SAP Data Warehouse Cloud content

Documentation

Release Date: Nov 14th, 2022

Last Update: Nov 14th, 2022

EXTERNAL

Table of Contents

1 GENERAL REMARKS

This documentation covers the following topics:

- Chapter 3 describes how to get the content and install it in the system.
   As of the Q4 2020 release, SAP Analytic Cloud content corresponding to the SAP Data Warehouse Cloud models is provided in separate packages in the SAP Analytic Cloud Content Network. You need to import and setup both SAP Data Warehouse Cloud and SAP Analytics Cloud packages for an End-2-End content experience. Please read this chapter carefully, even if you have installed content before.

- Chapter 4 describes the detailed documentation of the Line(s) of Business (LoB) and Industries is described in chapter 5. Cross Application content is described in chapter 6.

- Find information about known issues and their resolution in chapter 7.

Further information is available on the following web sites:

- SAP Community blog,
- the product web site
- find an overview of all content packages in the SAP Business Content Center.

This documentation assumes that the reader is familiar with SAP Data Warehouse Cloud. It does not substitute SAP Data Warehouse Cloud documentation, which can be found here: Help Portal: SAP Data Warehouse Cloud.

The content does not include any predefined roles or permissions.

2 RELEASE NOTES SAP DATA WAREHOUSE CLOUD CONTENT

Here you can find an overview of the content per Content release.

2.1 CONTENT INNOVATION Q2 2020 – JUNE 3, 2020

- Industry Content for Retail: SAP Consumer Sales Intelligence

2.2 CONTENT INNOVATION Q4 2020 – NOVEMBER 15, 2020

- Financial analytics dashboard for SAP Analytics Cloud
- Industry Content for Automotive (AUT): Responsive Supply Network, Sales and Inventory
- Industry Content for Consumer Goods (CP): Revenue Growth Management - Foundation
- Industry Content for Utilities (UTL): Meter to Cash

2.3 CONTENT INNOVATION Q1 2021 – FEBRUAR 22, 2021

- SAP Ariba: Enterprise Analytics for Procurement
- Finance for SAP S/4HANA Cloud
- Statistical Process Control (SPC) Toolkit
- Telecommunication: Customer Value Management

2.4 CONTENT INNOVATION Q2 2021 – MAY 31, 2021

- SAP Ariba: Spend Analysis
- Financial Analytics Dashboard for SAP Analytics Cloud (Updates)
- SAP Retail: POS Analysis for Retail
- SAP Supply Chain Management: Life Sciences

2.5 CONTENT INNOVATION Q1 2022 – FEBURARY 21, 2022

- Intelligent Real Estate
- Sales and Distribution: Sales Analysis for SAP S/4HANA
- Sustainability Control Tower

2.6 CONTENT INNOVATION Q2 2022 – MAY 21, 2022

- Automotive (AUT): Responsive Supply Network, Sales and Inventory (update)
- Consumer Goods (CP): Revenue Growth Management – Foundation (update)
- Intelligent Real Estate

- Sales and Distribution:
    - Sales Analysis for SAP S/4HANA (update)
    - Sales Conditions for SAP S/4HANA (new)
    - Sales Quotations for SAP S/4HANA (new)
- Supply Chain Management: Life Sciences (Update)

2.7 **CONTENT INNOVATION Q3 2022 – AUG 22, 2022**

- Automotive (AUT): Responsive Supply Network, Sales and Inventory (update)
- Business Networks - Value Analytics (new)
- Consumer Goods (CP): Revenue Growth Management – Foundation (update)
- Intelligent Real Estate (update)
- Sales and Distribution (update)
- Solution Order Analysis (new)
- Supply Chain Management: Life Sciences (update)

2.8 **CONTENT INNOVATION Q4 2022 – NOV 15, 2022**

- SAP Business Networks - Value Analytics
- Intelligent Real Estate
- Service Analysis for SAP S/4HANA
- Service Analysis for SAP S/4HANA Cloud

3 INSTALL AND HOW TO USE CONTENT

3.1 GENERAL INFORMATION

Business content is available from the Content Network. Please refer to the online documentation for details:
Importing from the Content Network.

The first SAP and Partner content packages released in June 2020 (Content Innovation 1) contained both SAP Data Warehouse Cloud objects and the SAP Analytics Cloud stories (as part of a Space) in one content package.
With the release of November 2020 (Content Innovation 2), this has changed:

To simplify and optimize the SAP Analytics Cloud to SAP Data Warehouse Cloud connectivity, an **SAP Data Warehouse Cloud live connection** with the name "**SAPDWC**" is used from now onwards. This connection needs to be created manually in the SAP Analytics Cloud system. Read the SAP Analytics Cloud documentation if you need help to create a SAP Data Warehouse Cloud live data connection.

Consequently, SAP Analytic Cloud content is delivered in separate packages starting with Q4 2020. This adds the flexibility to import the content in any SAP Analytic Cloud system of choice and connect to any Data Warehouse Cloud system of choice.
There will no longer be content packages, that include SAP Analytics Cloud content and SAP Data Warehouse Cloud content, instead two separate packages will always exist in this optimized setup. Both packages should always be installed together for an end-to-end experience.
Please understand that new or updated package will only be support for the optimized setup going forward.

The SAP Analytic Cloud content and the SAP Data Warehouse Cloud content can be installed independently. Before you can run the SAP Analytics Cloud stories, a live connection to SAP Data Warehouse Cloud has to be setup. This is a one-time effort for each SAP Analytics Cloud system.

Follow the SAP Analytics Cloud documentation how to setup the live connection between SAP Analytics Cloud and SAP Data Warehouse Cloud here. (SAP Analytics Cloud Help > Connections > Live Data Connections > Live Data Connections to SAP Data Warehouse Cloud)

3.2 SETUP INFORMATION

Before you can import any SAP or partner content package, the space into which the content will imported, needs to be created upfront. The same holds true for the connections to any source system as well as the openSQL schemas.

The description of each content package also contains the necessary information so that no important task that is required before importing a content package will be missed.

SAP Content is always imported into the space SAP_CONTENT. Thus, please create a space with the technical name "**SAP_CONTENT**" once before you can import any content package. Please use the description "SAP Content". In addition, you need to assign the user who will import the content to the space SAP_CONTENT.
Each partner content is imported into a dedicated space, please follow the instructions at package level in the Content Network to create the required space. Do not forget to assign the user who will import the content to the partner content space.

For the creation of the connections or openSQL schemas, follow the instructions at package level.
In case further activities are required, they will be either mentioned in the Content Network for each package or as part of the content documentation.

3.3 **UPDATE EXISTING CONTENT**

 Whenever using the “Overwrite” option during the content import, this could result in unintended loss of customer enhancements, customer data or changes to content objects. Should you have imported content before, some or all objects included in the package-to-be-installed might already exist in your system. Content packages are not free of overlap, so content objects may be delivered in more than one package. They might get overwritten accidentally even if you choose a different package. Please read the following paragraph carefully to avoid accidental loss of customer enhancements and data:

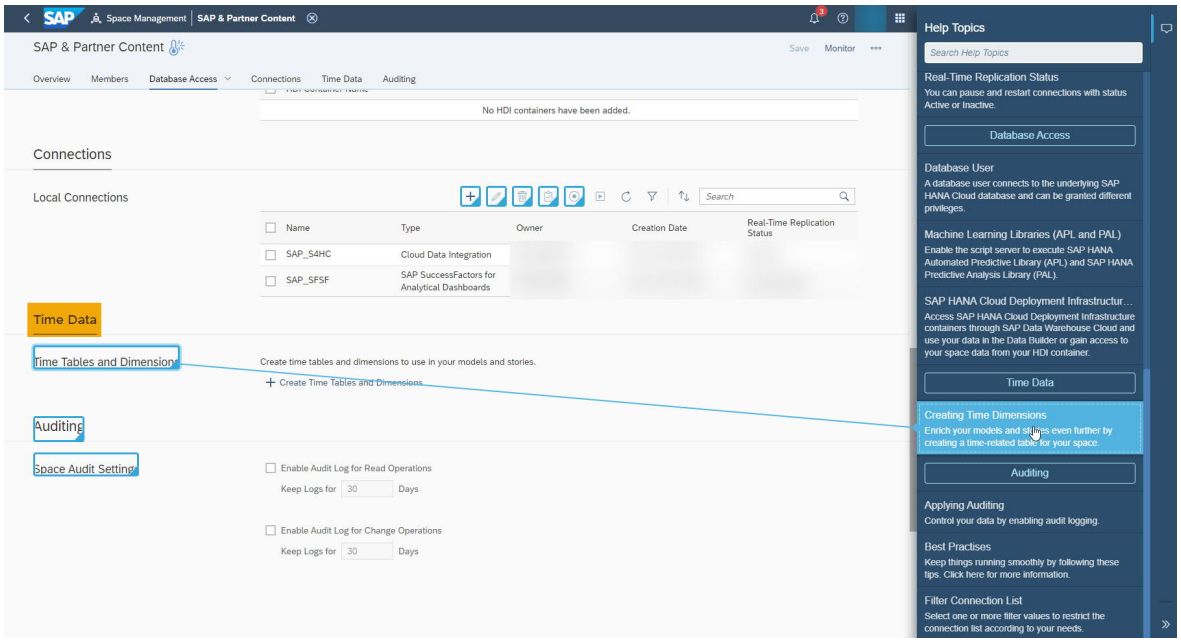
If you have a second tenant that you do not use productively, e.g. for development or testing, you may check the new content first to ensure it fulfils your needs before moving it to the productive tenant.

It is recommended to copy the artefacts, before you change or enhance them. Typically, references to other objects will stay in place. A copy will still reference the same objects as the original: A copy of a view will still refer to the original objects (views, remote tables, tables).

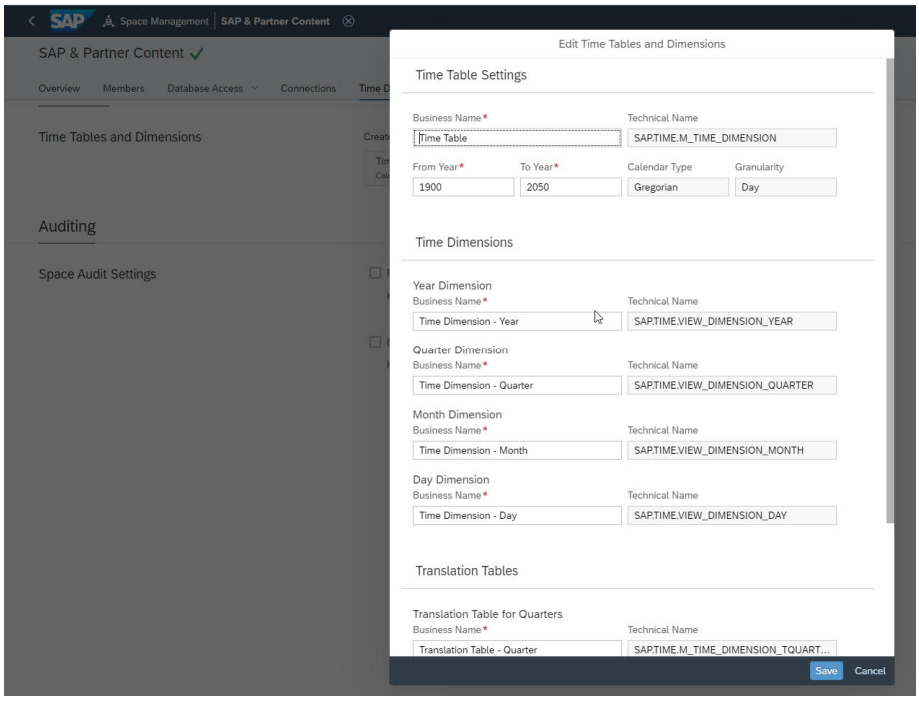
3.4 ACTIVATE TIME DATA IN THE SAP CONTENT SPACE

Before importing any content package, the Time Data needs to be setup in the SAP & Partner Content Space (SAP_CONTENT).

Please follow the SAP Data Warehouse Cloud documentation “Create Times Dimension” here or use the In-App Help directly in SAP Data Warehouse Cloud in case further assistance is required:



As a result, the Time Tables and dimension are created as follows:



3.5 SETUP CURRENCY CONVERSION

Content packages also come with in-built currency conversion. The currency conversion objects and the sourcing of these objects need to be setup in the SAP_CONTENT space before the content is imported.
Currently the following content uses currency conversion.

- Sales and Distribution: Sales Analysis
- Business Solution Order
- Automotive
- Consumer Products
- Supply Chain Management
- Intelligent Real Estate

Please follow the SAP Data Warehouse Cloud documentation Enabling Currency Conversion with TCUR* Tables and Views accordingly. You may load the currency from any source or system. If you use a SAP S/4HANA Cloud system, you can directly use the generated objects and Data Flows.

While the source system for the currency information does not matter, the upcoming description and information assumes, that you have used the SAP S/4HANA system (connection SAP_CONTENT_SAP4H) as the source system. If your source system is an SAP S/4HANA Cloud system, the client has a fixed value (100).
As the client in any customer SAP S/4HANA system differs, but the content should work universally, the client ‘000’ is used in the context of the currency conversion.
During the setup of the currency conversion tables and views, the client is taken from the setting in the connection. This now needs to be adjusted to ‘000’ for the content to work, The following two options exist:

1. change the client that is used in the dataflows to '000' OR
2. change the client in all currency conversion columns of the package

For option 1.) proceed as follows:

In the projection node of each generated dataflow, change the field CLIENT to the expression '000' and deploy the dataflow again. Run the Data Flow to load the data from your source system.
These are Data Flows that need to be changed:

- SAP.CURRENCY.DATAFLOW.TCURV
- SAP.CURRENCY.DATAFLOW.TCURN
- SAP.CURRENCY.DATAFLOW.TCURR
- SAP.CURRENCY.DATAFLOW.TCURF
- SAP.CURRENCY.DATAFLOW.TCURC
- SAP.CURRENCY.DATAFLOW.TCURW
- SAP.CURRENCY.DATAFLOW.TCURT

For option 2.) follow the instructions for the affected content in the respective chapter.

Additional consideration, if more than one source system exists
If you have more than one source system connected to your SAP Data Warehouse Cloud system and want to load the currency rates from different systems or clients, please consider the following:
If the currency rates (and the other currency tables), which are common in all systems, are the same, but one system has e.g. more currencies rates , then you should load using the generated data flows from the different source systems into the same destination client ‘000’ in SAP Data Warehouse Cloud (as described in option 1)

If the currency rates are different and this should be reflected in your SAP Data Warehouse Cloud e.g. because you have special currency rates for planning in your different source systems, then you can load the currency rates via the generated data flows with the original destination client (which was derived from the connection for source system). This results in currency rates separated through the client information in the currency tables. As a result, that depending on which currency rates you want to use, you have to specify the respective client in the currency calculation columns used in the views of this package (as described in option 2).

4 LINES OF BUSINESS (LOB)

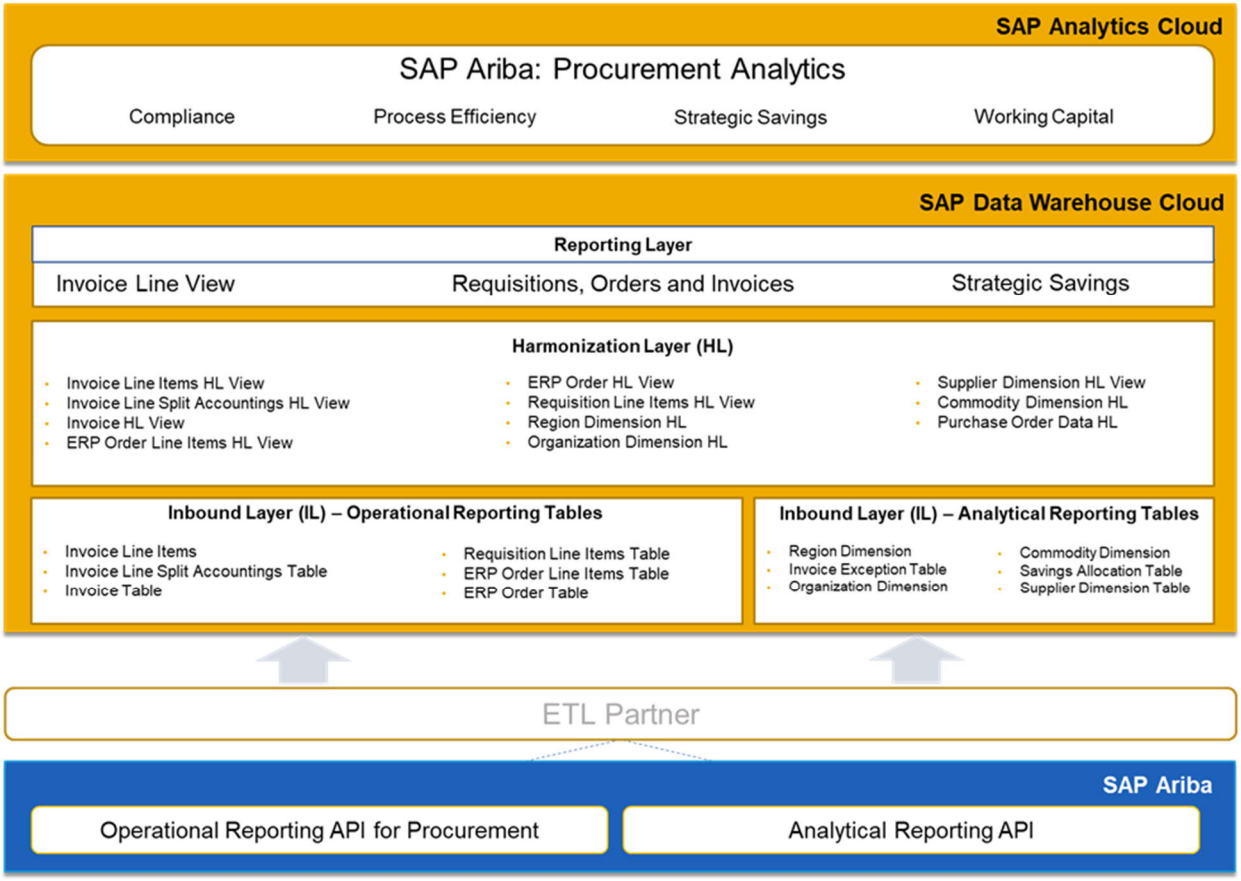
The industry and cross-application packages offer selective access to line-of-business information already to the degree that this is required for the scenarios to work. Here in particular finance information from SAP S/4HANA Cloud and HR information from SuccessFactors are available.

The line-of-business connections, e.g. to SAP S/4HANA Cloud or SAP SuccessFactors, and the data models on top may be re-used even without an industry or cross-application focus.

4.1 SAP ARIBA: ENTERPRISE ANALYTICS FOR PROCUREMENT

The Enterprise Analytics for Ariba Procurement package is one integrated solution that provides analytics based on Ariba Data. It measures Compliance, Sourcing Savings, Process Efficiency and Working Capital to reduce spend by following established procurement processes, payment terms and the most efficient processing methods within an organization.

4.1.1 *Architecture and Abstract*



The SAP Analytics Cloud stories are created using 3 SAP Data Warehouse Cloud models:

- Invoice Line View (SAP_PROC_RL_INVOICES)
- Strategic Savings (SAP_PROC_RL_STRATEGIC_SAVINGS)
- Requisitions Orders and Invoices (SAP_PROC_RL_REQ_ORD_INV)

These views are built on top of Ariba tables brought in by an ETL Partner. In this particular package, SAP Ariba REST APIs are accessed by these ETL platforms and brought to Data Warehouse Cloud as Database User tables.

4.1.2 *Stories*

The following story is included in the content package:

SAP__PROC_PROCUREMENT_ANALYTICS

Please navigate to the SAP Analytics Cloud content documentation for details.

4.1.3 *Models*

Three layers are used for all of objects in this package:

Inbound Layer (IL) Objects

These objects represent tables that are brought into SAP Data Warehouse Cloud. Each table represents data related to a specific Ariba template.

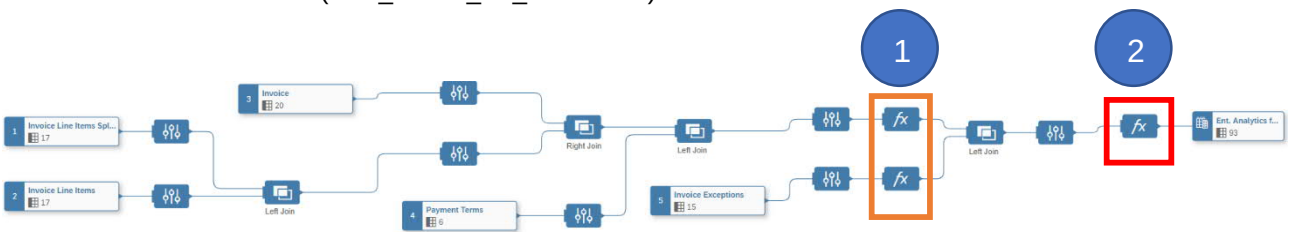
Harmonization Layer (HL) Objects

These objects join together tables brought into SAP Data Warehouse Cloud but are not directly used on the dashboard/reporting level. For example, the Commodity HL view combines commodities found on the Orders table and joins it with the Commodity Dimension table from Ariba.

Reporting Layer (RL) Objects

These objects are meant for use on a reporting/dashboard level. In this package, the SAP Analytics Cloud story is using these RL objects to build charts and tables. These RL objects are created by connecting 2 or more IL or HL objects. The data model applies different joins between tables, calculations, and data harmonizing steps to make it ready for use on SAP Analytics Cloud.

4.1.3.1 Invoice Line View (SAP_PROC_RL_INVOICES)



Invoice Line View model is used directly in the SAP Analytics Cloud story. It builds from 4 invoice related sources, and a payment terms table. Combining these tables together adds additional attributes to each invoice.

Calculations in (1) are for trimming and concatenating text strings to allow for joins. I.e. for invoice names, ID's and source system names.

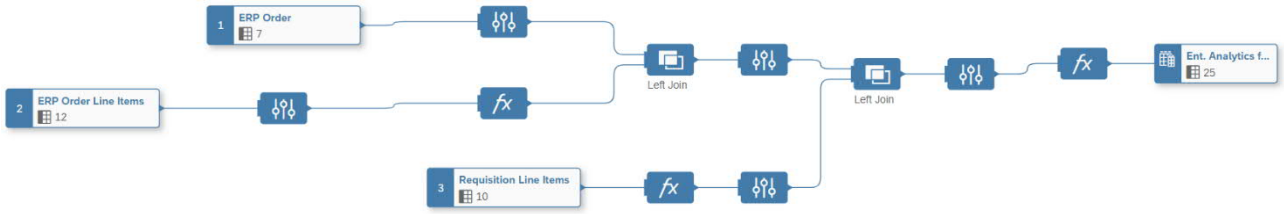
Some KPI's are calculated here at the view level (2):

- PO and Non-PO Spend
- Invoice Due dates
- Discount Days
- Potential Discounts
- On and Off Contract Spend & Invoice Counts
- Compliant and Non-Compliant Spend

4.1.3.2 Strategic Savings - SAP_PROC_RL_STRATEGIC_SAVINGS

The Strategic Savings model is used directly on the SAP Analytics Cloud story. This view uses the Savings Allocation table from Ariba. Using the "Associations" feature in Data Warehouse Cloud, it connects to various dimension tables i.e. Region, Organization and Cost Centers. These data tables have a hierarchy structure that allows users to perform drill-down analysis. i.e. within organizational groups in the company.

4.1.3.3 Orders and Requisitions - SAP_PROC_HL_ORDERS_AND_REQS



The Orders and Requisitions view is not directly in the SAP Analytics Cloud story. It acts as an intermediary model that performs the joins and calculations between tables. In this model, Order tables and Requestions are joined.

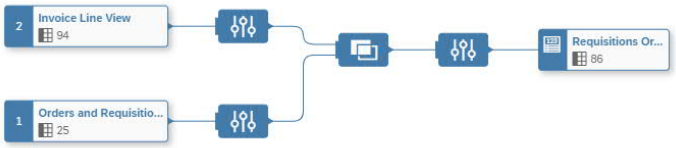
Calculations for Data Harmonization:

- Date conversions
- Concatenations for order numbers

KPI Calculations:

- Order Count
- Order Line Count

4.1.3.4 Requisitions Orders and Invoices - SAP_PROC_RL_REQ_ORD_INV

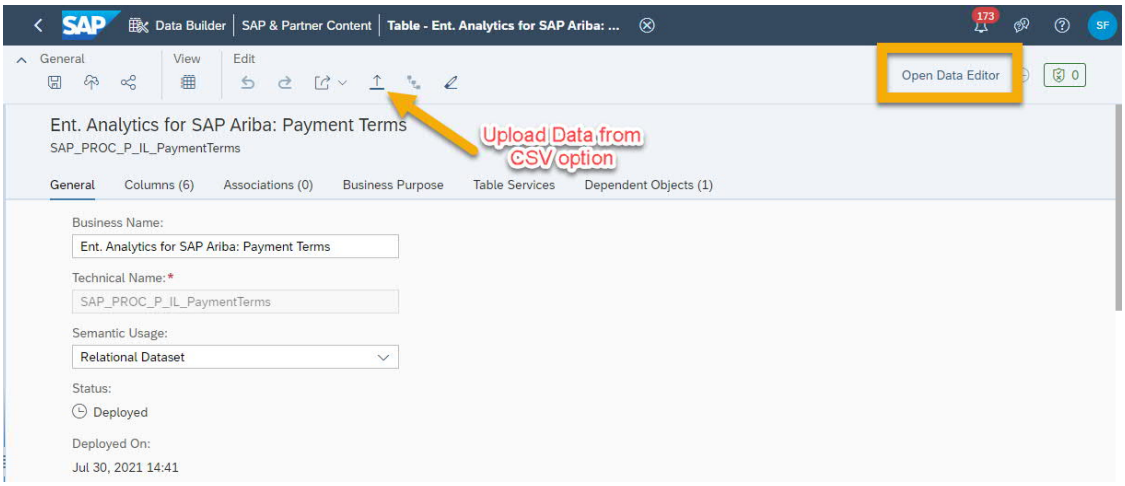


The Requisitions, Orders and Invoices model is used directly on the SAP Analytics Cloud story. This view joins the Invoice Line View, with the Orders and Requisitions view.

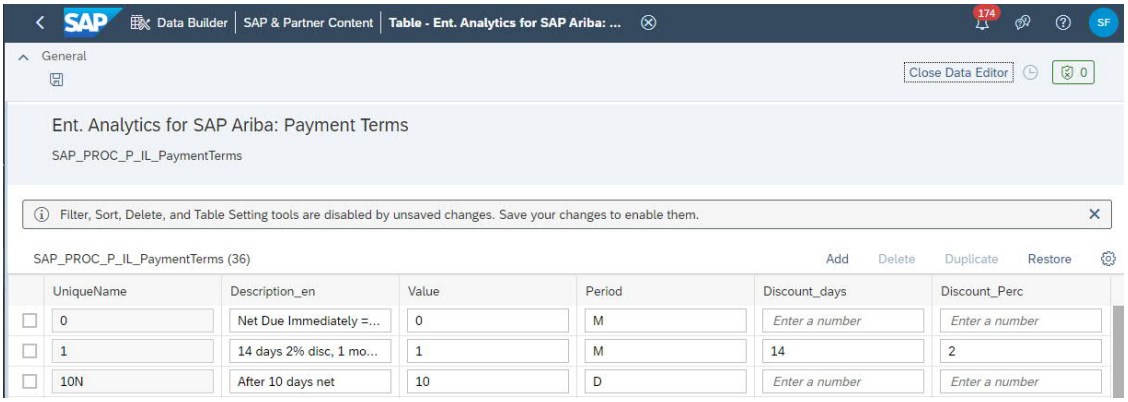
4.1.4 *Setup Instructions:*

1. **Creating / Uploading a Payment Terms table**

1. Open the **Payment Terms** table in the Data Builder.



2. Use the data editor to add each individual payment term record to the table.



3. Alternatively, you can use the **Upload Data from CSV option**. To do this, prepare a payment terms CSV file with the following columns:

Column Name	Description	**Example**
Description_en	Text description for the payment term	60 days NET from Invoice Receipt
UniqueName	Payment terms ID used in your Ariba system	NT60
Value	Days (or months) to pay invoice	60
Period	Specify period in Days (D) or Months (M)	D
Discount_days	Days to qualify as early payment (if applicable)	10

Discount_Perc	Early payment discount % (If applicable)	2

CSV Table example:

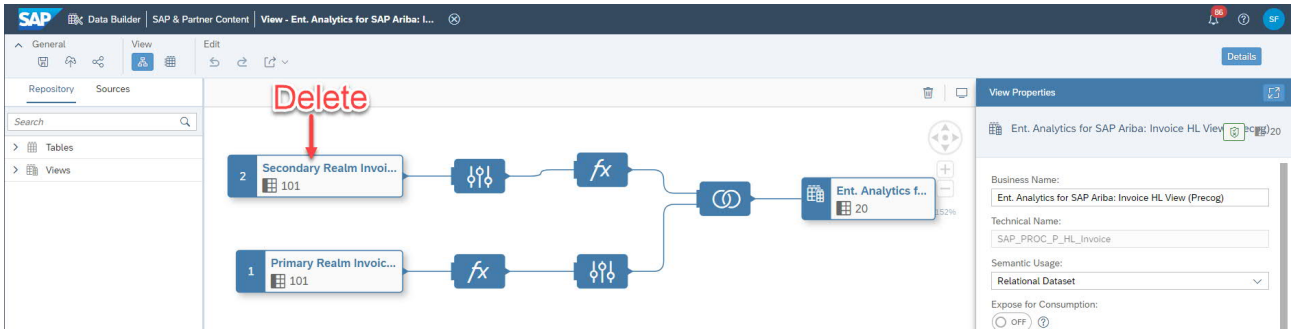
Description_en	UniqueName	Value	Period	Discount_days	Discount_Perc
Net Due Immediately = Paid @ Net 5	0	0	M		
14 days 2% disc, 1 month net	1	1	M	14	2
14 days 2% cash disc., 60 days	2	2	M	14	2
5 days NET from Invoice Receipt	5	5	D		
7 days 2% disc, 15 days net	15		D	7	2
After 30 days net	30	30	D		
After 10 days net	10N	10	D		
Within 2 days from invoice date, due net	2D	2	D		
11 days 2%, net 30 from invoice receipt	2NT10	30	D	10	2
Within 3 days from invoice date, due net	3D	3	D		
Within 5 days from invoice date, due net	5D	5	D		
30 days NET from Invoice Receipt	NT30	30	D		

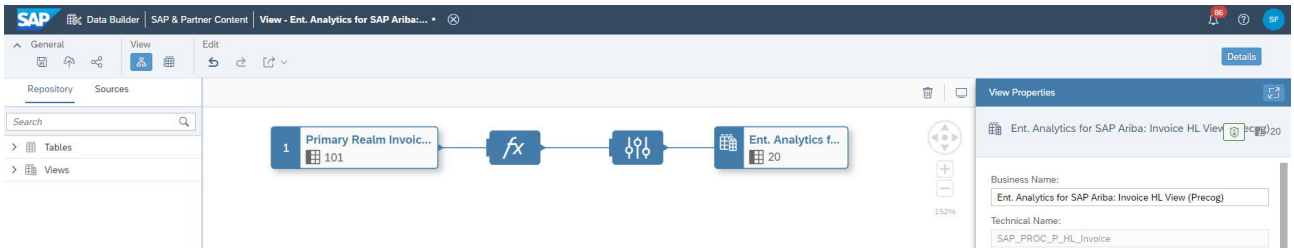
4.1.5 *Configuration for Single Realm Ariba*

The data models in this content package are designed to be compatible with both single and dual realm Ariba systems. For single-realm Ariba systems, we need to delete portions of the HL views listed below.

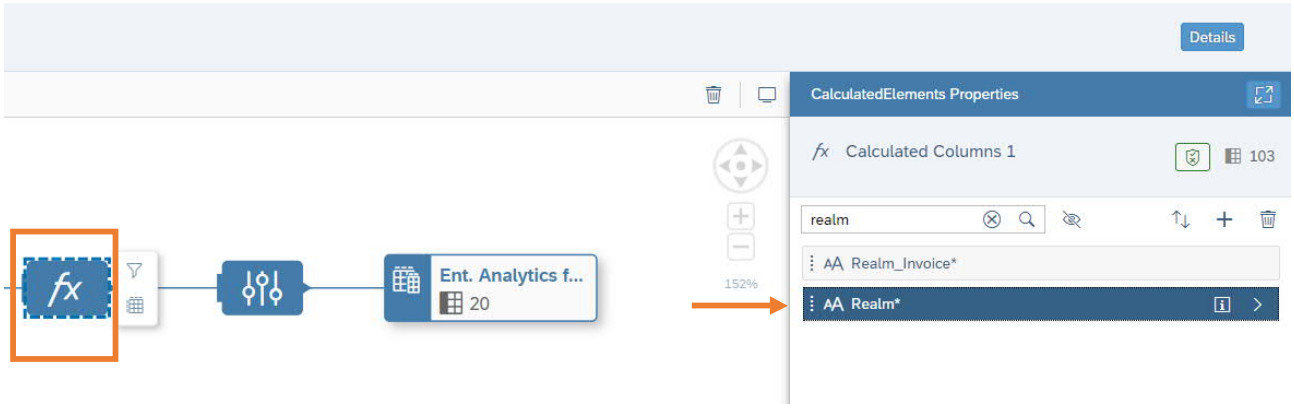
Invoice (HL)	ERP Order (HL)	Requisition Line Items (HL)
Invoice Line Items (HL)	ERP Order Line Items (HL)	
Invoice Line Items Split Accountings (HL)		

1. Open the HL views listed above, in the SAP Data Warehouse Cloud Data Builder.
2. Delete the object labelled as “Secondary Realm”. This will remove the Projection, Calculation, and Union nodes that are linked to it as well.

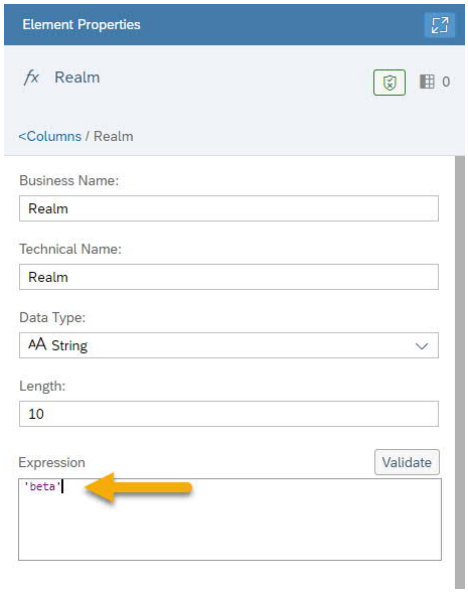




3. Open the Calculation node in the HL model



4. Find the Realm column and modify the expression to match the realm name in your Ariba system. Ensure that the text is enclosed in single quotations.



5. Save and deploy the HL view
6. Repeat these steps for each of the 5 HL views listed above.

4.1.6 *Configuration for 2 Realm Ariba*

The data models in this content package are designed to be compatible with both single and dual realm Ariba systems. For dual-realm Ariba systems, we need to add these

secondary realm tables to our data models and remap columns as necessary. The HL views listed below need to be modified:

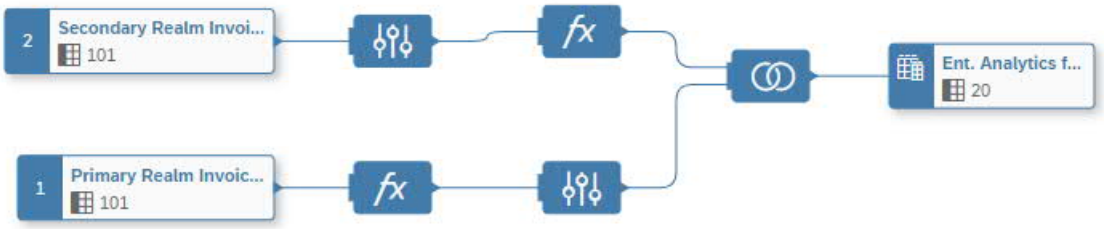
Invoice (HL)	ERP Order (HL)	Requisition Line Items (HL)
Invoice Line Items (HL)	ERP Order Line Items (HL)	
Invoice Line Items Split Accountings (HL)		

Prerequisite step:

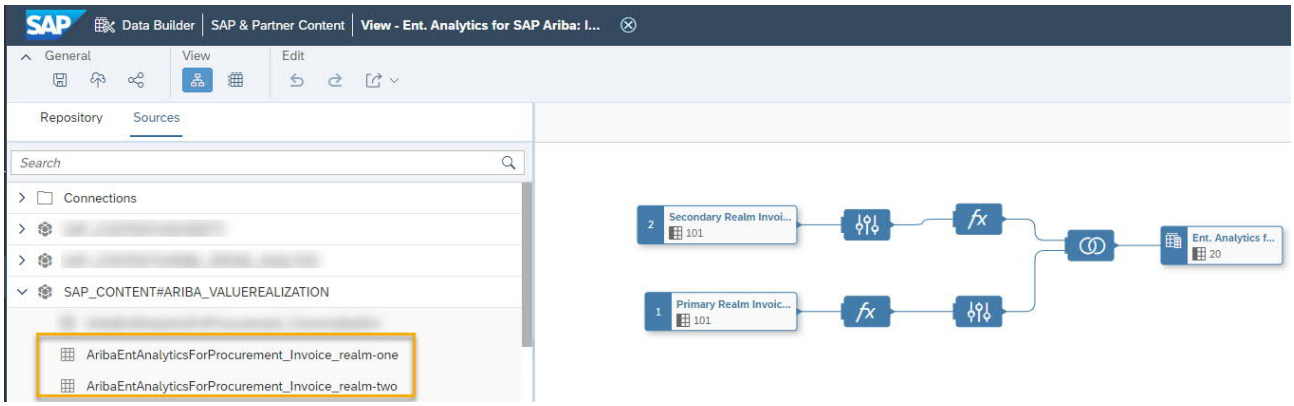
Ensure that tables from both Ariba realms have been loaded by the ETL partner to SAP Data Warehouse Cloud with names that identify each realm.

Adding both realms to HL Views

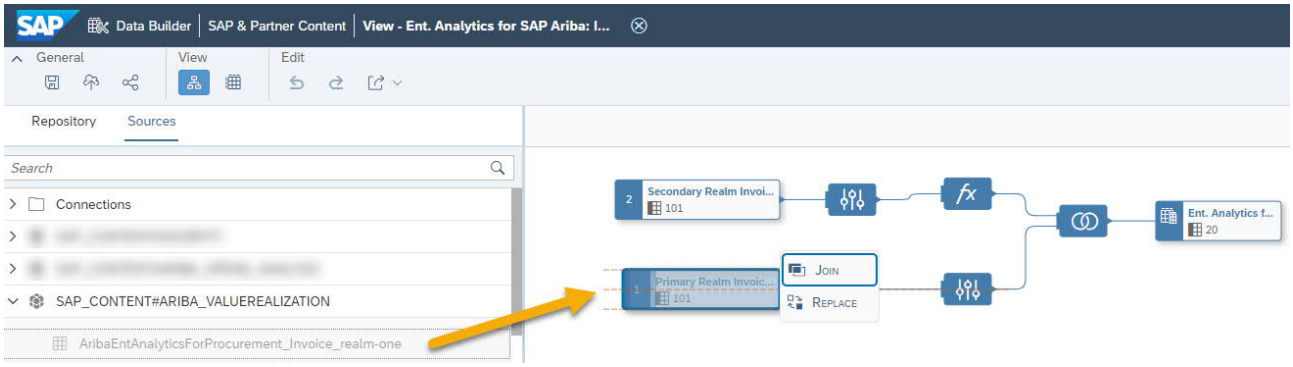
1. Open the HL views listed above in the Data Builder. In these HL views, there is a table object for each Ariba realm.



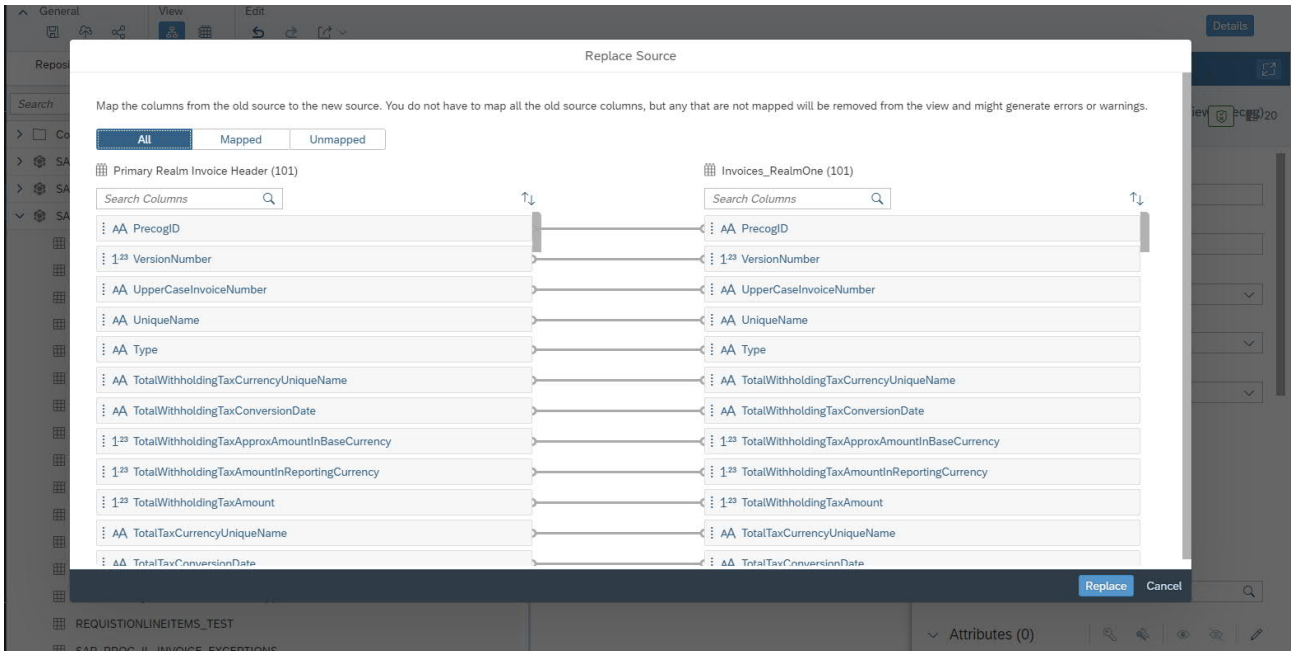
2. In the left panel under Sources, open the SAP_CONTENT#VALUEREALIZATION database user dropdown, and the tables will appear. In the example case below, we are altering the Invoice (HL) view, using the AribaEntAnalyticsForProcurement_Invoice table. Two versions of this table have been loaded by my ETL partner and are labelled “realm-one” and “realm-two”



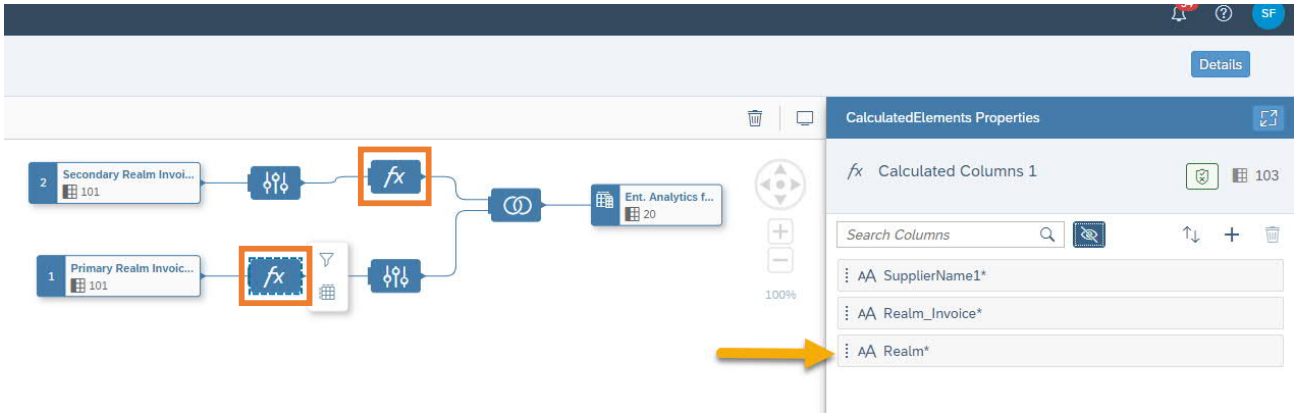
3. Drag each table from the **Sources** panel and hold it over the existing tables in the HL view. Select **Replace** in the pop up. Type in a business name and technical name and press Import/Deploy.



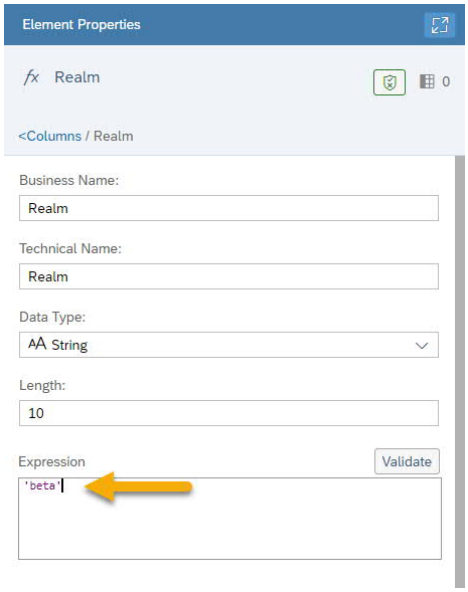
4. Next, it will prompt you to remap columns if necessary. Once finished, press **Replace**. Repeat steps 3 and 4 for the table from your second Ariba realm.



5. Open the calculation node in the HL view,



6. Find the **Realm** column and modify the expression to match the realm name in your Ariba system. Ensure that the text is enclosed in single quotations.

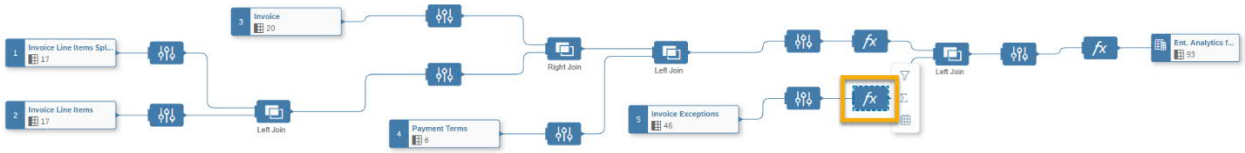


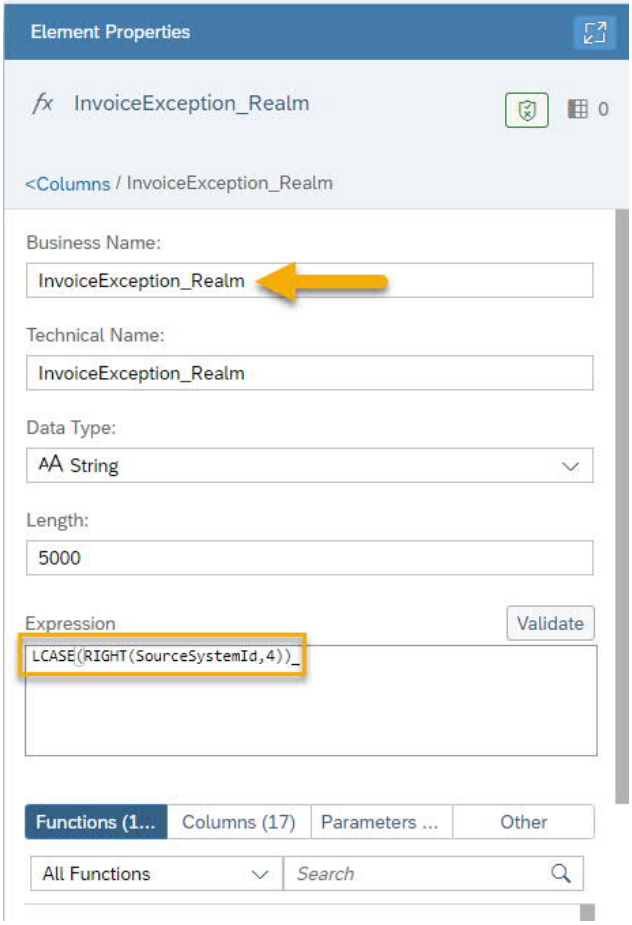
7. Perform step 5 and 6 for the second realm table.
8. Save and deploy the HL view
9. Repeat these steps for each of the 5 HL views listed above.

4.1.7 *Modifying the RL View*

1. Open up the calculation node for the Invoice Exceptions table and create a new calculated column called **InvoiceException_Realm**. We will be using this calculation to extract the realm name from the SourceSystemId column found on the Exceptions

table. This will be used as a join field with the other Invoice tables.

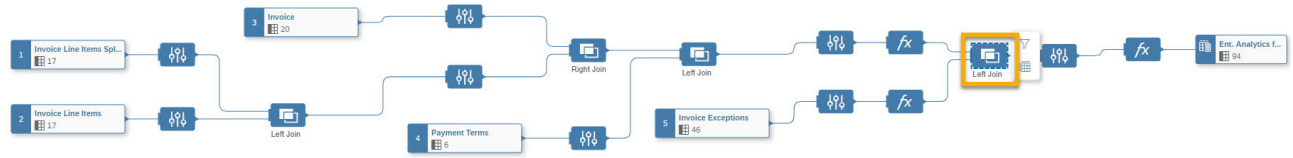


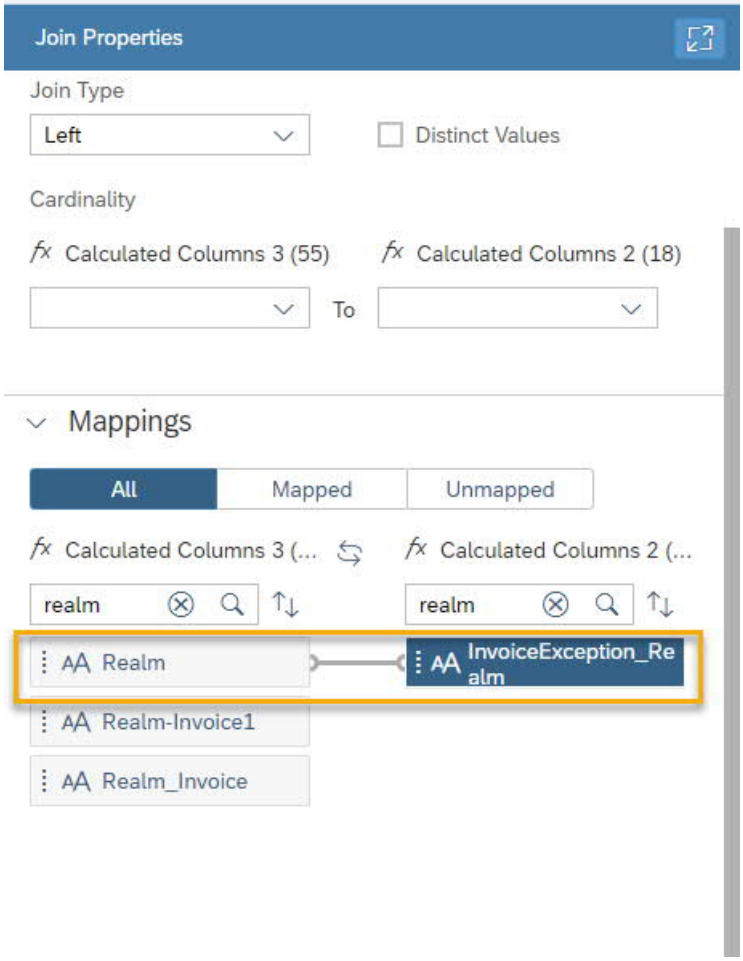


2. Write an expression using the RIGHT() function to extract the realm name from, the SourceSystemId records.

For example, if records in the **SourceSystemId** field are “sap-ssp-test” with “test” being the realm name, my expression would be RIGHT(SourceSystemId, 4). Additionally, you can use the LCASE() or UCASE() functions to match the realm name lettercase in your other invoice tables.

3. Open the Join node for the Invoice Exception table. Create a new mapping between the newly created **InvoiceException_Realm** column, with the **Realm** column from the other Invoice related tables.





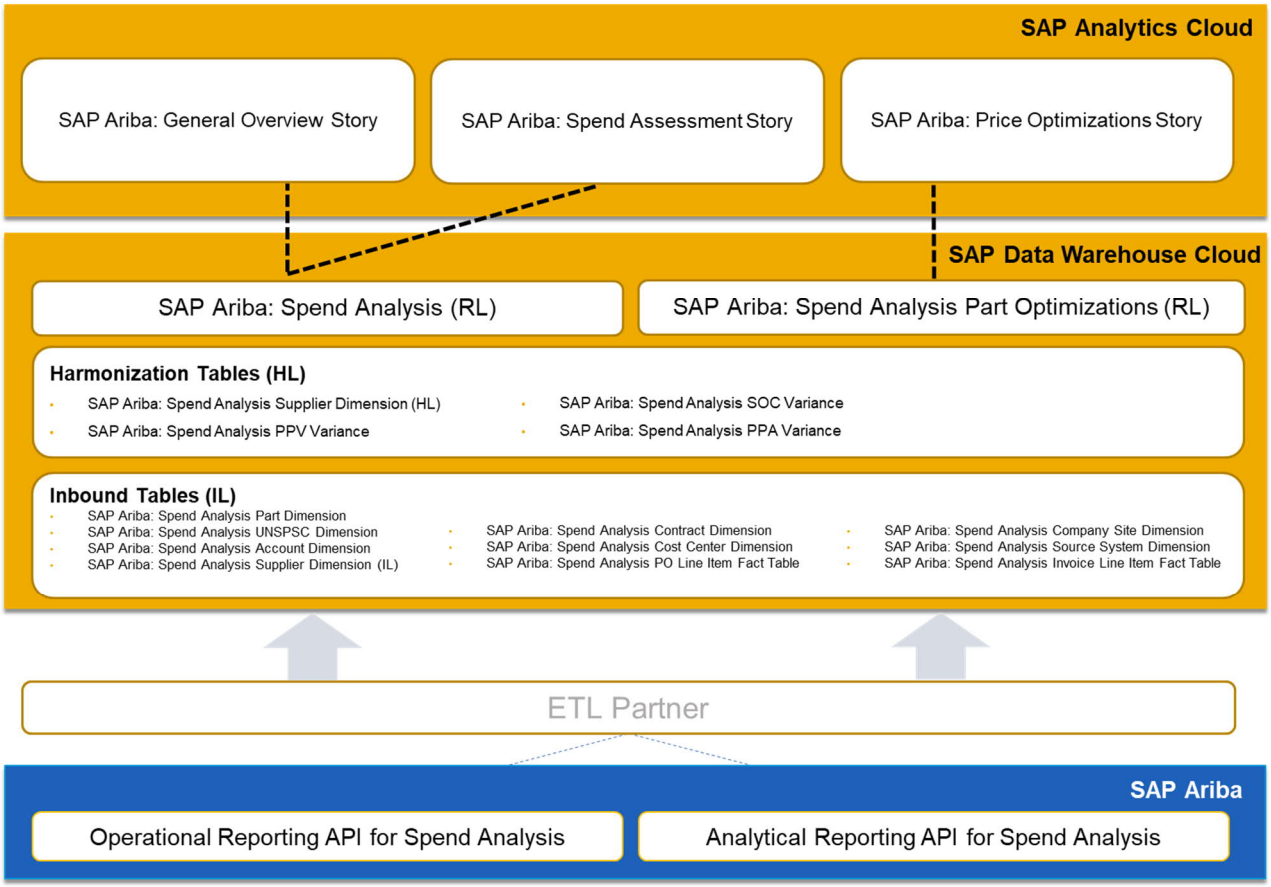
4. Save and deploy Invoice Line View (RL).

4.2 SAP ARIBA: SPEND ANALYSIS

The SAP Ariba Spend Analysis package for SAP Data Warehouse Cloud and SAP Analytics Cloud provides a visualization extension of SAP Ariba Spend Analysis data. This package is aimed towards sourcing managers, category managers, and procurement business analysts to inform decision making within procurement spending.

This content contains the building blocks and harmonized views related to the business scenario "Spend Analysis" of the Ariba Procurement industry.
It is based on data from Ariba Spend Analysis. The building blocks expose data for a standard products scenario. Additional spend analysis data elements can be made available by extending data models provided.

4.2.1 *Architecture and Abstract*



The Spend Analysis data is populated using an ETL process. The ETL process uses Spend Analysis API to extract data from SAP Ariba.

The extracted data is populated in the tables categorized as Inbound Layer (IL). Harmonization Layer (HL) views are created to hide some of the complexity of the tables in Inbound Later.

4.2.2 **Stories**

The SAP Ariba: Spend Analysis content consists of three different stories based on data coming mainly from the SAP Ariba Spend Analysis module.

- SAP Ariba: Spend Analysis General Overview (SAP__PROC_SA_GeneralOverview)
- SAP Ariba: Spend Analysis Spend Assessment (SAP__PROC_SA_SpendAssessment)
- SAP Ariba: Price Optimizations (SAP__PROC_SA_PriceOptimizations)

Please navigate to the SAP Analytics Cloud content documentation for details.

4.2.3 ***Models***

4.2.3.1 Time Data Associations Tables

For the main views, associations to date dimensions have been created. The standard data views have been used

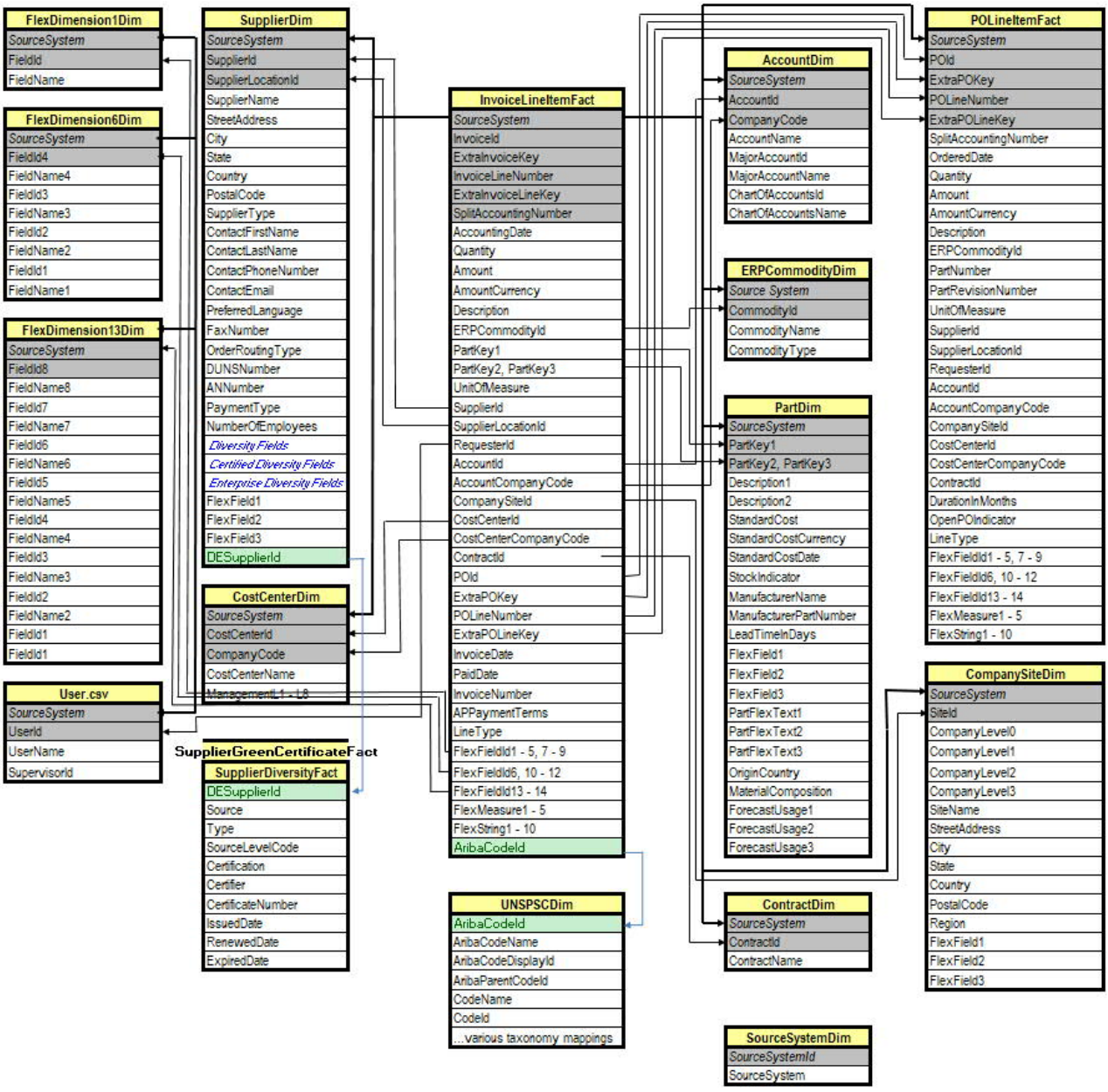
Association of a view with a Time Table

4.2.3.2 Reporting layer

Reporting Layer (RL) views are created based on tables in Inbound Later (IL) and views in Harmonization Layer (HL). The views in Reporting Layer can be used to build SAP Analytic Cloud Stories using a live connection to SAP Datawarehouse Cloud.
The Reporting Layer views are as below:

Entity	Business Name	Technical Name
Spend Analysis	SAP Ariba: Spend Analysis (RL)	SAP_PROC_SA_RL_SPEND_ANALYSIS
Part Optimization	SAP Ariba: Spend Analysis Part Optimizations (RL)	SAP_PROC_SA_RL_PART_OPTIMIZATI

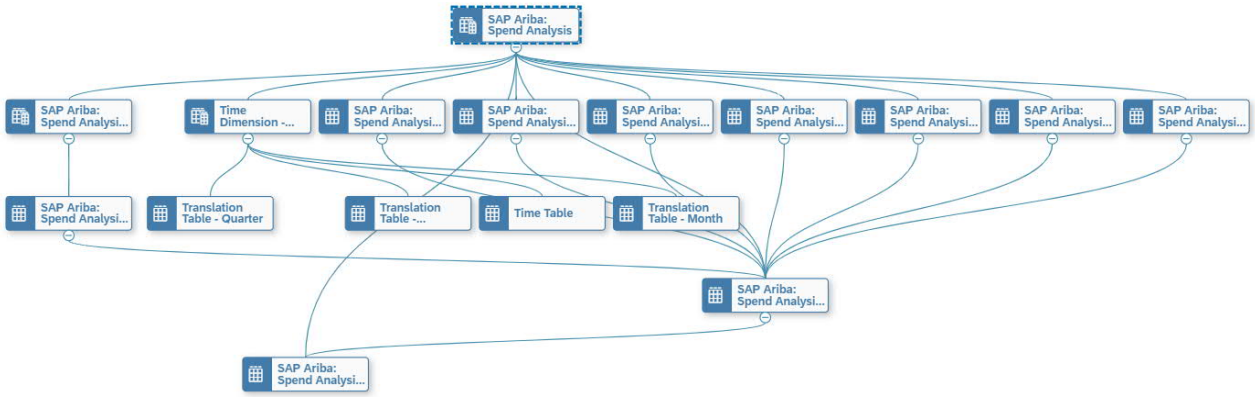
The reporting layer (RL) views are created using below ER model.



Notes:
Not all fields listed - you should always reference the Metadata API to get the latest field names, field labels, types and descriptions
Field names are based on database field names
Use OUTER JOINS from FK to PK
Indicates enriched key
database field names starting with "DE" represent enriched data fields

4.2.3.2.1 Spend Analysis

The view SAP Ariba: Spend Analysis (RL) (SAP_PROC_SA_RL_SPEND_ANALYSIS) is built to access the data referring to Invoice Fact Table, based on different entities, primarily Source System, Part, Company, UNSPSC, Supplier, Contract, Account etc.



The list of views referenced to build Spend Analysis view are as below:

SAP_PROC_SA_IL_InvoiceLineItemFact
SAP_PROC_SA_IL_POLineItemFact
SAP_PROC_SA_HL_SupplierDim
SAP_PROC_SA_IL_SourceSystemDim
SAP_PROC_SA_IL_CompanySiteDim
SAP_PROC_SA_IL_CostCenterDim
SAP_PROC_SA_IL_PartDim
SAP_PROC_SA_IL_UNSPSCDim
SAP_PROC_SA_IL_ContractDim
SAP_PROC_SA_IL_AccountDim

List of calculations done in the view are as below.

Field	Description	Calculation
Actual Paid Days	Actual Paid Days	Case When

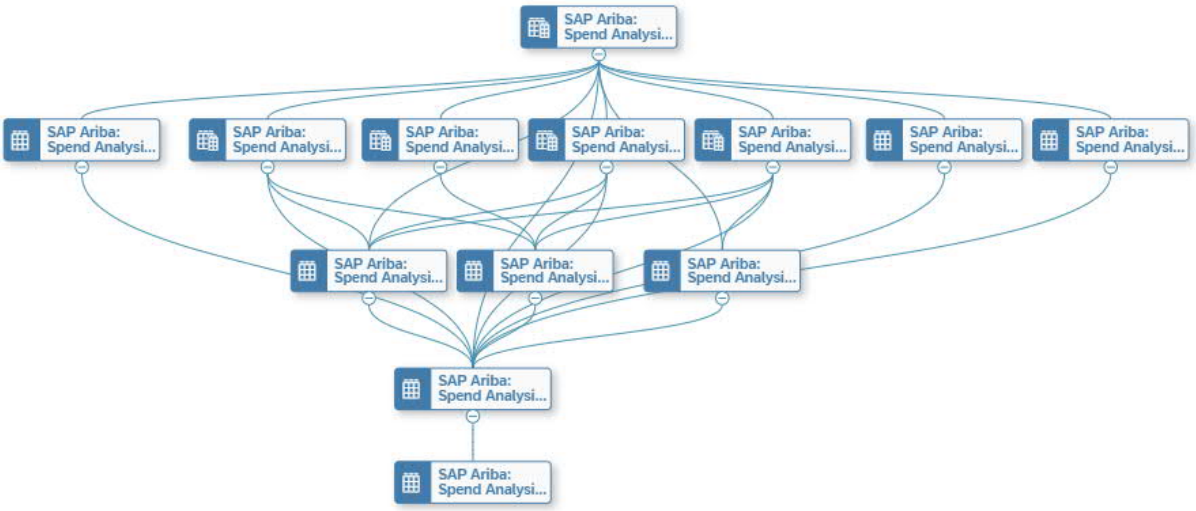
Actual Paid Days		DAYS_BETWEEN(invoice_date_day, paid_date_day)<=0 Then 0 Else DAYS_BETWEEN(invoice_date_day, paid_date_day) End
Spend with Contract & no PO	Spend with Contract & no PO	CASE WHEN poid = '' and contract_type = 'Contract' THEN amount ELSE 0 END
Compliant Spend	Compliant Spend	Invoice_Spend_With_Contract + Invoice_Spend_With_PO + Spend_with_Contract_PO
Maverick	Maverick	CASE WHEN poid = '' and contract_type = 'Non-Contract' THEN amount ELSE 0 END
On-Contract	On-Contract	CASE WHEN contract_type = 'Contract' THEN amount ELSE NULL END
Off-Contract	Off-Contract	CASE WHEN contract_type = 'Non-Contract' THEN amount ELSE NULL END
Unit Price (Invoice)	Unit Price (Invoice)	CASE WHEN quantity<=0 or amount <= 0 or part_key1 = '' or part_key1 IS NULL THEN 0 ELSE amount/quantity END
Unit Price (Min)	Unit Price (Min)	CASE

		WHEN quantity<=0 or amount <= 0 or part_key1 = '' or part_key1 IS NULL THEN 0 ELSE amount/quantity END
Unit Price (Max)	Unit Price (Max)	CASE WHEN quantity<=0 or amount <= 0 or part_key1 = '' or part_key1 IS NULL THEN 0 ELSE amount/quantity END
Managed	Managed	CASE WHEN poid = '' THEN 0 ELSE amount END
Non-Managed	Non-Managed	CASE When poid ='' Then amount Else 0 End
Row Count	Used to count number of rows by any given dimension. Ex count rows by ERP Supplier Name	1
Compliance Type	Compliance Type	Case when poid != '' and contract_type = 'Non-Contract' Then 'PO & No Contract' when poid != '' and contract_type = 'Contract' Then 'PO & Contract' when poid = '' and contract_type = 'Contract' Then 'Contract & No PO' when poid = '' and contract_type = 'Non-Contract' Then 'Maverick' Else '-'

		End
PO and Contract	PO and Contract	CASE WHEN poid != '' and contract_type = 'Contract' THEN amount ELSE 0 END
Accounting Quarter	Accounting Quarter	substring(quarter(accounting_date_day), 6,2)
Accounting Month	Accounting Month	CONCAT(Ucase(substring(monthname(accounting_date_day),1, 1)) , lcase(substring(monthname(accounting_date_day),2, 2)))
Accounting Year	Accounting Year	YEAR(accounting_date_day)
Invoice Quantity	Invoice Quantity	CASE WHEN quantity<=0 or amount <= 0 or part_key1 = '' or part_key1 IS NULL THEN 0 ELSE quantity END
Spend with Contract & PO	Spend with Contract & PO	CASE WHEN poid != '' and contract_type = 'Contract' THEN amount ELSE 0 END
Invoice Created Before PO Count	Invoice Created Before PO Count	CASE WHEN DAYS_BETWEEN(invoice_date_day, ordered_date_day) > 0 THEN 1 ELSE 0 END
Spend with PO & no Contract	Spend with PO & no Contract	CASE WHEN poid != '' and contract_type = 'Non-Contract' THEN amount ELSE 0 END

4.2.3.2.2 Part Optimization

The view SAP Ariba: Part Optimizations (RL) (SAP_PROC_SA_RL_PART_OPTIMIZATI) is built to access the data referring to Invoice Fact Table, based on different entities, primarily Source System, Part, Company, UNSPSC, Supplier, Contract, Account etc. In addition, this view provides calculations related to Supplier Optimization Cost, Purchase Price Variance and Purchase Price Alignment.



The list of views used to build Part Optimization view are as below:

SAP_PROC_SA_IL_InvoiceLineItemFact

SAP_PROC_SA_HL_SupplierDim

SAP_PROC_SA_IL_SourceSystemDim

SAP_PROC_SA_IL_CompanySiteDim

SAP_PROC_SA_IL_CostCenterDim

SAP_PROC_SA_IL_PartDim

SAP_PROC_SA_IL_UNSPSCDim

SAP_PROC_SA_IL_ContractDim

SAP_PROC_SA_HL_SOC_Variance

SAP_PROC_SA_HL_PPA_Variance

SAP_PROC_SA_HL_PPV_Variance

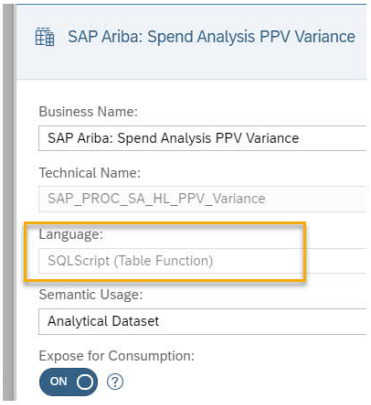
The views related to Supplier Optimization Cost (SOC), Purchase Price Variance (PPV) and Purchase Price Alignment (PPA) are created using SQL Script. This allows to use some of the SQL functions not supported in DWC graphical views as well as develop complex calculations.

Ex.

```
RETURN

SELECT "MainQuery"."description1",
    "MainQuery"."ERP_Supplier_Name",
    "MainQuery"."Invoice_Amount" As "PPV_Invoice_Amount",
    "MainQuery"."Invoice_Quantity" as "PPV_Invoice_Quantity",
    "MainQuery"."Unit_Price" as "PPV_Unit_Price",
    Min("MinQuery"."Unit_Price") AS "PPV_Unit_Price_Lowest",
    case when sum("MainQuery"."Invoice_Amount")<=0 then  0
         when sum("MainQuery"."Invoice_Quantity")<=0 then 0
         else  ("MainQuery"."Invoice_Amount" - ("MainQuery"."Invoice_Quantity" * Min("MinQuery"."Unit_Price"))) end AS
             "Purchase_Price_Variance"

FROM (
    (
        SELECT "PD"."description1" "description1",
            "SD"."supplier_name" "ERP_Supplier_Name",
            sum("IL"."amount") "Invoice_Amount",
            sum("IL"."quantity") "Invoice_Quantity",
            case when sum("IL"."amount")<=0 then  0
                 when sum("IL"."quantity")<=0 then 0
                 else  sum("IL"."amount") / sum("IL"."quantity") end AS "Unit_Price"
        FROM "SAP_PROC_SA_IL_InvoiceLineItemFact" AS "IL"
            LEFT JOIN "SAP_PROC_SA_IL_PartDim" AS "PD" ON "IL"."part_source_system" = "PD"."source_system" AND "IL"."part_part_key1"
                = "PD"."part_key1" AND "IL"."part_part_key2" = "PD"."part_key2"
            LEFT JOIN "SAP_PROC_SA_IL_SupplierDim" AS "SD" ON "SD"."source_system" = "IL"."supplier_source_system" AND "SD"
                ."supplier_id" = "IL"."supplier_supplier_id" AND "SD"."supplier_location_id" = "IL"."supplier_supplier_location_id"
        WHERE "IL"."accounting_date_day" between  ADD_MONTHS(TO_DATE(YEAR(CURRENT_DATE)), (TO_INT(RIGHT(QUARTER(CURRENT_DATE), 1) - 5
            ) * 3))
```



There are three SQL Script views created to support SOC, PPV and PPA calculations:

SAP Ariba: Spend Analysis SOC Variance (SAP_PROC_SA_HL_SOC_Variance)

SAP Ariba: Spend Analysis PPA Variance (SAP_PROC_SA_HL_PPA_Variance)

SAP Ariba: Spend Analysis PPV Variance (SAP_PROC_SA_HL_PPV_Variance)

List of calculations done in the view are as below.

Field	Description	Calculation
Row Count	Used to count number of rows by any given dimension. Ex count rows by ERP Supplier Name	1

Accounting Quarter	Accounting Quarter	substring(quarter(accounting_date_day), 6,2)
Accounting Month	Accounting Month	CONCAT(Ucase(substring(monthname(accounting_date_day),1, 1)) , lcase(substring(monthname(accounting_date_day),2, 2)))
Accounting Year	Accounting Year	YEAR(accounting_date_day)

4.2.3.3 Inbound and Harmonization layer

The Inbound Layer and Harmonization Layer views are as below.

Entity	Business Name	Technical Name
Invoice	SAP Ariba: Spend Analysis Invoice Line Item Fact Table (IL)	SAP_PROC_SA_IL_InvoiceLineItem Fact
Source System	SAP Ariba: Spend Analysis Source System Dimension (IL)	SAP_PROC_SA_IL_SourceSystemD im
Company Site	SAP Ariba: Spend Analysis Company Site Dimension (IL)	SAP_PROC_SA_IL_CompanySiteDi m
PO Line Item	SAP Ariba: Spend Analysis PO Line Item Fact Table (IL)	SAP_PROC_SA_IL_POLineItemFact
Part	SAP Ariba: Spend Analysis Part Dimension (IL)	SAP_PROC_SA_IL_PartDim
UNSPSC	SAP Ariba: Spend Analysis UNSPSC Dimension (IL)	SAP_PROC_SA_IL_UNSPSCDim
Account	SAP Ariba: Spend Analysis Account Dimension (IL)	SAP_PROC_SA_IL_AccountDim
Supplier	SAP Ariba: Spend Analysis Supplier Dimension (IL)	SAP_PROC_SA_IL_SupplierDim

Supplier	SAP Ariba: Spend Analysis Supplier Dimension (HL)	SAP_PROC_SA_HL_SupplierDim
Contract	SAP Ariba: Spend Analysis Contract Dimension (IL)	SAP_PROC_SA_IL_ContractDim
Cost Center	SAP Ariba: Spend Analysis Cost Center Dimension (IL)	SAP_PROC_SA_IL_CostCenterDim
PPV	SAP Ariba: Spend Analysis PPV Variance (RL)	SAP_PROC_SA_HL_PPV_Variance
SOC	SAP Ariba: Spend Analysis SOC Variance (RL)	SAP_PROC_SA_HL_SOC_Variance
PPA	SAP Ariba: Spend Analysis PPA Variance (RL)	SAP_PROC_SA_HL_PPA_Variance

4.1 SAP BUSINESS NETWORKS - VALUE ANALYTICS

SAP Business Networks - Value Analytics (Value Analytics) solves several business problems for organizations who struggle with inbound materials / components in their supply chain:

- Improve supply chain resilience
- Improve value associated with business network initiatives
- Offer quick wins along a continuous improvement journey
- Provide actionable intelligence
- The need for lengthy software implementations.

Pre-pandemic, a key objective for supply chain initiatives was inventory effectiveness – reduce the wrong inventory faster and provide the right inventory faster. One leading indicator of inventory reduction is lead times – the time to receive in-bound materials / components after issuing a purchase order. In the current recovery economy, lead times have increased greatly (doubling or even tripling) which has crippled supply chains. As recovery continues, lead time will always be a crucial metric which organizations need to improve no matter the economic situation.

An organization can quickly begin to diagnose issues with metrics such as lead time and organizations can quickly determine which suppliers, materials / components, and locations are causing issues with these metrics. Users of Value Analytics range from senior leaders who need to understand summary information, to knowledge workers who need detailed analysis and drilldowns to improve such metrics.

4.1.1 *Content Activation Services*

The models for the SAP Business Networks - Value Analytics content package do not contain a configured data connection to a source system. Engage with SAP Consulting for the activation services of the content package.

4.1.2 *Data Sources & Connections*

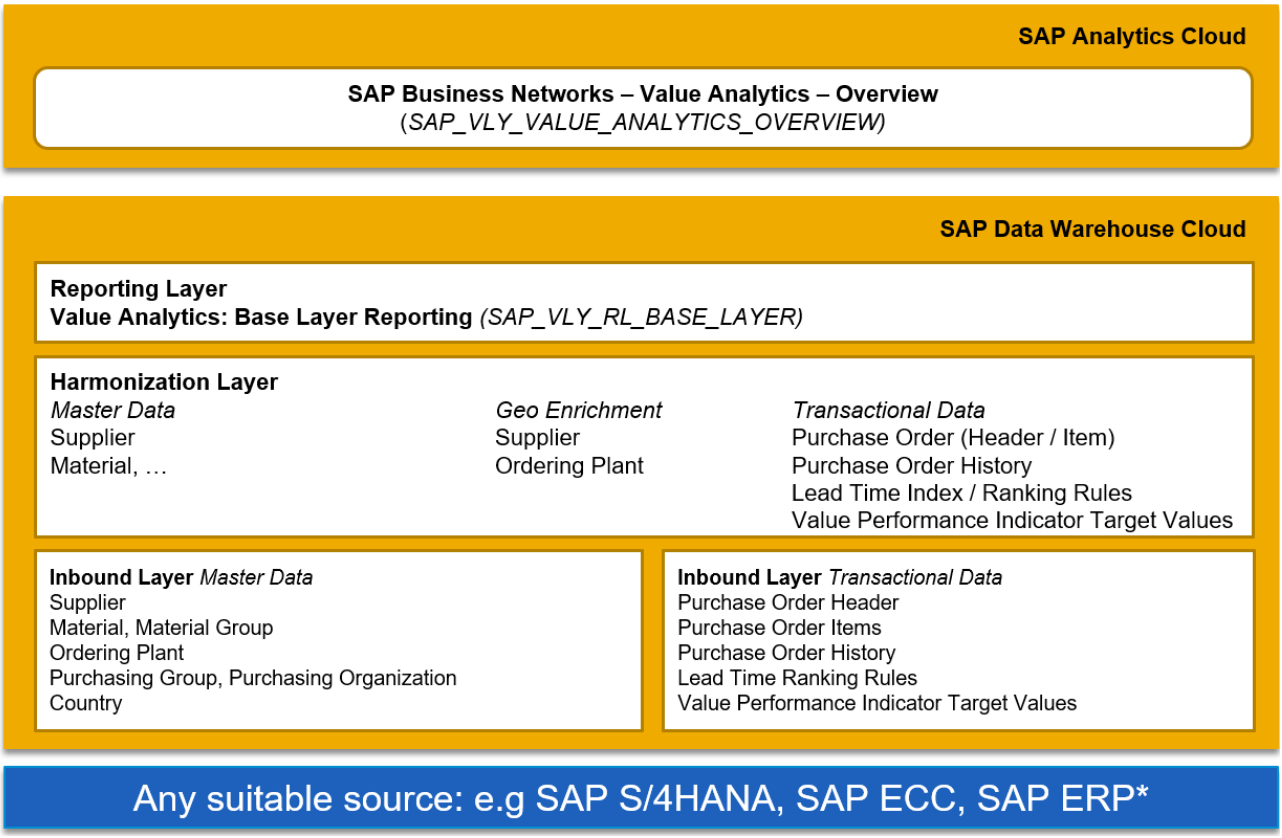
The models for the SAP Business Networks - Value Analytics content package are delivered with a base layer created on Local Tables in SAP Data Warehouse Cloud. The content package does not contain a configured data connection.

4.1.3 *High Level Architecture*

The SAP Business Networks - Value Analytics content package provides the necessary content in form of an Inbound Layer (prefix: SAP_VLY_IL) for all master data as well as all transactional data.

In addition, a harmonization layer (prefix: SAP_VLY_HL) is provided to configure the incoming master data in form of dimensions, to create any necessary calculations, and to configure the geographical enrichment for the master data.

On the Reporting Layer (prefix: SAP_VLY_RL) the content package provides a single analytical view, which is used in the SAP Analytics Cloud Story.



*: see above: 4.1.1 Content Activation Services and Data Sources & Connections

4.1.4 *SAP Analytics Cloud Stories*

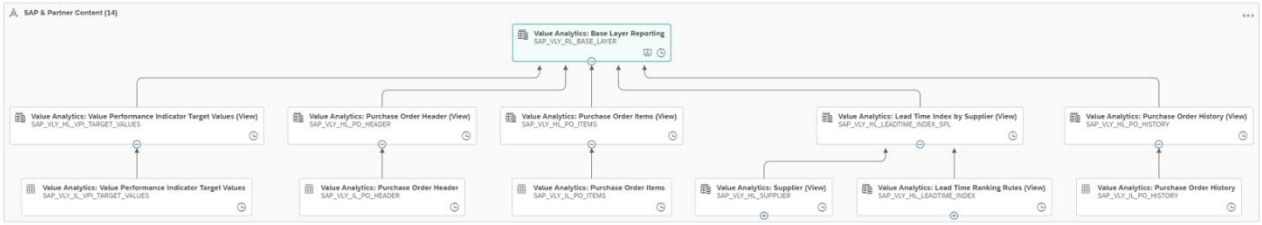
The following story is included in the content package:
SAP Business Networks - Value Analytics / SAP Business Networks - Value Analytics - Overview (SAP_VLY_VALUE_ANALYTICS_OVERVIEW)

Please navigate to the SAP Analytics Cloud content documentation for details.

4.1.5 *Models*

On the Reporting Layer (prefix: SAP_VLY_RL) the content package provides a single analytical view, which combines the different transactional information (Purchase Order header, Purchase Order items, Purchase Order history) as well as the Target Values and Lead Time Ranking rules.

Model Name: Value Analytics: Base Layer Reporting
Technical Name: SAP_VLY_RL_BASE_LAYER



4.1.6 ***Currencies***

Currently the models, which are part of the Business Content package, assume, that the data is based on a single currency. The currency is maintained with table SAP_VLY_IL_PO_HEADER on a per Purchase Order level. In case you do require a currency conversion based on your source data containing multiple currencies, this is something that can be implemented as part of the consulting engagement.

4.1.7 *Filter for Movement Types for Purchase Order History*

The model for reporting - Value Analytics: Base Layer Reporting (SAP_VLY_RL_BASE_LAYER) is filtering the data based on the field Movement Type (Inventory Management) (Technical Name: BWART) from the table Value Analytics: Purchase Order History (SAP_VLY_IL_PO_HISTORY) with the values 101 (Goods receipt for purchase order) and 107 (Goods Receipt to Valuated Goods Receipt Blocked Stock) as default configuration.

If based on your configuration, you would like to change this to a different set of Movement Types, you can customize the existing model in SAP Data Warehouse Cloud and make the adjustment in the filter for the table.

4.1.8 *Local Table: Value Analytics: Value Performance Indicator Target Values*

As part of the overall model, customers have the option to configure monthly target values for the Lead Time KPI. These monthly target values need to be entered into the local table "Value Analytics: Value Performance Indicator Target Values" (SAP_VLY_IL_VPI_TARGET_VALUES).

The table has the following data structure:

Column Description	Technical Name	Data Type	Example
Calendar Month	Calendar_Month	Date	July 01, 2022
Lead Time (Target)	Lead_Time_Target	Decimal	30

With the given example, our Target Lead Time value would be 30 days for the month of July 2022.

Please note, that you only need to enter a single value per calendar month.

Data can upload via local files, via remote connections, or using the Data Editor within SAP Data Warehouse Cloud to enter data manually.

4.1.9 *Local Table: Value Analytics: Lead Time Ranking Rules*

As part of the overall model, customers have the option to configure a set of rules on how suppliers would receive an overall Lead Time Rank based on their performance in four categories:

- Lead Time
- % Share of Purchase Orders
- % Share of Purchase Orders above Lead Time Target
- Supplier Variability

The local table provides 4 ranges (A - D) for each of the categories and a supplier that matches all four categories for the Rank A will then receive an overall ranking of 1.

The table has the following data structure:

Column Description	Technical Name	Data Type	Example
Calendar Year	LTI_Calendar_Year	Integer	2022
Lead Time Rank A - Low	LTI_LeadTime_Low_A	Integer	20
Lead Time Rank A - High	LTI_LeadTime_High_A	Integer	30

Lead Time Rank B - Low	LTI_LeadTime_Low_B	Integer	31
Lead Time Rank B - High	LTI_LeadTime_High_B	Integer	40
Lead Time Rank C - Low	LTI_LeadTime_Low_C	Integer	41
Lead Time Rank C - High	LTI_LeadTime_High_C	Integer	50
Lead Time Rank D - Low	LTI_LeadTime_Low_D	Integer	51
Lead Time Rank D - High	LTI_LeadTime_High_D	Integer	60
POShare Rank A - Low	LTI_POShare_Low_A	Decimal (5,2)	10
POShare Rank A - High	LTI_POShare_High_A	Decimal (5,2)	100
POShare Rank B - Low	LTI_POShare_Low_B	Decimal (5,2)	5
POShare Rank B - High	LTI_POShare_High_B	Decimal (5,2)	100
POShare Rank C - Low	LTI_POShare_Low_C	Decimal (5,2)	3
POShare Rank C - High	LTI_POShare_High_C	Decimal (5,2)	100
POShare Rank D - Low	LTI_POShare_Low_D	Decimal (5,2)	1
POShare Rank D - High	LTI_POShare_High_D	Decimal (5,2)	100
POShare Above Target Rank A - Low	LTI_POShare_AboveTarget_Low_A	Decimal (5,2)	0
POShare Above Target Rank A - High	LTI_POShare_AboveTarget_High_A	Decimal (5,2)	50
POShare Above Target Rank B - Low	LTI_POShare_AboveTarget_Low_B	Decimal (5,2)	0
POShare Above Target Rank B - High	LTI_POShare_AboveTarget_High_B	Decimal (5,2)	60
POShare Above Target Rank C - Low	LTI_POShare_AboveTarget_Low_C	Decimal (5,2)	0
POShare Above Target Rank C - High	LTI_POShare_AboveTarget_High_C	Decimal (5,2)	70
POShare Above Target Rank D - Low	LTI_POShare_AboveTarget_Low_D	Decimal (5,2)	0
POShare Above Target Rank D - High	LTI_POShare_AboveTarget_High_D	Decimal (5,2)	80
Variability Rank A - Low	LTI_Variability_Low_A	Decimal (5,2)	0
Variability Rank A - High	LTI_Variability_High_A	Decimal (5,2)	50
Variability Rank B - Low	LTI_Variability_Low_B	Decimal (5,2)	0

Variability Rank B - High	LTI_Variability_High_B	Decimal (5,2)	60
Variability Rank C - Low	LTI_Variability_Low_C	Decimal (5,2)	0
Variability Rank C - High	LTI_Variability_High_C	Decimal (5,2)	70
Variability Rank D - Low	LTI_Variability_Low_D	Decimal (5,2)	0
Variability Rank D - High	LTI_Variability_High_D	Decimal (5,2)	80

Data can upload via local files, via remote connections, or data can be entered manually using the Data Editor within SAP Data Warehouse Cloud.

Please note the following:

- For Lead Time Rank you are entering absolute day ranges
- For all other measures you are entering percentage values (10 = 10%).

Using the values from the table shown above the following conditions would have to be met by a supplier to be ranked A:

Column Description	Technical Name	Data Type	Example
Calendar Year	LTI_Calendar_Year	Integer	2022
Lead Time Rank A - Low	LTI_LeadTime_Low_A	Integer	20
Lead Time Rank A - High	LTI_LeadTime_High_A	Integer	30
POShare Rank A - Low	LTI_POShare_Low_A	Decimal (5,2)	10
POShare Rank A - High	LTI_POShare_High_A	Decimal (5,2)	100
POShare Above Target Rank A - Low	LTI_POShare_AboveTarget_Low_A	Decimal (5,2)	0
POShare Above Target Rank A - High	LTI_POShare_AboveTarget_High_A	Decimal (5,2)	50
Variability Rank A - Low	LTI_Variability_Low_A	Decimal (5,2)	0
Variability Rank A - High	LTI_Variability_High_A	Decimal (5,2)	50

A Supplier would have to:

- …have an average lead time in days between 20 and 30 days
- …represent between 10 - 100% of all our Purchase Orders
- …have between 0 and 50% of those purchase orders with a lead time above our lead time target value
- … have a variability between 0 and 50%.

4.1.10 *Local Table: Value Analytics: Delivery Tolerance Rules*

As part of the overall model, customers have the option to configure delivery tolerance values for the quantity as well as the delivery timeline.

The local table is based on a Supplier / Material combination, so that customer can provide the tolerance values for each supplier / material entry.

The table has the following data structure:

Column Description	Technical Name	Data Type	Example
Supplier	LIFNR	String 10	
Material	MATNR	String 20	
Order Delivery Date - Upper Tolerance	ORDER_DELIV_TOLERANCE_UPPER	Integer 64	
Order Delivery Date - Lower Tolerance	ORDER_DELIV_TOLERANCE_LOWER	Integer 64	
Order Quantity - Upper Tolerance	ORDER_QTY_TOLERANCE_UPPER	Integer 64	
Order Quantity - Lower Tolerance	ORDER_QTY_TOLERANCE_LOWER	Integer 64	

Please note, that the values entered for the Order Delivery Date - Upper Tolerance and Order Delivery Date - Lower Tolerance are absolute values and the values for the Order Quantity - Upper Tolerance and Order Quantity - Lower Tolerance are percentage values.

Example:

Column Description	Sample Value
Supplier	SAP0001
Material	MAT0001
Order Delivery Date - Upper Tolerance	10
Order Delivery Date - Lower Tolerance	10
Order Quantity - Upper Tolerance	10
Order Quantity - Lower Tolerance	10

- In this example
- …the tolerance values have been entered for supplier SAP0001 with material MAT0001
- …a tolerance of 10 days has been entered for the upper and lower tolerance for the Order Delivery Date
- …a tolerance of 10% has been entered for the upper and lower tolerance for the Order Quantity

The rules defined using this table will be used to evaluate, if a purchase order was delivered on time and in full.

4.1.11 *Geographic Enrichment in SAP Data Warehouse Cloud*

As part of the inbound layer of SAP Data Warehouse Cloud a geographic enrichment in form of longitude and latitude values for the Supplier dimension as well as the Ordering Plant can be provided.

SAP Data Warehouse Cloud is offering a local table for each of these two dimensions where you can upload the longitude and latitude values per Supplier and per Ordering Plan.

Geographic Enrichment for Supplier

Table: Value Analytics: Supplier Geo Location

Technical Name: SAP_VLY_IL_SUPPLIER_GEO

Column Description	Technical Name	Data Type	Example
Supplier Number	LIFNR	String	
Supplier Longitude	LIFN_LONG	Decimal (38,19)	
Supplier Latitude	LIFN_LAT	Decimal (38,19)	

Geographic Enrichment for Ordering Plant

Table: Value Analytics: Value Analytics: Ordering Plant Geo

Technical Name: SAP_VLY_IL_ORDERING_PLANT_GEO

Column Description	Technical Name	Data Type	Example
Ordering Plant	WERKS	String	
Ordering Plant Longitude	WERKS_LONG	Decimal (38,19)	
Ordering Plant Latitude	WERKS_LAT	Decimal (38,19)	

4.1.12 *Local Table: Supplier Group (SAP_VLY_IL_SUPPLIER_GROUP)*

As part of the overall model an option is offered to consolidate multiple suppliers into a supplier group, for example for a scenario where regional suppliers should be consolidated from multiple countries into a supplier group.

The table in SAP Data Warehouse Cloud is based on a simple data structure as shown below.

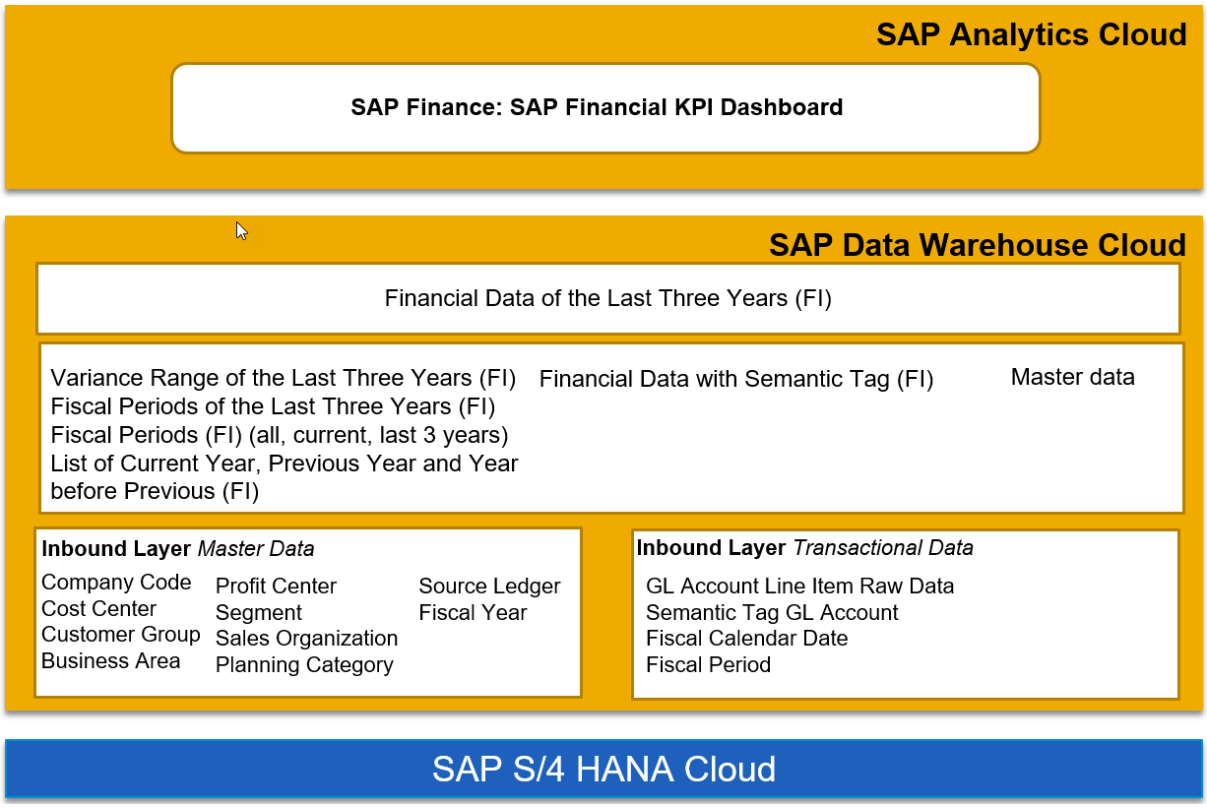
Column Description	Technical Name	Data Type	Example
Supplier Number	LIFNR	String	
Supplier Group	LIFGROUP	String	

As part of the data loading for master data, it is recommended to either define these Supplier Groups, or - in case you prefer not to define Supplier Groups - to then load a one to one match of suppliers to supplier groups (each supplier becoming its own supplier group).

4.2 FINANCE FOR SAP S/4 HANA CLOUD

This package offers basic financial reports and KPIs and thus targets all management levels and financials experts as an audience. The story includes a general Financial Overview, Profit & Loss statement and Balance Sheet information.

4.2.1 *Architecture and Abstract*



This model is based on a live connection to SAP S/4HANA Cloud, using CDS-views to access General Ledger data.
The different views are classified as follow:

Inbound Layer (IL): Inbound layer objects are the “building blocks” of the scenario. Each of these views exposes SAP S/4HANA Cloud data relevant for the financial scenario. Some are listed in the picture above.

Harmonization Layer (HL): each of the views in this layer is created connecting 2 or more IL views with join or union logic. This layer creates the semantic for reporting / dashboarding in SAP Analytics Cloud.

4.2.2 *Stories*

The following story is included in the content package:
Finance for SAP S/4HANA Cloud (SAP__FI_GEN_KPI).

This story is based on the following SAP Data Warehouse Cloud view:
Financial Data of the Last Three Years (FI) (SAP_FI_GLDataOverTime).

Please navigate to the SAP Analytics Cloud content documentation for details.

4.2.3 *Models*

The most relevant models for the finance content package are *Financial Data of the Last Three Years (FI)* (SAP_FI_GLDataOverTime) and *Financial Data with Semantic Tag (FI)* (SAP_FI_GLAccountSemanticTag).
The master data (dimensions) that comes with content follows a similar pattern: The dimension sources from the master data information CDS view and the text CDS view of the same object. The texts are filtered to the English language “en”.

Here is an overview of the master data:

- Cost Center
- Sales Organization
- Company Code
- Business Area
- Segment View
- Profit Center

4.2.3.1 Financial Data of the Last Three Years (SAP_FI_GLDataOverTime)

The *Financial Data of the Last Three Years* is the foundation for the Analytics Cloud Story *Finance for SAP S/4HANA Cloud (SAP__FI_GEN_KPI)*. The main source is the CDS view

I_GLAccountLineItemRawData from General Ledger (G/L), based on the table ACDOCA of SAP S/4HANA Cloud.

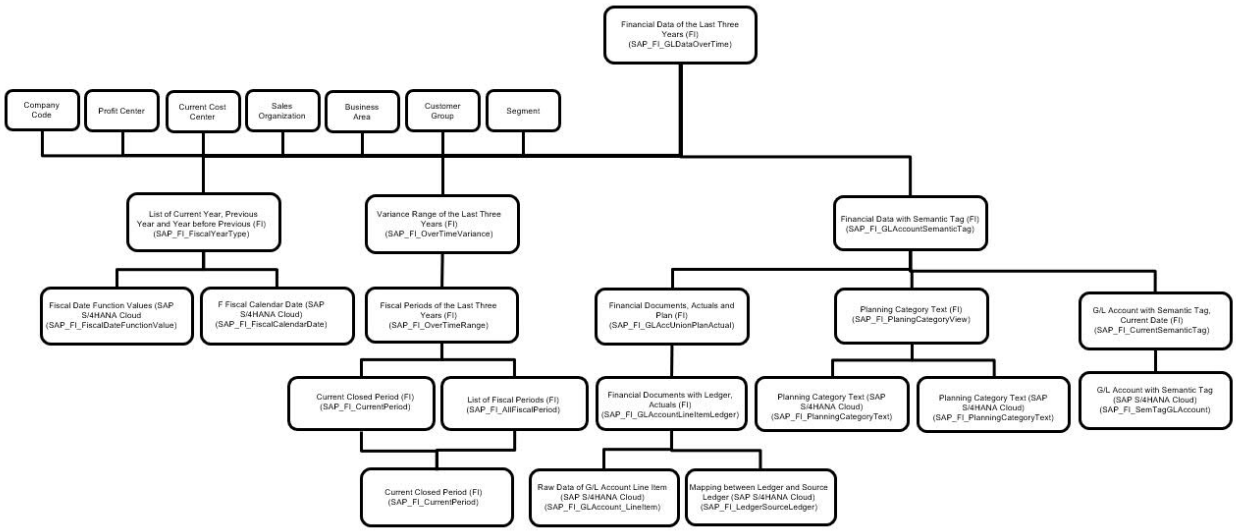


Figure 2 – View: Financial Data of the Last Three Years (SAP_FI_GLDataOverTime)

The view itself contains 3 major parts:

- Fiscal periods with variance range and a list of financial periods as well as the current closed period, and fiscal year type based on the fiscal calendar date.
- Transactional data, mainly the replicated table G/L Line Item Raw Data.
- G/L Account with Semantic Tag as the essential object. The semantic tags, which are joined to the Line Item Raw Data abstract from a specific chart-of-accounts and are also the source for calculated KPIs.

4.2.3.2 Financial Data with Semantic Tag (FI) (SAP_FI_GLAccountSemanticTag)

The *Financial Data with Semantic Tag (FI)* view is the essential view within the data model. It contains the calculated key performance indicators (KPIs).

The view is modelled as follows:

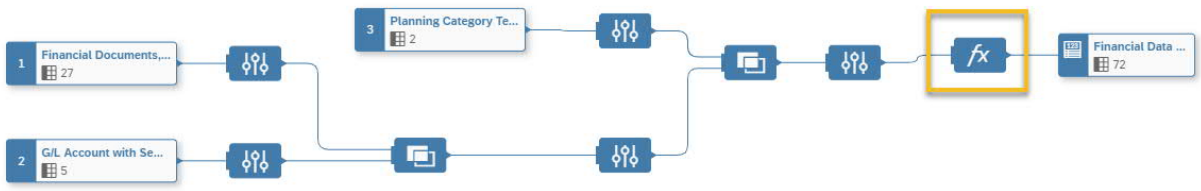


Figure 3 – View: Financial Data with Semantic Tag (FI) (SAP_FI_GLAccountSemanticTag)

The calculation step is highlighted; the account model is transferred into a key figure model based on the semantic tags. Depending on the semantic tag, values have to be inverted.

Here are two examples:

- Operating Expenses:
  case when SemanticTag = 'OPEREXP' then AmountInGlobalCurrency end
- COGS:
  case when SemanticTag = 'RECO_COS' then InvertAmount end

In a logical second step, but technically within the same transformation, further KPIs are calculated on top of the key figure model.

Examples:

- Gross Margin:
  Gross Profit / Recognized Revenue x 100
  Expression in Data Warehouse Cloud:

- IFNULL(GrossProfit,RecognizedRevenue)-IFNULL(GrossProfit,RecognizedRevenue)
- +(NDIV0 ("GrossProfit","RecognizedRevenue")*100)
-

- Operating Cash Flow:
  The International Financial Reporting Standards define the operating cash-flow as the cash generated from operations less taxation and interest paid, investment income received and less dividends paid. As a financial statement based KPI, SAP defines operating cash flow as a company´s net income less depreciation of tangible assets, less amortization of intangible assets, less fixed assets and inventory changes, less provision changes, less accounts receivables and other accounts receivable changes, plus accounts payable and other accounts payable changes.
  (= Net Income – Depreciation of Tangible Assets – Amortization of Intangible Assets – Fixed Assets – Inventory Changes – Provision Changes – Account Receivable Changes – Changes of other Account Receivables + Account Payable Changes + Changes of other Accounts Payables)

Expression in Data Warehouse Cloud:

- COALESCE(NetIncome, DepreciationTangibleAsset, AmorIntangAsset, FixedAssets, InventoryChanges, ProvisionChanges, AccountsRecChanges, AccountsPayablesChanges,ChangesOtherAccRec, ChangesOtherAccPayable) - COALESCE(NetIncome, DepreciationTangibleAsset, AmorIntangAsset, FixedAssets, InventoryChanges, ProvisionChanges, AccountsRecChanges, AccountsPayablesChanges,ChangesOtherAccRec, ChangesOtherAccPayable) + IFNULL(NetIncome, 0) - IFNULL(DepreciationTangibleAsset, 0) - IFNULL(AmorIntangAsset, 0) - IFNULL(FixedAssets, 0) - IFNULL(InventoryChanges, 0) - IFNULL(ProvisionChanges, 0) - IFNULL(AccountsRecChanges, 0) - IFNULL(ChangesOtherAccRec, 0) + IFNULL(AccountsPayablesChanges, 0) + IFNULL(ChangesOtherAccPayable, 0)

The following table shows assigned Semantic Tags to the corresponding measure.

Measure	Technical Global Field Name in Query	Semantic Tag Assigned
KPI: Operating Cash Flow	OpgActyCashAmtInGlobCrcy	
Net Income	NetIncomeAmtInGlobCrcy	NtInc_alAc * -1
Depreciation of Tangible Assets	TngblAstDeprAmtInGlobCrcy	DprTAsset * -1
Amortization		Inventory * -1, Fiscal Period = '000' - '…'
Fixed Assets	FxdAssetRtrmtAmtInGlobCrcy	ChgFARet * -1
Inventory Changes	ChgsProvisionAmtInGlobCrcy	Inventory
Provision Changes	ChgsProvisionAmtInGlobCrcy	Provisions
Accounts Receivables Changes	ChgsAcctsRblAmtInGlobCrcy	AccRec
Changes in other Accounts Receivables	ChgsAcctsOthRblAmtInGlobCrcy	AccRec_Oth
Accounts Payables Changes	ChgsAcctsPyblAmtInGlobCrcy	AccPay * -1
Chages in other Accounts Payables	ChgsAcctsOthPyblAmtInGlobCrcy	AccPay_Oth * -1

Figure 5 – Measures and assigned Semantic Tag

4.3 SALES AND DISTRIBUTION: SALES ANALYSIS FOR SAP S/4HANA ON-PREMISE

This content package covers three areas from Sales and Distribution (SD):

- Sales Analysis
- Sales Quotations
- Sales Conditions

The source for these areas are the Sales Document, Billing Document, Sales Quotations and Conditions data from the SD module. The content is based on SAP S/4HANA CDS views for both transaction and master data.

Depending on the release of your SAP S/4HANA system, different implementation steps are necessary.
The content has been designed to work with the SAP S/4HANA release 2021.
To use the content with SAP S/4HANA release 2020, please follow the instructions in the chapter “Prerequisites for SAP S/4HANA release 2020”.
Older releases are not supported, as this would require too many manual efforts in SAP S/4HANA.

4.3.1 *Prerequisites for SAP S/4HANA release 2020*

For SAP S/4HANA release 2020, the following activities are required before you can deploy the content:

4.3.1.1 Transaction Data

The package uses the following CDS-Views:

- C_SALESDOCUMENTITEMDEX_1 (CSDSLSDOCITMDX1)
- C_BILLINGDOCITEMBASICDEX_1 (CSDBILDOCITMBDX1)
- C_SALESDOCITMPRCGELMNTDEX_1 (CSDSDOCITMPEDX1)
- C_BILLGDOCITMPRCGELMNTBSCDEX_1 (CSDBDOCITMPECDX1)

These CDS-Views have replaced the previous views:

- C_SALESDOCUMENTITEMDEX (CSDSLSDOCITMDX),

- C_BILLINGDOCUMENTITEMBASICDEX (CSDBILDOCITMBCDX),
- C_SALESDOCITMPRCGELMNTDEX (CSDSDOCITMPEDX),
- C_BILLGDOCITMPRCGELMNTBSCDEX (CSDBDOCITMPEBCDX)

which will be deprecated in a future release.

Those new CDS-Views are available with OP2020 SP03 or with corrections instructions in SAP Note 3070845. Either apply the relevant service pack or the SAP Note 3070845 in the SAP S/4HANA system before you deploy the content in SAP Data Warehouse Cloud.

4.3.1.2 Master Data (Release OP2020)

The following CDS-Views are not extraction enabled in release OP2020 and can therefore not be used for extraction:

- I_Plant
- I_StorageLocation
- I_PaymentMethod

Any warning during import related to these three CDS-Views can be ignored.
The following steps have to be taken before the deployment of the content:

The dimension views for these master data are associated to the Analytical Datasets *SAP_SD_RL_SalesDocumentItem* and *SAP_SD_RL_BillingDocumentItem*.

Please remove the following associations:

- Storage Location to Storage Location Master Data View (StorageLoc) (*SAP_LO_StorageLocation)*
- Plant to Plant Master Data View (Plant) (*SAP_MM_Plant)*

in the Analytical Datasets *SAP_SD_RL_SalesDocumentItem, SAP_SD_RL_SalesQuotationItem and SAP_SD_RL_ExpSlsQuotDateGrid before* deploying these views.

Please remove the following associations

- Storage Location to Storage Location Master Data View (StorageLoc) (*SAP_LO_StorageLocation*)
- Plant to Plant Master Data View (Plant) (*SAP_MM_Plant)*
- Payment Method to Payment Method for Country/Region Master Data View (PayMethod) (*SAP_FI_PayMethodCountryRegion)*

in the Analytical Dataset *SAP_SD_RL_BillingDocumentItem* before deploying this view.

Find the full stack for these views below for you reference (from the source to the dimension)

Type	Name	Technical Name
CDS-View	Plant - Master Data Attributes	I_PLANT
Remote Table	Plant - Master Data Attributes + Text	IPLANT
Relational Dataset	Plant - Attr + Text (IL)	SAP_MM_IL_PLANT
Dimension	Plant	SAP_MM_Plant
CDS-View	Storage Location	I_STORAGELOCATION
Remote table	Storage Location Attr + Text	ISTORAGELOCATION
Relational Dataset	Storage Location Attr + Text (IL)	SAP_LO_IL_ISTORAGELOCATION
Dimension	Storage Location	SAP_LO_StorageLocation
CDS-View	Payment Method	I_PAYMENTMETHOD
Remote table	Payment Method Attr + Text	IFIPAYMENTMETHOD
Relational Dataset	Payment Method Attr + Text (IL)	SAP_FI_IL_IFIPAYMENTMETHOD
Dimension	Payment Method	SAP_FI_PayMethodCountryRegion

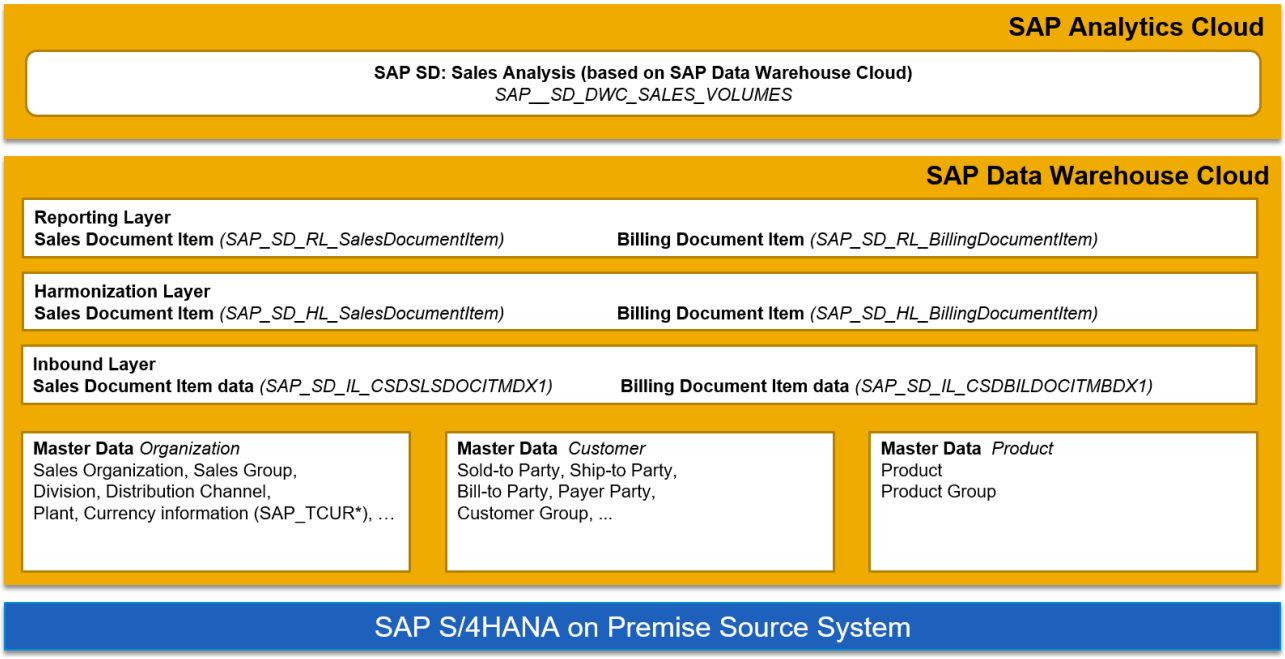
Alternative: Create a custom CDS-views

Instead of removing the dependency to those three views in your release OP2020, an alternative is to create two custom CDS-Views by copying the original CDS-Views. The copies have to be extraction enabled. In SAP Data Warehouse Cloud, create remote tables based on the custom CDS-Views. Then replace the remote tables delivered in the content in the following views with the new remote tables:

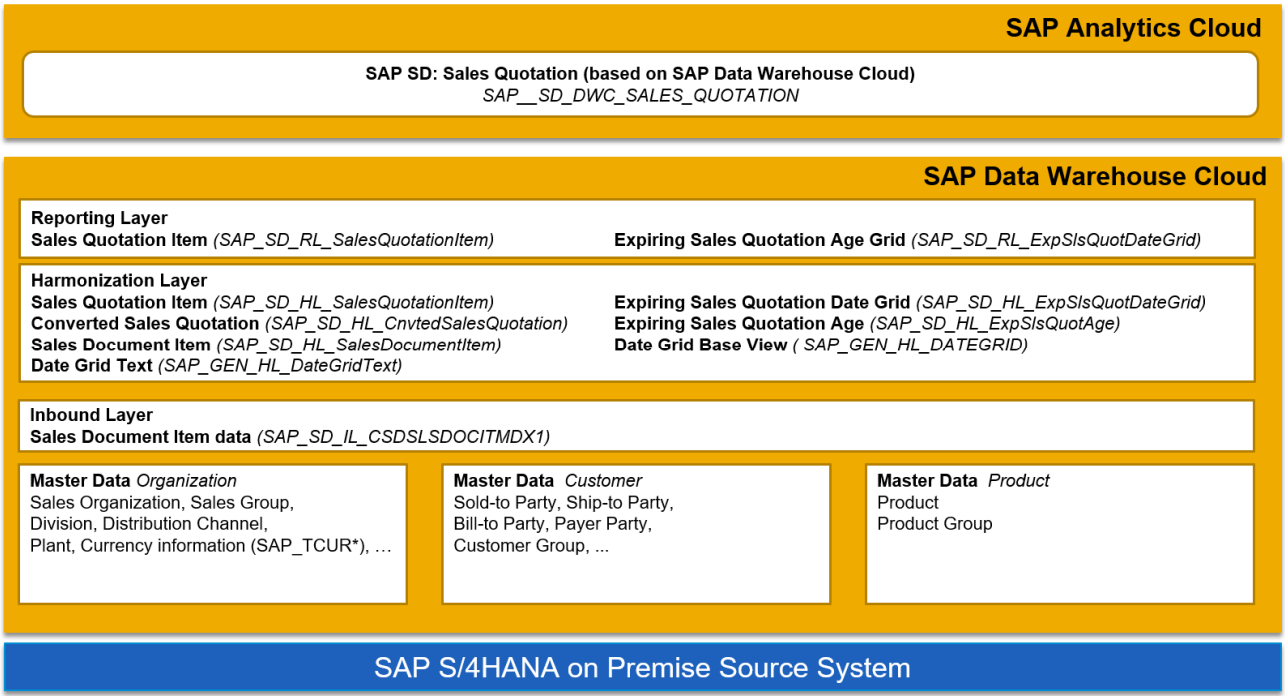
- Plant Attr + Text (IL) *SAP_MM_IL_PLANT,*
- Storage Location Attr + Text (IL) *SAP_LO_IL_ISTORAGELOCATION and*
- Payment Method Attr + Text (IL) *SAP_FI_IL_IFIPAYMENTMETHOD.*

4.3.2 *Architecture and Abstract*

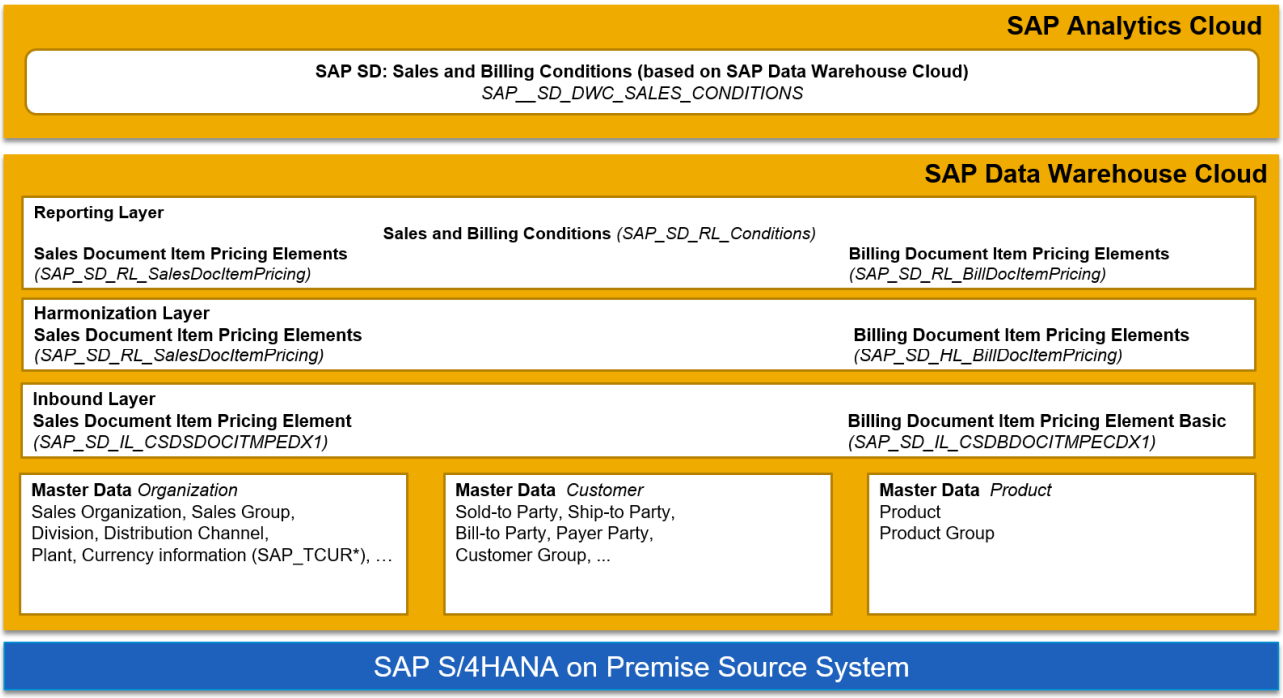
The high-level architecture of the SAP Sales Analysis for SAP S/4HANA package is as follows:



The high-level architecture of the Sales Quotation is as follows:



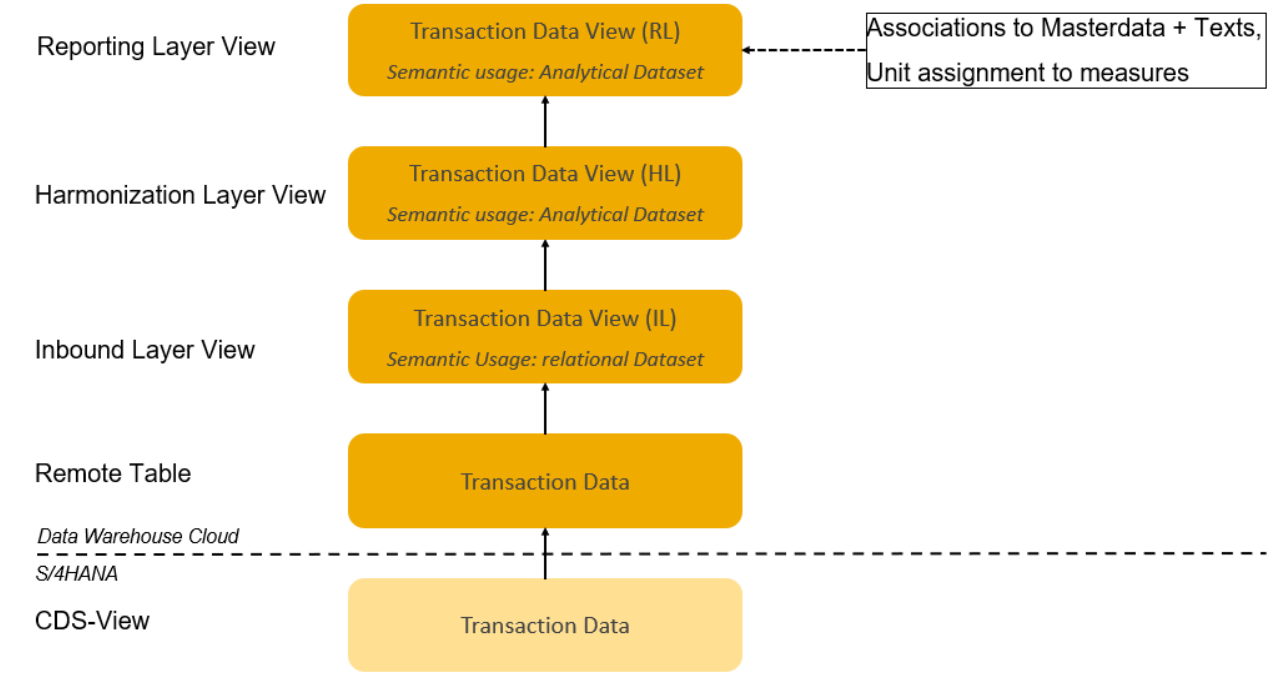
The high-level architecture of the SAP Sales and Billing Conditions Analysis for SAP S/4HANA package is as follows:



The architecture consists of an inbound layer, an harmonization layer and a reporting layer in accordance with SAP Data Warehouse Cloud modelling best practices and guidelines. The SD transaction data models have been developed leveraging SAP Data Warehouse Cloud virtualization capabilities in three distinct layers :

- An inbound layer view (SAP_SD_IL*) that is in most parts a mirror of the CDS view / remote table from SAP S/4HANA.
- A harmonized layer view (SAP_SD_HL*), which uses the inbound layer view and enhances it with restricted key figures and filters / logic.
- A reporting layer view (SAP_SD_RL*), which uses the harmonization layer view and adds calculated key figures and master data associations for attributes and texts. This layer is also used to connect to the SAP Analytics Cloud stories.

Layer concept



4.3.3 *Stories*

This content package covers three areas from Sales and Distribution (SD), each covered by the following stories:

- SAP SD: Sales Analysis (based on SAP Data Warehouse Cloud)
- SAP SD: Sales Conditions (based on SAP Data Warehouse Cloud)
- SAP SD: Sales Quotations (based on SAP Data Warehouse Cloud)

These stories are based on the two following SAP Data Warehouse Cloud views:

SAP SD: Sales Analysis (SAP Data Warehouse Cloud) story:

- Sales Document Item (SAP_SD_RL_SalesDocumentItem)
- Billing Document Item (SAP_SD_RL_BillingDocumentItem)

SAP SD: Sales Conditions (based on SAP Data Warehouse Cloud)

- Sales and Billing Conditions (SAP_SD_RL_Conditions)

SAP SD: Sales Quotations (based on SAP Data Warehouse Cloud)

- Sales Quotation Item (SAP_SD_RL_SalesQuotationItem).
- Expiring Sales Quotation Age Grid (SAP_SD_RL_ExpSlsQuotDateGrid).

Please navigate to the SAP Analytics Cloud content documentation for details.

4.3.4 ***Models***

4.3.4.1 Master data

4.3.4.1.1 Introduction

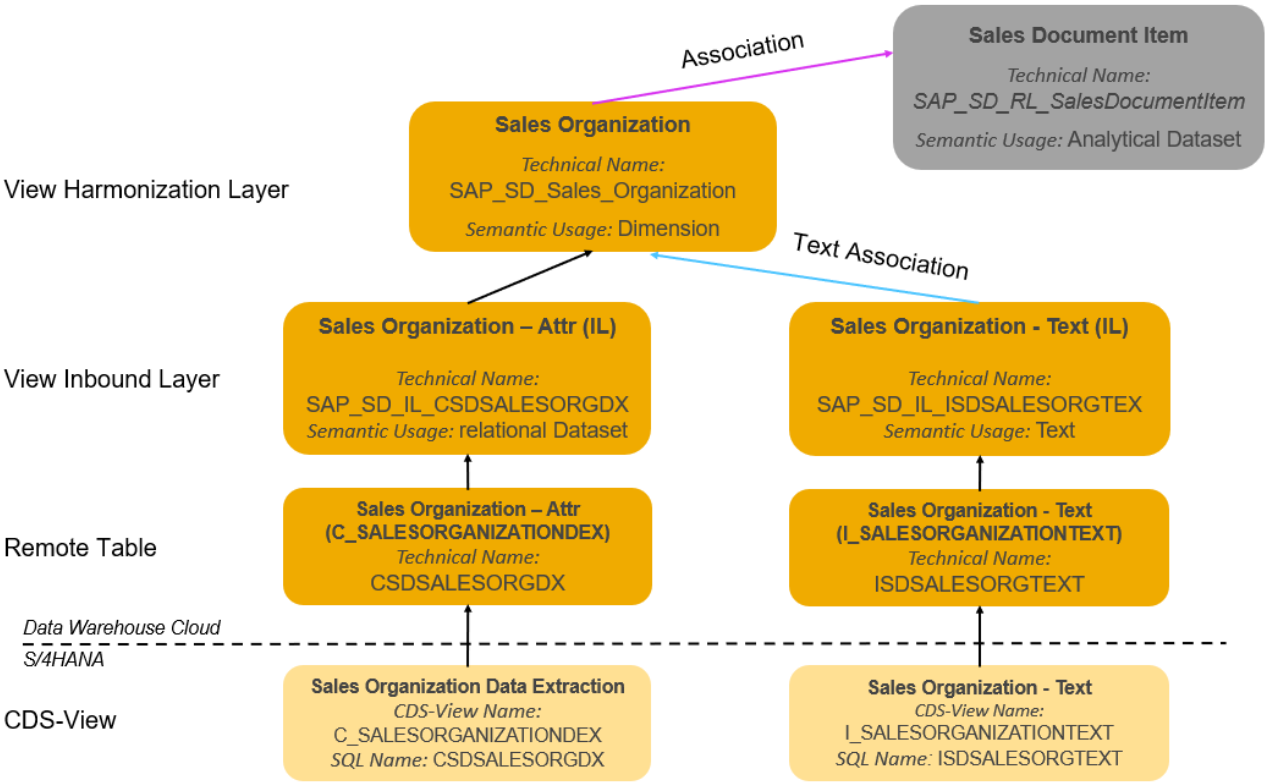
Master data comes in different flavors:

- Master data with attributes and texts
- Master data with text only and no attributes

Either the views for attributes and texts are distinct views or attributes and texts are combined in one view only. Therefore, the master data models and the modelling in Data Warehouse Cloud need to be slightly adapted per case.

Master data views have been created following SAP Data Warehouse Cloud modelling guidelines and best practices:

Case 1: Master data – attributes and texts; separate CDS-Views for attributes and texts

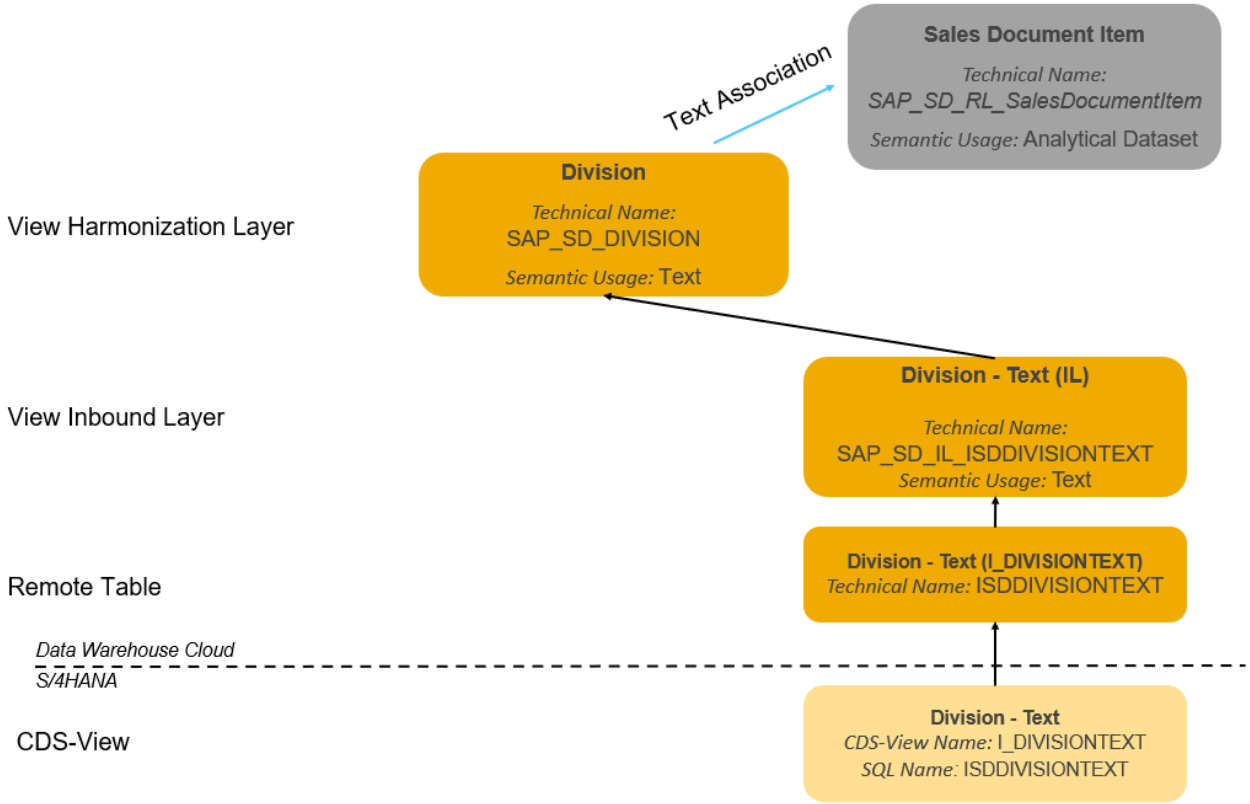


- The remote tables are 1:1 representations of the SAP S/4HANA CDS-views for master data and text CDS-views.
- The inbound layer views use the remote tables. Sometimes data type adjustments e.g. for language, are necessary.
- The harmonization layer view brings master data and text together using text association. This view has the semantic type „Dimension”. This view is then associated to the relevant transaction data in the transaction data reporting layer view.

Case 2: Master data – text only, one CDS-View for texts

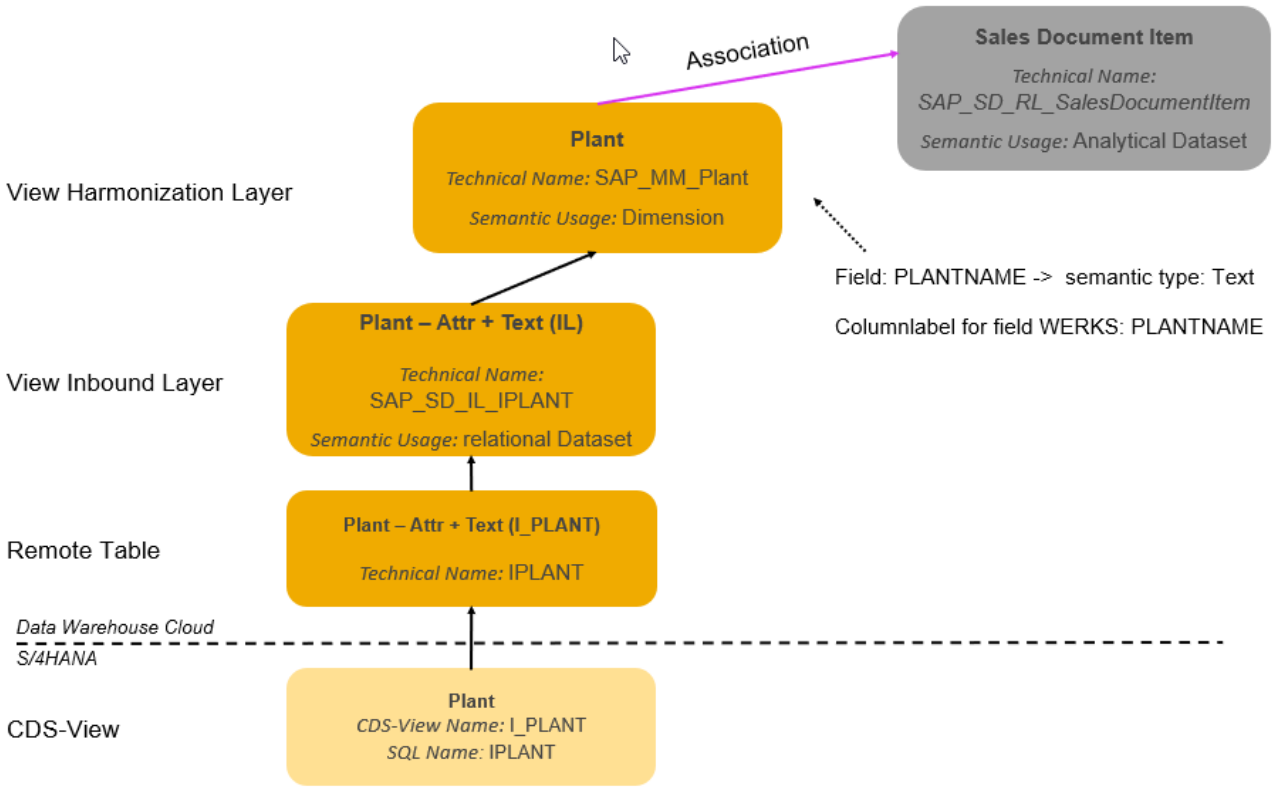
For master data without attributes - text only - the harmonization layer view is directly based on the inbound layer text view and its semantic type is “Text”.

This view is associated to the relevant transaction data in the transaction data reporting layer view as a text association.



Case 3: Master data – attributes and texts; one CDS-View for attributes incl. language independent texts

Within the harmonization layer view, the field containing the text is set to semantic type “text” and entered as a column label for the respective key field.
This view is associated to the relevant transaction data in the transaction data reporting layer view.



4.3.4.1.2 Overview of master data views

Find the most important master data views in the table below. The entire set of master data views can best be explored directly in your SAP Data Warehouse Cloud system.

Master Data	Master Data Type	Technical Name
Sales Organization	Attributes and Texts	SAP_SD_Sales_Organization
Distribution Channel	Texts	SAP_SD_DistributionChannel
Customer	Attributes and Texts	SAP_LO_Customer
Customer Group	Texts	SAP_SD_Customer_Group
Sales District	Texts	SAP_SD_SalesDistrict
Division	Texts	SAP_SD_Division
Sales Office	Texts	SAP_SD_SalesOffice
Company Code	Attributes and Texts	SAP_FI_Company_Code
Sales Document Category	Texts	SAP_SD_SalesDocumentCategory
Sales Document Item Category	Texts	SAP_SD_SalesDocItemCategory
Billing Document Category	Texts	SAP_SD_BillingDocCategory
Billing Document Type	Texts	SAP_SD_BillingDocumentType
Sales Document Type	Texts	SAP_SD_SalesDocumentType
Product Group	Texts	SAP_LO_ProductGroup
Sales Group	Texts	SAP_SD_SalesGroup
Statistical Value Control	Texts	SAP_SD_StatisticalValueControl
Plant	Attributes and Texts	SAP_MM_Plant
Condition Type	Texts	SAP_SD_Condition_Type
Condition Class	Texts	SAP_SD_Condition_Class
Condition Category	Texts	SAP_SD_Condition_Category
Condition Origin	Texts	SAP_SD_Condition_Origin
Condition Application	Texts	SAP_SD_Condition_Application

4.3.4.2 Currency Conversion

For general instructions how to setup the Currency Conversion initially and which standard setting apply, please refer to the chapter 3.5 Setup Currency Conversion.

All amount key figures are provided in document currency as well as company code currency in the reporting layer views or harmonization layer views.

In the SAP Analytics Cloud stories only the key figures in company code currency are used, to allow for a meaningful aggregation. To ensure this, a filter on Company Code is mandatory and of single value.

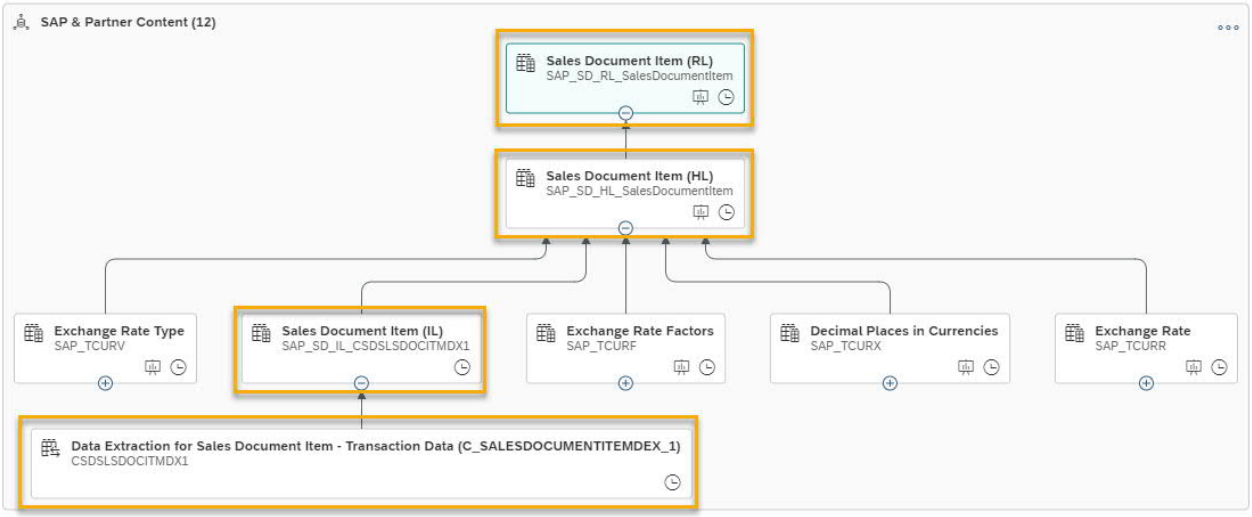
Please adapt the story filter in the data model if you want to analyze more than one Company Code at a time. Depending on the Company Code Currency of the Company Codes, adapt the currency conversion to meet your requirements and to not add up different currencies accidentally.

4.3.4.3 Transaction data

4.3.4.3.1 Sales Document Item

The sales document item view contains real-time sales document header and item data enhanced with calculated key figures and master data associations to organizational, customer, product and other master data.

The following lineage diagram shows the entities described in this chapter:



The following sales document categories are included and are sourced from the sales document item data:

- Inquiry (A)
- Quotation (B)
- Order (C)
- Contract (G)
- Returns (H)
- Order w/o charge (I)
- Credit Memo Request (K)
- Debit Memo Request (L)

Data Extraction for Sales Document Item - Transaction Data

The remote table *Data Extraction for Sales Document Item - Transaction Data (C_SalesDocumentItemDEX_1) (technical name: CSDSLSDOCITMDX1)* is based on the CDS-View *Data Extraction for Sales Document Item (technical Name CDS-View Name:*

C_SalesDocumentItemDEX_1, SQL Name: CSDSLSDOCITMDX1) from SAP S/4HANA. For productive use consider replication the data to SAP Data Warehouse Cloud for better reporting performance.

Sales Document Item (IL)

The inbound layer view *Sales Document Item (IL) (SAP_SD_IL_CSDSLSDOCITMDX1)* is based on the remote table *Data Extraction for Sales Document Item - Transaction Data (C_SalesDocumentItemDEX_1)*. Minor adjustments, like data type conversions and the conversion from string to a date type for all fields of type date is modeled here (e.g. TO_DATE(CREATIONDATE)).

Sales Document Item (HL)

The harmonization layer view *Sales Document Item (HL) (SAP_SD_HL_SalesDocumentItem)* uses the inbound layer view *Sales Document Item (IL)* and adds a filter on the field Statistical Values (STATISTICALVALUECONTROL), as only records with an initial value in this field are relevant for reporting.
Formula: STATISTICALVALUECONTROL = ''
In addition, Measures with an amount are converted from Document Currency to Company Code Currency using a currency conversion column.
Date fields are renamed to …_date to support date functions and capabilities of SAP Analytics Cloud.

The CDS-View *Data Extraction for Sales Document Item* (C_SALESDOCUMENTITEMDEX1) sources the field Return Item Processing Type (ISRETURNSITEM), which identifies, if the item is a return-like document. This field is used to fill the new field Credit/debit posting item level (CI/DI). Find the calculation in the below table.

The Harmonization Layer also contains the following calculated columns, which are the basis for calculation of the key figures in the reporting layer:

Calculated column	Transformation Rule
Document category /Quotation/Order/Delivery/Invoice	Fill with “B” for **Quotations**, “A” for **Inquiries** and “O” for **Orders**. Formula: CASE WHEN SDDOCUMENTCATEGORY ='B' THEN 'Q' WHEN SDDOCUMENTCATEGORY ='A' THEN 'A' ELSE 'O' END
Credit/debit posting (C/D)	Fill with “D” (**Debit)** for sales documents or “C” (**Credit)** for returns (VBTYP = H) or credit memos requests (VBTYP = K) on header level. Formula: CASE SDDOCUMENTCATEGORY WHEN 'H' THEN 'C' WHEN 'K' THEN 'C' ELSE 'D' END
Credit/debit posting item level (CI/DI)	Differentiates between debit and credit postings (on document item level): Return Item Processing Type (ISRETURNSITEM = X) are credit postings, all others are debit postings. Formula: CASE WHEN ISRETURNSITEM = 'X' THEN 'CI' ELSE 'DI' END
Sales order probability	Calculate order probability of quotation header Formula: CASE WHEN SDDOCUMENTCATEGORY = 'B' THEN HDRORDERPROBABILITYINPERCENT/100 ELSE 0 END
Order probability of quotation item	Calculate order probability of quotation item Formula: CASE WHEN SDDOCUMENTCATEGORY = 'B' THEN ITEMORDERPROBABILITYINPERCENT/100 ELSE 0 END

Relevant for Sales	Calculate Relevance for Sales: Sales documents, which are not billing relevant and the total delivery status is initial, should be excluded from reporting Formula: CASE WHEN (ITEMISBILLINGRELEVANT='' AND TOTALDELIVERYSTATUS='') THEN '' ELSE 'X' END
Number of Sales Document Items	Constant = 1
Update Date	Returns the current date Formula: CURRENT_DATE()
For key figures with an amount, a currency conversion column has been created to convert from Document Currency to Company Code Currency	Conversion Type: M Reference Date: Sales Document_Date

Sales Document Item (RL)

In the reporting layer view *Sales Document Item (technical name: SAP_SD_RL_SalesDocumentItem),* calculated key figures are only calculated, if the Document Category/Quotation/Order/Delivery/Invoice equals “O” (= Order).

For the quotation key figures, see the sales quotation content model.

Use the basis key figures like *Net value of the order Item in Document Currency* (NETAMOUNT) and restrict them to Document Category = A to calculate key figures for Inquiries.

The content includes amongst others the following top measures and key figures:

- Incoming Sales Order Net Amount, Quantity and Cost:
  incoming sales order value, quantity and cost during a specific period.

- Incoming Customer Returns Net Amount, Quantity and Cost:
  the total amount, quantity and cost of Returns and Credit Memo Requests during a specified period.

Most of the restricted or calculated Key Figures are restricted using the following characteristics:

- Credit/debit posting (C/D),
- Credit/debit posting item level (CI/DI),
- Relevant for Sales and
- Document Category.

Key Figure	Type	Value Calculation / Restriction
Incoming Sales Order Net Amount in Document Currency	Calculated Key Figure	Incoming Sales Order Net Amount_Debit in Document Currency + Incoming Sales Order Net Amount_Credit in Document Currency * -1
Incoming Sales Order Net Amount_Debit in Document Currency	Restricted Key Figure	Key figure: Net value of the order item in document currency restricted by Debit/Credit Item = DI , Debit/Credit = D , Relevant for Sales = X, Document Category = O
Incoming Sales Order Net Amount_Credit in Document Currency	Restricted Key Figure	Key figure: Net value of the order item in document currency restricted by Debit/Credit Item = DI , Debit/Credit = C , Relevant for Sales = X, Document Category = O
Incoming Customer Returns Net Amount in Document Currency	Calculated Key Figure	Incoming Customer Returns Net Amount_Credit in Document Currency + Incoming Customer Returns Net Amount_Debit in Document Currency * -1
Incoming Customer Returns Net Amount_Debit in Document Currency	Restricted Key Figure	Key figure: Net value of the order item in document currency restricted by Debit/Credit Item = CI , Debit/Credit = D , Relevant for Sales = X, Document Category = O
Incoming Customer Returns Net Amount_Credit in Document Currency	Restricted Key Figure	Key figure: Net value of the order item in document currency restricted by Debit/Credit Item = CI , Debit/Credit = C , Relevant for Sales = X, Document Category = O

Incoming Sales Order Quantity	Restricted Key Figure	Key figure: Requested delivery qty in base unit restricted by Debit/Credit Item = DI , Debit/Credit = D and C , Relevant for Sales = X, Document Category = O
Incoming Customer Returns Quantity	Restricted Key Figure	Key figure: Requested delivery qty in base unit restricted by Debit/Credit Item = CI , Debit/Credit = D and C , Relevant for Sales = X, Document Category = O
Number of Incoming Sales Order Item	Restricted Key Figure	Key figure: Number of Sales Document Items restricted by Debit/Credit Item = DI , Debit/Credit = D and C , Relevant for Sales = X, Document Category = O
Number of Incoming Customer Returns Items	Restricted Key Figure	Key figure: Number of Sales Document Items restricted by Debit/Credit Item = CI , Debit/Credit = D and C , Relevant for Sales = X, Document Category = O
Incoming Sales Order Cost_Debit in Document Currency	Restricted Key Figure	Key figure: Cost in Document Currency restricted by Debit/Credit Item = DI , Debit/Credit = D, Relevant for Sales = X, Document Category = O
Incoming Sales Order Cost_Credit in Document Currency	Restricted Key Figure	Key figure: Cost in Document Currency restricted by Debit/Credit Item = DI , Debit/Credit = C, Relevant for Sales = X, Document Category = O
Incoming Customer Returns Cost_Debit in Document Currency	Restricted Key Figure	Key figure: Cost in Document Currency restricted by Debit/Credit Item = CI , Debit/Credit = D, Relevant for Sales = X, Document Category = O
Incoming Customer Returns Cost_Credit in Document Currency	Restricted Key Figure	Key figure: Cost in Document Currency restricted by Debit/Credit Item = CI , Debit/Credit = C, Relevant for Sales = X, Document Category = O
Incoming Sales Order Cost in Document Currency	Calculated Key Figure	Incoming Sales Order Cost_Debit in Document Currency + Incoming Sales Order Cost_Credit in Document Currency * -1
Incoming Customer Returns Cost in Document Currency	Calculated Key Figure	Incoming Customer Returns Cost_Credit in Document Currency + Incoming Customer Returns Cost_Debit in Document Currency * -1

Incoming Sales Order Net Amount in Company Code Currency	Calculated Key Figure	Incoming Sales Order Net Amount_Debit in Company Code Currency + Incoming Sales Order Net Amount_Credit in Company Code Currency * -1
Incoming Sales Order Net Amount_Debit in Company Code Currency	Restricted Key Figure	Key figure: Net value of the order item in Company Code Currency restricted by Debit/Credit Item = DI , Debit/Credit = D , Relevant for Sales = X, Document Category = O
Incoming Sales Order Net Amount_Credit in Company Code Currency	Restricted Key Figure	Key figure: Net value of the order item in Company Code Currency restricted by Debit/Credit Item = DI , Debit/Credit = C , Relevant for Sales = X, Document Category = O
Incoming Customer Returns Net Amount in Company Code Currency	Calculated Key Figure	Incoming Customer Returns Net Amount_Credit in Company Code Currency + Incoming Customer Returns Net Amount_Debit in Company Code Currency * -1
Incoming Customer Returns Net Amount_Debit in Company Code Currency	Restricted Key Figure	Key figure: Net value of the order item in Company Code Currency restricted by Debit/Credit Item = CI , Debit/Credit = D , Relevant for Sales = X, Document Category = O
Incoming Customer Returns Net Amount_Credit in Company Code Currency	Restricted Key Figure	Key figure: Net value of the order item in Company Code Currency restricted by Debit/Credit Item = CI , Debit/Credit = C , Relevant for Sales = X, Document Category = O
Incoming Sales Order Quantity	Restricted Key Figure	Key figure: Requested delivery qty in base unit restricted by Debit/Credit Item = DI , Debit/Credit = D and C , Relevant for Sales = X, Document Category = O
Incoming Customer Returns Quantity	Restricted Key Figure	Key figure: Requested delivery qty in base unit restricted by Debit/Credit Item = CI , Debit/Credit = D and C , Relevant for Sales = X, Document Category = O
Number of Incoming Sales Order Item	Restricted Key Figure	Key figure: Number of Sales Document Items restricted by Debit/Credit Item = DI , Debit/Credit = D and C , Relevant for Sales = X, Document Category = O
Number of Incoming Customer Returns Items	Restricted Key Figure	Key figure: Number of Sales Document Items

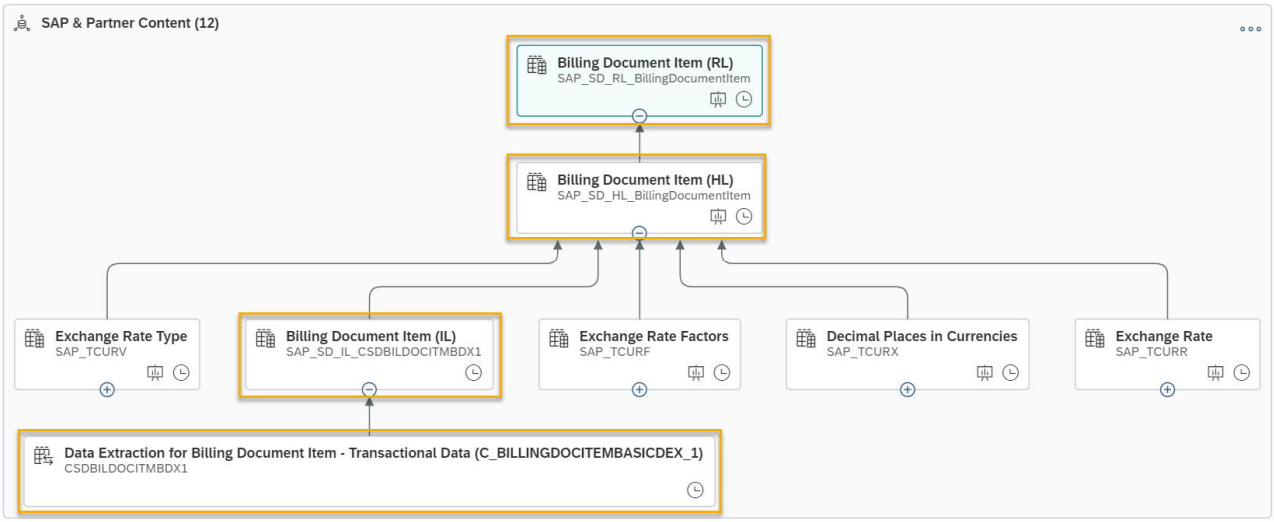
		restricted by Debit/Credit Item = CI , Debit/Credit = D and C , Relevant for Sales = X, Document Category = O
Incoming Sales Order Cost_Debit in Company Code Currency	Restricted Key Figure	Key figure: Cost in Company Code Currency restricted by Debit/Credit Item = DI , Debit/Credit = D, Relevant for Sales = X, Document Category = O
Incoming Sales Order Cost_Credit in Company Code Currency	Restricted Key Figure	Key figure: Cost in Company Code Currency restricted by Debit/Credit Item = DI , Debit/Credit = C, Relevant for Sales = X, Document Category = O
Incoming Customer Returns Cost_Debit in Company Code Currency	Restricted Key Figure	Key figure: Cost in Company Code Currency restricted by Debit/Credit Item = CI , Debit/Credit = D, Relevant for Sales = X, Document Category = O
Incoming Customer Returns Cost_Credit in Company Code Currency	Restricted Key Figure	Key figure: Cost in Company Code Currency restricted by Debit/Credit Item = CI , Debit/Credit = C, Relevant for Sales = X, Document Category = O
Incoming Sales Order Cost in Company Code Currency	Calculated Key Figure	Incoming Sales Order Cost_Debit in Company Code Currency + Incoming Sales Order Cost_Credit in Company Code Currency * -1
Incoming Customer Returns Cost in Company Code Currency	Calculated Key Figure	Incoming Customer Returns Cost_Credit in Company Code Currency + Incoming Customer Returns Cost_Debit in Company Code Currency * -1

4.3.4.3.2 Billing Document Item

This model contains billing document header as well as item data for billing documents with the following sales document categories:

- Invoice (M)
- Canceled Invoice (N)
- Credit Memo (O)
- Canceled Credit Memo (S)
- Debit Memo (P)
- Pro Forma Invoice (U)
- Intercompany Invoice (5)
- Intercompany Credit Memo (6)
- Preliminary Billing Document (PBD)

The following lineage diagram shows the entities described in this chapter:



Data Extraction for Billing Document Item - Transaction Data

The remote table *Data Extraction for Billing Document Item - Transaction Data (C_BillingDocItemBasicDEX_1) (technical name: CSDBILDOCITMBDX1)* is based on the CDS-View *Data Extraction for Billing Document Item (technical Name CDS-View Name C_BillingDocItemBasicDEX_1, SQL Name CSDBILDOCITMBDX1)* from SAP S/4HANA.

For productive use consider replication the data to SAP Data Warehouse Cloud for better reporting performance.

Billing Document Item (IL)

The inbound layer view *Billing Document Item (IL)* (*SAP_SD_IL_CSDBILDOCITMBDX1*) is based on the remote table. Minor adjustments, like data type conversions and the conversion from string to a date type for all fields of type date is modeled here (e.g. TO_DATE(CREATIONDATE)).

Billing Document Item (HL)

The harmonization layer view *Billing Document Item (HL) (technical name: SAP_SD_HL_BillingDocumentItem)* uses the Inbound Layer View and adds the following filters:

- is relevant for statistics (STATISTICALVALUECONTROL = ``)
- Billing category not equal to ‘Down payment request’ (`P`)
- is not temporary (Draft indicator =``)
- Billing Plan Rule not equal to ‘Down payment in milestone billing on percentage basis (`4`) and not equal to ‘Down payment in milestone billing on a value basis (`5`) or Statistic control value not equal to ‘Y’
- Sales Document category not equal to ‘Preliminary Billing Document’ (‘PBD’), Canceled Invoice (‘N’), Canceled Credit Memo (‘S’), ‘Pro Forma Invoice’ (‘U’).
  Filter expression:
  STATISTICALVALUECONTROL = '' AND
  SDDOCUMENTCATEGORY <> 'PBD' AND
  SDDOCUMENTCATEGORY <>'N' AND
  SDDOCUMENTCATEGORY <>'S' AND
  SDDOCUMENTCATEGORY <>'U' AND
  BILLINGDOCUMENTCATEGORY <> 'P' AND
  BILLINGDOCUMENTISTEMPORARY = '' AND
  (BILLINGPLANRULE<>'4' AND BILLINGPLANRULE<>'5' OR
  STATISTICALVALUECONTROL <>'Y')

In addition, Measures with an amount are converted from Document Currency to Company Code Currency using a currency conversion column.
Date fields are renamed to …_date to support date functions and capabilities of SAP Analytics Cloud.

The CDS-View *Data Extraction for Billing Document Item* (C_BILLINGDOCITEMBASICDEX1) sources the field Return Item Processing Type (ISRETURNSITEM), which identifies, if the item is a return-like document. This field is used to fill the new field Credit/debit posting item level (CI/DI). Find the calculation in the below table.

The harmonization layer embeds calculated columns:

Calculated column	Transformation Rule
Document category /Quotation/Order/Delivery/Invoice	Fill with “I” for **Invoice**
Credit/debit posting (C/D)	Fill with “D” (**Debit**, for invoice documents) or “C” (**Credit**, for credit memos) on header level Formula: CASE SDDOCUMENTCATEGORY WHEN 'N' THEN 'C' WHEN 'O' THEN 'C' WHEN '6' THEN 'C' ELSE 'D' END
Credit/debit posting item level (CI/DI)	Differentiates between debit and credit postings (on document item level): Return Item Processing Type (ISRETURNSITEM = X) are credit postings, all others are debit postings. Formula: CASE WHEN ISRETURNSITEM = 'X' THEN 'CI' ELSE 'DI' END
Number of Billing items	Constant = 1
Update Date	Returns the current date

	Formula: CURRENT_DATE()
For all amount Key Figures a currency conversion column has been created to convert from Document Currency to Company Code Currency	Conversion Type: M Reference Date: Sales Document_Date

Billing Document Item (RL)

The Reporting Layer View *Billing Document Item (SAP_SD_RL_BillingDocumentItem)* contains transaction data from billing documents header and items.

The content includes amongst others the following top measures and key figures:

- Sales, Credit memo, cancellation volumes and quantities
- (The total amount of invoices that have been canceled during a specified period. This is based on customer invoices that have been canceled. Cancellation documents are not considered at all.)
- Profit margin and Credit memo profit margin
- Net sales volume: Sales volume minus credit memos
- Net profit margin: Sales profit margin minus credit memo profit margin
- Net sales cost: Difference between net sales volume and net profit margin.

This view contains billing document data for the following sales document categories:

- Invoice (M)
- Credit Memo (O)
- Debit Memo (P)
- Intercompany Invoice (5)
- Intercompany Credit Memo (6)

Most of the restricted or calculated Key Figures are restricted using the following characteristics:

- Credit/debit posting (C/D),
- Credit/debit posting item level (CI/DI),

- Overall Billing Status (C = canceled)

Key Figure	Type	Value Calculation / Restriction
Sales Volume Net Amount in Document Currency	Calculated Key Figure	Sales Volume Net Amount_Debit in Document Currency + Sales Volume Net Amount_Credit in Document Currency * -1
Sales Volume Net Amount_Debit in Document Currency	Restricted Key Figure	Key figure: Net Value of Billing Item in Document Currency Restricted by Debit/Credit Item = DI , Debit/Credit = D, Overall Billing Status <> C
Sales Volume Net Amount_Credit in Document Currency	Restricted Key Figure	Key figure: Net Value of Billing Item in Document Currency Restricted by Debit/Credit Item = DI , Debit/Credit = C, Overall Billing Status <> C
Customer Credit Memo Net Amount in Document Currency	Calculated Key Figure	Customer Credit Memo Net Amount_Credit in Document Currency + Customer Credit Memo Net Amount_Debit in Document Currency * -1
Customer Credit Memo Net Amount_Debit in Document Currency	Restricted Key Figure	Key figure: Net Value of Billing Item in Document Currency Restricted by Debit/Credit Item = CI , Debit/Credit = D, Overall Billing Status <> C
Customer Credit Memo Net Amount_Credit in Document Currency	Restricted Key Figure	Key figure: Net Value of Billing Item in Document Currency Restricted by Debit/Credit Item = CI , Debit/Credit = C, Overall Billing Status <> C
Sales Profit Margin Net Amount in Document Currency	Calculated Key Figure	Sales Profit Margin Net Amount_Debit in Document Currency + Sales Profit Margin Net Amount_Credit in Document Currency * -1
Sales Profit Margin Net Amount_Debit in Document Currency	Restricted Key Figure	Key figure: Sales Profit Margin Net Amount Basis in Document Currency Restricted by Debit/Credit Item = DI , Debit/Credit = D, Overall Billing Status <> C
Sales Profit Margin Net Amount_Credit in Document Currency	Restricted Key Figure	Key figure: Sales Profit Margin Net Amount Basis in Document Currency Restricted by Debit/Credit Item = DI , Debit/Credit = C, Overall Billing Status <> C

Sales Profit Margin Net Amount Basis in Document Currency	Calculated Key Figure	Net Value of Billing Item in Document Currency – Cost in Document Currency
Customer Credit Memo Profit Margin Net Amount in Document Currency	Calculated Key Figure	Customer Credit Memo Profit Margin Net Amount_Credit in Document Currency + Customer Credit Memo Profit Margin Net Amount_Debit in Document Currency * -1
Customer Credit Memo Profit Margin Net Amount_Debit in Document Currency	Restricted Key Figure	Key figure: Sales Profit Margin Net Amount Basis in Document Currency Restricted by Debit/Credit Item = CI , Debit/Credit = D, Overall Billing Status <> C
Customer Credit Memo Profit Margin Net Amount_Credit in Document Currency	Restricted Key Figure	Key figure: Sales Profit Margin Net Amount Basis in Document Currency Restricted by Debit/Credit Item = CI , Debit/Credit = C, Overall Billing Status <> C
Canceled Sales Volume Net Amount in Document Currency	Calculated Key Figure	Canceled Sales Volume Net Amount_Debit in Document Currency + Canceled Sales Volume Net Amount_Credit in Document Currency * -1
Canceled Sales Volume Net Amount_Debit in Document Currency	Restricted Key Figure	Key figure: Net Value of Billing Item in Document Currency Restricted by Debit/Credit Item = DI , Debit/Credit = D, Overall Billing Status = C
Canceled Sales Volume Net Amount_Credit in Document Currency	Restricted Key Figure	Key figure Net Value of Billing Item in Document Currency Restricted by Debit/Credit Item = DI , Debit/Credit = C, Overall Billing Status = C
Sales Volume Quantity	Restricted Key Figure	Key figure: Billing Quantity in Base Unit Restricted by Debit/Credit Item = DI , Debit/Credit = C and D, Overall Billing Status <> C
Customer Credit Memo Quantity	Restricted Key Figure	Key figure: Billing Quantity in Base Unit Restricted by Debit/Credit Item = CI , Debit/Credit = C and D, Overall Billing Status <> C
Number of Billing Items	Restricted Key Figure	Key figure: Number of Billing Items Restricted by Debit/Credit Item = DI , Debit/Credit = C and D, Overall Billing Status <> C
Number of Customer Credit Memo Items	Restricted Key Figure	Key figure: Number of Billing Items Restricted by Debit/Credit Item = CI , Debit/Credit = C and D, Overall Billing Status <> C

Sales Profit Margin Ratio	Calculated Key Figure	Sales Profit Margin Net Amount in Document Currency / Sales Volume Net Amount in Document Currency
Sales Volume Cost Net Amount in Document Currency	Calculated Key Figure	Sales Volume Cost Net Amount_Debit in Document Currency + Sales Volume Cost Net Amount_Credit in Document Currency * -1
Sales Volume Cost Net Amount_Debit in Document Currency	Restricted Key Figure	Key figure: Cost in Document Currency Restricted by Debit/Credit Item = DI , Debit/Credit = D, Overall Billing Status <> C
Sales Volume Cost Net Amount_Credit in Document Currency	Restricted Key Figure	Key figure: Cost in Document Currency Restricted by Debit/Credit Item = DI , Debit/Credit = C, Overall Billing Status <> C
Customer Credit Memo Cost Net Amount in Document Currency	Calculated Key Figure	Customer Credit Memo Cost Net Amount_Credit in Document Currency + Customer Credit Memo Cost Net Amount_Debit in Document Currency * -1
Customer Credit Memo Cost Net Amount_Debit in Document Currency	Restricted Key Figure	Key figure: Cost in Document Currency Restricted by Debit/Credit Item = CI , Debit/Credit = D, Overall Billing Status <> C
Customer Credit Memo Cost Net Amount_Credit in Document Currency	Restricted Key Figure	Key figure: Cost in Document Currency Restricted by Debit/Credit Item = CI , Debit/Credit = C, Overall Billing Status <> C
Net Sales Volume Net Amount in Document Currency	Calculated Key Figure	Sales Volume Net Amount in Document Currency – Customer Credit Memo Net Amount in Document Currency
Net Sales Profit Margin Net Amount in Document Currency	Calculated Key Figure	Sales Profit Margin Net Amount in Document Currency – Customer Credit Memo Profit Margin Net Amount in Document Currency
Net Sales Cost Amount in Document Currency	Calculated Key Figure	Net Sales Volume Net Amount in Document Currency – Net Sales Profit Margin Net Amount in Document Currency
Sales Volume Net Amount in Company Code Currency	Calculated Key Figure	Sales Volume Net Amount_Debit in Company Code Currency + Sales Volume Net Amount_Credit in Company Code Currency * -1
Sales Volume Net Amount_Debit in Company Code Currency	Restricted Key Figure	Key figure: Net Value of Billing Item in Company Code Currency Restricted by Debit/Credit Item = DI , Debit/Credit = D, Overall Billing Status <> C

Sales Volume Net Amount_Credit in Company Code Currency	Restricted Key Figure	Key figure: Net Value of Billing Item in Company Code Currency Restricted by Debit/Credit Item = DI , Debit/Credit = C, Overall Billing Status <> C
Customer Credit Memo Net Amount in Company Code Currency	Calculated Key Figure	Customer Credit Memo Net Amount_Credit in Company Code Currency + Customer Credit Memo Net Amount_Debit in Company Code Currency * -1
Customer Credit Memo Net Amount_Debit in Company Code Currency	Restricted Key Figure	Key figure: Net Value of Billing Item in Company Code Currency Restricted by Debit/Credit Item = CI , Debit/Credit = D, Overall Billing Status <> C
Customer Credit Memo Net Amount_Credit in Company Code Currency	Restricted Key Figure	Key figure: Net Value of Billing Item in Company Code Currency Restricted by Debit/Credit Item = CI , Debit/Credit = C, Overall Billing Status <> C
Sales Profit Margin Net Amount in Company Code Currency	Calculated Key Figure	Sales Profit Margin Net Amount_Debit in Company Code Currency + Sales Profit Margin Net Amount_Credit in Company Code Currency * -1
Sales Profit Margin Net Amount_Debit in Company Code Currency	Restricted Key Figure	Key figure: Sales Profit Margin Net Amount Basis in Company Code Currency Restricted by Debit/Credit Item = DI , Debit/Credit = D, Overall Billing Status <> C
Sales Profit Margin Net Amount_Credit in Company Code Currency	Restricted Key Figure	Key figure: Sales Profit Margin Net Amount Basis in Company Code Currency Restricted by Debit/Credit Item = DI , Debit/Credit = C, Overall Billing Status <> C
Sales Profit Margin Net Amount Basis in Company Code Currency	Calculated Key Figure	Net Value of Billing Item in Company Code Currency – Cost in Company Code Currency
Customer Credit Memo Profit Margin Net Amount in Company Code Currency	Calculated Key Figure	Customer Credit Memo Profit Margin Net Amount_Credit in Company Code Currency + Customer Credit Memo Profit Margin Net Amount_Debit in Company Code Currency * -1
Customer Credit Memo Profit Margin Net Amount_Debit in Company Code Currency	Restricted Key Figure	Key figure: Sales Profit Margin Net Amount Basis in Company Code Currency Restricted by Debit/Credit Item = CI , Debit/Credit = D, Overall Billing Status <> C

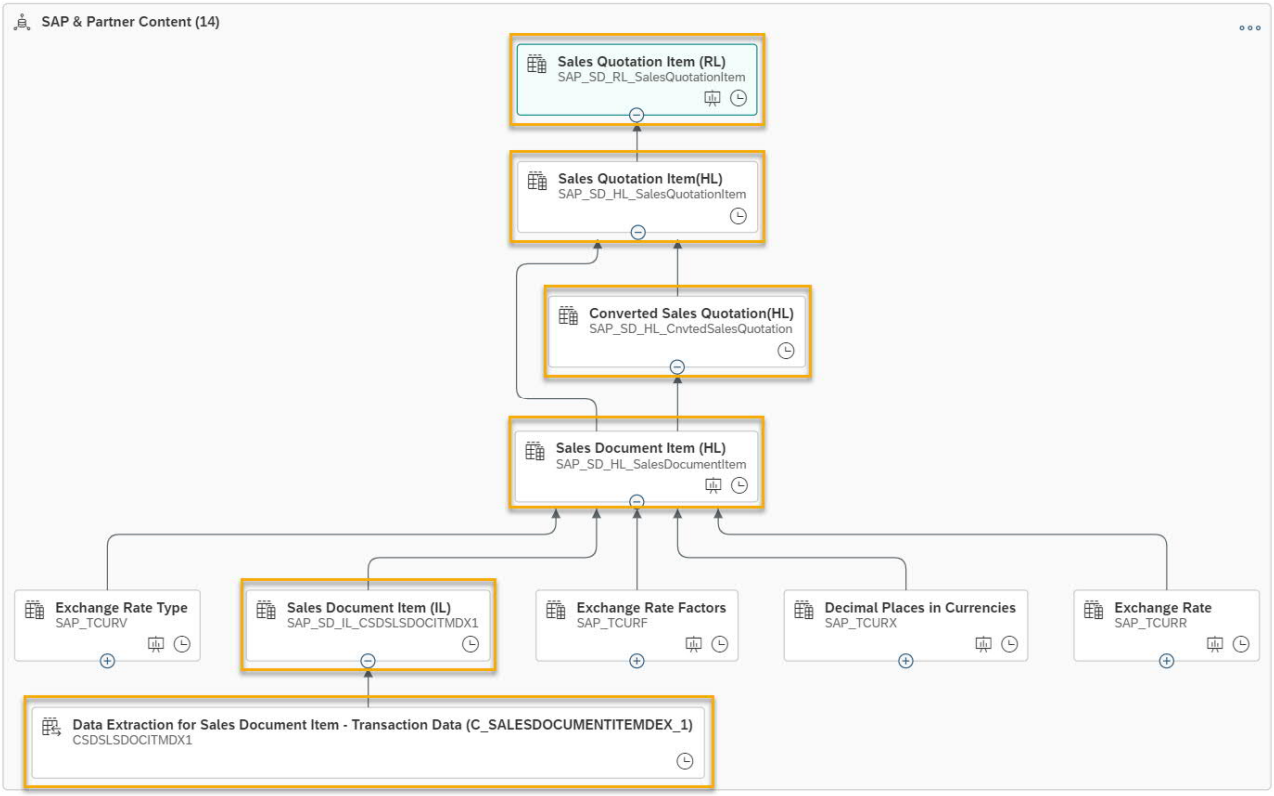
Customer Credit Memo Profit Margin Net Amount_Credit in Company Code Currency	Restricted Key Figure	Key figure: Sales Profit Margin Net Amount Basis in Company Code Currency Restricted by Debit/Credit Item = CI , Debit/Credit = C, Overall Billing Status <> C
Canceled Sales Volume Net Amount in Company Code Currency	Calculated Key Figure	Canceled Sales Volume Net Amount_Debit in Company Code Currency + Canceled Sales Volume Net Amount_Credit in Company Code Currency * -1
Canceled Sales Volume Net Amount_Debit in Company Code Currency	Restricted Key Figure	Key figure: Net Value of Billing Item in Company Code Currency Restricted by Debit/Credit Item = DI , Debit/Credit = D, Overall Billing Status = C
Canceled Sales Volume Net Amount_Credit in Company Code Currency	Restricted Key Figure	Key figure: Net Value of Billing Item in Company Code Currency Restricted by Debit/Credit Item = DI , Debit/Credit = C, Overall Billing Status = C
Sales Volume Quantity	Restricted Key Figure	Key figure: Billing Quantity in Base Unit Restricted by Debit/Credit Item = DI , Debit/Credit = C and D, Overall Billing Status <> C
Customer Credit Memo Quantity	Restricted Key Figure	Key figure: Billing Quantity in Base Unit Restricted by Debit/Credit Item = CI , Debit/Credit = C and D, Overall Billing Status <> C
Number of Billing Items	Restricted Key Figure	Key figure: Number of Billing Items Restricted by Debit/Credit Item = DI , Debit/Credit = C and D, Overall Billing Status <> C
Number of Customer Credit Memo Items	Restricted Key Figure	Key figure: Number of Billing Items Restricted by Debit/Credit Item = CI , Debit/Credit = C and D, Overall Billing Status <> C
Sales Profit Margin Ratio	Calculated Key Figure	Sales Profit Margin Net Amount in Company Code Currency / Sales Volume Net Amount in Company Code Currency
Sales Volume Cost Net Amount in Company Code Currency	Calculated Key Figure	Sales Volume Cost Net Amount_Debit in Company Code Currency + Sales Volume Cost Net Amount_Credit in Company Code Currency * -1
Sales Volume Cost Net Amount_Debit in Company Code Currency	Restricted Key Figure	Key figure: Cost in Company Code Currency Restricted by Debit/Credit Item = DI , Debit/Credit = D, Overall Billing Status <> C

Sales Volume Cost Net Amount_Credit in Company Code Currency	Restricted Key Figure	Key figure: Cost in Company Code Currency Restricted by Debit/Credit Item = DI , Debit/Credit = C, Overall Billing Status <> C
Customer Credit Memo Cost Net Amount in Company Code Currency	Calculated Key Figure	Customer Credit Memo Cost Net Amount_Credit in Company Code Currency + Customer Credit Memo Cost Net Amount_Debit in Company Code Currency * -1
Customer Credit Memo Cost Net Amount_Debit in Company Code Currency	Restricted Key Figure	Key figure: Cost in Company Code Currency Restricted by Debit/Credit Item = CI , Debit/Credit = D, Overall Billing Status <> C
Customer Credit Memo Cost Net Amount_Credit in Company Code Currency	Restricted Key Figure	Key figure: Cost in Company Code Currency Restricted by Debit/Credit Item = CI , Debit/Credit = C, Overall Billing Status <> C
Net Sales Volume Net Amount in Company Code Currency	Calculated Key Figure	Sales Volume Net Amount in Company Code Currency – Customer Credit Memo Net Amount in Company Code Currency
Net Sales Profit Margin Net Amount in Company Code Currency	Calculated Key Figure	Sales Profit Margin Net Amount in Company Code Currency – Customer Credit Memo Profit Margin Net Amount in Company Code Currency
Net Sales Cost Amount in Company Code Currency	Calculated Key Figure	Net Sales Volume Net Amount in Company Code Currency – Net Sales Profit Margin Net Amount in Company Code Currency

4.3.4.3.3 Sales Quotation Item

These models contain Sales Quotation header and item data. The models also provide information about Sales Quotations converted into Sales Orders and expired and expiring Sales Quotations.

The following lineage diagram shows the entities described in this chapter:



Converted Sales Quotation (HL)

The harmonization layer view *Converted Sales Quotation (HL)* (SAP_SD_HL_CnvtedSalesQuotation) uses the inbound layer view Sales Document Item (SAP_SD_HL_SalesDocumentItem) to get Sales Orders created from Sales Quotation. This view provides order quantities and order amount for sales quotation item. The Order amount is available in both document currency and company code currency.

The Sales Document Item is restricted to *Sales Orders* (SDDOCUMENTCATEGORY = C) and *Document Category of Preceding SD Document* (REFERENCESDDOCUMENTCATEGORY = ‘B’). As from a quotation more than one

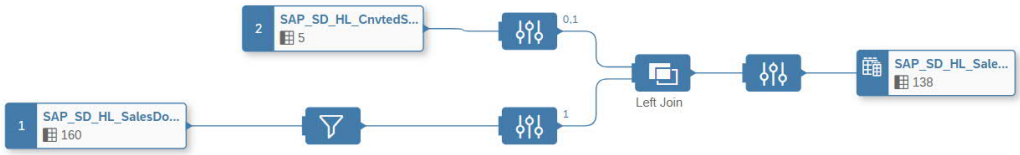
order/order item can be created, this view adds the order quantities and amount of all these sales orders and shows the result for the original Sales Quotation and Sales Quotation Item.

Sales Quotation Item (HL)

The harmonization layer *Sales Quotation Item (HL)* (SAP_SD_HL_SalesQuotationItem) uses the Harmonization layer *Sales Document Item (HL)* (SAP_SD_HL_SalesDocumentItem).

The view has the following logic:

- The view first applies filter on the source view *Sales Document Item (HL)* to get only the Sales Quotations (Document_CategoryQuotationOrde = 'Q')
- Projection Node is used to select fields that are relevant for Sales Quotations
- The output of the projection is then joined with the Converted Sales Quotation (HL) view to get the converted sales quotation amount for the sales quotation item



Sales Quotation Item (RL)

The reporting layer view *Sales Quotation Item (RL)* (SAP_SD_RL_SalesQuotationItem) provides information for Sales Quotation items including the conversion, expired quotations and expiring quotation in document currency as well as in company code currency.

This view uses an input parameter “Quotation Expiry Period (Days)”. This parameter is used to get the open quotation that will expire in the time frame provided by the parameter.

For e.g., if the parameter is set to 365 days, all open quotations that have validity less than 365 days from current date are considered as expiring quotations.

The following table provides the detailed calculations modeled in this view

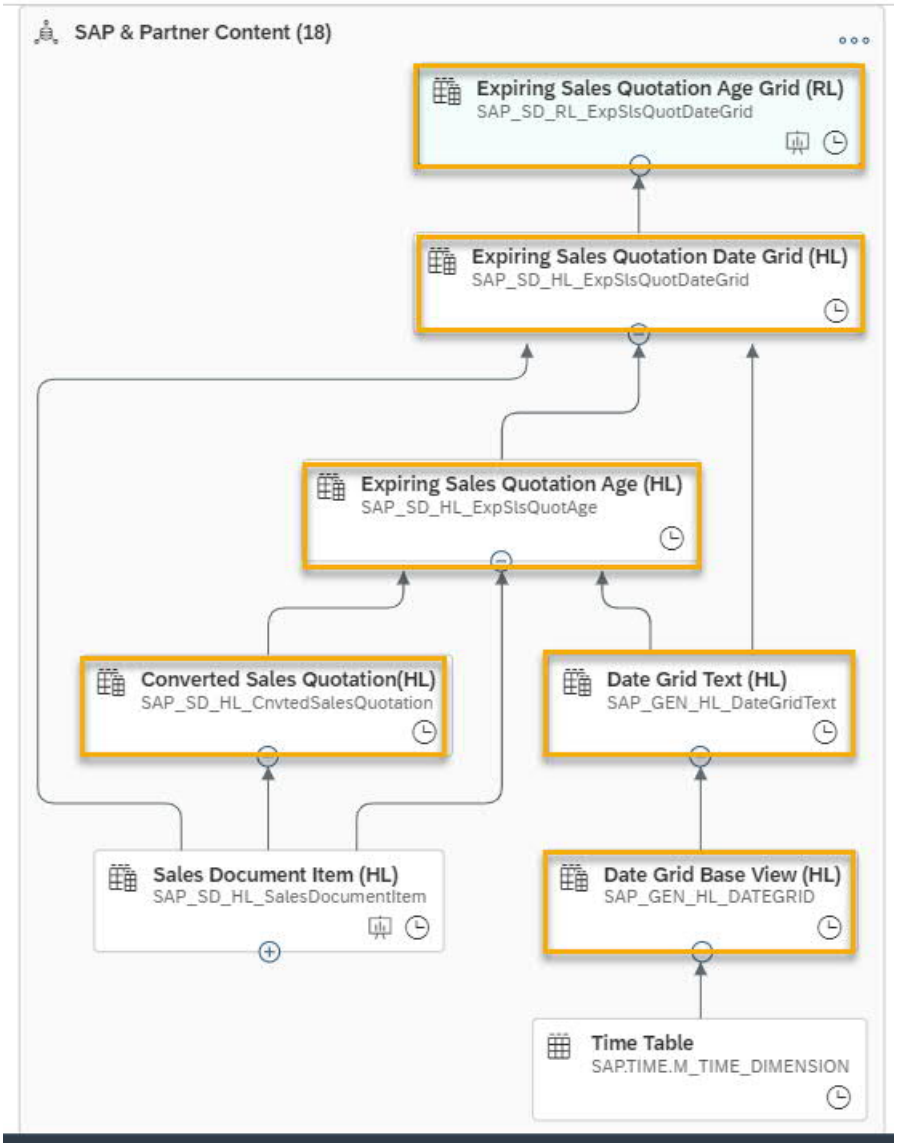
Key Figure	Type	Value Calculation / Restriction
Sales Quotation Amount	Restricted Key Figure	Key Figure: Net Value of the Order Item in Document Currency Restricted by Overall Reference Status (Item)! = '' and Completion Rule for Quotation / Contract! = ''
Sales Quotation Amount in Company Code Currency	Restricted Key Figure	Key Figure: Net Value of the Order Item in Company Code Currency Restricted by Overall Reference Status (Item)! = '' and Completion Rule for Quotation / Contract! = ''
Sales Quotation Quantity	Restricted Key Figure	Key Figure: Requested Order Quantity in Base Unit of Measure Restricted by Overall Reference Status (Item)! = '' and Completion Rule for Quotation / Contract! = ''
Rejected Quotation Amount	Restricted Key Figure	Key Figure: Net Value of the Order Item in Document Currency Restricted by Rejection Status (Item) = 'C'
Rejected Quotation Amount in Company Code Currency	Restricted Key Figure	Key Figure: Net Value of the Order Item in Company Code Currency Restricted by Rejection Status (Item) = 'C'
No of Rejected Sales Quotation Item	Restricted key figure	Constant value 1 Restricted by Rejection Status (Item) = 'C'
No of Open Sales Quotation Item	Restricted key figure	Constant Value 1 Restricted by Overall Reference Status (Item) = ‘A or ‘B’
Converted Sales Quotation Amount	Restricted Key Figure	Key Figure Converted Sales Quotation Amount Restricted by Overall Reference Status (Item)! = '' and Completion Rule for Quotation / Contract! = ''

Converted Sales Quotation Amount in Company Code Currency	Restricted Key Figure	Key Figure Converted Sales Quotation Amount in Company Code Currency Restricted by Overall Reference Status (Item)! = '' and Completion Rule for Quotation / Contract! = ''
Open Sales Quotation Amount	Restricted Key Figure	Key Figure (Net Value of the Order Item in Document Currency – Converted Sales Quotation Amount) Restricted by Overall Reference Status (Item) = 'A or 'B'
Open Sales Quotation Amount in company code currency	Restricted Key Figure	Key Figure (Net Value of the Order Item in Company Code Currency – Converted Sales Quotation Amount in Company Code Currency) Restricted by Overall Reference Status (Item) = 'A or 'B'
No of Expired Sales Quotation Items	Restricted Key Figure	Key Figure No of Open Sales Quotation Items Restricted by Date Until Which Bid/Quotation is Binding > '00000000 and < current Date
Expired Sales Quotation Amount	Restricted Key Figure	Key Figure Open Sales Quotation Amount Restricted by Date Until Which Bid/Quotation is Binding > '00000000 and < current Date
Expired Sales Quotation Amount in Company Code Currency	Restricted Key Figure	Key Figure Open Sales Quotation Amount in Company Code Currency Restricted by Date Until Which Bid/Quotation is Binding > '00000000 and < current Date
No of Expiring Quotation Items	Restricted Key figure	Key Figure Number of Open Sales Quotation Items Restricted by Date Until Which Bid/Quotation is Binding > Current Date and Date Until Which Bid/Quotation is Binding < (Current Date + Quotation Expiry Period (Days)) * *Quotation Expiry Period (Days) is the view Parameter*

Expiring Sales Quotation Amount	Restricted Key Figure	Key Figure Open Sales Quotation Amount Restricted by Date Until Which Bid/Quotation is Binding > Current Date and Date Until Which Bid/Quotation is Binding < (Current Date + Quotation Expiry Period (Days))
Expiring Sales Quotation Amount in Company Code Currency	Restricted Key Figure	Key Figure Open Sales Quotation Amount in company code currency Restricted by Date Until Which Bid/Quotation is Binding > Current Date and Date Until Which Bid/Quotation is Binding < (Current Date + Quotation Expiry Period (Days))

4.3.4.3.4 Expiring Quotation Age Grid

The following lineage diagram shows the entities described in this chapter:



This model provides flexible aging analysis of expiring sales quotation. The model categorizes expiring sales quotation items and the corresponding amount based on user defined age buckets.

The view provides two input parameters:

- Number of Age Buckets (P_NUMBEROFAGINGGRIDCOLUMNS)
- Days per Age Bucket (P_AGINGGRIDMEASUREINDAYS)

User can provide the days per age buckets (e.g., 30 days) and the number of age buckets required (e.g., 4). Based on the user input the model creates age buckets of the days provided. So, in above example the model will create 4 buckets as follows

- Quotation expiring in < 30 days
- Quotation expiring in 30 – 60 days
- Quotation expiring in 61 – 90 days
- Quotation expiring in > 90 days

The model will produce 4 buckets of 30-day intervals, if the user inputs ‘0’ for the days in age buckets and number of age buckets. The below section describes the model in detail.

Date Grid Base View

The harmonization layer view *Date Grid Base View* (Technical Name SAP_GEN_HL_DATEGRID) uses the generated Time Dimension Table SAP.TIME.M_TIME_DIMENSION.

The view has two input parameters Number of Age Buckets (P_NUMBEROFAGINGGRIDCOLUMNS) and Days per Age Bucket (P_AGINGGRIDMEASUREINDAYS). The parameter P_NUMBEROFAGINGGRIDCOLUMNS specifies how many buckets should be generated and the parameter P_AGINGGRIDMEASUREINDAYS specifies the days interval for each bucket. The view creates the age grid and provides the day intervals of each age bucket and the sequence of each age bucket.

Date Grid Text

The harmonization layer view *Date Grid Text* (technical Name SAP_GEN_HL_DateGridText) uses the view Date Grid Base View. The view has the same parameters P_NUMBEROFAGINGGRIDCOLUMNS and P_AGINGGRIDMEASUREINDAYS.

This view provides the label to the age buckets based on the parameters P_NumberofAgingGridColumns and P_AGINGGRIDMeasureInDays.

Below is the example output of the view for P_NumberofAgingGridColumns = 4 and P_AGINGGRIDMeasureInDays = ’30

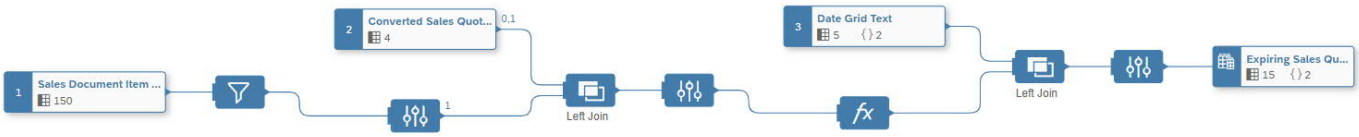
Input Parameters: P_NumberOfAgingGridColumns(4), P_AGINGGRIDMEASUREINDAYS(30)

AgingGridColumnSequence	AgingGradeText	NumberOfAgingGridColumns	AgingGridMeasureInDays
1	01. < 30	4	30
2	02. 30 - 60	4	30
3	03. 61 - 90	4	30
4	04. > 90	4	30

The AgingGridColumnSequence arranges the buckets sequentially and provides the age interval for each sequence.

Expiring Sales Quotation Age

The harmonization layer view *Expiring Sales Quotation Age* (Technical Name SAP_SD_HL_ExpSlsQuotAge) classifies the expiring sales quotation items into the different age buckets based on the quotation validity date. This view also has the two parameters P_NumberofAgingGridColumns and P_AGINGGRIDMeasureInDays that are used to assign the age bucket to each open quotation item. The below diagram shows the view design.

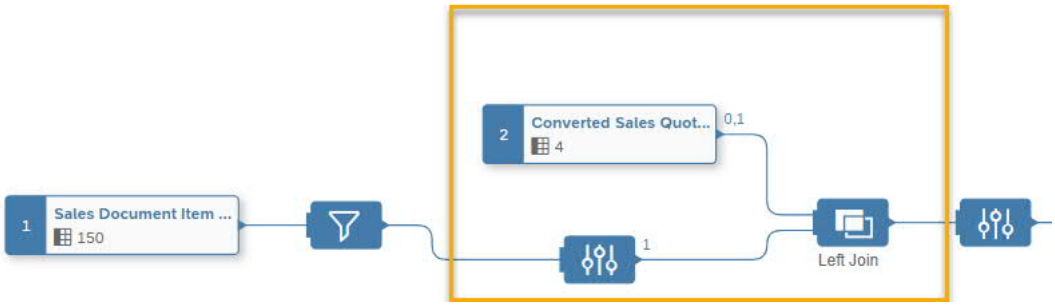


The below section describes the design in detail:

Harmonization layer view *Sales Document Item (HL)* (technical name SAP_SD_HL_SalesDocumentItem) is restricted to get the valid open quotation items. The used filter criteria for this are Document Category/Quotation/Order/Delivery/Invoice = ‘Q’ and Overall Reference Status (Item) = ‘A or ‘B’ and Date Until Which Bid/Quotation is Binding >= Current Date.

The resulting open sales quotation items are then joined with the view *Converted Sales Quotation (HL)* (Technical Name SAP_SD_HL_CnvtedSalesQuotation) to get the converted sales quotation amount and the expiring sales quotation item amount. The

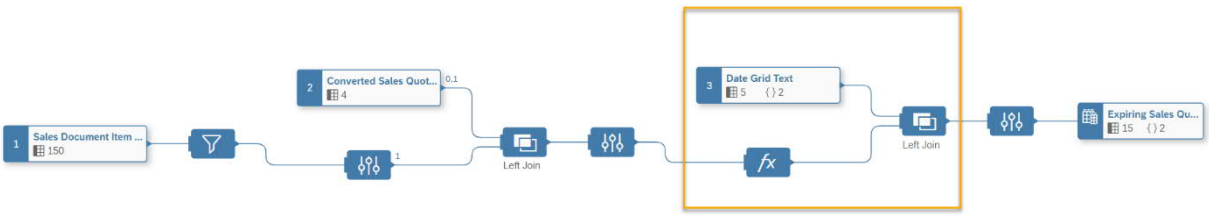
expiring sales quotation item amount is calculated as Sales Quotation Amount – Converted Sales Quotation Amount.



To map the open sales quotation with the corresponding age bucket a column called Age Column Sequence is calculated. This Age Sequence column is the key of the view *Date Grid text* (technical Name SAP_GEN_HL_DateGridText) and provides in which age interval the quotation item falls**.** Following logic is used to calculate Age Sequence of each quotation item:

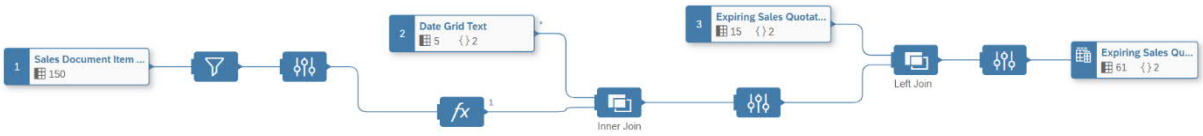
- Age of each quotation item is calculated as difference between Date Until Which Bid/Quotation is Binding and the Current Date
- If the age is less than the parameter value P_AGINGGRIDMeasureInDays (Age Bucket Interval) then the Age Sequence column is assigned to 1. That means the quotation item belongs to the first age bucket
- If quotation age is greater than the parameter P_AGINGGRIDMeasureInDays (Age Bucket Interval) then the Age column Sequence (Age Bucket) is determined as follows,
  - Quotation age is divided by the P_AGINGGRIDMeasureInDays (Age Bucket Interval) and quotient and remainder are calculated.
  - If the remainder of the division is 0 then the largest integer of the quotient (FLOOR function) is assigned as the age bucket column sequence.
  - If the remainder is greater than 0 then 1 is added to the largest integer of the quotient and assigned to the age bucket column sequence.

Once the Age Column Sequence is calculated the output is joined with the *Date Grid text* view to get the label of the age column sequence.

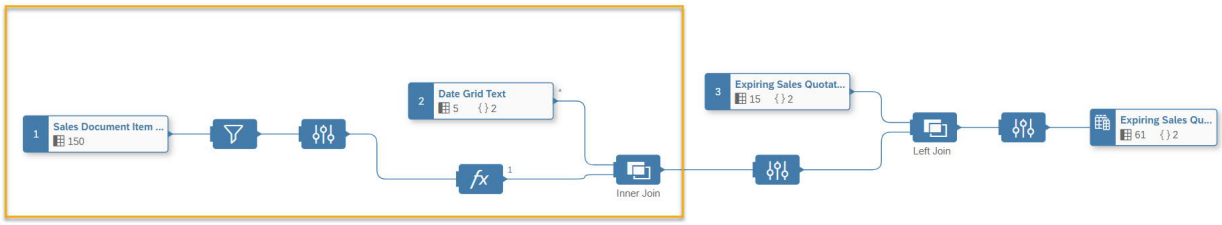


Expiring Sales Quotation Date Grid

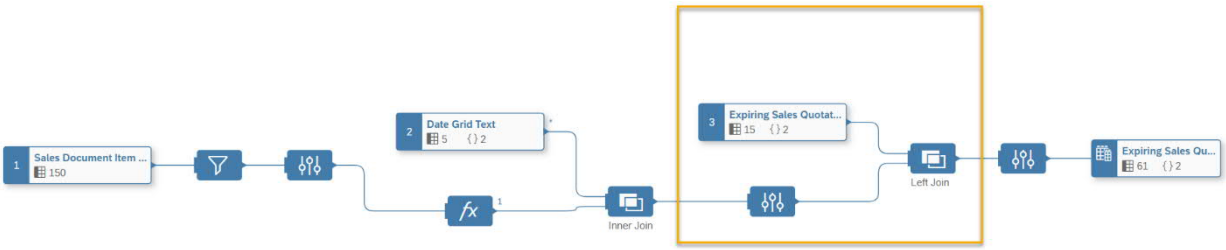
The harmonization layer view *Expiring Sales Quotation Date Grid* (Technical Name SAP_SD_HL_ExpSlsQuotDateGrid) prepares the final dataset. The below diagram explains the design of this view:



All the open sales quotations valid on current date are joined with the *Date Grid text* view to populate all the age buckets for each open sales quotation item.



Then the output is joined with harmonization view *Expiring Sales Quotation Age (HL)* (Technical Name SAP_SD_HL_ExpSlsQuotAge) to get the right age bucket for each quotation item.



Expiring Sales Quotation Age Grid (RL)

The reporting layer view *Expiring Sales Quotation Age Grid (RL)* (Technical name SAP_SD_RL_ExpSlsQuotDateGrid) uses harmonization layer view *Expiring Sales Quotation Date Grid (HL).*

The view provides two measures

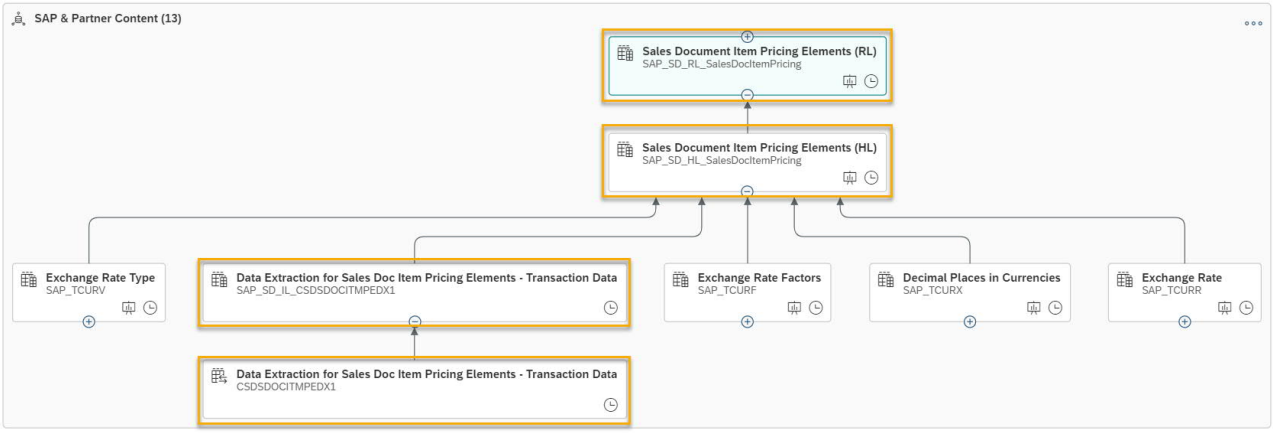
- Number of Expiring Sales Quotation Items
- Expiring Sales Quotation Amount

Associations to Dimension and Text view is configured in this view. This view is used in the SAP Analytics Cloud Story.

4.3.4.3.5 Sales Document Item Pricing Elements

These SAP Data Warehouse Cloud models contain sales document conditions data at item level.

The following lineage diagram shows the entities described in this chapter:



Data Extraction for Sales Document Item Pricing Elements - Transaction Data

The remote table *Data Extraction for Sales Document Item Pricing Elements - Transaction Data* (technical name: CSDSDOCITMPEDX1) was created from the CDS-View Data Extraction for Sales Document Item Pricing Elements (SQL Name CSDSLSDOCITMDX1) for an SAP S/4HANA live connection. For productive use consider replicating the data to SAP Data Warehouse Cloud for better reporting performance.

Sales Document Item Pricing Elements (IL)

The inbound layer view *Sales Document Item Pricing Elements (IL)* (technical name: SAP_SD_IL_CSDSDOCITMPEDX1) uses the remote table *Data Extraction for Sales Document Item Pricing Elements - Transaction Data*. All fields of type Date have been converted from string to date data type with formulas like this: TO_DATE(CREATIONDATE).

Sales Document Item Pricing Elements (HL)

The harmonization layer view *Sales Document Item Pricing Elements (HL)* (technical name: SAP_SD_HL_SalesDocItemPricing) uses the Inbound Layer View and adds a filter on the field Statistical Values (STATISTICALVALUECONTROL), as only records with an initial value in this field are relevant for reporting.
Formula: STATISTICALVALUECONTROL = ''.

The following document categories have been filtered out:

- Inquiry (A)
- Quotation (B)
- Canceled Invoice (N)
- Canceled Credit Memo (S)
- Pro Forma Invoice (U)
- Preliminary Billing Document (PBD)
- Formula:
  SDDOCUMENTCATEGORY <> 'PBD' AND

SDDOCUMENTCATEGORY <>'N' AND
SDDOCUMENTCATEGORY <>'S' AND
SDDOCUMENTCATEGORY <>'U' AND
SDDOCUMENTCATEGORY <>'A' AND
SDDOCUMENTCATEGORY <>'B'

Date fields are renamed to …_date to support date functions and capabilities of SAP Analytics Cloud.

The CDS-View *Data Extraction for Sales Document Item Pricing Elements* (CSDSDOCITMPEDX1) supplies the field Return Item Processing Type (ISRETURNSITEM), which identifies, if the item is a return-like document, this field is used to fill the new field Credit/debit posting item level (CI/DI), which expresses, if the item is return-like or not.

The harmonization layer also embeds a currency conversion from transaction currency to company code currency and the following calculated columns, which are necessary for calculation of the key figures in the reporting layer view:

Calculated column	Transformation Rule
Document category /Quotation/Order/Delivery/Invoice	Fill with “B” for **Quotations**, “A” for **Inquiries** and “O” for **Orders**. Formula: CASE WHEN SDDOCUMENTCATEGORY ='B' THEN 'Q' WHEN SDDOCUMENTCATEGORY ='A' THEN 'A' ELSE 'O' END
Credit/debit posting (C/D)	Fill with “D” (**Debit)** for sales documents or “C” (**Credit)** for returns (VBTYP = H) or credit memos requests (VBTYP = K) on header level. Formula: CASE SDDOCUMENTCATEGORY WHEN 'H' THEN 'C' WHEN 'K' THEN 'C' ELSE 'D' END

Credit/debit posting item level (CI/DI)	Differentiates between debit and credit postings (on document item level): Return Item Processing Type (ISRETURNSITEM = X) are credit postings, all others are debit postings. Formula: CASE WHEN ISRETURNSITEM = 'X' THEN 'CI' ELSE 'DI' END
Condition Used in Order/Billing Document	Returns ‘1’
Calculated Sales Unit	Returns target quantity unit when document category is K (Credit Memo Request) or L (Debit Memo Request), else it returns the order quantity unit with formula: CASE SDDOCUMENTCATEGORY WHEN 'K' THEN TARGETQUANTITYUNIT WHEN 'L' THEN TARGETQUANTITYUNIT ELSE ORDERQUANTITYUNIT END
Cumulative Order Quantity in Sales Unit	Returns target quantity when document category is K (Credit Memo Request) or L (Debit Memo Request), else it returns the order quantity with formula: CASE SDDOCUMENTCATEGORY WHEN 'K' THEN TARGETQUANTITY WHEN 'L' THEN TARGETQUANTITY ELSE ORDERQUANTITY END
Condition Rate	Returns Condition Amount / target quantity when document category is K (Credit Memo Request) or L (Debit Memo Request), else it returns Condition Amount / order quantity with formula: CASE SDDOCUMENTCATEGORY WHEN 'K' THEN NDIV0(CONDITIONAMOUNT , TARGETQUANTITY) WHEN 'L' THEN

	NDIV0(CONDITIONAMOUNT , TARGETQUANTITY) ELSE NDIV0(CONDITIONAMOUNT , ORDERQUANTITY) END
Update Date	Returns the current date Formula: CURRENT_DATE()
Condition Value in Company Code Currency	Condition Value converted from Transaction Currency to Company Code Currency with Sales Document Date as reference date.

Sales Document Item Pricing Elements (RL)

The reporting layer view *Sales Document Item Pricing Elements (RL)* (technical name: SAP_SD_RL_SalesDocItemPricing) adds restricted and calculated key figures to HL data.

Some important measures you can analyze are:

- Sales Order Condition Amount (in transaction currency or in company code currency)
- Customer Returns Condition Amount (in transaction currency or in company code currency)

Most delivered restricted or calculated Key Figures are defined by restricting the following characteristics: Credit/debit posting (C/D), Credit/debit posting item level (CI/DI), Relevant for Sales and Condition used in Order/Billing Document.

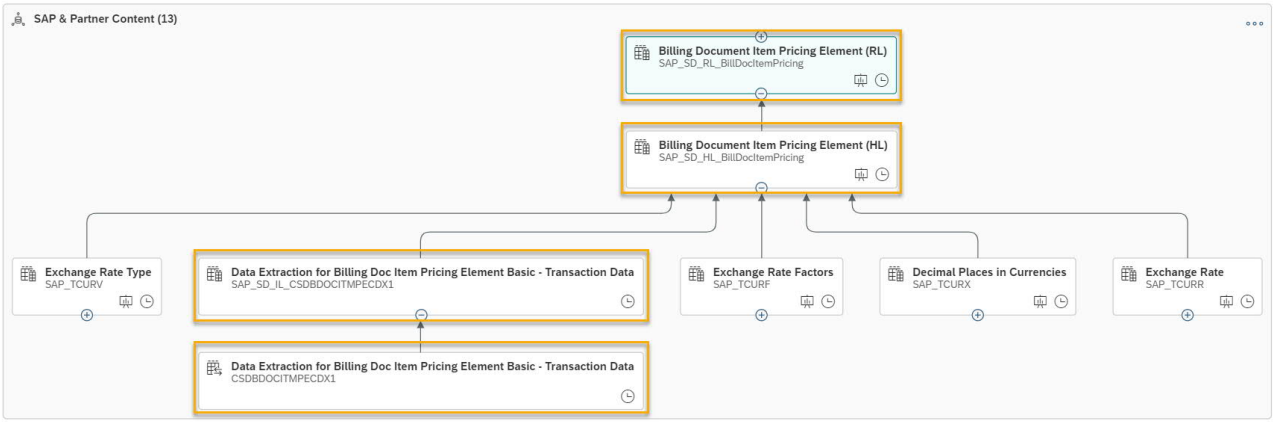
Key Figure	Type	Value Calculation / Restriction
Sales Order Condition Amount Debit	Restricted Key Figure	Key figure: Condition Value restricted by Debit/Credit Item = DI , Debit/Credit = D , Relevant for Sales = X, Condition used in Order / Billing Document = 1
Sales Order Condition Amount Credit	Restricted Key Figure	Key figure: Condition Value restricted by Debit/Credit Item = DI , Debit/Credit = C , Relevant for Sales = X, Condition used in Order / Billing Document = 1

Customer Returns Condition Amount Debit	Restricted Key Figure	Key figure: Condition Value restricted by Debit/Credit Item = CI , Debit/Credit = D , Relevant for Sales = X, Condition used in Order / Billing Document = 1
Customer Returns Condition Amount Credit	Restricted Key Figure	Key figure: Condition Value restricted by Debit/Credit Item = CI , Debit/Credit = C , Relevant for Sales = X, Condition used in Order / Billing Document = 1
Sales Order Quantity	Restricted Key Figure	Key figure: Cumulative order quantity in sales unit restricted by Debit/Credit Item = DI , Debit/Credit = D or C , Relevant for Sales = X, Condition used in Order / Billing Document = 1
Customer Returns Quantity	Restricted Key Figure	Key figure: Cumulative order quantity in sales unit restricted by Debit/Credit Item = CI , Debit/Credit = D or C , Relevant for Sales = X, Condition used in Order / Billing Document = 1
Sales Order Condition Amount	Calculated Key Figure	Sales Order Condition Amount Debit + Sales Order Condition Amount Credit * -1
Customer Returns Condition Amount	Calculated Key Figure	Customer Returns Condition Amount Credit + Customer Returns Condition Amount Debit * -1
Sales Order Condition Amount Debit in Company Code Currency	Restricted Key Figure	Key figure: Condition Value in Company Code Currency restricted by Debit/Credit Item = DI , Debit/Credit = D , Relevant for Sales = X, Condition used in Order / Billing Document = 1
Sales Order Condition Amount Credit in Company Code Currency	Restricted Key Figure	Key figure: Condition Value in Company Code Currency restricted by Debit/Credit Item = DI , Debit/Credit = C , Relevant for Sales = X, Condition used in Order / Billing Document = 1
Customer Returns Condition Amount Debit in Company Code Currency	Restricted Key Figure	Key figure: Condition Value in Company Code Currency restricted by Debit/Credit Item = CI , Debit/Credit = D , Relevant for Sales = X, Condition used in Order / Billing Document = 1

Customer Returns Condition Amount Credit in Company Code Currency	Restricted Key Figure	Key figure: Condition Value in Company Code Currency restricted by Debit/Credit Item = CI , Debit/Credit = C , Relevant for Sales = X, Condition used in Order / Billing Document = 1
Sales Order Condition Amount in Company Code Currency	Calculated Key Figure	Sales Order Condition Amount Debit in Company Code Currency + Sales Order Condition Amount Credit in Company Code Currency * -1
Customer Returns Condition Amount in Company Code Currency	Calculated Key Figure	Customer Returns Condition Amount Credit in Company Code Currency + Customer Returns Condition Amount Debit in Company Code Currency * -1

4.3.4.3.6 Billing Document Item Pricing Elements

The following lineage diagram shows the entities described in this chapter:



These SAP Data Warehouse Cloud models contain billing document conditions data at item level.

Data Extraction for Billing Document Item Pricing Elements - Transaction Data

The Remote Table Data Extraction for *Billing Document Item Pricing Elements - Transaction Data* (technical name: CSDBDOCITMPECDX1) was created from the CDS-View *Data Extraction for Billing Document Item Pricing Elements* (SQL *Name CSDBDOCITMPECDX1)* for an SAP S/4HANA live connection. For productive use

consider replicating the data to SAP Data Warehouse Cloud for better reporting performance.

Billing Document Item Pricing Elements (IL)

The inbound layer view *Billing Document Item Pricing Elements (IL)* (technical name: SAP_SD_IL_CSDBDOCITMPECDX1) uses the remote table *Billing Document Item Pricing Elements - Transaction Data.*

All fields of type Date have been converted from string to date data type with formulas like this: TO_DATE(CREATIONDATE).

Billing Document Item Pricing Elements (HL)

The harmonization layer view *Billing Document Item Pricing Elements (HL)* (technical name: SAP_SD_HL_BillDocItemPricing) uses the inbound layer view *Billing Document Item Pricing Elements (IL)* and adds the following filters:

- is relevant for statistics (STATISTICALVALUECONTROL = ``)
- Billing category not equal to ‘Down payment request’ (`P`)
- Billing Plan Rule not equal to ‘Down payment in milestone billing on percentage basis (`4`) and not equal to ‘Down payment in milestone billing on a value basis (`5`) or Statistic control value not equal to ‘Y’

The following document categories have been filtered out:

- Inquiry (A)
- Quotation (B)
- Canceled Invoice (N)
- Canceled Credit Memo (S)
- Pro Forma Invoice (U)
- Preliminary Billing Document (PBD)
- Formula:

  STATISTICALVALUECONTROL = '' AND

  BILLINGDOCUMENTCATEGORY <> 'P' AND

  (BILLINGPLANRULE<>'4' AND BILLINGPLANRULE<>'5' OR

  STATISTICALVALUECONTROL<>'Y') AND

SDDOCUMENTCATEGORY <> 'PBD' AND
SDDOCUMENTCATEGORY <>'N' AND
SDDOCUMENTCATEGORY <>'S' AND
SDDOCUMENTCATEGORY <>'U' AND
SDDOCUMENTCATEGORY <>'A' AND
SDDOCUMENTCATEGORY <>'B' AND
OVERALLBILLINGSTATUS <> 'C'

Date fields are renamed to …_date to support date functions and capabilities of SAP Analytics Cloud.

The CDS-View *Data Extraction for Billing Document Item Pricing Elements* (CSDBDOCITMPECDX1) supplies the field Return Item Processing Type (ISRETURNSITEM), which identifies, if the item is a return-like document, this field is used to fill the new field Credit/debit posting item level (CI/DI), which expresses, if the item is return-like or not.

The harmonization layer also embeds a currency conversion from transaction currency to company code currency and the following calculated columns, which are necessary for calculation of the key figures in the reporting layer view:

Calculated column	Transformation Rule
Document category /Quotation/Order/Delivery/Invoice	Fill with “I” for **Invoice**
Credit/debit posting (C/D)	Fill with “D” (**Debit**, for invoice documents) or “C” (**Credit**, for credit memos) on header level Formula: CASE SDDOCUMENTCATEGORY WHEN 'N' THEN 'C' WHEN 'O' THEN 'C' WHEN '6' THEN 'C' ELSE 'D' END

Credit/debit posting item level (CI/DI)	Differentiates between debit and credit postings (on document item level): Return Item Processing Type (ISRETURNSITEM = X) are credit postings, all others are debit postings. Formula: CASE WHEN ISRETURNSITEM = 'X' THEN 'CI' ELSE 'DI' END
Condition Used in Order/Billing Document	Returns ‘2’
Condition Rate	Returns Condition Amount / billing quantity when quantity is not null CASE WHEN BILLINGQUANTITY = 0 THEN BILLINGQUANTITY ELSE CONDITIONAMOUNT/BILLINGQUANTITY END
Update Date	Returns the current date Formula: CURRENT_DATE()
Condition Value in Company Code Currency	Condition Value converted from Transaction Currency to Company Code Currency with Sales Document Date as reference date.

Billing Document Item Pricing Elements (RL)

The Reporting Layer View *Billing Document Item Pricing Elements (RL)* (technical name: SAP_SD_RL_BillDocItemPricing) adds restricted and calculated key figures to HL data.

Some important measures you can analyze are:

- Billing Document Condition Amount (in transaction currency or in company code currency)

- Customer Credit Memo Condition Amount (in transaction currency or in company code currency)

This view contains billing document condition data for the following sales document categories:

- Invoice (M)
- Credit Memo (O)
- Debit Memo (P)
- Intercompany Invoice (5)
- Intercompany Credit Memo (6)

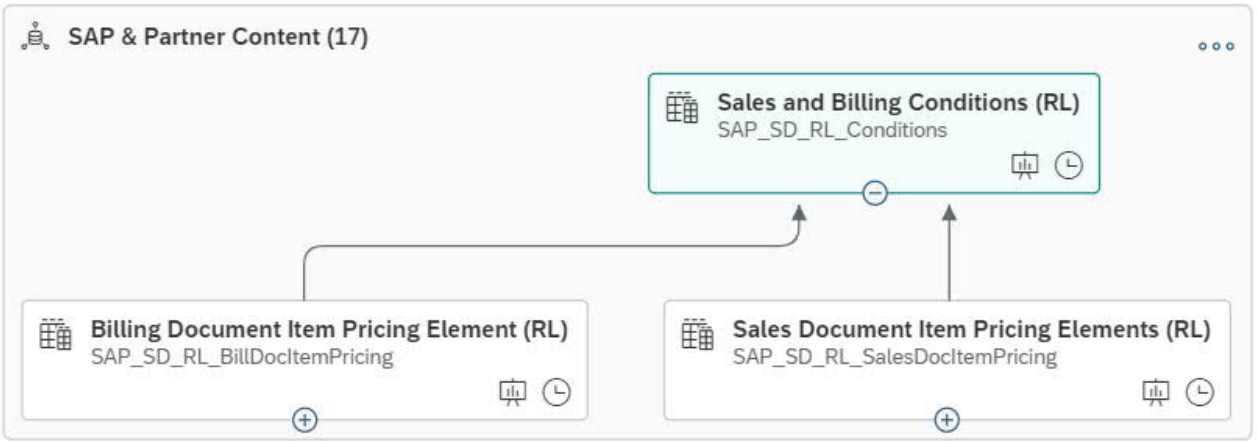
Most delivered restricted or calculated Key Figures are defined by restricting the following characteristics: Credit/debit posting (C/D), Credit/debit posting item level (CI/DI), Overall Billing Status (C = canceled) and Condition used in Order/Billing Document.

Key Figure	Type	Value Calculation / Restriction
Billing Document Condition Amount Debit	Restricted Key Figure	Key figure: Condition Value restricted by Debit/Credit Item = DI , Debit/Credit = D , Overall Billing Status <> C , Condition used in Order / Billing Document = 2
Billing Document Condition Amount Credit	Restricted Key Figure	Key figure: Condition Value restricted by Debit/Credit Item = DI , Debit/Credit = C , Overall Billing Status <> C , Condition used in Order / Billing Document = 2
Customer Credit Memo Condition Amount Debit	Restricted Key Figure	Key figure: Condition Value restricted by Debit/Credit Item = CI , Debit/Credit = D , Overall Billing Status <> C , Condition used in Order / Billing Document = 2
Customer Credit Memo Condition Amount Credit	Restricted Key Figure	Key figure: Condition Value restricted by Debit/Credit Item = CI , Debit/Credit = C , Overall Billing Status <> C , Condition used in Order / Billing Document = 2
Billing Document Quantity	Restricted Key Figure	Key figure: Billing quantity in sales unit restricted by Debit/Credit Item = DI , Debit/Credit = D or C, Overall Billing Status <> C , Condition used in Order / Billing Document = 2

Customer Returns Quantity	Restricted Key Figure	Key figure: Billing quantity in sales unit restricted by Debit/Credit Item = CI , Debit/Credit = D or C, Overall Billing Status <> C , Condition used in Order / Billing Document = 2
Billing Document Condition Amount	Calculated Key Figure	Billing Document Condition Amount Debit + Billing Document Condition Amount Credit * -1
Customer Credit Memo Condition Amount	Calculated Key Figure	Customer Credit Memo Condition Amount Credit + Customer Credit Memo Condition Amount Debit * -1
Billing Document Condition Amount Debit in Company Code Currency	Restricted Key Figure	Key figure: Condition Value in company code currency restricted by Debit/Credit Item = DI , Debit/Credit = D , Overall Billing Status <> C , Condition used in Order / Billing Document = 2
Billing Document Condition Amount Credit in Company Code Currency	Restricted Key Figure	Key figure: Condition Value in company code currency restricted by Debit/Credit Item = DI , Debit/Credit = C , Overall Billing Status <> C , Condition used in Order / Billing Document = 2
Customer Credit Memo Condition Amount Debit in Company Code Currency	Restricted Key Figure	Key figure: Condition Value in company code currency restricted by Debit/Credit Item = CI , Debit/Credit = D , Overall Billing Status <> C , Condition used in Order / Billing Document = 2
Customer Credit Memo Condition Amount Credit in Company Code Currency	Restricted Key Figure	Key figure: Condition Value in company code currency restricted by Debit/Credit Item = CI , Debit/Credit = C , Overall Billing Status <> C , Condition used in Order / Billing Document = 2
Billing Document Condition Amount in Company Code Currency	Calculated Key Figure	Billing Document Condition Amount Debit in Company Code Currency + Billing Document Condition Amount Credit in Company Code Currency * -1
Customer Credit Memo Condition Amount in Company Code Currency	Calculated Key Figure	Customer Credit Memo Condition Amount Credit in Company Code Currency + Customer Credit Memo Condition Amount Debit in Company Code Currency * -1

4.3.4.3.7 Sales and Billing Conditions

The following lineage diagram shows the entities described in this chapter:



Sales and Billing Conditions (RL)

The reporting layer view *Sales and Billing Conditions (RL) (SAP_SD_RL_Conditions)* is the union of reporting layer views *Sales Document Item Pricing Elements (RL)* (technical name: SAP_SD_RL_SalesDocItemPricing) and *Billing Document Item Pricing Elements (RL)* (technical name: SAP_SD_RL_BillDocItemPricing).

The story *SAP SD: Sales Conditions (based on SAP Data Warehouse Cloud)* is based on this Sales and Billing Conditions (RL) view.

4.4 SERVICE ANALYSIS FOR SAP S/4HANA (SAP DATA WAREHOUSE CLOUD)

This content package covers the following areas:

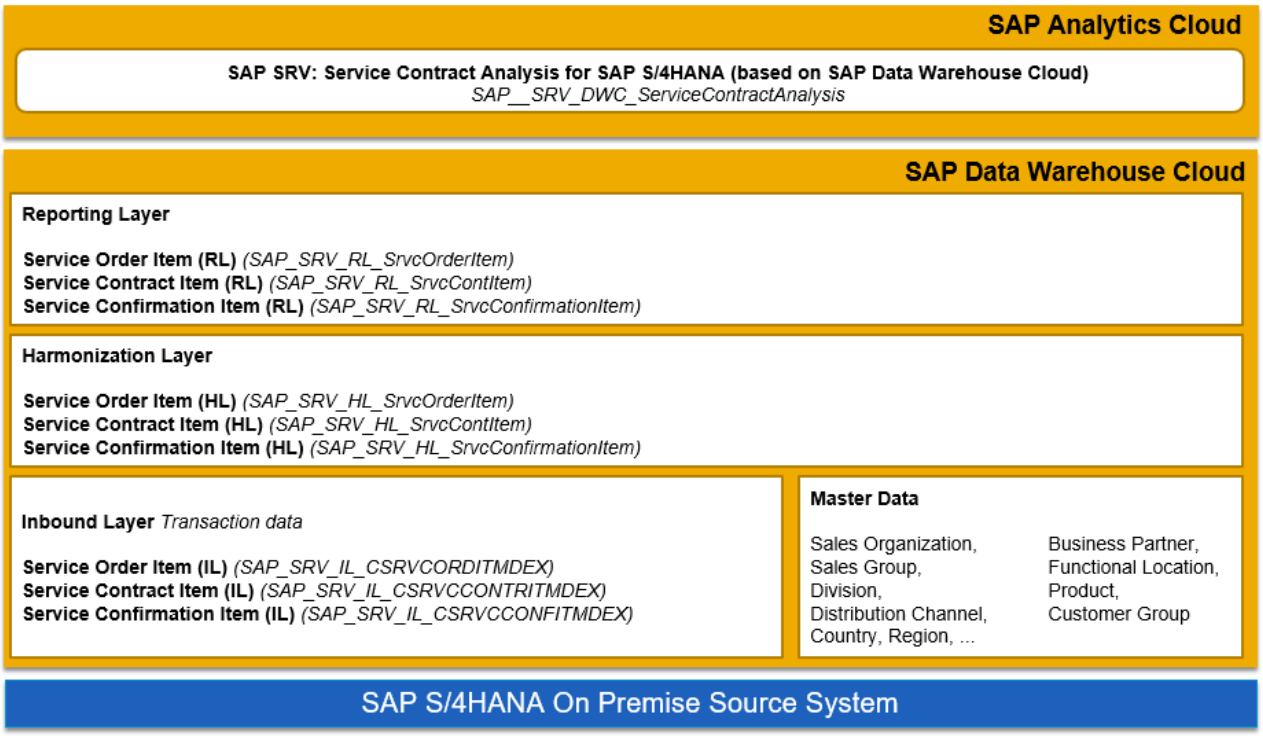
- Service Order Items
- Service Contract Items
- Service Confirmation Items

The sources for these areas are the Service Order Items, Service Contract Items and Service Confirmation Items based on data from SAP S/4HANA.

The content provides a holistic view of your service documents. Service manager can get an overview of their service orders, contracts and confirmations as well as a detailed view at item level.
For service orders you can analyze the number and volume of service orders, open and overdue service orders and the top performing products and customers based on service order amount.
The service contract item data allows to analyze the number and volume of service contracts as well as of expired, expiring and cancelled contracts.
With the service confirmation item data you can analyze the volume of service confirmations as well as numbers and values of unplanned service orders and the top performing products and customers based on service confirmations.

4.4.1 *Architecture and Abstract*

The high-level architecture of the SAP Service Analysis for SAP S/4HANA package is as follows:

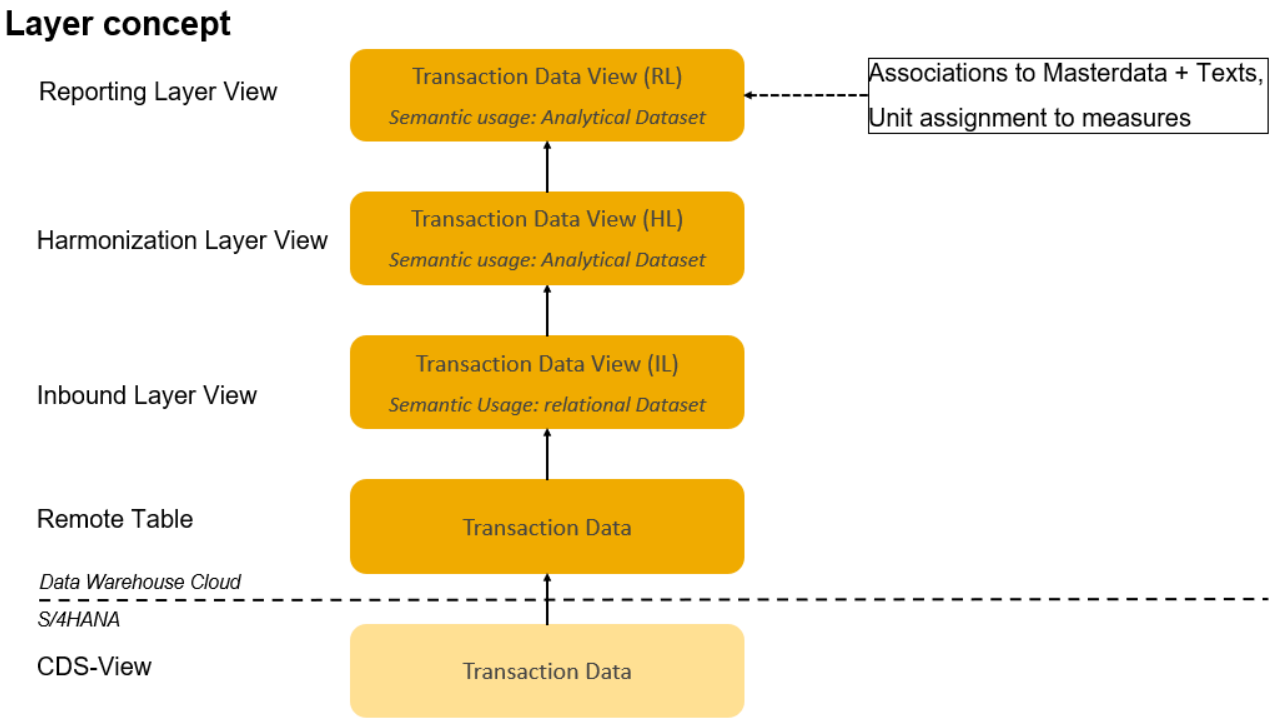


While the SAP Data Warehouse Cloud content and models cover three areas within “Service” (orders, contracts and confirmations), currently only for Service Contracts an SAP Analytics Cloud story is available.

The architecture consists of an inbound layer, a harmonization layer and a reporting layer in accordance with SAP Data Warehouse Cloud modelling best practices and guidelines. The transaction data models have been developed leveraging SAP Data Warehouse Cloud virtualization capabilities in three distinct layers:

- An inbound layer view (e.g., SAP_SRV_IL*) that is in most parts a mirror of the CDS view / remote table from S/4HANA.
- A harmonization layer view (e.g., SAP_SRV_HL*), which uses the inbound layer view and enhances it with key figures using currency conversion into company code currency.

- A reporting layer view (e.g., SAP_SRV_RL*), which uses the harmonization layer view and adds calculated key figures and master data associations for attributes and texts. This layer is also used to connect to the SAP Analytics Cloud stories.



4.4.2 ***Stories***

This content package contains the following story:

- SAP SRV: Service Contract Analysis for SAP S/4HANA (based on SAP Data Warehouse Cloud)

Please navigate to the SAP Analytics Cloud content documentation for details.

4.4.3 *Models*

4.4.3.1 **Master data**

4.4.3.1.1 Introduction

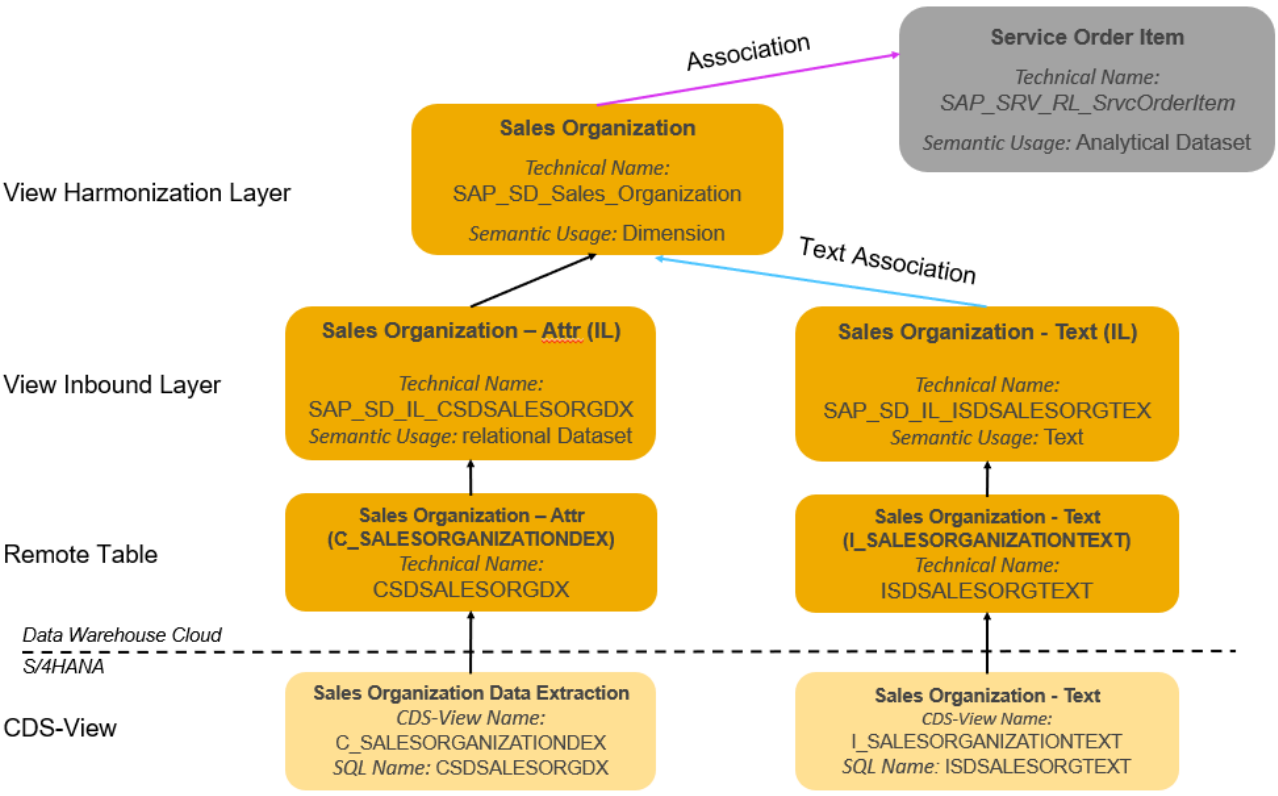
Master data comes in different flavours:

- Master data with attributes and texts
- Master data with text only and without attributes

Either the views for attributes and texts are distinct views or attributes and texts are combined in one view only. Therefore, the master data models and the modelling in Data Warehouse Cloud need to be slightly adapted per case.

Master data views have been created following SAP Data Warehouse Cloud modelling guidelines and best practices:

Case 1: Master data – attributes and texts; separate CDS-Views for attributes and texts

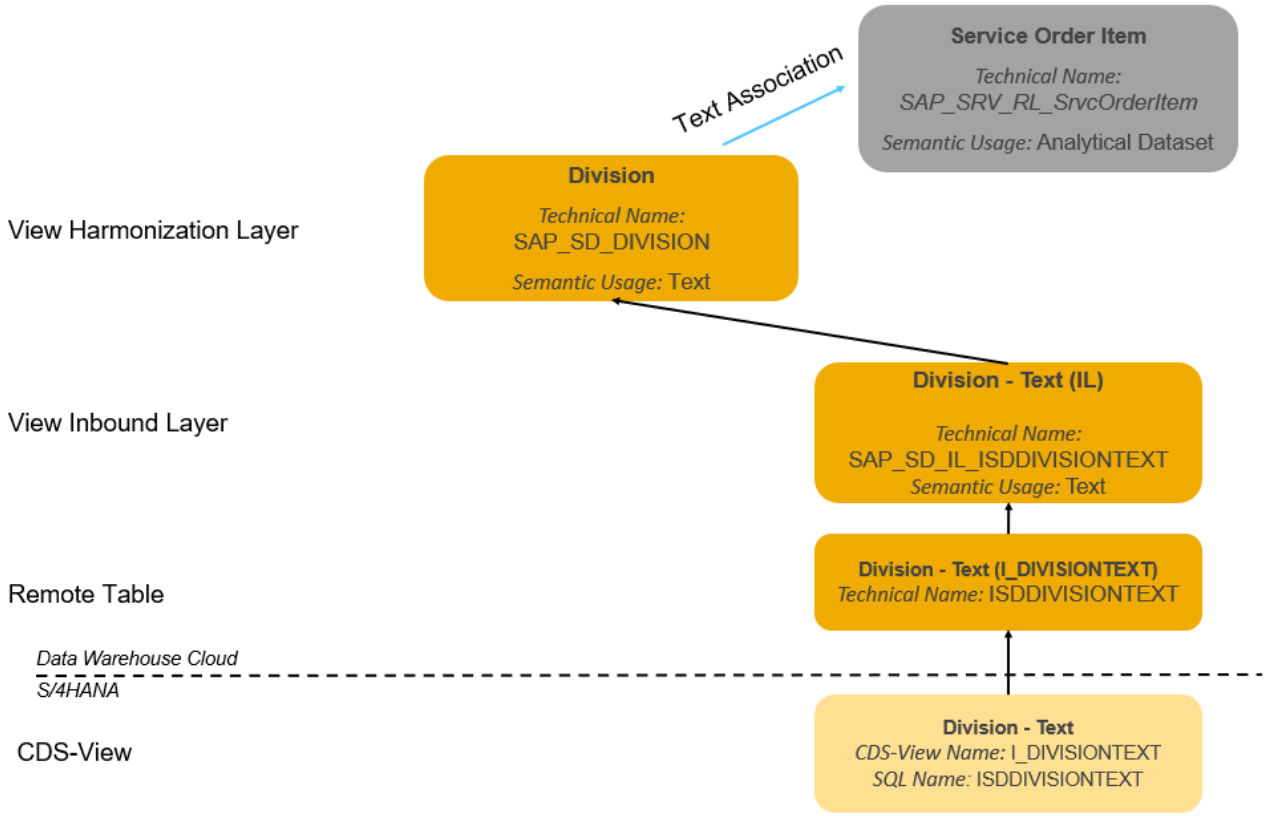


- The remote tables are the 1:1 representation of the S/4HANA CDS-views for master data and text.
- The inbound layer views use the remote tables, sometimes data type adjustments e.g. for language, are necessary.
- The harmonization layer view brings master data and text together using text association and is of semantic type: Dimension. This view is then associated to the relevant transaction data in the transaction data reporting layer view

Case 2: Master data – text only, one CDS-View for texts

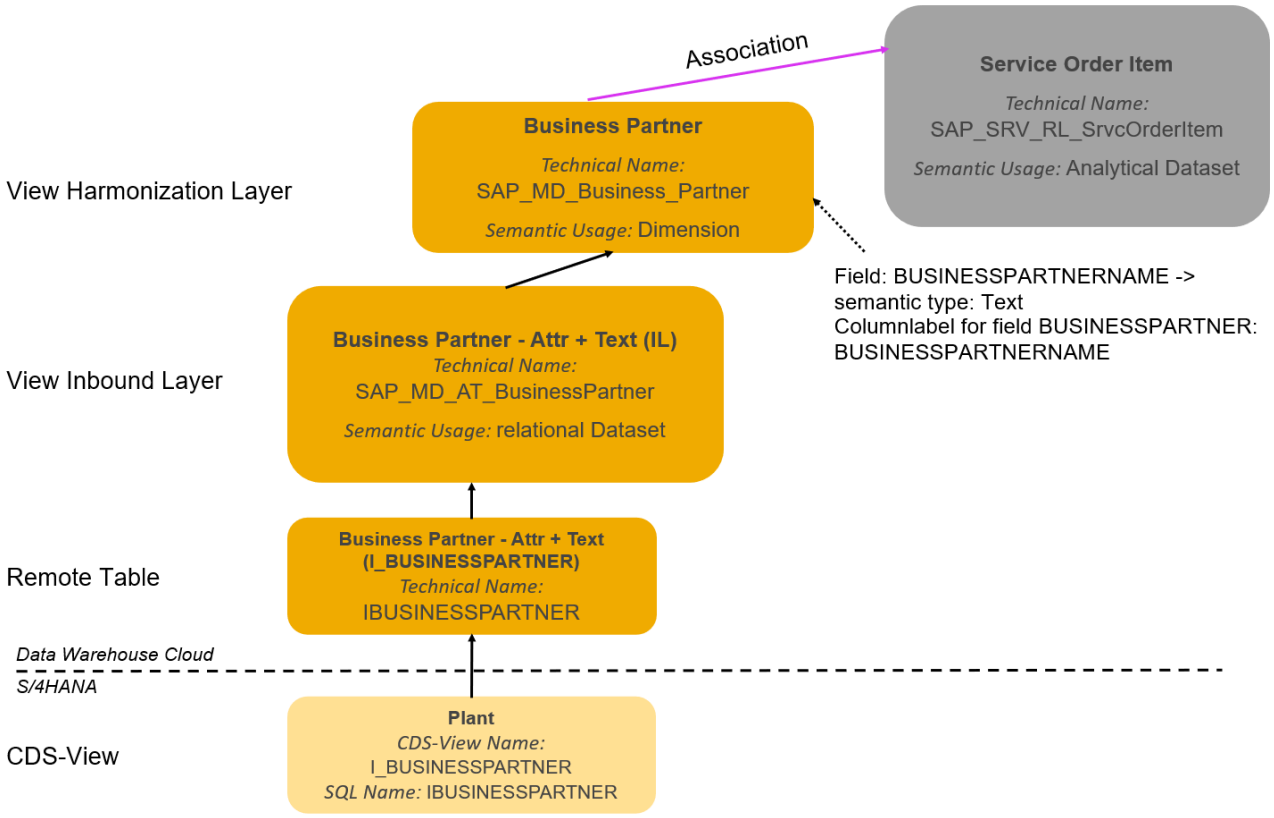
For master data without attributes - text only - the harmonization layer view is directly based on the inbound layer text view and its semantic type is “Text”.

This view is associated to the relevant transaction data in the transaction data reporting layer view as a text association.



Case 3: Master data – attributes and texts; one CDS-View for attributes incl. not language dependent texts

Within the harmonization layer view, the field containing the text is set to semantic type “text” and entered as a column label for the respective key field.
This view is associated to the relevant transaction data in the transaction data reporting layer view.



4.4.3.1.2 Overview of master data views

Find the most important master data views in the table below and explore the entire overview best directly in your SAP Data Warehouse Cloud system.

Master Data	Master Data Type	Technical Name

Sales Organization	Attributes and Texts	SAP_SD_Sales_Organization
Distribution Channel	Texts	SAP_SD_DistribChannel
Division	Texts	SAP_SD_Division
Customer Group	Texts	SAP_SD_Customer_Group
Business Partner	Attributes and Texts	SAP_MD_Business_Partner
Sales Group	Text	SAP_SD_SalesGroup
Sales Office	Texts	SAP_SD_SalesOffice
Product	Attributes and Texts	SAP_LO_Product
Organization Unit	Text	SAP_CX_OrgUnit
Controlling Area	Attributes and Texts	SAP_FI_ControllingArea
Billing Block Reason	Text	SAP_SD_BillingBlockReason
Service Transaction Item Business Object Type	Text	SAP_SRV_SrvcTransItemBOTP
Service Transaction Type	Text	SAP_SRV_SrvcTransacType
Service Transaction Status	Text	SAP_SRV_SrvcTransStatus
Service Transaction Business Object Type	Text	SAP_SRV_SrvcTransacBOTP
Release Status of Service Transaction	Text	SAP_SRV_RelStatuSrvcTrans
Rejection Status of Service Transaction	Text	SAP_SRV_RejStatuSrvcTrans
Functional Location	Attributes and Texts	SAP_PM_FunctionalLocation
Billable Control	Text	SAP_FI_BillableControl
Billing Status of Service Transaction	Text	SAP_SRV_BillingStatusSrvT

Note: The SAP S/4HANA CDS-View *I_ORGUNITTEXT* extracts the texts for Organization Units time dependend, supplying a start and end date. To use these texts the view *Organizational Unit - Text (IL) (SAP_CX_IL_IORGUNITTXT)* includes a filter *StartDate <= CURRENT_DATE and EndDate >= CURRENT_DATE and a projection, which results in the texts valid for the current date.*

4.4.3.2 Currency Conversion

For general instructions how to setup the Currency Conversion initially, please refer to the chapter 3.5 Setup Currency Conversion.

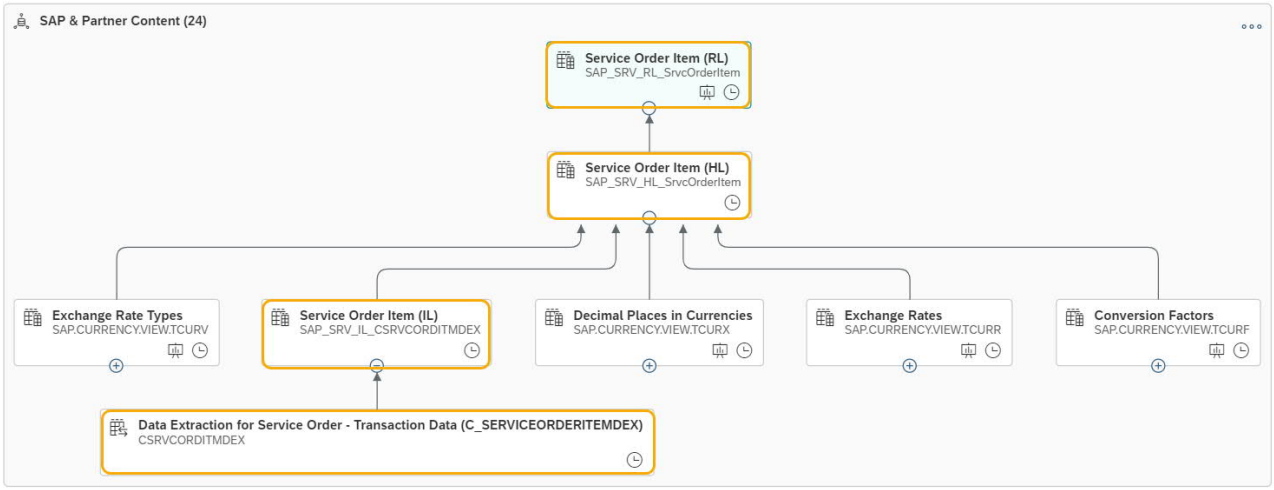
All amount key figures are provided in Document Currency as well as Company Code Currency in the reporting layer views or harmonization layer views.
In the SAP Analytics Cloud stories only the key figures in Company Code Currency are used, to allow for a meaningful aggregation. To ensure this, a SAP Analytics Cloud story filter on Company Code is mandatory and of single value.
Please adapt the story filter if you want to analyze more than one Company Code at a time. Depending on the Company Code Currency of the Company Codes, adapt the currency conversion to meet your requirements and to not add up different currencies accidentally.

4.4.3.3 Transaction data

4.4.3.3.1 Service Order Item

The service order item view contains real-time service order header and item data enhanced with calculated key figures and master data associations to organizational, customer, product and other master data.

The following lineage diagram shows the entities described in this chapter:



Data Extraction for Service Order Item - Transaction Data

The remote table *Data Extraction for Service Order - Transaction Data (C_SERVICEORDERITEMDEX) (technical name: CSRVCORDITMDEX) is* based on the CDS-View *Data Extraction for Service Order (technical Name CDS-View Name: C_ServiceOrderItemDEX*, SQL Name: *CSRVCORDITMDEX*) from SAP S/4HANA. Find more information on the CDS view in the SAP S/4HANA documentation.

For productive use consider replication of the transactional data as well as important master data remote tables to SAP Data Warehouse Cloud for better reporting performance.

Service Order Item (IL)

The inbound layer view *Service Order Item (IL) (SAP_SRV_IL_CSRVCORDITMDEX)* is based on the remote table *Data Extraction for Service Order - Transaction Data (C_SERVICEORDERITEMDEX) (technical name: CSRVCORDITMDEX)*. Minor

adjustments, like deriving Created on, Changed on date from Created on, Changed on timestamp are done.

The following table lists all the calculations in the inbound layer

Calculated Column	Transformation Rule
Service Document UUID	TO_VARCHAR(SERVICEDOCUMENTUUID)
Changed At - Timestamp	TO_TIMESTAMP(SERVICEDOCCHANGEDDATETIME)
Created At - Timestamp	TO_TIMESTAMP(SERVICEDOCCREATIONDATETIME)
Created At - Time	TO_TIME(SERVICEDOCCREATIONDATETIME)
Created At - Date	TO_DATE(SERVICEDOCCREATIONDATETIME)
Changed At - Date	TO_DATE(SERVICEDOCCHANGEDDATETIME)
Changed At - Time	TO_TIME(SERVICEDOCCHANGEDDATETIME)
Requested Service Start Date	TO_DATE(REQUESTEDSERVICESTARTDATE)
Requested Service End Date	TO_DATE(REQUESTEDSERVICEENDDATE)
Posting Date	TO_DATE(POSTINGDATE)
Exchange Rate Date	TO_DATE(EXCHANGERATEDATE)
Planned Service Start	TO_DATE(PLANNEDSERVICESTARTDATETIME)
Planned Service End	TO_DATE(PLANNEDSERVICEENDDATETIME)
Profit Center Determination Date	TO_DATE(PROFITCENTERDETERMINATIONDATE)
Planned Service Start - Timestamp	TO_TIMESTAMP(PLANNEDSERVICESTARTDATETIME)
Planned Service End - Timestamp	TO_TIMESTAMP(PLANNEDSERVICEENDDATETIME)
Planned Service Start	TO_DATE(PLANNEDSERVICESTARTDATETIME)
Planned Service End	TO_DATE(PLANNEDSERVICEENDDATETIME)
Sales Organization Org Unit	SUBSTRING(SalesOrganizationOrgUnitID,3,8)

Sales Office Org Unit	SUBSTRING(SALESOFFICEORGUNITID,3,8)
Sales Group Org Unit	SUBSTRING(SALESGROUPORGUNITID,3,8)
Service Organization	SUBSTRING(SERVICEORGANIZATION,3,8)
Responsible Organizational Unit (Sales)	SUBSTRING(RESPONSIBLESALESORGANIZATION,3,8)
Responsible Organizational Unit (Service)	SUBSTRING(RESPONSIBLESERVICEORGANIZATION,3,8)
GUID of Service Document Predecessor	TO_VARCHAR(SERVICEDOCUMENTPREDECESSORUUID)
GUID of Service Contract Predecessor	TO_VARCHAR(SRVCCONTRPREDECESSORUUID)
GUID of a Service Order Item	TO_VARCHAR(SERVICEDOCUMENTITEMUUID)
GUID of a Service Order Parent Item	TO_VARCHAR(PARENTSERVICEDOCUMENTITEMUUID)

Service Order Item (HL)

The harmonization layer view *Service Order Item (HL) (SAP_SRV_HL_SrvcOrderItem)* uses the inbound layer view *Service Order Item (IL)* and adds a filter on the field *Order Error Status (SERVICEDOCUMENTHASERROR),* as only records without errors are relevant for reporting.

Formula: *SERVICEDOCUMENTHASERROR = ''*

Date fields are renamed to …_DATE to support date functions and capabilities of SAP Analytics Cloud.

In addition, in this view measures in transaction currency are converted to company code currency of the sales organization.

Calculated column	Type	Transformation Rule

Invoice Value in Company Code Currency *(InvoiceAmount_CC_CUR)*	Currency Measure	Source Amount Column: Invoice Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 000 Conversion Rate: M
Released Value in Company Code Currency *(SrvcDocItmReldAmt_CC_CUR)*	Currency Measure	Source Amount Column: Released Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 000 Conversion Rate: M
Net Value in Company Code Currency *(ServiceDocItemNetAmount_CC_CUR)*	Currency Measure	Source Amount Column: Net Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 000 Conversion Rate: M
Gross Value in Company Code Currency *(SrvcDocItemGrossAmount_CC_CUR)*	Currency Measure	Source Amount Column: Gross Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 000 Conversion Rate: M

Service Order Item (RL)

In the reporting layer view *Service Order Item (RL) (technical name: SAP_SRV_RL_SrvcOrderItem),* further measures are calculated like number of service

order items and additional measures related to service order item based on the item status. Master Data and Text Views are associated to provide attributes and text.

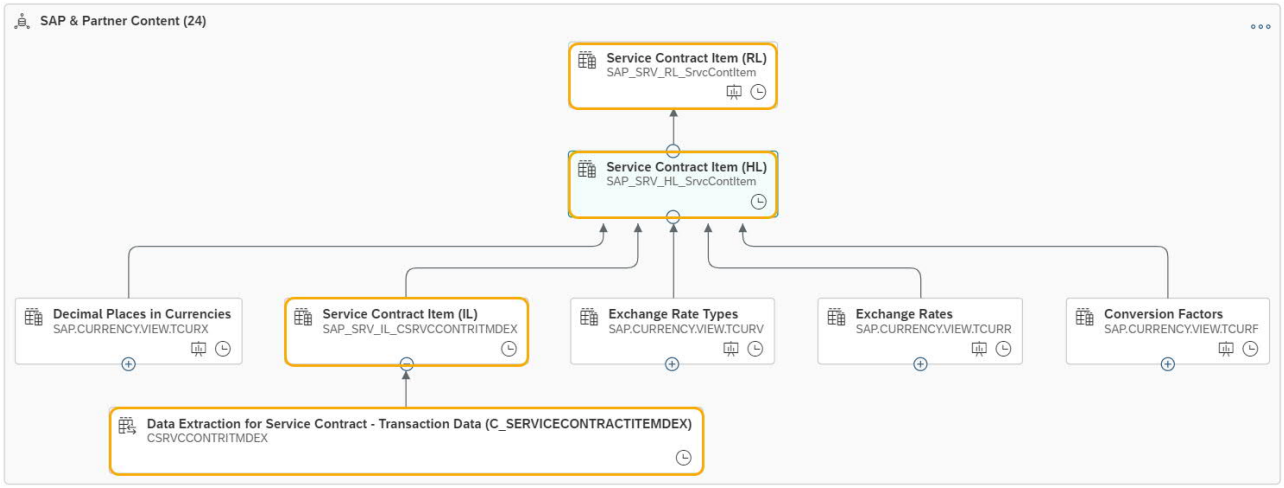
Following calculated/ restricted measures are created in this view

Calculated Column	Type	Value Calculation / Restriction
No. of Service Order Items (NrofServiceOrderItems)	Restricted measure	Constant 1 when Service Document Item <> ' '
No. of open Service Order Items (*NoOpenSrvDocItems*)	Restricted measure	Constant 1 when Service Document Item Open Status = 'X'
No. of overdue Service Order Items (*NoOverdueSrvDocItems*)	Restricted measure	Constant 1 when Service Document Item Open Status = 'X' and Requested Service End Date < CURRENT DATE
Net Value of Open Service Order Items in Company Code Currency (*SrvDocOpnItmNetAmnt_CC_CUR*)	Restricted measure	Net Value in Company Code Currency when Service Document Item Open Status = 'X'
Net Value of Overdue Service Order Items in Company Code Currency (*SrvDocOdueItmNetAmnt_CC_CUR*)	Restricted measure	Net Value in Company Code Currency when Service Document Item Open Status = 'X' and Requested Service End Date < CURRENT DATE

4.4.3.3.2 Service Contract Item

The service contract item view contains real-time service contract header and item data enhanced with calculated key figures and master data associations to organizational, customer, product and other master data.

The following lineage diagram shows the entities described in this chapter:



Data Extraction for Service Contract Item - Transaction Data

The remote table *Data Extraction for Service Order - Transaction Data (C_SERVICECONTRACTITEMDEX)* (technical name: *CSRVCCONTRITMDEX*) is based on the CDS-View *Data Extraction for Service Contract (technical Name CDS-View Name: C_ServiceContractItemDEX, SQL Name: CSRVCCONTRITMDEX)* from SAP S/4HANA. Find more information on the CDS view in the SAP S/4HANA documentation.

For productive use consider replication of the transactional data as well as important master data remote tables to SAP Data Warehouse Cloud for better reporting performance.

Service Contract Item (IL)

The inbound layer view *Service Contract Item (IL) (SAP_SRV_IL_CSRVCCONTRITMDEX)* is based on the remote table *Data Extraction for Service Contract - Transaction Data (C_SERVICECONTRACTITEMDEX) (technical name:*

CSRVCCONTRITMDEX). Minor adjustments, like deriving Created on, Changed on date from Created on, Changed on timestamp are done.

The following table lists all the calculations in the inbound layer

Calculated Column	Transformation Rule
Created At - Timestamp	TO_TIMESTAMP(SERVICEDOCCREATIONDATETIME)
Changed At - Timestamp	TO_TIMESTAMP(SERVICEDOCCHANGEDDATETIME)
Created At - Date	TO_DATE(SERVICEDOCCREATIONDATETIME)
Created At - Time	TO_TIME(SERVICEDOCCREATIONDATETIME)
Changed At - Date	TO_DATE(SERVICEDOCCHANGEDDATETIME)
Changed At - Time	TO_TIME(SERVICEDOCCHANGEDDATETIME)
Posting Date	TO_DATE(POSTINGDATE)
Posting Date Item - Timestamp	TO_TIMESTAMP(SRVCDOCITMPOSTINGDATETIME)
Posting Date Item	TO_DATE(SRVCDOCITMPOSTINGDATETIME)
Validity Start Date - Timestamp	TO_TIMESTAMP(SRVCDOCITMVALDTYSTARTDATETIME)
Validity End Date - Timestamp	TO_TIMESTAMP(SRVCDOCITMVALDTYENDDATETIME)
Validity Start Date	TO_DATE(SRVCDOCITMVALDTYSTARTDATETIME)
Validity End Date	TO_DATE(SRVCDOCITMVALDTYENDDATETIME)
Sales Organization Org Unit	SUBSTRING(SALESORGANIZATIONORGUNITID,3,8)
Sales Office Org Unit	SUBSTRING(SALESOFFICEORGUNITID,3,8)
Sales Group Org Unit	SUBSTRING(SALESGROUPORGUNITID,3,8)
Service Organization	SUBSTRING(SERVICEORGANIZATION,3,8)
Responsible Organizational Unit (Sales)	SUBSTRING(RESPONSIBLESALESORGANIZATION,3,8)

Responsible Organizational Unit (Service)	SUBSTRING(RESPONSIBLESERVICEORGANIZATION,3,8)
Contract Start Date - Timestamp	TO_TIMESTAMP(SERVICECONTRITEMSTARTDATETIME)
Contract End Date - Timestamp	TO_TIMESTAMP(SERVICECONTRITEMENDDATETIME)
Contract Start Date	TO_DATE(SERVICECONTRITEMSTARTDATETIME)
Contract End Date	TO_DATE(SERVICECONTRITEMENDDATETIME)
Service Document UUID	TO_VARCHAR(SERVICEDOCUMENTUUID)
GUID of a Service Contract Item	TO_VARCHAR(SERVICEDOCUMENTITEMUUID)
GUID of a Parent Service Document Item	TO_VARCHAR(PARENTSERVICEDOCUMENTITEMUUID)
Profit Center Determination Date	TO_DATE(PROFITCENTERDETERMINATIONDATE)
Exchange Rate Date	TO_DATE(EXCHANGERATEDATE)
GUID of Service Quotation Predecessor	TO_VARCHAR(SRVCQTANPREDECESSORUUID)

Service Contract Item (HL)

The harmonization layer view *Service Contract Item (HL) (SAP_SRV_HL_SrvcContItem)* uses the inbound layer view *Service Contract Item (IL)* and adds a filter on the field *Order Error Status (SERVICEDOCUMENTHASERROR),* as only records without errors are relevant for reporting.

Formula: *SERVICEDOCUMENTHASERROR = ''.*

Date fields are renamed to …_DATE to support date functions and capabilities of SAP Analytics Cloud.

In this view measures in transaction currency are converted to company code currency of the sales organization.

Calculated Column	Type	Transformation Rule
Invoice Value in Company Code Currency *(InvoiceAmount_CC_CUR)*	Currency Measure	Source Amount Column: Invoice Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 000 Conversion Rate: M
Released Value in Company Code Currency *(SrvcDocItmReldAmt_CC_CUR)*	Currency Measure	Source Amount Column: Released Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 000 Conversion Rate: M
Net Value in Company Code Currency *(ServiceDocItemNetAmount_CC_CUR)*	Currency Measure	Source Amount Column: Net Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 000 Conversion Rate: M
Gross Value in Company Code Currency *(SrvcDocItemGrossAmount_CC_CUR)*	Currency Measure	Source Amount Column: Gross Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 000

		Conversion Rate: M

Service Contract Item (RL)

In the reporting layer view *Service Contract Item (RL) (technical name: SAP_SRV_RL_SrvcContItem)* further measures are calculated like number of service contract items and additional measures related to service contract item based on the item status. Master Data and Text View are associated to provide attributes and text.

Following calculated/ restricted measures are created in this view

Calculated Column	Type	Value Calculation / Restriction
No. of Service Contract Items (*NumberofServiceContractItem*)	Restricted measure	Constant 1 when Service Document Item <> ' '
Average Quantity of Service Contract Item (AvgQuantityofServiceContrItem)	Calculated measure	Order quantity / No. of service contract item
Average Net Value of Service Contract Item in Transaction Currency (*AvgNetAmountofServiceContrItem*)	Calculated measure	Service document item net amount / No. of service contract item
Net Value of Expired Service Contract Items in Last 6 Months in Company Code Currency (*ExprdSrvcContrItmNetAmt_CC_CUR*)	Restricted measure	Service document item net amount in company code currency when service contract item end date within the last 6 months

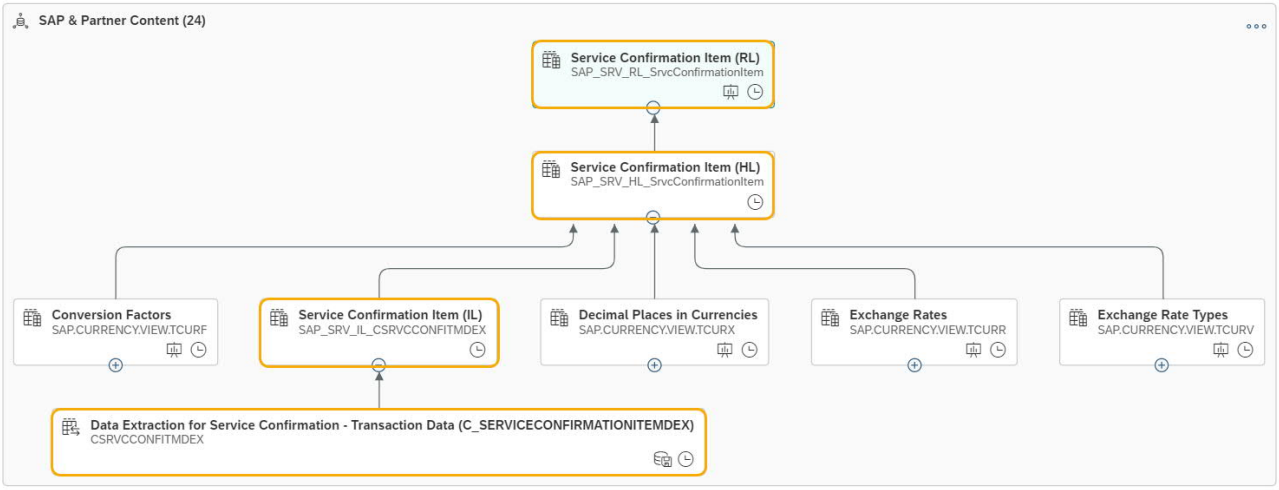
Number of Expired Service Contract Items in Last 6 Months (*NrOfExprdServiceContractItems*)	Restricted measure	Constant 1 when service contract item end date within the last 6 months
Net Value of Expiring Service Contract Items in next 6 Months in Company Code Currency (*ExprgSrvcContrItmNetAmt_CC_CUR*)	Restricted measure	Service document item net amount in company code currency when service contract item end date within the next 6 months
No. of Expiring Service Contract Items in Next 6 Months (*NrOfExprgServiceContractItems*)	Restricted measure	Constant 1 when service contract item end date when service contract item end date within the next 6 months
Net Value of Cancelled/Expired Service Contract Items in Company Code Currency (*SrvcContrItemLostNetAmt_CC_CUR*)	Restricted measure	Service document item net amount in company code currency when current date > service contract item end date or service document item cancel reason <> ' '
No. of Cancelled Service Contract Items (*NrOfCancldServiceContractItems*)	Restricted measure	Constant 1 when service document item cancel reason <> ' '
Net Value of Cancelled Service Contract Items in Company Code Currency (*CancldSrvcContItmNetAmt_CC_CUR*)	Restricted measure	Service document item net amount in company code currency when service document item cancel reason <> ' '

First Day of Current Month (FirstDayofMonth)	Calculated Measure	ADD_MONTHS(NEXT_DAY(LAST_DAY(CURRENT_DATE)),-1)

4.4.3.3.3 Service Confirmation Item

The service confirmation item view contains real-time service confirmation header and item data enhanced with calculated key figures and master data associations to organizational, customer, product and other master data.

The following lineage diagram shows the entities described in this chapter:



Data Extraction for Service Confirmation - Transaction Data

The remote table *Data Extraction for Service Confirmation -Transaction Data (C_SERVICECONFIRMATIONITEMDEX) (technical name: CSRVCCONFITMDEX)* is based on the CDS-View *Data Extraction for Service Order (technical Name CDS-View Name: C_ServiceConfirmationItemDEX, SQL Name: CSRVCCONFITMDEX)* from SAP S/4HANA.

Find more information on the CDS view in the SAP S/4HANA documentation.

For productive use consider replication of the transactional data as well as important master data remote tables to SAP Data Warehouse Cloud for better reporting performance.

Service Confirmation Item (IL)

The inbound layer view *Service Confirmation Item (IL) (SAP_SRV_IL_ CSRVCCONFITMDEX)* is based on the remote table *Data Extraction for Service*

Confirmation (technical name: CSRVCCONFITMDEX). Minor adjustments, like deriving Created on, Changed on date from Created on, Changed on timestamp are done.

The following table lists all the calculations in the inbound layer

Calculated Column	Transformation Rule
Service Document UUID	TO_VARCHAR(SERVICEDOCUMENTUUID)
Changed At - Timestamp	TO_TIMESTAMP(SERVICEDOCCHANGEDDATETIME)
Created At - Timestamp	TO_TIMESTAMP(SERVICEDOCCREATIONDATETIME)
Created At - Time	TO_TIME(SERVICEDOCCREATIONDATETIME)
Created At - Date	TO_DATE(SERVICEDOCCREATIONDATETIME)
Changed At - Date	TO_DATE(SERVICEDOCCHANGEDDATETIME)
Changed At - Time	TO_TIME(SERVICEDOCCHANGEDDATETIME)
Requested Service Start Date	TO_DATE(REQUESTEDSERVICESTARTDATE)
Requested Service End Date	TO_DATE(REQUESTEDSERVICEENDDATE)
GUID of a Service Confirmation Item	TO_VARCHAR(SERVICEDOCUMENTITEMUUID)
GUID of a Parent Service Document Item	TO_VARCHAR(PARENTSERVICEDOCUMENTITEMUUID)
Posting Date	TO_DATE(POSTINGDATE)
Actual Service Start Date - Timestamp	TO_TIMESTAMP(ACTUALSERVICESTARTDATETIME)
Actual Service Start Date	TO_DATE(ACTUALSERVICESTARTDATETIME)
Actual Service End Date - Timestamp	TO_TIMESTAMP(ACTUALSERVICEENDDATETIME)
Actual Service End Date	TO_DATE(ACTUALSERVICEENDDATETIME)
Exchange Rate Date	TO_DATE(EXCHANGERATEDATE)
Sales Organization Org Unit	SUBSTRING(SalesOrganizationOrgUnitID,3,8)
Sales Office Org Unit	SUBSTRING(SALESOFFICEORGUNITID,3,8)

Sales Group Org Unit	SUBSTRING(SALESGROUPORGUNITID,3,8)
Service Organization	SUBSTRING(SERVICEORGANIZATION,3,8)
Responsible Organizational Unit in Sales	SUBSTRING(RESPONSIBLESALESORGANIZATION,3,8)
Responsible Organizational Unit in Service	SUBSTRING(RESPONSIBLESERVICEORGANIZATION,3,8)
GUID of Service Order Predecessor	TO_VARCHAR(SRVCCONTRPREDECESSORUUID)

Service Confirmation Item (HL)

The harmonization layer view *Service Confirmation Item (HL) (SAP_SRV_HL_SrvcConfirmationItem)* uses the inbound layer view *Service Confirmation Item (IL)* and adds a filter on the field *Order Error Status (SERVICEDOCUMENTHASERROR),* as only records without errors are relevant for reporting.

Formula: *SERVICEDOCUMENTHASERROR = ''.*

Date fields are renamed to …_DATE to support date functions and capabilities of SAP Analytics Cloud.

In this view measures in transaction currency are converted to company code currency of the sales organization.

Calculated Column	Type	Transformation Rule
Invoice Value in Company Code Currency *(InvoiceAmount_CC_CUR)*	Currency Measure	Source Amount Column: Invoice Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date

		Client: 000 Conversion Rate: M
Net Value in Company Code Currency *(ServiceDocItemNetAmount_CC_CUR)*		Source Amount Column: Net Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 000 Conversion Rate: M
Gross Value in Company Code Currency *(SrvcDocItemGrossAmount_CC_CUR)*		Source Amount Column: Gross Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 000 Conversion Rate: M

Service Confirmation Item (RL)

In the reporting layer view *Service Confirmation Item (RL) (technical name: SAP_SRV_RL_SrvcConfirmationItem),* further measures are calculated like number of service confirmation items and additional measures related to service confirmation item based on the item status are calculated. Master Data and Text View are associated to provide attributes and text.

Following calculated/ restricted measures are created in this view

Calculated Column	Type	Value Calculation / Restriction
No. of Service Confirmation Items (*NoSrvConfItems*)	Calculated measure	Constant 1

No. of unplanned Service Order Items (*NoUnplanSrvOrderItems*)	Restricted measure	Constant 1 when object type for predecessor service order = ''
Net Value of Unplanned Service Order Items in Transaction Currency (*SrvOrdUnplanItmNetAmnt*)	Restricted measure	Service document item net amount in transaction currency when object type for predecessor service order = ''
Quantity of unplanned Service Order Items (*SrvOrdUnplanQuantity*)	Restricted measure	Quantity delivered in sales unit when object type for predecessor service order = ''
Net Value of Unplanned Service Order Items in Company Code Currency (*SrvOrdUnplanItmNetAmnt_CC_CUR)*	Restricted measure	Service document item net amount in company code currency when object type for predecessor service order = ''

4.5 SERVICE ANALYSIS FOR SAP S/4HANA CLOUD (SAP DATA WAREHOUSE CLOUD)

This content package covers the following area:

- Service Order Items
- Service Contract Item
- Service Confirmation Item

The source for this area is the Service Order Items, Service Contract Items and Service Confirmation Items based on Service Orders, Service Contracts and Service Confirmation data from SAP S/4HANA Cloud.

The content provides a holistic view of your service documents. Service manager can get an overview of their service orders, contracts and confirmations as well as a detailed view at item level.

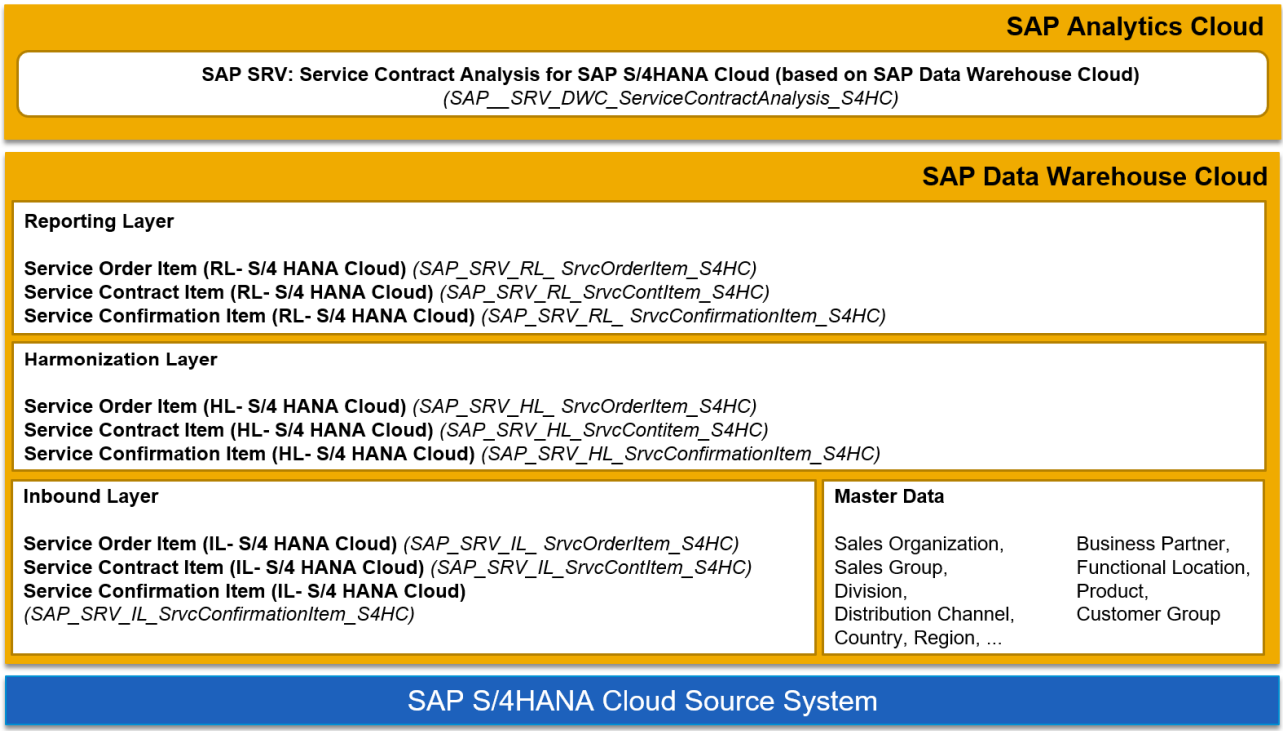
For service orders you can analyze the number and volume of service orders, open and overdue service orders and the top performing products and customers based on service order amount. Also measure about service orders created from solution orders can be reported on.

The service contract item data allows to analyze the number and volume of service contracts as well as of expired, expiring and cancelled contracts.

With the service confirmation item data you can analyze the volume of service confirmations as well as numbers and values of unplanned service orders and the top performing products and customers based on service confirmations.

4.5.1 *Architecture and Abstract*

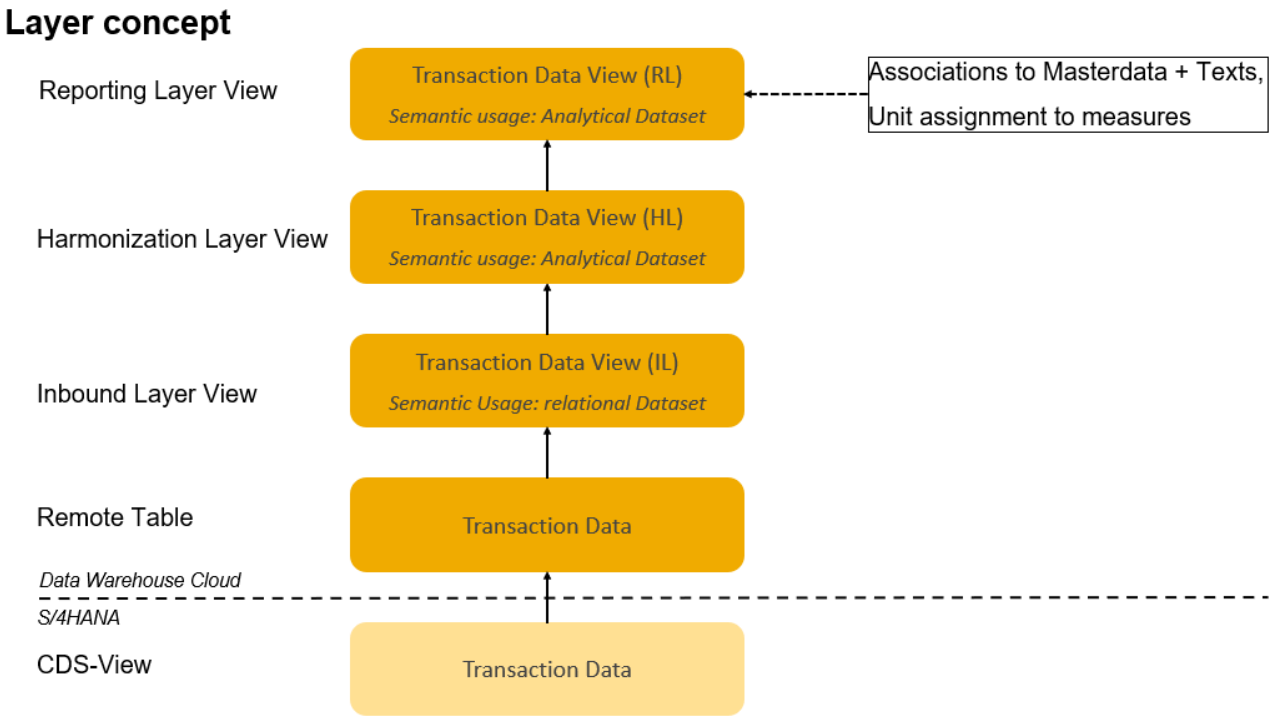
The high-level architecture of the Service Analysis for SAP S/4HANA Cloud package is as follows:



While the SAP Data Warehouse Cloud content and models cover three areas within “Service” (orders, contracts and confirmations), currently only for Service Contracts an SAP Analytics Cloud story is available.

The architecture consists of an inbound layer, a harmonization layer and a reporting layer in accordance with SAP Data Warehouse Cloud modelling best practices and guidelines. The transaction data models have been developed leveraging SAP Data Warehouse Cloud virtualization capabilities in three distinct layers:

- An inbound layer view (e.g., SAP_SRV_IL*) that is in most parts a mirror of the CDS view / remote table from S/4HANA Cloud.
- A harmonization layer view (e.g., SAP_SRV_HL*), which uses the inbound layer view and enhances it with key figures using currency conversion into company code currency.
- A reporting layer view (e.g., SAP_SRV_RL*), which uses the harmonization layer view and adds calculated key figures and master data associations for attributes and texts. This layer is also used to connect to the SAP Analytics Cloud stories.



4.5.2 *Stories*

This content package contains the following story:

- SAP SRV: Service Contract Analysis for SAP S/4HANA Cloud (based on SAP Data Warehouse Cloud)

Please navigate to the SAP Analytics Cloud content documentation for details.

4.5.3 *Models*

4.5.3.1 **Master data**

4.5.3.1.1 Introduction

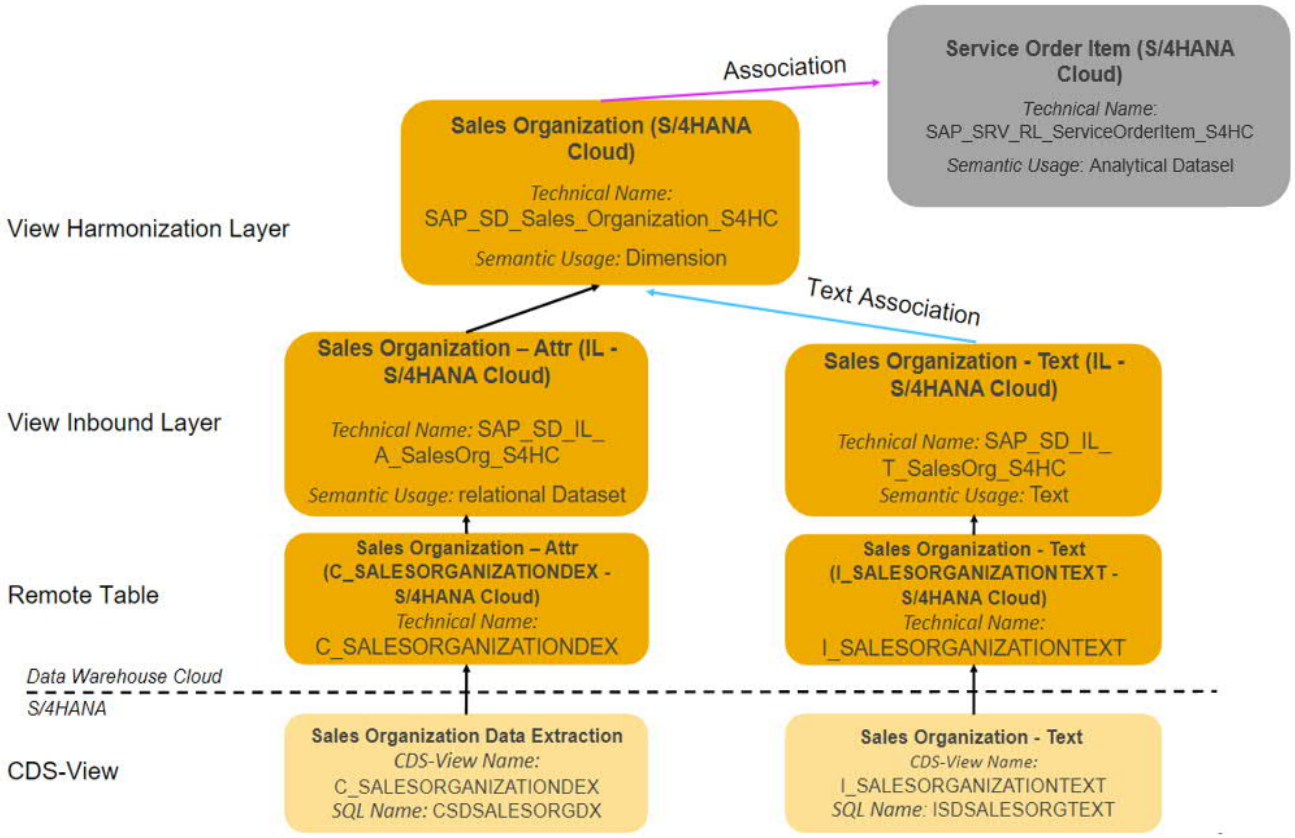
Master data comes in different flavours:

- Master data with attributes and texts
- Master data with text only and without attributes

Either the views for attributes and texts are distinct views or attributes and texts are combined in one view only. Therefore, the master data models and the modelling in Data Warehouse Cloud need to be slightly adapted per case.

Master data views have been created following SAP Data Warehouse Cloud modelling guidelines and best practices:

Case 1: Master data – attributes and texts; separate CDS-Views for attributes and texts



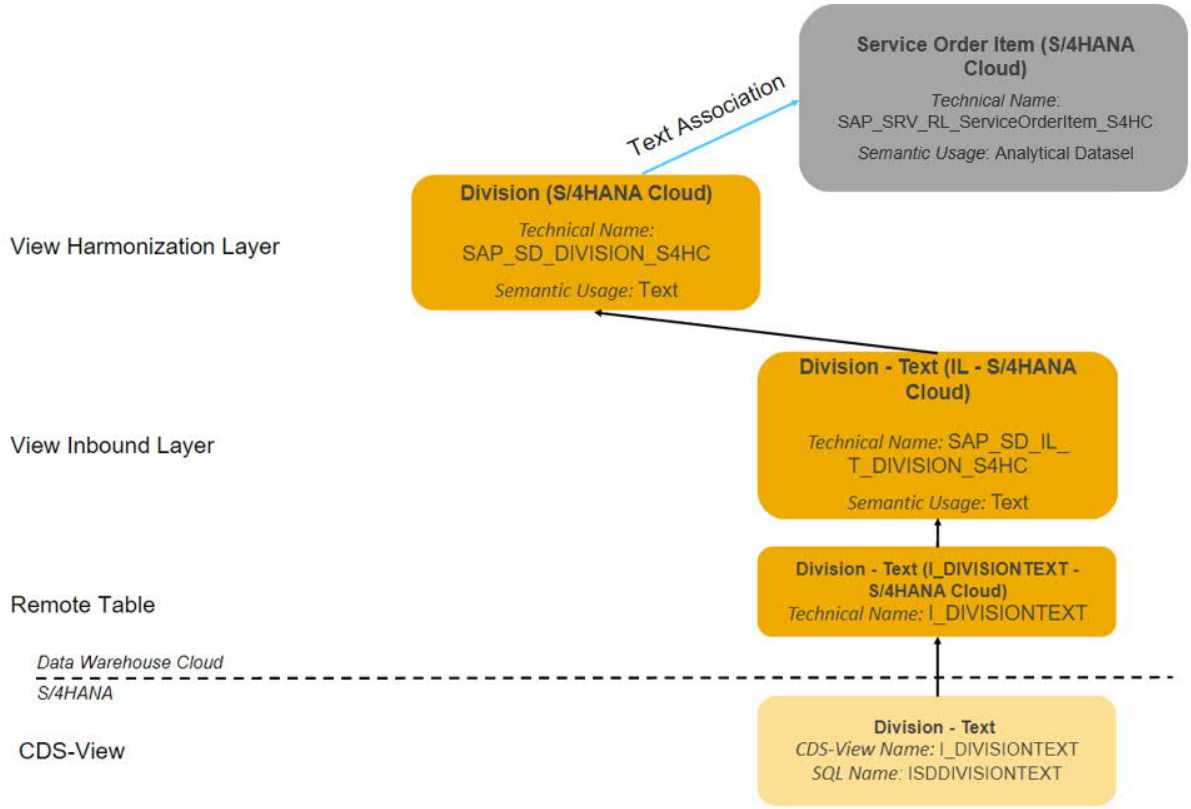
- The remote tables are the 1:1 representation of the S/4HANA Cloud CDS-views for master data and text.
- The inbound layer views use the remote tables, sometimes data type adjustments e.g. for language, are necessary.

- The harmonization layer view brings master data and text together using text association and is of semantic type: Dimension. This view is then associated to the relevant transaction data in the transaction data reporting layer view

Case 2: Master data – text only, one CDS-View for texts

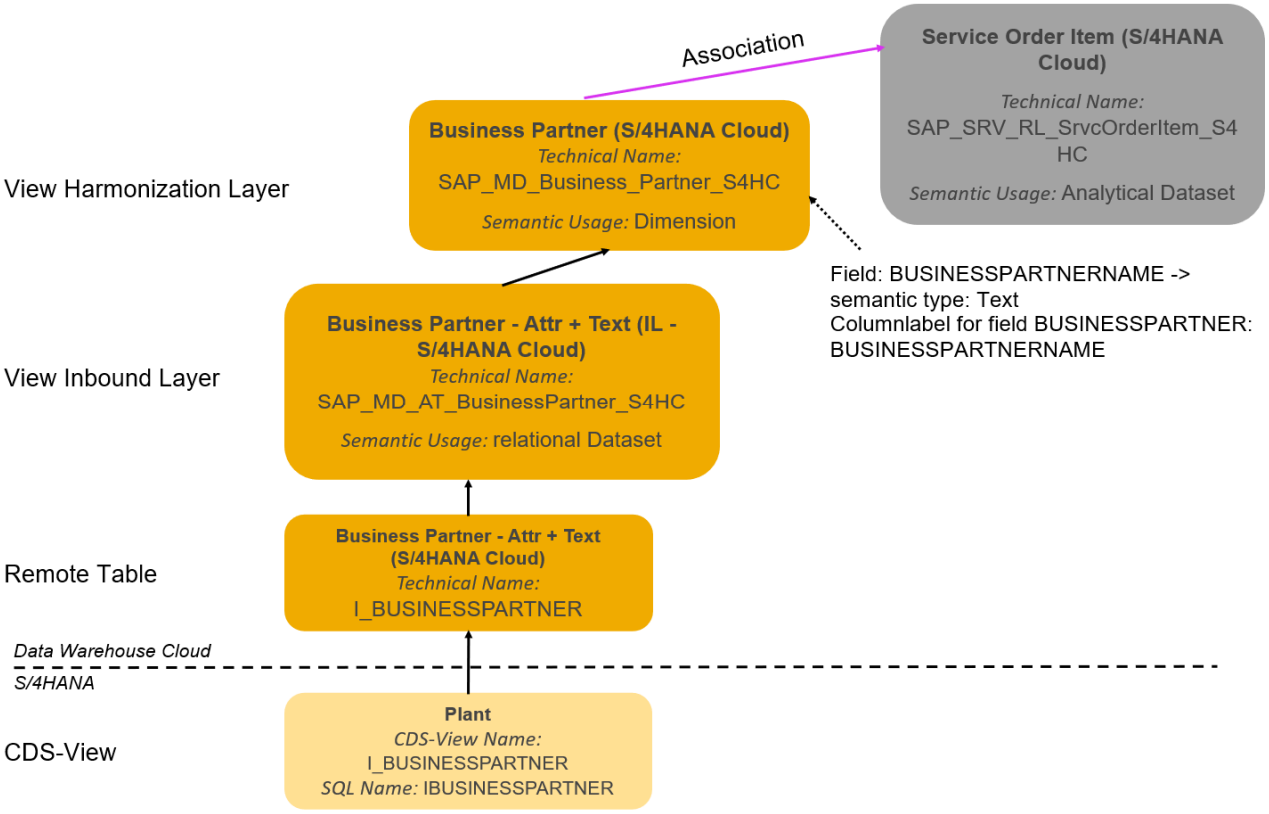
For master data without attributes - text only - the harmonization layer view is directly based on the inbound layer text view and its semantic type is “Text”.

This view is associated to the relevant transaction data in the transaction data reporting layer view as a text association.



Case 3: Master data – attributes and texts; one CDS-View for attributes incl. not language dependent texts

Within the harmonization layer view, the field containing the text is set to semantic type “text” and entered as a column label for the respective key field.
This view is associated to the relevant transaction data in the transaction data reporting layer view.



4.5.3.1.2 Overview of master data views

Find the most important master data views in the table below and explore the entire overview best directly in your SAP Data Warehouse Cloud system.

Master Data	Master Data Type	Technical Name
Sales Organization	Attributes and Texts	SAP_SD_Sales_Organization_S4HC
Distribution Channel	Texts	SAP_SD_DistribChannel_S4HC
Division	Texts	SAP_SD_Division_S4HC
Customer Group	Texts	SAP_SD_Customer_Group_S4HC
Business Partner	Attributes and Texts	SAP_MD_Business_Partner_S4HC

Sales Group	Text	SAP_SD_SalesGroup_S4HC
Sales Office	Texts	SAP_SD_SalesOffice_S4HC
Product	Attributes and Texts	SAP_LO_Product_S4HC
Organization Unit	Text	SAP_CX_OrgUnit_S4HC
Controlling Area	Attributes and Texts	SAP_FI_ControllingArea_S4HC
Billing Block Reason	Text	SAP_SD_BillingBlockReason_S4HC
Service Transaction Item Business Object Type	Text	SAP_SRV_SrvcTransItemBOTP_S4HC
Service Transaction Type	Text	SAP_SRV_SrvcTransacType_S4HC
Service Transaction Status	Text	SAP_SRV_SrvcTransStatus_S4HC
Service Transaction Business Object Type	Text	SAP_SRV_SrvcTransacBOTP_S4HC
Release Status of Service Transaction	Text	SAP_SRV_RelStatuSrvcTrans_S4HC
Rejection Status of Service Transaction	Text	SAP_SRV_RejStatuSrvcTrans_S4HC
Functional Location	Attributes and Texts	SAP_PM_FunctionalLocation_S4HC
Billable Control	Text	SAP_FI_BillableControl_S4HC
Billing Status of Service Transaction	Text	SAP_SRV_BillingStatusSrvT_S4HC

Note: The SAP S/4HANA CDS-View *I_ORGUNITTEXT* extracts the texts for Organization Units time dependent, supplying a start and end date. To use these texts the view *Organizational Unit - Text (IL - S/4HANA Cloud) (SAP_CX_IL_T_OrgUnit_S4HC)* includes a filter *StartDate <= CURRENT_DATE and EndDate >= CURRENT_DATE and a projection, which results in the texts valid for the current date.*

4.5.3.2 Currency Conversion

For general instructions how to setup the Currency Conversion initially, please refer to the chapter 3.5 Setup Currency Conversion.

All amount key figures are provided in Document Currency as well as Company Code Currency in the reporting layer views or harmonization layer views.

In the SAP Analytics Cloud stories only the key figures in Company Code Currency are used, to allow for a meaningful aggregation. To ensure this, a SAP Analytics Cloud story filter on Company Code is mandatory and of single value.

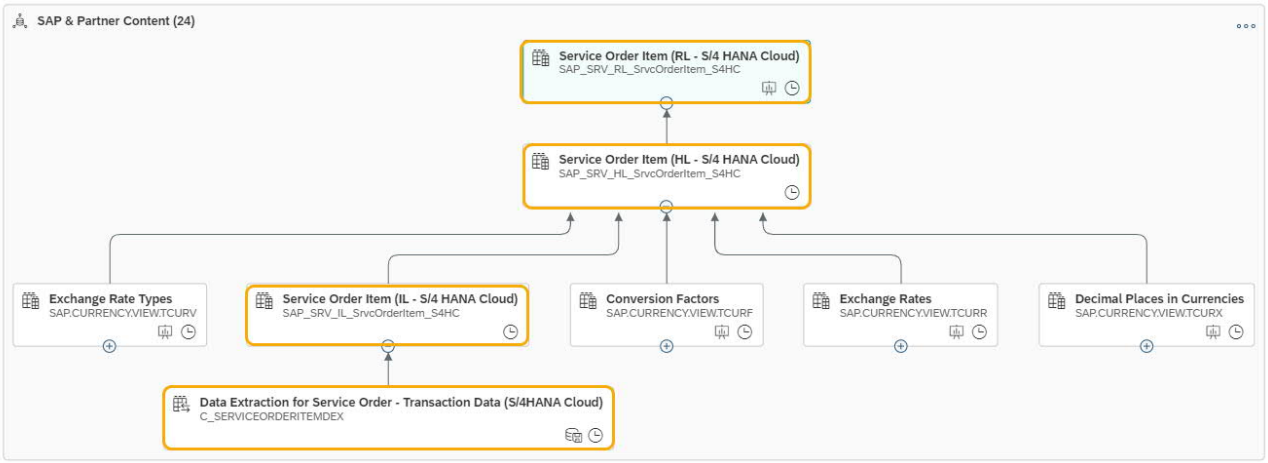
Please adapt the story filter if you want to analyze more than one Company Code at a time. Depending on the Company Code Currency of the Company Codes, adapt the currency conversion to meet your requirements and to not add up different currencies accidentally.

4.5.3.3 Transaction data

4.5.3.3.1 Service Order Item

The service order item view contains real-time service order header and item data enhanced with calculated key figures and master data associations to organizational, customer, product and other master data.

The following lineage diagram shows the entities described in this chapter:



Data Extraction for Service Order Item - Transaction Data

The remote table *Data Extraction for Service Order - Transaction Data (S/4HANA Cloud) (technical name: C_SERVICEORDERITEMDEX)* is based on the CDS-View *Data Extraction for Service Order (technical Name CDS-View Name: C_ServiceOrderItemDEX, SQL Name: CSRVCORDITMDEX)* from SAP S/4HANA Cloud.
Find more information on the CDS view in the SAP S/4HANA documentation.

Please replicate the data to SAP Data Warehouse Cloud.
For productive use also consider replication of important master data remote tables to SAP Data Warehouse Cloud for better reporting performance.

Service Order Item (IL – S/4HANA Cloud)

The inbound layer view *Service Order Item (IL – S/4HANA Cloud) (SAP_SRV_IL_SrvcOrderItem_S4HC)* is based on the remote table *Data Extraction for*

Service Order - Transaction Data (S/4HANA Cloud) (technical name: C_SERVICEORDERITEMDEX. Minor adjustments, like deriving Created on, Changed on date from Created on, Changed on timestamp are done.

In the projection the Business Names of the fields are adjusted to be more descriptive.

The following table lists all the calculations in the inbound layer

Calculated Column	Transformation Rule
Created At - Date	TO_DATE(ServiceDocCreationDateTime)
Created At - Time	TO_TIME(ServiceDocCreationDateTime)
Changed At - Date	TO_DATE(ServiceDocChangedDateTime)
Changed At - Time	TO_TIME(ServiceDocChangedDateTime)
Planned Service Start Date	TO_DATE(PlannedServiceStartDateTime)
Planned Service End Date	TO_DATE(PlannedServiceEndDateTime)
Sales Organization Org Unit	SUBSTRING(SalesOrganizationOrgUnitID,3,8)
Sales Office Org Unit	SUBSTRING(SalesOfficeOrgUnitID,3,8)
Sales Group Org Unit	SUBSTRING(SalesGroupOrgUnitID,3,8)
Service Organization	SUBSTRING(ServiceOrganization,3,8)
Responsible Organizational Unit (Sales)	SUBSTRING(ResponsibleSalesOrganization,3,8)
Responsible Organizational Unit (Service)	SUBSTRING(ResponsibleServiceOrganization,3,8)

Service Order Item (HL - S/4HANA Cloud)

The harmonization layer view *Service Order Item (HL- S/4HANA Cloud) (SAP_SRV_HL_SrvcOrderItem_S4HC)* uses the inbound layer view *Service Order Item (IL - S/4 HANA Cloud)* and adds a filter on the field *Order Error Status (ServiceDocumentHasError)*, as only records without errors are relevant for reporting.

Formula: *ServiceDocumentHasError = ''*

Date fields are renamed to …_DATE to support date functions and capabilities of SAP Analytics Cloud.

In addition, in this view measures in transaction currency are converted to company code currency of the sales organization.

Calculated column	Type	Transformation Rule
Invoice Value in Company Code Currency *(InvoiceAmount_CC_CUR)*	Currency Measure	Source Amount Column: Invoice Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 100 Conversion Rate: M
Released Value in Company Code Currency *(SrvcDocItmReldAmt_CC_CUR)*	Currency Measure	Source Amount Column: Released Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 100 Conversion Rate: M
Net Value in Company Code Currency *(ServiceDocItemNetAmount_CC_CUR)*	Currency Measure	Source Amount Column: Net Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 100 Conversion Rate: M
Gross Value in Company Code Currency *(SrvcDocItemGrossAmount_CC_CUR)*	Currency Measure	Source Amount Column: Gross Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency

		Reference Date: Posting Date Client: 100 Conversion Rate: M

Service Order Item (RL – S/4HANA Cloud)

In the reporting layer view *Service Order Item (RL - S/4 HANA Cloud) (technical name: SAP_SRV_RL_SrvcOrderItem_S4HC),* further measures are calculated like number of service order items and additional measures related to service order item based on the item status. Master Data and Text Views are associated to provide attributes and text.

Following calculated/ restricted measures are created in this view

Calculated Column	Type	Value Calculation / Restriction
No. of open Service Order Items (*NoOpenSrvDocItems*)	Restricted measure	Constant 1 when Service Document Item Open Status = 'X'
No. of overdue Service Order Items based on Solution Order (*NoOverdueSrvDocItems_SO*)	Restricted measure	Constant 1 when Service Document Item Open Status = 'X' and Requested Service End Date < CURRENT DATE and Reference Business Solution Order <> ' ' and Reference Business Solution Order Item <> ' '
No. of open Service Order Items based on Solution Order (NoOpenSrvDocItems_SO)	Restricted measure	Constant 1 when Service Document Item Open Status = 'X' and Reference Business Solution Order <> ' ' and Reference Business Solution Order Item <> ' '
No. of overdue Service Order Items (*NoOverdueSrvDocItems*)	Restricted measure	Constant 1 when Service Document Item Open Status =

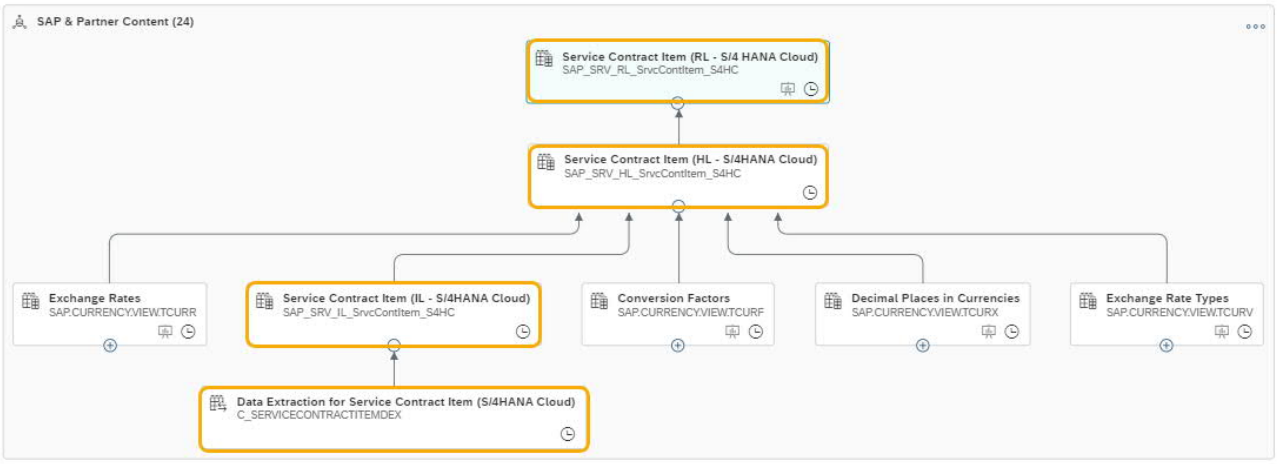
		‘X’ and Requested Service End Date < CURRENT DATE
Net Value of Service Order Items based on Solution Order in Company Code Currency (*SrvDocItmNetAmnt_SO_CC_CUR*)	Restricted measure	Net Value in Company Code Currency when Reference Business Solution Order <> ’ ’ and Reference Business Solution Order Item <> ’ ’
Net Value of Open Service Order Items based on Solution Order in Company Code Currency (*SrvDocOpnItmNetAmnt_SO_CC_CUR*)	Restricted measure	Net Value in Company Code Currency when Service Document Item Open Status = ‘X’ and Reference Business Solution Order <> ’ ’ and Reference Business Solution Order Item <> ’ ’
Net Value of Overdue Service Order Items based on Solution Order in Company Code Currency (*SrvDocOdueItmNetAmnt_SO_CC_CUR*)	Restricted measure	Net Value in Company Code Currency when Service Document Item Open Status = ‘X’ and Requested Service End Date < CURRENT DATE and Reference Business Solution Order <> ’ ’ and Reference Business Solution Order Item <> ’ ’
No. of Service Order Items (NrofServiceOrderItems)	Restricted measure	Constant 1 when Service Document Item <> ’ ’
Net Value of Open Service Order Items (SrvDocOpnItmNetAmnt_CC_CUR)	Restricted measure	Net Value in Company Code Currency when Document Item Open Status = 'X'
Net Value of Overdue Service Order Items (SrvDocOdueItmNetAmnt_CC_CUR)	Restricted measure	Net Value in Company Code Currency Document Item Open Status = 'X' and

		Requested Service End Date < CURRENT_DATE

4.5.3.3.2 Service Contract Item

The service contract item view contains real-time service contract header and item data enhanced with calculated key figures and master data associations to organizational, customer, product and other master data.

The following lineage diagram shows the entities described in this chapter:



Data Extraction for Service Contract Item - Transaction Data

The remote table *Data Extraction for Service Order - Transaction Data (S/4HANA Cloud)* (technical name: *C_SERVICECONTRACTITEMDEX*) is based on the CDS-View *Data Extraction for Service Contract (technical Name CDS-View Name: C_ServiceContractItemDEX, SQL Name: CSRVCCONTRITMDEX)* from SAP S/4HANA Cloud.

Find more information on the CDS view in the SAP S/4HANA documentation.

Please replicate the data to SAP Data Warehouse Cloud.

For productive use also consider replication of important master data remote tables to SAP Data Warehouse Cloud for better reporting performance.

Service Contract Item (IL – S/4HANA Cloud)

The inbound layer view *Service Contract Item (IL – S/4HANA Cloud) (SAP_SRV_IL_SrvcContItem_S4HC)* is based on the remote table *Data Extraction for Service Contract - Transaction Data (S/4HANA Cloud) (technical name: C_SERVICECONTRACTITEMDEX)*. Minor adjustments, like deriving Created on, Changed on date from Created on, Changed on timestamp are done.

In the projection the Business Names of the fields are adjusted to be more descriptive.

The following table lists all the calculations in the inbound layer

Calculated Column	Transformation Rule
Created At - Date	TO_DATE(ServiceDocCreationDateTime)
Created At - Time	TO_TIME(ServiceDocCreationDateTime)
Changed At - Date	TO_DATE(ServiceDocChangedDateTime)
Changed At - Time	TO_TIME(ServiceDocChangedDateTime)
Posting Date Item	TO_DATE(SrvcDocItmPostingDateTime)
Validity Start Date	TO_DATE(SrvcDocItmValdtyStartDateTime)
Validity End Date	TO_DATE(SrvcDocItmValdtyEndDateTime)
Sales Organization Org Unit	SUBSTRING(SalesOrganizationOrgUnitID,3,8)
Sales Office Org Unit	SUBSTRING(SalesOfficeOrgUnitID,3,8)
Sales Group Org Unit	SUBSTRING(SalesGroupOrgUnitID,3,8)
Service Organization	SUBSTRING(ServiceOrganization,3,8)
Responsible Organizational Unit (Sales)	SUBSTRING(ResponsibleSalesOrganization,3,8)
Responsible Organizational Unit (Service)	SUBSTRING(ResponsibleServiceOrganization,3,8)
Contract Start Date - Timestamp	TO_TIMESTAMP(ServiceContrItemStartDateTime)
Contract End Date - Timestamp	TO_TIMESTAMP(ServiceContrItemEndDateTime)
Contract Start Date	TO_DATE(ServiceContrItemStartDateTime)
Contract End Date	TO_DATE(ServiceContrItemEndDateTime)

Service Contract Item (HL - S/4HANA Cloud)

The harmonization layer view *Service Contract Item (HL- S/4HANA Cloud) (SAP_SRV_HL_SrvcContItem_S4HC)* uses the inbound layer view *Service Contract Item (IL - S/4 HANA Cloud)* and adds a filter on the field *Order Error Status (ServiceDocumentHasError),* as only records without errors are relevant for reporting.

Formula: *ServiceDocumentHasError = ''.*

Date fields are renamed to …_DATE to support date functions and capabilities of SAP Analytics Cloud.

In this view measures in transaction currency are converted to company code currency of the sales organization.

Calculated Column	Type	Transformation Rule
Invoice Value in Company Code Currency *(InvoiceAmount_CC_CUR)*	Currency Measure	Source Amount Column: Invoice Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 100 Conversion Rate: M
Released Value in Company Code Currency *(SrvcDocItmReldAmt_CC_CUR)*	Currency Measure	Source Amount Column: Released Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 100 Conversion Rate: M

Net Value in Company Code Currency *(ServiceDocItemNetAmount_CC_CUR)*	Currency Measure	Source Amount Column: Net Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 100 Conversion Rate: M
Gross Value in Company Code Currency *(SrvcDocItemGrossAmount_CC_CUR)*	Currency Measure	Source Amount Column: Gross Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 100 Conversion Rate: M

Service Contract Item (RL – S/4HANA Cloud)

In the reporting layer view *Service Contract Item (RL - S/4 HANA Cloud) (technical name: SAP_SRV_RL_SrvcContItem_S4HC)* further measures are calculated like number of service contract items and additional measures related to service contract item based on the item status. Master Data and Text View are associated to provide attributes and text.

Following calculated/ restricted measures are created in this view

Calculated Column	Type	Value Calculation / Restriction
No. of Service Contract Items (*NumberofServiceContractItem*)	Restricted measure	Constant 1 when Service Document Item <> ' '
Average Quantity of Service Contract Item (AvgQuantityofServiceContrItem)	Calculated measure	Order quantity / No. of service contract item

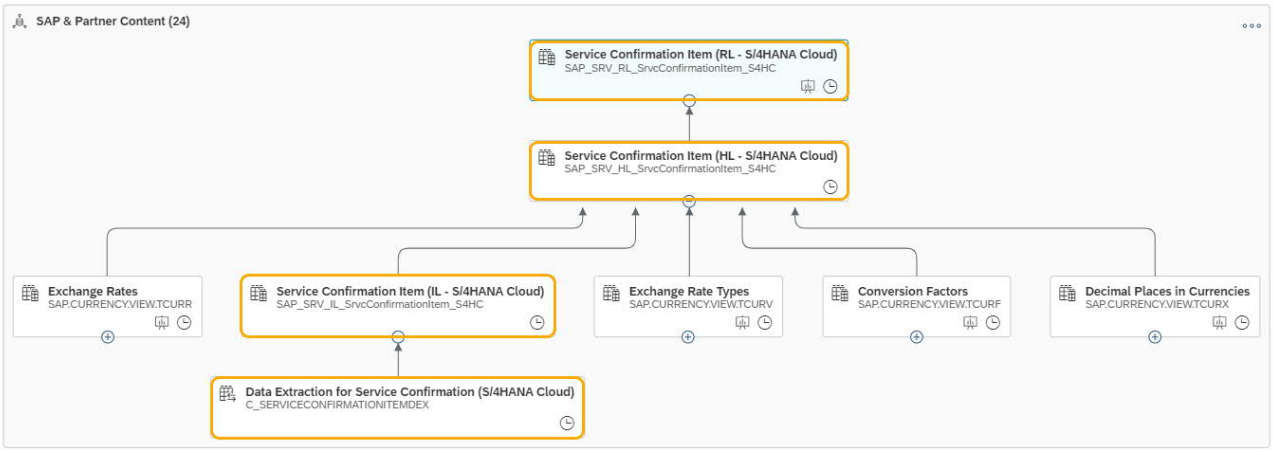
Average Net Value of Service Contract Item in Transaction Currency (*AvgNetAmountofServiceContrItem*)	Calculated measure	Service document item net amount / number of service contract item
Net Value of Expired Service Contract Items in Last 6 Months in Company Code Currency (*ExprdSrvcContrItmNetAmt_CC_CUR*)	Restricted measure	Service document item net amount in company code currency when service contract item end date within the last 6 months
Number of Expired Service Contract Items in Last 6 Months (*NrOfExprdServiceContractItems*)	Restricted measure	Constant 1 when service contract item end date within the last 6 months
Net Value of Expiring Service Contract Items in next 6 Months in Company Code Currency (*ExprgSrvcContrItmNetAmt_CC_CUR*)	Restricted measure	Service document item net amount in company code currency when service contract item end date within the next 6 months
No. of Expiring Service Contract Items in Next 6 Months (*NrOfExprgServiceContractItems*)	Restricted measure	Constant 1 when service contract item end date when service contract item end date within the next 6 months
Net Value of Cancelled/Expired Service Contract Items in Company Code Currency	Restricted measure	Service document item net amount in company code currency when current date > service contract item end date or service document item cancel reason is not void

(*SrvcContrItemLostNetAmt_CC_CUR*)		
No. of Cancelled Service Contract Items (*NrOfCancldServiceContractItems*)	Restricted measure	Constant 1 when service document item cancel reason <> ' '
Net Value of Cancelled Service Contract Items in Company Code Currency (*CancldSrvcContItmNetAmt_CC_CUR*)	Restricted measure	Service document item net amount in company code currency when service document item cancel reason <> ' '
First Day of Current Month (FirstDayofMonth)	Calculated Measure	ADD_MONTHS(NEXT_DAY(LAST_DAY(CURRENT_DATE)),-1)

4.5.3.3.3 Service Confirmation Item

The service confirmation item view contains real-time service confirmation header and item data enhanced with calculated key figures and master data associations to organizational, customer, product and other master data.

The following lineage diagram shows the entities described in this chapter:



Data Extraction for Service Confirmation - Transaction Data

The remote table *Data Extraction for Service Confirmation (S/4HANA Cloud)* (technical name: *C_SERVICECONFIRMATIONITEMDEX*) is based on the CDS-*View Data Extraction for Service Confirmation (technical Name CDS-View Name: C_ServiceConfirmationItemDEX, SQL Name: CSRVCCONFITMDEX)* from SAP S/4HANA Cloud.

Find more information on the CDS view in the SAP S/4HANA documentation.

Please replicate the data to SAP Data Warehouse Cloud.

For productive use also consider replication of important master data remote tables to SAP Data Warehouse Cloud for better reporting performance.

Service Confirmation Item (IL – S/4HANA Cloud)

The inbound layer view *Service Confirmation Item (IL – S/4HANA Cloud) (SAP_SRV_IL_SrvcConfirmationItem_S4HC)* is based on the remote table *Data Extraction for Service Confirmation (S/4HANA Cloud) (technical name: C_SERVICECONFIRMATIONITEMDEX)*. Minor adjustments, like deriving Created on, Changed on date from Created on, Changed on timestamp are done.

In the projection the Business Names of the fields are adjusted to be more descriptive.

The following table lists all the calculations in the inbound layer

Calculated Column	Transformation Rule
Actual Service Start Date - Timestamp	TO_TIMESTAMP(ActualServiceStartDateTime)
Actual Service End Date - Timestamp	TO_TIMESTAMP(ActualServiceEndDateTime)
Sales Organization Org Unit	SUBSTRING(SalesOrganizationOrgUnitID,3,8)
Sales Office Org Unit	SUBSTRING(SalesOfficeOrgUnitID,3,8)
Sales Group Org Unit	SUBSTRING(SalesGroupOrgUnitID,3,8)
Service Organization	SUBSTRING(ServiceOrganization,3,8)
Responsible Organizational Unit in Sales	SUBSTRING(ResponsibleSalesOrganization,3,8)
Responsible Organizational Unit in Service	SUBSTRING(ResponsibleServiceOrganization,3,8)
Changed At - Time	TO_TIME(ServiceDocChangedDateTime)
Changed At - Date	TO_DATE(ServiceDocChangedDateTime)
Actual Service Start Date	TO_DATE(ActualServiceStartDateTime)
Created At - Date	TO_DATE(ServiceDocCreationDateTime)
Created At - Time	TO_TIME(ServiceDocCreationDateTime)
Actual Service End Date	TO_DATE(ActualServiceEndDateTime)

Service Confirmation Item (HL - S/4HANA Cloud)

The harmonization layer view *Service Confirmation Item (HL- S/4HANA Cloud) (SAP_SRV_HL_SrvcConfirmationItem_S4HC)* uses the inbound layer view *Service Confirmation Item (IL - S/4 HANA Cloud)* and adds a filter on the field *Order Error Status (ServiceDocumentHasError),* as only records without errors are relevant for reporting.

Formula: *ServiceDocumentHasError = ''.*

Date fields are renamed to …_DATE to support date functions and capabilities of SAP Analytics Cloud.

In this view measures in transaction currency are converted to company code currency of the sales organization.

Calculated Column	Type	Transformation Rule
Invoice Value in Company Code Currency *(InvoiceAmount_CC_CUR)*	Currency Measure	Source Amount Column: Invoice Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 100 Conversion Rate: M
Net Value in Company Code Currency *(ServiceDocItemNetAmount_CC_CUR)*		Source Amount Column: Net Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 100 Conversion Rate: M
Gross Value in Company Code Currency *(SrvcDocItemGrossAmount_CC_CUR)*		Source Amount Column: Gross Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 100 Conversion Rate: M

Service Confirmation Item (RL – S/4HANA Cloud)

In the reporting layer view *Service Confirmation Item (RL - S/4 HANA Cloud) (technical name: SAP_SRV_RL_SrvcConfirmationItem_S4HC),* further measures are calculated

like number of service confirmation items and additional measures related to service confirmation item based on the item status.
Master Data and Text View are associated to provide attributes and text.

Following calculated/ restricted measures are created in this view

Calculated Column	Type	Value Calculation / Restriction
No. of Service Confirmation Items (*NoSrvConfItems*)	Calculated measure	Constant 1
No. of unplanned Service Order Items (*NoUnplanSrvOrderItems*)	Restricted measure	Constant 1 when object type for predecessor service order = ''
Net Value of Unplanned Service Order Items in Transaction Currency (*SrvOrdUnplanItmNetAmnt*)	Restricted measure	Service document item net amount in transaction currency when object type for predecessor service order = ''
Quantity of unplanned Service Order Items (*SrvOrdUnplanQuantity*)	Restricted measure	Quantity delivered in sales unit when object type for predecessor service order = ''
Net Value of Unplanned Service Order Items in Company Code Currency (*SrvOrdUnplanItmNetAmnt_CC_CUR)*	Restricted measure	Service document item net amount in company code currency when object type for predecessor service order = ''

4.6 SOLUTION BUSINESS (SOL): SOLUTION ORDER ANALYSIS

This content package covers three areas from Solution Business (SOL) in the area of Solution Order Analysis:

- Business Solution Order Items
- Business Solution Order Profitability
- Service Order Items

The source for these areas is the Business Solution Order Items, GL Account Line Item related to Business Solution Orders and the Service Order Items based on Business Solution Orders data from SAP S/4HANA Cloud. The content is based on CDS views for both transaction and master data available with SAP S/4HANA Cloud 2208.

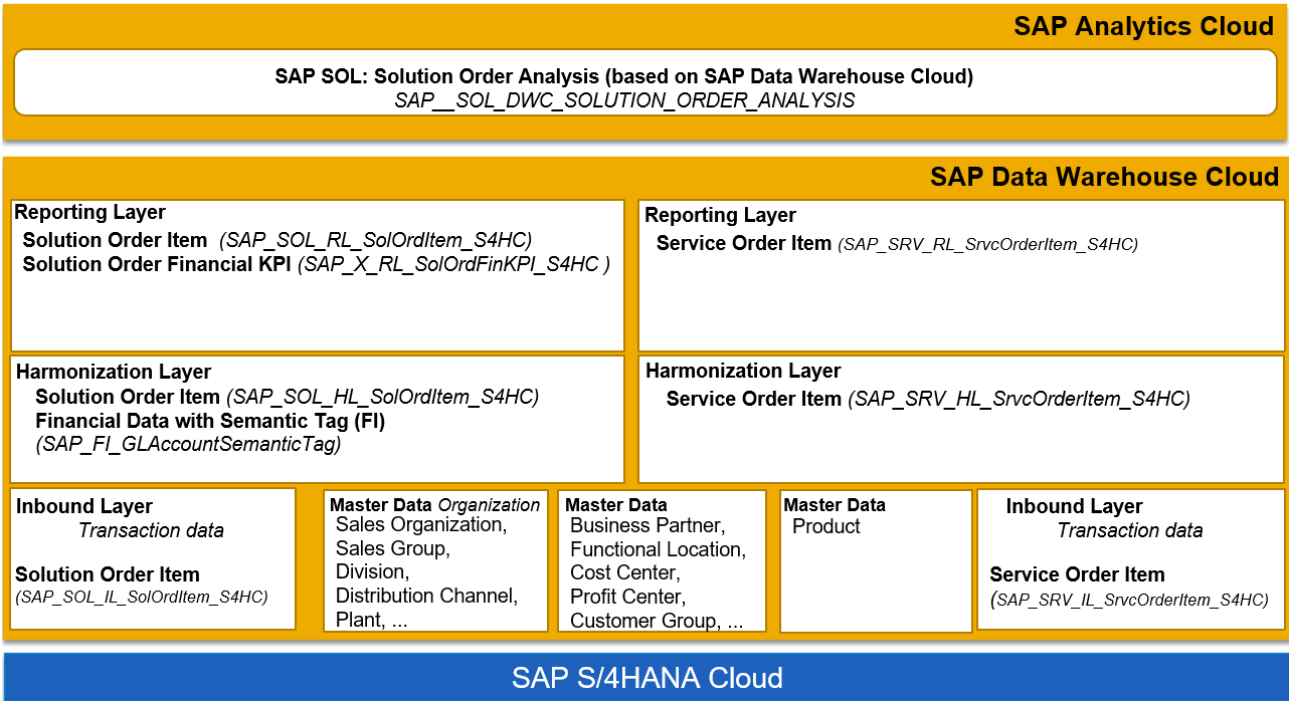
The content provides a holistic view of business solution orders. Sales manager can get an overview of incoming solution orders and in the current life cycle status of incoming solution orders. The content provides top performing products and customers and also gives an outlook on the share of different types of solution orders items (e.g. sales items, service items, project items etc.) by net value of solution orders in the organization.

The content also provides a financial view of solution orders by analyzing the solution orders Recognized Revenue, Recognized Margin and Recognized Cost. Sales manager can analyze top performing products and customers based on Recognized Margin and Recognized Revenue.

The service order perspective provides details about the service orders created from solution orders. Sales Manager can analyze the volume of service orders, open and overdue service orders and the top performing products and customers based on service order value.

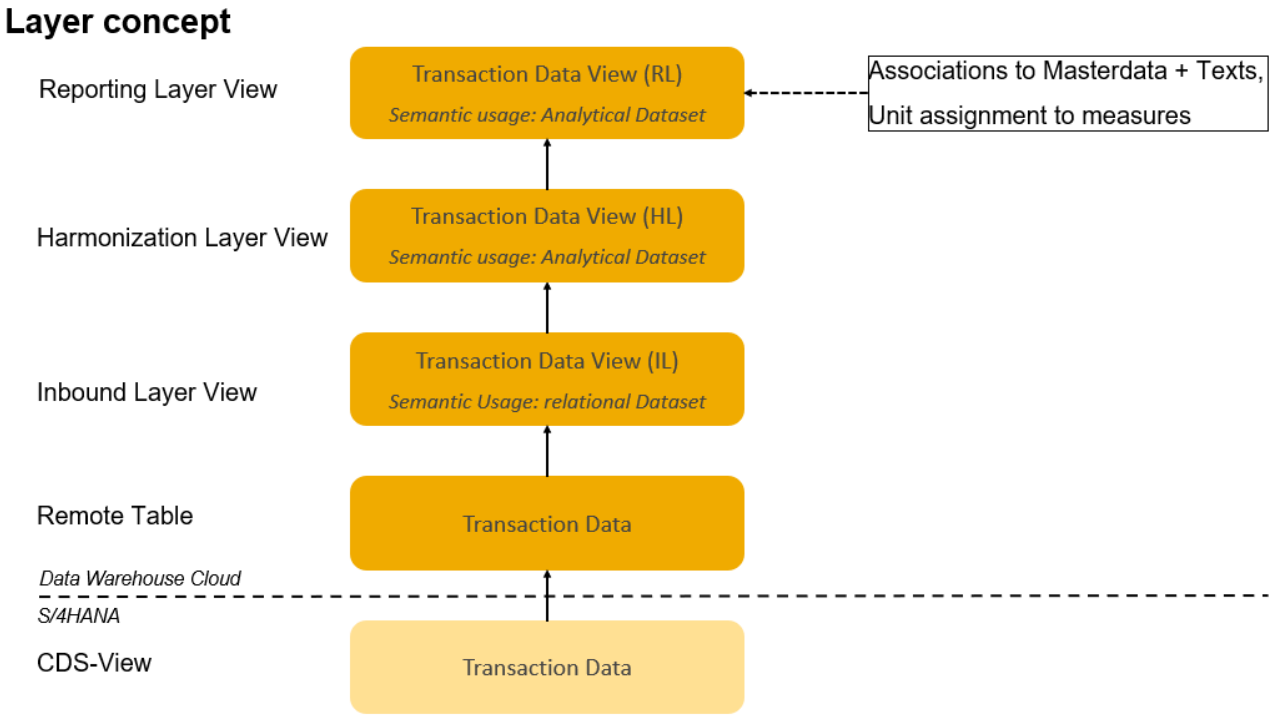
4.6.1 *Architecture and Abstract*

The high-level architecture of the SAP Solution Order Analysis for SAP S/4HANA Cloud is as follows:



The architecture consists of an inbound layer, a harmonization layer and a reporting layer in accordance with SAP Data Warehouse Cloud modelling best practices and guidelines. The transaction data models have been developed leveraging SAP Data Warehouse Cloud virtualization capabilities in three distinct layers:

- An inbound layer view (e.g., SAP_SOL_IL*) that is in most parts a mirror of the CDS view / remote table from SAP S/4HANA Cloud.
- A harmonization layer view (e.g., SAP_SOL_HL*), which uses the inbound layer view and enhances it with key figures using currency conversion into company code currency.
- A reporting layer view (e.g., SAP_SOL_RL*), which uses the harmonization layer view and adds calculated key figures and master data associations for attributes and texts. This layer is also used to connect to the SAP Analytics Cloud stories.



4.6.2 ***Stories***

This content package covers Solution Order Analysis. The following SAP Analytics Cloud story provides details on solution orders: SAP SOL: Solution Order Analysis (based on SAP Data Warehouse Cloud)

The story is based on the following SAP Data Warehouse Cloud views:

- Solution Order Item (SAP_SOL_RL_SolOrdItem_S4HC)
- Service Order Item (SAP_SRV_RL_SrvcOrderItem_S4HC)
- Solution Order Financial KPI (SAP_X_RL_SolOrdFINKPI_S4HC)

Please navigate to the SAP Analytics Cloud content documentation for details.

4.6.3 *Models*

4.6.3.1 **Master data**

4.6.3.1.1 Introduction

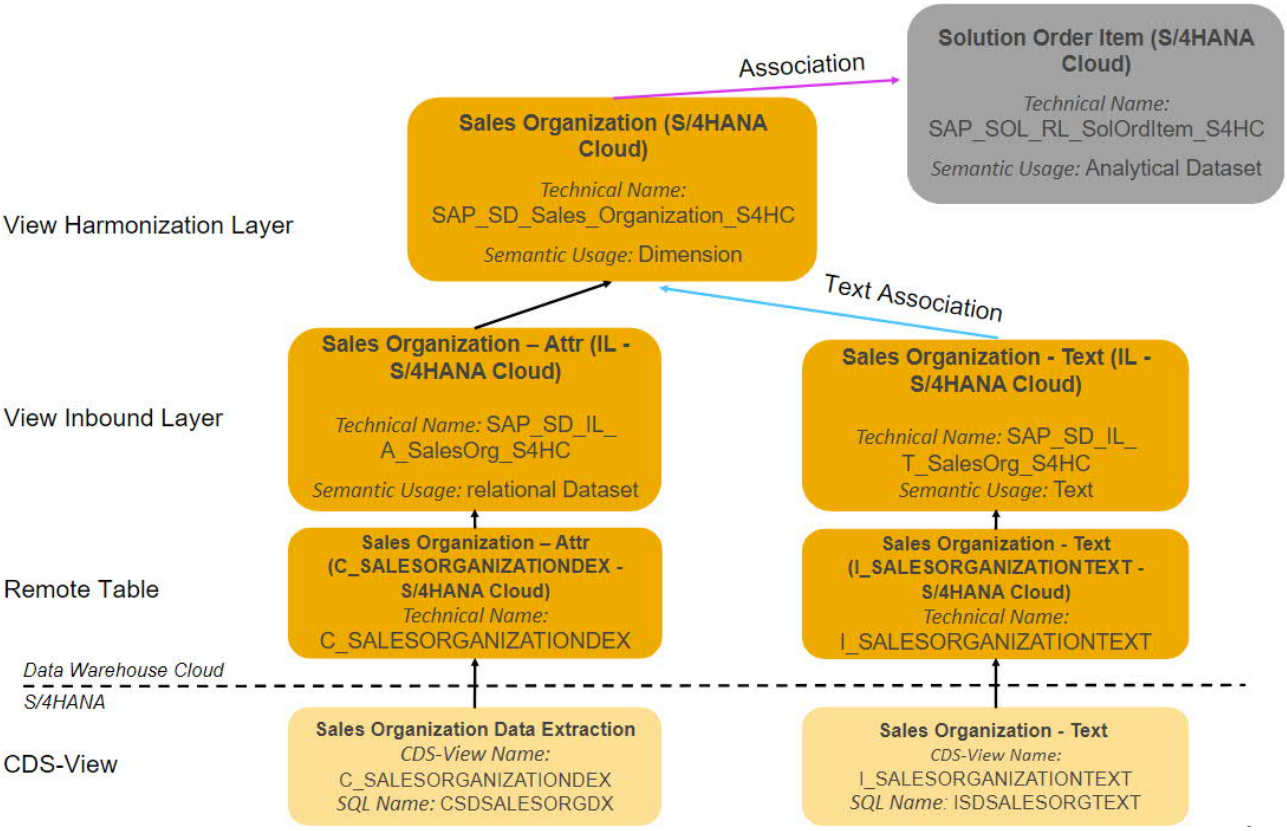
Master data comes in different flavors:

- Master data with attributes and texts
- Master data with text only and without attributes

Either the views for attributes and texts are distinct views or attributes and texts are combined in one view only. Therefore, the master data models and the modelling in Data Warehouse Cloud need to be slightly adapted per case.

Master data views have been created following SAP Data Warehouse Cloud modelling guidelines and best practices:

Case 1: Master data – attributes and texts; separate CDS-Views for attributes and texts

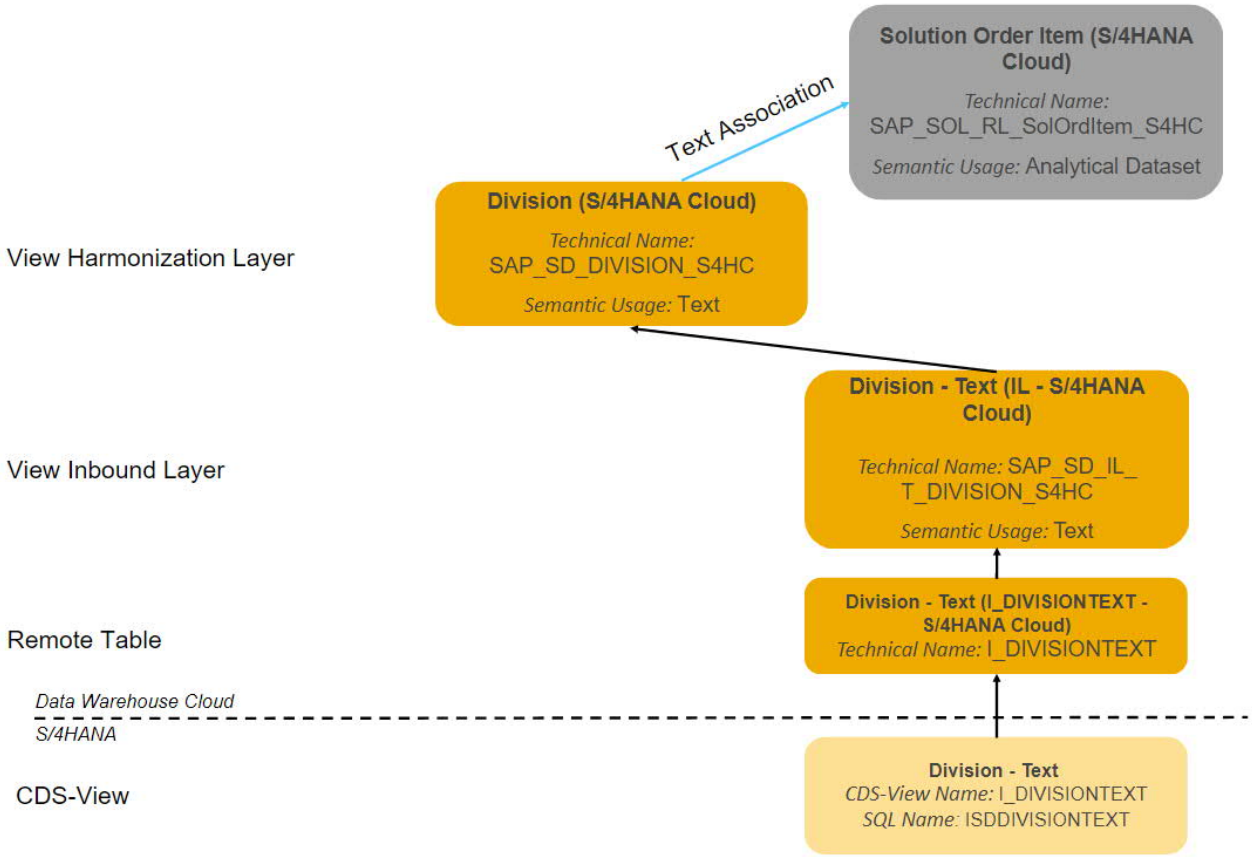


- The remote tables are the 1:1 representation of the SAP S/4HANA Cloud CDS-views for master data and text.
- The inbound layer views use the remote tables, sometimes data type adjustments e.g. for language, are necessary.
- The harmonization layer view brings master data and text together using text association and is of semantic type: Dimension. This view is then associated to the relevant transaction data in the transaction data reporting layer view

Case 2: Master data – text only, one CDS-View for texts

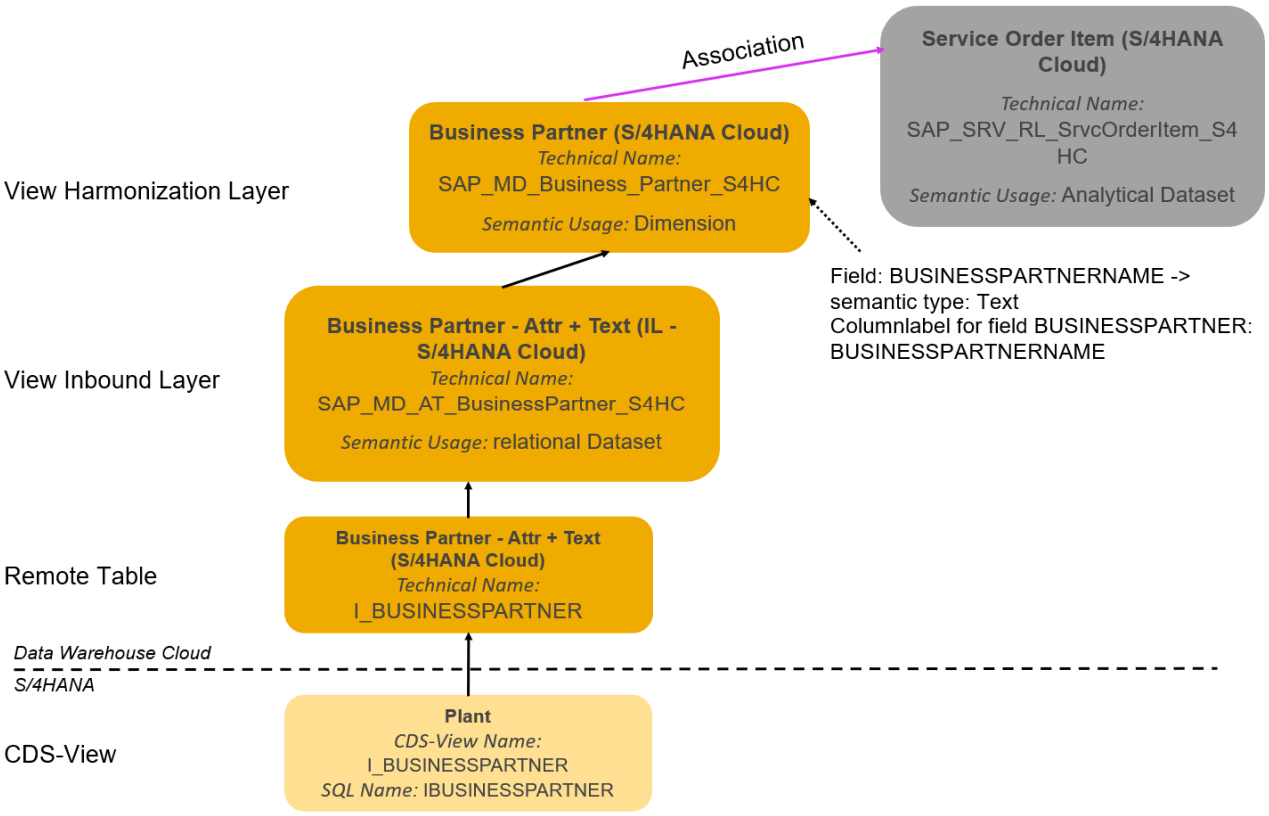
For master data without attributes - text only - the harmonization layer view is directly based on the inbound layer text view and its semantic type is “Text”.

This view is associated to the relevant transaction data in the transaction data reporting layer view as a text association.



Case 3: Master data – attributes and texts; one CDS-View for attributes incl. not language dependent texts

Within the harmonization layer view, the field containing the text is set to semantic type “text” and entered as a column label for the respective key field.
This view is associated to the relevant transaction data in the transaction data reporting layer view.



4.6.3.1.2 Overview of master data views

Find the most important master data views in the table below and explore the entire overview best directly in your SAP Data Warehouse Cloud system.

Master Data	Master Data Type	Technical Name
Sales Organization	Attributes and Texts	SAP_SD_Sales_Organization_S4HC
Distribution Channel	Texts	SAP_SD_DistribChannel_S4HC
Division	Texts	SAP_SD_Division_S4HC
Customer Group	Texts	SAP_SD_Customer_Group_S4HC
Business Partner	Attributes and Texts	SAP_MD_Business_Partner_S4HC
Sales Group	Text	SAP_SD_SalesGroup_S4HC
Sales Office	Texts	SAP_SD_SalesOffice_S4HC
Product	Attributes and Texts	SAP_LO_Product_S4HC
Organization Unit	Text	SAP_CX_OrgUnit_S4HC
Controlling Area	Attributes and Texts	SAP_FI_ControllingArea_S4HC
Billing Block Reason	Text	SAP_SD_BillingBlockReason_S4HC

Service Transaction Item Business Object Type	Text	SAP_SRV_SrvcTransItemBOTP_S4HC
Service Transaction Type	Text	SAP_SRV_SrvcTransacType_S4HC
Service Transaction Status	Text	SAP_SRV_SrvcTransStatus_S4HC
Service Transaction Business Object Type	Text	SAP_SRV_SrvcTransacBOTP_S4HC
Plant	Attributes and Texts	SAP_MM_Plant_S4HC
Release Status of Service Transaction	Text	SAP_SRV_RelStatuSrvcTrans_S4HC
Rejection Status of Service Transaction	Text	SAP_SRV_RejStatuSrvcTrans_S4HC
Functional Location	Attributes and Texts	SAP_PM_FunctionalLocation_S4HC
Billable Control	Text	SAP_FI_BillableControl_S4HC
Billing Status of Service Transaction	Text	SAP_SRV_BillingStatusSrvT_S4HC

4.6.3.2 Currency Conversion

For general instructions how to setup the Currency Conversion initially and which standard setting apply, please refer to the chapter 3.5 Setup Currency Conversion.

All amount key figures are provided in document currency as well as company code currency in the reporting layer views or harmonization layer views.
In the SAP Analytics Cloud stories only the key figures in company code currency are used, to allow for a meaningful aggregation. To ensure this, a filter on Company Code is mandatory and of single value.

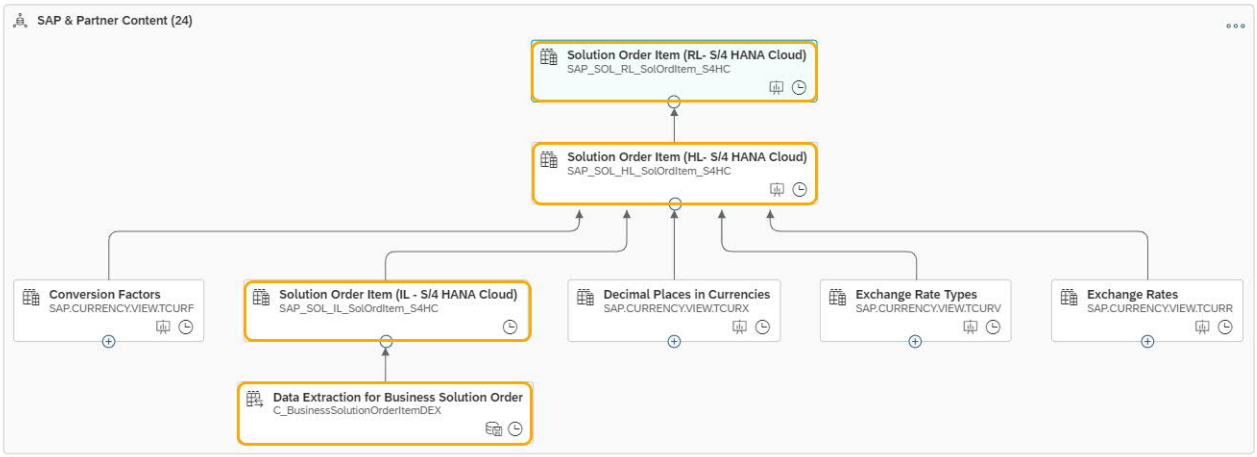
Please adapt the story filter in the data model if you want to analyze more than one Company Code at a time. Depending on the Company Code Currency of the Company Codes, adapt the currency conversion to meet your requirements and to not add up different currencies accidentally.

4.6.3.3 Transaction data

4.6.3.3.1 Solution Order Item

The solution order item view contains real-time solution order header and item data enhanced with calculated key figures and master data associations to organizational, customer, product and other master data.

The following lineage diagram shows the entities described in this chapter:



Data Extraction for Solution Order Item - Transaction Data

The remote table Data Extraction for Business Solution Order (technical name: C_BusinessSolutionOrderItemDEX) is based on the CDS-View Data Extraction for Business Solution Order (technical Name CDS-View Name: C_BusinessSolutionOrderItemDEX, SQL Name: CBSOLORDITMDEX) from SAP S/4HANA Cloud 2208. Find more information on the CDS view in the SAP S/4HANA documentation.

For productive use consider replication of the data to SAP Data Warehouse Cloud for better reporting performance.

Solution Order Item (IL – S/4HANA Cloud)

The inbound layer view *Solution Order Item (IL – S/4HANA Cloud) (SAP_SOL_IL_SolOrdItem_S4HC)* is based on the remote table *Data Extraction for Business Solution Order (C_BusinessSolutionOrderItemDEX)*. Minor

adjustments, like deriving Created on, Changed on date from Created on, Changed on timestamp are done. The following table lists all the calculations in the inbound layer

Calculated Column	Transformation Rule
CreatedOn_DATE	TO_DATE(ServiceDocCreationDateTime)
CreatedOn_TIME	TO_TIME(ServiceDocCreationDateTime)
ChangedOn_DATE	TO_DATE(ServiceDocChangedDateTime)
ChangedOn_TIME	TO_TIME(ServiceDocChangedDateTime)
RequestedDelivery_DATE	TO_DATE(RequestedDeliveryUTCDateTime)
ServiceContrItemStart_DATE	TO_DATE(ServiceContrItemStartDateTime)
ServiceContrItemEnd_DATE	TO_DATE(ServiceContrItemEndDateTime)
SubscrpnBillgItmPrcg_DATE	TO_DATE(SubscrpnBillgItmPrcgDateTime)
SalesOrganizationOrgUnitID	RIGHT(SalesOrganizationOrgUnitID,8)
SalesOfficeOrgUnitID	RIGHT(SalesOfficeOrgUnitID,8)
SalesGroupOrgUnitID	RIGHT(SalesGroupOrgUnitID,8)

Solution Order Item (HL - S/4HANA Cloud)

The harmonization layer view *Solution Order Item (HL- S/4HANA Cloud) (SAP_SOL_HL_SolOrdItem_S4HC)* uses the inbound layer view *Solution Order Item (IL - S/4HANA Cloud)*

In this view measures in transaction currency are converted to company code currency of the sales organization.

Key Figure	Type	Transformation Rule
Net Value In Company Code Currency (*ServiceDocuItemNetAmnt_CC_CUR*)	Currency Measure	Source Amount Column: Net Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Reference Currency Reference Date: Posting Date Client: 100 Conversion Rate: M

Gross Value in Company Code Currency (*ServiceDocItemGrossAmnt_CC_CUR*)	Currency Measure	Source Amount Column: Gross Amount in Transaction Currency Source Currency: Transaction Currency Target Currency: Reference Currency Reference Date: Posting Date Client: 100 Conversion Rate: M

Solution Order Item (RL – S/4HANA Cloud)

In the reporting layer view *Solution Order Item (RL – S/4HANA Cloud) (technical name: SAP_SOL_RL_SolOrdItem_S4HC),* number of solution order items and additional measures related to solution order item based on the item status are calculated. Master Data and Text View are associated to provide attributes and text.

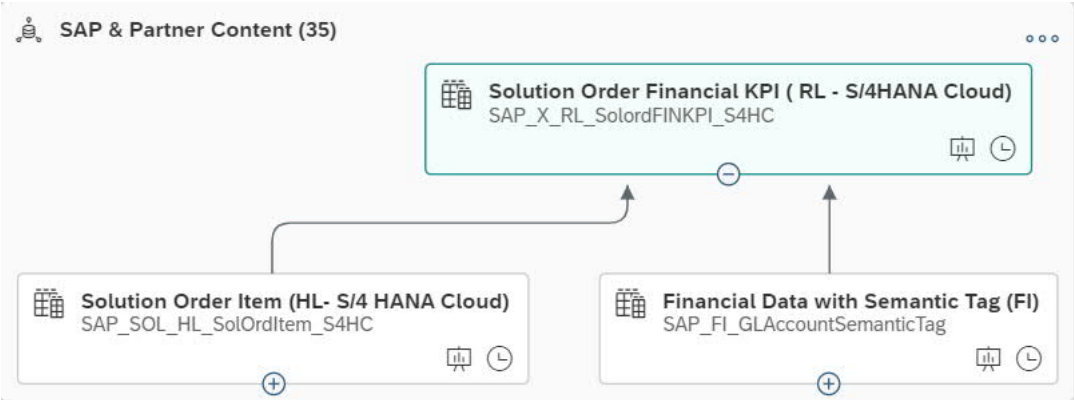
Following calculated/ restricted measures are created in this view

Key Figure	Type	Value Calculation / Restriction
No. of Solution Order Items (*No_of_SolutionOrderItems*)	Calculated Key Figure	Constant 1 when Service Document <> '' and Service Document Item <> ''
No. of Released Solution Order Items (*No_of_Rel_SolutionOrder_Items*)	Restricted Key Figure	Constant 1 when Service Document Item release Status = 'X'
No. of Open, In Process, Released Solution Order Items (*No_of_Opn_SolutionOrderItems*)	Restricted Key Figure	Constant 1 when Service Document Item Open Status = 'X'
No. of Completed Solution Order Items (*No_of_Cmp_SolutionOrderItem*)	Calculated Key Figure	Constant 1 when Service Document Item Open Status <> 'X'
No. of Rejected Solution Order Items (*No_of_Rej_SolutionOrderItems*)	Restricted Key Figure	Constant 1 when Service Document Item Rejection Status = 'X'

4.6.3.3.2 Solution Order Financial KPI

This model contains Solution Order Financial KPIs from financial data with sematic tag.

The following lineage diagram shows how the view is modeled:



Solution Order Financial KPI (RL- S/4HANA Cloud)

The reporting layer View *Solution Order Financial KPI (SAP_X_RL_SolordFINKPI_S4HC)* contains financial data for business solution orders and the business solution order volume. The view is associated with master data and text views related to business solution order.

The view has an input parameter “FINANCIAL_STATEMENT_VERSION”, to select the financial statement version configured for their organization. The financial statement version is required to select the semantic tags associated with it. The default financial statement version in SAP S/4HANA Cloud ‘YPS2’ is set as a default value for the input parameter.

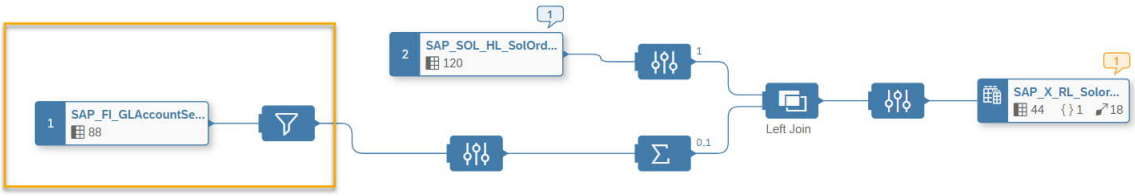
The content includes following measures:

- Recognized cost
- Recognized revenue
- Recognized margin
- Net value of solution order

The view sourced from the following harmonization layer views:

- Financial Data with Semantic Tag (SAP_FI_GLAccountSemanticTag) and
- Solution Order Item (HL – S/4HANA Cloud) (SAP_SOL_SolOrdItem_S4HC)

The harmonization layer view *Financial Data with Semantic Tag* (SAP_FI_GLAccountSemanticTag) is used as the base view.
For more information about this view, please see chapter 4.2 Finance for SAP S/4 HANA Cloud

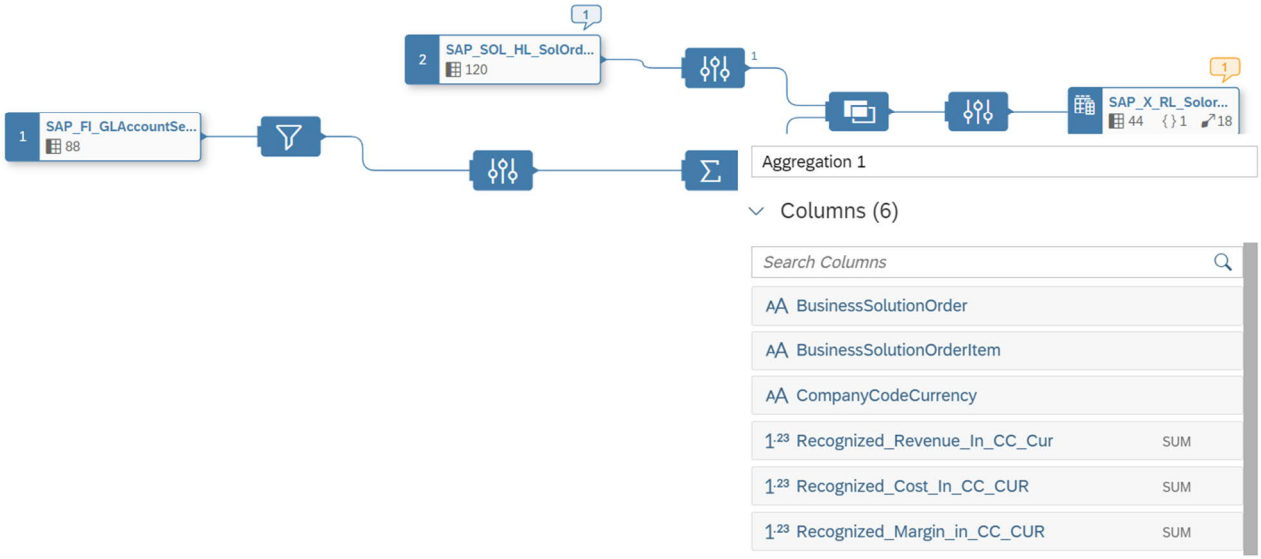


Semantic Tags, Recognized Revenue, Recognized Cost and Recognized Margin in company code currency related to business solution orders are selected by applying the following filter on these fields of the view *Financial Data with Semantic Tag* (SAP_FI_GLAccountSemanticTag):

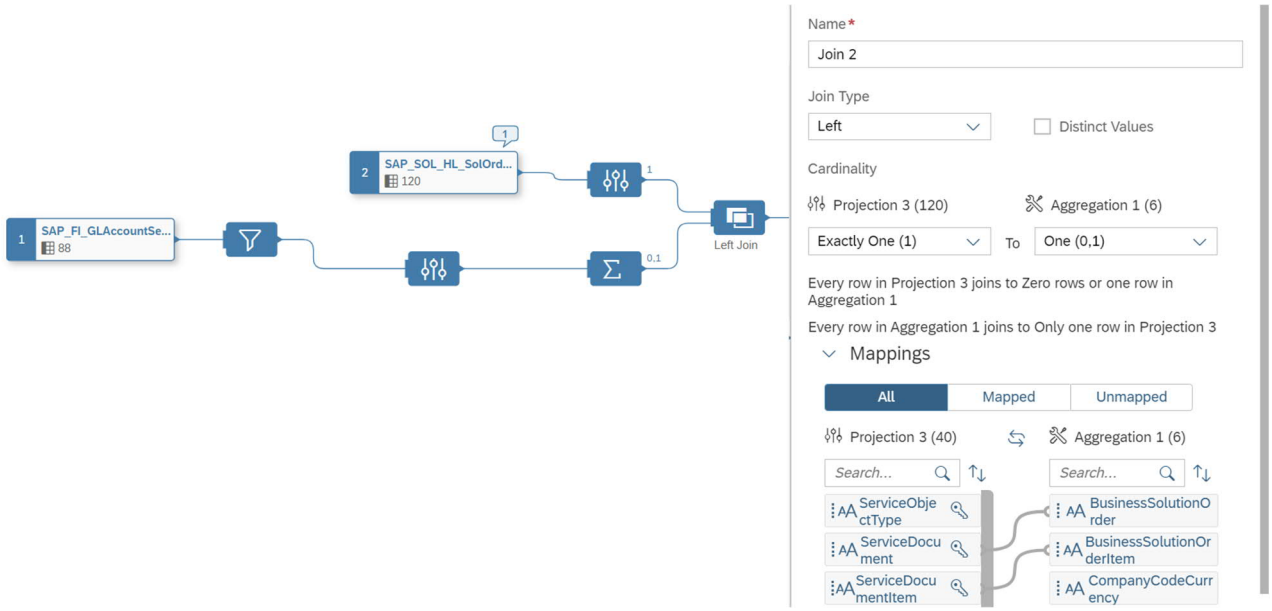
- Ledger = ‘0L’ and
- Financial Statement Version = Input Parameter “FINANCIAL_STATEMENT_VERSION” and
- Business Solution Order <> ‘’ and
- ActualPlanCode = ‘Actual’ and
- Semantic Tag = (‘REC_MARGIN’ or ‘RECO_COS’ or ‘RECO_REV) and
- Account Assignment Type = ‘PR’ and Controlling Object Class = ‘PA’ or
- Account Assignment Type = ‘EO’ or ‘SV’ or ‘SC’ or ‘PD

After selecting the recognized cost, recognized revenue and recognized margin for business solution orders all the postings for the business solution orders and items are summarized using an aggregation node. The aggregation node only includes Business

Solution Orders and Business Solution Order Items apart from the measures to get the summarized values.



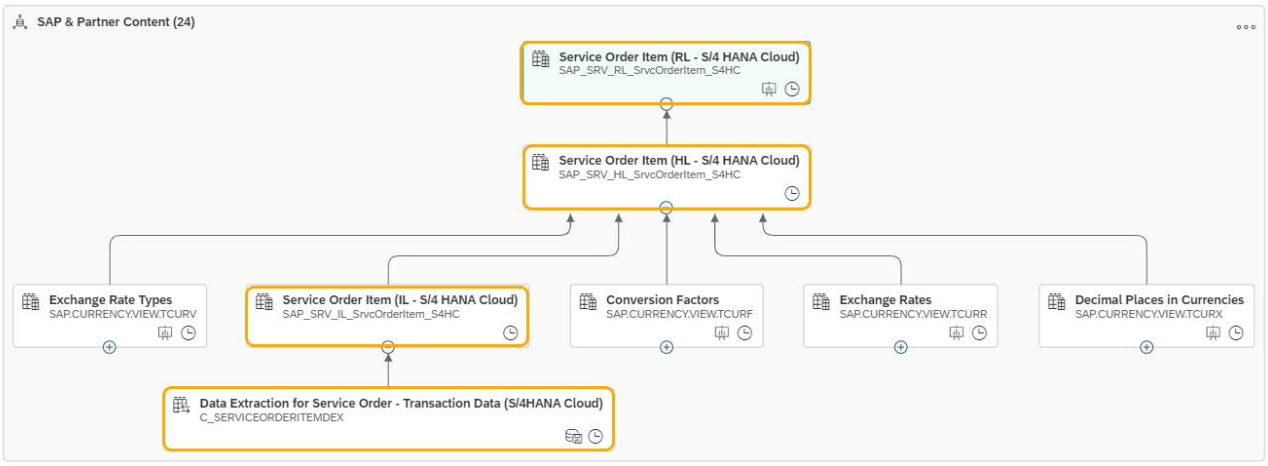
After getting the financial KPIs for business solution orders the data set is joined with business solution order items data to get the solution order related fields like sales organization, sold to party, profit center, product, customer group etc.



4.6.3.3.3 Service Order Item

The service order item view contains real-time service order header and item data enhanced with calculated key figures and master data associations to organizational, customer, product and other master data.

The following lineage diagram shows the entities described in this chapter:



Data Extraction for Service Order Item - Transaction Data

The remote table Data Extraction for Service Order (technical name: C_SERVICEORDERITEMDEX) is based on the CDS-View Data Extraction for Service Order (technical Name CDS-View Name: C_SERVICEORDERITEMDEX, SQL Name: CSRVCORDITMDEX from SAP S/4HANA Cloud 2208.
Find more information on the CDS view in the SAP S/4HANA documentation.

For productive use consider replication of the data to SAP Data Warehouse Cloud for better reporting performance.

Service Order Item (IL – S/4HANA Cloud)

The inbound layer view *Service Order Item (IL – S/4HANA Cloud) (SAP_SRV_IL_SrvcOrderItem_S4HC)* is based on the remote table *Data Extraction for Service Order – Transaction Data (C_SERVICEORDERITEMDEX)*.
Minor adjustments, like deriving Created on, Changed on date from Created on, Changed

on timestamp are done. In the projection the Business Names of the fields are adjusted to be more descriptive. The following table lists all the calculations in the inbound layer

Calculated Column	Transformation Rule
Created At - Date	TO_DATE(ServiceDocCreationDate)
Created At - Time	TO_TIME(ServiceDocCreationDate)
Change At - Date	TO_DATE(ServiceDocChangedTime)
Changed At - Time	TO_TIME(ServiceDocChangedTime)
Planned Service Start Date	TO_DATE(PlannedServiceStartDate)
Planned Service End Date	TO_DATE(PlannedServiceEndDate)
Sales Organization Org Unit	SUBSTRING(SalesOrganizationOrgUnitID,3,8)
Sales Office Org Unit	SUBSTRING(SalesOfficeOrgUnitID,3,8)
Sales Group Org Unit	SUBSTRING(SalesGroupOrgUnitID,3,8)
Service Organization	SUBSTRING(ServiceOrganization,3,8)
Responsible Organizational Unit (Sales)	SUBSTRING(ResponsibleSalesOrganization,3,8)
Responsible Organizational Unit (Service)	SUBSTRING(ResponsibleServiceOrganization,3,8)

Service Order Item (HL - S/4HANA Cloud)

The harmonization layer view *Service Order Item (HL- S/4HANA Cloud) (SAP_SRV_HL_SrvcOrderItem_S4HC)* uses the inbound layer view *Service Order Item (IL - S/4HANA Cloud)* and adds a filter on the field *Order Error Status (ServiceDocumentHasError*), as only records without errors are relevant for reporting.

Formula: *ServiceDocumentHasError = ''*

Date fields are renamed to …_DATE to support date functions and capabilities of SAP Analytics Cloud.

In addition in this view measures in transaction currency are converted to the company code currency of the sales organization.

Key Figure	Type	Transformation Rule
Invoice Value in Company Code Currency (*InvoiceAmount_CC_CUR*)	Currency Measure	Source Amount Column: Invoice Value in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 100 Conversion Rate: M
Released Value in Company Code Currency (*SrvcDocItmReldAmt_CC_CUR*)	Currency Measure	Source Value Column: Released Amount in Transaction Currency source Currency: Transaction Currency Target Currency: Reference Currency Reference Date: Posting Date Client: 100 Conversion Rate: M
Net Value in Company Code Currency (*ServiceDocItemNetAmount_CC_CUR*)	Currency Measure	Source Value Column: Net Amount in Transaction Currency Source Currency: Transaction Currency Target Currency: Statistics Currency Reference Date: Posting Date Client: 100 Conversion Rate: M
Gross Value in Company Code Currency (*SrvcDocItemGrossAmount_CC_CUR*)	Currency Measure	Source Value Column: Gross Amount in Transaction Currency Source Currency: Transaction Currency

		Target Currency: Reference Currency Reference Date: Posting Date Client: 100 Conversion Rate: M

Service Order Item (RL – S/4HANA Cloud)

In the reporting layer view *Service Order Item (RL – S/4HANA Cloud) (technical name: SAP_SRV_RL_SrvcOrderItem_S4HC)* further measures like number of service order items and additional measures related to service order item based on the item status are calculated. Master Data and Text View are associated to provide attributes and text. Following calculated/ restricted measures are created in this view

Key Figure	Type	Value Calculation / Restriction
No. of open Service Order Items (*NoOpenSrvDocItems*)	Restricted Key Figure	Constant 1 when Service Document Item Open Status = 'X'
No. of overdue Service Order Items based on Solution Order (*NoOverdueSrvDocItems_SO*)	Restricted Key Figure	Constant 1 when Service Document Item Open Status = 'X' and Requested Service End Date < CURRENT DATE and Reference Business Solution Order <> ' ' and Reference Business Solution Order Item <> ' '
No. of open Service Order Items based on Solution Order (*NoOpenSrvDocItems_SO*)	Restricted Key Figure	Constant 1 when Service Document Item Open Status = 'X' and Reference Business Solution Order <> ' ' and Reference Business Solution Order Item <> ' '
No. of overdue Service Order Items (*NoOverdueSrvDocItems*)	Restricted Key Figure	Constant 1 when Service Document Item Open Status = 'X' and Requested Service End Date < CURRENT DATE

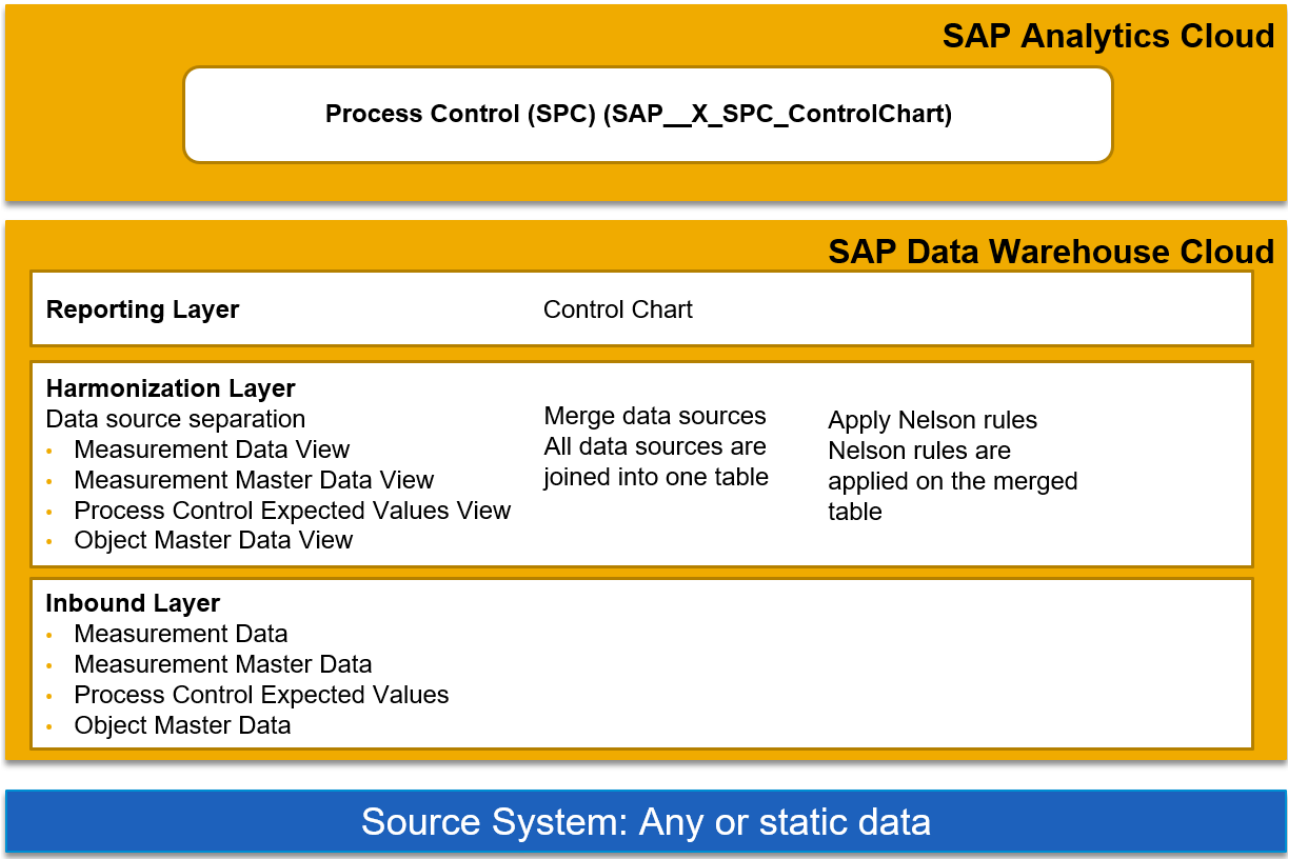
Net Value of Service Order Items based on Solution Order in Company Code Currency (*SrvDocItmNetAmnt_SO_CC_CUR*)	Restricted Key Figure	Net Value in Company Code Currency when Reference Business Solution Order <> ' ' and Reference Business Solution Order Item <> ' '
Net Value of Open Service Order Items based on Solution Order in Company Code Currency (*SrvDocOpnItmNetAmnt_SO_CC_CUR*)	Restricted Key Figure	Net Value in Company Code Currency when Service Document Item Open Status = 'X' and Reference Business Solution Order <> ' ' and Reference Business Solution Order Item <> ' '
Net Value of Overdue Service Order Items based on Solution Order in Company Code Currency (*SrvDocOdueItmNetAmnt_SO_CC_CUR*)	Restricted Key Figure	Net Value in Company Code Currency when Service Document Item Open Status = 'X' and Requested Service End Date < CURRENT DATE and Reference Business Solution Order <> ' ' and Reference Business Solution Order Item <> ' '
No. of Service Order Items (NrofServiceOrderItems)	Restricted measure	Constant 1 when Service Document Item <> ' '
Net Value of Open Service Order Items (SrvDocOpnItmNetAmnt_CC_CUR)	Restricted measure	Net Value in Company Code Currency when Document Item Open Status = 'X'
Net Value of Overdue Service Order Items (SrvDocOdueItmNetAmnt_CC_CUR)	Restricted measure	Net Value in Company Code Currency Document Item Open Status = 'X' and Requested Service End Date < CURRENT_DATE

4.7 STATISTICAL PROCESS CONTROL (SPC)

4.7.1 *Architecture and Abstract*

SPC (Statistical Process Control) is a methodology used in manufacturing (stability, quality, reliability) to prevent defects, and is typically either implemented in specialized software or used on top of a low-level software layer such as excel. However, the SPC tools can be easily applied to a much wider range of business processes and even beyond, to things like the sequence of items in a batch or a collection of purchase orders.

The content package described here provides a generic toolkit to simplify, accelerate and standardize implementations of SPC (control charts, Nelson rules) on Data Warehouse Cloud. At a high level, this is achieved by combining all relevant data sources – measurements and master data describing them and enabling self-service SPC analyses on the combined data set.



4.7.2 *Stories*

The following story is included in the content package:

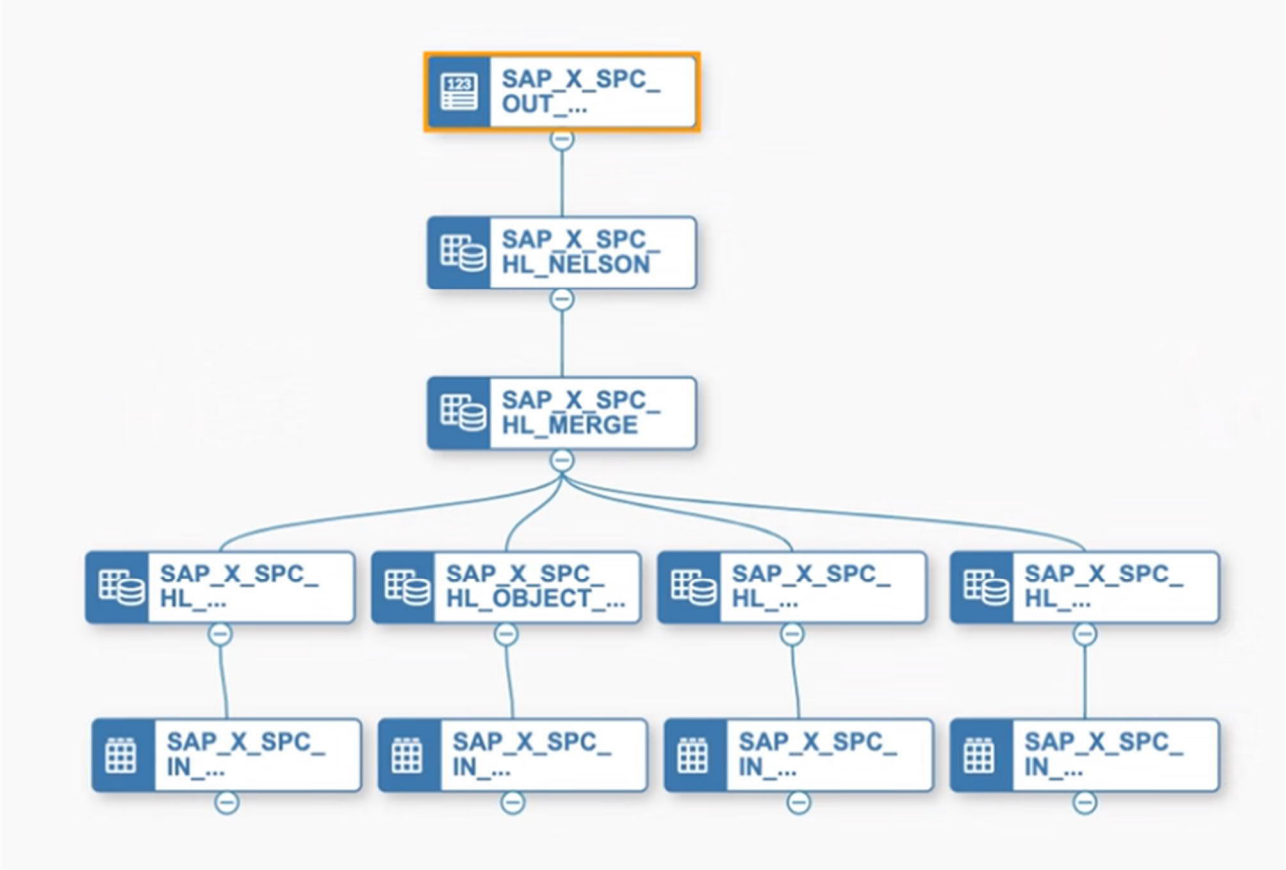
Statistical Process Control (SPC) (SAP_X_SPC_CONTROL_CHART)

Please navigate to the SAP Analytics Cloud content documentation for details.

4.7.3 *Models*

Architecture

The following overview shows a lineage of the entire data model. Find all details on the models in the subchapters below.



4.7.3.1 Control Chart - Consumption layer to SAP Analytics Cloud

The output contains all the columns required to display a control chart in SPC. (see 4.1.3.4 for a detail description of the output view)

Name	Description	Type
SAP_X_SPC_OUT_CONTROL_CHART SAP_CONTENT	Control Chart (SPC)	View

4.7.3.2 Nelson rules and merged view of data

The source tables are merged into one table. Then, Nelson rules are applied to that table.

SAP_X_SPC_HL_NELSON SAP_CONTENT	Nelson Rules (SPC)	View
SAP_X_SPC_HL_MERGE SAP_CONTENT	Merged Data (SPC)	View

4.7.3.3 Source data and Source separation

The source data for the SPC toolkit is modeled in a set of 4 tables (see 4.1.4 for table structure):

Name	Description	Type
SAP_X_SPC_IN_OBJECTMASTER SAP_CONTENT	Object Master Data Sample (SPC)	Local Table
SAP_X_SPC_IN_MEASUREMENTS SAP_CONTENT	Measurement Sample (SPC)	Local Table
SAP_X_SPC_IN_MEASUREMENTPC SAP_CONTENT	Measurement Process Control Data Sample (SPC)	Local Table
SAP_X_SPC_IN_MEASUREMENT_MASTE SAP_CONTENT	Measurement Master Data Sample (SPC)	Local Table

To provide a separation between the toolkit and the data sources, each source table is connected to a 1-to-1 view. This design pattern makes it easy to replace each of the source tables, for example with the result of a data flow.

Name	Description	Type
SAP_X_SPC_HL_OBJECT_MASTER SAP_CONTENT	Object Master Data View (SPC)	View
SAP_X_SPC_HL_NELSON SAP_CONTENT	Nelson Rules (SPC)	View
SAP_X_SPC_HL_MERGE SAP_CONTENT	Merged Data (SPC)	View
SAP_X_SPC_HL_MEASUREMENT SAP_CONTENT	Measurement View (SPC)	View
SAP_X_SPC_HL_MEASUREMENT_PC SAP_CONTENT	Measurement Process Control Data View (SPC)	View
SAP_X_SPC_HL_MEASUREMENT_MASTE SAP_CONTENT	Measurement Master Data View (SPC)	View

4.7.3.4 Control Chart (SPC) (SAP_X_SPC_OUT_CONTROL_CHART)

The view SAP_X_SPC_OUT_CONTROL_CHART provides all the measures and dimensions needed to display a control chart.

Attributes (6)

Business Name	Technical Name	Data Type
Measurement Name	NAME	String(5000)
Measurement Unit Of Measure	UNITOFMEASURE	String(5000)
Object ID	OBJECTID	Integer64
Object Name	OBJECTNAME	String(5000)
Measurement Time Stamp	ITIMESTAMP	DateTime
Measurement ID	MEASUREMENTID	Integer64

Attributes:

- Measurement Name (NAME): the name of the measurement. Provided in SAP_X_SPC_HL_MEASUREMENT_MASTER
- Measurement Unit of Measure (UNITOFMEASURE): the unit of measure of the measurement. Provided in SAP_X_SPC_HL_MEASUREMENT_MASTER
- Object ID (OBJECTID): the id of the object being measured (ex. process). Links SAP_X_SPC_HL_MEASUREMENT_MASTER and SAP_X_SPC_HL_OBJECT_MASTER
- Object Name (OBJECTNAME): the name of the object being measured (ex. process). Provided in SAP_X_SPC_HL_OBJECT_MASTER

- Measurement Time Stamp (ITIMESTAMP): the timestamp of the measurement. Provided in SAP_X_SPC_HL_MEASUREMENT
- Measurement ID (MEASUREMENTID): the id of the measurement. Links SAP_X_SPC_HL_MEASUREMENT with SAP_X_SPC_HL_MEASUREMENT_MASTER and SAP_X_SPC_HL_MEASUREMENT_PC

These are the measure of the model. Find more details in the documentation below.

Measures	
Technical Name	**Description**
EXPECTEDMEAN	Measurement Expected Mean
EXPECTEDSTDEV	Measurement Expected Standard Deviation
SPECIFICATIONLIMIT	Process Specification Limit
MVALUE	Measurement Value
c_USL	Upper Specification Limit
c_LSL	Lower Specification Limit
c_UTL	Upper Tolerance Limit
c_LTL	Lower Tolerance Limit
c_n1_paboveUTL	Point above UTL: flag (0 or 1) set for the points that are larger than UTL
c_n1_pbelowLTL	Point below LTL: flag (0 or 1) set for the points that are smaller than LTL
c_n2_iabovemean	flag (0 or 1) set for points that are part of an interval of 9 or more consecutive points above the mean
c_n2_ibelowmean	flag (0 or 1) set for points that are part of an interval of 9 or more consecutive points below the mean

Measures:

- Measurement Expected Mean (EXPECTEDMEAN): expected mean value for the measurement. Provided in SAP_X_SPC_HL_MEASUREMENT_PC
- Measurement Expected Standard Deviation (EXPECTEDSTDEV): expected standard deviation for the measurement. Provided in SAP_X_SPC_HL_MEASUREMENT_PC

- Process Specification Limit (SPECIFICATIONLIMIT): Statistical Process Control “Specification Limit”: limits between which the measurement should always be. Provided relative to the mean in SAP_X_SPC_HL_MEASUREMENT_PC
- Measurement Value (MVALUE): value of the measurement. Provided in SAP_X_SPC_HL_MEASUREMENT
- Upper Specification Limit (c_USL): computed as expected mean + specification limit
- Lower Specification Limit (c_LSL): computed as expected mean – specification limit
- Upper Tolerance Limit (c_UTL): computed as expected mean + 3 x expected standard deviation
- Lower Tolerance Limit (c_LTL): computed as expected mean – 3 x expected standard deviation
- Point above UTL: flag (0 or 1) set for the points that are larger than UTL
- Point below LTL (lower tolerance): flag (0 or 1) set for the points that are smaller than LTL
- Interval above mean: flag (0 or 1) set for points that are part of an interval of 9 or more consecutive points above the mean
- Interval below mean: flag (0 or 1) set for points that are part of an interval of 9 or more consecutive points below the mean
- Point colour: colour code that can be used to display points using distinct colours depending on the Nelson rule violations. 2: Nelson rule 2 violation; 1: no Nelson rule 2 violation and Nelson rule 1 violation; 0: no Nelson rule violation

4.7.4 *Setup content with local dataset*

To setup the content with a local dataset, there are 4 SQL views that need to be modified to connect to local data (instead of the sample data provided in this content):

1. SAP_X_SPC_HL_MEASUREMENT

Columns (3)

	Business Name	Technical Name
☐	MEASUREMENTID	MEASUREMENTID
☑	ITIMESTAMP	ITIMESTAMP
☐	MVALUE	MVALUE

2. SAP_X_SPC_HL_MEASUREMENT_MASTER

Columns (4)

	Business Name	Technical Name
☐	MEASUREMENTID	MEASUREMENTID
☐	OBJECTID	OBJECTID
☐	NAME	NAME
☐	UNITOFMEASURE	UNITOFMEASURE

3. SAP_X_SPC_HL_MEASUREMENT_PC

Columns (4)

	Business Name	Technical Name
☐	MEASUREMENTID	MEASUREMENTID
☐	EXPECTEDMEAN	EXPECTEDMEAN
☐	EXPECTEDSTDEV	EXPECTEDSTDEV
☐	SPECIFICATIONLIMIT	SPECIFICATIONLIMIT

4. SAP_X_SPC_HL_OBJECT_MASTER

Columns (2)

	Business Name	Technical Name
☐	OBJECTID	OBJECTID
☐	OBJECTNAME	OBJECTNAME

5 INDUSTRIES

5.1 AUTOMOTIVE (AUT)

This package covers the business scenario "Responsive Supply Networks" for the automotive industry. It is based on data from SAP S/4HANA source systems.

The content currently covers Sales Order, Purchasing Order and Production Order Data, which serve as building block for future enhancements.
Depending on the release of your SAP S/4HANA system, different implementation steps are necessary.
The content has been designed to work with the SAP S/4HANA release 2021.
To use the content with SAP S/4HANA release 2020, please follow the instructions in the chapter “Prerequisites for SAP S/4HANA release 2020”.
Older releases are not supported, as this would require too many manual efforts in SAP S/4HANA.

5.1.1 *Prerequisites*

5.1.1.1 Setup currency conversion and connection to source system

For general instructions how to setup the Currency Conversion initially and which standard setting apply, please refer to the chapter 3.5 Setup Currency Conversion.
All amount key figures are provided in document currency as well as company code currency in the reporting layer views or harmonization layer views.
In the SAP Analytics Cloud stories only the key figures in company code currency are used, to allow for a meaningful aggregation. To ensure this, a filter on Company Code is mandatory and of single value.
Please adapt the story filter in the data model if you want to analyze more than one Company Code at a time. Depending on the Company Code Currency of the Company Codes, adapt the currency conversion to meet your requirements and to not add up different currencies accidentally.

Please also setup the connection **SAP_CONTENT_SAP_S4H** with business name “SAP S/4HANA on-Premise” to your SAP S/4HANA instance.

If you want to change the client in all currency conversion columns of the package (Option 2), the client needs to be changed for the currency conversion columns in following views:

View	Currency Conversion Column
Purchase Order (HL) *(SAP_AUT_HL_Purchasing)*	Net Price in Company Code Currency *(NetPrice_CC_Curr)*
Purchase Order (HL) *(SAP_AUT_HL_Purchasing)*	Net Order Amount in Company Code *Currency (NetOrderAmount_CC_Curr)*

5.1.1.2 Prerequisites for SAP S/4HANA release 2020

5.1.1.2.1 Transaction Data (Release OP2020)

The package uses the following CDS-Views:

- C_SALESDOCUMENTITEMDEX_1 (CSDSLSDOCITMDX1)

This CDS-View replaces the previous view C_SALESDOCUMENTITEMDEX (CSDSLSDOCITMDX), which will be deprecated in a future release.

This CDS-View is available with OP2020 SP03 or with corrections instructions in SAP Note 3070845. Either apply the relevant service pack or the SAP Note 3070845 in the SAP S/4HANA system before you deploy the content in SAP Data Warehouse Cloud.

5.1.1.2.2 Master Data (Release OP2020)

The following CDS-Views are not extraction enabled in release OP2020 and can therefore not be used for extraction:

- I_Plant
- I_StorageLocation

Any warning during import related to these three CDS-Views can be ignored.
The following steps must be taken before the deployment of the content:

The dimension views for these master data are associated to the Analytical Datasets *SAP_SD_RL_SalesDocumentItem*, *SAP_AUT_HL_OrderPP and SAP_AUT_HL_Purchasing.*

Please remove the following associations:

- Plant to Plant Attribute View (Plant) (*SAP_MM_Plant)*

in the Analytical Dataset *SAP_AUT_HL_OrderPP* before deploying this view.

Please remove the following associations:

- Storage Location to Storage Location Master Data View (StorageLoc) (*SAP_LO_StorageLocation)*
- Plant to Plant Master Data View (Plant) (*SAP_MM_Plant)*

in the Analytical Datasets *SAP_SD_RL_SalesDocumentItem* and *SAP_AUT_HL_Purchasing* before deploying these views.

Find the full stack for these views below for you reference (from the source to the dimension)

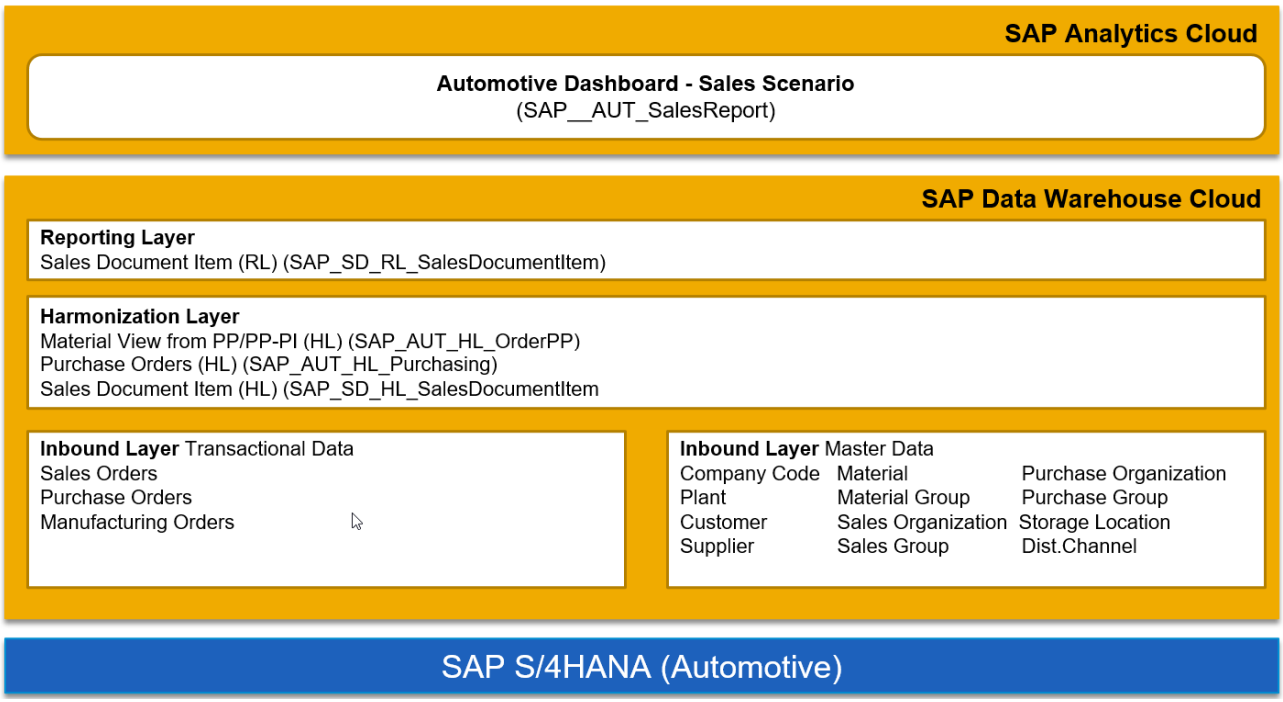
Type	Name	Technical Name
CDS-View	Plant - Master Data Attributes	I_PLANT
Remote Table	Plant - Master Data Attributes + Text	IPLANT
Relational Dataset	Plant - Attr + Text (IL)	SAP_MM_IL_PLANT
Dimension	Plant	SAP_MM_Plant
CDS-View	Storage Location	I_STORAGELOCATION
Remote table	Storage Location Attr + Text	ISTORAGELOCATION
Relational Dataset	Storage Location Attr + Text (IL)	SAP_LO_IL_ISTORAGELOCATION
Dimension	Storage Location	SAP_LO_StorageLocation

Alternative: Create a custom CDS-views

Instead of removing the dependency to those three views in your release OP2020, an alternative is to create two custom CDS-Views by copying the original CDS-Views. The copies have to be extraction enabled. In SAP Data Warehouse Cloud, create remote tables based on the custom CDS-Views. Then replace the remote tables delivered in the content in the following views with the new remote tables:

- Plant Attr + Text (IL) *SAP_MM_IL_PLANT,* Storage Location Attr + Text (IL) *SAP_LO_IL_ISTORAGELOCATION*

5.1.2 *Architecture and Abstract*



5.1.3 *Stories*

The following story is included in the content package: Automotive Dashboard – Sales Scenario (SAP__AUT_SalesReport).

This story is based on the following SAP Data Warehouse Cloud views:

- Material View from PP/PP-PI (HL) (SAP_AUT_HL_OrderPP)
- Purchase Orders (HL) (SAP_AUT_HL_Purchasing)
- Sales Document Item (RL) (SAP_SD_RL_SalesDocumentItem)

Please navigate to the SAP Analytics Cloud content documentation for details.

5.1.4 ***Models***

5.1.4.1 Master Data

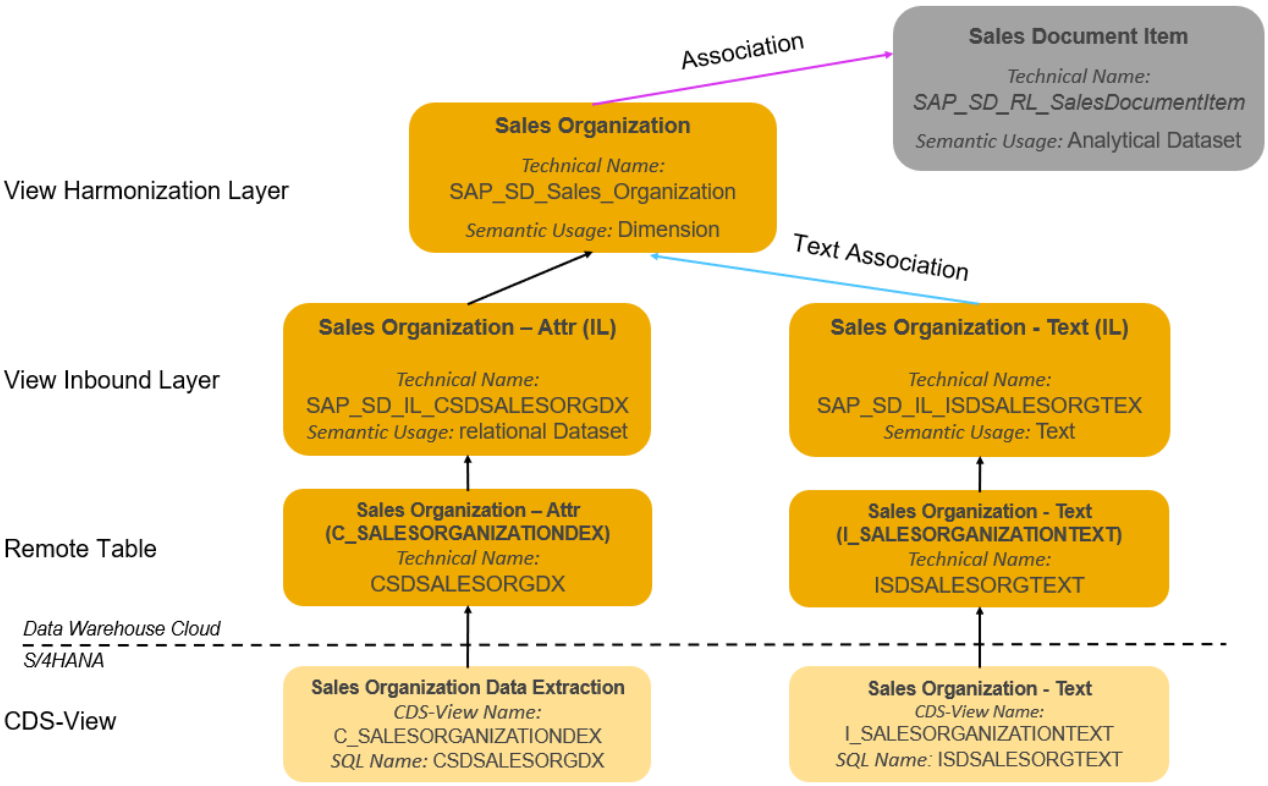
Master data comes in different flavors:

- Master data with attributes and texts
- Master data with text only and without attributes

Either the views for attributes and texts are distinct views or attributes and texts are combined in one view only. Therefore the master data models and the modelling in Data Warehouse Cloud need to be slightly adapted per case.

Master data views have been created following SAP Data Warehouse Cloud modelling guidelines and best practices:

Case 1: Master data – attributes and texts; separate CDS-Views for attributes and texts

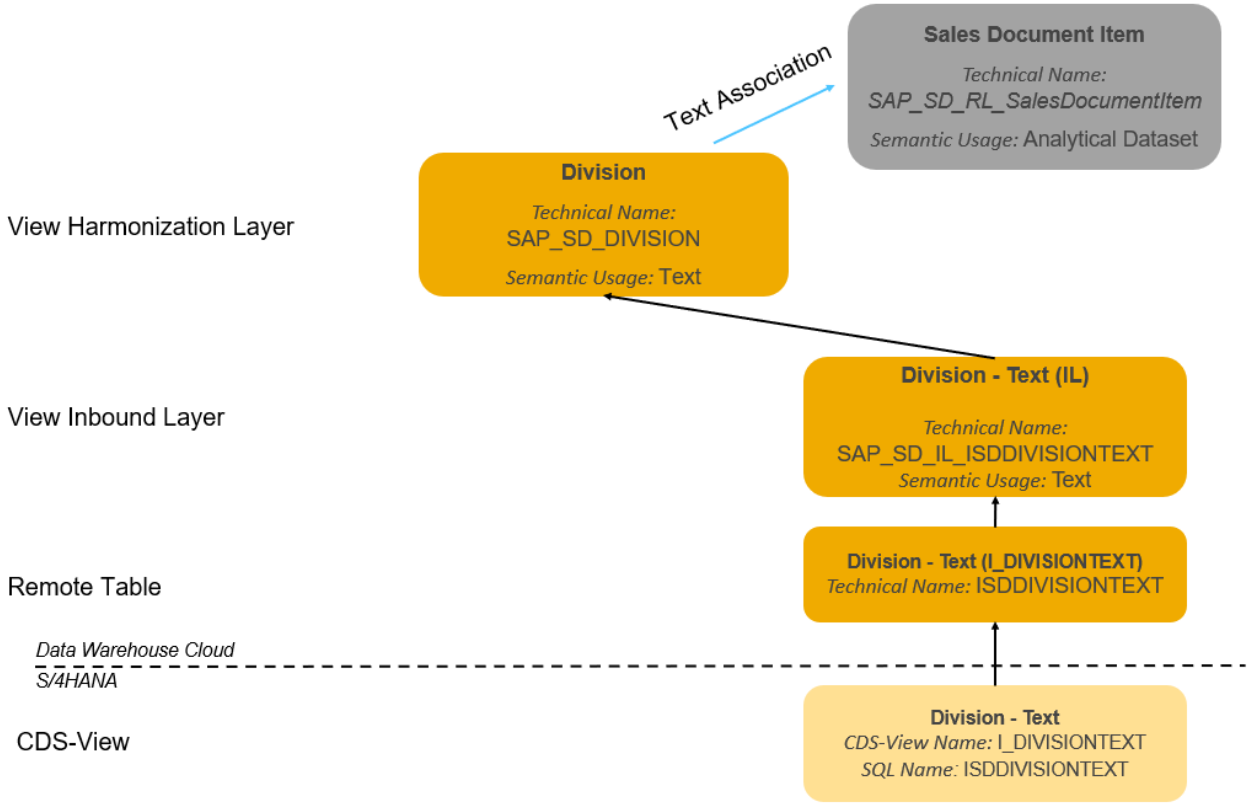


- The remote tables are the 1:1 representation of the SAP S/4HANA CDS-views for master data and text CDS-views.
- The inbound layer views use the remote tables, sometimes data type adjustments e.g. for language, are necessary.
- The harmonization layer view brings master data and text together using text association and is of semantic type: Dimension. This view is then associated to the relevant transaction data in the transaction data reporting layer view

Case 2: Master data – text only, one CDS-View for texts

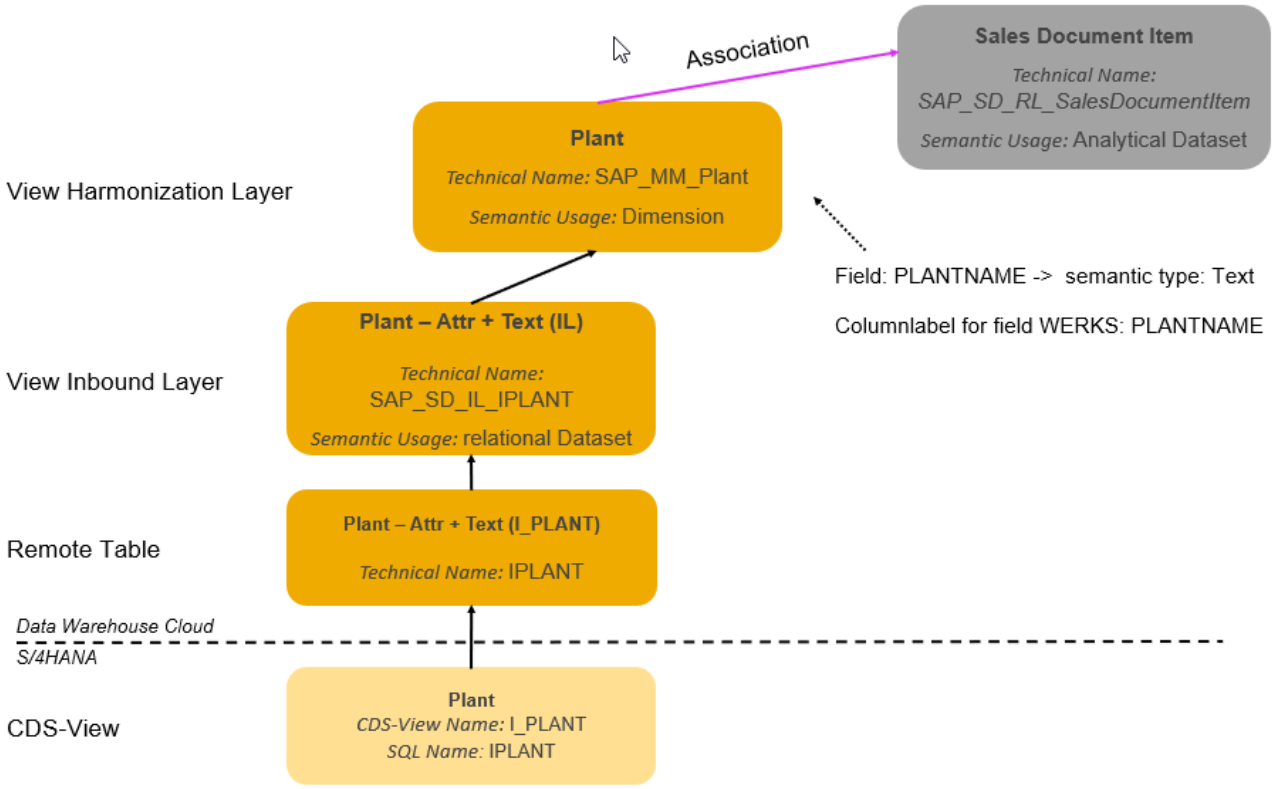
For master data without attributes - text only - the harmonization layer view is directly based on the inbound layer text view and its semantic type is “Text”.

This view is associated to the relevant transaction data in the transaction data reporting layer view as a text association.



Case 3: Master data – attributes and texts; one CDS-View for attributes incl. not language dependent texts

Within the harmonization layer view, the field containing the text is set to semantic type “text” and entered as a column label for the respective key field.
This view is associated to the relevant transaction data in the transaction data reporting layer view.



5.1.4.2 Currency Conversion

For general instructions how to setup the Currency Conversion initially and which standard setting apply, please refer to the chapter 3.5 Setup Currency Conversion.

All amount key figures are provided in document currency as well as company code currency in the reporting layer views or harmonization layer views.

In the SAP Analytics Cloud stories only the key figures in company code currency are used, to allow for a meaningful aggregation. To ensure this, a filter on Company Code is mandatory and of single value.

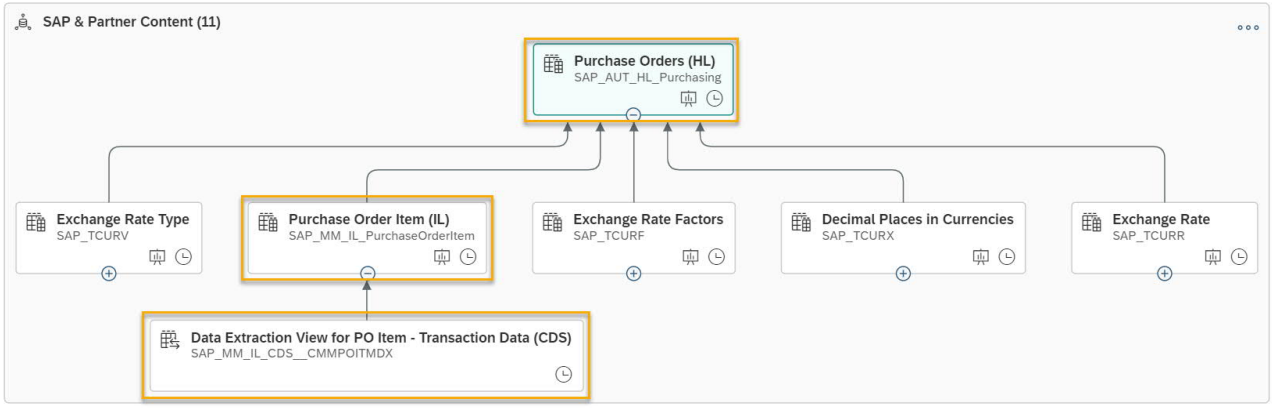
Please adapt the story filter in the data model if you want to analyze more than one Company Code at a time. Depending on the Company Code Currency of the Company Codes, adapt the currency conversion to meet your requirements and to not add up different currencies accidentally.

5.1.4.3 Sales Document Item

Sales Document Item information are based on the view “Sales Document Item (RL)” (SAP_SD_RL_SalesDocumentItem) from the Sales and Distribution (SD) content. Find the documentation in chapter 4.3 Sales and Distribution: Sales Analysis for SAP S/4HANA on-premise.

5.1.4.4 Purchase Orders

Note: The Purchasing Model can only be used, if the extracted Purchasing orders do not contain any Purchase order return items.



Data Model Purchase Orders

Data Extraction View for PO Item - Transaction Data (CDS)

The remote table Data Extraction View for PO Item - Transaction Data (CDS) (SAP_MM_IL_CDS__CMMPOITMDX) is based on the CDS-View Data Extraction View for PO Item *(technical Name C_PURCHASEORDERITEMDEX, SQL Name* CMMPOITMDX*)* from SAP S/4HANA. For productive use consider replication the data to SAP Data Warehouse Cloud for better reporting performance.

Purchase Order Item (IL)

The View Purchase Order Item (IL) (SAP_MM_IL_PurchaseOrderItem) lies in the Inbound Layer and builds on the remote table Data Extraction View for PO Item - Transaction Data (CDS) (SAP_MM_IL_CDS__CMMPOITMDX).

This model contains a date formatting formula in the formula node for each date field like e.g.

- Field "Purchase Order Date":
- TO_DATE(PURCHASEORDERDATE)

Purchase Orders (HL)

The view for Purchase Orders (HL) (SAP_AUT_HL_Purchasing) lies in the harmonization layer and is used in the SAC Story Automotive Dashboard – Sales Scenario (SAP__AUT_SalesReport).

It builds on the transactional data coming from the Purchase Order Item (IL) (SAP_MM_IL_PurchaseOrderItem).
In the projection node the date fields are renamed to …_date to allow for the by SAP Data Warehouse Cloud offered date functionality.
In the calculated column node for key figures with an amount, a currency conversion column has been created to convert from Document Currency to Company Code Currency.

The following master data views are associated in this model

- Supplier (SAP_LO_Supplier)
- Plant (SAP_MM_Plant)
- Purchase Organization (SAP_MM_PurchasingOrganization)
- Company Code (SAP_FI_Company_Code)
- Product (SAP_LO_Product)
- Product Group (SAP_LO_ProductGroup)
- Storage Location (SAP_LO_StorageLocation)
- Automotive Dashboard – Sales Scenario (SAP__AUT_SalesReport).

All date fields are associated to the Time Dimension Day- View (SAP.TIME.VIEW_DIMENSION_DAY).

5.1.4.5 Manufacturing Orders

Data Model Manufacturing Orders

Manufacturing Order Item

The remote table Manufacturing Order Item (IMFGORDERITEM) is based on the CDS-View Manufacturing Order Item *(technical Name I_MANUFACTURINGORDERITEM, SQL Name* IMFGORDERITEM*)* from SAP S/4HANA. For productive use consider replication the data to SAP Data Warehouse Cloud for better reporting performance.

Manufacturing Order Item (IL)

The View Manufacturing Order Item (IL) (SAP_PP_IL_IMFGORDERITEM) lies in the Inbound Layer and builds on the remote table Manufacturing Order Item (IMFGORDERITEM).

In the projection node key figures on manufacturing order header level are excluded, as these cannot be summed up over the order items. Dependent on the customizing in the SAP S/4HANA system, the manufacturing orders can have more than one item. In case all manufacturing orders only have one item the model on DWC side can be adjusted to include the header key figures.

This model contains date formatting formulas in the formula node for each date field like e.g.

- Field " Manufacturing Order Planned Start Date":
  CASE WHEN MFGORDERPLANNEDSTARTDATE = '99999999'
  THEN '99991231'
  ELSE TO_DATE(MFGORDERPLANNEDSTARTDATE)
  END

Material View from PP/PP-PI (HL)

The view for Material View from PP/PP-PI (HL) (SAP_AUT_HL_OrderPP) is part of the harmonization layer and is used in the SAC Story Automotive Dashboard – Sales Scenario (SAP__AUT_SalesReport).

It builds on the transactional data coming from the Manufacturing Order (IL) (SAP_PP_IL_ IMFGORDERITEM).

The following master data views are associated in this model

- Production Plant (SAP_MM_Plant)
- Product (SAP_LO_Product)

All date fields are associated to the Time Dimension Day- View (SAP.TIME.VIEW_DIMENSION_DAY).

5.2 CONSUMER PRODUCTS (CP) - REVENUE GROWTH

This content packages utilizes the Sales Document data from the SD module. The content is based on SAP S/4HANA CDS views for both transaction and master data.

This release provides information for Sales Orders and Material Sales as a starting point for the "Revenue Growth" scenario for Consumer Products industry.

Depending on the release of your SAP S/4HANA system, different implementation steps are necessary.
The content has been designed to work with the SAP S/4HANA release 2021.
To use the content with SAP S/4HANA release 2020, please follow the instructions in the chapter “Prerequisites for SAP S/4HANA release 2020”.
Older releases are not supported, as this would require too many manual efforts in SAP S/4HANA.

5.2.1 *Prerequisites for SAP S/4HANA release 2020*

For SAP S/4HANA release 2020, the following activities are required before you can deploy the content:

5.2.1.1 Transaction Data

The package uses the following CDS-View:

- C_SALESDOCUMENTITEMDEX_1 (CSDSLSDOCITMDX1)

This CDS-View has replaced the previous view:

- C_SALESDOCUMENTITEMDEX (CSDSLSDOCITMDX),

which will be deprecated in a future release.

This new CDS-View is available with OP2020 SP03 or with corrections instructions in SAP Note 3070845. Either apply the relevant service pack or the SAP Note 3070845 in the SAP S/4HANA system before you deploy the content in SAP Data Warehouse Cloud.

5.2.1.2 Master Data (Release OP2020)

The following CDS-Views are not extraction enabled in release OP2020 and can therefore not be used for extraction:

- I_Plant
- I_StorageLocation

Any warning during import related to this CDS-View can be ignored.
The following steps have to be taken before the deployment of the content:

The dimension views for these master data are associated to the Analytical Datasets *SAP_SD_RL_SalesDocumentItem*.

Please remove the following associations:

- Storage Location to Storage Location Master Data View (StorageLoc) (*SAP_LO_StorageLocation)*
- Plant to Plant Master Data View (Plant) (*SAP_MM_Plant)*

in the Analytical Datasets *SAP_SD_RL_SalesDocumentItem* before deploying this view.

Find the full stack for these views below for you reference (from the source to the dimension)

Type	Name	Technical Name
CDS-View	Plant - Master Data Attributes	I_PLANT
Remote Table	Plant - Master Data Attributes + Text	IPLANT
Relational Dataset	Plant - Attr + Text (IL)	SAP_MM_IL_PLANT
Dimension	Plant	SAP_MM_Plant
CDS-View	Storage Location	I_STORAGELOCATION
Remote table	Storage Location Attr + Text	ISTORAGELOCATION
Relational Dataset	Storage Location Attr + Text (IL)	SAP_LO_IL_ISTORAGELOCATION
Dimension	Storage Location	SAP_LO_StorageLocation

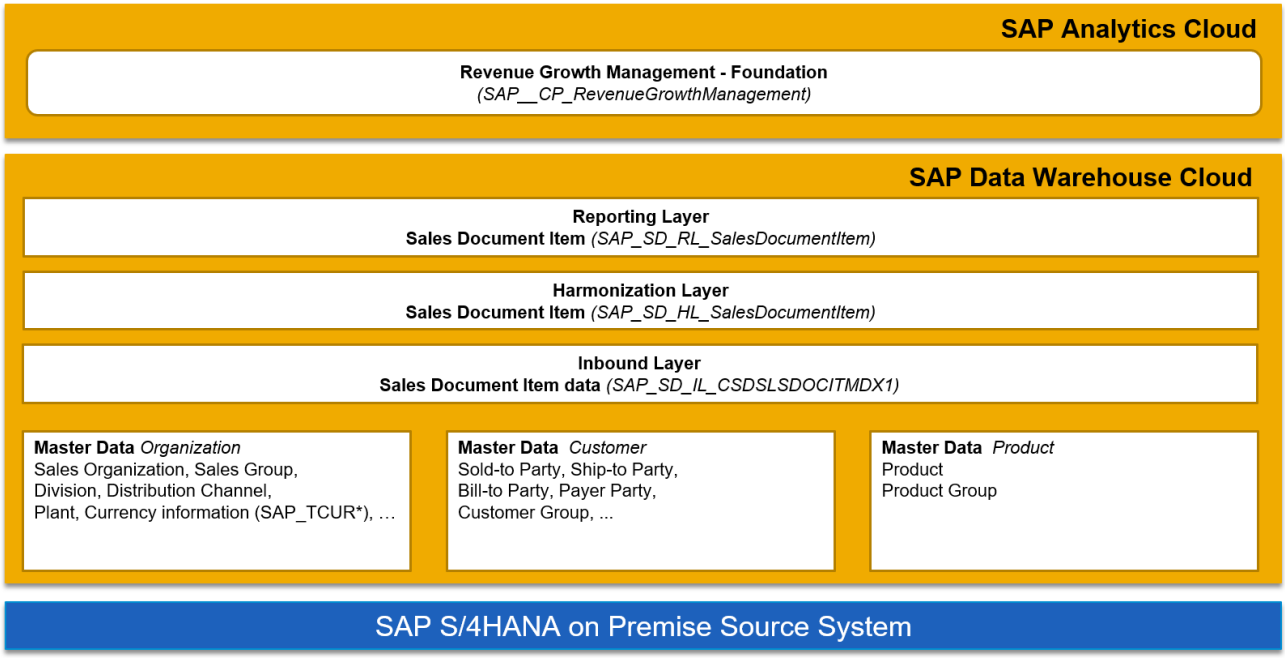
Alternative: Create custom CDS-views

Instead of removing the dependency to those two views in your release OP2020, an alternative is to create two custom CDS-Views by copying the original CDS-Views. The copies have to be extraction enabled. In SAP Data Warehouse Cloud, create remote tables based on the custom CDS-Views. Then replace the remote tables delivered in the content in the following views with the new remote tables:

- Plant Attr + Text (IL) *SAP_MM_IL_PLANT* and
- Storage Location Attr + Text (IL) *SAP_LO_IL_ISTORAGELOCATION .*

5.2.2 *Architecture and Abstract*

The models for the Revenue Growth story are built on the Sales and Distribution content – in particular on the Sales Document Item data.



5.2.3 *Stories*

The following story is included in the SAP Analytics Cloud content package:
CP__Dashboard – Revenue Growth Management – Foundation (SAP__CP_RevenueGrowthManagement)

This story is based on the following SAP Data Warehouse Cloud view: Sales Document Item (SAP_SD_RL_SalesDocumentItem)

Please navigate to the SAP Analytics Cloud content documentation for details.

5.2.4 *Models*

Find the detailed documentation for the Sales Document Items in chapter 4.3 Sales and Distribution: Sales Analysis for SAP S/4HANA on-premise.

5.3 SAP INTELLIGENT REAL ESTATE

Before the SAP Intelligent Real Estate content package can be imported, ensure that the following tasks have been executed.

5.3.1 *SAP S/4HANA Cloud Connection*

Setup the connection to SAP S/4HANA Cloud. It must be ensured that the communication scenario SAP_COM_0531 is set up in the SAP S/4HANA Cloud source system (see https://help.sap.com/s4hanacloud. Navigate to Product Assistance -> SAP S/4HANA Cloud -> Extend and Integrate Your SAP S/4HANA Cloud -> Integration -> Integration Scenarios -> Integrating CDI.

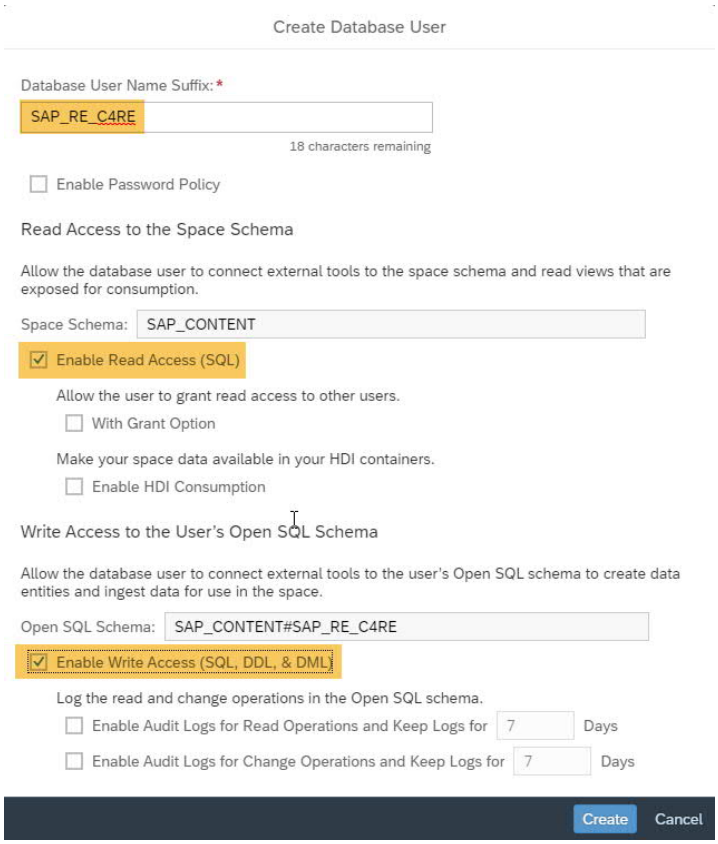
This must be done for the following connections:

- to SAP Cloud Real Estate (SAP_C4RE_S4H) and
- to SAP Cloud Finance (SAP_S4HC).

5.3.2 *BTP SAP Cloud for Real Estate Connection in Data Intelligence*

To connect SAP Cloud for Real Estate Data Intelligence, an openSQL schema in SAP Data Warehouse Cloud is required as a target for the data.

First, setup the openSQL schema in SAP Data Warehouse Cloud in the Space SAP_CONTENT as follows:
Database User Name Suffix: SAP_RE_C4RE
Enable Read Access (SQL) = true
Enable Write Access (SQL, DDL & DML) = true



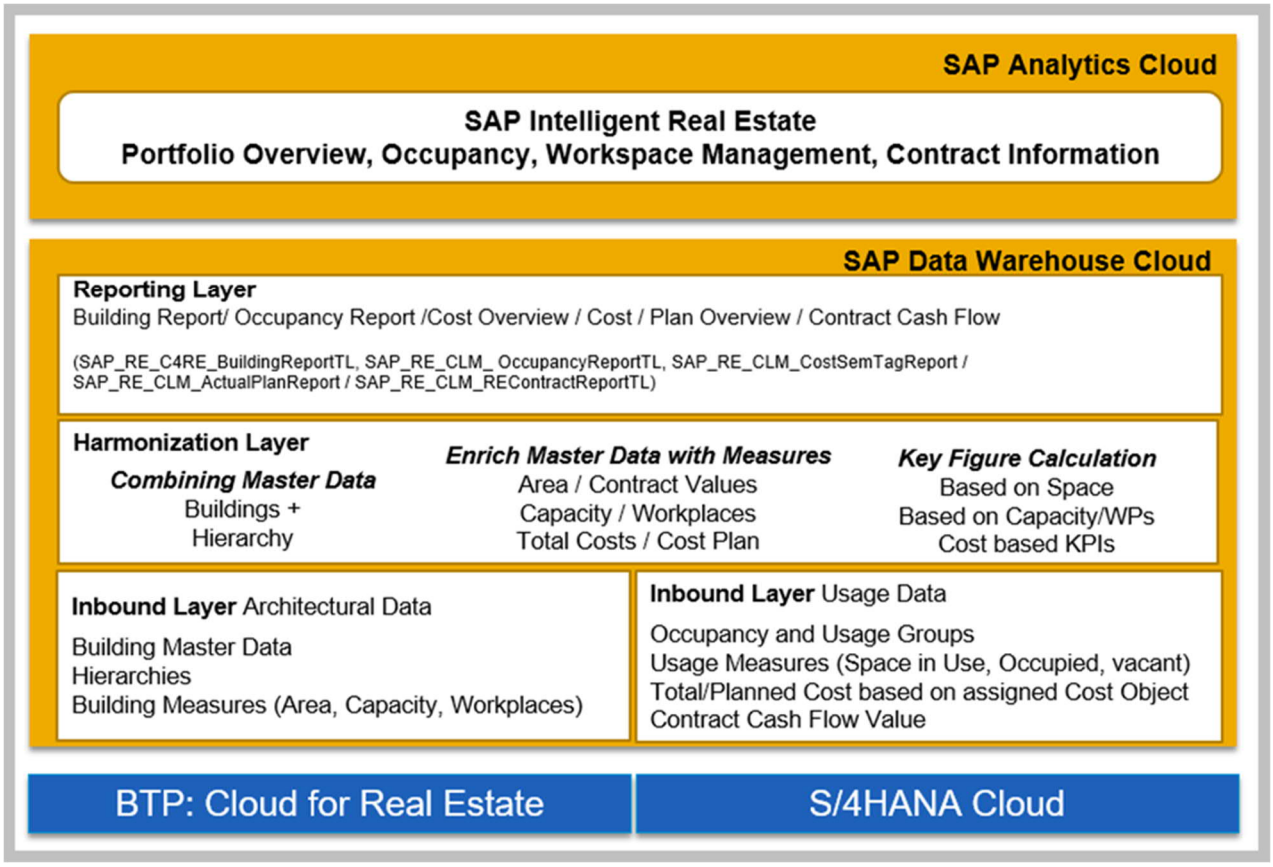
Secondly, the pipelines for the data transfer of the REST APIs must be created and activated in SAP Data Intelligence (DI). See detailed documentation in the Blog https://blogs.sap.com/2022/01/25/how-to-connect-sap-cloud-for-real-estate-to-sap-data-warehouse-cloud/.

Now you are ready to import the content package into your SAP Data Warehouse Cloud system.

5.3.3 *Architecture and Abstract*

The SAP Intelligent Real Estate content build on data from SAP Cloud for Real Estate (C4RE) and SAP S/4HANA Cloud for Contract and Lease Management and SAP S/4HANA Cloud finance data. The story is based on Location Management within C4RE, providing insights you need to expertly manage your enterprise real estate portfolio. A predefined analytical story gives transparency on the global portfolio compositions, the occupancy and workspace management.

The costs and the plan values based on a cost structure come from the SAP S/4HANA Cloud financial accounting. The mapping to the cost object is managed in the SIRE Usage Enablement Group and the cost hierarchy is based on a Cost Element Structure.



5.3.4 *Stories*

The following story is included in the SAP Intelligent Real Estate content package:
SAP Intelligent Real Estate (SAP__RE_GEN_SIRE)

This story is based on the following SAP Data Warehouse Cloud views:

- RE C4RE Building Report per Periods (RL) (SAP_RE_C4RE_BuildingReportTL)
- RE CLM Occupancy Report per Period (RL) (SAP_RE_CLM_ OccupancyReportTL)
- RE CLM Cost Reporting Semantic Tag (RL) (SAP_RE_CLM_CostSemTagReport)
- RE CLM Actual Plan Report (RL) (SAP_RE_CLM_ActualPlanReport)
- RE CLM Contract Report (RL) (SAP_RE_CLM_REContractReportTL)

Please navigate to the SAP Analytics Cloud content documentation for details.

5.3.5 ***Models***

Five reporting layers objects are consumed in the SAP__RE_GEN_SIRE dashboard. Each view covers a certain area and connects to different data sources.

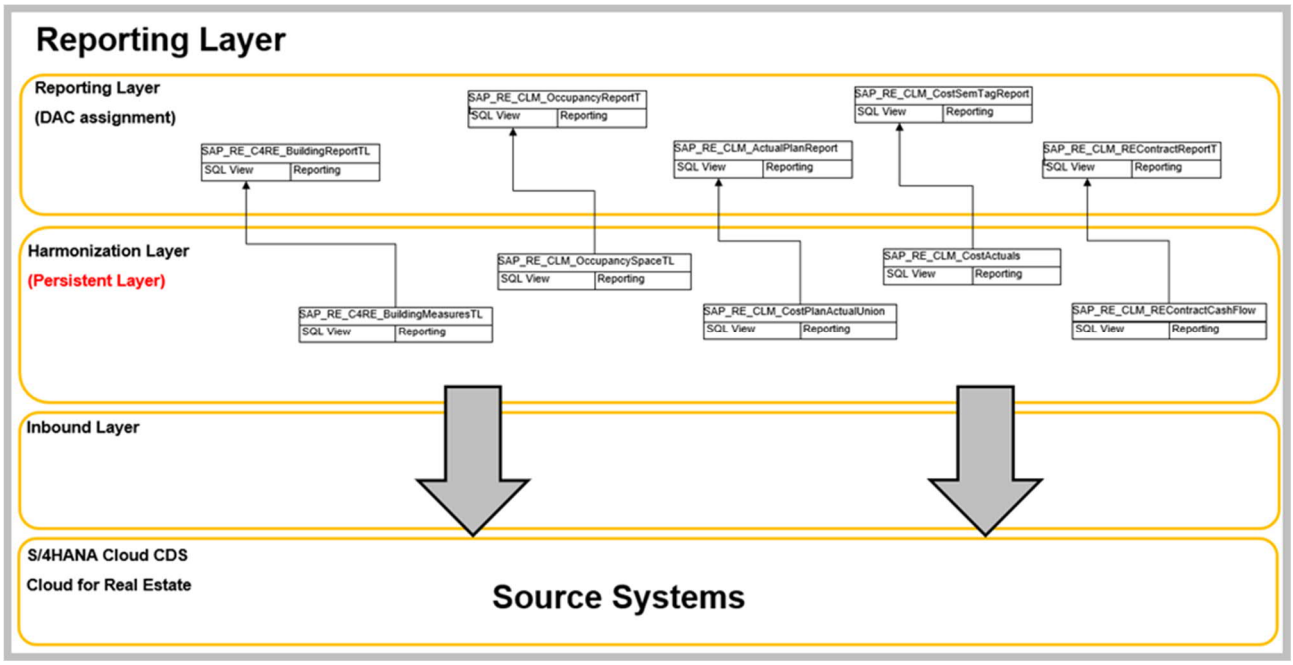
Analytical Reporting Views used in the SAP__RE_GEN_SIRE dashboard:

• SAP_RE_C4RE_BuildingReportTL	C4RE Building Report per Periods (RL)
• SAP_RE_CLM_OccupancyReportTL	RE CLM Occupancy Report per Periods (RL)
• SAP_RE_CLM_CostSemTagReport	CLM Cost Reporting Semantic Tag (RL)
• SAP_RE_CLM_ActualPlanReport	RE CLM Actual Plan Report (RL)
• SAP_RE_CLM_REContractReportTL	RE CLM Contract Report (RL)

Further analytical data sets are offered ready for consumption:

• SAP_RE_C4RE_BuildAreaDetailTL	C4RE Building Area Detail TL (RL)
• SAP_RE_C4RE_LandSiteReportTL	CLM Land Site Areas Parcels Rep. TL (RL)

The relationship of the models from the reporting layer to the harmonization layer is a 1:1, which would allow to persist the data in the harmonization layer in SAP Data Warehouse Cloud.



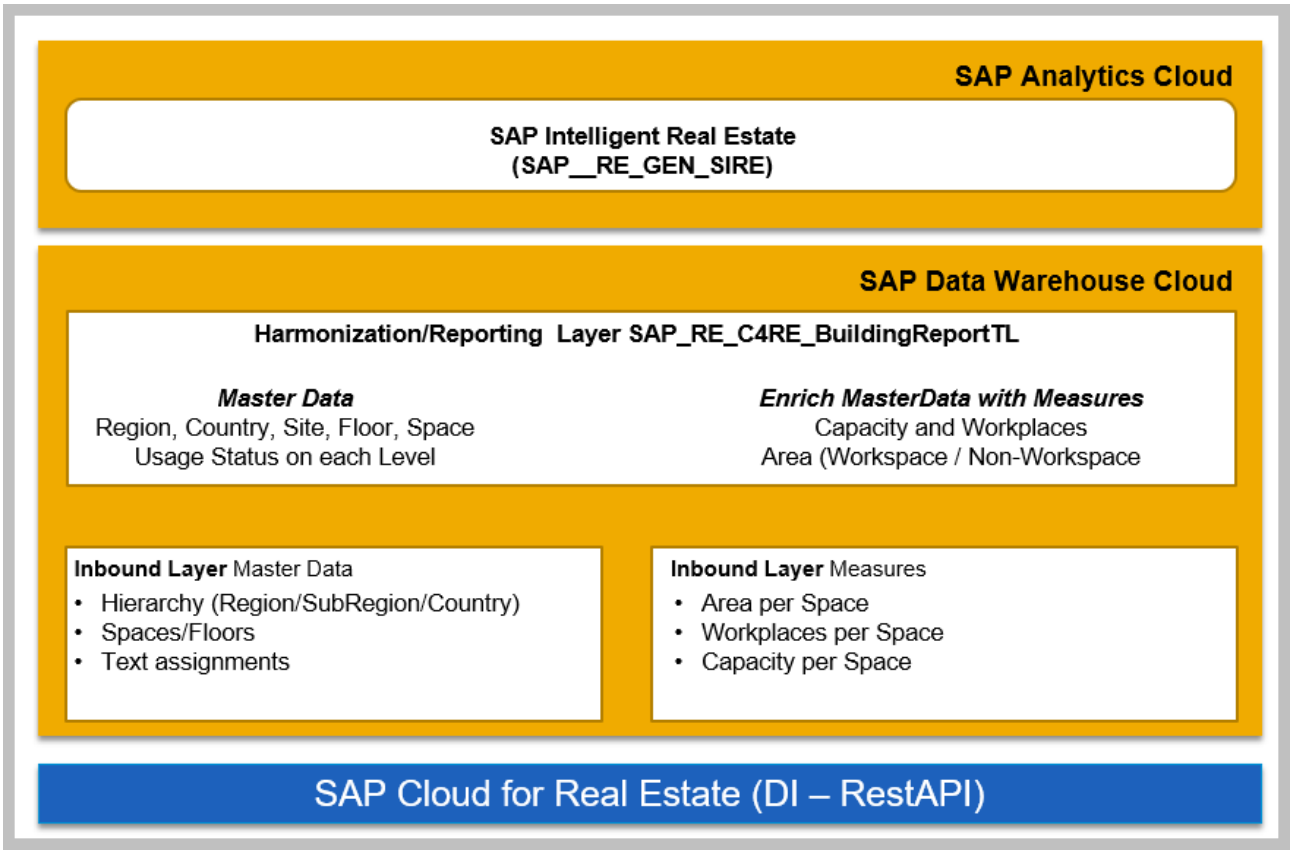
Recommendation: To have the best performance, persist the following harmonization layer views in the persistence layer and schedule a regular update in the Data Integration Monitor in the SAP Data Warehouse Cloud.

- SAP_RE_C4RE_BuildingMeasuresTL
- SAP_RE_CLM_OccupancySpaceTL
- SAP_RE_CLM_CostActuals
- SAP_RE_CLM_CostPlanActualUnion
- SAP_RE_CLM_REContractCashFlow

Schedule the Task Chain SAP_RE_CLM_PersistenceLayer (SAP RE CLM Persistence Layer (TC)) to persist the data in the harmonization layer.

5.3.5.1 C4RE Building Report (RL) (SAP_RE_C4RE_BuildingReportTL)

The data model SAP_RE_C4RE_BuildingReportTL provides the architectural Information of a building and measures like space, workplaces and capacity. The data will be provided for 3 years in the past and 3 years in the future on a monthly aggregation.



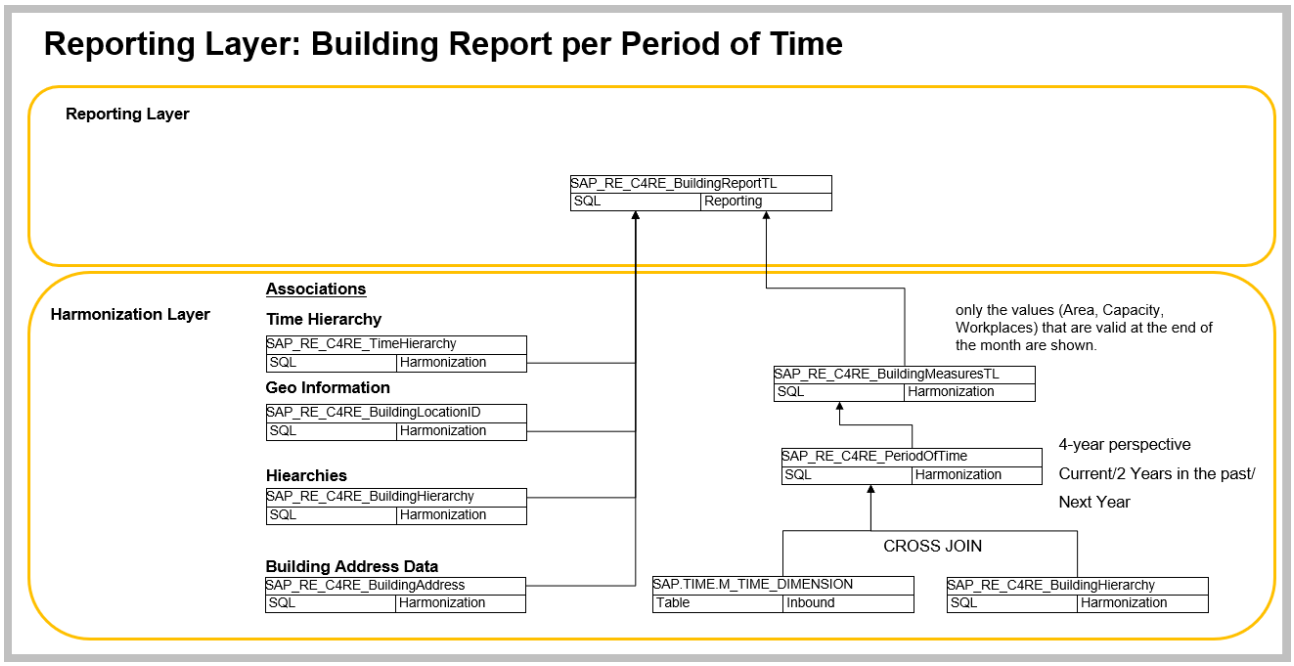
Measures	Aggregation
Spaces	SUM
Capacity	SUM
Total Workplaces	SUM
Dedicated Workplaces	SUM
Shared Workplaces	SUM
Hotdesk Workplaces	SUM
Total Area	SUM
Workspace Area	SUM
Non Workspace Area	SUM

Capacity (Free)	SUM
Attributes	Settings
Date	Set as key
Year	
Region	Set as key
Subregion	Set as key
Country	Set as key
Subdivision	Set as key
Site	Set as key
Building	Set as key
Floor	Set as key
Space	Set as key
Space IRN Link	
Floor IRN Link	
Site ShortName	hidden
Site LongName	
Building ShortName	hidden
Building LongName	
Building Start Date	
Building End Date	Set as key
Floor ShortName	hidden
Floor LongName	
FloorLevel	
Space ShortName	hidden
Space LongName	
Region Text	
Subregion Text	hidden
Country Text	hidden
Subdivision Text	hidden
Ownership	
Ownership Text	hidden

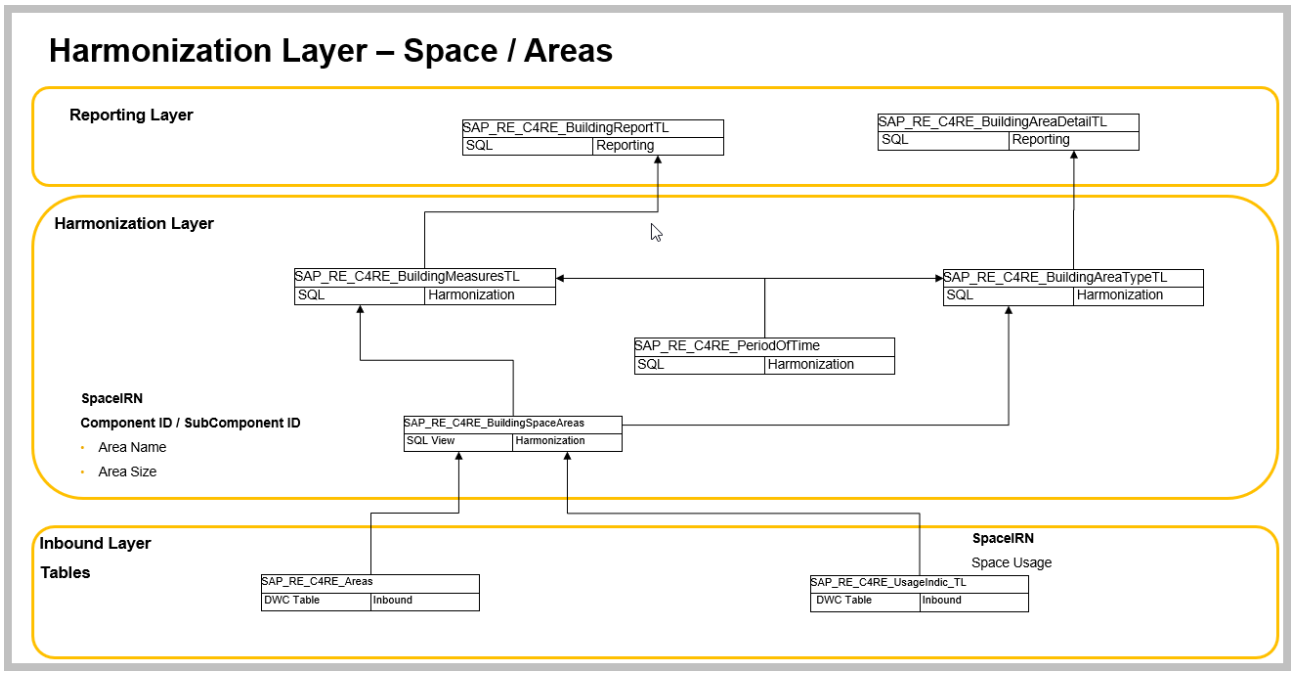
Space Usage Indicator	
Space Usage Indicator Text	hidden
Space Usage Type	
Space Usage Type Text	hidden
Building Status	
Building Status Text	hidden
Floor Status	
Floor Status Text	hidden
Space Status	
Space Status Text	hidden
Building Usage Type	
Building Usage Type Text	hidden
Construction Year	
Building Age	
Area Unit	

Associations	From – to	Mapping
_SAP_RE_C4	SAP_RE_C4RE_BuildingReportTL to SAP_RE_C4RE_BuildingLocationID	Building - Building IRN
_SAP_RE_C1	SAP_RE_C4RE_BuildingReportTL to SAP_RE_C4RE_BuildingAddress	Building - Building IRN
_VIEW_DIME	SAP_RE_C4RE_BuildingReportTL to SAP.TIME.VIEW_DIMENSION_DAY	Date-Date
_SAP_RE_C2	SAP_RE_C4RE_BuildingReportTL to SAP_RE_C4RE_BuildingHierarchy	Space - SpaceIRN

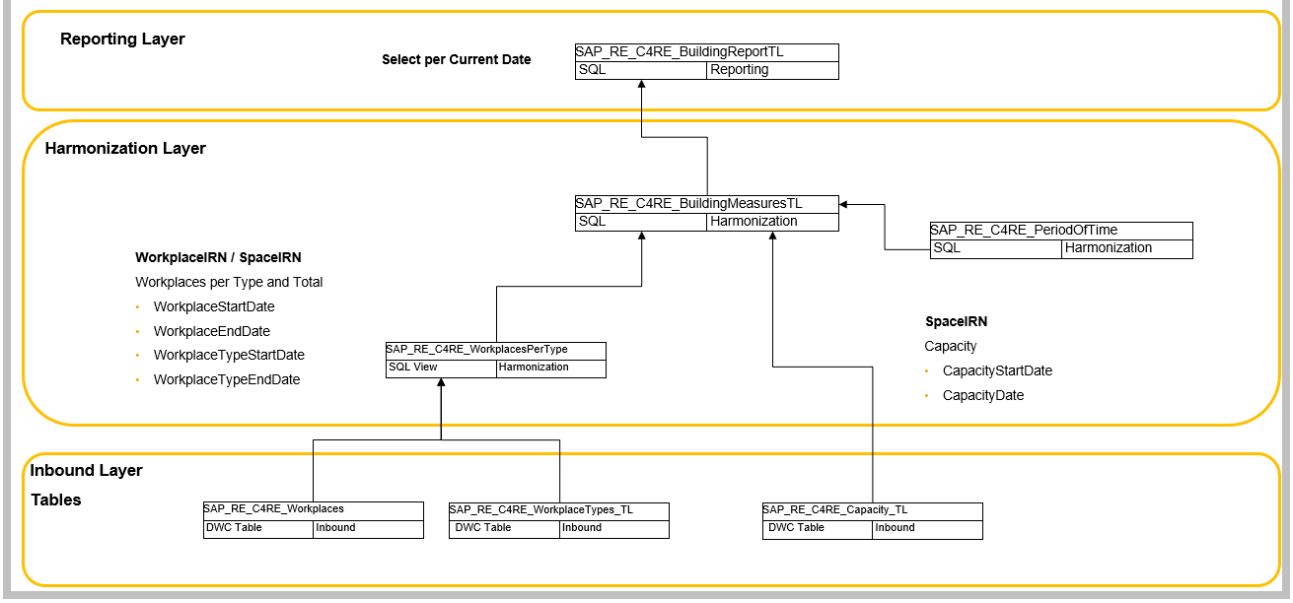
The data is provided with the associated Geo Information, the building hierarchy (Region, Subregion, Subdivision, Site, Building, Floor, Space) and the address data of the buildings. All measures are calculated on space level, so that these can be aggregated upwards along the hierarchy.



All Building measures are calculated on space level in the harmonization layer and made available to the reporting layer:

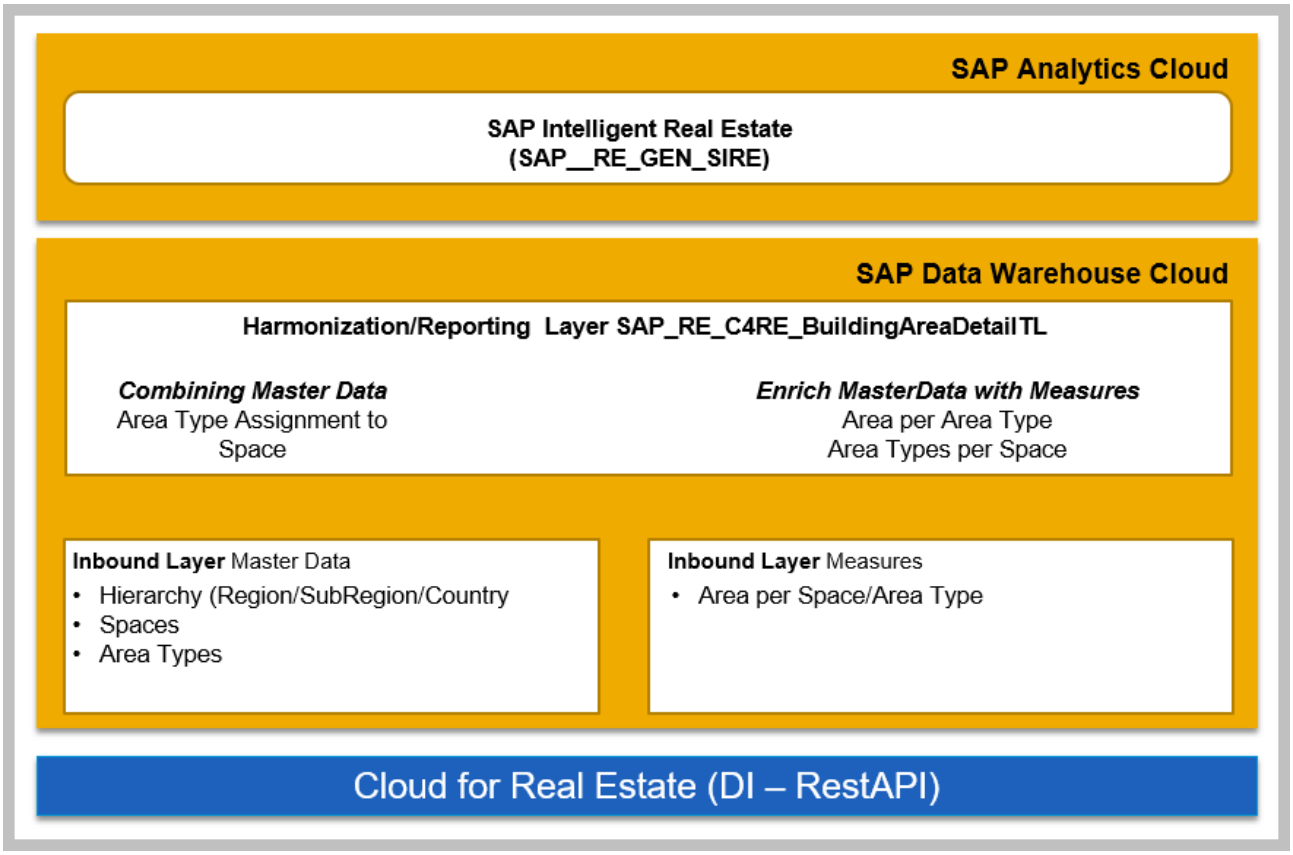


Harmonization Layer – Workplaces & Capacity



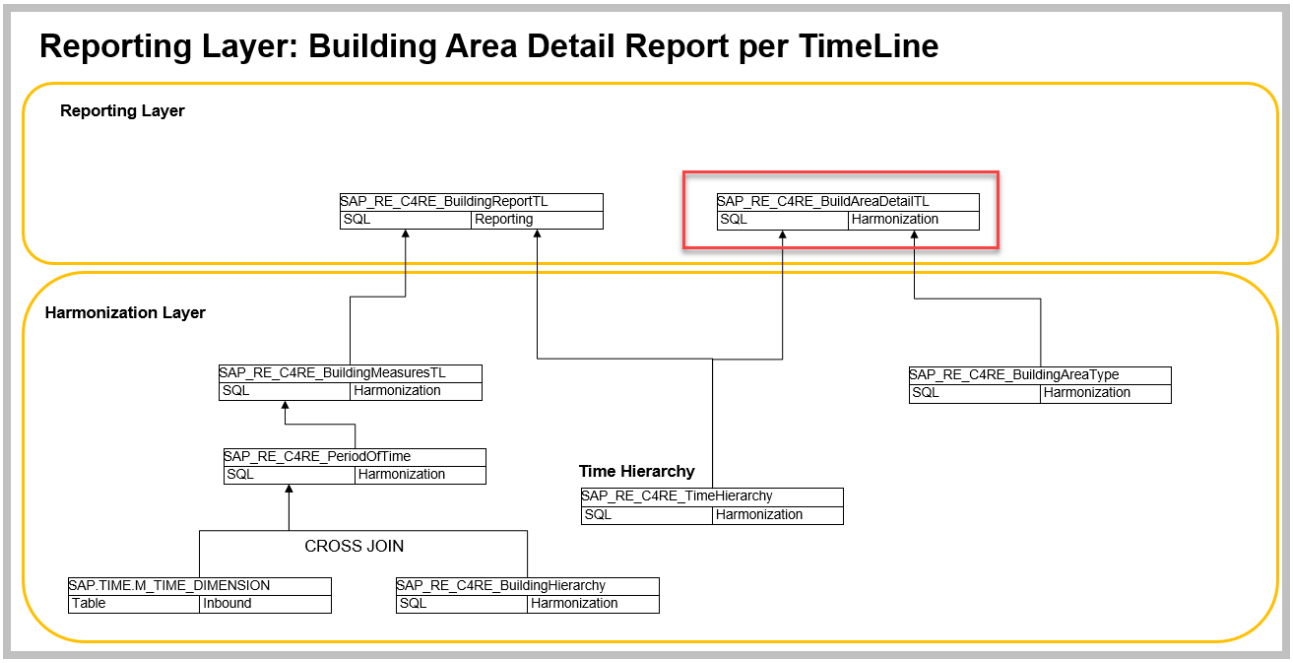
5.3.5.2 C4RE Building Area Detail (RL) (SAP_RE_C4RE_BuildingAreaDetailTL)

The data model SAP_RE_C4RE_BuildingAreaDetailTL is a supplement model to the Building Report, since the area data is displayed below the space at the Component / SubComponent level. The data will be provided for 3 years in the past and 3 year in the future on a monthly aggregation.



Measures	Aggregation
Area Size	SUM
WorkspaceArea	SUM
NonWorkspaceArea	SUM
Attributes	**Settings**
Date	Set as key
Year	
Month	
Space	Set as key

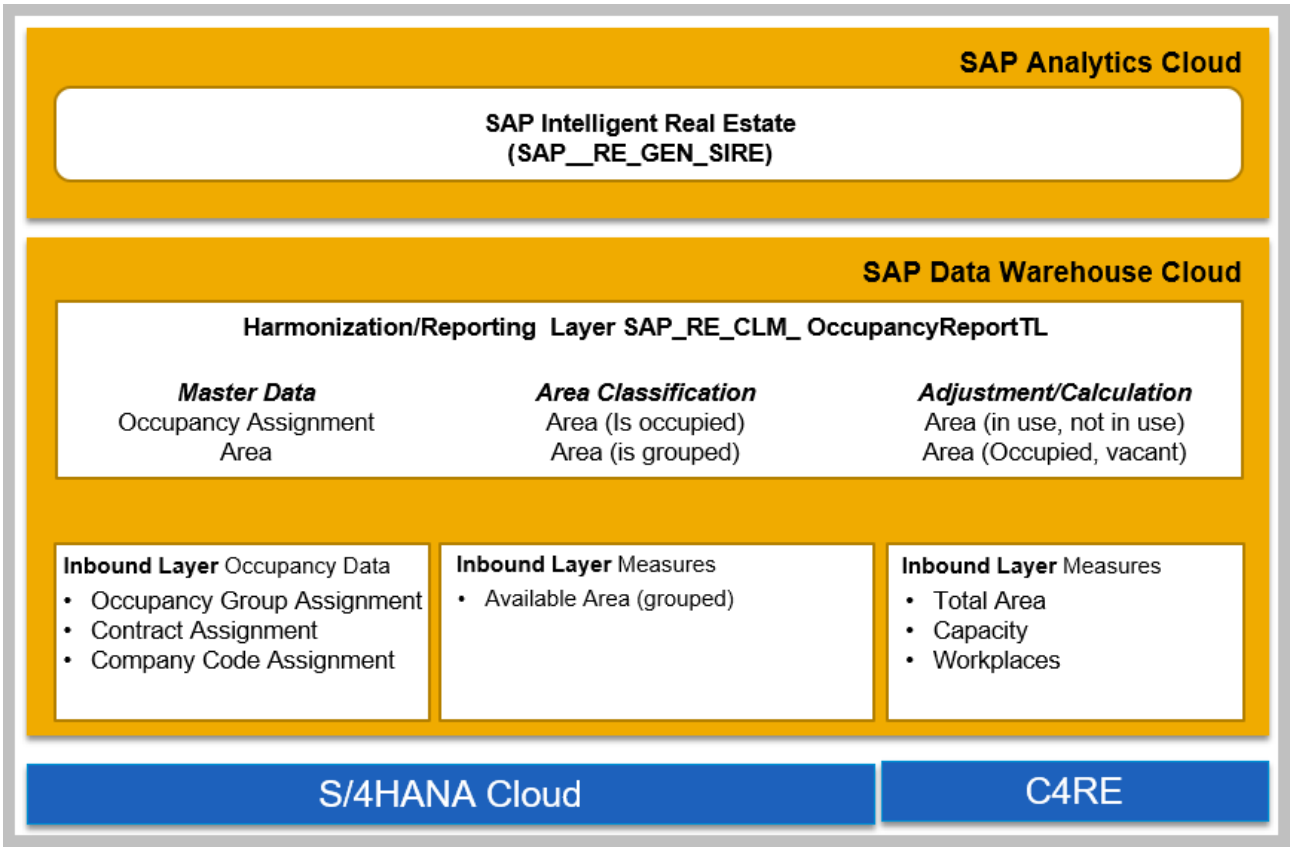
SpaceShortName	Hidden
SpaceLongName	
Space Component ID	Set as key
Space SubComponent ID	Set as key
Workspace Type	
Space Component	
SpaceComponentText	
Space Usage Indicator	
UsageIndicatorText	Hidden
Area	
AreaText	Hidden
Area Unit	



The analytical Reporting View SAP_RE_C4RE_BuildAreaDetailTL C4RE Building Area Detail TL (RL) is not used in the default dashboard SAP__RE_GEN_SIRE (SAP Intelligent Real Estate Management) but can be used for individual purposes.

5.3.5.3 RE CLM Occupancy Report (RL) (SAP_RE_CLM_OccupancyReportTL)

The data model SAP_RE_CLM_OccupancyReportTL provides information about the usage of an area (area is occupied, in use, vacant) based on Company Code level. The data will be provided for 3 years in the past and 3 years in the future on a monthly aggregation.



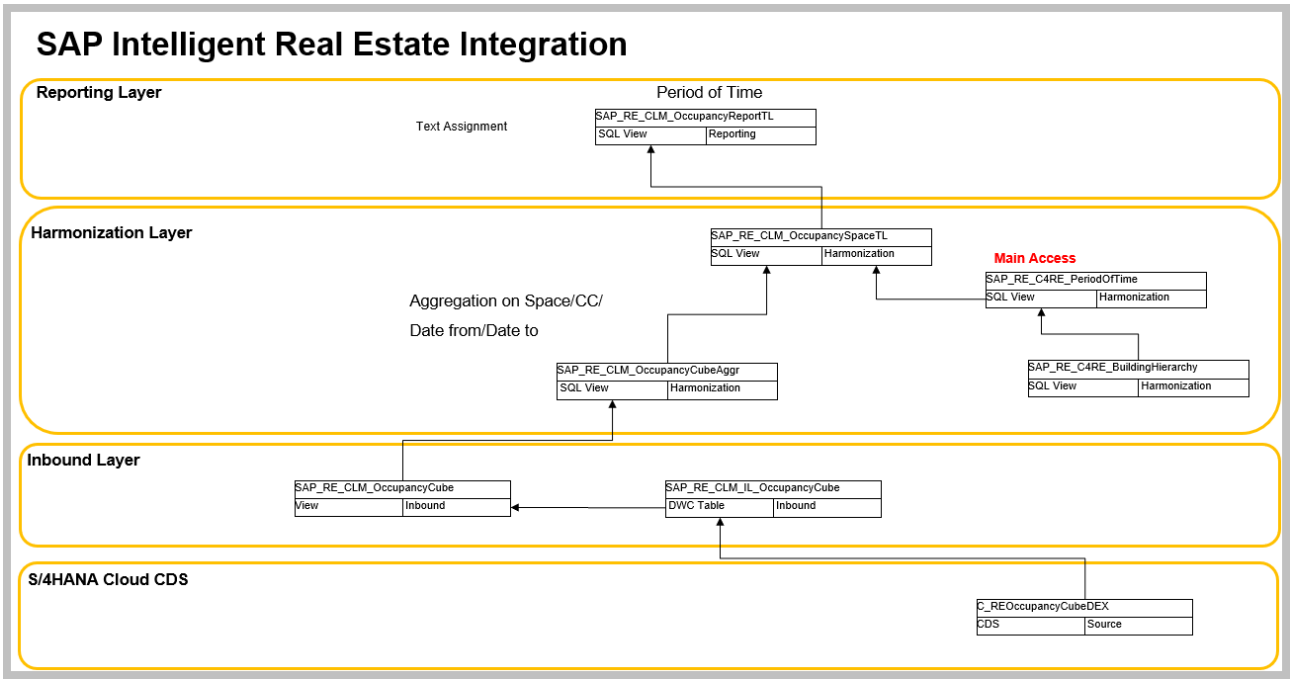
Measures	Aggregation
Number Spaces Not in Use	SUM
Number Spaces In Use	SUM
Number Spaces Occupied	SUM
NumberSpaceVacant	
Number LO Contract	SUM
Number Of Spaces	SUM
Total Area	SUM
Area Not In Use	SUM

Area In Use	SUM
Area Occupied	SUM
Area Vacant	SUM
Attributes	Settings
Date	Set as key
Year	
Region	Set as key
Subregion	Set as key
Country	Set as key
Subdivision	Set as key
Site	Set as key
Building	Set as key
Floor	Set as key
Space	Set as key
Space IRN Link	
Floor IRN Link	
Site ShortName	
Site LongName	
Building ShortName	hidden
Building LongName	
Building Start Date	
Building End Date	Set as key
Floor ShortName	hidden
Floor LongName	
Space ShortName	hidden
Space LongName	
BuildingIRNHyperlink	
Region Text	hidden
Subregion Text	hidden
Country Text	hidden
Subdivision Text	hidden

Ownership	
Ownership Text	hidden
Space Usage Indicator	
Space Usage Indicator Text	hidden
Space Usage Type	
Space Usage Type Text	hidden
Building Status	
Building Status Text	hidden
Floor Status	
Floor Status Text	hidden
Space Status	
Space Status Text	hidden
Building Usage Type	
Building Usage Type Text	hidden
Construction Year	
Building Age	
Area Unit	hidden
Integration Object name	
REInternal Number For Occupancy	
Enable Use Group	
RealEstateContract	
RealEstate ContractType	
RE Contract Name	
Contract Start Date	
Contract End Date	
Usage Classification	
Usage Type	
Space Group Usage Type	
Enable Use Type	
Object is Grouped	
Object Is In Use	

Object Is Assigned	
Object Is Occupied	
REContract Is Active	
Area Unit	

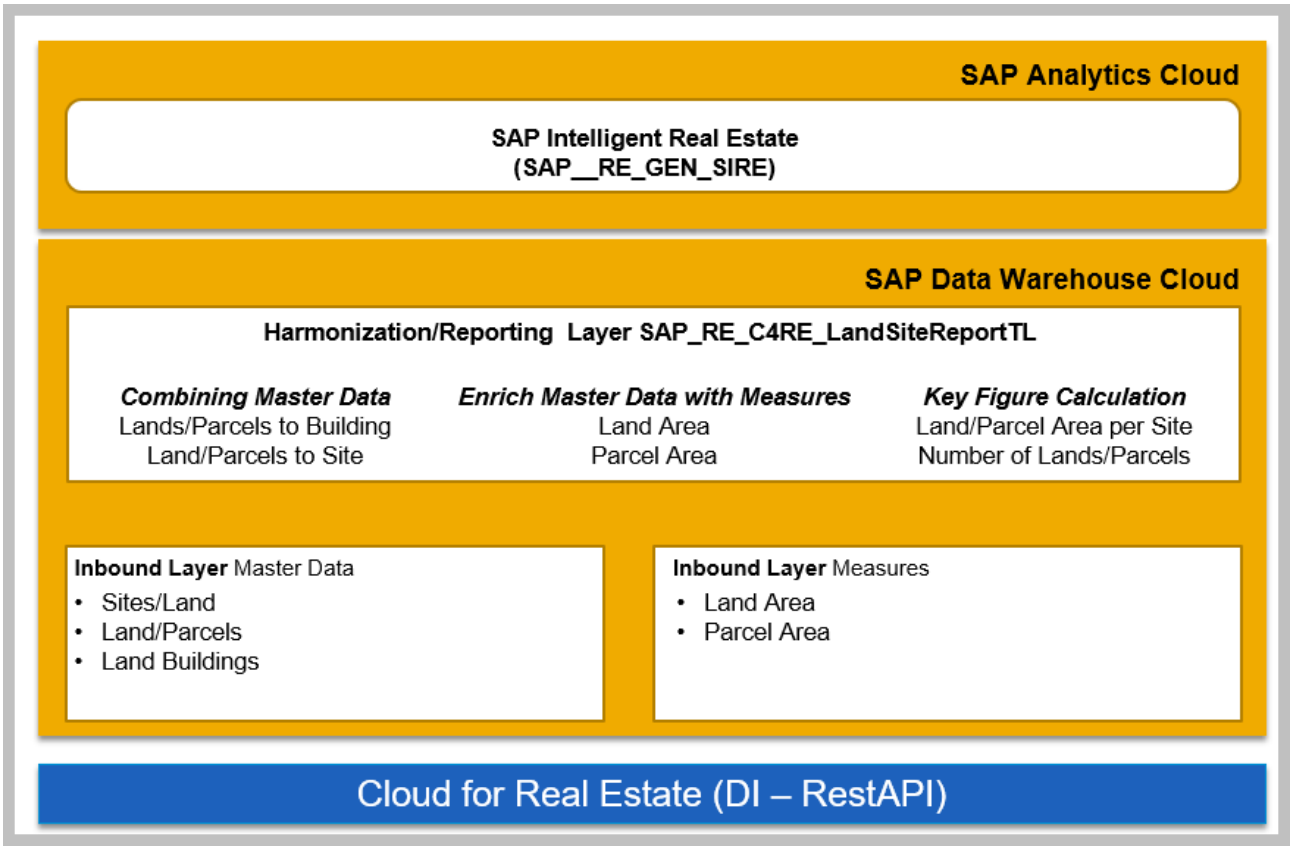
Associations	From – to	Mapping
_SAP_RE_C4	SAP_RE_C4RE_BuildingReportTL to SAP_RE_C4RE_BuildingLocationID	Building - Building IRN
_SAP_RE_C2	SAP_RE_CLM_OccupancyReportTL to SAP_RE_CLM_IntObjSpaceGrp	Space Group Type - REIntegObjSpaceGroupType
_SAP_RE_C3	SAP_RE_CLM_OccupancyReportTL to SAP_RE_CLM_SpaceGrpUsage	Space Group Usage Type - RESpaceGroupUsageType
_SAP_RE_C5	SAP_RE_CLM_OccupancyReportTL to SAP_RE_CLM_SpaceGrpEnable	Enable Use Type - RESpaceGrpEnableUseType
_SAP_RE_C6	SAP_RE_CLM_OccupancyReportTL to SAP_RE_CLM_IntObjUsageClfn	Usage Classification - REIntegObjectUsageClfn
_SAP_RE_C7	SAP_RE_CLM_OccupancyReportTL to SAP_RE_CLM_IntObjUsageType	Usage Type - REIntegObjectUsageType
_SAP_RE_C8	SAP_RE_CLM_OccupancyReportTL to SAP_RE_CLM_REContractType	RealEstate Contract - REContractType
_VIEW_DIME	SAP_RE_CLM_OccupancyReportTL to SAP.TIME.VIEW_DIMENSION_DAY	Date-Date
BuildHier	RE CLM Occupancy Report per Period (RL) to SAP_RE_C4RE_BuildingHierarchy	Space-SpaceIRN
_SAP_RE_C1	SAP_RE_C4RE_BuildingReport to SAP_RE_C4RE_BuildingAddress	Building - Building IRN



The analytical Reporting View SAP_RE_CLM_OccupancyReport (CLM Occupancy Report (RL)) provides the same data based on current date. This view is not used in the default dashboard SAP__RE_GEN_SIRE (SAP Intelligent Real Estate Management) but can be used for individual purposes.

5.3.5.4 CLM Land Site Areas Parcels Report (RL) (SAP_RE_C4RE_LandSiteReportTL)

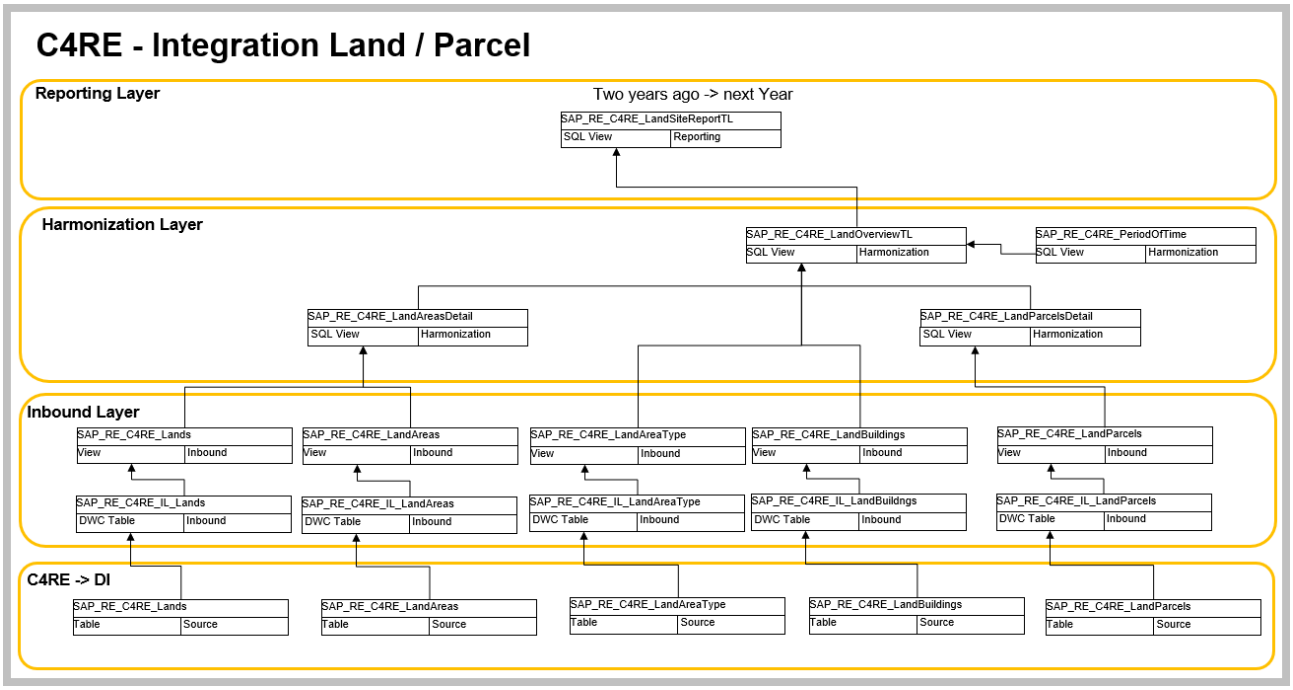
The data model SAP_RE_C4RE_LandSiteReportTL provides information about the Land and Parcels from Cloud for Real Estate that are assigned to the site.



Measures	Aggregation
Parcel Area Maintained	SUM
Parcel Area Occupied	SUM
Land Area Size	SUM
Parcels	SUM
Land/Areas	SUM
Buildings	SUM
Lands	SUM
Attributes	Settings
Date	Set as key

Year	
Land	Set as key
Site	
Site Short Name	hidden
Site Long Name	
Land ShortName	hidden
Land LongName	
Area Unit Maintained	
Area Unit Computed	
LandAreaUnit	

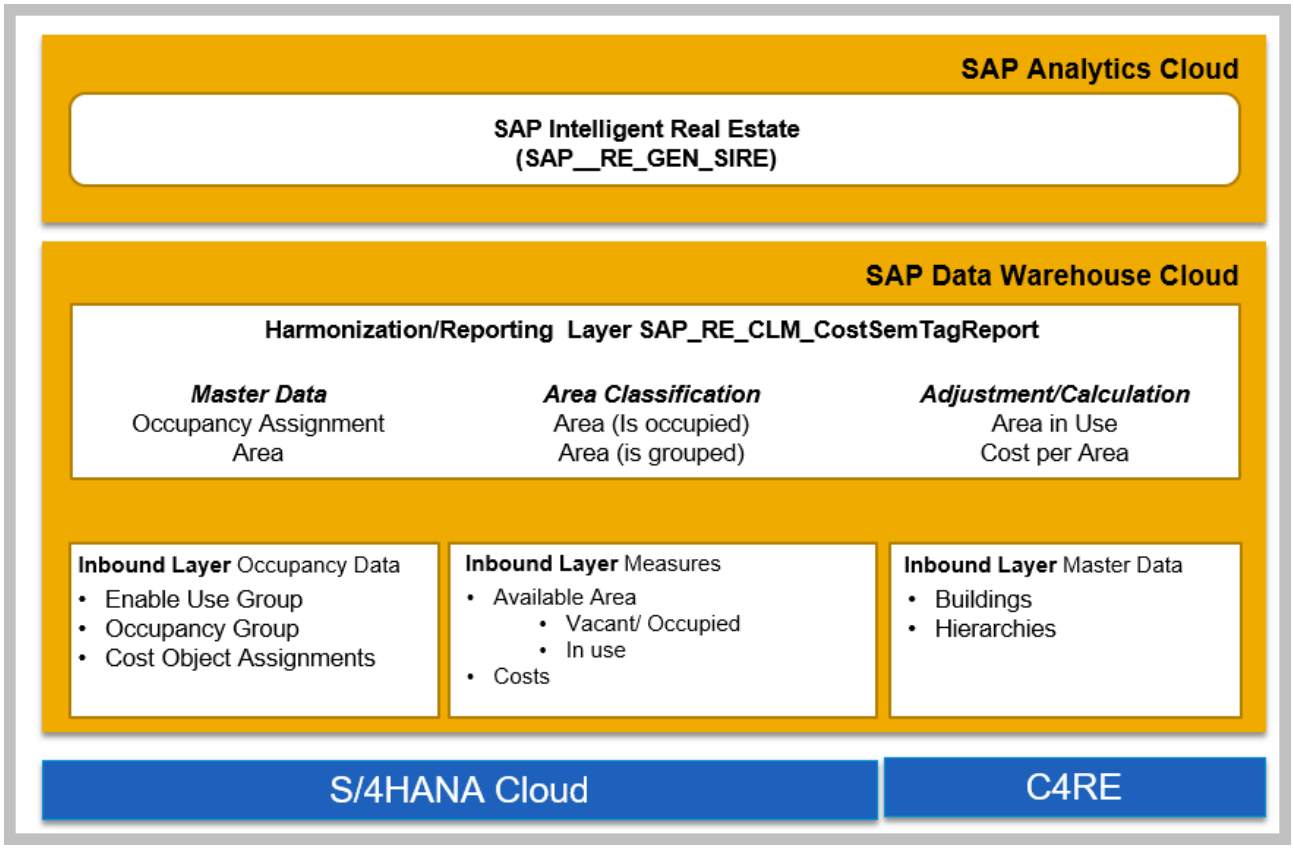
The data will be provided for 3 years in the past and 3 years in the future on a monthly aggregation.



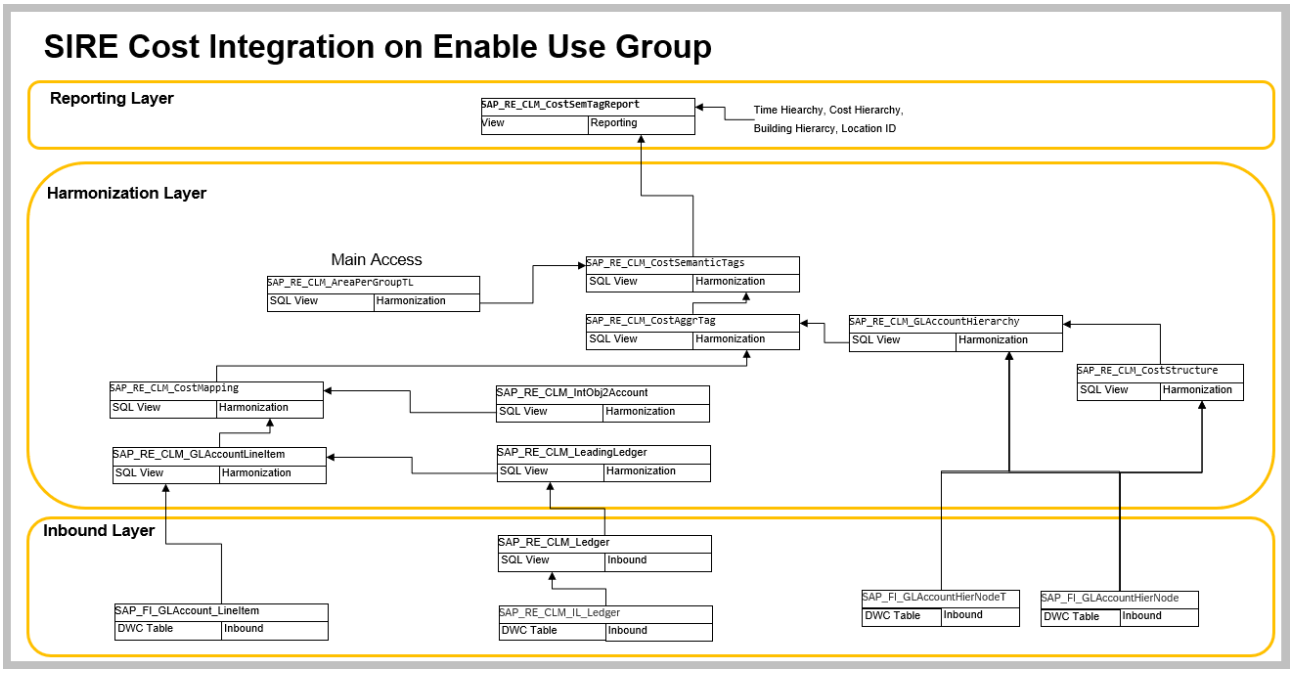
The analytical Reporting View SAP_RE_C4RE_LandSiteReport (CLM Land Site Areas Parcels Report (RL)) provides the same data based on current date.
Both views (SAP_RE_C4RE_LandSiteReport + SAP_RE_C4RE_LandSiteReportTL) are not used in the default dashboard SAP__RE_GEN_SIRE (SAP Intelligent Real Estate Management) but can be used for individual purposes.

5.3.5.5 CLM Cost Reporting Semantic Tag (RL) (SAP_RE_CLM_CostSemTagReport)

The data model SAP_RE_CLM_CostSemTagReport provides information about the Costs of a Usage Enablement Group from Finance. The assignment of the cost objects (cost center, internal order or WBS element) to the Usage Enablement Group takes place in SAP Intelligent Real Estate.



The data will be provided for 3 years in the past and 3 years in the future on a monthly aggregation.



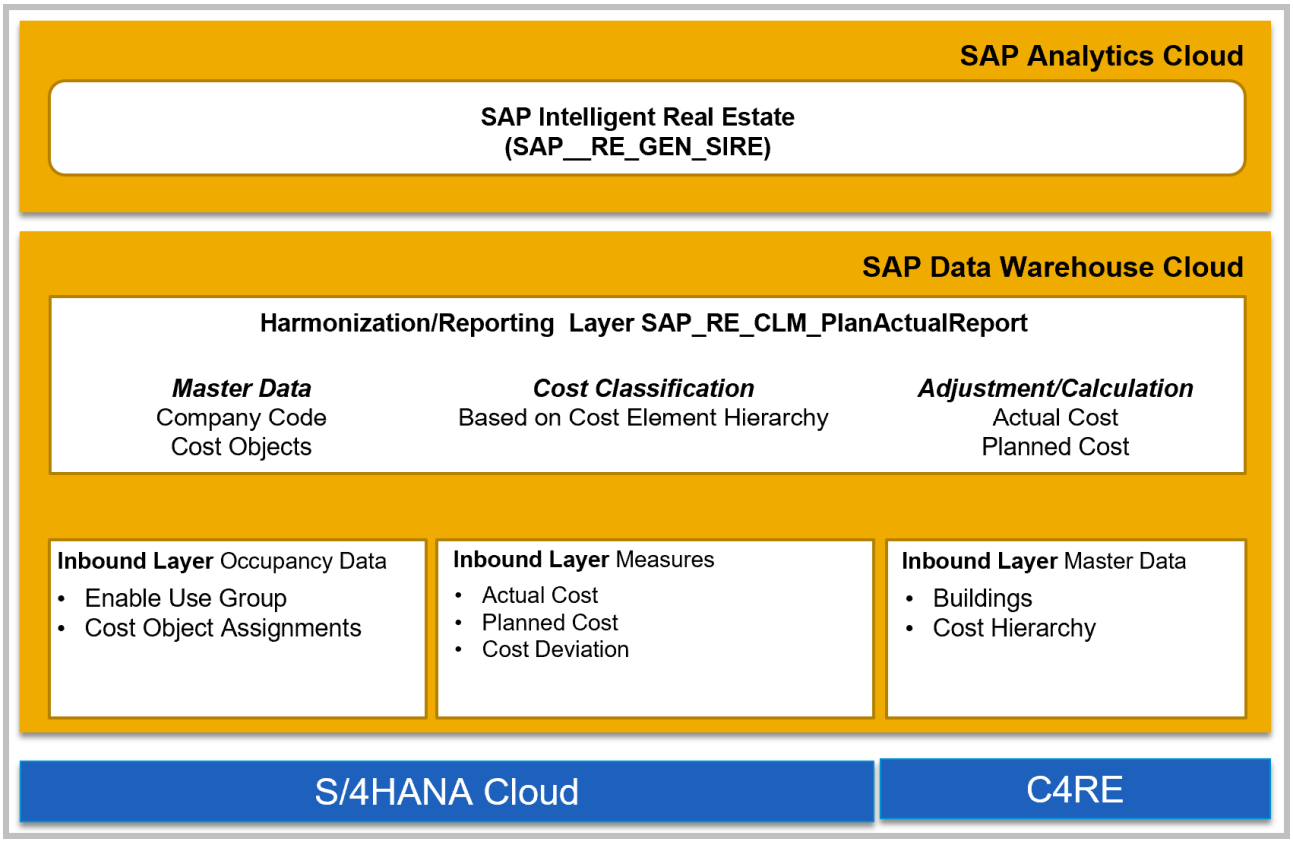
Measures	Aggregation
Area in Use	SUM
Area Not In Use	SUM
Area Occupied	SUM
Area Vacant	SUM
Number of total Workplaces	SUM
Total Cost	SUM
Capital Cost	SUM
Consumption Cost	SUM
Administrative Cost	SUM
Operation Cost	SUM
Other Cost	SUM
Counter Records	SUM
Attributes	**Settings**
Date	Set as key
Region	Set as key
Subregion	Set as key

Country	Set as key
Subdivision	Set as key
Site	Set as key
Site Long Name	hidden
Building	Set as key
Building Hierarchy	Set as key
Building Short Name	hidden
Company Code	
Actual/Plan Code	
Enable Use Group	
Ownership	
Node	
GL Account	
Chart of Accounts	
Profit Center	
Profit Center LongName	hidden
Controlling Area	
Accounting Object	
REAccountingObjectName	hidden
Accounting Object Type	
Cost Center	hidden
CostCenterName	
Internal Order	
InternalOrderDescription	hidden
WBS Element Internal ID	
WBS Description	hidden
Area Unit	
Global Currency	

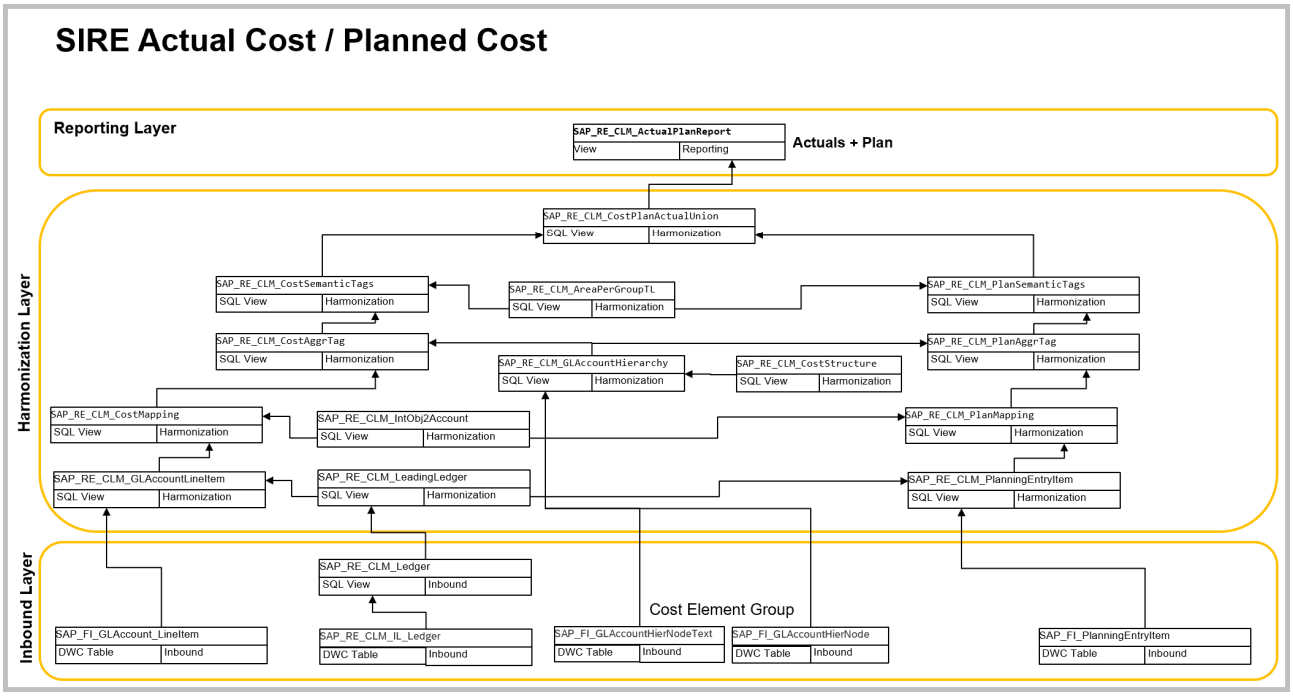
Associations	From – to	Mapping
TimeHier	To SAP.TIME.VIEW_DIMENSION_DAY	PostingDatePeriod_DATE - DATE_SQL
BuildHier	To SAP_RE_C4RE_BuildingCostHier	BuildingIRNHierarchy - Building IRN
LocationID	To SAP_RE_C4RE_BuildingLocationID	BuildingIRN - BuildingIRN
RegionDim	To SAP_RE_C4R_RegionDim	RegionID - RegionID
SubregionDim	To SAP_RE_C4R_SubregionDim	SubregionID - SubregionID
CountryDim	To SAP_RE_C4R_CountryDim	CountryID - CountryID
SubdivisionDim	To SAP_RE_C4R_SubdivisionDim	SubdivisionID - SubdivisionID
EnableUseType	To SAP_RE_CLM_SpaceGrpEnable	RESpaceGrpEnableUseType - RESpaceGrpEnableUseType
GLAccountDim	To SAP_FI_GLAccountDim	GLAccount/CompanyCode - GLAccount/CompanyCode
CostHier	To SAP_RE_CLM_CostStructure	ChartOfAccounts/Node - ChartOfAccounts/Hierarchy Node

5.3.5.6 RE CLM Actual Plan Report (RL) (SAP_RE_CLM_ActualPlanReport)

The data model SAP_RE_CLM_ActualPlanReport provides information about the actual costs and the planned costs based on a SIRE Usage Enablement Group from Finance.



The assignment of the cost objects (cost center, internal order or WBS element) to the Usage Enablement Group takes place in SAP Intelligent Real Estate.



The data will be provided for 3 years in the past and 3 years in the future on a monthly aggregation.

Measures	Aggregation
Total Costs (Actuals)	SUM
Total Costs (Plan)	SUM
Deviation (Totals)	SUM
Operational Costs (Actuals)	SUM
Operational Costs (Plan)	SUM
Consumption Costs (Actuals)	SUM
Consumption Costs (Plan)	SUM
Capital Costs (Actuals)	SUM
Capital Costs (Plan)	SUM
Administrative Costs (Actuals)	SUM
Administrative Costs (Plan)	SUM
Other Costs (Actuals)	SUM
Other Costs (Plan)	SUM
Counter Records	SUM
Attributes	Settings
Date	Set as key
Region	Set as key
Subregion	Set as key
Country	Set as key
Subdivision	Set as key
Site	Set as key
Site Long Name	hidden
Building	Set as key
Building Hierarchy	Set as key
Building Short Name	hidden
Company Code	
Company Code Name	hidden

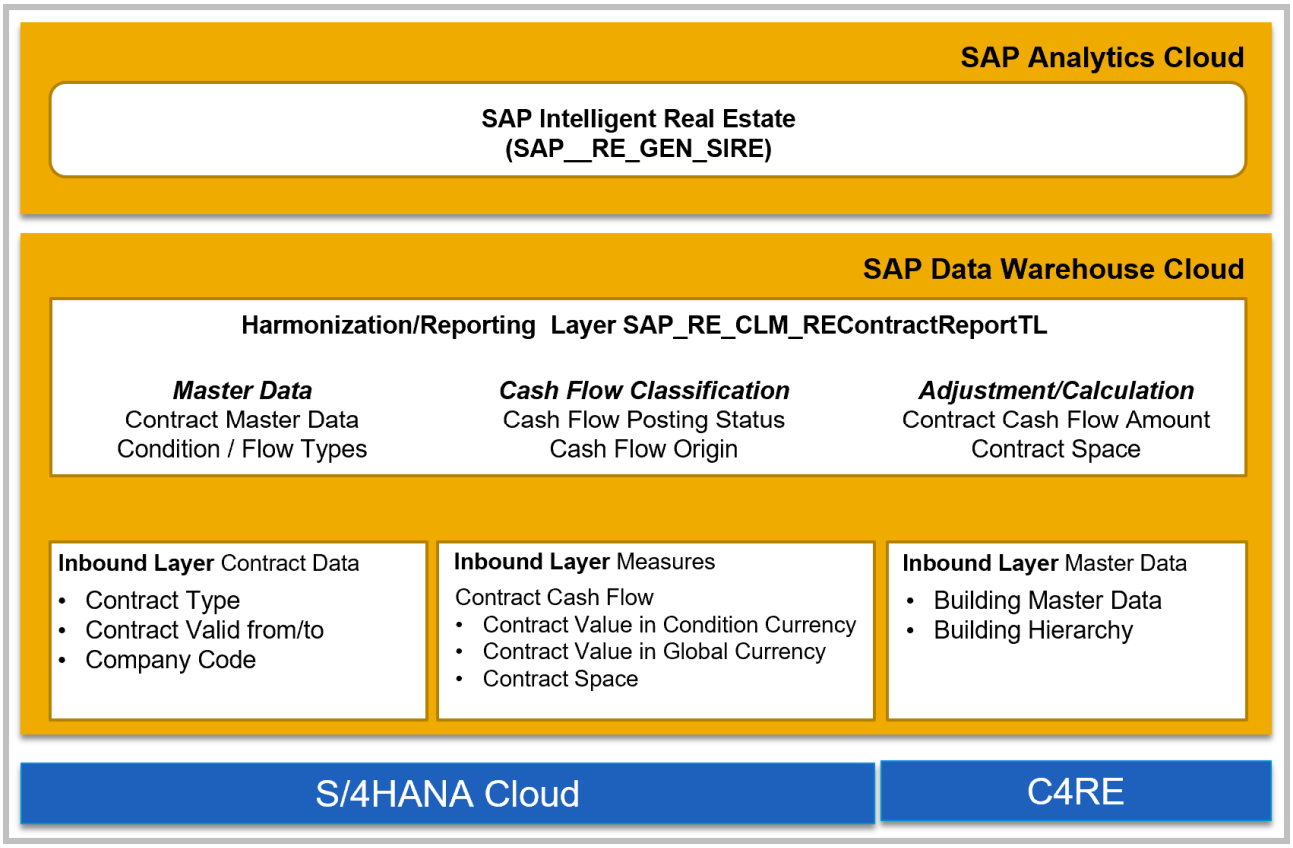
Company Code Link	Hidden
Planning Category	
Actual/Plan Code	
Enable Use Group	
Ownership	
Cost Hierarchy Level 2	
GL Account	
Chart of Accounts	
Profit Center	
Profit Center LongName	hidden
Controlling Area	
Accounting Object	
REAccountingObjectName	hidden
Accounting Object Type	
Cost Center	hidden
CostCenterName	
Internal Order	
Internal Order Description	hidden
WBS Element	
WBS Description	hidden
Global Currency	

Associations	From – to	Mapping
TimeHier	To SAP.TIME.VIEW_DIMENSION_DAY	PostingDatePeriod_DATE - DATE_SQL
BuildHier	To SAP_RE_C4RE_BuildingCostHier	BuildingIRNHierarchy - Building IRN
LocationID	To SAP_RE_C4RE_BuildingLocationID	BuildingIRN - BuildingIRN
RegionDim	To SAP_RE_C4R_RegionDim	RegionID - RegionID
SubregionDim	To SAP_RE_C4R_SubregionDim	SubregionID - SubregionID

CountryDim	To SAP_RE_C4R_CountryDim	CountryID - CountryID
SubdivisionDim	To SAP_RE_C4R_SubdivisionDim	SubdivisionID - SubdivisionID
EnableUseType	To SAP_RE_CLM_SpaceGrpEnable	RESpaceGrpEnableUseType - RESpaceGrpEnableUseType
GLAccountDim	To SAP_FI_GLAccountDim	GLAccount/CompanyCode - GLAccount/CompanyCode
PlanningCat	To SAP_RE_CLM_PlanningCategory	PlanningCategory - PlanningCategory
CostHier	To SAP_RE_CLM_CostStructure	ChartOfAccounts/Node - ChartOfAccounts/Hierarchy Node

5.3.5.7 RE CLM Contract Report TL (RL) (SAP_RE_CLM_REContractReportTL)

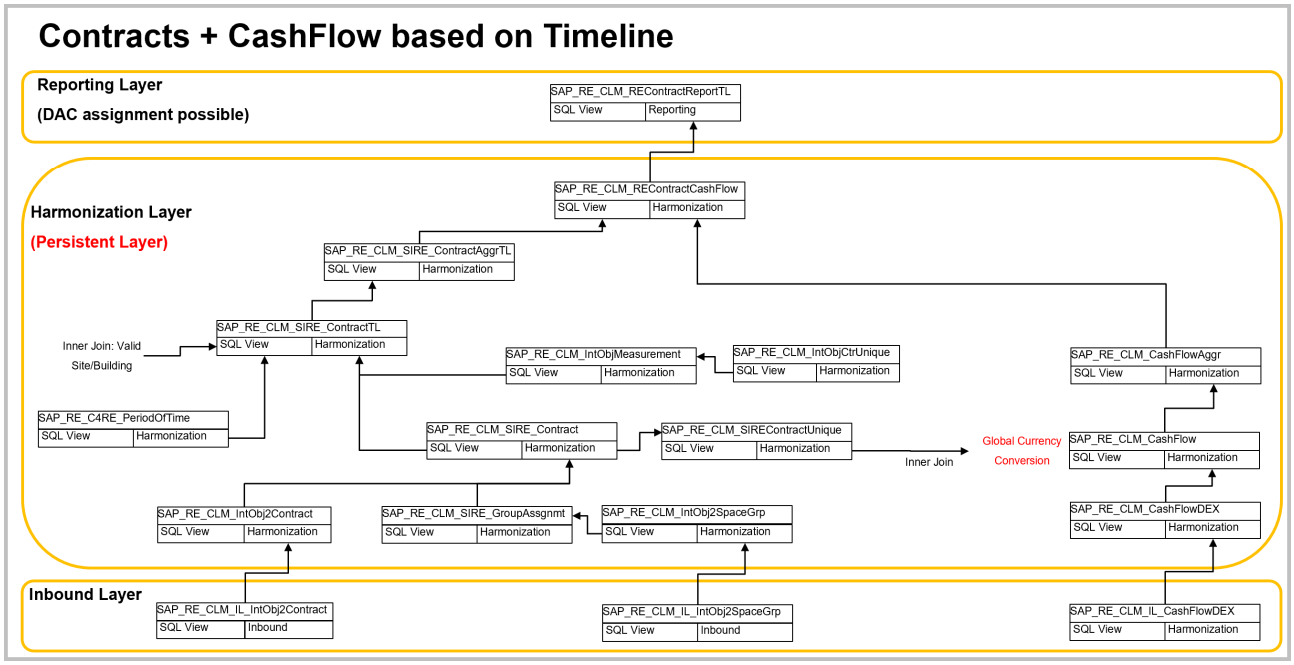
The data model SAP_RE_CLM_REContractReportTL provides information about the Lease In and Lease Out Contracts from the S/4HANA Cloud.



In addition to the general information such as the term of the contract, contract objects and reference to the contract type and company code, there are also the value flows of the contract such as the amount in condition currency and in global currency. The conditions are converted using the payment due date of the determined cash flow; the global currency of the source system is used as the target currency.

For the preparations required for currency conversion, please refer to the "SETUP CURRENCY CONVERSION" chapter in the SAP Data Warehouse Cloud Content Documentation.

The area associated with the contract and the number of data records are also available as key figures. The data is compressed at the end of each month and made available for 3 years in the past and 3 years in the future. Information on how to change the default period can be found in the "Definition of the period for the data selection" chapter.



Measures	Aggregation
Amount (Cond. Currency)	SUM
Amount (Global Currency)	SUM
Contract Measurement	SUM
Counter Records	SUM
Attributes	**Settings**
Date	Set as key
Region	Set as key
Subregion	Set as key
Country	Set as key
Subdivision	Set as key

Site	Set as key
Site Long Name	hidden
Building	Set as key
Building Hierarchy	Set as key
Building Short Name	hidden
Company Code	
Company Code Name	hidden
Real Estate Contract	Set as key
Contract Name	
Contract Type	
Contract Start Date	
Contract End Date	
Contract End (Year)	
Contract Activate Date	
Contract Is Active	
Posting Status	
CashFlowPostingStatusText	hidden
Cash Flow Origin	
RECashFlowOriginText	hidden
Flow Type	set as key
Condition Type	
REMeasurementUnit	hidden
Condition Currency	
Global Currency	

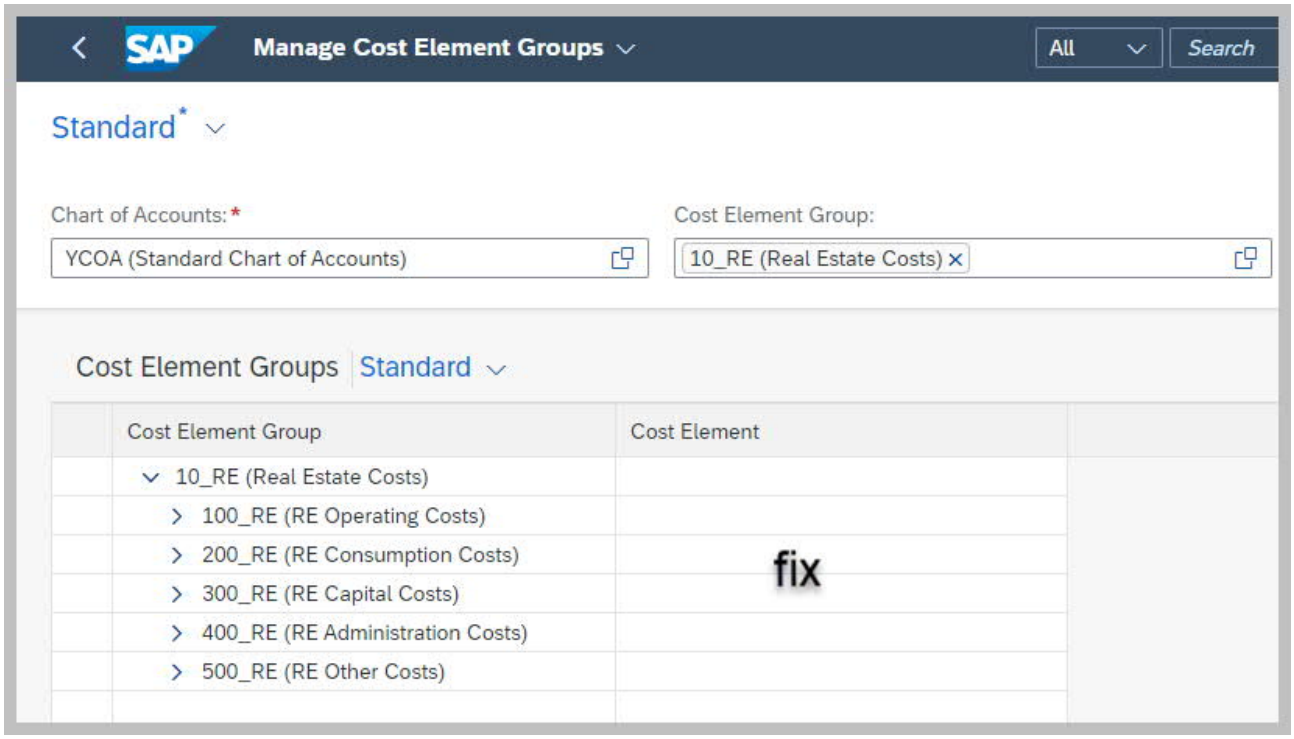
Associations	From – to	Mapping
TimeHier	To SAP.TIME.VIEW_DIMENSION_DAY	DateSelection_DATE - DATE_SQL
CashFlowType	To SAP_RE_CLM_CashFlowType	REFlowType - REFlowType
RegionDim	To SAP_RE_C4R_RegionDim	RegionID - RegionID
SubregionDim	To SAP_RE_C4R_SubregionDim	SubregionID - SubregionID

CountryDim	To SAP_RE_C4R_CountryDim	CountryID - CountryID
SubdivisionDim	To SAP_RE_C4R_SubdivisionDim	SubdivisionID - SubdivisionID
BuildingHier	To SAP_RE_C4RE_BuildingCostHier	BuildingIRNHier – BuildingIRN
ContractType	To SAP_RE_CLM_REContractType	REContractType - REContractType

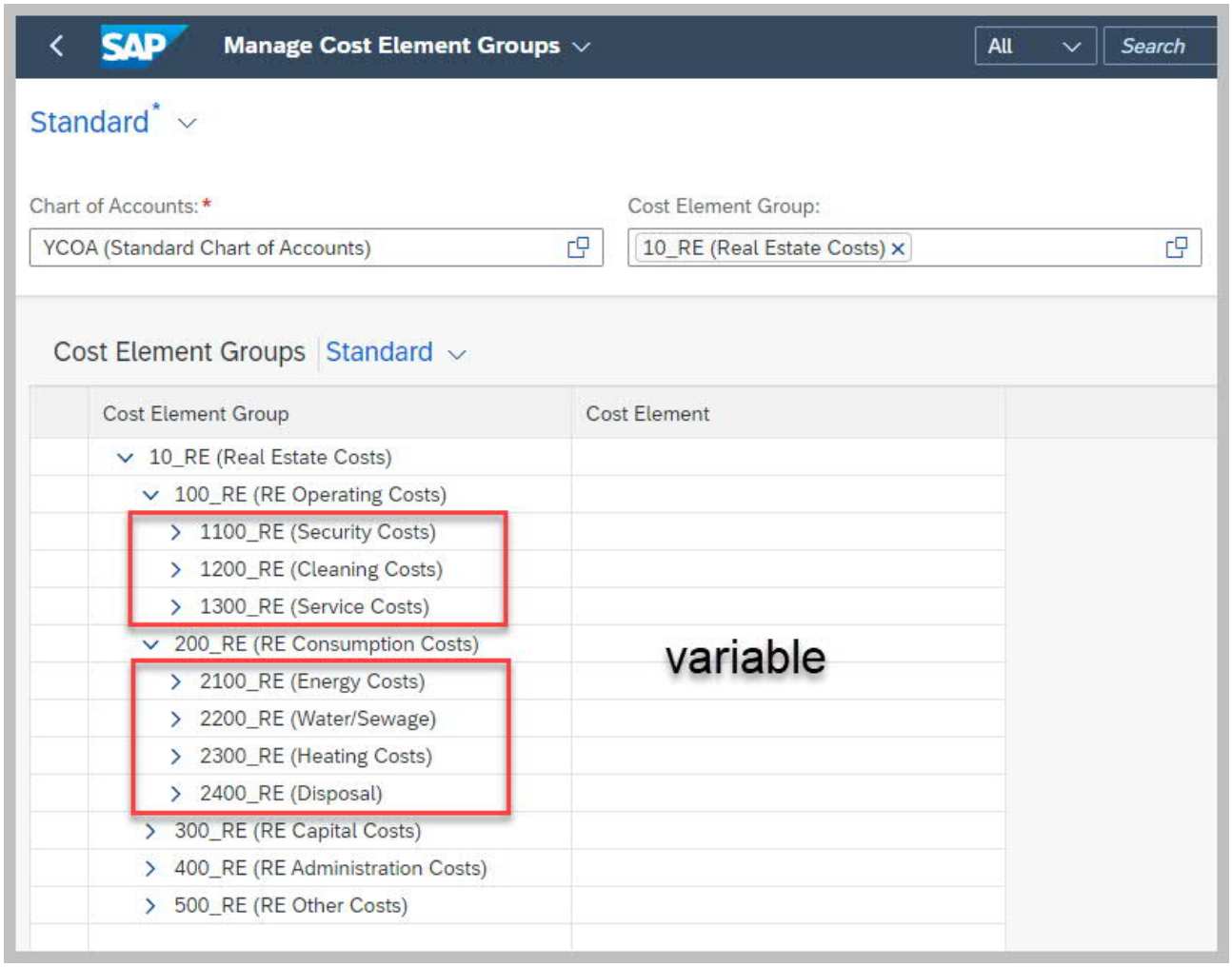
5.3.5.8 SAP S/4HANA Cloud - Cost Hierarchy

The cost element group 010_RE, which already exists in the SAP S/4HANA cloud, can be used to structure the actual and planned costs in reporting and to display them hierarchically.

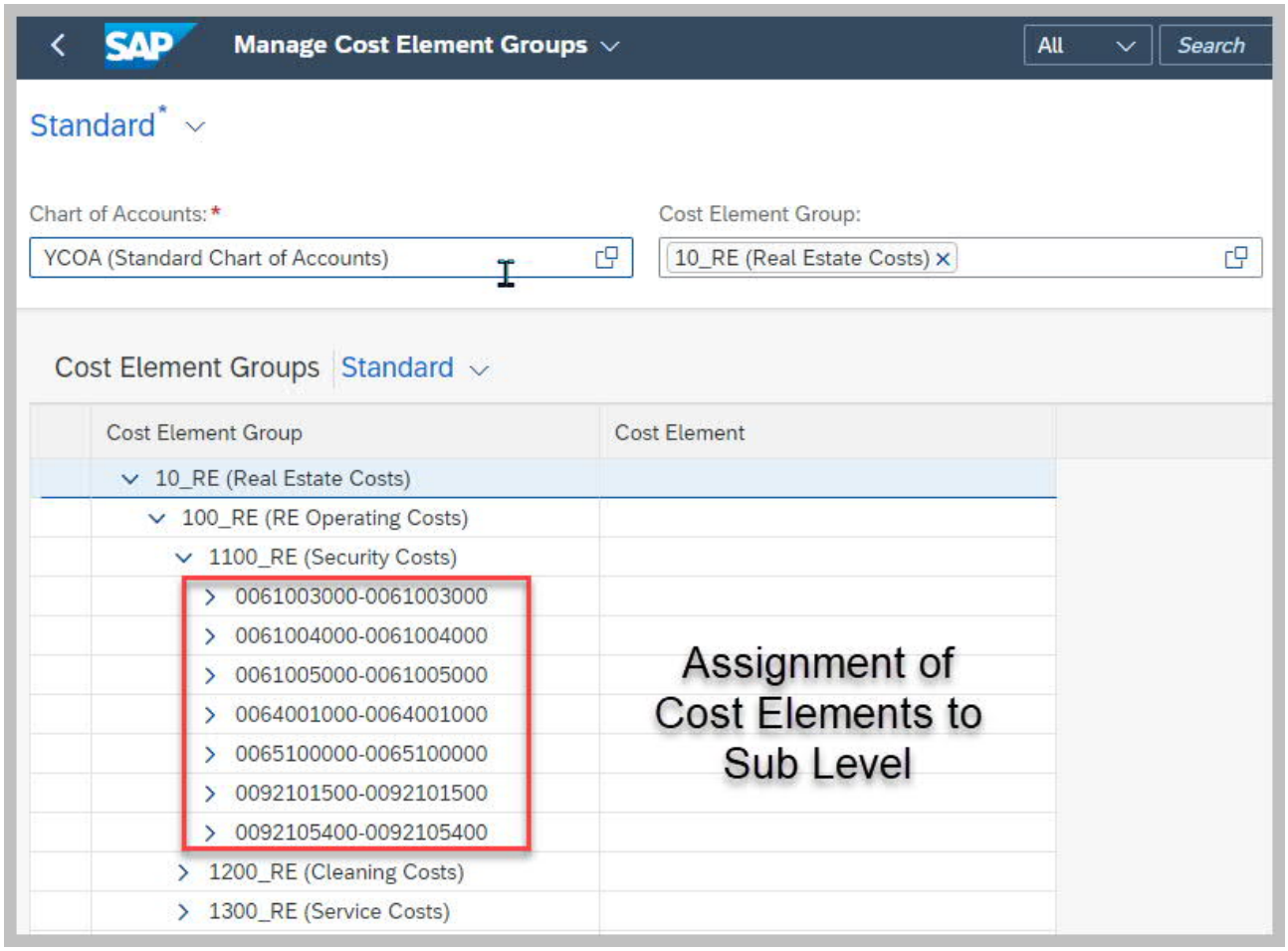
The first level of the cost element group is fixed, an extension is not possible and not supported.



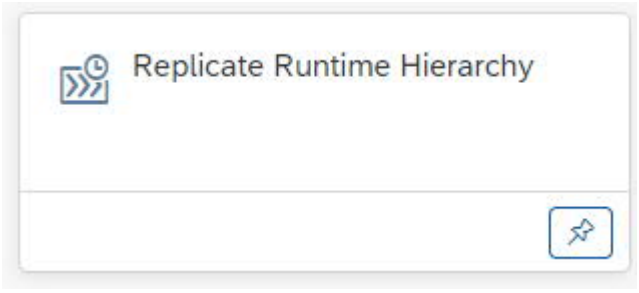
The second level can be set up and used individually.



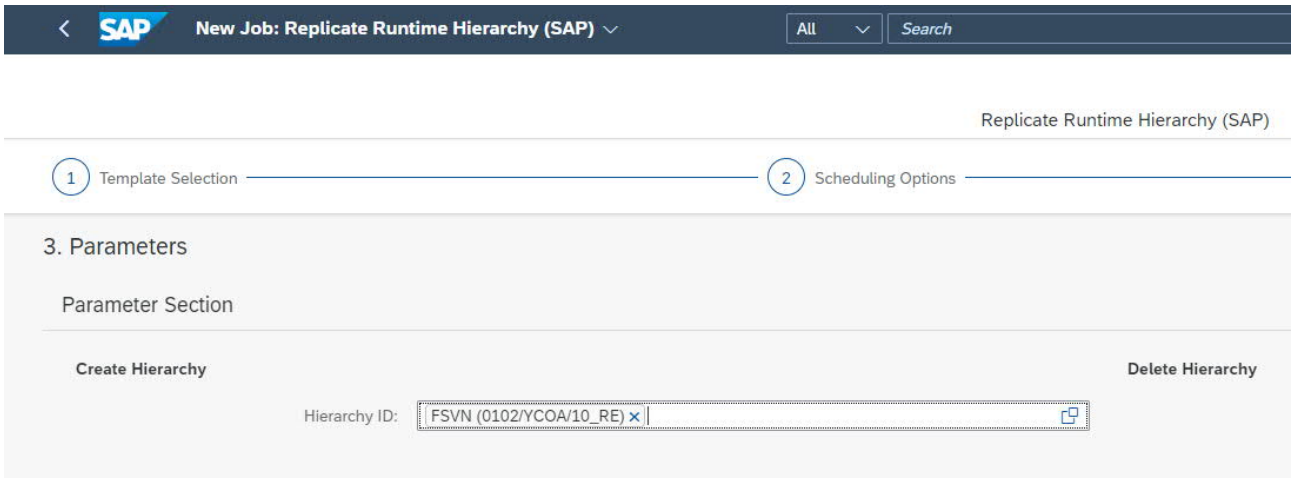
The cost elements are to be assigned on the basis of the second level. All relevant cost elements that are not assigned to a level are classified as RE OTHER COST.



In the S/4HANA Cloud System the hierarchy needs to be replicated.



In step 3 select the Hierarchy and click on ‘Schedule’:



When that is done, then start the task chain SAP RE CLM GL Account Hierarchy (TC) - SAP_RE_CLM_GLAccountHier and schedule them once a day in the data integration monitor.

5.3.5.9 SAP S/4HANA Cloud - GL Account Line Item and Planning Entry Item

The data model provides information about the Costs (Actuals and Plan) from the SAP S/4HANA Cloud Finance.

In order to always have an up-to-date overview, it is recommended to schedule the following remote tables in the SAP Data Warehouse Cloud Integration Monitor as Real Time Replication (Enable Real-Time Access):

- SAP_FI_GLAccount_LineItem
- SAP_FI_PlanningEntryItem

In this context, the following table should also be replicated from the SAP S/4HANA Cloud to the SAP Data Warehouse Cloud in the Data Integration Monitor (Remote Table Monitor). Daily scheduling of the update for this table is sufficient: SAP_FI_GLAccountHierNode

5.3.5.10 Definition of the period for the data selection

As mentioned in the chapters of the data models per default the data is read 3 years in the past and 3 years in the future, starting from the current year, in order to reduce the data volume and to improve performance in the dashboard.

If a different period is required, this can be adjusted at a central point in the data model. In this case, the view “C4RE Period of Time (HL)” (SAP_RE_C4RE_PeriodOfTime) must be adjusted. This change applies to all data models and affects the time that can be analyzed.

Proceed as follows to change the default setup:

- Navigate to view SAP_RE_C4RE_PeriodOfTime in the space SAP_CONTENT
- Change Years to look back and/or Years to look forward (currently -3 / +3)

- Save and deploy the view

Remark: In the case views on a higher level in the data model exists are persisted, you need to re-run the view persistency job to reflect the change from the view “C4RE Period of Time (HL)” (SAP_RE_C4RE_PeriodOfTime).

5.3.5.11 Task Chains

With the availability of the task chains functionality in Data Warehouse Cloud, there are two examples of task chains in the Content Package for SAP Intelligent Real Estate:

- SAP RE CLM GL Account Hierarchy (TC) – (SAP_RE_CLM_GLAccountHier)
- SAP RE CLM Persistence Layer (TC) – (SAP_RE_CLM_PersistenceLayer)

The task chain SAP RE CLM GL Account Hierarchy (TC) replicated the master data for the account hierarchy from the S/4HANA Cloud to the Data Warehouse Cloud and persisted the hierarchy in the view SAP_RE_CLM_GLAccountHierarchy. The task chain can be started when there are changes in the hierarchy in the S/4HANA Cloud or scheduled regularly.

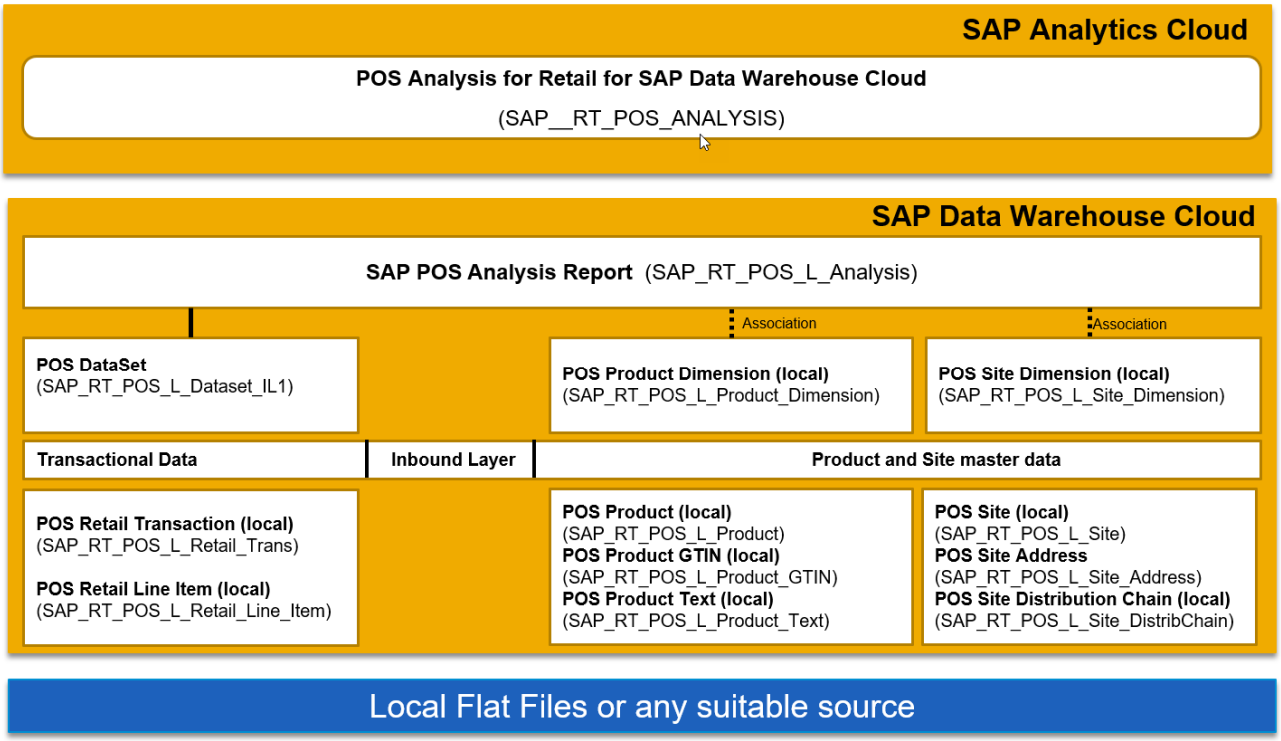
The task chain SAP RE CLM Persistence Layer (TC) persists the data under the reporting layer, so that the performance is noticeably increased. It is recommended to schedule this task chain at least once a day.

5.4 POS ANALYSIS FOR RETAIL

Analyze point-of-sale (POS) transactions – all in one place, from anywhere, and in real time with the SAP Data Warehouse solution

5.4.1 *Architecture and Abstract*

The model for the POS Analysis Cockpit is set up as with local tables of POS sample data. The idea is to enable users to play around with Retail data. It offers sales data with drilldowns into different dimensions (country, region, city) as well as different use cases (sales by category, sales by product, sales by site) can be set up.



5.4.2 *Stories*

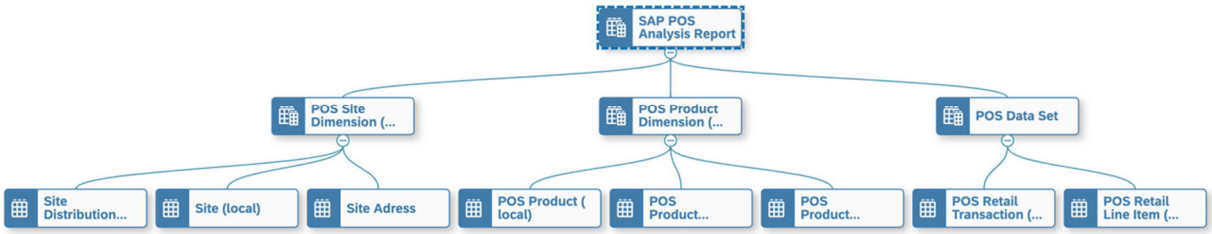
The following story is included in the content package: POS Analysis for Retail for SAP Data Warehouse Cloud (SAP__RT_POS_ANALYSIS)

Please navigate to the SAP Analytics Cloud content documentation for details.

5.4.3 *Models*

This content package is based on flat files. To enable a direct out-of-the-box start with sample data, the following data stream have been realized:

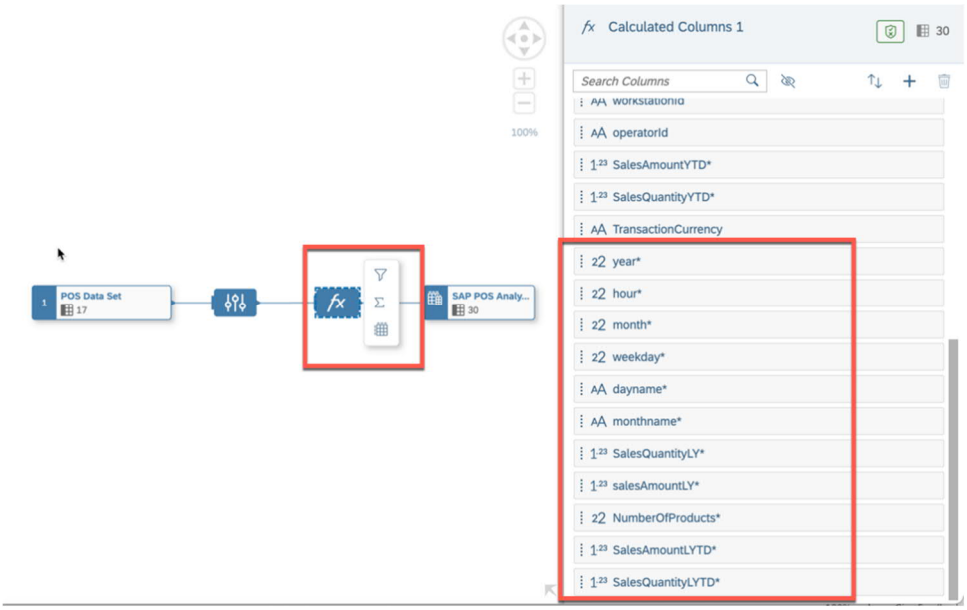
Architecture



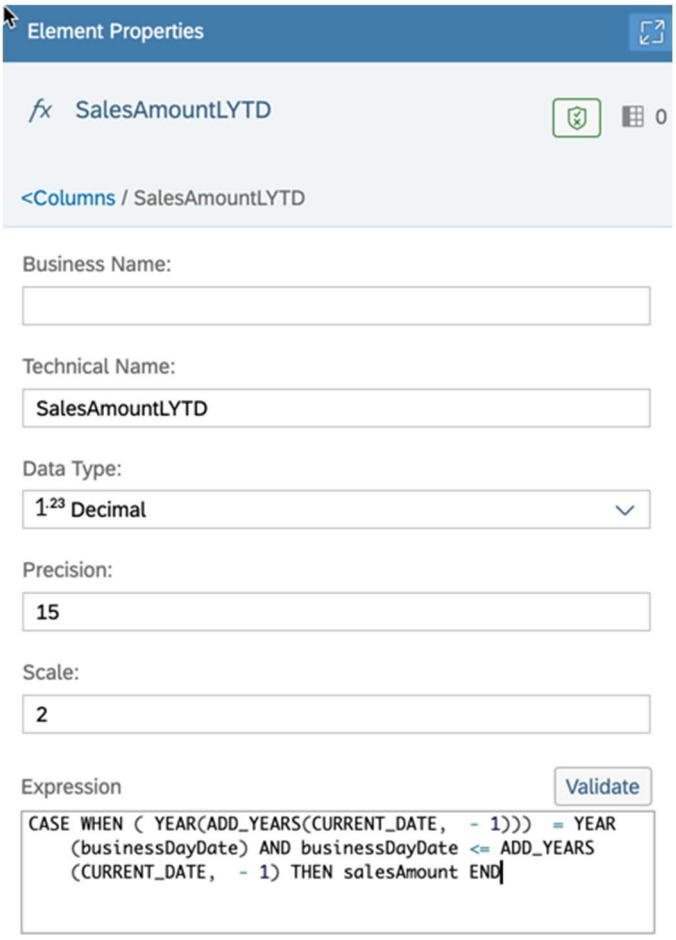
- **Layer 1**: SAP POS Analysis Report (SAP_POS_L_Analysis)

  This model is the source for the Analytics Cloud story (POS Analysis for Retail for SAP Data Warehouse Cloud).

  For reporting and business purposes, the following calculations have added:

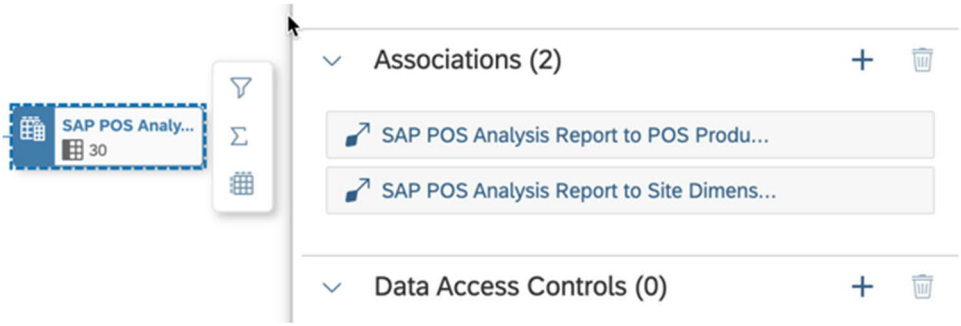


E.g. Sales Amount Last Year To Date (SalesAmountLYTD) can be used to compare this year's Sales Amount versus last year's Sales Amount for the same date range:

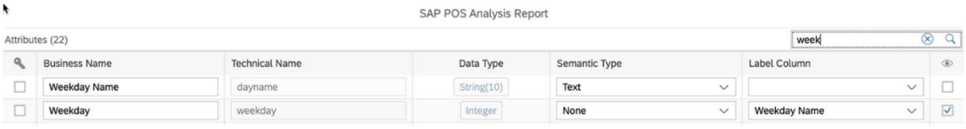


The other measure are calculated in a similar way.

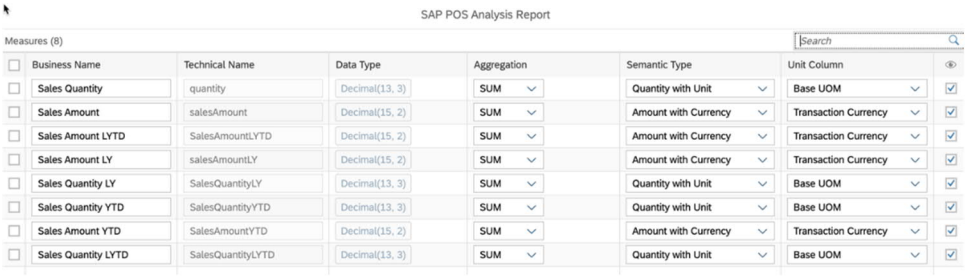
Master data dimension views for dimension “Product” and dimension “Site” are attached via Associations to the data set, to be able to report on hierarchies:



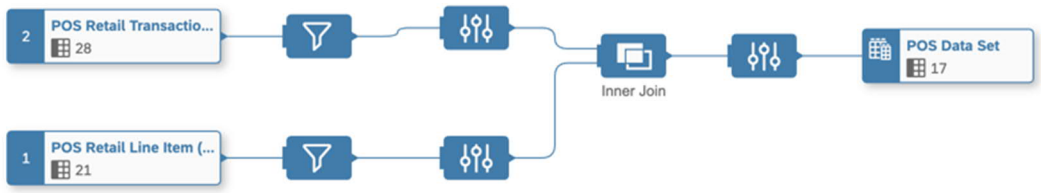
Labeling has been maintained, to guarantee a best practice customizing:



Measures have been properly determined by their Semantic Type and assigned with the corresponding Unit Column.



- **Layer 2:** SAP POS Data Set (SAP_POS_L_DataSet)



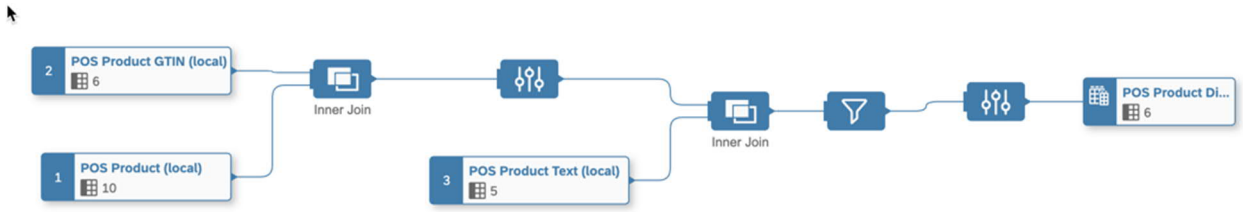
The transactional data is stored in the following two tables:

- POS Retail Transactions
- POS Retail Line Item

In the model "POS Data Set" both are joined and filtered accordingly to fulfill reporting requirement.

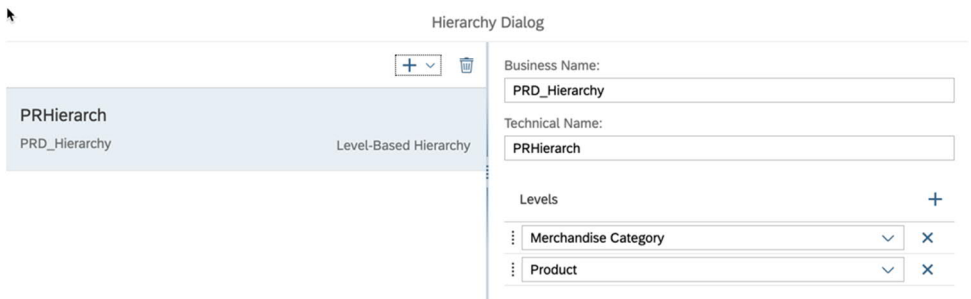
Layer 3: Master data

- **Layer 3.1:** SAP_POS_L_Product_Dimension

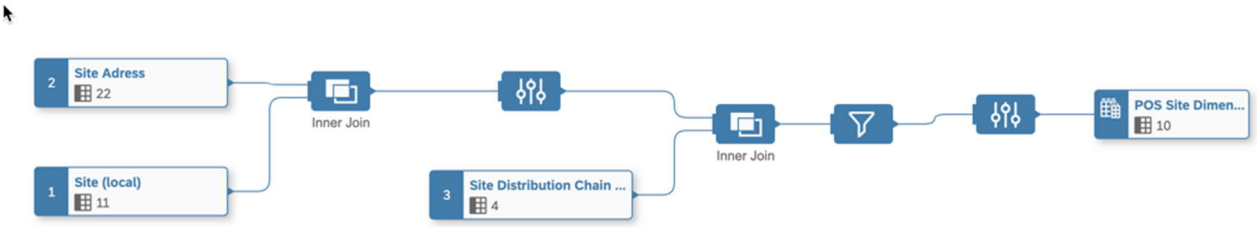


For the local product dimension (SAP_POS_L_Product_Dimension), SAP_POS_ _L_Product, SAP_POS_L_Product_Text and SAP_POS_L_Product_GTIN are joined.

In addition, the following master data hierarchy was defined:

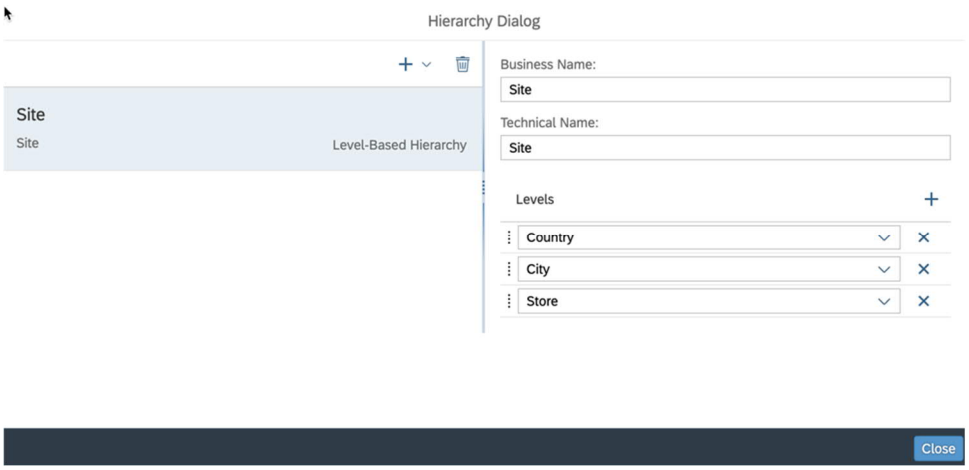


- **Layer 3.2:** SAP_POS_L_Site_Dimension



For the local site dimension (SAP_POS_L_Site_Dimension), SAP_POS_L_Site, SAP_POS_L_Site_DistribChain and SAP_POS_L_Site_Text, are joined.

In addition, the following master data hierarchy was defined:



5.4.4 *Setup content with local dataset*

Pre-requisite: You have successfully imported the content package into your Data Warehouse Cloud system and you have downloaded the CSV-files from GitHub here.

Finally upload data to the following local tables:

Files (9)

Business Name	Technical Name	Type
POS Site (local)	SAP_RT_POS_L_Site	Local Table (Relational Dataset)
POS Product (local)	SAP_RT_POS_L_Product	Local Table (Relational Dataset)
POS Site Adress	SAP_RT_POS_L_Site_Address	Local Table (Relational Dataset)
POS Retail Transaction (local)	SAP_RT_POS_L_Retail_Trans	Local Table (Relational Dataset)
POS Product GTIN (local)	SAP_RT_POS_L_Product_GTIN	Local Table (Relational Dataset)
POS Product Text (local)	SAP_RT_POS_L_Product_Text	Local Table (Relational Dataset)
POS Site Distribution Chain (local)	SAP_RT_POS_L_Site_DistribChain	Local Table (Relational Dataset)
POS Retail Line Item (local)	SAP_RT_POS_L_Retail_Line_Item	Local Table (Relational Dataset)

You have successfully installed the content package. You may now run the SAP Analytics Cloud story to explore the content based on sample data.

5.5 SUPPLY CHAIN MANAGEMENT FOR LIFE SCIENCES (SCM-LS)

This package covers the business scenario “Supply Chain Management for Life Sciences” of the Life Sciences Industry. It is based on data from SAP S4/HANA.
This package is a foundation for Supply Chain scenarios, the content currently covers Sales Order, Purchasing Order, Production Order and Transportation Order Data, which serve as building block for future enhancements.
Depending on the release of your SAP S/4HANA system, different implementation steps are necessary.
The content has been designed to work with the SAP S/4HANA release 2021.
To use the content with SAP S/4HANA release 2020, please follow the instructions in the chapter “Prerequisites for SAP S/4HANA release 2020”.
Older releases are not supported, as this would require too many manual efforts in SAP S/4HANA.

5.5.1 *Prerequisites for SAP S/4HANA release 2020*

For SAP S/4HANA release 2020, the following activities are required before you can deploy the content:

5.5.1.1 Transaction Data (Release OP2020)

The package uses the following CDS-Views:

- C_SALESDOCUMENTITEMDEX_1 (CSDSLSDOCITMDX1)
- C_BILLINGDOCITEMBASICDEX_1 (CSDBILDOCITMBDX1)

The two CDS-Views have replaced the previous views C_SALESDOCUMENTITEMDEX (CSDSLSDOCITMDX) and C_BILLINGDOCUMENTITEMBASICDEX (CSDBILDOCITMBCDX), which will be deprecated in a future release.

Those two CDS-Views are available with OP2020 SP03 or with corrections instructions in SAP Note 3070845. Either apply the relevant service pack or the SAP Note 3070845 in the SAP S/4HANA system before you deploy the content in SAP Data Warehouse Cloud.

5.5.1.2 Master Data (Release OP2020)

The following CDS-Views are not extraction enabled in release OP2020 and can therefore not be used for extraction:

- I_Plant
- I_StorageLocation
- I_PaymentMethod

Any warning during import related to these three CDS-Views can be ignored.
The following steps have to be taken before the deployment of the content:

The dimension views for these master data are associated to the Analytical Datasets *SAP_SD_RL_SalesDocumentItem*, *SAP_SD_RL_BillingDocumentItem, SAP_SCM_RL_InboundScenarioBsc, SAP_SCM_HL_PurchaseOrders and SAP_SCM_HL_ManufactrgOrder.*

Please remove the following associations:

- Production Plant to Plant Attribute View (ProdPlant) (SAP_MM_Plant) in the Analytical Dataset *SAP_SCM_HL_ManufactrgOrder* before deploying this view.

Please remove the following associations:

- Storage Location to Storage Location Master Data View (StorageLoc) (*SAP_LO_StorageLocation)*
- Plant to Plant Master Data View (Plant) (*SAP_MM_Plant)* in the Analytical Datasets *SAP_SD_RL_SalesDocumentItem, SAP_SCM_RL_InboundScenarioBsc and SAP_SCM_HL_PurchaseOrders* before deploying these views.

Please remove the following associations

- Storage Location to Storage Location Master Data View (StorageLoc) (*SAP_LO_StorageLocation*)
- Plant to Plant Master Data View (Plant) (*SAP_MM_Plant)*
- Payment Method to Payment Method for Country/Region Master Data View (PayMethod) (*SAP_FI_PayMethodCountryRegion)*

in the Analytical Dataset *SAP_SD_RL_BillingDocumentItem* before deploying this view.

Find the full stack for these views below for you reference (from the source to the dimension)

Type	Name	Technical Name
CDS-View	Plant - Master Data Attributes	I_PLANT
Remote Table	Plant - Master Data Attributes + Text	IPLANT
Relational Dataset	Plant - Attr + Text (IL)	SAP_MM_IL_PLANT
Dimension	Plant	SAP_MM_Plant
CDS-View	Storage Location	I_STORAGELOCATION
Remote table	Storage Location Attr + Text	ISTORAGELOCATION
Relational Dataset	Storage Location Attr + Text (IL)	SAP_LO_IL_ISTORAGELOCATION
Dimension	Storage Location	SAP_LO_StorageLocation
CDS-View	Payment Method	I_PAYMENTMETHOD
Remote table	Payment Method Attr + Text	IFIPAYMENTMETHOD
Relational Dataset	Payment Method Attr + Text (IL)	SAP_FI_IL_IFIPAYMENTMETHOD
Dimension	Payment Method	SAP_FI_PayMethodCountryRegion

<u>Alternative: Create a custom CDS-views</u>

Instead of removing the dependency to those three views in your release OP2020, an alternative is to create two custom CDS-Views by copying the original CDS-Views. The copies have to be extraction enabled. In SAP Data Warehouse Cloud, create remote tables based on the custom CDS-Views. Then replace the remote tables delivered in the content in the following views with the new remote tables:

- Plant Attr + Text (IL) *SAP_MM_IL_PLANT,*
- Storage Location Attr + Text (IL) *SAP_LO_IL_ISTORAGELOCATION and*
- Payment Method Attr + Text (IL) *SAP_FI_IL_IFIPAYMENTMETHOD.*

5.5.2 ***Architecture and Abstract (SCM-LS)***

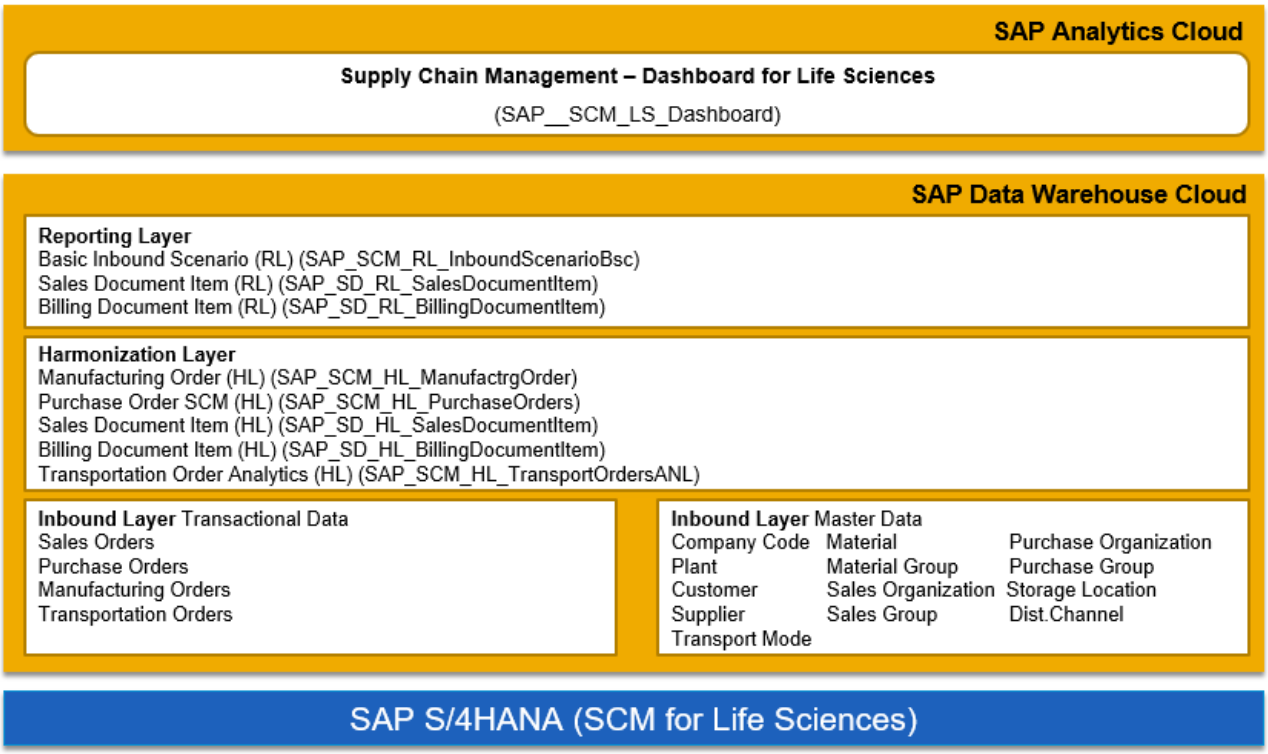
The models are set up as live connections to an SAP S/4HANA system, with views covering multiple areas:

- Sales and Billing Documents
- Purchase Orders
- Transportation Orders
- Manufacturing Orders
- Master Data

The transaction data models have been developed leveraging SAP Data Warehouse Cloud virtualization capabilities in three distinct layers :

- An inbound layer view (SAP_xx_IL*) that is in most parts a mirror of the CDS view / remote table from SAP S/4HANA.
- A harmonized layer view (SAP_xx_HL*), which uses the inbound layer view and enhances it with restricted key figures and filters / logic.
- A reporting layer view (SAP_xx_RL*), which uses the harmonization layer view and adds calculated key figures and master data associations for attributes and texts.

Architecture



5.5.3 *Stories*

The following story is included in the content package: Life Sciences Supply Chain Dashboard (SAP__SCM_LS_Dashboard).

The following SAP Data Warehouse Cloud models are used in the story:

- Basic Inbound Scenario (RL) (SAP_SCM_RL_InboundScenarioBsc)
- Transportation Order Analytics (HL) (SAP_SCM_HL_TransportOrdersANL)
- Manufacturing Order (HL) (SAP_SCM_HL_ManufactrgOrder)
- Sales Documents (RL) (SAP_SD_RL_SalesDocumentItem)
- Billing Documents (RL) SAP_SD_RL_BillingDocumentItem)

Please navigate to the SAP Analytics Cloud content documentation for details.

5.5.4 ***Models***

5.5.4.1 Master Data

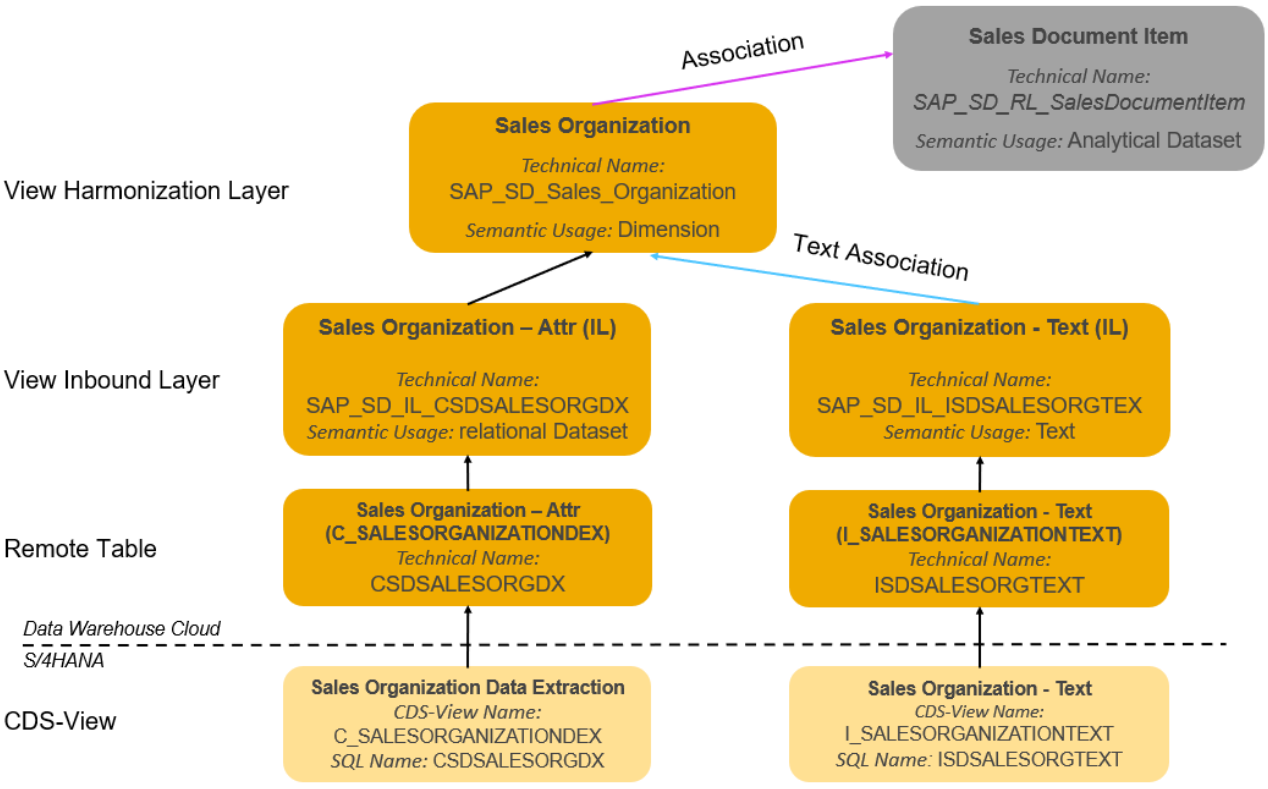
Master data comes in different flavors:

- Master data with attributes and texts
- Master data with text only and without attributes

Either the views for attributes and texts are distinct views or attributes and texts are combined in one view only. Therefore the master data models and the modelling in Data Warehouse Cloud need to be slightly adapted per case.

Master data views have been created following SAP Data Warehouse Cloud modelling guidelines and best practices:

Case 1: Master data – attributes and texts; separate CDS-Views for attributes and texts

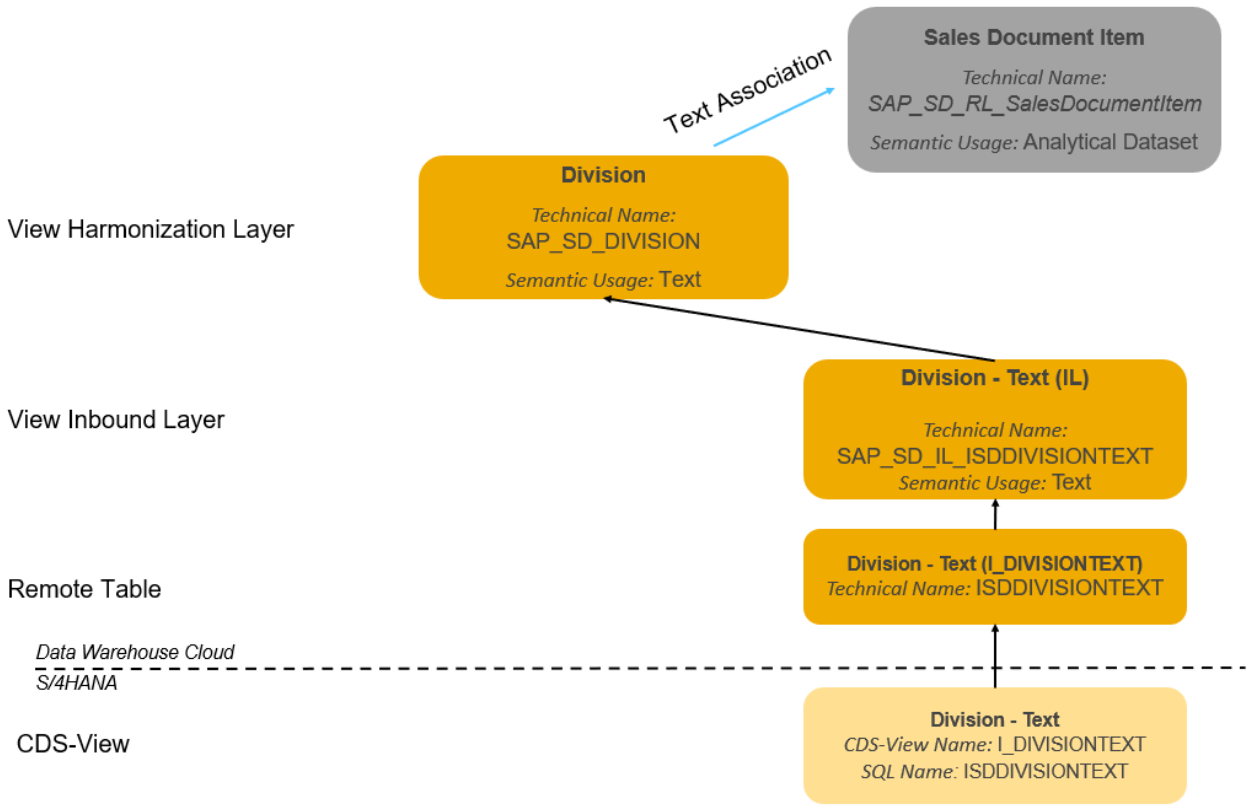


- The remote tables are the 1:1 representation of the SAP S/4HANA CDS-views for master data and text CDS-views.
- The inbound layer views use the remote tables, sometimes data type adjustments e.g. for language, are necessary.
- The harmonization layer view brings master data and text together using text association and is of semantic type: Dimension. This view is then associated to the relevant transaction data in the transaction data reporting layer view

Case 2: Master data – text only, one CDS-View for texts

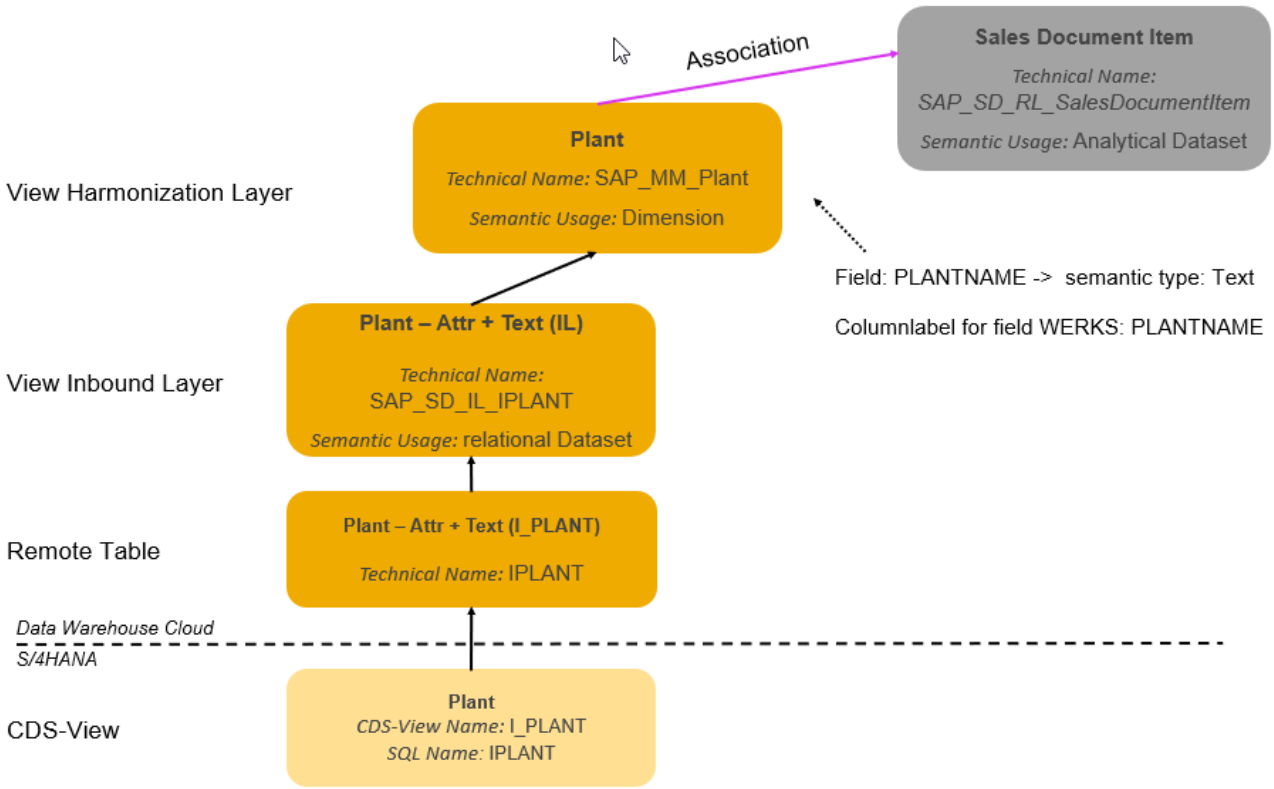
For master data without attributes - text only - the harmonization layer view is directly based on the inbound layer text view and its semantic type is “Text”.

This view is associated to the relevant transaction data in the transaction data reporting layer view as a text association.



Case 3: Master data – attributes and texts; one CDS-View for attributes incl. not language dependent texts

Within the harmonization layer view, the field containing the text is set to semantic type “text” and entered as a column label for the respective key field.
This view is associated to the relevant transaction data in the transaction data reporting layer view.



5.5.4.2 Currency Conversion

For general instructions how to setup the Currency Conversion initially and which standard setting apply, please refer to the chapter 3.5 Setup Currency Conversion.

All amount key figures are provided in document currency as well as company code currency in the reporting layer views or harmonization layer views.

In the SAP Analytics Cloud stories only the key figures in company code currency are used, to allow for a meaningful aggregation. To ensure this, a filter on Company Code is mandatory and of single value.

Please adapt the story filter in the data model if you want to analyze more than one Company Code at a time. Depending on the Company Code Currency of the Company Codes, adapt the currency conversion to meet your requirements and to not add up different currencies accidentally.

5.5.4.3 Sales Document Item

Sales Document Item information are based on the view “Sales Document Item (RL)” (SAP_SD_RL_SalesDocumentItem) from the Sales and Distribution (SD) content. Find the documentation in chapter 4.3 Sales and Distribution: Sales Analysis for SAP S/4HANA on-premise.

5.5.4.4 Billing Document Item

Billing Document Item information are based on the view “Billing Document Item (RL)” (SAP_SD_RL_BillingDocumentItem) from the Sales and Distribution (SD) content. Find the documentation in chapter 4.3 Sales and Distribution: Sales Analysis for SAP S/4HANA on-premise.

5.5.4.5 Purchase Orders

Note: The Purchasing Model can only be used, if the extracted Purchasing orders do not contain any Purchase order return items.

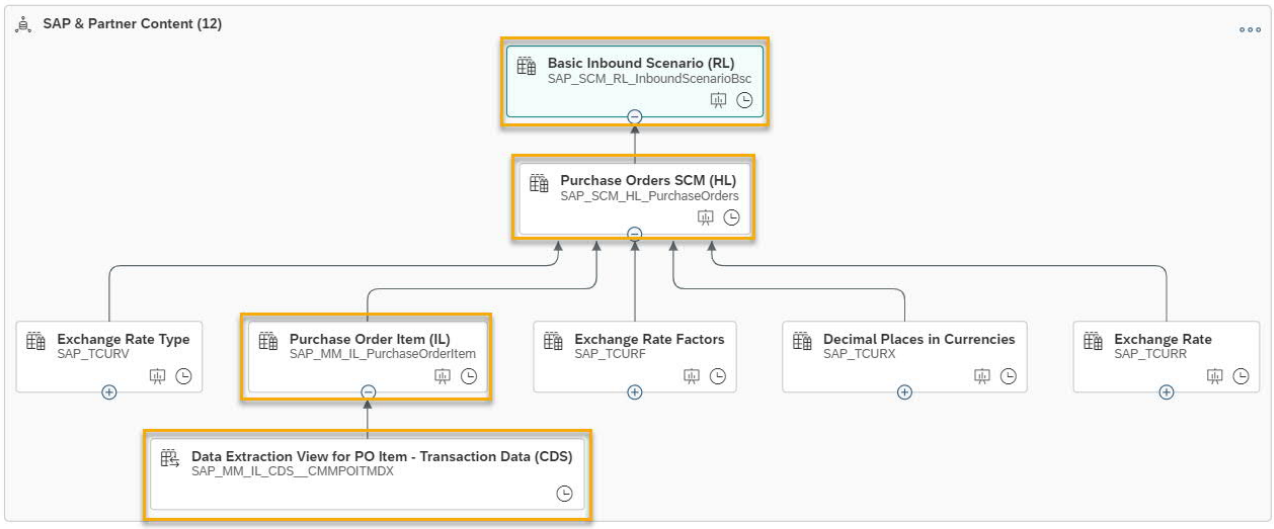


Figure 1 Data Model for Purchase Orders

Data Extraction View for PO Item - Transaction Data (CDS)

The remote table *Data Extraction View for PO Item - Transaction Data (CDS)* (SAP_MM_IL_CDS__CMMPOITMDX) is based on the CDS-View Data Extraction View for PO Item *(technical Name C_PURCHASEORDERITEMDEX, SQL Name* CMMPOITMDX*)* from SAP S/4HANA. For productive use consider replication the data to SAP Data Warehouse Cloud for better reporting performance.

Purchase Order Item (IL)

The *Purchase Order Item (IL)* (SAP_MM_IL_PurchaseOrderItem) view lies in the Inbound Layer and builds on the remote table *Data Extraction View for PO Item - Transaction Data (CDS)* (SAP_MM_IL_CDS__CMMPOITMDX).

In this model date information is converted to the data type “Date” e.g.

- Field: "Purchase Order Date":
- Expression: TO_DATE(PURCHASEORDERDATE)

Purchase Orders SCM (HL)

The *Purchase Orders SCM (HL)* (SAP_SCM_HL_PurchaseOrders) view lies in the harmonization layer. It builds on the transactional data coming from *Purchase Order Item (IL)* (SAP_MM_IL_PurchaseOrderItem).

Date fields are renamed to …_date to support date functions and capabilities of SAP Analytics Cloud.

Measures with an amount are converted from Document Currency to Company Code Currency using a currency conversion column.

The following master data views are associated to this model

- Company Code (SAP_FI_Company_Code)
- Storage Location (SAP_LO_StorageLocation)
- Plant (SAP_MM_Plant)
- Product Group (SAP_LO_ProductGroup)
- Product (SAP_LO_Product)
- Supplier (SAP_LO_Supplier)
- Purchasing Organization (SAP_MM_PurchasingOrganization)
- Purchasing Group (SAP_MM_Purchasing_Group)

All date fields are associated to the Time Dimension Day - view (SAP.TIME.VIEW_DIMENSION_DAY).

Basic Inbound Scenario (RL)

The view Basic Inbound Scenario (RL) (SAP_SCM_RL_InboundScenarioBsc) is used in the SAP Analytics Cloud story *Life Sciences Supply Chain Dashboard* (SAP__SCM_LS_Dashboard).

The view lies in the reporting layer.

The following master data views are associated to this model

- Company Code (SAP_FI_Company_Code)
- Storage Location (SAP_LO_StorageLocation)
- Plant (SAP_MM_Plant)
- Product Group (SAP_LO_ProductGroup)

- Product (SAP_LO_Product)
- Supplier (SAP_LO_Supplier)
- Purchasing Organization (SAP_MM_PurchasingOrganization)
- Purchasing Group (SAP_MM_Purchasing_Group)

All date fields are associated to the Time Dimension Day- View (SAP.TIME.VIEW_DIMENSION_DAY).

The projection node is used to reduce the number of fields projected in the final view. In the calculated columns, a line item counter for purchase order item is added.

5.5.4.6 Transportation Orders

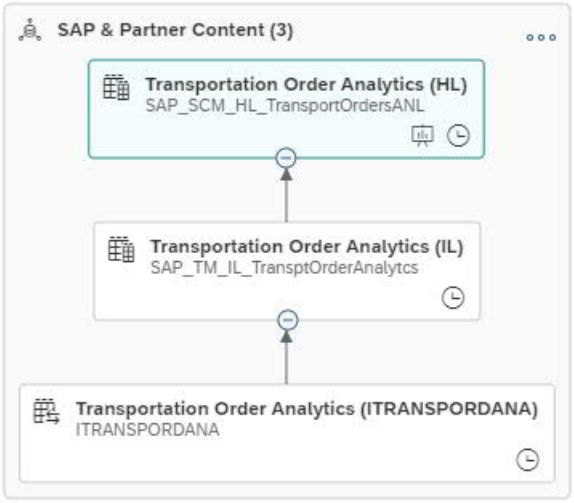


Figure 2 Data Model for Transportation Orders

Transportation Order Analytics (ITRANSPORDANA)

The remote table *Transportation Order Analytics (ITRANSPORDANA)* (ITRANSPORDANA) is based on the CDS-View *Transportation Order Analytics (technical Name I_TRANSPORTATIONORDERANALYTICS, SQL Name* ITRANSPORDANA*)* from SAP S/4HANA. For productive use consider replication the data to SAP Data Warehouse Cloud for better reporting performance.

Transportation Order Analytics (IL)

The *Transportation Order Analytics (IL)* (SAP_TM_IL_TransptOrderAnalytcs) view lies in the inbound layer and builds on the remote table *Transportation Order Analytics* (ITRANSPORDANA).

In this model date information is converted to the data type “Date” e.g.

- Field "Transport Order Creation Date":
- TO_DATE(TRANSPORDCREATIONDATE)

Transportation Order Analytics (HL)

The *Transportation Order Analytics (HL)* (SAP_SCM_HL_TransportOrdersANL) view lies in the harmonization layer and is used in the SAP Analytics Cloud story *Life Sciences Supply Chain Dashboard* (SAP__SCM_LS_Dashboard).
It builds on the transactional data coming from the view *Transportation Order Analytics (IL)* (SAP_TM_IL_TransptOrderAnalytcs).
Date fields are renamed to …_date to support date functions and capabilities of SAP Analytics Cloud. In addition the number of fields projected in the final view is reduced in this node.

In the filter node the data is restricted to the completed freight orders (TRANSPORTATIONORDERCATEGORY = 'TO' and TRANSPORDLIFECYCLESTATUS = '05')

The following master data views are associated to this model

- Carrier (SAP_MD_Business_Partner)
- Consignee (SAP_MD_Business_Partner)
- Transportation Order Lifecycle Status (SAP_TM_TranspOrderLifeCycleSta)

All date fields are associated to the Time Dimension Day- View (SAP.TIME.VIEW_DIMENSION_DAY).

5.5.4.7 Manufacturing Orders

Figure 3 Data Model for Manufacturing Orders

Manufacturing Order Item

The remote table *Manufacturing Order Item* (IMFGORDERITEM) is based on the CDS-View Manufacturing Order Item *(technical Name I_MANUFACTURINGORDERITEM, SQL Name* IMFGORDERITEM*)* from SAP S/4HANA. For productive use consider replication the data to SAP Data Warehouse Cloud for better reporting performance.

Manufacturing Order Item (IL)

The *Manufacturing Order Item (IL)* (SAP_PP_IL_IMFGORDERITEM) view lies in the Inbound Layer and builds on the remote table *Manufacturing Order Item* (IMFGORDERITEM).

In the projection node key figures on manufacturing order header level are excluded, as these cannot be summed up over the order items. Dependent on the customizing in the SAP S/4HANA system, the manufacturing orders can have more than one item. In case all manufacturing orders only have one item the data Data Warehouse Cloud model can be adjusted to include the header key figures.

This model contains date formatting formulas in the formula node for each date field like e.g.

- Field " Manufacturing Order Planned Start Date":
  CASE WHEN MFGORDERPLANNEDSTARTDATE = '99999999'
  THEN '99991231'
  ELSE TO_DATE(MFGORDERPLANNEDSTARTDATE)
  END

Manufacturing Order (HL)

The *Manufacturing Order (HL)* (SAP_SCM_HL_ManufactrgOrder) view is part of the harmonization layer and is used in the SAP Analytics Cloud story *Life Sciences Supply Chain Dashboard* (SAP__SCM_LS_Dashboard).

It builds on the transactional data coming from the *Manufacturing Order (IL)* (SAP_PP_IL_IMFGORDERITEM).

Date fields are renamed to …_date and _time to support date functions and capabilities of SAP Analytics Cloud

In the calculated column node a manufacturing order item counter is added.

The following master data views are associated to this model

- Production Plant (SAP_MM_Plant)
- Product (SAP_LO_Product)

All date fields are associated to the Time Dimension Day- View (SAP.TIME.VIEW_DIMENSION_DAY).

5.6 TELECOMMUNICATION: CUSTOMER VALUE MANAGEMENT (CVM)

5.6.1 *Architecture and Abstract*

The Customer Value Management (CVM) package for the telecommunication industry is introducing an automated methodology with one unified shared foundation for all marketing team to identify the most IDEAL targeting opportunity or next best action for any customer at any point in time.

The **main purpose** of this content package is to simplify and accelerate the Customer Value Management scenario implementation for the telecom operators and mainly for the marketing department as well as to enable them with self-service Analytics.
Marketing departments are often isolated from the rest of the organization and are not working in a fully integrated and data driven approach. This has a negative impact on their ability to maximize customer value and eventually on implementing the CVM scenario.

This package solution addresses the needs mainly of the persona of **Telecom Marketing Business Analyst.**

The methodology is designed mainly to use the service revenue as the main KPI for the evaluation and calculation of the ideal targeting opportunity and also the customer value segment.

Key assets of this content package:

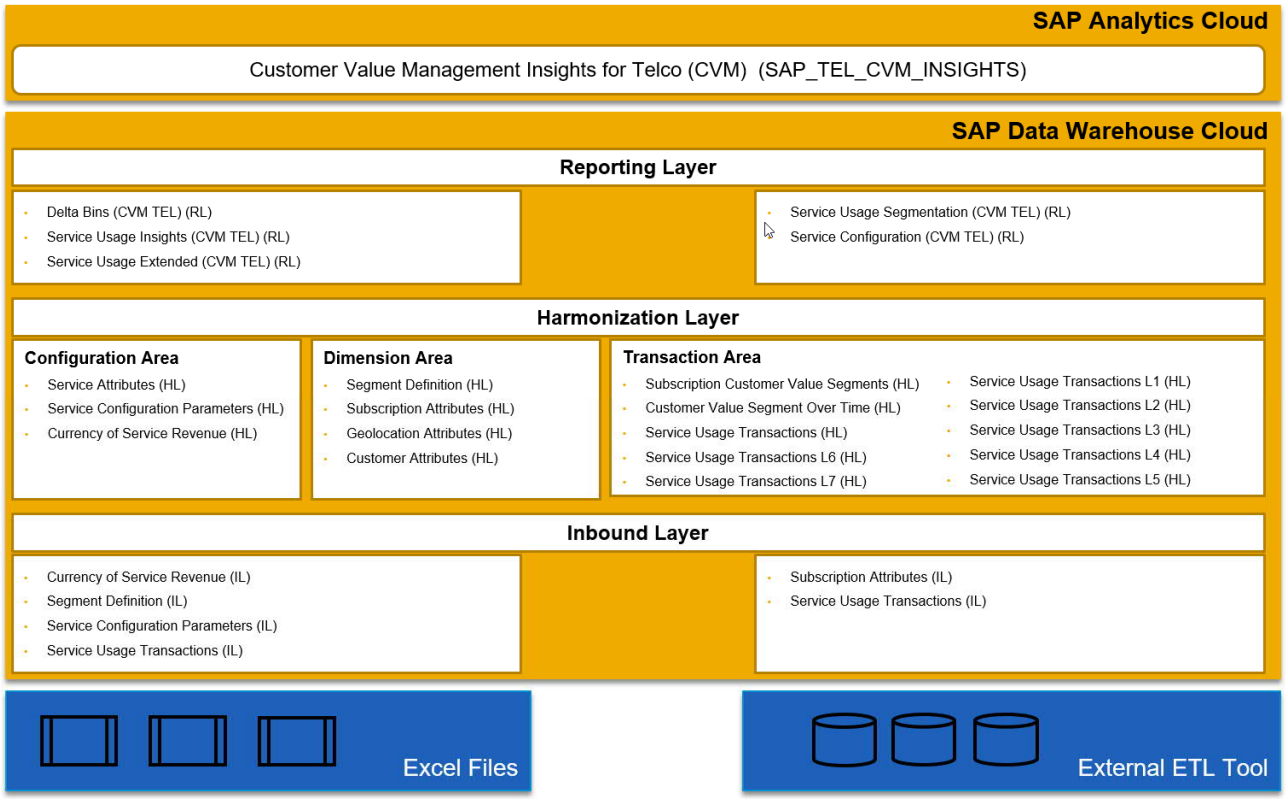
- Service definitions / configurations for the below parameters:
    - service definition
    - period seasonality
    - performance indicators calculation methodology (e.g. discount factor, weighted average etc.)
    - segments thresholds (business rules)
- Measure the behavior and performance of each product and service over time and at customer level as well as at main customer characteristics (e.g. age, location, gender, income, etc.)
- Classify the customer behavior into predetermined / ready-made segments per each service / product (Grow, Flat, Drop, Stopper, Non-user and new user) and different target groups are created automatically based on customer trend analysis,

- Map automatically every target group to pre-defined set of marketing actions like Up-sell, Cross-sell, Mitigation and Revive,
- Evaluate the customer performance versus the entire segment and several performance indicators are calculated,
- Evaluate and monitor the customer base performance over time and over the segments,
- Classify automatically the entire customer base into 3 value segments based on the revenue contribution (high, medium, low),
- Calculate the expected potential incremental revenue for each marketing action and target group,
- Order / prioritize the marketing actions (or also called opportunities) for each customer based on the expected potential incremental revenue.

All the above enable the marketing team to prioritize marketing actions based on the total expected revenue (and not only) and automatically generates campaign leads per product and target group.

The solution also highlights immediately the existing opportunities or marketing actions and can uncover new hidden opportunities and revenue streams.

Architecture



5.6.2 *Stories*

The following story is included in the content package: Customer Value Management Insights for Telco (CVM) (SAP_TEL_CVM_INSIGHTS)

This story is based on the following SAP Data Warehouse Cloud views:

- Service Usage Segmentation (CVM TEL) (RL)
- Service Usage Insights (CVM TEL) (RL)
- Service Configuration (CVM TEL) (RL)

Please navigate to the SAP Analytics Cloud content documentation for details.

5.6.3 ***Models***

5.6.3.1 Inbound Layer

This layer is receiving all the data from the customer external system(s) and accepts user - configuration (through excel) for the calculation engine of the model.

Three SQL scripts are provided in order to create the necessary tables on the open schema of DWC

- DDL_SAP_TEL_CVM_IL_SUBSC_CUST_MASTER_DATA.sql
- DDL_SAP_TEL_CVM_IL_SERVICE_USAGE.sql
- DDL_SAP_TEL_CVM_IL_SEGMENT_MASTER_DATA.sql

For the last one, regarding the segment definition, an insert statement is provided in order to load the table appropriately.

Furthermore, 3 excel files are available with the appropriate format to be edited from the user.

- CURRENCY.csv
- SERVICE_PER_SEGMENT_CONFIG.csv
- SERVICE_CONFIG.csv

More details regarding the objects of the Inbound layer are as follows

1. Segment Definition (IL)

Predefined table which holds the 6 default segments for each service. (Grow, Flat, Drop, Stop, NON_USER, NEW_USER). Segments names are highly advised not to change.

The underlying table on the open schema of DWC is "SAP_CONTENT#SAP_TEL_CVM"."SAP_TEL_CVM_IL_SEGMENT_MASTER_DATA". DDL and initial insert statement are on the DDL_SAP_TEL_CVM_IL_SEGMENT_MASTER_DATA.sql file.

2. Service Configuration Parameters (IL)

It will be needed from the customer to define all the services which are needed on the calculation methodology of CVM.

The service can be group of services or specific subcategory or sub service or even a product. The weight of each period before the current one (1-3 period before) can be defined upon the customer needs.

In addition, there are two parameters that increase or decrease the final expected incremental value and can be configured in this object (service target discount factor and service duality expected incremental).

Sample excel file for the loading of this DWC table is on the file SERVICE_CONFIG.csv

3. Service Attributes (IL)

It will be needed from the customer to define the start and end value (start delta value and the end delta value) for each service and segment based on the data understanding, business rules from Telco operators in the region and the market situation. 6 default segments will be generated (Grow, Flat, Drop, Stop, NON_USER, NEW_USER) for each service.

Sample excel file for the loading of this DWC table is on the file SERVICE_MASTER_DATA.csv

4. Currency of Service Revenue (IL)

This DWC table holds the currency of the revenue of Services provided. It can be modified upon the needs of the customer.
Sample excel file for the loading of this DWC table is on the file CURRENCY.csv

The following two tables are located in the openSQL schema of Data Warehouse Cloud. Use any suitable ETL tool to load data into these tables.

5. Subscription Attributes (IL)

An aggregated result set with information on customer level, such as demographics / location and more is required.

This table can be created on the open schema by using the file DDL_SAP_TEL_CVM_IL_SUBSC_CUST_MASTER_DATA.sql

6. Service Usage Transactions (IL)

An aggregated result set which represents the monthly revenue per subscription and service.

This table can be created on the open schema by using the file DDL_SAP_TEL_CVM_IL_SERVICE_USAGE.sql

5.6.3.2 Harmonization Layer

Business Name	Technical Name	Type
Currency of Service Revenue (HL)	SAP_TEL_CVM_HL_CURRENCY	Dimension (View)
Customer Attributes (HL)	SAP_TEL_CVM_HL_CUSTOMER	Dimension (View)
Segment Definition (HL)	SAP_TEL_CVM_HL_SEGMENT_MD	Dimension (View)
Geolocation Attributes (HL)	SAP_TEL_CVM_HL_CTMR_GEO_LOC	Dimension (View)
Subscription Attributes (HL)	SAP_TEL_CVM_HL_CUST_SC_DOMAIN	Dimension (View)
Service Configuration Parameters (HL)	SAP_TEL_CVM_HL_SERVICE_CONFIG	Dimension (View)
Service per Segment Configuration Parameters (HL)	SAP_TEL_CVM_HL_SRV_PER_SEG_CNF	Dimension (View)
Service Attributes (HL)	SAP_TEL_CMV_HL_SRV_MSTR_DATA	Dimension (View)
Service Usage Transactions (HL)	SAP_TEL_CVM_HL_SERVICE_USAGE	Relational Dataset (View)
Service Usage Transactions L4 (HL)	SAP_TEL_CVM_HL_FACT_C_VAL_SEG	Relational Dataset (View)
Service Usage Transactions L7 (HL)	SAP_TEL_CVM_HL_FACT_DELTA_BINS	Relational Dataset (View)
Service Usage Transactions L5 (HL)	SAP_TEL_CVM_HL_FACT_SRV_SEGMNT	Relational Dataset (View)
Service Usage Transactions L1 (HL)	SAP_TEL_CVM_HL_SRV_DIM_LV1	Relational Dataset (View)
Subscription Customer Value Segments (HL)	SAP_TEL_CVM_HL_VALUE_SEGMENT	Relational Dataset (View)
Service Usage Transactions L3 (HL)	SAP_TEL_CVM_HL_VL_S_C_SRV_AVG	Relational Dataset (View)
Service Usage Transactions L2 (HL)	SAP_TEL_CVM_HL_SERVICE_STATUS	Relational Dataset (View)
Service Usage Transactions L6 (HL)	SAP_TEL_CVM_HL_FACT_POTENT_INC	Relational Dataset (View)
Customer Value Segment Over Time (HL)	SAP_TEL_CVM_HL_VALUE_SGT_SRV_A	Relational Dataset (View)

This layer is responsible to prepare the data received from the inbound layer for the reporting one. This model has been created under the principals of the 3rd normal form in order any extension with new business domains to be fast and robust.

On this stage, the objects from the Inbound layer are enriched with the following characteristics

1. New internal ids are created on every object
2. New dimensions are created using the snowflake architecture
3. All the objects on this layer are normalized on 3rd normal
4. New temporary transaction tables have been created for the need of reporting

Three logical areas have been defined according to the usage of these objects.

Configuration Area

On this area are all the objects which hold the configuration defined by the customer regarding

- The calculation method of creating the comparison (Delta) between the current revenue of period for every service in contrast to the three previous ones (taking under consideration and the weight of each one).
- The limits for the six default segments.

These four objects are

- Service Attributes (HL)

1 to 1 from the corresponding object of the inbound layer plus all the enrichments mentioned above.

- Service Configuration Parameters (HL)

1 to 1 from the corresponding object of the inbound layer plus all the enrichments mentioned above.

- Currency of Service Revenue (HL)

1 to 1 from the corresponding object of the inbound layer plus all the enrichments mentioned above.

- Service per Segment Configuration Parameters (HL)

Created from the Service and Segment Master Data plus all the enrichments mentioned above.

Dimension Area

On this area all the objects which hold information about all the needed characteristics (attributes) for this package. They can be derived 1:1 from the Inbound layer.

These objects are

- Segment Definition (HL)

1 to 1 from the corresponding object of the inbound layer plus all the enrichments mentioned above.

- Subscription Attributes (HL)

Created domain table which keep the relationship between Customer and Subscription, using the new created IDs.

- Geolocation Attributes (HL)

Created new dimension, using snowflake architecture from the Customer Master Data table which hold geolocation information regarding the customer.

- Customer Attributes (HL)

1 to 1 from the corresponding object of the inbound layer plus all the enrichments mentioned above.

Transaction Area

This area contains all the objects which needed to implement the CVM scenario. Starting with the provided result set of revenue per service and customer on the inbound layer and taking under consideration the configuration chosen by the customer , eight new objects will be created.

These could serve implementation needs of the calculation to hold temporary results between the several steps.

These objects are

- Service Usage Transactions (HL)

1 to 1 from the corresponding object of the inbound layer plus all the enrichments mentioned above. This object is the starting point for all the new objects introduced on this area.

- Service Usage Transactions L2 (HL)

The customer segmentation per service is computed on this object.
Initially we calculate the difference on Revenue per user and service between the current period and the average of the three preceding ones (taken under consideration any defined weight from the user configuration).

Then with the following rules we define the segmentation per customer.

- When Revenue of Current period <= 0 and Average of Revenue of the three preceding periods > 0 then “Segment Name” = ’STOP’
- When Revenue of Current period = 0 and Average of Revenue of the three preceding periods = 0 then “Segment Name” = ’NON_USER’
- When Revenue of Current period <> 0 and Average of Revenue of the three preceding periods = 0 then “Segment Name” = ’NEW_USER’

For the remaining cases, when

- The difference on Revenue per user and service between the current period and the average of the three preceding periods > Defined (start) Value per Service then “Segment Name” = ’GROW’
- The difference on Revenue per user and service between the current period and the average of the three preceding periods < Defined (end) Value per Service then “Segment Name” = ’DROP’
- The difference on Revenue per user and service between the current period and the average of the three preceding periods is between then Defined (start) Value per Service and the Defined (end) Value per Service then “Segment Name” = ’FLAT’

- Subscription Customer Value Segments (HL)

Segmentation per customer is computed on this object, with the below formula.

For Value Segment

- When the Revenue per Customer on Current Period is greater or equal of 0% and less of 10% of the Total Revenue of all Customers on Current Period then “Value Segment” = 1
- When the Revenue per Customer on Current Period is greater or equal of 10% and less of 20% of the Total Revenue of all Customers on Current Period then “Value Segment” = 2
- ……. Continue with the same logic.
- When the Revenue per Customer on Current Period is greater or equal of 80% and less of 90% of the Total Revenue of all Customers on Current Period then “Value Segment” = 9
- When the Revenue per Customer on Current Period is greater or equal of 90% of the Total Revenue of all Customers on Current Period then “Value Segment” = 10
- For all the other cases “Value Segment” = -1

For Value Segment Group

- When the Revenue per Customer on Current Period is greater or equal of 0% and less of 50% of the Total Revenue of all Customers on Current Period then “Value Segment Group” = ‘LOW’
- When the Revenue per Customer on Current Period is greater or equal of 50% and less of 80% of the Total Revenue of all Customers on Current Period then “Value Segment” = ’MED’
- When the Revenue per Customer on Current Period is greater or equal of 80% of the Total Revenue of all Customers on Current Period then “Value Segment” = ‘HIGH’

- Customer Value Segment Over Time (HL)

This object enriches the previous ones with the average revenue of current period, only when Revenue of Current Period is greater than zero.

- Service Usage Transactions L3 (HL)

This object enriches the previous ones with the Customer Service Segment Performance. It is computed as below:

- When the Percentage of the Revenue of Current Period (per Customer) comparing to the Average Revenue per Service is less than -95% then “PERFORMANCE” = -100
- When the Percentage of the Revenue of Current Period (per Customer) comparing to the Average Revenue per Service is greater than -95% and less or equal of -90% then “PERFORMANCE” = -95
- When the Percentage of the Revenue of Current Period (per Customer) comparing to the Average Revenue per Service is greater than -90% and less or equal of -85% then “PERFORMANCE” = -90
- When the Percentage of the Revenue of Current Period (per Customer) comparing to the Average Revenue per Service is greater than -85% and less or equal of -80% then “PERFORMANCE” = -85
- ……. Until (with the same logic)
- When the Percentage of the Revenue of Current Period (per Customer) comparing to the Average Revenue per Service is more or equal of 90% and less than 95% then “PERFORMANCE” = 95
- When the Percentage of the Revenue of Current Period (per Customer) comparing to the Average Revenue per Service is more or equal of 95% then “PERFORMANCE” = 100

- Service Usage Transactions L1 (HL)

On this object, we calculate the difference on revenue ,per user and service , between the current period and the average of the three preceding periods (taken under consideration any weight on each defined from user configuration).It is used on the previous ones as a starting point of calculations.

- Service Usage Transactions L6 (HL)

Potential incremental, marketing action and customer marketing wave are computed. These calculations will be needed for the reporting.

- Service Usage Transactions L5 (HL)

Object which keeps temporary result sets for the need of the other objects.

- Service Usage Transactions L4 (HL)

Object which keeps temporary result sets for the need of other objects.

- Service Usage Transactions L7 (HL)

Object which keeps temporary result sets for the need other objects.

5.6.3.3 Reporting Layer

Business Name	Technical Name	Type
Service Usage Insights (CVM TEL) (RL)	SAP_TEL_CVM_RL_SERV_USG_INS	Analytical Dataset (View)
Delta Bins (CVM TEL) (RL)	SAP_TEL_CVM_RL_DELTA_BINS	Analytical Dataset (View)
Service Usage Extended (CVM TEL) (RL)	SAP_TEL_CVM_RL_SRV_USAGE_EXTD	Analytical Dataset (View)
Service Usage Segmentation (CVM TEL) (RL)	SAP_TEL_CVM_RL_SERVICE_SEGMENT	Analytical Dataset (View)
Service Configuration (CVM TEL) (RL)	SAP_TEL_CVM_RL_SERVICE_CONF	Analytical Dataset (View)

This layer is using the created objects of the harmonized layer in order to create the appropriate views which will be used on SAP Analytics Cloud.

Five analytical datasets are created.

- Service Usage Insights (CVM TEL) (RL)
- Delta Bins (CVM TEL) (RL)
- Service Usage Extended (CVM TEL) (RL)
- Service Usage Segmentation (CVM TEL) (RL)
- Service Configuration (CVM TEL) (RL)

All calculations and characteristics of this package are on subscription level which in reality, due to the way we are waiting the data from the customer side, is the customer level.
It is highly recommended to use the functionality of persistency for these views, for performance reasons.
Pre-configured Analytics Cloud Stories will be provided to this package which are replying to the business challenges mentioned on the introduction.

Model Name: SAP_TEL_CVM_RL_SERVICE_SEGMENT	
- Service Usage Segmentation (CVM_TEL) (RL)	
Measures	
Technical Name	**Description**
Average Historical Usage	Average historical usage based on configuration settings
Current Period Usage	Current period customer usage (default monthly)
Number of Active Customers	Number of customers active
Number of Customers	Number of customers
Number of Customers per segment	Number of customers per segment
Number of customers per service	Number of customers per service
Number of customers per segment and service	Number of customers per segment and service
Total historical usage	Sum of Total historical usage
Usage for T-1	Customer usage for previous period (T-1)
Usage for T-2	Customer usage for previous 2 period (T-2)
Usage for T-3	Customer usage for previous 3 period (T-3)
Dimensions	
Name	Description
Account Dimension*	Account
Activation date	Customer/Subscription activation date
Address	Customer Address

Annual Income	Customer Annual Income
Area	Customer Area
Channel of activation	Customer/Subscription channel of activation
City	Customer City
Contract Based	Flag if customer/subscription is contract based
Country	Customer country
Customer first name	Customer first name
Customer ID	Unique id of the customer
Customer Last name	Customer last name
Customer Type Description	Customer type (prepaid or postpaid)
Date	Usage Period (default is month)
Date of Birth	Customer date of birth
Gender	Customer gender
Level of education	Customer level of education
Marital Status	Customer Marital Status
Segment Name	Customer segment calculated by CVM
Service ID	Unique service id
Service Name	Service name
State	Customer State
Usage Delta	Delta performance of the usage (variance current with previous period)

5.6.4 ***Setup content with local dataset***

1. Initially, a schema with the following naming format must be created SAP_CONTENT#SAP_TEL_CVM
2. On this schema, through the provided SQL scripts, three column tables should be created.
    - Script DDL_SAP_TEL_CVM_IL_SUBSC_CUST_MASTER_DATA.sql, which points on the DWC local table Subscription Attributes (IL).

- Script DDL_SAP_TEL_CVM_IL_SERVICE_USAGE.sql which points on the DWC local table Service Usage Transactions (IL).
- Script DDL_SAP_TEL_CVM_IL_SEGMENT_MASTER_DATA.sql which points on the DWC local table object Segment Definition (IL). This scripts also includes an initial insert statement with the default values.

3. Three sample csv files are available for loading the remaining three tables of Inbound layer. It is highly recommended to use these with your real data since they have the needed format of the columns.
    - CURRENCY.csv is needed for the DWC local table Currency of Service Revenue (IL).
    - SERVICE_PER_SEGMENT_CONFIG.csv is needed for the DWC local table Service Attributes (IL).
    - SERVICE_CONFIG.csv is needed for the DWC local table Service Configuration Parameters (IL).
4. Two more csv files are provided which keep sample data regarding Customer and Revenue of usage. These can be used only for demo purposes.

5.7 UTILITIES – METER TO CASH SCENARIO

The "Meter to Cash" (M2C) business process is a significant process for utility companies because it not only represents their revenue cycle but also touches the end customer directly.

In general, a Meter to Cash business process is all about making sure that bills are created based on reliable meter reading data in time and that, at the end, the customer pays on due date.

This business process starts with a meter reading request and continues only when the meter reading data has been received. Then, this data has to be registered and validated within the system. After that, a billing document can be created and validated and, subsequently, the same steps can be reproduced also for the invoicing document. Once all these tasks have been completed, the invoice can be printed and sent to customers to collect the due amount.

In this scenario, all the data to monitor, control and possibly optimize the operational process is collected.

An extra section is included to provide an overview of the maintenance of the devices.

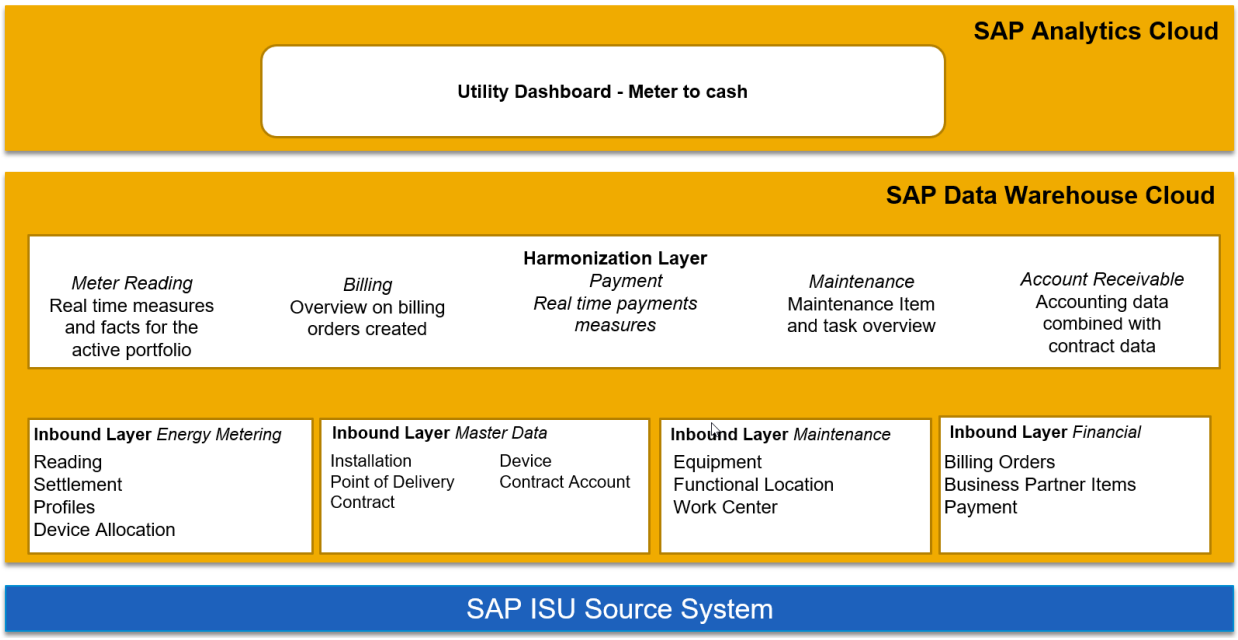
5.7.1 *Prerequisites: Data Sources in source system*

To completely deploy the content, all relevant data sources have to be active in the source system. Find an overview of all relevant data sources at the end of the Utilities content documentation section in the chapter 5.7.5 Overview content Data Sources

5.7.2 *Architecture and Abstract*

This live model is based on 74 Data Warehouse Cloud views organized in 4 main areas:

- Master Data
- Energy Data Management (Metering)
- Financial
- Maintenance

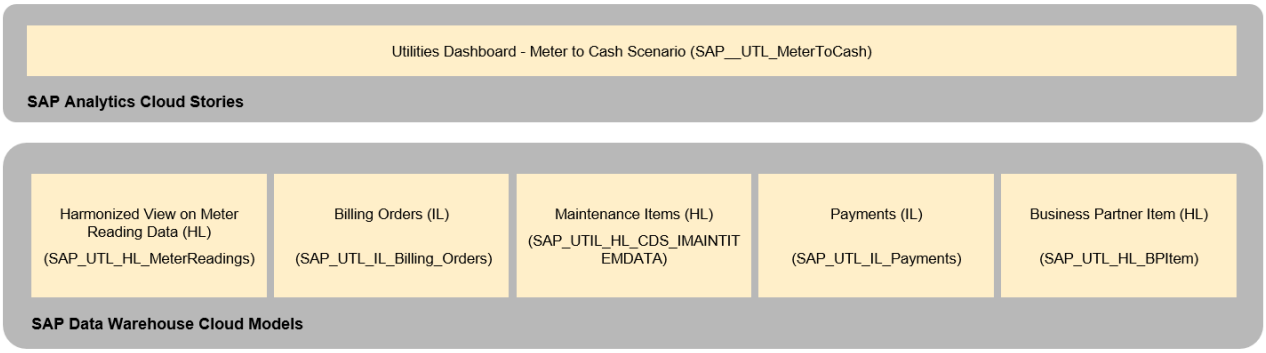


The different views are classified as follow:

Inbound Layer (IL): Inbound layer objects are the “building blocks” of the scenario. Each of these views exposes data related to a specific subject. (i.e. Point of Delivery or Meter Reading description). Some of them are listed in the picture above.

Harmonization Layer (HL): each of the views in this layer is created connecting 2 or more IL views with join or union logic and the core data modelling is done.

The Meter to Cash scenario has the following architecture:



5.7.3 *Stories*

The following story is included in the SAP Analytics Cloud content package: Meter to Cash Scenario (SAP__UTL_MeterToCash)

It provides overviews and details pages for five sections.

- Meter Reading
- Maintenance
- Billing Orders
- Payments
- Account Receivables

The available filter panel offers a flexible way to restrict the data depending on the business context.

This story is based on the following SAP Data Warehouse Cloud views:

- Harmonized View on Meter Reading Data (SAP_UTL_HL_MeterReadings)
- Maintenance Items (SAP_UTIL_HL_CDS_IMAINTITEMDATA)
- Billing Orders (SAP_UTL_IL_Billing_Orders)
- Payments (SAP_UTL_IL_Payments)
- Business Partners Item (SAP_UTL_HL_BPItem)

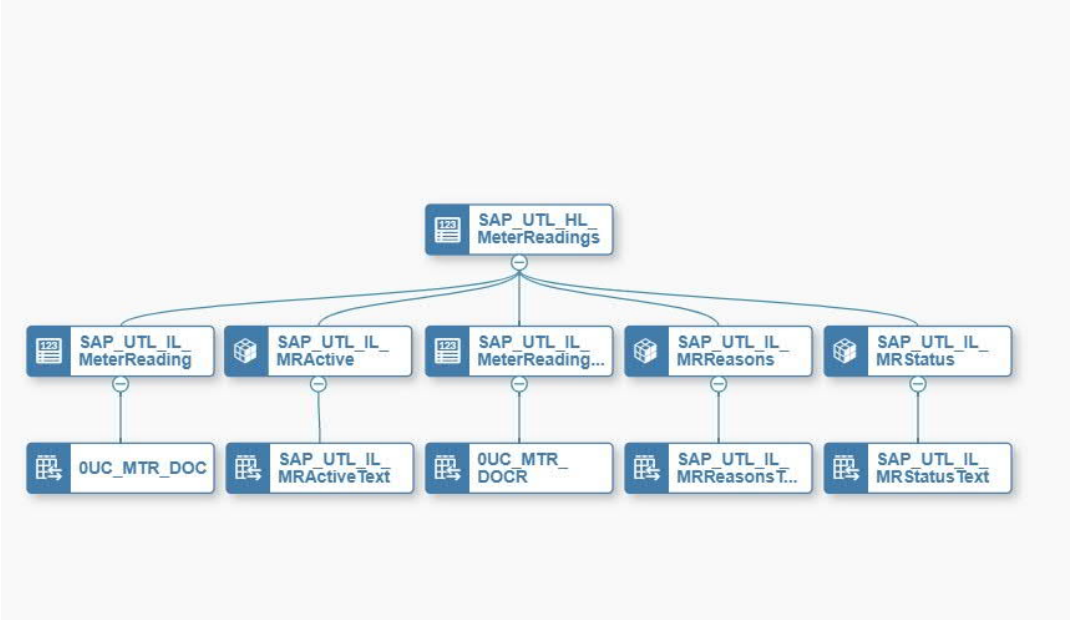
Please navigate to the SAP Analytics Cloud content documentation for details.

5.7.4 ***Models***

As mentioned above, the SAP Analytics Cloud Story is built using five main SAP Data Warehouse Cloud models. Find the details of these models described in this chapter.

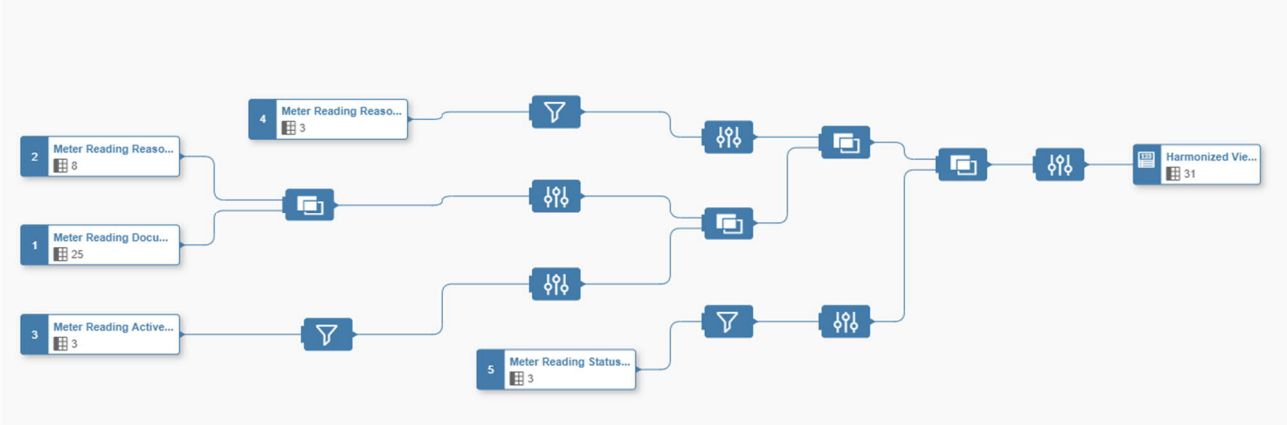
5.7.4.1 Harmonized View on Meter Reading Data (SAP_UTL_HL_MeterReadings)

In this model, all meter reading data for the register of a device is shown, together with the meter reading reason that is defined for all meter reading documents for an installation.



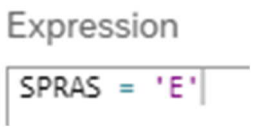
Five SAP Data Warehouse Cloud views built this harmonized layer:

- Meter Reading Document (SAP_UTL_IL_MeterReadingDocument)
- Meter Reading Reasons for Meter Reading Document (SAP_UTL_MeterReadingReason)
- Meter Reading Reasons Text (SAP_UTL_IL_MeterReaderText)
- Meter Reading Active Text (SAP_UTL_IL_MRActive)
- Meter Reading Status Text (SAP_UTL_IL_MRStatus)



Meter Reading Document view shows the fact and has been joined with the dimensional data of the Meter Reading Reasons:

The other 3 views add description fields to support the presentation in the SAP Analytics Cloud story. In the text views, a filter has been applied to restrict the language to English:



The following measures are provided by this harmonized view:

- Real Meter reading taken
- Billed Meter reading taken
- Difference Between Planned and Billing MR Date (Days):

The formula used to create this last measure is:

```
CASE WHEN ADAT = '00000000' THEN 0
ELSE
DAYS_BETWEEN(TO_DATE(ADATSOLL,
'YYYYMMDD'),TO_DATE(ADAT,
'YYYYMMDD')) END
```

If there are any time field populated with ‘00000000’ value, the following formula has been used to update that field with a more appropriate value:

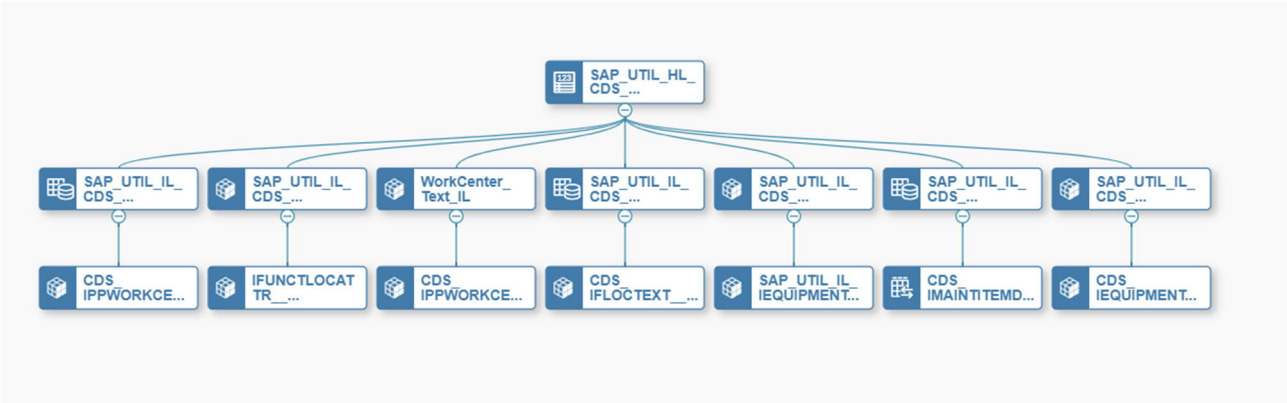
```
CASE WHEN ADAT = '00000000'
THEN TO_DATE('99991231', 'YYYYMMDD')
ELSE TO_DATE(ADAT, 'YYYYMMDD')
END
```

As seen in the 2 previous formulas, time fields that would be filled with the value ‘00000000’ are instead filled with ‘99991231’ to avoid calculation errors. This logic has been applied to the following fields:

- Meter Reading Date Relevant to Billing
- Scheduled Meter Reading Date
- Calendar Year/Month
- Calendar Year
- WeekDay

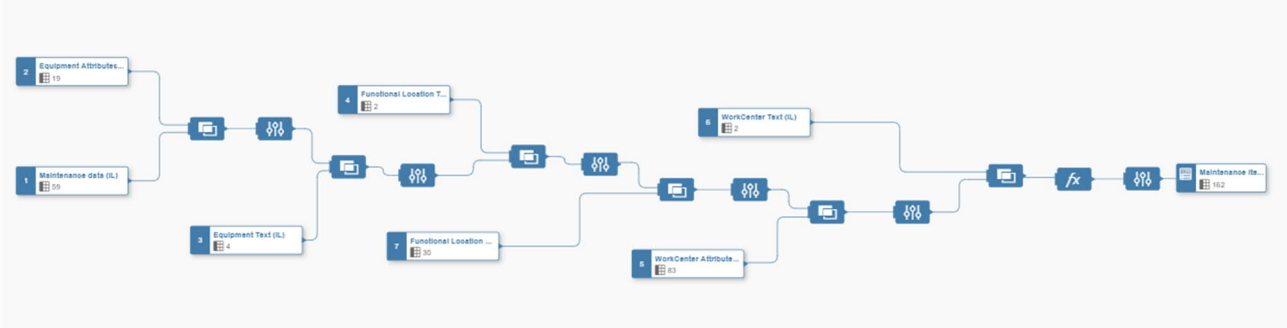
5.7.4.2 Harmonized View on Maintenance Items (SAP_UTIL_HL_CDS_IMAINTITEMDATA)

A maintenance item describes which preventive maintenance tasks should take place regularly for a technical object or a group of technical objects.
A maintenance item could, for example, be “perform safety test”. You then assign exactly the reference objects (for example, equipment, functional locations or assemblies) to a maintenance item at which you want to perform the maintenance task “safety test”.



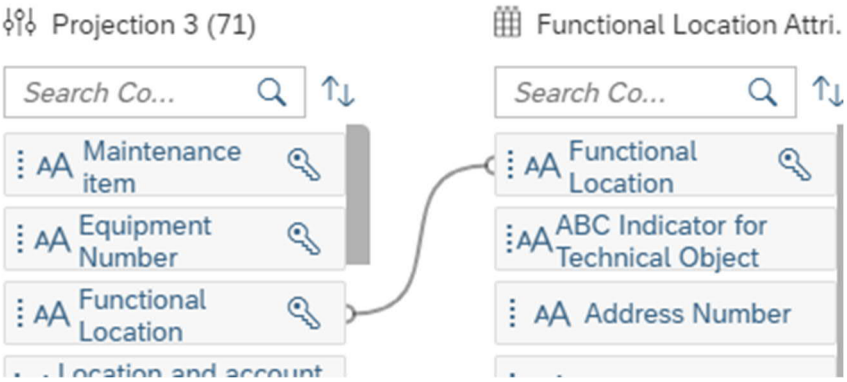
Seven SAP Data Warehouse Cloud views built this model:

- Maintenance Data (SAP_UTIL_IL_CDS_IMAINTITEMDATA)
- Equipment Text (SAP_UTIL_IL_CDS_IEQUIPMENTTEXT)
- Equipment Attributes (SAP_UTIL_IL_CDS_IEQUIPMENTATTR)
- Functional Location Text (SAP_UTIL_IL_CDS_IFLOCTEXT)
- Functional Location Attributes (SAP_UTIL_IL_CDS_IFUNCTLOCATTR)
- WorkCenter Attributes (SAP_UTIL_IL_CDS_IPPWORKCENTER)
- WorkCenter Text (SAP_UTIL_IL_CDS_IPPWORKCENTERT)

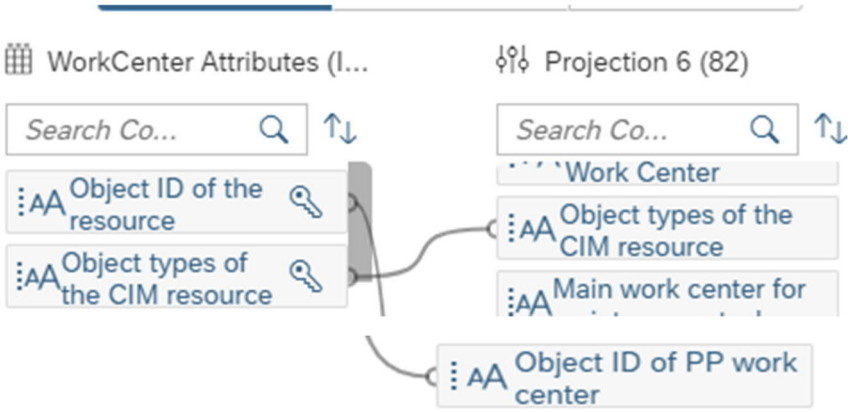


Maintenance Data view shows the facts and it is joined to the dimensional data of the Equipment Attributes:

Functional Location data and descriptions are provided by this left join:



Work Center data and descriptions are provided by this left join:



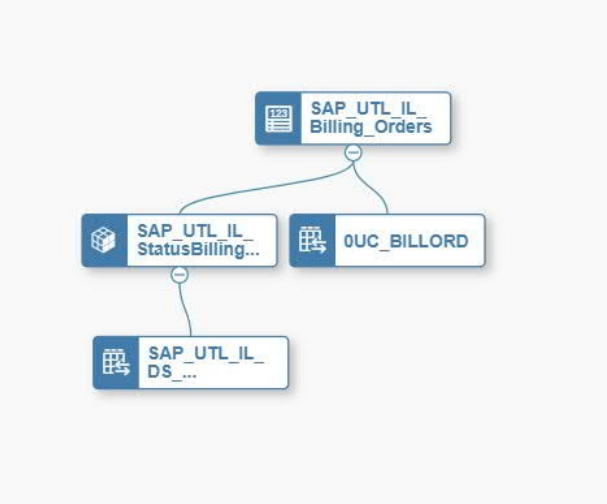
The following measures are provided by this harmonized view:

- Volume of maintenance items

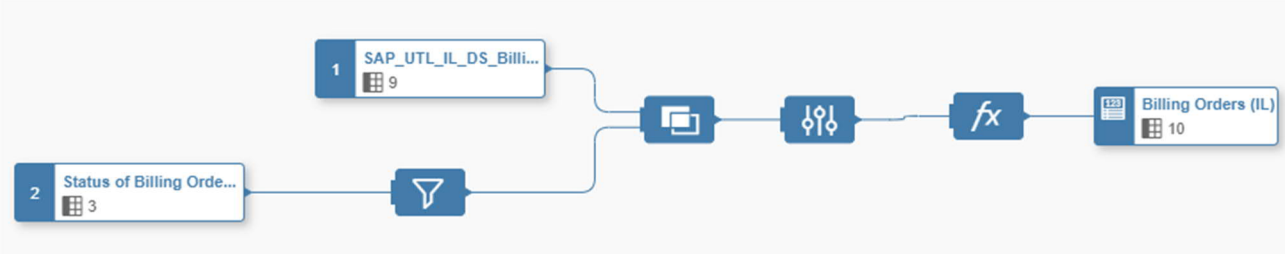
This measure is a counter of the number of Maintenance Items analyzed

5.7.4.3 Harmonized view on Billing Orders (SAP_UTL_IL_Billing_Orders)

After the creation of a Meter Reading Order (MRO) and the upload of the Meter readings, a billing order is created.



The view Billing Orders (SAP_UTL_IL_Billing_Orders) exposes the facts related to the Billing process and it is joined with the description of the Status of Billing Orders (SAP_UTL_IL_StatusBillingOrd).



The description is restricted to English:

Expression

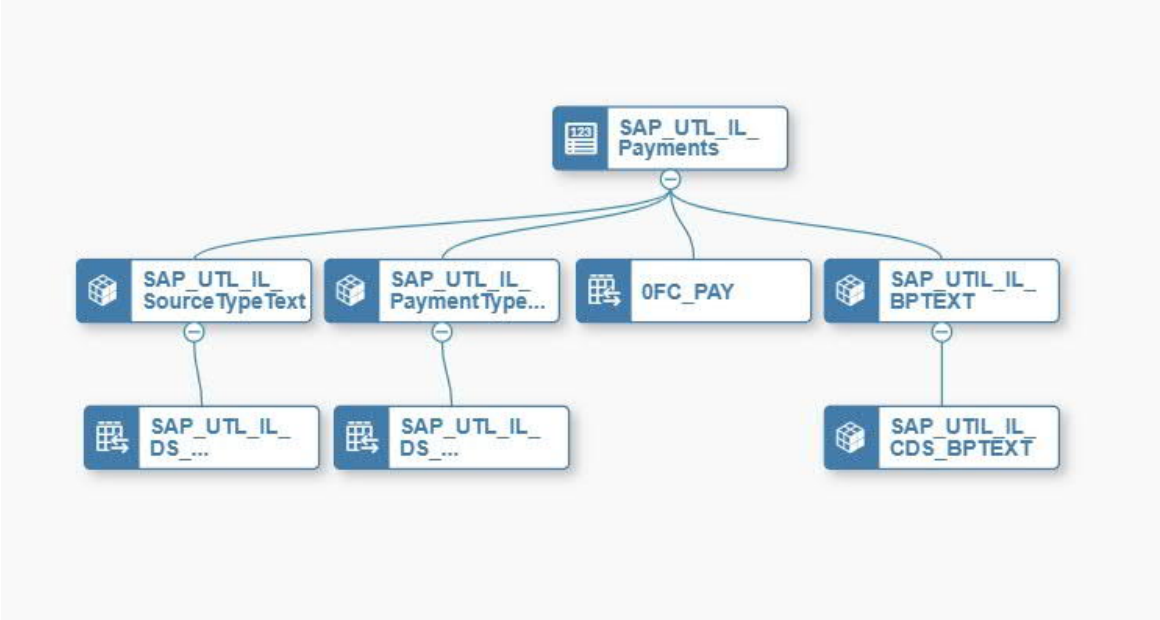
```
LANGU = 'E'
```

The following measure is provided by this harmonized view: Data Record Counter for Billing Order

This measure is a counter of the number of Billing Orders analyzed.

5.7.4.4 Harmonized view on Payments (SAP_UTL_IL_Payments)

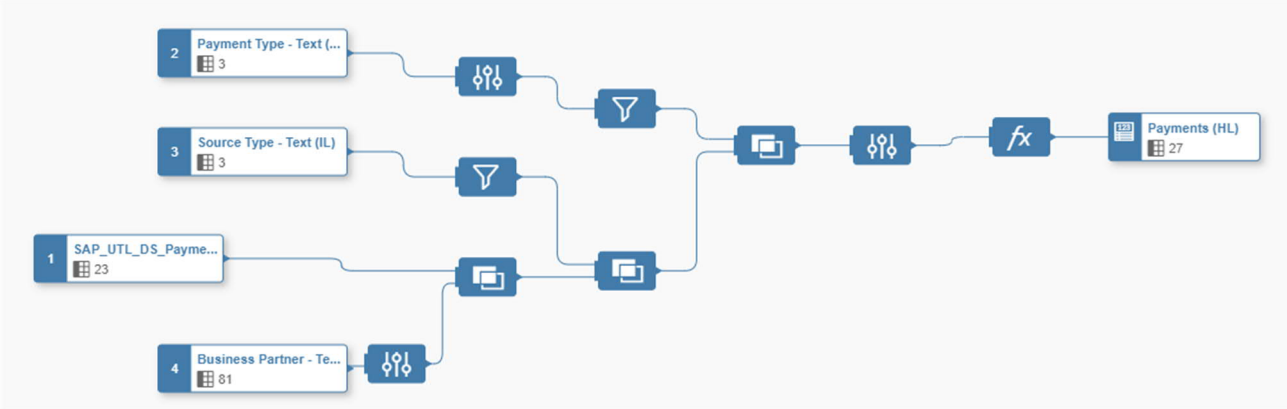
In the billing cycle, after the MRO and the billing order have been created, invoicing and payments take place.



The harmonized view Payment is based on the following views:

- Payments (SAP_UTL_IL_Payments)
- Source Type - Text (SAP_UTL_IL_SourceTypeText)
- Payment Type – Text (SAP_UTL_IL_PaymentTypeText)
- Business Partner - Text (SAP_UTIL_IL_BPTEXT)

The first view exposes the facts and the 3 others add descriptions to support the presentation of data.



The following measures are provided by this harmonized view:

- Amount
- Duration of Clarification

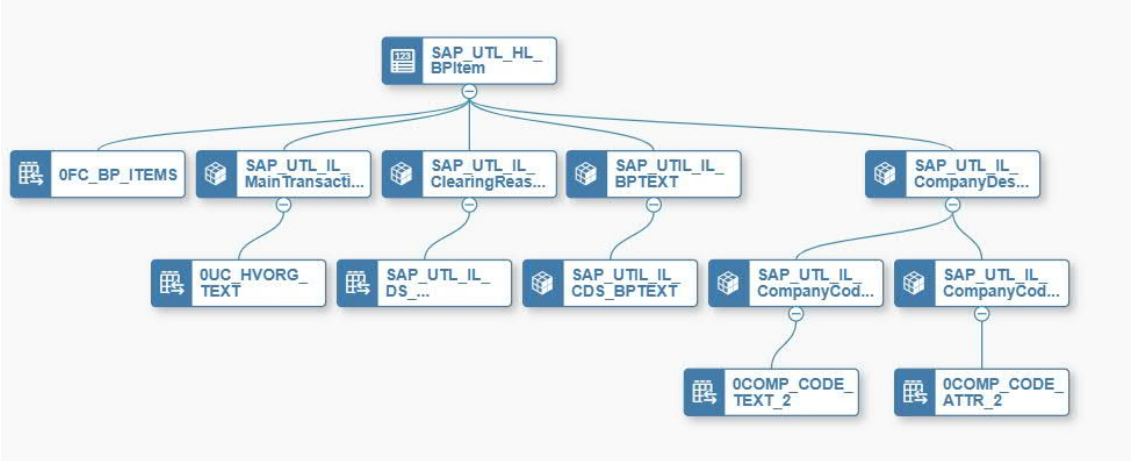
The description is restricted to English:

Expression

```
LANGU = 'E'
```

5.7.4.5 Harmonized view on Business Partner Items (SAP_UTL_HL_BPItem)

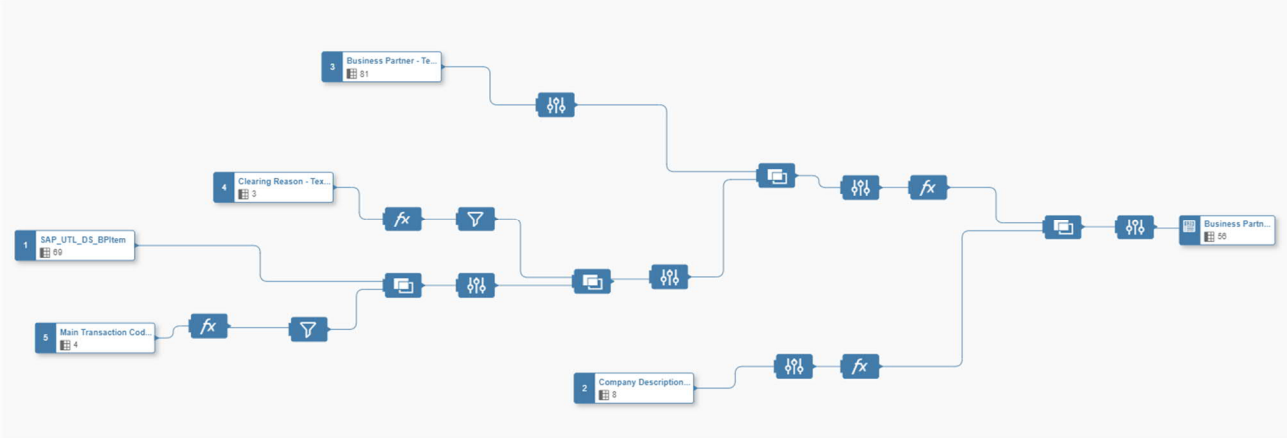
Business Partner Item Harmonized view present the Account Receivable Data, the amount of money for goods delivered or services used but not yet paid for by customers.



This model is based on the following views:

- Business Partner Items (SAP_UTL_HL_BPItem)
- Main Transaction Code - Text (SAP_UTL_IL_MainTransaction)
- Clearing Reason - Text (SAP_UTL_IL_ClearingReasText)
- Business Partner - Text (SAP_UTIL_IL_BPTEXT)
- Company Description - Text (SAP_UTL_IL_CompanyDescription)

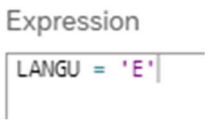
First view exposes the facts and the 4 others add descriptions to support the presentation of data.



The following measures are provided by this harmonized view:

- Local Currency Amount
- Clearing Amount
- Amount
- Tax Portion FI-CA Local Currency
- Statistical Tax Amount in Document Currency

The description is restricted to English:



5.7.5 *Overview content Data Sources*

Find an overview of the relevant data sources in the following chapter.

5.7.5.1.1 Utilities master data

Technical Data Source name	Type
0UC_DEVINST_ATTR	Master Data
0UC_REGINST_STR_ATTR	Master Data
0UC_PODINST_ATTR	Master Data
0FC_ACCTREL_ATTR	Master Data
0UCBU_PART_ATTR_3	Master Data
0UC_ACCNTBP_ATTR_2	Master Data
0UCCONTRACT_ATTR_2	Master Data
0UCINSTALLA_ATTR_2	Master Data
0UCINSTALLAH_ATTR_2	Master Data
0UCPREMISE_ATTR_2	Master Data
0UC_CONNOBJ_ATTR_2	Master Data
0UC_DEVLOC_ATTR	Master Data
0UC_POD_EXT_ATTR	Master Data
0UC_POD_ATTR	Master Data
0UC_DEVICE_ATTR	Master Data
0UC_DEVICEH_ATTR	Master Data
0UC_DEVICER_ATTR	Master Data
0COMP_CODE_ATTR	Master Data
0COMP_CODE_TEXT	Master Data
0UC_REGISTER_ATTR	Master Data

5.7.5.1.2 Utilities – Energy Data Management

Technical Data Source name	Type
0UC_MTR_DOC	Transactional Data
0UC_MTR_DOCR	Transactional Data
0UC_BILLORD	Transactional Data
0UC_DEVALLC_ATTR	Master Data
0UC_REGALLOC_ATTR	Master Data
0UC_PODLNR_ATTR	Master Data
0UC_PODLREG_ATTR	Master Data
0UC_PODPGRP_ATTR	Master Data
0UC_PODGRID_ATTR	Master Data
0UC_PODSTTL_ATTR	Master Data
0UC_SETTLDOC	Transactional Data
0UC_SETTLDOCUNIT	Transactional Data
0UC_SETTLDOCUPDP	Transactional Data
0UC_UFASS	Transactional Data
0UC_LPASS_ATTR	Master Data
0UC_SETTLIN	Transactional Data
0UC_SETTLUF	Transactional Data
0UC_PROFILE_ATTR	Master Data
0UC_SYNPROF_ATTR	Master Data

5.7.5.1.3 Utilities - Financials

Technical Data Source name	Type
0UC_HVORG_TEXT	Master Data
0UC_TVORG_TEXT	Master Data
0UC_MRREAS_TEXT	Master Data
0UC_ABRVORG	Master Data
0UC_ACTIVMR_TEXT	Master Data
0UC_BOSTAT_TEXT	Master Data
0FC_PAYTP_TEXT	Master Data
0FC_SRCTP_TEXT	Master Data
IBUSINESSPARTNER	ABAP CDS / Master Data
0FC_AUGRD_TEXT	Master Data
0UC_KOFIZ_TEXT	Master Data

5.7.5.1.4 Utilities - Maintenance

Technical Data Source name	Type
IEQUIPMENTTEXT	ABAP CDS / Master Data
IEQUIPMENTATTR	ABAP CDS / Master Data
IMAINTITEMDATA	ABAP CDS / Transactional Data
IFLOCTEXT	ABAP CDS / Master Data
IFUNCTLOCATTR	ABAP CDS / Master Data
IPPWORKCENTER	ABAP CDS / Master Data
IPPWORKCENTERTXT	ABAP CDS / Master Data

6 CROSS APPLICATIONS

6.1 FINANCIAL ANALYTICS DASHBOARD FOR SAP ANALYTICS CLOUD

The Financial Analytics Dashboard for SAP Analytics Cloud is one integrated solution that visualizes Cross Analytics Finance and HR metrics to effectively measure the top and bottom-line impact.

Find more information on this package in the SAP Analytics Cloud documentation here.

6.2 SAP MONITORING CONTENT (DATA INTEGRATION TASKS)

The content package *SAP Monitoring Content (Data Integration Tasks)* uses SAP Data Warehouse Cloud pre-configured monitoring views to monitor data integration tasks in a more flexible way. They are based on top of the V_EXT HANA views and are enriched with further information as preparation for consumption in an SAP Analytics Cloud Story. Navigate to the SAP Data Warehouse Cloud documentation Monitoring Tasks, Logs and Schedules With Dedicated Monitoring Views for more details on the SAP HANA Monitoring views and the content.

We recommend reading the following blogs:

- SAP Data Warehouse Cloud: Data Integration Monitoring – Sample Content for Reporting
- SAP Data Warehouse Cloud: Data Integration Monitoring – Running Task Overview

6.3 **SUSTAINABILITY CONTROL TOWER**

The SAP Sustainability Control Tower supports customers to automate their integrated reporting and performance management by enabling transparency across financial, operational, compliance, environmental, and social key figures, to understand their impact on environment, society and communities.

Objective:

- Gain trust by establishing a robust and auditable ESG reporting.
- Drive action by setting targets, monitor progress and gain actionably insights from granular, consistent and dependable sustainability data

Capabilities:

- Source and integrate data from SAP and non-SAP applications into a central data warehouse
- Harmonize, allocate and calculate granular sustainability key figures along established structures from Finance, HR, real estate and operations
- Analyze and report sustainability data according to established ESG Reporting Frameworks
- Drive targeted action by giving business areas a dedicated view on their sustainability performance

Benefits:

- Efficient Reporting
  Automated, timely and auditable ESG reporting against a variety of regulations and standards as well as ratings
- Actionable Insights
  Establish interrelationship between financial, operational and sustainability performance. Analyze data at a level of granularity that allows decision making and targeted actions for business units, departments and locations
- Holistic Steering

- Realize a holistic understanding and performance management across social, environmental and financial indicators

Find further details and how to implement the content on the SAP Help Portal here.

7 KNOWN ISSUES

Issue	Solution	Valid from / to SAP Data Warehouse Cloud version
Connection name changes as of release 2021.19 from SAP_NAME_CONNECTION to CONNECTION	Create the connection with the full name SAP_CONTENT_<ConnectionName> instead of <ConnectionName>. Once the connection names can be created as <ConnectionName> we will update this entry accordingly.	2021.19 -
One of the following content packages cannot be deployed: • Finance for SAP S/4HANA Cloud • Financial Analytics Dashboard for SAP Analytics Cloud • SAP Intelligent Real Estate • Solution Order Analysis for SAP S/4HANA Cloud. The deployment fails with an error like or similar to the following: *Datatype string(5) of attribute 'XYZ' in CSN Document does not match to datatype int(2) of target table.*	If you had previously imported one or several of the mentioned packages from a content release <= 2022.Q3 and with a DP Agent version < 2.5.5, a boolean value got a wrong data type in SAP Data Warehouse Cloud. For SAP_FI_SemTagGLAccount the length of two attributes have been shortened. You have by now updated to a new version of the DP Agent (>= 2.5.5). This results in the usage of the expected data type in SAP Data Warehouse Cloud. These changes can possibly affect the following remote tables: • SAP_FI_CompanyCode • SAP_FI_Costcenter • SAP_FI_FiscalYearPeriodVariant • SAP_FI_GLAccount_LineItem	2022.22 -

You have updated your DP Agent version from < 2.5.5 to 2.5.5 or newer	• SAP_FI_GLAccount • SAP_FI_PlanningCategory • SAP_FI_PlanningEntryItem • SAP_FI_SemTagGLAccount In case you have replicated data into these tables, delete the data, refresh the remote table and re-deploy these tables and any other not yet deployed object of your content package.	