BW Modernization Webinar Series - Session 7

Working with SAP Business Warehouse Elements in SAP Datasphere

Dominik Kurz, SAP
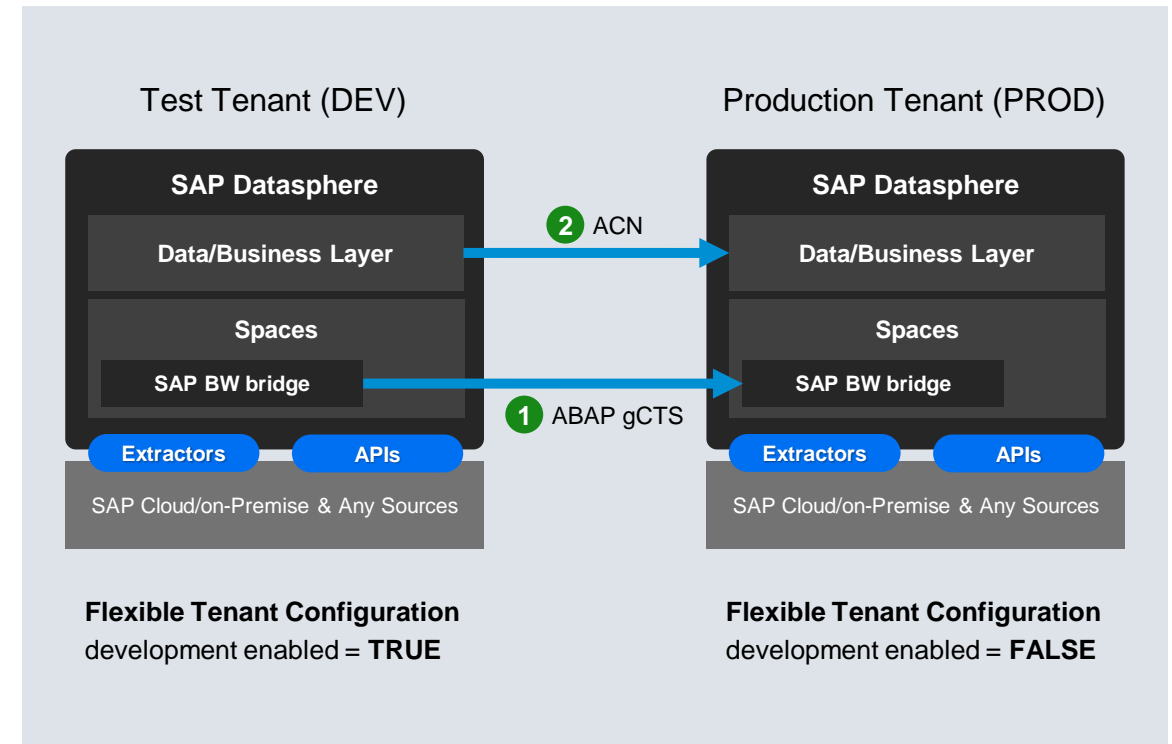
Public

Best practices – Infrastructure, Space concept, naming convention …

SAP BW bridge: Multi-tier landscape support

- Define your landscape setup **BEFORE** you provision the SAP Datasphere tenants.
  Single-tier setups cannot be converted!

- DEV tenant of the SAP BW bridge instance is automatically set to "development enabled = TRUE" ☞ do not change this!

- PROD tenant of the SAP BW bridge must be configured as "development enabled = FALSE"

- Then you can start transporting from DEV to PROD between the SAP BW bridge instances

- Both transport mechanisms work independently, therefore
  1. transport the SAP BW bridge objects first, expose the data and objects in the SAP BW bridge space. In SAP Datasphere, SAP BW bridge, transports are carried out via gCTS (git-based Change and Transport System, see SAP Help for details). This is controlled via the software component. Initially, all objects assigned to a software component are transferred to other systems in the system landscape and subsequently a delta mechanism is available in gCTS.
  2. transport the SAP Datasphere objects on top. In SAP Datasphere, transports between tenants are carried out using the transport and CSN/JSON methods. The transports are controlled via the SAP Analytic Content Network (ACN), see SAP Help for more details.

Test Tenant (DEV)

| SAP Datasphere |
| Data/Business Layer |
| Spaces |
| SAP BW bridge |
| Extractors | APIs |

SAP Cloud/on-Premise & Any Sources

2 ACN

1 ABAP gCTS

Production Tenant (PROD)

| SAP Datasphere |
| Data/Business Layer |
| Spaces |
| SAP BW bridge |
| Extractors | APIs |

SAP Cloud/on-Premise & Any Sources

Flexible Tenant Configuration
development enabled = **TRUE**

Flexible Tenant Configuration
development enabled = **FALSE**

For more information, see also SAP Note 3130759

Blog on the topic:
https://blogs.sap.com/2023/06/21/how-to-transport-in-an-sap-bw-bridge-system-landscape/

Developer tutorial:
https://developers.sap.com/tutorials/abap-environment-abapgit.html

Modernize your Data Warehousing Solution

Best practices – Space concept

TOPIC_C

Topic C

TOPIC_B

Topic B

TOPIC_A

Topic A

✔ Healthy

Deployed on Feb 22, 2022 02:22

Storage:

2.5 GB of 5 GB

Memory:

1.5 GB of 2 GB

SAP Datasphere

👤 72   🖧 9   ▤ 143   Edit

ADMINISTRATION

Administration

✔ Healthy

Deployed on Feb 22, 2022 02:22

Storage:

2.5 GB of 5 GB

Memory:

1.5 GB of 2 GB

SAP Datasphere

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PERMISSIONS

Permissions

✔ Healthy

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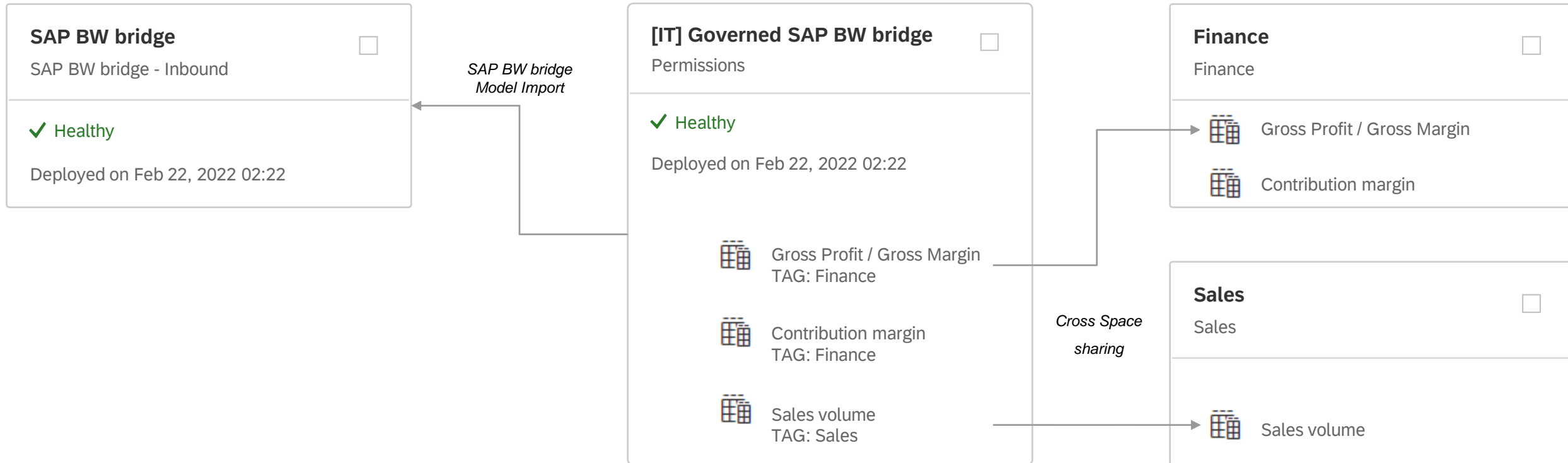
Storage:

2.5 GB of 5 GB

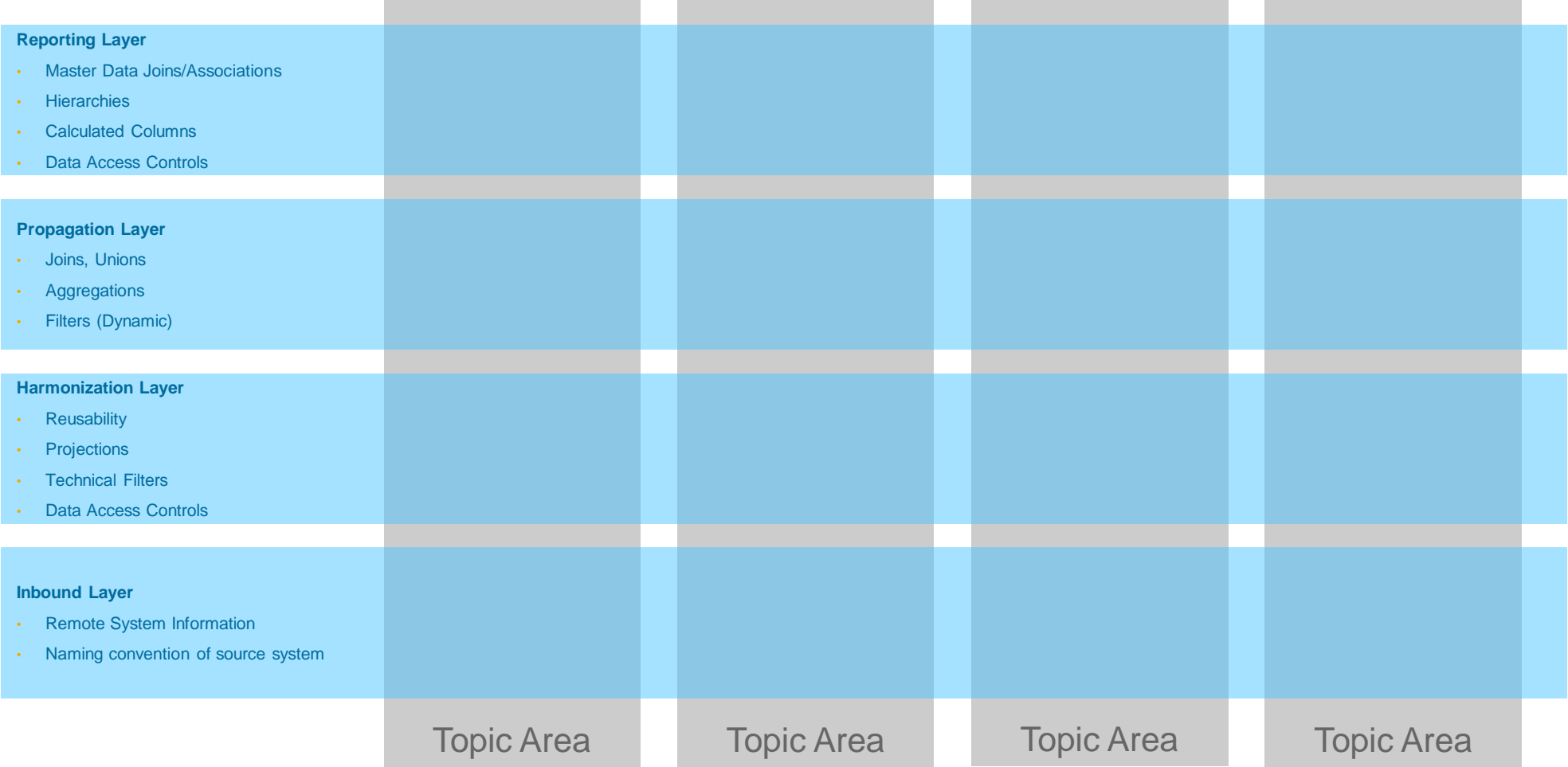Memory:

1.5 GB of 2 GB

SAP Datasphere

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Modernize your Data Warehousing Solution
Best practices – Space concept with SAP BW bridge

SAP BW bridge
SAP BW bridge - Inbound

✔ Healthy

Deployed on Feb 22, 2022 02:22

SAP BW bridge Model Import

[IT] Governed SAP BW bridge
Permissions

✔ Healthy

Deployed on Feb 22, 2022 02:22

Gross Profit / Gross Margin
TAG: Finance

Contribution margin
TAG: Finance

Sales volume
TAG: Sales

Finance
Finance

Gross Profit / Gross Margin

Contribution margin

Cross Space sharing

Sales
Sales

Sales volume

Modernize your Data Warehousing Solution Best practices – Modelling approach

Reporting Layer
- Master Data Joins/Associations
- Hierarchies
- Calculated Columns
- Data Access Controls

Propagation Layer
- Joins, Unions
- Aggregations
- Filters (Dynamic)

Harmonization Layer
- Reusability
- Projections
- Technical Filters
- Data Access Controls

Inbound Layer
- Remote System Information
- Naming convention of source system

Topic Area   Topic Area   Topic Area   Topic Area

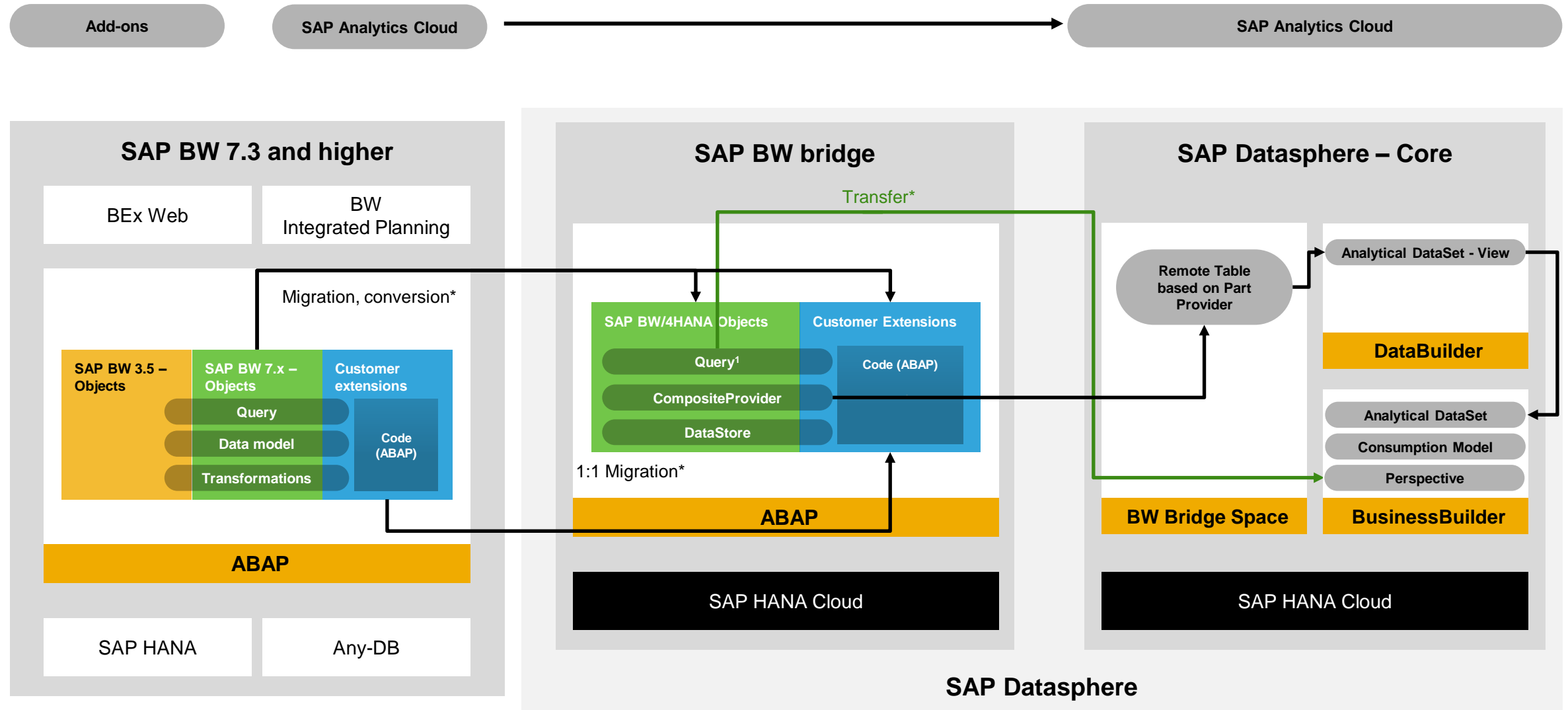|	Layer	Object Type	Variant	Topic Area	Object Name	Number
Letter	1	1	1	4	6	2
	IL	RT				

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Layers shift – Architecture approach

SAP BW Bridge. Layers shift between SAP Datasphere & SAP BW Bridge
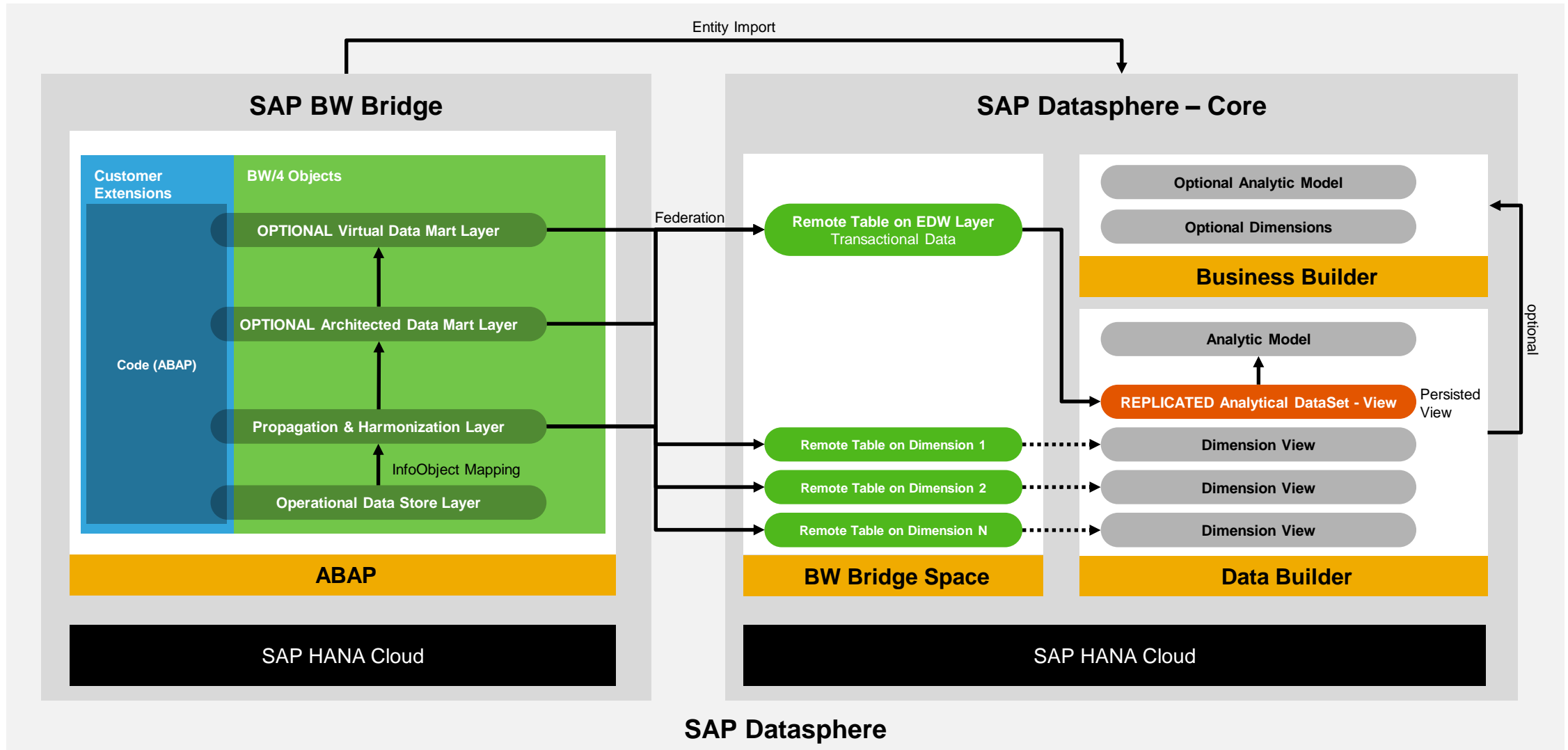
SAP BW bridge – Entity Import

SAP BW bridge: SAP BW Query to SAP Datasphere conversion

Add-ons

SAP Analytics Cloud ⟶ SAP Analytics Cloud

SAP BW 7.3 and higher

BEx Web

BW Integrated Planning

Migration, conversion*

SAP BW 3.5 – Objects

SAP BW 7.x – Objects
- Query
- Data model
- Transformations

Customer extensions

Code (ABAP)

ABAP

SAP HANA

Any-DB

SAP BW bridge

Transfer*

1:1 Migration*

SAP BW/4HANA Objects
- Query[1]
- CompositeProvider
- DataStore

Customer Extensions
- Code (ABAP)

ABAP

SAP HANA Cloud

SAP Datasphere – Core

Remote Table based on Part Provider

Analytical DataSet - View

DataBuilder

Analytical DataSet

Consumption Model

Perspective

BW Bridge Space

BusinessBuilder

SAP HANA Cloud

SAP Datasphere

* More information on the SAP Datasphere Roadmap

[1] Not visible or executable

SAP BW Modelling & Bridge Model conversion

BW Capabilities

Supported	Planned	Unsupported
▪ Calculated key figure	▪ Handling and reuse of hierarchies (Q1/2024)	▪ Temporal Join
▪ Restricted key figure	▪ Non-Cumulative Key figures (Q2/2024)	▪ Ambiguous Join
▪ Global filter	▪ Constant selection (Q1/2024)	▪ BADI Provider as PartProvider
▪ Time dependency	▪ Exit variables	▪ Open ODS View without calculation scenario
▪ Key figure with currency	▪ Multi-Structure (manually already possible via Cross calculation in SAP Analytics Cloud)	
▪ Navigation attributes	▪ Unit Conversion	
▪ Texts	▪ Replacement path variables	
▪ Currency Conversion	▪ Conditions	

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Complexity drivers for SAP BW customers

Understand what makes your SAP BW complex

SAP BW Query	(Non-ODP) Data sources	OpenHub destinations	Analysis Process Designer (APD)	Planning and Consolidation	Mixed modeling
OLAP Features SAP Datasphere is our semantic layer combining data from several sources & layers and covers the same functionality as OLAP queries. Many query features have already been implemented. Others have been identified and are listed as roadmap items.	**FILE, HANA, Big Data sources** SAP Datasphere provides many more data source types than SAP BW. All data sources that were available in SAP BW are equally available in SAP Datasphere. The focus of SAP BW bridge as a staging layer is on classic SAP connections (ODP_SAP).	**Mass data export** Open Hub destinations are not required in SAP Datasphere (and are not supported in SAP BW bridge) as it provides native export and data transport capabilities.	**Analysis process modeling** In SAP Datasphere you have the option to modernize the analysis process with a DataFlow artefact (manual). The conversion to SAP BW/4HANA supports APDs (DataFlow object)	**SAP BPC and BCS (SEM-BCS)** SAP BW add-ons are not supported in SAP Datasphere or SAP BW bridge. Strategically, the successor for SAP BCS is S/4HANA Group reporting. The successor for SAP BPC is SAP Analytics Cloud Planning (blog, web page). For SAP BW/4HANA, we support the consolidation add-on (SAP BCS4/HANA, see details) and SAP BCS aligned with the SAP S/4HANA maintenance strategy	**Hybrid models** SAP HANA on-prem is based on XS Classic, while the SAP HANA Cloud engine underlying SAP Datasphere is based on XS Advanced (XSA). Regarding the complexity and different kind of technologies, no migration option can be offered.

# Connection options for SAP BW customers

SAP BW Hybrid. Integration Overview

- Two different ways available for integrating SAP BW and SAP BW/4HANA systems:
  - Federated/replicated data consumption scenarios via
    - Operational Data Provisioning framework (SAP ABAP connection)
    - External SAP HANA Views (SAP HANA connection)
  - Federated/replicated business semantics integration scenarios via SAP BW/4HANA Model Transfer connection

- Differences in support of consumable entities, supported entity features, federated or replicated scenarios, location & usage of calculation engine

- Remote or replicated data consumption scenarios supported with SAP BW & SAP BW/4HANA

- Business semantics migration support for SAP BW/4HANA only via SAP BW/4HANA Model Transfer connection
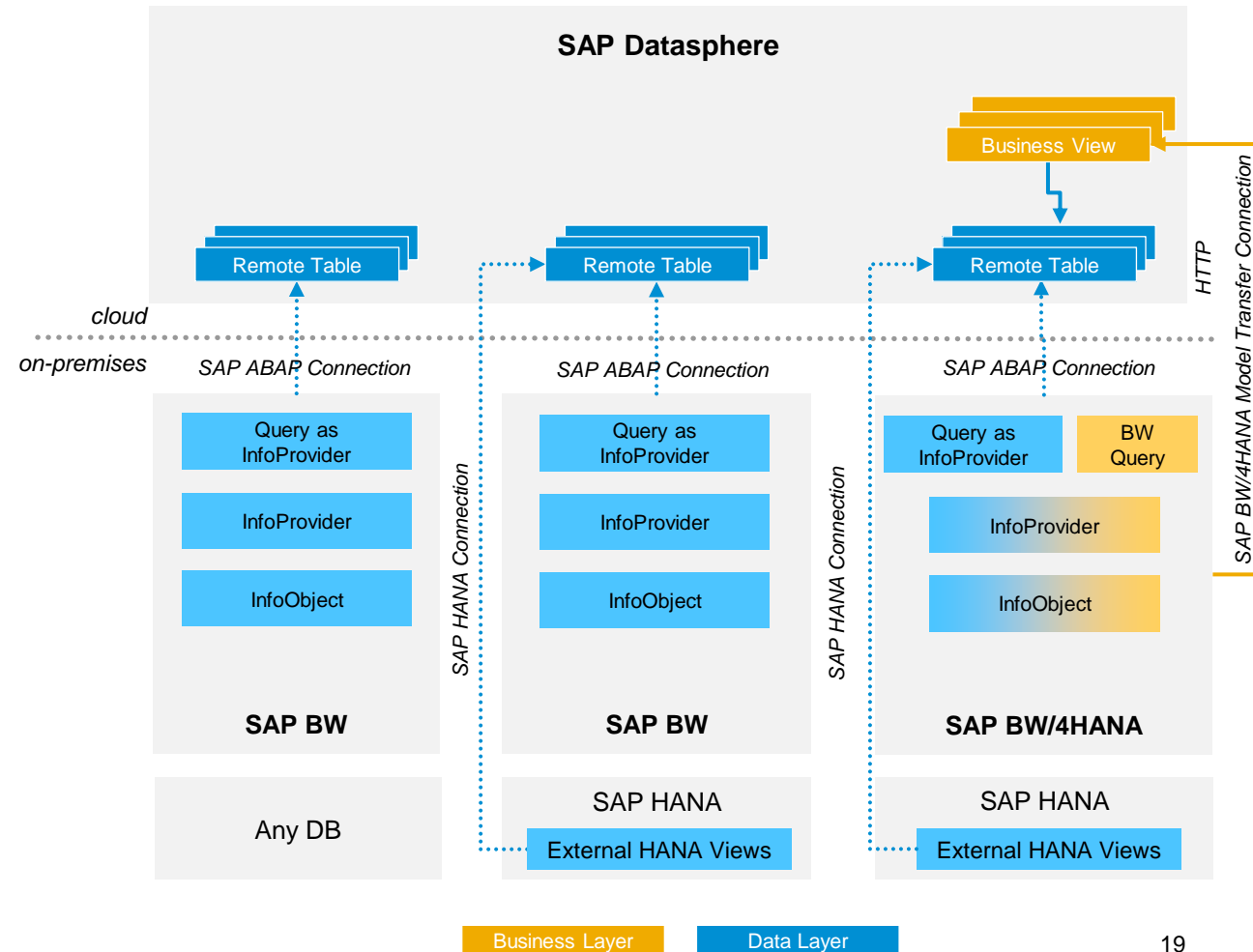
SAP BW Hybrid. SAP BW/4HANA Model Transfer

- Provide SAP BW/4HANA business semantics to SAP Datasphere

- Enable staging scenarios for SAP BW/4HANA data and virtual models

- Transfer BW Query as native entity (KPI, analytic model)

- Support BW Analysis Authorizations in SAP Datasphere

- Hierarchy Support (virtual, available via semantics, native SAP Datasphere dimension with hierarchies)*

- SAP BW/4HANA system only acts remote data source, calculation engine execution (via MDS) happens in SAP Datasphere

- More information about supported features in SAP Note 2932647

* According to the Roadmap.

Business Layer   Data Layer
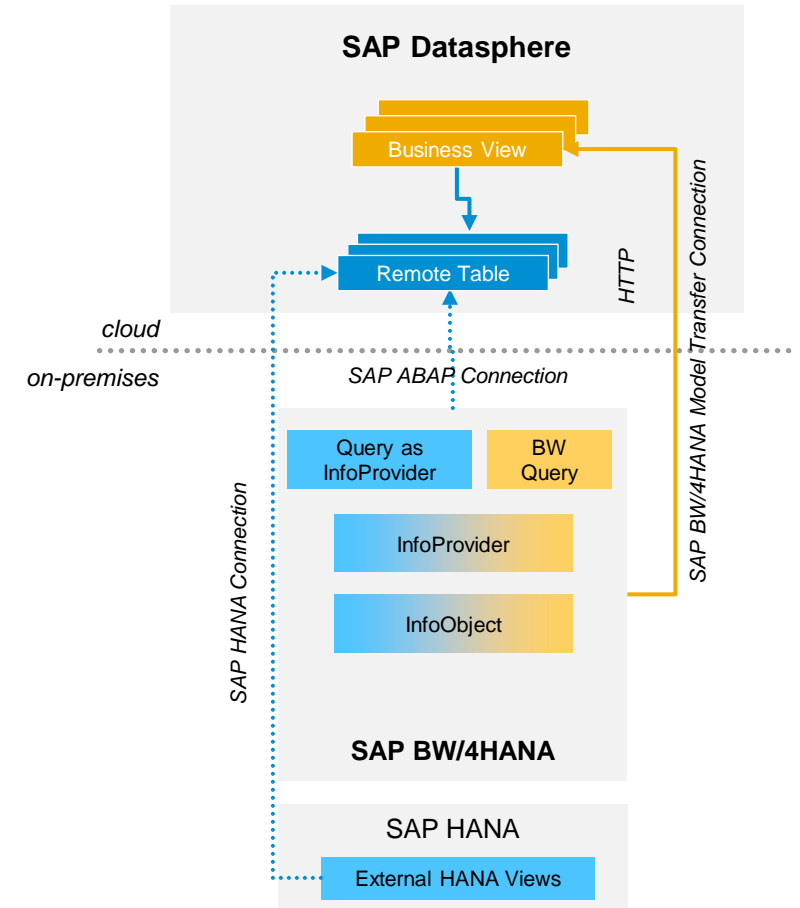
SAP Datasphere – Remote Authorizations

Leverage your SAP BW/4HANA authorization in SAP Datasphere
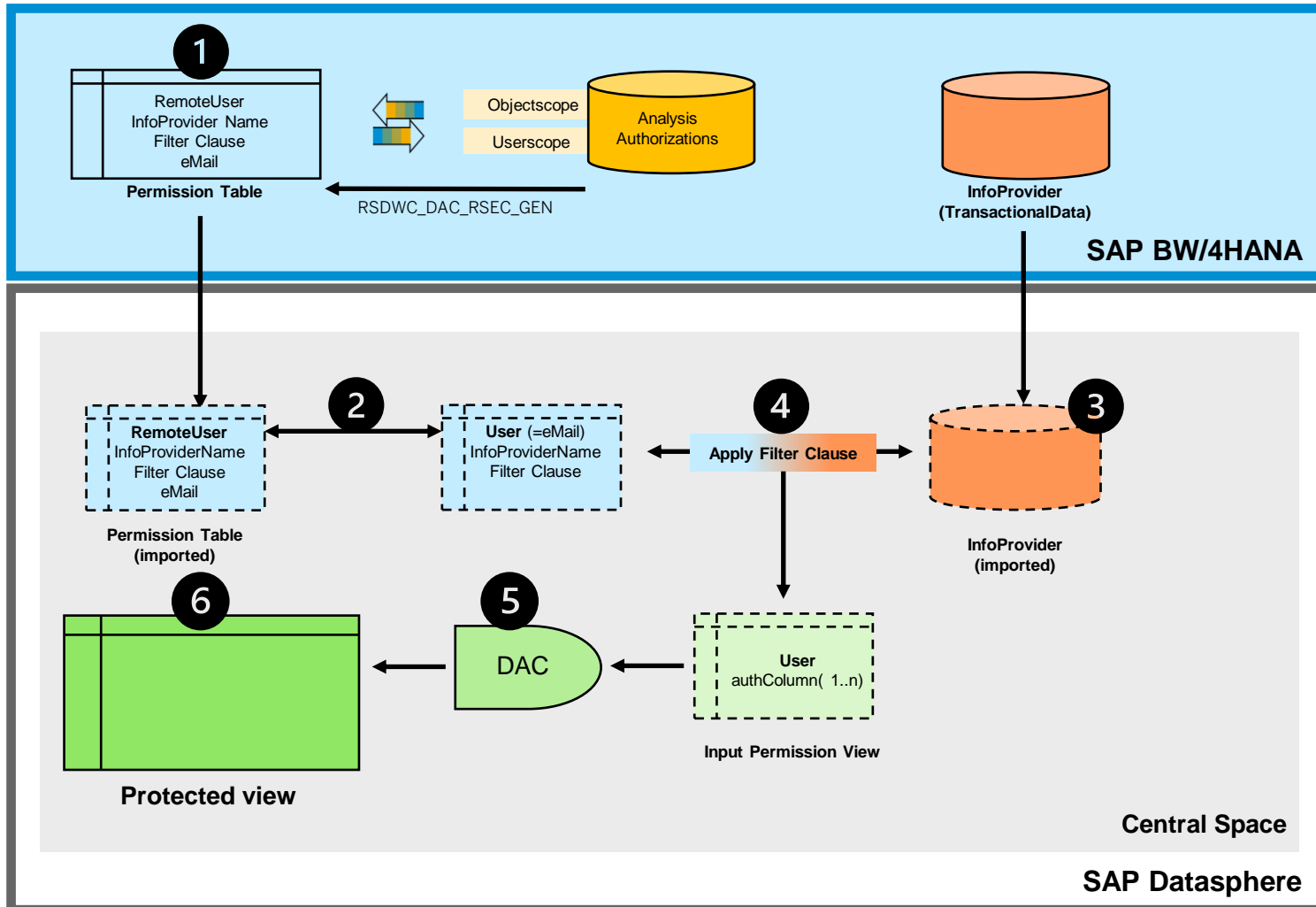
Process Flow:

1. For the given scope (User, InfoProvider) the Analysis Authorizations are exported in the Permission Table in SAP BW/4HANA (Transaction: RSDWC_DAC_RSEC_GEN; technical name of Permission Table: RSDWC_RSEC_DAC)

2. Permission Table is imported to SAP Datasphere and the (BW)Remote User is replaced by the Datasphere User which is the eMail by Standard, BAdI provided for other logic of replacement

3. SAP BW/4HANA InfoProvider must be imported into SAP Datasphere (via Data Builder) as well

4. An Input Permission View is generated by applying the Filter Clause (with a generated SQL Script)

5. Data Access Control is generated

6. Protected View from imported InfoProvider is generated with the Data Access Control assigned. This view can be shared to other Spaces.

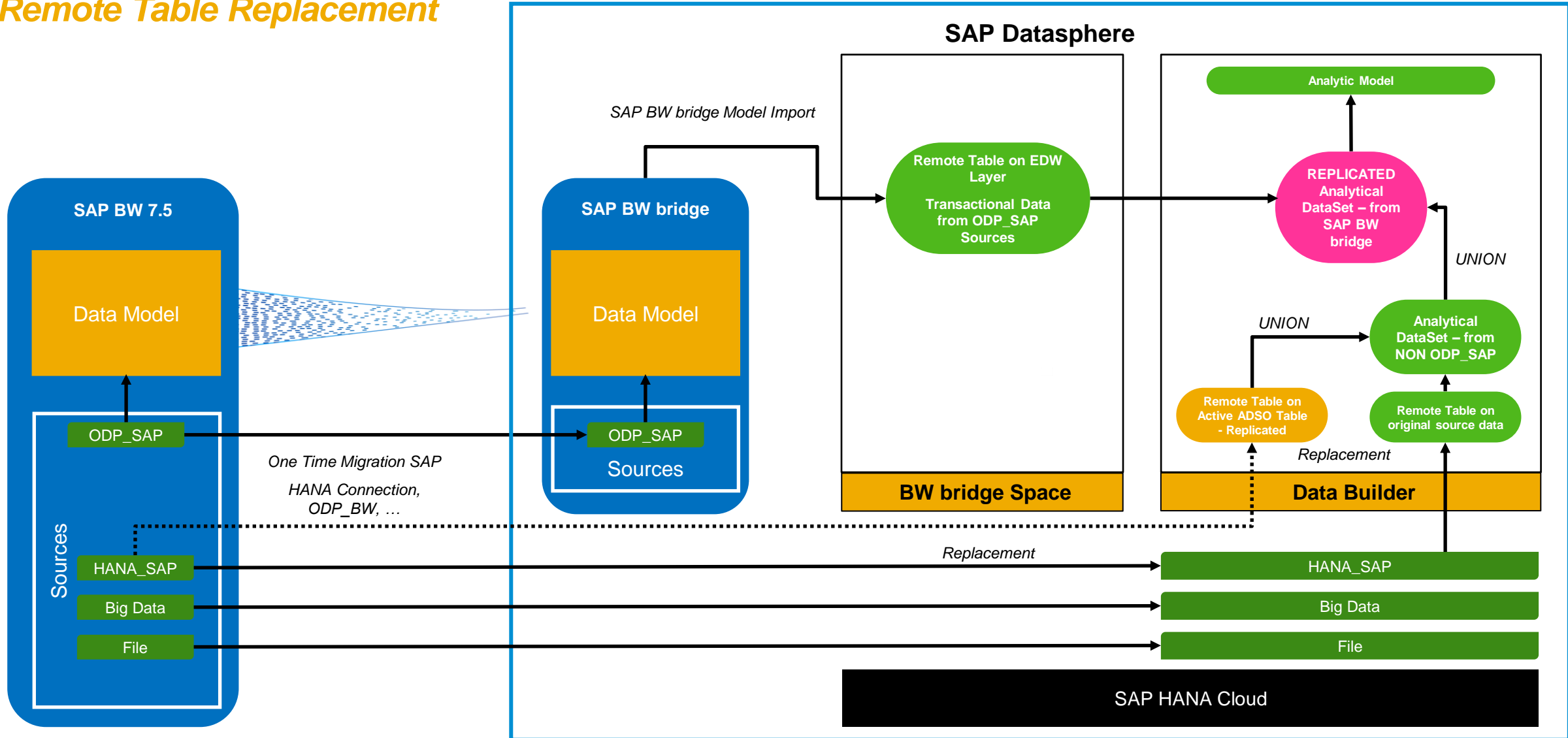**Summary:**

Three objects will be generated in SAP Datasphere for each Remote InfoProvider selected for protection:

– Data Access Control

– View of the SAP BW/4HANA InfoProvider protected by the Data Access Control

– SQL Script that exposes the permissions for each user based on the Analysis Authorizations from SAP BW/4HANA

Takeover Metadata & Historical Data for NON ODP_SAP data models

Takeover of Metadata & Historical Data for NON ODP_SAP Data models

Remote Table Replacement

SAP Datasphere

SAP BW 7.5

Data Model

ODP_SAP

Sources

One Time Migration SAP

HANA Connection, ODP_BW, …

HANA_SAP

Big Data

File

SAP BW bridge

Data Model

ODP_SAP

Sources

SAP BW bridge Model Import

Remote Table on EDW Layer

Transactional Data from ODP_SAP Sources

BW bridge Space

Analytic Model

REPLICATED Analytical DataSet – from SAP BW bridge

UNION

Analytical DataSet – from NON ODP_SAP

UNION

Remote Table on Active ADSO Table - Replicated

Remote Table on original source data

Replacement

Data Builder

Replacement

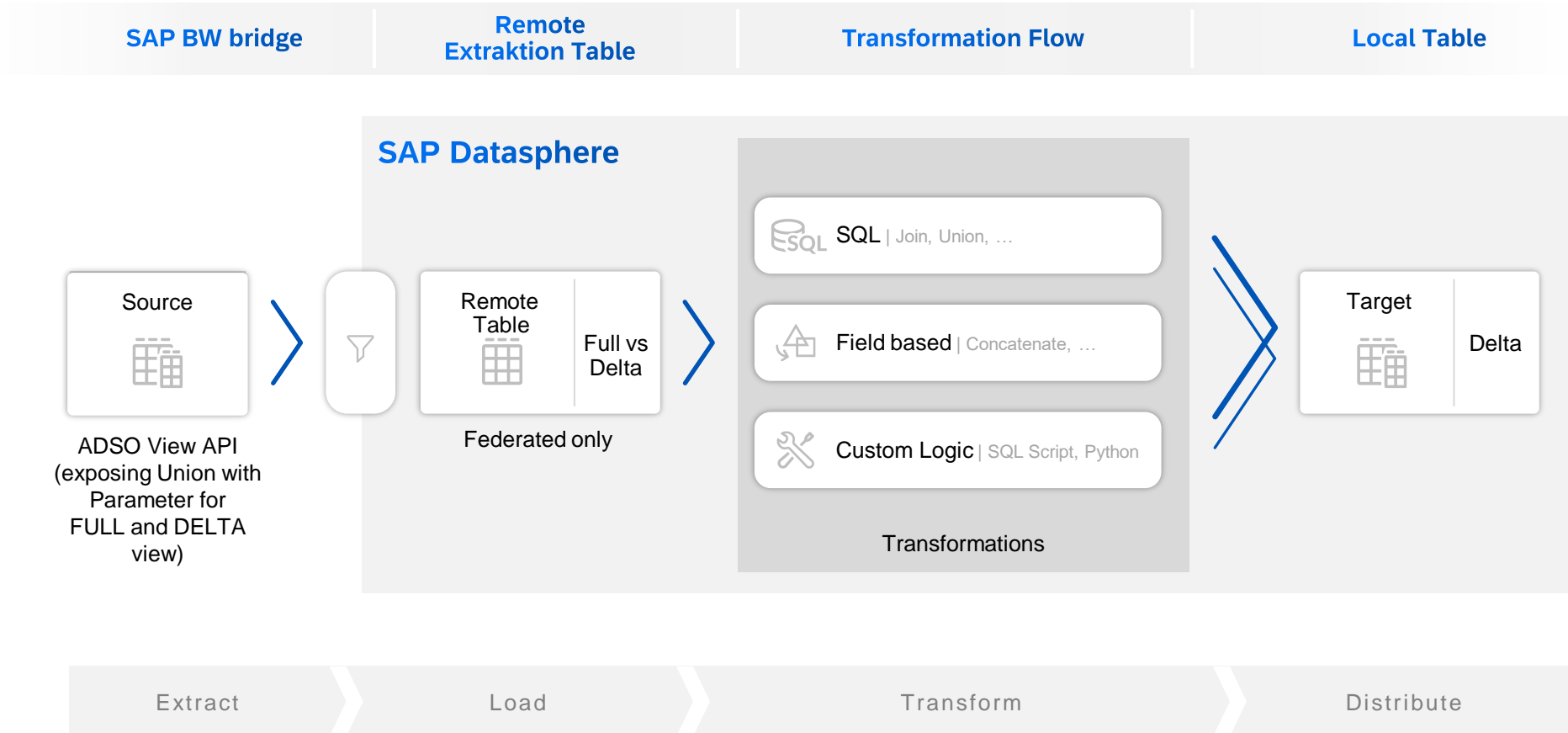HANA_SAP

Big Data

File

SAP HANA Cloud

Transformation Flow – SAP BW bridge Delta

Replication Flow is intended to become our strategic replication technology

Delta enabled transformation for staging. Focused on SAP HANA transformations, allowing customer code extensions

Planned a light-weight Python exit. Extended scripting (libraries, testability, debugging) but still sandboxed.

| SAP BW bridge | Remote Extraktion Table | Transformation Flow | Local Table |

SAP Datasphere

Source

ADSO View API (exposing Union with Parameter for FULL and DELTA view)

Remote Table | Full vs Delta

Federated only

SQL | Join, Union, …

Field based | Concatenate, …

Custom Logic | SQL Script, Python

Transformations

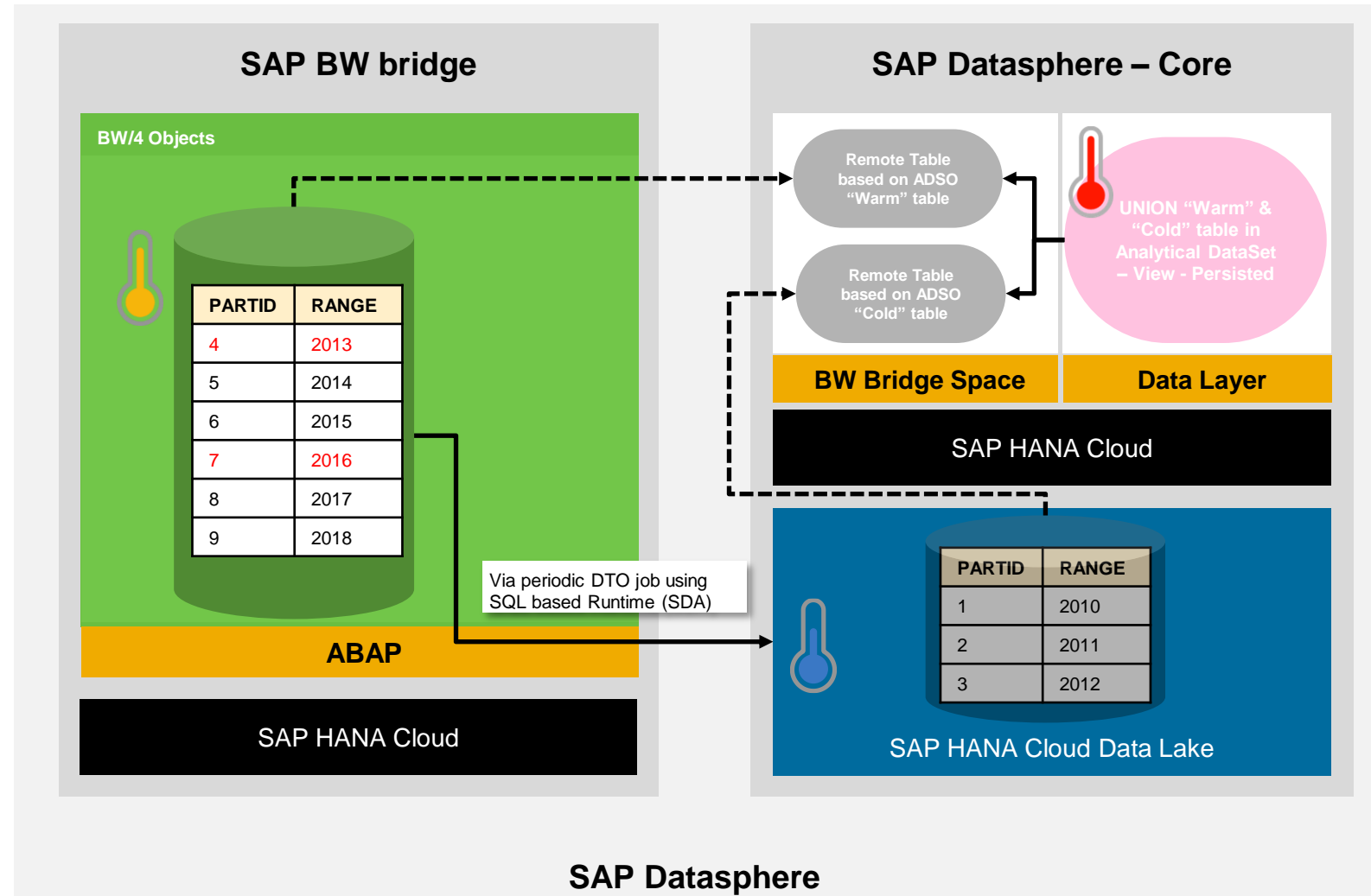Target | Delta

| Extract | Load | Transform | Distribute |

SAP BW bridge - Data tiering optimization (DTO) – Q4/2023
SAP HANA Cloud Data as Cold-Storage

Partition Temperature in SAP BW bridge ("Plan")

Updated entries made by DTO Admin…

2013 and 2016 to be moved….

PARTID	RANGE	TEMPERATURE
1	2010	COLD
2	2011	COLD
3	2012	COLD
4	2013	COLD
5	2014	WARM
6	2015	WARM
7	2016	WARM
8	2017	WARM
9	2018	WARM

SAP BW bridge

BW/4 Objects

PARTID	RANGE
4	2013
5	2014
6	2015
7	2016
8	2017
9	2018

ABAP

SAP HANA Cloud

Via periodic DTO job using SQL based Runtime (SDA)

SAP Datasphere – Core

Remote Table based on ADSO "Warm" table

Remote Table based on ADSO "Cold" table

UNION "Warm" & "Cold" table in Analytical DataSet – View - Persisted

BW Bridge Space   **Data Layer**

SAP HANA Cloud

PARTID	RANGE
1	2010
2	2011
3	2012

SAP HANA Cloud Data Lake

SAP Datasphere

Thank you.

THE BEST RUN **SAP**