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ABAP Managed Custom Fields in S/4HANA

Unique Names

Agenda

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1 Getting started

- Requirement
- New structures for Custom Fields
- The accident

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- Houston we have a problem
- Accident Clash Prevention
- Draft Concept
- oData Field Control

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- Some Questions
- Crystal Ball
- Future-Proof
- Headaches

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- OData Value Helps
- SCFD_EUI
- Data Transfer

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- Unregistered _EEW_ includes?
- Replacement Objects

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6 Gift list

- Official SAP Guideline?
- Tool for "Z-Suffix" managed CF
- Merry Christmas
- Letter of thanks

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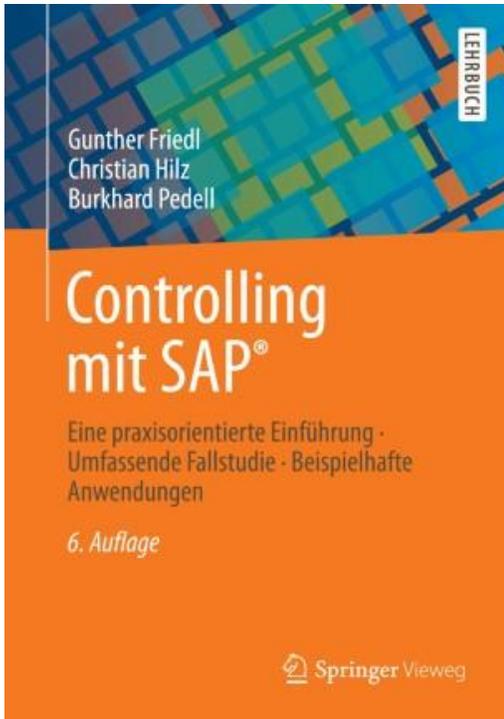
Getting started

- Requirement
- New structures for Custom Fields
- The accident

Requirement

Selling Media Products

SPRINGER NATURE



ID Code Type	ID Code	M...
ISBN ISBN13 w d... v	978-3-658-27719-2	<input checked="" type="radio"/>
IS01 ISBN13 w/o... v	9783658277192	<input type="radio"/>
IS02 ISBN10 w d... v	3-658-27719-X	<input type="radio"/>
IS03 ISBN10 w/o... v	365827719X	<input type="radio"/>

**Each Media Product
(Material Master) has
several Ident Codes**



We need at least 2 Custom Fields

- **Ident Code Type**
- **Ident Code**

at

- **Sales Document Item**
- **Billing Document Item**
- **Delivery Document Item**

New structures for Custom Fields

Transparent Table Active

Short Description

Attributes | Delivery and Maintenance | **Fields** | Input Help/Check | Currency/Quantity Fields | Indexes

Search Built-In Type 290 / 457

Field	Key	Ini...	Data element	Data Type	Length	Deci...	Coordi...	Short Description
ATP_ABC_SUBSTIT...	<input type="checkbox"/>	<input type="checkbox"/>	ATP_ABC_SUBSTITUTION_STATUS	CHAR	1	0	0	Substitution Status for Alternative-Based C
.INCLUDE	<input type="checkbox"/>	<input type="checkbox"/>	SDSALESDOCITEM_INCL_EEW_PS	STRU	0	0	0	Extension Include persistent (VBAP)
DUMMY_SLSDOCITE...	<input type="checkbox"/>	<input type="checkbox"/>	DUMMY	CHAR	1	0	0	Dummy function in length 1

Transaction **SCFD_REGISTRY**

Extensibility Registry

Business Context | Extensible CDS View | Extensible OData Model | BAdI Registration | Data Transfer | Business Scenario | SAP GUI Context | Ext

Display | Change | Create | Delete | Check | Filter | Sort | Sum | Avg | Print | Refresh | Help

Business Context	Context Description	VDM Basic View Name	Structural Logic	Context(s)	Persistence Include
LE_SHP_DELIVERYITEM	Shipping: Delivery Item		X	X	SHPDELIVERYITEM_INCL_EEW_PS
SD_BILLINGDOCITEM	Sales: Billing Document Item		X	X	SDBILLGDOCITEM_INCL_EEW_PS
SD_SALESDOCITEM	Sales: Sales Document Item		X	X	SDSALESDOCITEM_INCL_EEW_PS

The accident

VBAP

(Sales Document Item)

```
...SDSALESDOCITEM_INCL_EEW_PS  
ZZIDCODETYPE  
ZZIDENTCODE
```

VBRP

(Billing Document Item)

```
...SDBILLGDOCITEM_INCL_EEW_PS  
ZZIDCODETYPE  
ZZIDENTCODE
```

LIPS

(Delivery Document Item)

```
...SHPDELIVERYITEM_INCL_EEW_PS  
ZZIDCODETYPE  
ZZIDENTCODE
```

```
1 @EndUserText.label : '#GENERATED#'  
2 @AbapCatalog.enhancementCategory : #EXTENSIBLE_ANY  
3 define structure issalesplanitemtp_d {  
4   salesorganization      : vkorg;  
5   distributionchannel    : vtweg;  
6   organizationdivision  : organization_division;  
7   salesoffice           : vkbur;  
48  hasactiveentity       : sdraft_has_active;  
49  include sdraft write draft admin;  
50  include sdbillgdocitem_incl_eew_ps;  
51  include sdbillingdoc_incl_eew_ps;  
52  include sdsalesdocitem_incl_eew_ps;  
53  include sdsalesdoc_incl_eew_ps;  
54  isactiveentity        : sdraft_is_active;  
55  
56 }
```

Activation Clash



2

Ready for the Future

- Houston we have a problem
- Accident Clash Prevention
- Draft Concept
- oData Field Control

Houston we have a problem

38907 / 2020 Double includes in issalesplanitemtp_d and issalesplanitemtp_...

CONFIRMED

Details Communication (7) Contacts (3) Attachments (2) Solutions (1) Action Log (17)

Die aktuelle Meldung geht darum, dass in der Struktur issalesplanitemtp_d die zwei Includes SDBILLGDOCITEM_INCL_EEW_PS und SDSALESDOCITEM_INCL_EEW_PS eingebunden sind, die gleiche Felder enthalten.

Zunächst einmal zu dem Konzept. Wie bereits geschrieben, ist hier das Ziel in der Sales Plan App die Kunden Felder aus dem Sales und Billing zur Verfügung zu stellen. Aus diesem Grund müssen hier beide Strukturen eingebunden sein. Solange die Kundenfelder mit der 'Custom Field and Logic App' angelegt werden, bekommen die Technischennamen einen Suffix und werden nie identisch sein und somit auf den beschriebenen Fehler laufen.

_SDI >> _SDI for Sales Document Item

_BDI >> _BDI for Billing Document Item

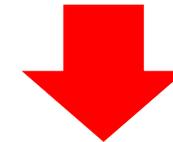
Da sie die Felder manuell anlegen, müssen hier die Guidelines eingehalten werden, die für die 'Customer Field and Logic App' auch gelten.

Auch bei der weiteren App Entwicklungen kann es immer wieder vorkommen, dass eine Applikationsübergreifende App ausgeliefert wird, die die Daten von Sales, Billing und Delivery zusammen führt. In diesem Fall müssten alle Kundenfelder Applikationsübergreifend in einer Struktur inkludiert werden, dies ist nur durch die Suffixverwendung abgesichert.

Leider kann ich Ihnen in diesem Fall keine Lösung anbieten, bitte überprüfen Sie noch mal die Namensgebung ihrer Kundenfelder.

**Hey, it's not a bug,
it's a feature!**

**In the future further
combinations of include
structures for custom fields
are possible.**



**Custom Fields must have a
unique name in S/4HANA**

<https://launchpad.support.sap.com/#/notes/2899836>

2899836 - Custom Fields: Avoid Field Collisions in ABAP Managed Fields

Accident Prevention

Question:

How to archive **unique names** for Custom Fields?



**Developer
Tool**

Adding a unique
Suffix

**Avoid
“_EEW_”
includes**

not useful
(in this case)

not available
(yet ???)

would work
(legacy fields ???)

???

Draft Concept

Before the data from a Fiori App is stored in a DB table (e.g. STPO) the data is sometimes stored in a so called "draft table" (e.g. STPO_DRAFT_V2)

If "Draft" is enabled then each Custom Field within an OData Service must also be included within the draft table, otherwise the OData Service is broken.

```
1 @EndUserText.label : 'I_BILLOFMATERIALTP I_BILLOFMATERIALITEMTP'  
2 @AbapCatalog.enhancementCategory : #EXTENSIBLE_ANY  
3 @AbapCatalog.tableCategory : #TRANSPARENT  
4 @AbapCatalog.deliveryClass : #A  
5 @AbapCatalog.dataMaintenance : #LIMITED  
6 define table stpo_draft_v2 {  
7   key mandt : mandt not null;  
8   key draftuuid : /bobf/uuid not null;  
9   parentdraftuuid : /bobf/uuid;  
10  billofmaterial : stnum;  
11  billofmaterialcategory : stlty;  
12  billofmaterialvariant : stalt;  
13  billofmaterialversion : bom_version;  
14  billofmaterialitemnodenumber : stlkn;  
15  headerchangedocument : aennr;  
16
```

```
129  effectivityparameterdesc : abap.char(1);  
130  billofmaterialheaderuuid : cs_guidb;  
131  hasactiveentity : sdraft_has_active;  
132  include sdraft_write_draft_admin;  
133  include stpo_incl_eew_ps;  
134  
135 }
```

Draft tables use same alias for field names as CDS-Views

Only the "new" include structures are considered within the draft tables

Draft Concept

Sometimes (depending on the oData Service implementation) a further manual append on the draft table is useless

```
CL_MBOM_HELPER_V2 | MAPPER_FOR_MBOM | case | when
2850
2851 ***** Extensibility: F1813/1705: Extensible field mapping *****
2852
2853 MOVE-CORRESPONDING <ls_gw_item> TO ls_ext_item_fields.
2854 MOVE-CORRESPONDING ls_ext_item_fields TO <ls_bo_item>-ext.
2855
2856 ***** Extensibility: F1813/1705: Extensible field mapping *****
2857
```

Only fields within “new” include structures STPO_INCL_EEW_PS are considered during the update from draft table for BOM items even if the field is available at oData service.

```
L ls_ext_item_fields type stpo_incl_eew_ps
```



There seems to be no way out!

We need to use this new _EEW_ structures for Custom Fields

oData Field Control

- Transient Field include structure (e.g. STPO_INCL_EEW_TR)

Only "enabled" Custom Fields are considered
(appending fields to transient structure is not enough)

```
CL_CFD_ODATA_METADATA
2538
2539 METHOD if_cfd_odata_metadata~add_custom_metadata.
2540
2541 TRY.
2542     " get all relevant data from runtime buffer
2543     get_model_data(
2544         IMPORTING
2545             es_model_data      = DATA(ls_model_data)
2546             et_entity_data     = DATA(lt_entity_data)
2547             et_business_contexts = DATA(lt_business_contexts)
2548             et_bus_context_fields = DATA(lt_bus_context_fields)
2549             et_enabled_custom_fields = DATA(lt_enabled_custom_fields)
2550             et_value_help_fields = DATA(lt_value_help_fields) ).
2551
2552     " add custom fields to the model
2553     add_custom_fields(
2554         io_model      = io_model
2555         it_entity_data = lt_entity_data
2556         it_business_contexts = lt_business_contexts
2557         it_bus_context_fields = lt_bus_context_fields
2558         it_enabled_custom_fields = lt_enabled_custom_fields
2559         it_value_help_fields = lt_value_help_fields ).
```

Future

ABAP managed
Custom Fields

DEAD
END

Direct Append

3

Suffix, Suffix, Suffix

- Easy Going
- Some Questions
- Crystal Ball
- Future-Proof
- Headaches

Easy Going

Transaction **SCFD_REGISTRY**

Business Context	Context Description	VDM Basic View Name	Structural Logic	Context(s)	Suffix	Persistence Include
LE_SHP_DELIVERYITEM	Shipping: Delivery Item		X	X	DLI	SHPDELIVERYITEM_INCL_EEW_PS
SD_BILLINGDOCITEM	Sales: Billing Document Item		X	X	BDI	SDBILLGDOCITEM_INCL_EEW_PS
SD_SALESDOCITEM	Sales: Sales Document Item		X	X	SDI	SDSALESDOCITEM_INCL_EEW_PS

Structural Enhancement

Context Data	
Field Suffix	SDI
Persistence Include	SDSALESDOCITEM_INCL_EEW_PS
Transient Fields Include	SDSALESDOCITEM_INCL_EEW_TR
Field Control Include	
Change Indicator Include	SDSALESDOCITEM_INCL_EEW_X



Some Questions

```

1 @EndUserText.label : 'Extension include for Coding Block'
2 @AbapCatalog.enhancementCategory : #EXTENSIBLE_CHARACTER_NUMERIC
3 define structure incl_eew_cobl {
4   include ci_cobl;
5   dummy_incl_eew_cobl : cfd_dummy;
6
7 }

```

Context Data	
Field Suffix	COB
Persistence Include	INCL_EEW_COBL
Transient Fields Include	INCL_EEW_COBL_TR
Field Control Include	
Change Indicator Include	

Q: Can we use the suffix COB in the case where an old CI_include is part of the new _EEW_ include?

A: You should **always use the suffix from the parent.**

```

1 @EndUserText.label : 'EDI-Kontierungsblock'
2 @AbapCatalog.enhancementCategory : #EXTENSIBLE_CHARACTER_NUMERIC
3 define structure edi_cobl {
4   bukrs      : bukrs;

```

Q: How to **handle further structures** were the Custom Fields **with the same fieldname** are **needed**?

A: This must be **decided on a case-by-case basis.**
If necessary, an SAP support incident must be opened.

Crystal Ball

Q: For **CI_WORKLIST_ITEM** there is no Business Context and Suffix available in SCFD_REGISTRY. Do we need unique field names, too?

A: It **could be possible** that SAP creates a **Business Context** with the **next release**. If you want to shift the field to the new **_EEW_** structure than, the name for the Custom Field must be unique.

Q: What should we do at least?

A: You can use **any suffix starting with Z**, but **ensure the suffix is only used once per table/structure**.



To be on the safe side each Custom Field must have a unique name

Future-Proof

Q: Should every Custom Field have a suffix at least?

A: For existing legacy fields the usage of suffixes is not required in case it is used only in a single persistence include. **However it is strongly recommended to use a suitable suffix in case new fields are created manually.**

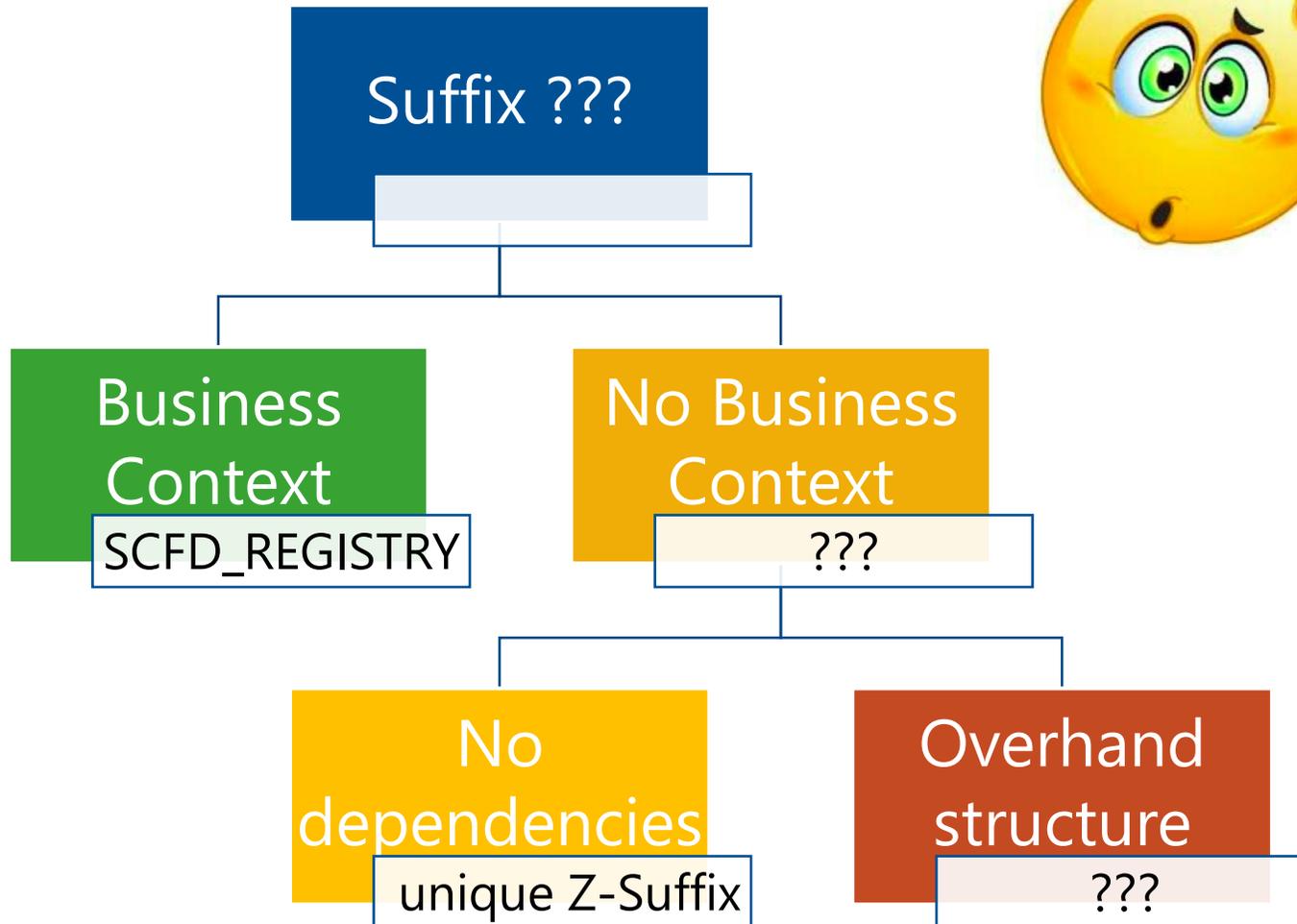
Q: Does SAP ensure that all CI_ Includes are contained in EEW includes?

A: **There is a guideline to include old CI Includes into _EEW_ persistence include structures wherever possible.**



**strongly recommended
to use a unique suffix
per table / structure**

Headaches



Each individual case must be analyzed in detail to determine how to proceed.

We have largely eliminated the risk of having to rename a field later in productive operation.

4

Reconstruction

- Mission
- OData Value Helps
- SCFD_EUI
- Data Transfer

Mission

We must adapt all our existing custom fields with unique fieldnames to be ready for the future

Problems

- No proper tool exists to identify and prevent duplicates
- Changing Fieldnames causes a loss of DB values and change history
- Adaptation of Code and Customizing needed
- No 100% where used list (dynamic ABAP)
- Integration Test needed

Good fortune

- We are not productive

In productive
Environment
SLO would be
needed



OData Value Helps



F4 GUI Values Helps

- DDIC Values Helps
- Foreign Key Relationships
- DDIC Domain Values

Manual Transformation



CDS-View Value Help

- Only key field **Code** used
- Text CDS View association
 - **Language** field
 - **Description** field

SAP plans to improve in one of the next releases

OData Value Helps

Column	Component Type	Data Type	Description
mandt	mandt	clnt(3)	Client
werks	werks_d	char(4)	Plant
lgort	lgort_d	char(4)	Storage location
lgobe	lgobe	char(16)	Description of Storage Location
spart	spart	char(2)	Division

```

1 @AccessControl.authorizationCheck: #NOT_REQUIRED
2 @EndUserText.label: 'Custom Field Storage Location Value Help'
3 @AbapCatalog.sqlViewName: 'ZICFISMSTORAGEVH'
4 @Search.searchable
5 @ObjectModel.compositionRoot: true
6 @ObjectModel.usageType.serviceQuality: #A
7 @ObjectModel.usageType.sizeCategory: #S
8 @ObjectModel.usageType.dataClass: #CUSTOMIZING
9 @Analytics.dataCategory: #DIMENSION
10 @ObjectModel.representativeKey: 'Code'
11
12 define view ZI_CF_ISMStorageVH
13   as select from t0011
14   association [0..*] to ZI_CF_ISMStorageText as _Text
15   on $projection.Code = _Text.Code
16 {
17   @ObjectModel.text.association: '_Text'
18   @Search.defaultSearchElement: true
19   @Search.ranking: #HIGH
20   key cast( lgort as zismLagerst ) as Code,
21   @ObjectModel.association.type: [#TO_COMPOSITION_CHILD]
22   _Text
23 }
24

```

Currently there is only one key with name Code possible

AB	Co	AB	AB	Descripti
0001	E			Lager 0001
0001	E			Lager 0001
0001	E			Lager 0001
0088	E			Lager 0088 (WM)
0088	E			Lager 0088 (WM)
0088	E			Lager 0088 (WM)

Plant ?

SAP plans to improve in one of the next releases

OData Value Helps

Association Target

Multi Field Odata Value Helps are currently only provided by Custom Fields created via App "Custom Fields and Logic" with Association Targets.

Association Target	Description	CDS Value Help View Name	Leading View
I_COMPANYCODESTDVH	Company Code	I_COMPANYCODESTDVH	
I_COSTCENTERSTDVH	Cost Center	I_COSTCENTERSTDVH	
I_COUNTRYVH	Country Value Help	I_COUNTRYVH	
I_GLACCOUNTSTDVH	General Ledger Account	I_GLACCOUNTSTDVH	
I_LANGUAGE	Language		I_LANGUAGE
I_SEGMENTSTDVH	Segment	I_SEGMENTSTDVH	
PROFITCENTER_VH	Profit Center Value Help	I_PROFITCENTERVH	
WORKFORCEPERSON_VH	Workforce Person	I_WORKFORCEPERSONVH	

SAP plans to enlarge the list with next releases and SNotes

```

24
25 @EndUserText.label: 'Cost Center'
26 define view I_CostCenterStdVH as select from I_CostCenter {
27   @ObjectModel.foreignKey.association: '_ControllingArea'
28   key ControllingArea,
29   @ObjectModel.text.association: '_Text'
30   @Search.defaultSearchElement: true
31   @Search.fuzzinessThreshold: 0.8
32   @Search.ranking: #HIGH
33   key CostCenter,
34   @Semantics.businessDate.to: true
35   key ValidityEndDate,
36   @Semantics.businessDate.from: true
37   ValidityStartDate,
38
39   _Text,
40
41   @Consumption.hidden: true
42   _ControllingArea
43 }
44

```


Data Transfer

Fiori App "Custom Fields and Logic"

General Information UIs and Reports (10) Email Templates (1) Form Templates (50) **Business Scenarios (8)** OData APIs (2) SOAP APIs (0) BAPIs (0) IDocs (0)

Scenarios Available for Business Context Sales: Billing Document (8)

Description	Field Usage
> Delivery to Billing Document from Item to Header Level	Disabled Enable Usage
> Delivery to Billing Document on Header Level	Disabled Enable Usage
> Sales Document to Billing Document from Item to Header Level	Disabled Enable Usage
> Sales Document to Billing Document on Header Level	Enabled Disable Usage

Business Scenario		Data Transfer
Business Scenario Name	Business Scenario Description	Data Transfer Name
SD_SLSDOC_HEAD_2_BILDOC_HEAD	Sales Document to Billing Document on Header Level	SD_SLSDOC_HEAD_2_BILDOC_HEAD

5

Trouble

- Relegate CI_ includes
- Unregistered _EEW_ includes?
- Replacement Objects

Relegate CI_includes

We need "old" CI_include due to CMOD GUI Custom Screens

```

1 @EndUserText.label : 'Customer Include for BOM Item User-Defined Fields'
2 @AbapCatalog.enhancementCategory : #NOT_CLASSIFIED
3 define structure ci_stpo {
4     _____
5 }
6
    
```

Open OSS incident in order to shift CI_includes into _EEW_includes!

Preparation required

Business Context BOM_ITEM Master Data: Bill of Material Items

⚠ Please execute the following steps in their listed sequence

Severity	Message	Detail
▲	Do not risk data loss. Read details before proceeding.	🔍
	Append field to extension include structure STPO_INCL_EEW_PS. Do not activate changes.	🔍
	Remove field from structure CI_STPO. Do not activate changes.	🔍
▲	After removal from structure CI_STPO, field will be missing in structure /PLMB/S_MBOM_ITEM_I.	🔍
▲	After removal from structure CI_STPO, field will be missing in structure /PLMI/S_NAV_BOMDIRITEM_ATTR.	🔍
▲	After removal from structure CI_STPO, field will be missing in structure /PLMI/S_NAV_ITEM_ID_ATTR.	🔍



Unregistered _EEW_ includes?

```
1 @EndUserText.label : 'Enhancement Include Postings'  
2 @AbapCatalog.enhancementCategory : #EXTENSIBLE_CHARACTER_NUMERIC  
3 define structure incl_eew_farr_rep {  
4     rep_eew_dummy : dummy;  
5  
6 }
```



Component	Relea...
S4CORE	104

SAP Reply
31.08.2020 at 11:09

Dear Andreas,

Unfortunately is the Key User Extensibility Tool fully supported from S4CORE 105. The new persistence include FARR_CONTRACT_ITEM_INCL_EEW_PS has been created from S4CORE 105 and the fields from this include can be generated in the CI-includes.

Until S4CORE 105 is this functionality not supported.



Replacement Objects

```

1 @EndUserText.label : 'CO-Objekt: Einzelposten per
2 @AbapCatalog.enhancementCategory : #EXTENSIBLE_CH
3 @AbapCatalog.tableCategory : #TRANSPARENT
4 @AbapCatalog.deliveryClass : #A
5 @AbapCatalog.dataMaintenance : #LIMITED
6 @AbapCatalog.replacementObject : 'v_coep_view'
7 define table coep {
8   key include coep_key not null
9   @AbapCatalog.foreignKey.keyType : #KEY
10  @AbapCatalog.foreignKey.screenCheck : true
11  extend belnr :
12    with foreign key [0..*,1] cobk
13    where mandt = coep.mandt
14    and kokrs = coep.kokrs
15    and belnr = coep.belnr

```

SQL Dependency Tree

SQL Name	SQL Relation	Object Type	Entity Name
V_COEP		CDS View (STOB)	v_coep_view
SELECT			
COEP	From	Database Table (TABL)	
UNION ALL			
V_COEP_R3	From	CDS View (STOB)	V_Coep_R3_view
V_COEP_R2	From	CDS View (STOB)	V_Coep_R2_view
V_COEP_R1	From	CDS View (STOB)	V_Coep_R1_view
V_COEP_ACDOCA_R	From	CDS View (STOB)	v_coep_acdoca_r_view
V_COEP_ACDOCA_R3	From	CDS View (STOB)	v_coep_acdoca_r3_view
V_COEP_ACDOCA_R2	From	CDS View (STOB)	V_Coep_Acdoca_R2_view
V_COEP_ACDOCA_R1	From	CDS View (STOB)	V_Coep_Acdoca_R1_view
ACDOCA	From	Database Table (TABL)	
FINSC_CMP_VERSND	Inner Join	Database Table (TABL)	
TKA01	Inner Join	Database Table (TABL)	
PRPS	Left Outer Join	Database Table (TABL)	

Copy Value from “old” field to field with suffix not possible for each dataset

<https://blogs.sap.com/2020/10/10/pitfalls-at-s-4hana-db-tables-with-replacement-object>

6

Gift list

- Official SAP Guideline?
- Tool for "Z-Suffix" managed CF
- Merry Christmas
- Letter of thanks

Official SAP Guideline?

ECC 6.0

S/4HANA 1503

S/4HANA 2020

- No official information about **unique names** for ABAP managed Custom Fields till 03/2020
- No official information about **potential impact for ECC**
- No official information **how to handle third-party** add-ons
- No official **definite rules how to handle Z-Suffix**
- [SNote 2899836](#) – 03/2020
Custom Fields: Avoid Field Collisions in ABAP Managed Fields
- [SNote 2981484](#) – 10/2020
Handling of Legacy Fields in S/4 HANA and understanding transaction SCFD_EUI



My Christmas wish list

- Less “Road Works” **no Support Incidents**
- **Official SAP Guideline**
(incl. legacy fields - brownfield approach)
- **Tool for “Z-Suffix” managed CF**
- **ATC checks** for uniqueness
- **DDIC Support** for App “CFaL” **at on-premise**
 - Data Element
 - Foreign-Key
 - DDIC Value Helps



Letter of thanks

- **DSAG - AK Development**

- Christian Lechner

for establishing contact with SAP

- **SAP Development Team "Custom Fields"**

- Georg Wilhelm
- Karsten Schaser

for the great support and eager cooperation

- **Springer Nature S4One Project Members**

- Nils Möller
- Mirella Nicastro Sprenger
- Holger Bärenwald
- Christoph Paulusch
- Anmol Bhat
- Andreas Hauer

for the awesome collaboration during the field name changeover



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SAP[®]-Consulting & -Development, competent and flexible