

## A Few Cool Features in BW 7.4 on HANA that Make a Difference

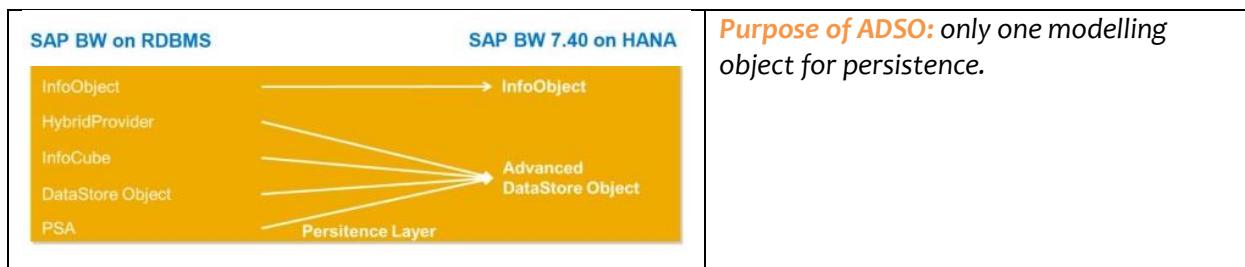
Here is a short summary of new functionality in BW 7.4 on HANA for those familiar with traditional SAP BW. I have collected and highlighted a few features out of many that I believe are crucial for understanding the benefits of BW on HANA SP8 and making architectural decisions.

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### Advanced DSOs

The ADSO is the only object you need for persistence. It replaces all previous types of DSOs, PSA, infocube, Hybrid Provider.



This raises a question on how to deal with the specific classical modeling objects in BW:

- The field-based structure of the PSA
- Write Optimized DSO
- The 3-table approach in standard DSO
- The ‘every characteristic is key’ approach of the InfoCube.

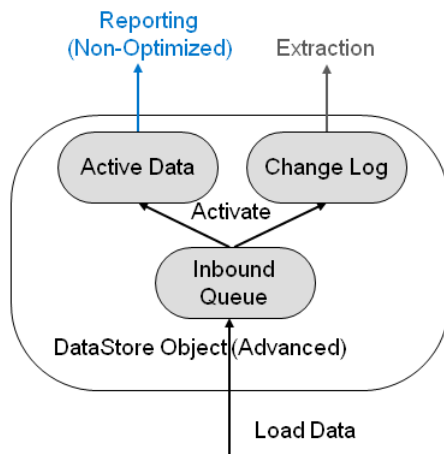
The Advanced DSO manages to replace all of these objects by basically being all of them. In the ADSO settings you can specify the ADSO to behave like either one of these objects. SAP has provided specific templates for each use case:

- Data Acquisition Layer
- Corporate memory
- Data Propagation Layer
- Reporting Layer

Each of these templates is made up of a specific combination of settings. The data propagation layer, for example, would require ticking the checkboxes below. These settings create an object with an active table to report on, and a change log table for further data provisioning, basically creating a classical Standard DSO.

▼ Settings

- Activate/Compress Data
  - Write Change Log
  - Keep Inbound Data, extract from Inbound Table
  - Unique Data Records
- All Characteristics are Key, Reporting on Union of Inbound and Active Table

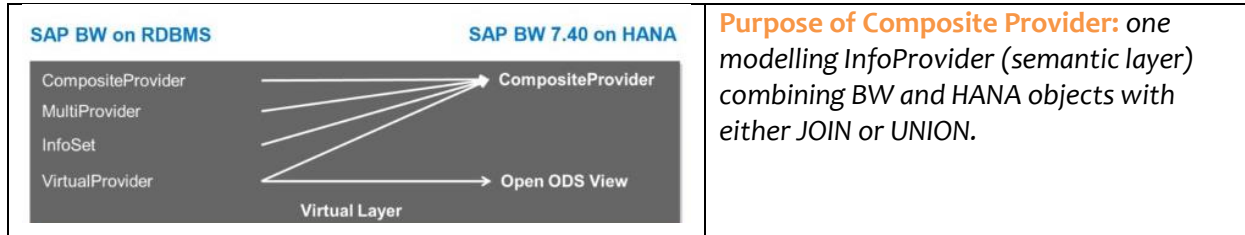


### Benefits of ADSO:

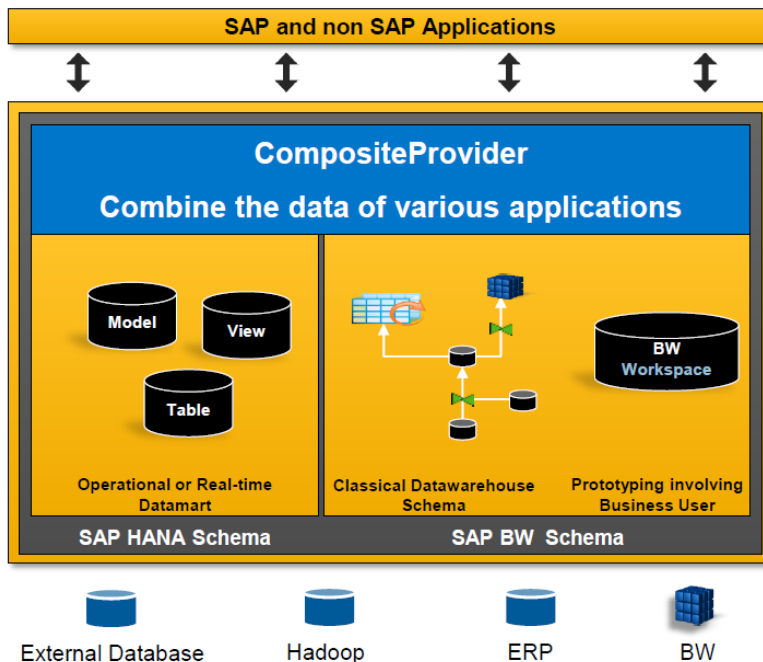
- **Simplification** of object types. The ADSO is your object for persistence with settings to fine-tune it to your specific needs.
- **Flexibility** in data modeling. Because the ADSO is manageable by settings, you can start out modeling your ADSO using the Reporting Layer settings. If requirements change or you come across new insights, you can now simply change your settings to change that object into the propagation layer for example. No new object needed, **this can even be done without losing data in most cases.**
- **Performance** of data loads and activation is optimized for HANA as ADSO is a HANA native object.

## Composite providers

Composite Provider is an InfoProvider that combines data from several analytical indexes or from other InfoProviders (by JOIN or UNION) and makes this data available for reporting and analysis.



UNION and JOIN operations are executed in HANA and not the application server. BEx queries can be created on Composite Providers as on any other BW InfoProviders.

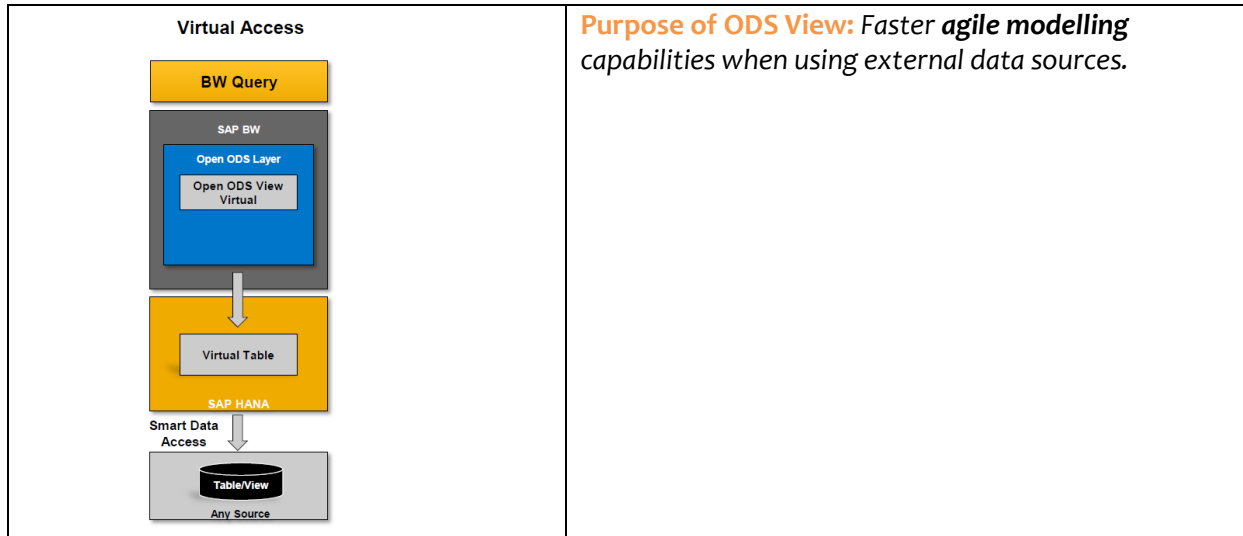


### Benefits of Composite Provider:

- BW InfoProviders can be combined using JOIN operation allowing us to create new scenarios not possible or very expensive with standard techniques (MultiProvider, InfoSet)
- Ability to combine BW InfoProviders and HANA tables/views via UNION or JOIN
- Faster and simpler data modeling - successor to MultiProvider and InfoSet
- Reduce database size: virtual modelling capabilities as opposed to data flows
- Supports usage of inventory key figures and planning scenarios

## Open ODS views

Open ODS views enable you to define BW data models for objects like database tables, database views or BW DataSources (for direct access). These data models allow flexible integration without the need to create InfoObjects.



ODS Views allow to consume external data sources in BW without staging, combine data sources with BW models and physically integrate (load) external data sources by creating DataSources.

Open ODS view allows data sources to be virtually consumed without the need for a separate BW persistence for the data. These data models can be located in a database schema (of the SAP HANA database in BW), which is not managed by BW. Alternatively, the models can be located in other databases, which can be connected to the SAP HANA database in BW using SAP HANA Smart Data Access.

### Benefits of Open ODS View:

- Flexible and easy integration of external data models
- Agile modeling combining infoobjects and field based modelling
- Integrated modelling environment between HANA and BW
- Enhanced business flexibility by supporting “the logical EDW”
- Reduces data modelling efforts

## SLT sources

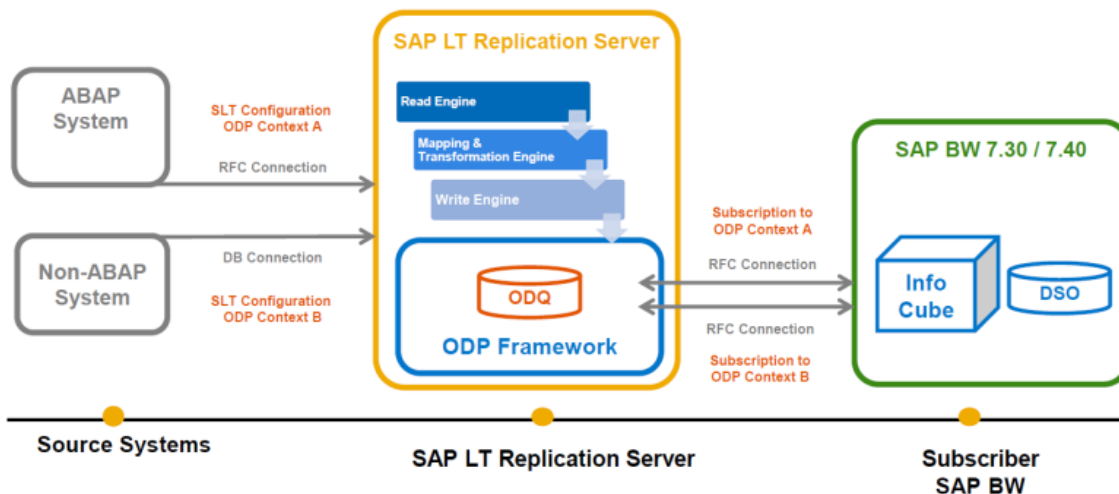
There are three types of data replication techniques:

1. SAP Landscape Transformation (SLT)
2. SAP Business Objects Data Services (BODS)
3. SAP HANA Direct Extractor Connection (DXC)

SLT replication server allows loading and replicating data in real time from SAP and non-SAP source

systems into SAP HANA environment. SLT allows real time and scheduled data replication, replicating only relevant data into HANA.

	<b>Purpose of SLT Replication:</b> Efficient way of data replication from SAP and non-SAP systems to HANA.
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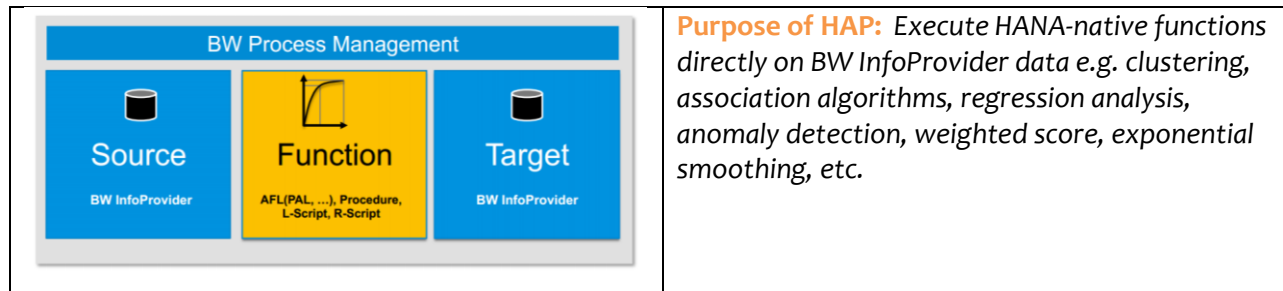
The replication server uses the Operational Data Provisioning (ODP) Framework. It is possible to connect several data providers, each with its own delta queue mechanism (ODQ). The delta queue mechanism is loaded with data from the source and there will be a database trigger for each new, changed or deleted record. You can even define how long data will be kept in the delta queue. More than one subscriber can use a defined delta queue at the same time.

**Benefits of SLT:**

- Real time delta-enabled data acquisition capabilities for any source
- Operational Data Provisioning takes a lot of load from source systems because data is extracted exactly once and then distributed over ODP as needed, may it be in real-time or in certain time intervals
- Operational Data Provisioning offers a recovery mechanism with configurable data retention periods. That means you can define how long the data should be stored in the ODQ after it has been read by all subscribing applications.
- Highly efficient compression enables data compression rates up to 90 percent in ODQ

## HANA Analysis Process in BW

With the SAP HANA analysis process (HAP), BW users are able to use the functions of the SAP HANA database and can combine these with the functions in the BW system.



Following are some of the standard functions available under Data Analysis:

Operation: \* (1) 10 Entries found

Restrictions

Analysis Type	Sub C...	Long Description
0BW_OPER_ABC	LFUNC	ABC Analysis
0BW_OPER_APRIORI	LFUNC	Association Analysis (Apriori Algorithm)
0BW_OPER_DOUBLE_SMOOTH	LFUNC	Double Exponential Smoothing
0BW_OPER_K_MEANS	LFUNC	K-Means Algorithm
0BW_OPER_OUTLIERS	LFUNC	Anomaly Detection
0BW_OPER_SINGLE_SMOOTH	LFUNC	Single Exponential Smoothing
0BW_OPER_TRIPLE_SMOOTH	LFUNC	Triple Exponential Smoothing
0BW_OPER_WEIGHTED_SCORING	LFUNC	Weighted Scoring Method
0BW_PROJECTION		Projection

Supported procedures/algorithms:

- AFL-functions (PAL, ...)
- L-script, R-script, SQL-script procedure.

On SAP HANA database SAP recommends using HAP instead of Analysis Process Designer (APD). The process is then performed exclusively in SAP HANA, thus improving performance. HAP does not offer all features of APD however. You therefore need to check whether the functions you need are offered. If not, you can fall back on APD instead. The main difference in functionality between HAP and APD is that only InfoProviders that a column view exists for on the SAP HANA database are supported as data sources.

### Benefits of HAP:

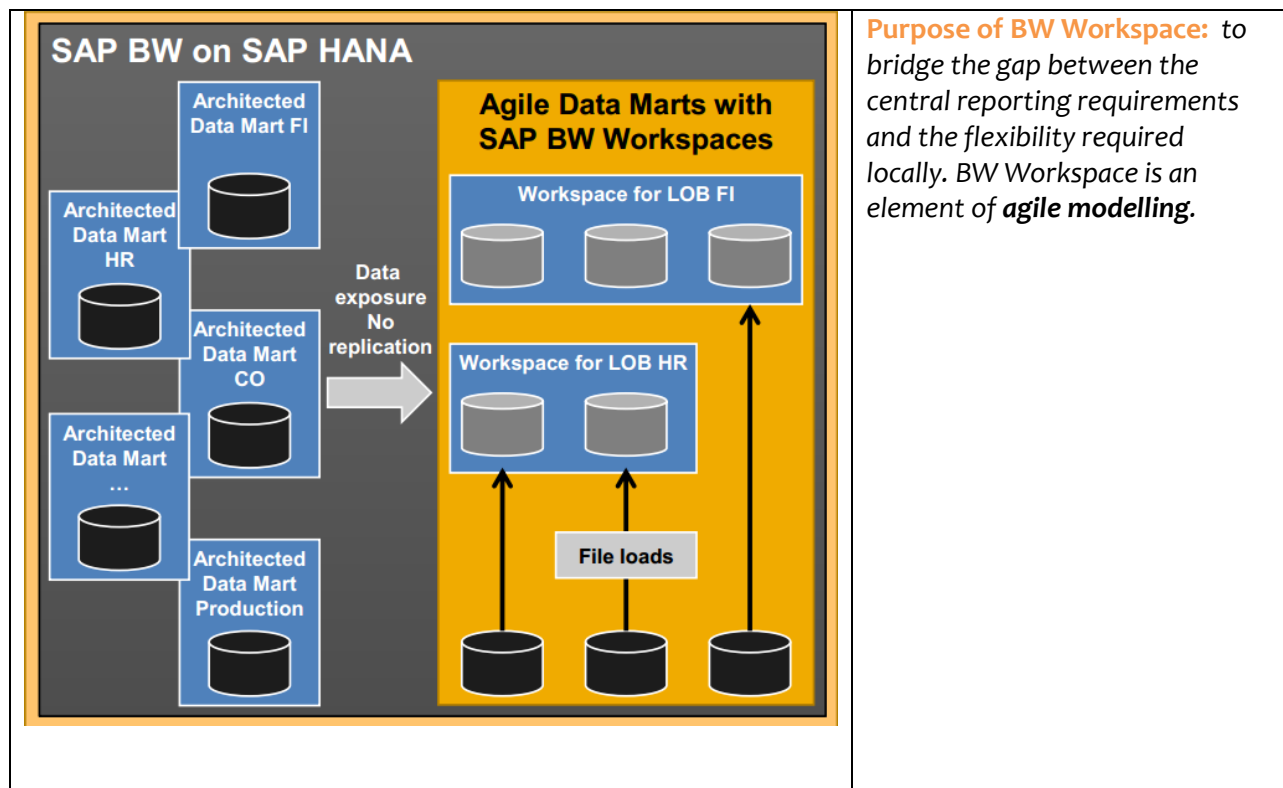
- Execute complex and data intensive processes on HANA without losing the integrity and

integration with the BW environment

- Materialize the result of a HANA Analysis Process in HANA for further processing
- Supporting also a scheduled batch processing use case
- Can be embedded and monitored via DTP and Process Chains

## BW Workspaces

A BW Workspace (agile data mart) enables business users to create ad-hoc scenarios for rapid prototyping. A BW workspace is an area where new models can be created based on central data from the BW system and local data. Workspaces can be managed and controlled by a central IT department and used by local special departments. This means you can quickly adjust to new and changing requirements.



SAP BW Workspaces consist of an administrator tool, workspaces administration, and the BW Workspace Designer.

### Benefits of BW Workspace:

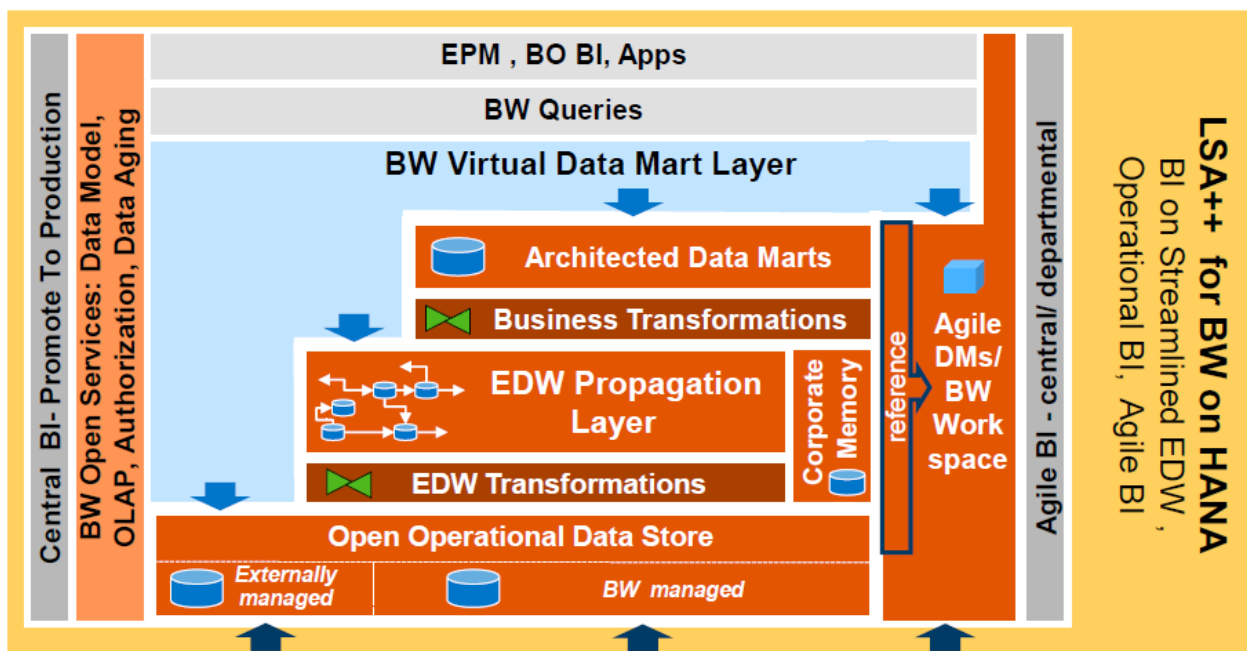
- Area where new models can be created based on central data from the SAP BW system and local data
- Can be managed and controlled by a central IT department and used by local special departments

## Landscape simplification, LSA++

When using SAP BW on HANA a new integrated layer architecture (LSA++) is required to depict a system with different approaches in BI, their persistency layers and virtual data marts.

The flexible, consistent core of the EDW remains in place. In the LSA++, special services for operational, flexible data are added to the core. The main differences to the LSA are:

- Queries on DataStore objects are just as fast as on InfoCubes. Therefore queries can be directly defined on the data propagation layer. You do not need an explicit reporting layer.
- You can define virtual data marts by using CompositeProviders that combine InfoProviders.
- Using special VirtualProviders and TransientProviders, you can access data directly in the SAP HANA database, to allow queries on the data.



The whole model is surrounded by BW Virtual Data Mart Layer which means that we can query on any object here. Hence, we need rules, governance, service level agreements so we can report on ODS Layer objects, on EDW propagation layer objects etc. We can also potentially directly report on Corporate Memory if it makes sense or if there is a business scenario.

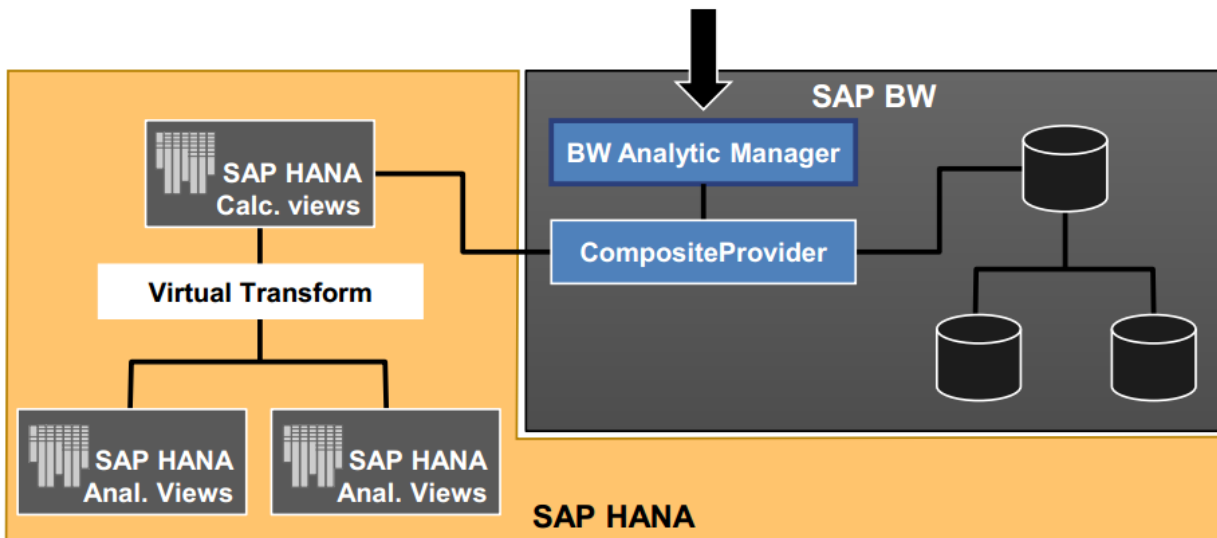
## Mixed scenarios

There are a number of scenarios where HANA objects have to be accessed in BW, and reported on via BEx queries. On the other hand, there are scenarios where BW models (for example, master data objects) need to be accessed in SAP HANA via Analytic views.

Data models in BW can be consumed via BEx queries by a number of BI frontend tools, such as OLAP Analysis, Web Intelligence, BO Design Studio. Alternatively, HANA models can be consumed by SAP Lumira, BO Explorer, SAP UI5, REST web services.

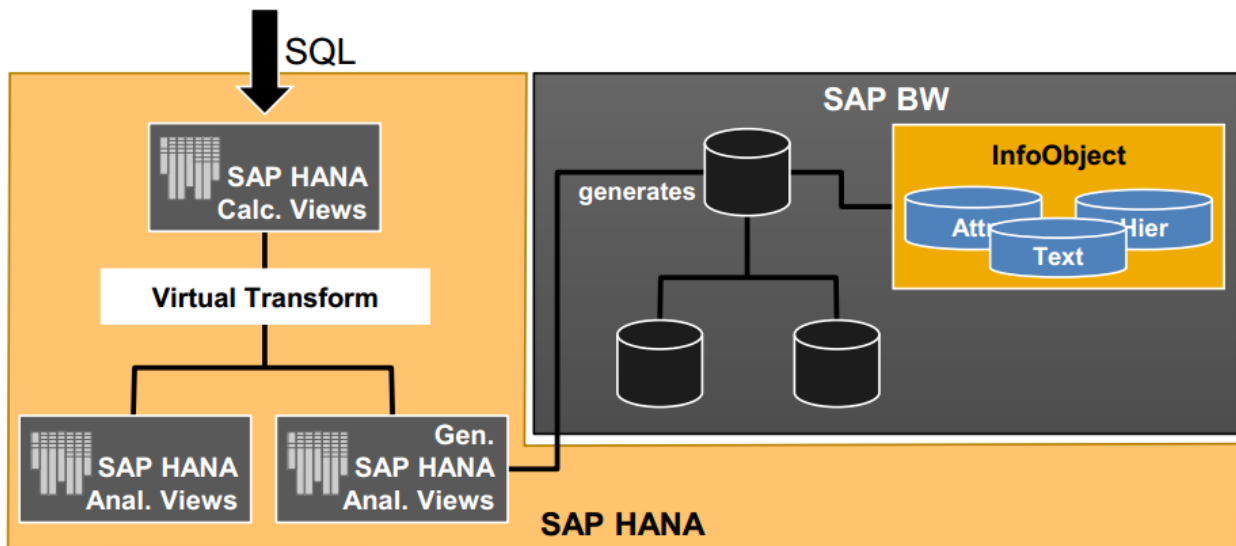


### Consuming HANA tables/views in BW



- Integrate existing SAP HANA models with the new CompositeProvider in SAP BW
- Add BW OLAP functionalities on SAP HANA modeling scenarios
- Leverage SAP HANA interfaces, libraries, and tools in combination with SAP BW

### Consuming BW Model in HANA



- SAP HANA model generation triggered automatically from SAP BW
- Supports automatic synchronization of authorizations and impact analysis
- Direct consumption of SAP BW data via generated SAP HANA views, for example SAP Lumira, BO Explorer, SQL

- Use SAP BW for further modeling in SAP HANA

Mixed scenarios have numerous applications, and BW 7.4 on HANA have built in capabilities to expose BW data models to HANA with a few button clicks. At the same time HANA tables and views are accessible in BW 7.4 via Open ODS Views and Composite Providers.

**Benefits of Mixed Scenarios, combination of BW and HANA:**

- Simplify the data modeling process
- Increase the agility of the Enterprise Data Warehouse
- Reduce the complexity of the EDW landscape
- Combine the strengths of the SQL oriented approach with an integrated EDW application



Sergei Peleshuk has over 15 years of experience implementing BI technologies for global clients in retail, distribution, fast-moving consumer goods (FMCG), oil, and gas industries. He has helped clients to design robust BI reporting and planning capabilities, leading them through all project phases: from analysis of requirements to building BI roadmaps, technical architecture, and efficient BI teams. Sergei is an expert in modern BI tools and technologies available on the market, including SAP Business Warehouse (SAP BW), SAP HANA, BusinessObjects, and SAP Lumira. You may contact Sergei at [peleshuk@biportal.org](mailto:peleshuk@biportal.org)