) can be created, changed and displayed via transactions MSCNx; during creation the globally configured batch level is considered
- Batch information is considered during packaging via PI and PS, i.e. PI and PS offer an option to allow/disallow to pack several batches of the same materials together onto/into the same packaging material in Packaging Specification

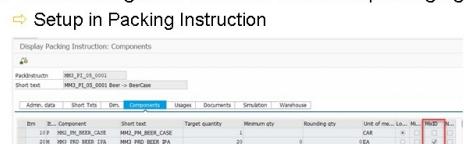
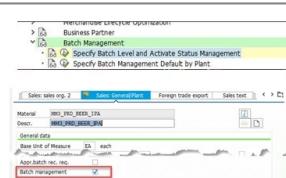


Figure 181: More Input Fields for EWM Processes (3/3)Batches - Background (2/2)



- New input fields in the UPB API:
 - "shipping_point" (shipping point)
 - "usage_indicator" (usage indicator)
 - "unloading_point" (unloading point)
 - "shipping_type" (shipping type)
 - "storage_location" (storage location)
 - All input fields are so far only relevant for packing instruction processing and are only used by LO application (not used by TM or EWM)
 - All fields are directly mapped through UPB mapping to the respective fields of the PI field catalog, i.e. all fields are available for PI determination during packing process.
 - UPB test cockpit also considers new input fields
- Full flexibility for LO processes

Figure 182: More Input Fields for LO Processes



API Input Field	Changes in S4 GP2022 FP0	Build Packages			
		Optional Item Partitioning in UPB Pre-Processing	Packing Instruction (PI)	Packaging Specification (PS)	Package Building (PB)
Material/Product		x	x	x	x
Source Location		x		x	x
Destination Location		x		x	x
Loading Stop-Warehouse No	Obsolete				
Loading Stop-Warehouse Door	Obsolete				
Loading Stop-Loading Point	Obsolete				
Shipping Party		x	x	x	x
Ship-to-Party		x	x	x	x
Sold-to-Party			x	x	
Carrier			x	x	
Equipment Group					x
Equipment Type					x
Plant		x	x		
Consolidation Group		x	x		
Production Supply Area		x	x		
Route		x	x		
Storage Type			x	x	
Warehouse Number		x	x		
Warehouse Door	New	x			
Loading Point	New	x			
Unloading Point	New		x		
Shipping Point	New		x		
Shipping Type	New		x		
Storage Location	New		x		
Warehouse Process Type			x	x	
Workcenter			x	x	
Usage Indicator	New				
Country of Origin	New		x	x	
Batch Id	New		x	x	
Original Document Id		x			
Original Document Type			x		
Validity				x	

Figure 183: Overview of Input Fields



- Building packages with packing instructions returns a code for the status of the overall packaging run:
 - 0: Packages were built for the entire quantity
 - 1: Couldn't build packages for the entire quantity
 - 2: Couldn't build any packages
 - 9: Couldn't build packages: No product to pack was found or quantity was zero
 - Before LO was consuming the PI via UPB, the return code information was handled on LO application side and according to the respective code a message was written into the application log
 - With having the UPB in place the return code is interpreted by the UPB itself and the respective message can be written into the application log (depends on logging severity setup in the used UPB Profile)
- Transparency and usability

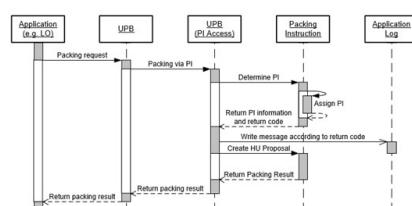


Figure 184: Usage of Packing Instruction (1/3)Provide Messages According to Return Code



- The packing status is determined per created packaging material during runtime by PI as per defined check profile
- A check profile is defined globally via SAP IMG and can be assigned to individually to a PI
- There are actually 4 different values possible:
 - 0: Packing Status undefined
 - 1: Packing Instruction violated
 - 2: Tolerated variance from Packing Instruction
 - 3: Packing Instruction fulfilled
- The packing status is available in UPB test cockpit as output information

Packing status check profile

Specifies the check profile used to determine the packing status of the handling units for this packing instruction. In the packing status check profile, you define appropriate packing statuses for the possible ways in which an HU proposal can differ from the packing instruction.

Use

As soon as you create an HU proposal for a packing instruction, the system uses the check profile assigned to check the HU proposal.

Examples

There are several ways in which handling units can differ from packing instructions. A packaging material that is not specified in the packing instruction might be used. The difference could be assigned the status "Packing instruction violated", so that as soon as it occurs, the HU proposal as a whole is faulty. Other examples of packing statuses are "Tolerated difference from packing instruction" or "Packing instruction met".

You assign statuses in the check profile for all other possible differences from the packing instruction.

Dependencies

You define the check profile in Customizing under **Packing with packing instructions** and assign it when maintaining packing instructions.

Change View "Check profile Maintenance (Assign Error Cod.)", Details

Check profile		MM1_PT_0002
PackInstruction		MM1_Packing Instruction_0001
Short text		MM1 Packing Instruction_0001
Admin. data		Short Txts Dim. Components Usages DoD
External name		
Check profile		01
Packing Status		
Target qty not reached	2 Tolerated variance from packin	
Minimum qty not reached	1 Packing instruction violated	
Maximum qty not reached	2 Tolerated variance from packin	
Target quantity exceeded	2 Tolerated variance from packin	
Batch qty not allowed	1 Packing instruction violated	
Auxiliary pack mat, not in packing instruction	2 Tolerated variance from packin	
Mat to be packed not in packing instruction	1 Packing instruction violated	
Mat to be packed not in packing instruction (according to pack instr.)	2 Tolerated variance from packin	
Aux pack mat, missing (acc. to pack instr.)	1 Packing instruction violated	
Mat to be packed missing (acc. to pack instr.)	2 Tolerated variance from packin	
Sub-MD (according to packing instructions)	1 Packing instruction violated	

→ Transparency and usability

Item Hierarchy		Product Description	Action	Quantity	UoM (Qty)	Packing Status	Length	Width	Height	UoM (Dim.)
└ Package MM1_PM_CHEP_PALET (1)		MM1_Package Material_CHEP PALET	bb	2	1,000 CPL	2	1,165,00000	1,165,00000	2,000,00000	MM
└ Product MM1_PRD_PET_LARGE_1		MM1_Product PET LARGE 1	bb	2	24,000 EA		380,00000	280,00000	318,00000	MM
└ Package MM1_PM_CHEP_PALET (1)		MM1_Package Material_CHEP PALET	bb	3	1,000 CPL	3	1,165,00000	1,165,00000	2,000,00000	MM
└ Product MM1_PRD_PET_LARGE_1		MM1_Product PET LARGE 1	bb	3	25,000 EA		380,00000	280,00000	318,00000	MM

Figure 185: Usage of Packing Instruction (2/3)Provide Packing Status Information



- Handling unit groups can be freely and individually defined per packing instruction (tab „Admin. data“)
- Different Handling Unit Groups can be defined via customizing (individually from 1 to 5)

SAP IMG: Logistics – General → Handling Unit Management → Basics
→ Use Handling Unit Supplements
- Fields "HU Group 1-5" also available in UPB test cockpit as output information

→ Full process consistency for LO processes

PackInstruction MM1_PT_0002

Short text MM1 Packing Instruction_0001

Admin. data		Short Txts Dim. Components Usages DoD
External name		
Check profile		01
Do Not Print Ext. Shipping Label		
Handling unit gr. 1	1907_1	HU group 4 1907_4
Handling unit gr. 2	1907_2	HU group 5 1907_5
Handling unit gr. 3	1907_3	

Item Hierarchy		Product Description	Action	Quantity	UoM (Qty)	HU Group 1	HU Group 2	HU Group 3	HU Group 4	HU Group 5	Length	Width	Height	UoM (Dim.)
└ Package MM1_PM_CHEP_PALET (1)		MM1_Package Material_CHEP PALET	bb	2	1,000 CPL	MMU_1	MMU_2	MMU_3	MMU_4	MMU_5	1,165,00000	1,165,00000	2,000,00000	MM
└ Product MM1_PRD_PET_LARGE_1		MM1_Product PET LARGE 1	bb	2	24,000 EA						380,00000	280,00000	318,00000	MM
└ Package MM1_PM_CHEP_PALET (1)		MM1_Package Material_CHEP PALET	bb	3	1,000 CPL	MMU_1	MMU_2	MMU_3	MMU_4	MMU_5	1,165,00000	1,165,00000	2,000,00000	MM
└ Product MM1_PRD_PET_LARGE_1		MM1_Product PET LARGE 1	bb	3	25,000 EA						380,00000	280,00000	318,00000	MM

Figure 186: Usage of Packing Instruction (3/3)Return Handling Unit Group Information



- New UPB interface method "/scmb/if_pb_unified~read_packing_rules"
- Only relevant for PI and PS; not valid for package building
- So far only relevant for specific EWM processes in order to get PI/PS specific information (like packaging material and contained material / products) based on a known packing rule (= PI ID or PS ID).
- Input fields:
 - Packing engine → PS or PI
 - Packing engine rule → PI ID or PS ID
 - Packing engine rule level → PS level (not valid for PI)
- Output fields
 - Packing engine, packing engine rule, packing engine rule GUID, packing engine level
 - Relevant packaging material (number, key, quantity, UoM, HU Type)
 - Content material table (item category (PRD), number, key, quantity, UoM)

→ Single access to UPB packing rule information; no need of dedicated access to PI and/or PS instead

Figure 187: Provide Details for a Given Packing Rule (1/2)Overview



- New execution mode in UPB test cockpit – “Read UPB Rules”

Item	Component	Short Text	Target Quantity	Minimum Qty	Rounding Qty	Unit of Measure	Loc No.	Mfg No.	Nbr.
1.0	MMI_PH_CHEP_PALLET	MMI_Package Natural_C...	1			CPL	+		
2.0K	MMI_PH_PET_LARGE_1	MMI_Product PET LANG...	25			EA			

Figure 188: Provide Details for a Given Packing Rule (2/2)Examples



- Sub screen per UPB engine instead of tabbed views

→ Improved usability

Figure 189: Unified Package Building ProfileMinor Usability Improvement



- After moving to S/4 still the SCM material master data was read for building up the UPB/PB internal material master data objects.
 - SCM material master data needed to be “mirrored” with the S/4 material master data, which is the single source of truth (i.e. only S/4 materials can be created and getting synchronized to the SCM material master data).
 - See SAP Note „2342043 - Integration of S/4 Product Master with SCM Product Master“ for details
- Harmonization through refactoring, i.e. also SCM applications like TM or EWM are no longer stuck to the SCM material master data.
- Relevant for UPB and PB.
 - Better performance due to central master data buffer provided by S/4 material master data access
 - No mirroring of S/4 product master data to SCM product master data needed for UPB/PB processes
 - Single master data access class provides better visibility

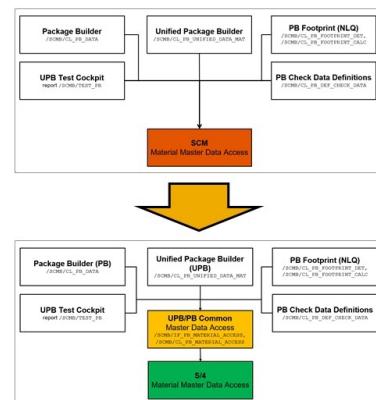


Figure 190: Improved Material Master Data Access



LESSON SUMMARY

You should now be able to:

- Learn new features and functions

Learning Assessment

1. I have reviewed the content of this lesson.

Determine whether this statement is true or false.

- True
 False