SCM-EWM

Delivery Service Provider in SAP-EWM Call Examples

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2 Glossary

Term	Definition
ABAP OO	Advanced Business Application Programming, Object-Oriented
BO	Business object (here usually a delivery)
DR	Delivery request
ESA	Enterprise Service Architecture
ESF	Enterprise Services Framework
FD	Final delivery = outbound delivery
IDN	Inbound Delivery Notification
OD	Outbound delivery
ODO	Outbound delivery order
ODP	Object Data Pattern
OIP	Object Identification Pattern
PRD	Processing Delivery
SP	Service provider
UI	User Interface
UIC	User Interface Controller
WDP	Web Dynpro Pattern

3 Service Provider

The service provider is the external interface for the business object “Delivery”. Its task is to map the object-oriented data model inside the business object Delivery to the aspect structure presented to the caller. The aim is to provide a unified interface to callers to allow the business object to be used in a generic way. The following figure shows the core service provider in the context of the general architecture of the Delivery

The following figure gives an overview of the architecture:

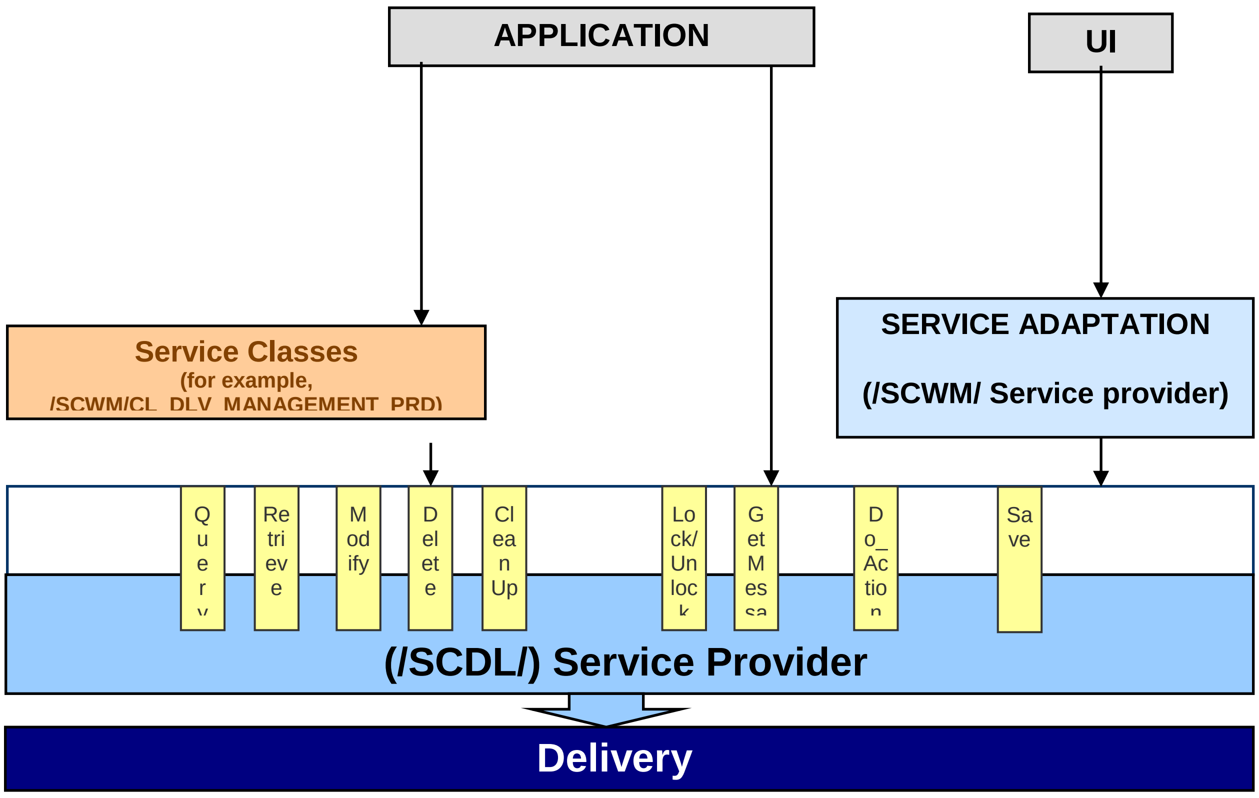


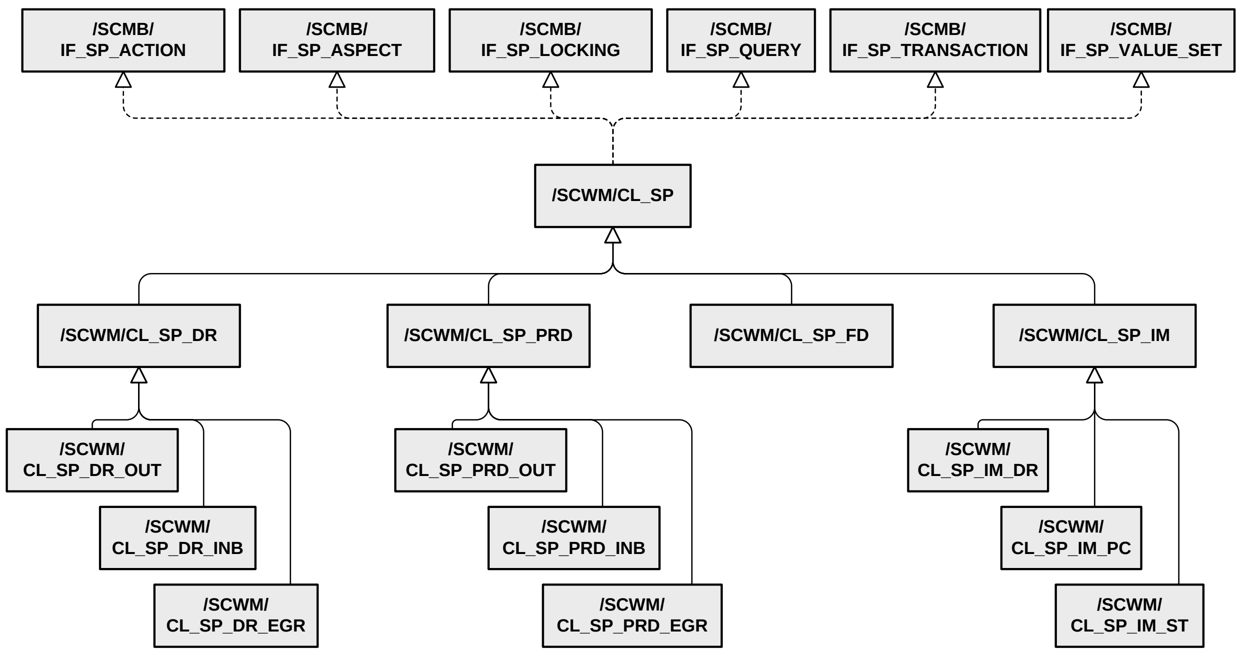
Figure 1 Service Architecture

Multiple service providers exist. in EWM. Therefore it is necessary to differentiate between these providers.

3.1 UI Service Providers

The **/SCWM/** service provider is usually only used by UIs. This means the methods are only used by UIs.

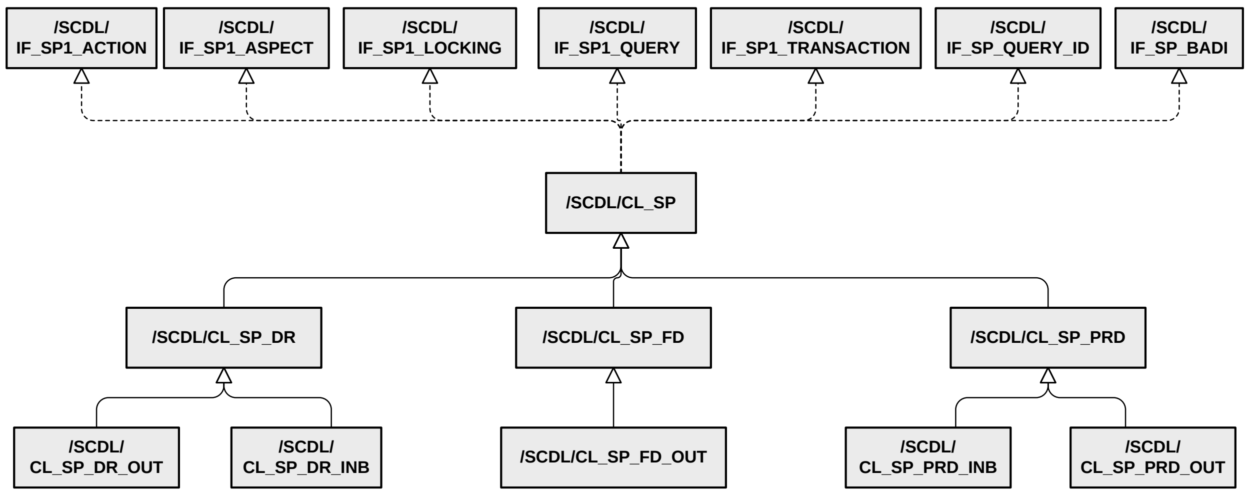
In Figure 1 Service Architecture, this is also called user interface controller or UI service adoption. It is only used by the UI. Here only the main /SCWM/ delivery UI service providers are mentioned. As the focus of this document is not principally on the UI, this is not described in more detail here. The following diagram shows the classes and the dependencies:



The interfaces that the UI service provider implements (for example, /SCMB/IF_SP_ASPECT) are similar to the interfaces used in the delivery service provider (for example, /SCDL/IF_SP1_ASPECT), but they are not identical. Nevertheless they use the same concepts; therefore the information about the delivery service provider in the next chapters can also partly be reused for the UI service provider. Please again keep in mind that the focus is the delivery service provider mentioned in the next chapter and not the UI service provider.

3.2 Delivery Service Provider

This is the service provider shown in Figure 1 Service Architecture and **Fehler! Verweisquelle konnte nicht gefunden werden.**. The following diagram shows the classes and the relations.



4 Relation Between UI Service Provider and Delivery Service Provider

As described above, the service provider (SP) offers several methods to read, insert, update, and execute actions, and so on, on a specific object (for example, outbound delivery order). Service providers exist for all delivery objects (for example, inbound delivery order, outbound delivery). The service provider instances contain the DOCCAT (for example, PDO, FDO, and so on). This means that if an outbound delivery is to be changed, an instance of the service provider with DOCCAT=FDO has to be used, while for an inbound delivery order, for example, a service provider instance with DOCCAT=PDI should be used.

Both UI-specific and delivery-object-specific service providers exist for the delivery service. The reason why there are “UI” and “delivery-object” service providers is the following:

- In each delivery UI, the delivery may be structured differently (for example, fewer or more fields compared to the data structure of the delivery).
- In the UI, specific checks should be done or additional UI-specific code needs to be executed.

The relationship between UI SP and delivery SP is the following:

- UI SP methods are only called from the UIs. Usually UI methods call delivery SP methods to insert, update, and so on.
- Delivery-SP methods can be called from multiple UIs and also from code that is independent of UIs (for example, RFC functions, batch jobs, and so on)
- The dependencies are described in more detail later on.

5 Aspects

One main term for the service provider is the “aspect”. An aspect can be described as a specific part of an existing business object. For example, there is the aspect for products, containing the product, product ID, product batch, and so on, or there is the aspect for dates, containing the date fields for the delivery item, for example.

In Enterprise Service Architecture, there are two types of aspects: key aspects and aspects.

Key aspects hold the semantic key of an aspect row, which is not necessarily the syntactical key in the database. Therefore, each aspect must have one associated key aspect. A key aspect is its own key aspect.

The usual naming convention for service providers is:

Table types

• /SCDL/T_SP_K_*	or	/SCWM/T_SP_K_*	Key aspect
• /SCDL/T_SP_A_*	or	/SCWM/T_SP_A_*	Aspect

Structure types

• /SCDL/S_SP_K_*	or	/SCWM/S_SP_K_*	Key aspect
• /SCDL/S_SP_A_*	or	/SCWM/S_SP_A_*	Aspect
• /SCDL/S_SP_D_*	or	/SCWM/S_SP_D_*	Text aspect data
• /SCDL/S_SP_Q_*	or	/SCWM/S_SP_Q_*	Query parameter

Constants

All constants defined to substitute the Enterprise Service Framework are defined in the interface /SCDL/IF_SP_C and /SCWM/IF_SP_C.

Note that /SCWM/IF_SP_C contains the constants for the EWM UIs as well as the constants for the EWM extension of SCDL.

5.1 Example

The data model for the outbound delivery order header contains a 1:n relation to dates (that means one delivery header can have multiple dates like out-of-yard date, delivery date, and so on)

So the corresponding aspect would be

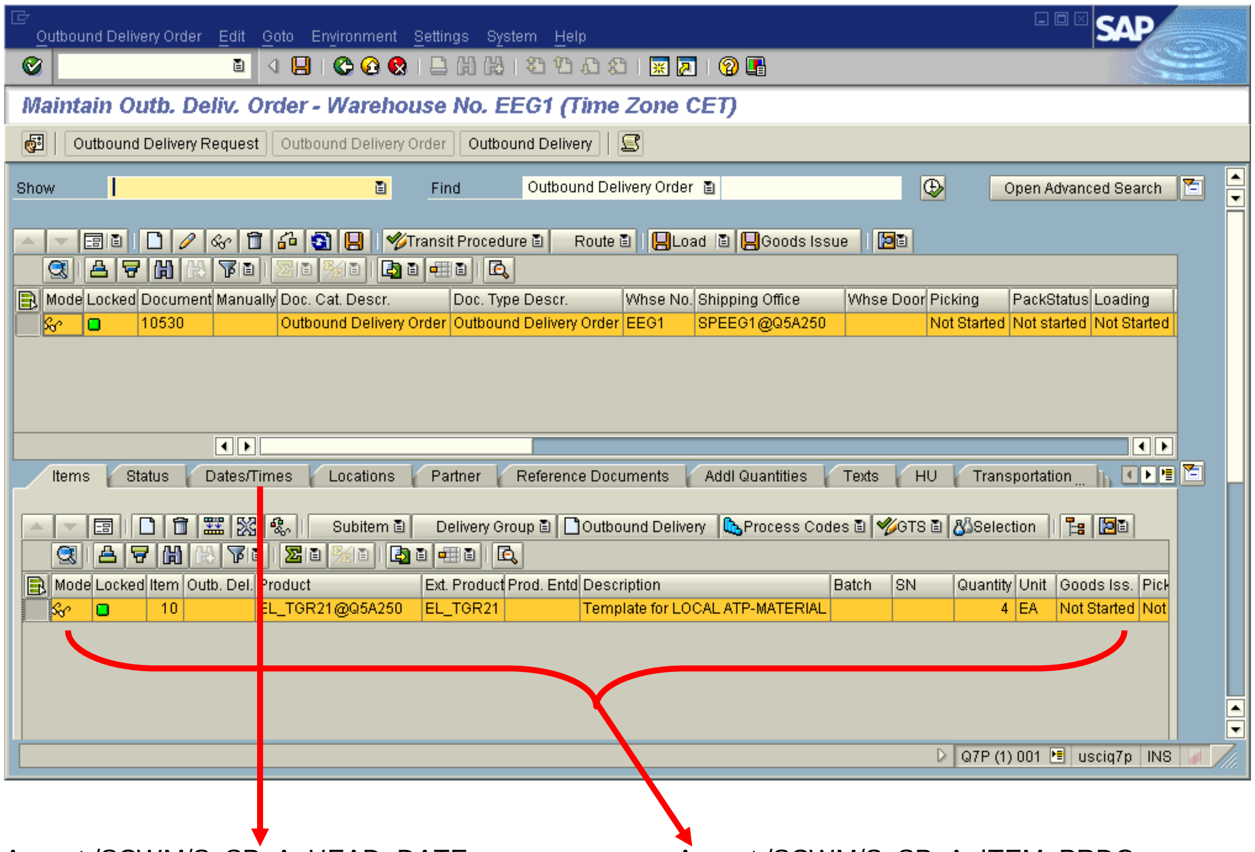
/SCDL/IF_SP_C=> SC_ASP_HEAD_DATE (fixed value ‘/SCDL/S_SP_A_HEAD_DATE')

The structure of the aspect would be	/SCDL/S_SP_A_HEAD_DATE (as in the constant above)
And the table type (as 1:n relation)	/SCDL/T_SP_A_HEAD_DATE

The aspect (structure) itself consists of the header date aspect key and the “data” fields. As the header date aspect is an aspect of the header, it contains the header aspect key and the date keys. The header aspect key identifies the delivery (header), while the date keys identify the date (showing, for example, whether it is an out-of-yard date or a delivery date, and so on).

The following screenshot shows the outbound delivery order UI (transaction /SCWM/PRDO).

The following example shows the relation between the aspects of UI and SCDL.



Maintain Outb. Deliv. Order - Warehouse No. EEG1 (Time Zone CET)

Mode	Locked	Document	Manually	Doc. Cat. Descr.	Doc. Type Descr.	Whse No.	Shipping Office	Whse Door	Picking	PackStatus	Loading
	🟩	10530		Outbound Delivery Order	Outbound Delivery Order	EEG1	SPEEG1@Q5A250		Not Started	Not started	Not Started

Mode	Locked	Item	Outb. Del.	Product	Ext. Product	Prod. Entd	Description	Batch	SN	Quantity	Unit	Goods Iss.	Pick
	🟩	10		EL_TGR21@Q5A250	EL_TGR21		Template for LOCAL ATP-MATERIAL			4	EA	Not Started	Not

Aspect /SCWM/S_SP_A_HEAD_DATE Aspect /SCWM/S_SP_A_ITEM_PRDO

(Note that these are the aspects of the UI service provider)

The aspect for the header dates contains

ASPECT /SCWM/S_SP_A_HEAD_DATE		
.INCLUDE	/SCDL/S_SP_K_HEAD_DATE	Key Aspect: Header Dates/Times
TSTCATEGORY_TXT	/SCWM/SP_TSTCATEGORY_TXT	Date/Time Category
TSTTYPE_TXT	/SCWM/SP_TSTTYPE_TXT	Date/Time Type
TZONE	/SCDL/DL_TZONE	Time Zone
DATE	DATS	Field of type DATS
TIME	/SCWM/SP_TIME	Time
DYNAMIC	/SCDL/DL_DYNAMIC	Indicator: Dynamic and Non-Persistent
DATE_INDICATOR	/SCDL/DL_INDICATOR	Value Determination Indicator

The above key aspect `/SCDL/S_SP_K_HEAD_DATE` contains the following fields:

Aspect /SCDL/S_SP_K_HEAD_DATE		
.INCLUDE	/SCDL/S_SP_K_HEAD	Key Aspect: Header
DOCID	/SCDL/DL_DOCID	Document ID
.INCLUDE	/SCDL/DL_DATE_KEY_STR	Date/Time Key
TSTTYPE	/SCDL/DL_TSTTYPE	Date/Time Type
TST_CATEGORY	/SCDL/DL_TST_CATEGORY	Date/Time Category

So the aspect key for header dates contains the header key aspect (/SCDL/S_SP_K_HEAD) and also the date aspect keys (/SCDL/DL_DATE_KEY_STR). Together both identify one entry (line in the UI) for a delivery header date.

The aspect /SCWM/S_SP_A_HEAD_DATE also contains the “data” information such as date, time, and so on, and also displays only fields such as date/time category short text. This information is displayed in the /SCWM/PRDO UI, for example.

In the delivery SP, the aspects are different. For the same date header, they are as follows:

ASPECT /SCDL/S_SP_A_HEAD_DATE		
.INCLUDE	/SCDL/S_SP_K_HEAD_DATE	Key Aspect: Header Dates/Times
.INCLUDE	/SCDL/DL_DATE_DATA_STR	Date/Time Data Fields
.INCLUDE	/SCDL/DL_DATE_DB_STR	Date/Time, Database Fields
.INCLUDE	/SCDL/DL_TST_STR	Date/Time (Interval)
TZONE	/SCDL/DL_TZONE	Time Zone
TSTFR	/SCDL/DL_TSTFR	Start Date/Time
TSTTO	/SCDL/DL_TSTTO	End Date/Time
DATE_INDICATOR	/SCDL/DL_INDICATOR	Value Determination Indicator
DYNAMIC	/SCDL/DL_DYNAMIC	Indicator: Dynamic and Non-Persistent

This already shows that a conversion between the two aspects is necessary. This is done in the UI SP. The UI SP also “enhances” the aspects by the short text, for example, or does additional checks.

6 Delivery Service Provider Interfaces

The service providers implement multiple interfaces. The following gives a short overview. Details can be found in the design documents

/SCDL/IF_SP1_ACTION	**allows actions**
EXECUTE	Execute action

/SCDL/IF_SP1_ ASPECT	**which allows operations on aspects**
SELECT	Read
INSERT	Insert
UPDATE	Update
DELETE	Delete
SELECT_BY_RELATION	Read by Relation

/SCDL/IF_SP1_LOCKING	**locking service**
LOCK	Lock Aspect Lines
UNLOCK	Unlock Aspect Lines

/SCDL/IF_SP1_QUERY	**Query Interface**
EXECUTE	Executes a QUERY

/SCDL/IF_SP1_TRANSACTION	**Access Interface**
BEFORE_SAVE	Event Before SAVE, Check for Consistency
CLEANUP	Clean Up, Release All Locks
SAVE	Save Accumulated Changes

Important Note!!!
The actions of /SCDL/IF_SP1_TRANSACTION affect not only the delivery object of the DOCCAT of the service provider used, but all other delivery objects. That means if you call the CLEANUP method on a service provider for DOCCAT=PDI, this will also clear DOCCATs for FDO, PDO, ODR, and so on.

/SCDL/IF_SP_QUERY_ID	Query by IDs
QUERY_DOCID	Search for Header (GUID)
QUERY_DOCNO	Search for Header (Number)
QUERY_MAPKEY	Key Allocation
QUERY_DOCFLOW	Search for Document Flow

These methods are implemented very generically. Usually they do not contain specific data types but are of the type STRING, ANY or TABLE. This is necessary because the data types depend on the aspect and/or service provider instance used, for example. The specific data types can easily be found based on the aspect name and the above-mentioned naming conventions.

/SCDL/IF_SP1_QUERY~EXECUTE			
QUERY	Importing	STRING	Name of the query. For example, `/scdl/if_sp_c=>sc_qry_head or /scdl/if_sp_c=>sc_qry_item`
OPTIONS	Importing	/SCDL/S_SP_QUERY_OPTIONS	Query options. For example, read only headers, lock result, sorting
SELECTIONS	Importing	/SCDL/T_SP_SELECTION	Selections
OUTRECORDS	Exporting	INDEX TABLE	Data type depends on QUERY. For example, header aspect (/scdl/t_sp_a_head) is returned for a header query (scdl/if_sp_c=>sc_qry_head)
REJECTED	Exporting	BOOLE_D	Exception indicator

/SCDL/IF_SP1_ASPECT~UPDATE			
ASPECT	Importing	STRING	Aspect to update. For example, /SCDL/IF_SP_C=>SC_ASP_HEAD or /SCDL/IF_SP_C=>SC_ASP_HEAD_PARTYLOC
INRECORDS	Importing	INDEX TABLE	Entries to be changed. Data type must correspond to the above aspect
OUTRECORDS	Exporting	INDEX TABLE	Entries after the change. Data type must correspond to the above aspect. Usually 1:1 to INRECORDS, but could differ if update was not possible or determinations were executed, for example.
REJECTED	Exporting	BOOLE_D	Exception indicator (whole call failed)
RETURN_CODES	Exporting	/SCDL/T_SP_RETURN_CODE	Success and failure information about each input line.

7 Examples of Service Provider Calls

This chapter provides some examples of how the delivery service provider is used in the code.

The following is an example of how a service provider is instantiated and how it is used to read and change data.

Note:

- The description of functions and methods in this document does not mean that these functions/methods are released by SAP or that SAP guarantees that they will be kept stable. SAP may change/remove them without notice. Also, do not use any other methods or parameters from the classes mentioned. For example, `/SCWM/CL_TM` has many other methods. Only use the methods mentioned in this document.
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7.1 Some Method Calls of the Service Provider

```
  DATA:
      lo_sp_                        TYPE REF TO /scdl/cl_sp_prd_out,
      lo_message_box                TYPE REF TO /scdl/cl_sp_message_box,
      ls_action                     TYPE /scdl/s_sp_act_action,
      lt_a_head                     TYPE /scdl/t_sp_a_head,
      lt_a_head_incoterms_out       TYPE /scdl/t_sp_a_head_incoterms,
      lt_a_head_incoterms           TYPE /scdl/t_sp_a_head_incoterms,
      ls_a_head_incoterms           TYPE /scdl/s_sp_a_head_incoterms,
      lt_a_item                     TYPE /scdl/t_sp_a_item,
      lv_rejected                   TYPE boole_d,
      lt_return_codes               TYPE /scdl/t_sp_return_code,
      lt_messages                   TYPE /scdl/dm_message_tab.

  TRY.
    CREATE OBJECT lo_message_box.

    CREATE OBJECT lo_sp
     EXPORTING
*           io_attribute_handler = lo_attribute_handler
            io_message_box       = lo_message_box
*           io_message_handler   = lo_message_handler
            IV_DOCCAT            = /scdl/if_dl_doc_c=>sc_doccat_out_prd
            iv_mode              = /scdl/cl_sp=>sc_mode_classic.
  ENDTRY.


CLEAR ls_sp_k_head.
ls_sp_k_head-docid = '00000000000000168042000000000000'.
append ls_sp_k_head to lt_sp_k_head.

    lo_sp->select( EXPORTING
      inkeys       = lt_sp_k_head
      aspect       = /scdl/if_sp_c=>sc_asp_head
*  OPTIONS
      IMPORTING
      outrecords   = lt_a_head
      rejected     = lv_rejected
      return_codes = lt_return_codes ).

    lo_sp->select_by_relation( EXPORTING
      relation = /scdl/if_sp_c=>sc_rel_head_to_item
      inrecords = lt_sp_k_head
      aspect = /scdl/if_sp_c=>sc_asp_head
*  OPTIONS
      IMPORTING
      outrecords = lt_a_item
      rejected = lv_rejected
      return_codes = lt_return_codes ).
```

Create a service provider instance to handle outbound delivery orders (here DOCCAT = PDO).

The attribute handler is only needed if, for example, fields should be displayed as changeable

Any messages issued are stored in the message box.

Define an order to be read

Read the order (the order BO instance is created with all items and data in the background)

Read the items for the order header. Note that this only returns the items that were read before with a SELECT or QUERY method.

```
* get incoterms
  lo_sp->select(
    EXPORTING
      inkeys       = it_sp_k_head
      aspect       = /scdl/if_sp_c=>sc_asp_head_incoterms
    IMPORTING
      outrecords   = lt_a_head_incoterms
      rejected     = lv_rejected_tmp
      return_codes = lt_return_codes ).
```

Read detail data of an object (here Incoterms of an order header).

```
      lo_sp->lock( EXPORTING
            inkeys = lt_sp_k_head
            aspect = /scdl/if_sp_c=>sc_asp_head
            lockmode  = /scdl/if_sp1_locking=>sc_exclusive_lock
          IMPORTING
            rejected     = lv_rejected
            return_codes = lt_return_codes ).
```

This example shows how the (complete) order is locked

```
    lo_sp->insert( EXPORTING
        inrecords        = lt_a_head_partyloc
        aspect           = /scdl/if_sp_c=>sc_asp_head_partyloc
        relation         = /scdl/if_sp_c=>sc_rel_head_to_partyloc
        relation_inkey   = ls_sp_k_head
    IMPORTING
       outrecords      = lt_a_head_partyloc_out
       relation_outrecord = ls_a_head_out
       rejected          = lv_rejected_tmp
       return_codes      = lt_return_codes ).
```

Here an additional party/location is added on header level. As a header can contain multiple parties/locations (1:n), this uses a relation.

```
  lo_sp->update(
    EXPORTING
      inrecords    = lt_a_head_incoterms
      aspect       = /scdl/if_sp_c=>sc_asp_head_incoterms
    IMPORTING
      outrecords   = lt_a_head_incoterms_out
      rejected     = lv_rejected_tmp
      return_codes = lt_return_codes ).
```

Here a 1:n aspect of the header is updated.

```
    ls_action-action_code = /scdl/if_bo_action_c=>sc_determine.

    lo_sp->execute( EXPORTING
        aspect                = /scdl/if_sp_c=>sc_asp_head
        inkeys                = lt_sp_k_head
        inparam               = ls_action
        action                = /scdl/if_sp_c=>sc_act_execute_action
      IMPORTING
        outrecords            = lt_a_head
        rejected              = lv_rejected_tmp
        return_codes          = lt_return_codes ).
```

Here an action is executed on header level. In this example, the generic action “execute action” is used to execute the BOPF action “determine”

```
* add messages
  IF lv_rejected = abap_true.
    lt_messages = lo_message_box->get_messages( ).
  ENDIF.
```

Get any detailed messages issued during the service provider calls. In the example, this is only done if a major failure occurred (usually RETURN_CODES should also be evaluated)

7.2 A Sample Program to Change a Customer Field

The above code examples do not contain a proper error handling. The return values and parameters should usually be checked after an SP call. Only then should the data be saved. The following sample program shows customer data may be changed.

Note: The program does not contain any checks (such as status checks) if a change of the delivery is allowed, for example. A delivery for which a GI has been posted should usually never be changed, for instance.

In the example, a customer-specific field is changed. It is very dangerous to change any other SAP fields because you usually do not know whether a field change is allowed and, if so, when/how. or the consequences of such a change. For example, if execution has started, changing might lead to problems in the process. The same applies to actions or other methods. For example, the service provider will allow you to change the product or quantity, or delete items. But without knowing the exact effects and consequences of these changes/actions it is very dangerous to use them.

```
REPORT  ZUPDATE_HEADER_EEW_DATA.

* This sample program shows how one an outbound delivery order (ODO)
* a customer-specific field (Z_ZUSATZ) is filled/changed.
* The program does a locking and reading of the data
* it then changes the EEW field
* the program also contains error handling
* It also considers validation errors
* based on if errors occurred or not it saves or rejects (ROLLBACK) the chang
es.
* The program uses the delivery service provider (SP).
* The program is meant to be used as a separate program, so not to be used in
side a BADI or
* other already running programs (as the setting of the warehouse/save/rollba
ck will destroy a running LUW/transaction)

* Note: The program is only for demo purpose. It is not meant for any
* productive usage.


DATA:
    lo_sp                       TYPE REF TO /scdl/cl_sp_prd_out,
    lo_message_box              TYPE REF TO /scdl/cl_sp_message_box,
    lt_a_head                   TYPE /scdl/t_sp_a_head,
    lt_sp_k_head                TYPE /scdl/t_sp_k_head,
    ls_sp_k_head                TYPE /scdl/s_sp_k_head,
    lt_a_head_eew                TYPE /scdl/t_sp_a_head_eew_prd,
    lt_a_head_eew_out            TYPE /scdl/t_sp_a_head_eew_prd,
    ls_sp_action                TYPE /scdl/s_sp_act_action,
    lv_rejected                 TYPE boole_d,
    lv_error_occured            TYPE boole_d,
    lv_validation_error_occured TYPE boole_d,
    lt_return_codes             TYPE /scdl/t_sp_return_code,
    lt_validation_messages      TYPE /scdl/dm_message_tab,
    lt_messages                 TYPE /scdl/dm_message_tab.

FIELD-SYMBOLS:
    <ls_a_head_eew>            TYPE /scdl/s_sp_a_head_eew_prd,
    <ls_messages>             TYPE /scdl/dm_message_str.

* create service provider for processing delivery and and message box
* the service provider is not used here for a UI (so no attribute handler is used)
TRY.
  CREATE OBJECT lo_message_box.

  CREATE OBJECT lo_sp
    EXPORTING
      io_message_box = lo_message_box
      iv_doccat      = /scdl/if_dl_doc_c=>sc_doccat_out_prd
      iv_mode        = /scdl/cl_sp=>sc_mode_classic.
ENDTRY.

* set warehouse that is used
/scwm/cl_tm=>set_lgnum( 'EWMZ' ).


* fill GUID of delivery header
CLEAR ls_sp_k_head.
ls_sp_k_head-docid = '000000000001004428330000000000000'.
APPEND ls_sp_k_head TO lt_sp_k_head.

* try to lock (also creates the delivery instance immediately)
clear lt_return_codes.
clear lv_rejected.
lo_sp->lock( EXPORTING
      inkeys = lt_sp_k_head
      aspect = /scdl/if_sp_c=>sc_asp_head
      lockmode  = /scdl/if_sp1_locking=>sc_exclusive_lock
    IMPORTING
      rejected     = lv_rejected
      return_codes = lt_return_codes ).

* check if any error occurred
READ TABLE lt_return_codes TRANSPORTING NO FIELDS WITH KEY failed = abap_true.
IF sy-subrc = 0 OR lv_rejected = abap_true.
  lv_error_occured = abap_true.
ENDIF.

* if no error so far...
if lv_error_occured = abap_false.
* select customer fields EEW for the delivery
  clear lt_return_codes.
  clear lv_rejected.
  lo_sp->select( EXPORTING
    inkeys       = lt_sp_k_head
    aspect       = /scdl/if_sp_c=>SC_ASP_HEAD_EEW_PRD
*   OPTIONS
    IMPORTING
    outrecords   = lt_a_head_eew
    rejected     = lv_rejected
    return_codes = lt_return_codes ).

* check if any error occurred
  READ TABLE lt_return_codes TRANSPORTING NO FIELDS WITH KEY failed = abap_true.
  IF sy-subrc = 0 OR lv_rejected = abap_true.
    lv_error_occured = abap_true.
  ENDIF.

  loop at lt_a_head_eew ASSIGNING <ls_a_head_eew>.
* now fill the customer specific field Z_ZUSATZ
    <ls_a_head_eew>-Z_ZUSATZ  = '1'.
  endloop.
endif.


* if no error so far...
if lv_error_occured = abap_false.
```

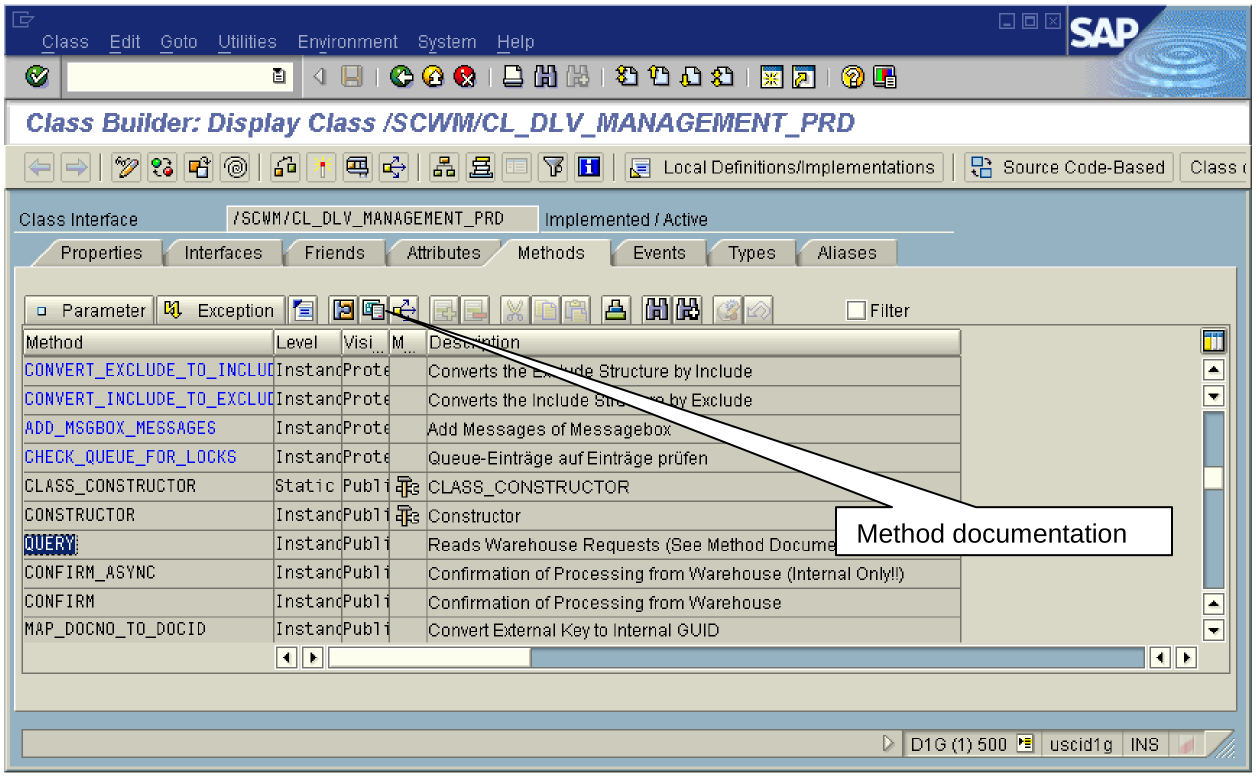
```
* update customer fields EEW for the delivery
  clear lt_return_codes.
  clear lv_rejected.
  lo_sp->update( EXPORTING
    inrecords    = lt_a_head_eew
    aspect       = /scdl/if_sp_c=>SC_ASP_HEAD_EEW_PRD
*   OPTIONS
    IMPORTING
    outrecords   = lt_a_head_eew_out
    rejected     = lv_rejected
    return_codes = lt_return_codes ).

* check if any error occurred
  READ TABLE lt_return_codes TRANSPORTING NO FIELDS WITH KEY failed = abap_true.
  IF sy-subrc = 0 OR lv_rejected = abap_true.
    lv_error_occured = abap_true.
  ENDIF.

endif.


* if no error so far...
if lv_error_occured = abap_false.

* validate the delivery (also triggers determinations)
* this is an optional step. It is assumed in this example that if validation errors occur
* the delivery should not get saved.
* If also deliveries with validation errors (blocked status) should get saved,
* the error handling has to distinguish between validation errors and other errors
* validation error messages are in the message box and are not returned as REJECTED or RETURN_COD
ES

  ls_sp_action-action_code = /scdl/if_bo_action_c=>sc_validate.
  clear lt_return_codes.
  clear lv_rejected.
  lo_sp->execute( EXPORTING
      aspect               = /scdl/if_sp_c=>sc_asp_head
      inkeys               = lt_sp_k_head
      inparam              = ls_sp_action
      action               = /scdl/if_sp_c=>sc_act_execute_action
    IMPORTING
      outrecords           = lt_a_head
      rejected             = lv_rejected
      return_codes         = lt_return_codes ).

* check if any error occurred
  READ TABLE lt_return_codes TRANSPORTING NO FIELDS WITH KEY failed = abap_true.
  IF sy-subrc = 0 OR lv_rejected = abap_true.
    lv_error_occured = abap_true.
  ENDIF.
endif.


* get all messages that occurred. Get the always as validation messages
* are also of interest
lt_messages = lo_message_box->get_messages( ).

* build two tables, one with validation messages and one with "real" errors
loop at lt_messages ASSIGNING <ls_messages> where consistency_message = abap_true.
  append <ls_messages> to lt_validation_messages.
  delete lt_messages.
endloop.

loop at lt_messages TRANSPORTING no fields where msgty ca 'EAX'.
  lv_error_occured = abap_true.
  exit.
endloop.

loop at lt_validation_messages TRANSPORTING no fields where msgty ca 'EAX'.
  lv_validation_error_occured = abap_true.
  exit.
endloop.


* now save delivery dependant on if error occurred or not.
* here validation errors are also considered. This depends on the business logic.

if lv_error_occured = abap_false and lv_validation_error_occured = abap_false.
  clear lt_return_codes.
  clear lv_rejected.
  lo_sp->save( IMPORTING rejected = lv_rejected ).

* check if during save serious errors occurred.
  IF lv_rejected = abap_true.
    lv_error_occured = abap_true.

* if errors occurred then get the messages again
    lt_messages = lo_message_box->get_messages( ).
  ENDIF.
endif.

* now do a commit (here with wait) or rollback dependant on if errors occurred or not
if lv_error_occured = abap_false and lv_validation_error_occured = abap_false.
  commit work and wait.
  /scwm/cl_tm=>cleanup( ). "clear buffers and release locks
else.
  rollback work.
  /scwm/cl_tm=>cleanup( ). "clear buffers and release locks
endif.


* now for example, messages could be displayed
```

8 Alternative Ways to Access the Delivery Data

In some cases, an application might only want to read several different items of data from a delivery. In this case, the use of the service provider might result in lengthy code because each aspect needs to be read separately.

Therefore the class `/SCWM/CL_DLV_MANAGEMENT_PRD` offers a `QUERY` method which allows delivery data to be read in a fast and also convenient way. Documentation of the `QUERY` method can be found in the method documentation in the system (use transaction SE24, for example). The screenshot below shows how to display the documentation.

Note that you must not use any of the other methods of this class! Neither must you use the parallel processing option of the QUERY method.



Class Builder: Display Class /SCWM/CL_DLV_MANAGEMENT_PRD

Class Interface /SCWM/CL_DLV_MANAGEMENT_PRD Implemented / Active

Method	Level	Visi…	M…	Description
CONVERT_EXCLUDE_TO_INCLUD	Instanc	Prote		Converts the Exclude Structure by Include
CONVERT_INCLUDE_TO_EXCLUD	Instanc	Prote		Converts the Include Structure by Exclude
ADD_MSGBOX_MESSAGES	Instanc	Prote		Add Messages of Messagebox
CHECK_QUEUE_FOR_LOCKS	Instanc	Prote		Queue-Einträge auf Einträge prüfen
CLASS_CONSTRUCTOR	Static	Publi		CLASS_CONSTRUCTOR
CONSTRUCTOR	Instanc	Publi		Constructor
QUERY	Instanc	Publi		Reads Warehouse Requests (See Method Docume
CONFIRM_ASYNC	Instanc	Publi		Confirmation of Processing from Warehouse (Internal Only!!)
CONFIRM	Instanc	Publi		Confirmation of Processing from Warehouse
MAP_DOCNO_TO_DOCID	Instanc	Publi		Convert External Key to Internal GUID