



S4/HANA VIEWS ENTITY

Walldorf, 06.06.2024



ENTITY VIEW AS SUCCESSOR OF DDIC CDS VIEW

1ST DATA MODEL TO EXPERIMENT WITH: BILL OF MATERIAL

SELECT AND BUFFERING DATA ON APP SERVER

READ ENTITIES, THAT DOES NOT WORK

2ND DATA MODEL: SALES ORDER

READ ENTITIES: LAZY OUTER JOIN PROBLEM

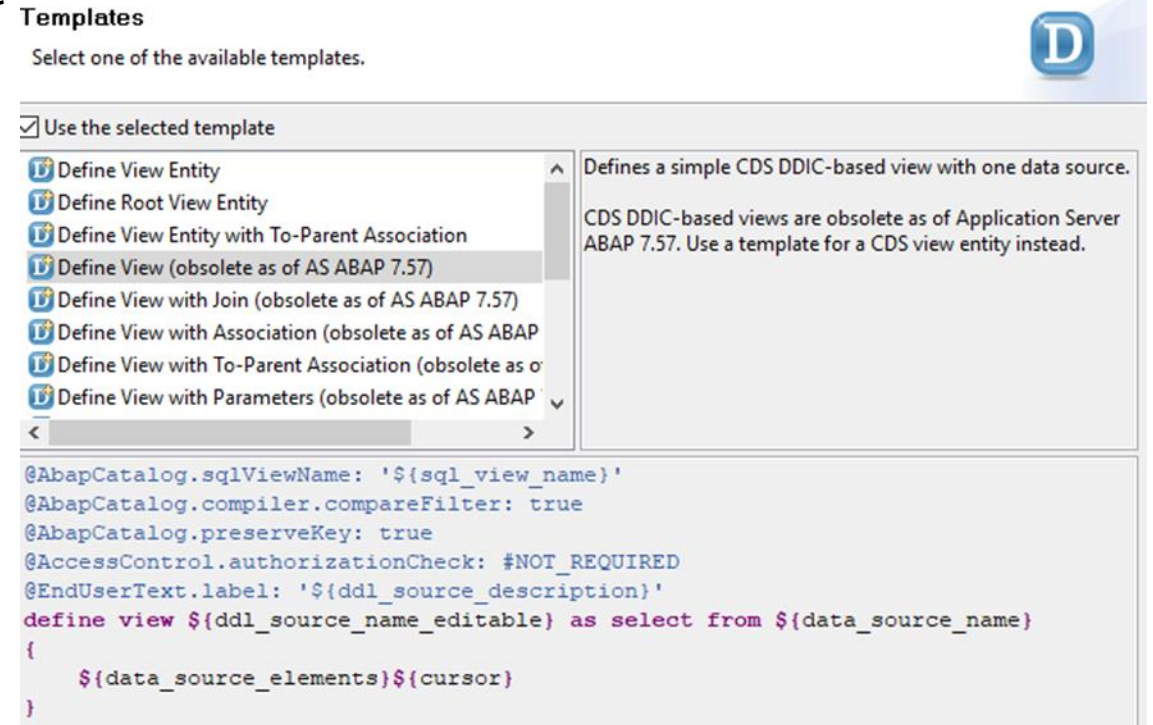
ENTITY MANIPULATION LANGUAGE IN UPDATE TASK

ENTITY VIEW AS SUCCESSOR OF DDIC CDS VIEW

Effective way of implementing code pushdown concept

2 types of ABAP CDS views currently available:

- View entities available from version 7.57, which can be used in RESTful ABAP Programming (RAP)
- Traditional Data Dictionary (DDIC) views following Virtual Data Model (VDM) paradigm, now recognized by ABAP Development Tools (ADT) in Eclipse as obsolete



Templates

Select one of the available templates.

Use the selected template

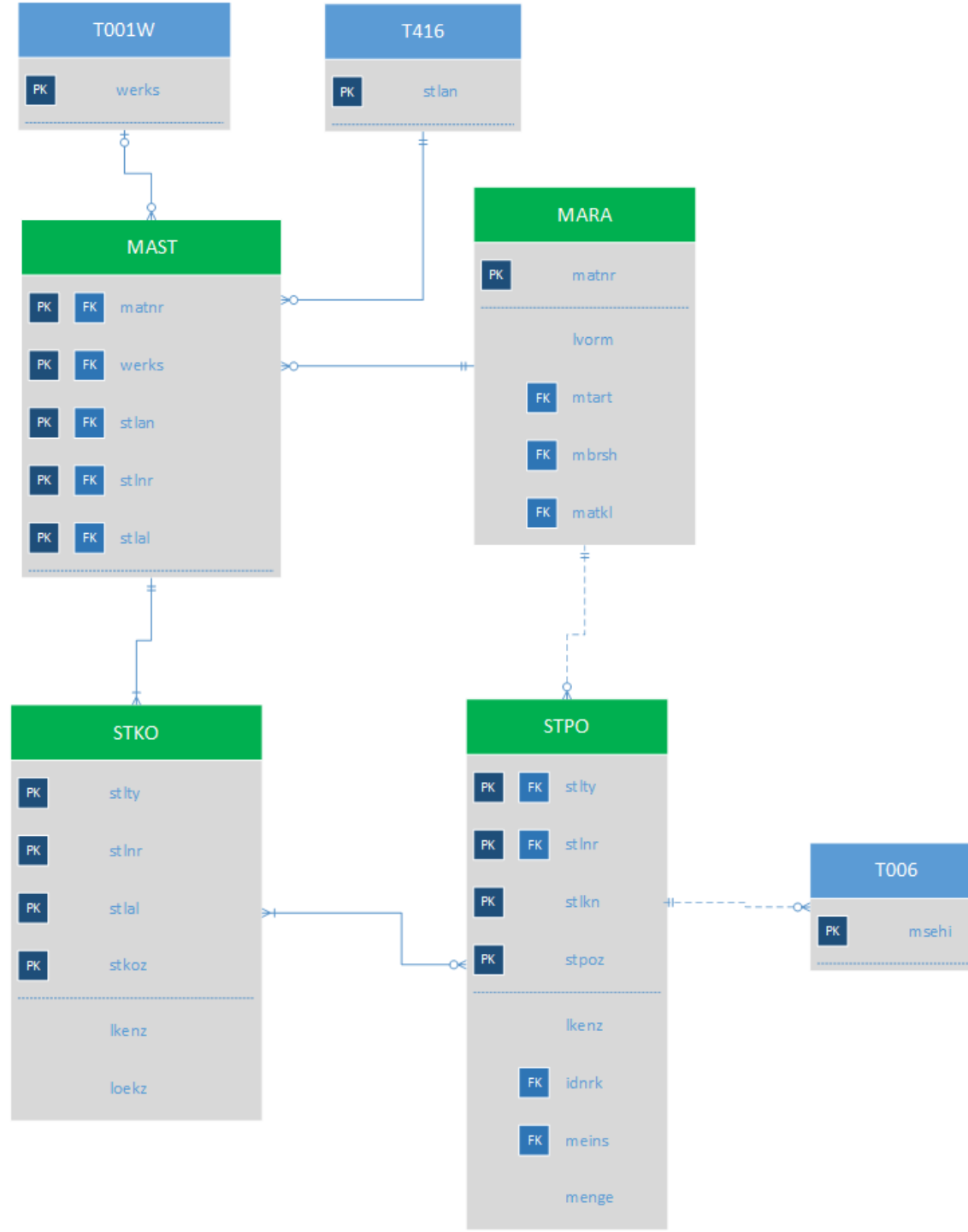
- Define View Entity
- Define Root View Entity
- Define View Entity with To-Parent Association
- Define View (obsolete as of AS ABAP 7.57)**
- Define View with Join (obsolete as of AS ABAP 7.57)
- Define View with Association (obsolete as of AS ABAP 7.57)
- Define View with To-Parent Association (obsolete as of AS ABAP 7.57)
- Define View with Parameters (obsolete as of AS ABAP 7.57)

Defines a simple CDS DDIC-based view with one data source.
CDS DDIC-based views are obsolete as of Application Server ABAP 7.57. Use a template for a CDS view entity instead.

```
@AbapCatalog.sqlViewName: '${sql_view_name}'
@AbapCatalog.compiler.compareFilter: true
@AbapCatalog.preserveKey: true
@AccessControl.authorizationCheck: #NOT_REQUIRED
@EndUserText.label: '${ddl_source_description}'
define view ${ddl_source_name_editable} as select from ${data_source_name}
{
    ${data_source_elements}${cursor}
}
```

1ST DATA MODEL

Bill of Material (so called BoM)



BUFFERING PREREQUISITES

Views with **parameters** are NOT bufferable!

Buffering works both with Entity Manipulation Language (**EML**) command like **READ ENTITIES** and traditional **SELECT** statement!

```
@AbapCatalog.entityBuffer.definitionAllowed: true
```

The annotation above must be declared for all entity views starting from the top (root) to the very bottom ones!

```
define view entity buffer on zld_c_rap_bom
```

```
layer core
```

```
type generic number of key elements 2 --MATNR, WERKS from MAST
```

Entity buffer example above

FURTHER CONSTRAINTS

Views with unstable calculations are not supported (e.g. utcl_current, tstmp_current_utctimestamp)

Session variables (other than client) can not be used

Base objects must be tables

Key length > 900 bytes is not supported

LOB key fields are not allowed

Views without key fields can not be buffered

Data aging in base tables is not allowed

VERIFICATION OF THE BUFFERING

DDLOGSTAT contents

Class	Mode	OBJECT_NAME ▲	RECORD_DA...	COUNTER
12		ZLD_B_C_RAP_BOM	20240214	4
12		ZLD_B_C_RAP_BOM_INNER	20240214	4
4		ZLD_C_RAP_BOM	20240214	4
7	9	ZLD_C_RAP_BOM	20240214	3
12		ZLD_C_RAP_BOM	20240214	8
4		ZLD_C_RAP_BOM_INNER	20240214	7
7	9	ZLD_C_RAP_BOM_INNER	20240214	4
12		ZLD_C_RAP_BOM_INNER	20240214	14

READ ENTITIES REQUIRES PROVIDING **FULL KEY** FROM THE VIEW

This is why view based on inner join is inconvenient, better to use view based on association without the key fields from the BOM items but only from its header

```
define root view entity ZLD_R_RAP_BOM_INNER
as select from ZLD_C_RAP_BOM_INNER {
key matnr,
key werks,
key stlan,
key stlnr,
key stlal,
key stlty,
key stkoz,
key stlkn,
key stpoz,
idnrk,
@Semantics.quantity.unitOfMeasure : 'meins'
menge,
meins,
_mara_stpo.mtart as stpo_mtart,
_mara_mast.mtart as mast_mtart,
_plant.name1 }
```

```
define root view entity ZLD_R_RAP_BOM
as select from zld_c_rap_bom {
key matnr,
key werks,
key stlan,
key stlnr,
key stlal,
key stlty,
key stkoz,
_mara_mast,
_stpo,
_plant }
```


READ ENTITIES PREREQUISITIES

Create behaviour definition plus corresponding class

```
managed implementation in class  
zbp ld r rap bom unique;  
strict ( 2 );
```

```
define behavior for ZLD_R_RAP_BOM //alias  
<alias_name>  
//persistent table <??>  
with unmanaged save  
lock master  
authorization master ( instance )  
//etag master <field_name>  
{  
create;  
update;  
delete;  
}
```

```
CLASS lhc_ZLD_R_RAP_BOM DEFINITION INHERITING FROM  
cl_abap_behavior_handler.  
PRIVATE SECTION.  
METHODS get_instance_authorizations FOR INSTANCE  
AUTHORIZATION  
IMPORTING keys REQUEST requested_authorizations FOR  
zld_r_rap_bom RESULT result.  
  
ENDCLASS.
```

```
CLASS lhc_ZLD_R_RAP_BOM IMPLEMENTATION.  
METHOD get_instance_authorizations.  
RETURN.  
ENDMETHOD.  
ENDCLASS.
```

```
CLASS lsc_ZLD_R_RAP_BOM DEFINITION INHERITING FROM  
cl_abap_behavior_saver.  
PROTECTED SECTION.  
METHODS save_modified REDEFINITION.  
METHODS cleanup_finalize REDEFINITION.  
ENDCLASS.
```

READ ENTITIES REQUIRES COMPOSITION RELATIONSHIP

...between header and items!

BOM data model cannot use composition, because the foreign key imported from the parent tables is only partial: STLTY, STLNR, without MATNR, STKOZ, STLAL, STLAN and WERKS !

```

92
93 READ ENTITY zld_r_rap_bom
94 BY \_stpo
95 ALL FIELDS WITH lt_sel[]
96 RESULT DATA(lt_one_bom)
97 FAILED DATA(lt_failed).
98
99 * READ ENTITIES OF zld_r_rap_bom ENTITY zld_r_rap_bom
100 * ALL FIELDS WITH lt_sel[]
101 * RESULT DATA(lt_one_bom_full)
102 * FAILED DATA(lt_failed).
103
104 ENDLOOP.
105

```

*Global Class | Class-relevant Local Types | Local Types | Test Classes | Macros

Problems × | Properti... | Templa... | Bookma... | Feed Re... | Transpo...

7 errors, 7 warnings, 0 others

Description

- Key field matnr is missing in ON condition of to-parent association
- Key field stkoz is missing in ON condition of to-parent association
- Key field stal is missing in ON condition of to-parent association
- Key field stlan is missing in ON condition of to-parent association
- Key field werks is missing in ON condition of to-parent association
- No behavior is specified for association "_STPO" of entity "ZLD_R_RAP_BOM".

```

9 j
10 define view entity zld_i_rap_stpo_mara_comp
11 as select from zld_i_rap_stpo_mara as stpo
12 association to parent zld_r_rap_bom as _stko
13 on $projection.stlty = _stko.stlty
14 and $projection.stlnr = _stko.stlnr
15 {
16 key stpo.stlty,
17 key stpo.stlnr,
18 key stpo.stlkn,
19 key stpo.stpoz,
20
21 stpo.idnrk,
22
23 @Semantics.quantity.unitOfMeasure : 'meins'
24 stpo.menge,
25 stpo.meins,
26
27 _mara_stpo,
28
29 _stko

```

Problems × | Properti... | Templa... | Bookma... | Feed Re... | Transpo... | Search

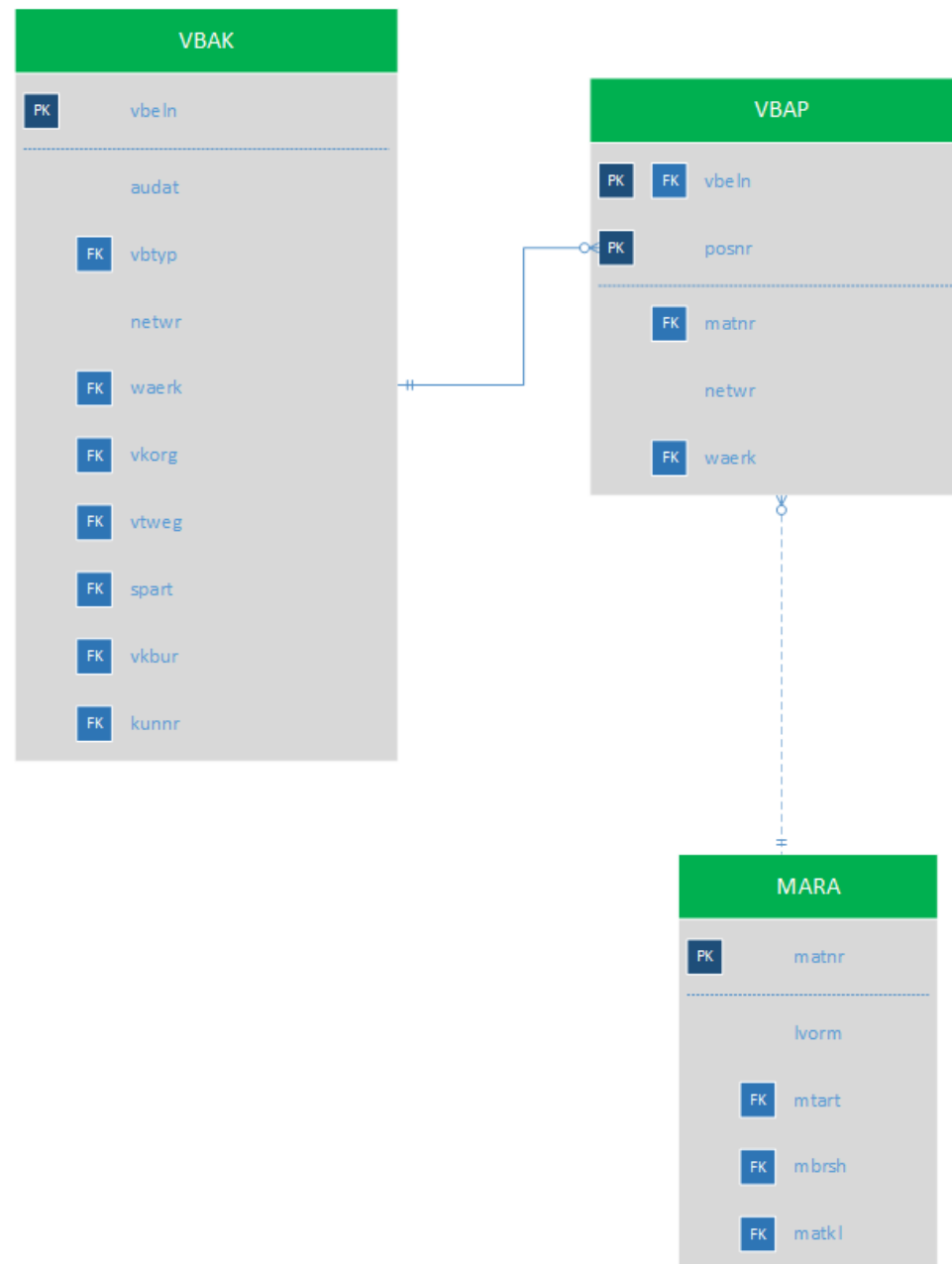
7 errors, 7 warnings, 0 others

Description

- Errors (7 items)
 - Child entity zld_i_rap_stpo_mara does not have a to-parent association with ZLD_R_RAP_BOM
 - Key field matnr is missing in ON condition of to-parent association
 - Key field stkoz is missing in ON condition of to-parent association
 - Key field stal is missing in ON condition of to-parent association
 - Key field stlan is missing in ON condition of to-parent association
 - Key field werks is missing in ON condition of to-parent association

DATA MODEL FOR COMPOSITION

Sales Order



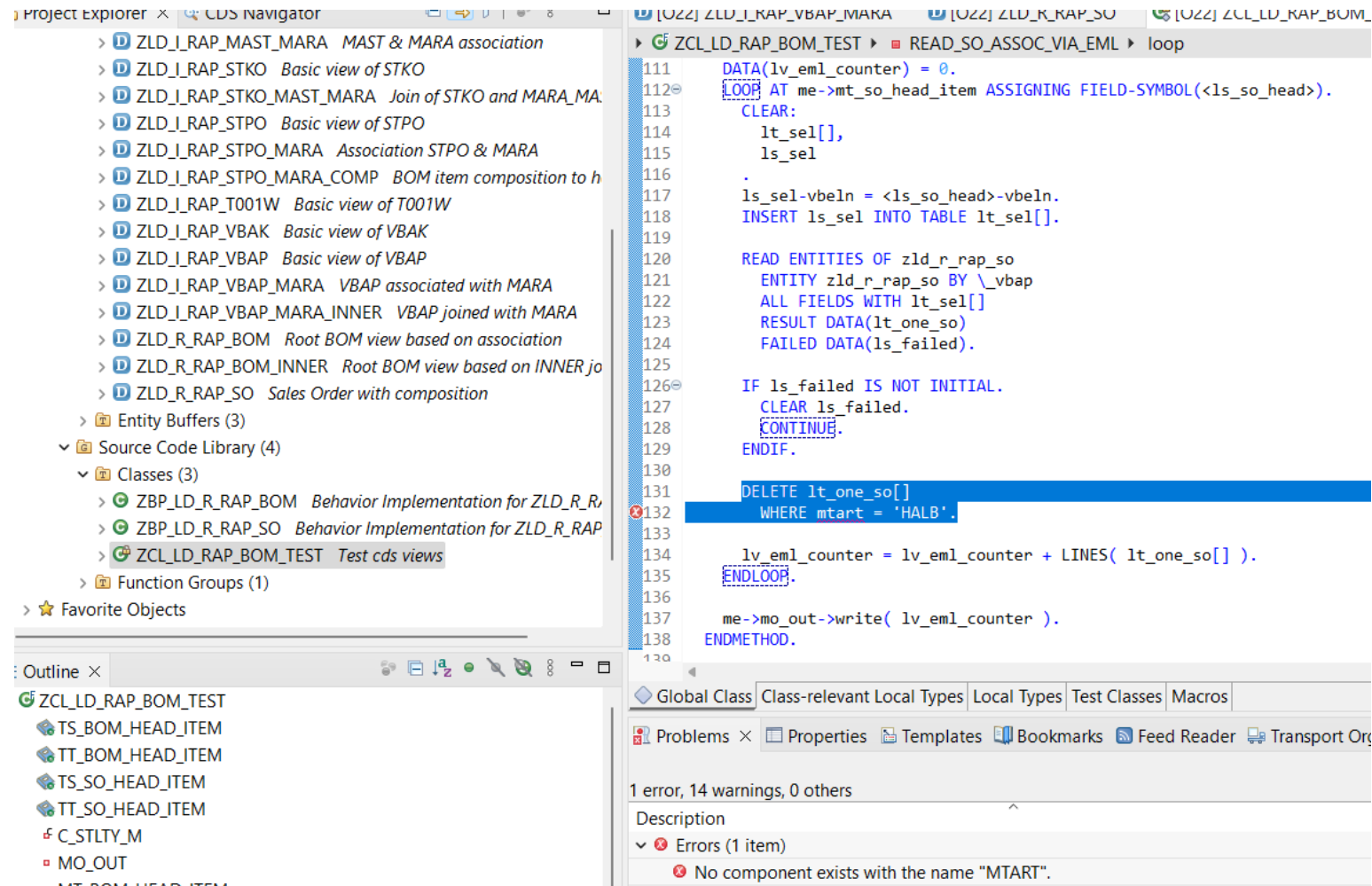
COMPOSITION VIEW TO COMBINE VBAP AND MARA

...referring to consumption ROOT VIEW ENTITY ZLD_R_RAP_SO as its parent

```
define view entity ZLD_I_RAP_VBAP_MARA
as select from ZLD_I_RAP_VBAP
association to parent ZLD_R_RAP_SO as _vbak
on $projection.vbeln = _vbak.vbeln
association [0..1] to ZLD_I_RAP_MARA as _mara
on $projection.matnr = _mara.matnr
{
    key vbeln,
    key posnr,
    matnr,
    @Semantics.amount.currencyCode: 'WAERK'
    netwr,
    waerk,
    _mara,
    _vbak
}
```

BUT THEN THE PROBLEM TO REACH MARA-MTART ARISES:

...so we cannot reach for MTART (via associated VBAP and MARA) using READ ENTITIES



The screenshot displays the SAP IDE interface. On the left, the Project Explorer shows a tree structure of classes and views, including 'ZCL_LD_RAP_BOM_TEST'. The main editor shows the source code of 'ZCL_LD_RAP_BOM_TEST' with the following ABAP code:

```
111 DATA(lv_eml_counter) = 0.  
112 LOOP AT me->mt_so_head_item ASSIGNING FIELD-SYMBOL(<ls_so_head>).  
113 CLEAR:  
114   lt_sel[],  
115   ls_sel  
116 .  
117 ls_sel-vbeln = <ls_so_head>-vbeln.  
118 INSERT ls_sel INTO TABLE lt_sel[].  
119  
120 READ ENTITIES OF zld_r_rap_so  
121   ENTITY zld_r_rap_so BY \_vbap  
122   ALL FIELDS WITH lt_sel[]  
123   RESULT DATA(lt_one_so)  
124   FAILED DATA(ls_failed).  
125  
126 IF ls_failed IS NOT INITIAL.  
127   CLEAR ls_failed.  
128   CONTINUE.  
129 ENDIF.  
130  
131 DELETE lt_one_so[]  
132   WHERE mtart = 'HALB'.  
133  
134 lv_eml_counter = lv_eml_counter + LINES( lt_one_so[] ).  
135 ENLOOP.  
136  
137 me->mo_out->write( lv_eml_counter ).  
138 ENDMETHOD.  
139
```

The error message at the bottom of the IDE indicates: "No component exists with the name 'MTART'".

THE SOLUTION

...in COMPOSITION view – making association (LAZY OUTER JOIN) just OUTER JOIN

```
define view entity ZLD_I_RAP_VBAP_MARA
as select from ZLD_I_RAP_VBAP
association to parent ZLD_R_RAP_SO as _vbak
on $projection.vbeln = _vbak.vbeln
association [0..1] to ZLD_I_RAP_MARA as _mara
on $projection.matnr = _mara.matnr
{
    key vbeln,
    key posnr,
    matnr,
    @Semantics.amount.currencyCode: 'WAERK'
    netwr,
    waerk,
    _mara.mtart,
    _vbak
}
```


READ ENTITIES WORKS INSIDE THE LOOP, BUT PERFORMANCE IS LOW

...see discussion: <https://community.sap.com/t5/application-development-blog-posts/buffering-cds-view-entities/bc-p/13520430#M45229>

```
READ ENTITIES OF zld_r_rap_so  
  ENTITY zld_r_rap_so BY \_vbap  
  ALL FIELDS WITH lt_sel[]  
  RESULT DATA(lt_one_so)  
  FAILED DATA(ls_failed).
```

```
IF ls_failed IS NOT INITIAL.  
  CLEAR ls_failed.  
  CONTINUE.  
ENDIF.
```

```
DELETE lt_one_so[] WHERE mstart = 'HALB'.  
lv_eml_counter = lv_eml_counter + LINES( lt_one_so[] ).  
ENDLOOP.
```

READ ENTITIES IN UPDATE TASK DOES NOT WORK!

It ends up with a short-dump:

Category	ABAP programming error
Runtime Errors	BEHAVIOR_STATEMENT_ILLEGAL
ABAP Program	SAPLZLD_RAP_CDS_VIEWS
Application Component	Not assigned

Error analysis

There is probably an error in the program

"SAPLZLD_RAP_CDS_VIEWS".

Statement "READ ENTITIES" is only permitted in certain phases of BEHAVIOR execution. At present, the execution is in "UPDATE TASK". The statement is forbidden here.

QUESTIONS ?



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