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Extending the Reach of LSA++ Using New SAP BW 7.40 Artifacts

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SESSION CODE: BI2241

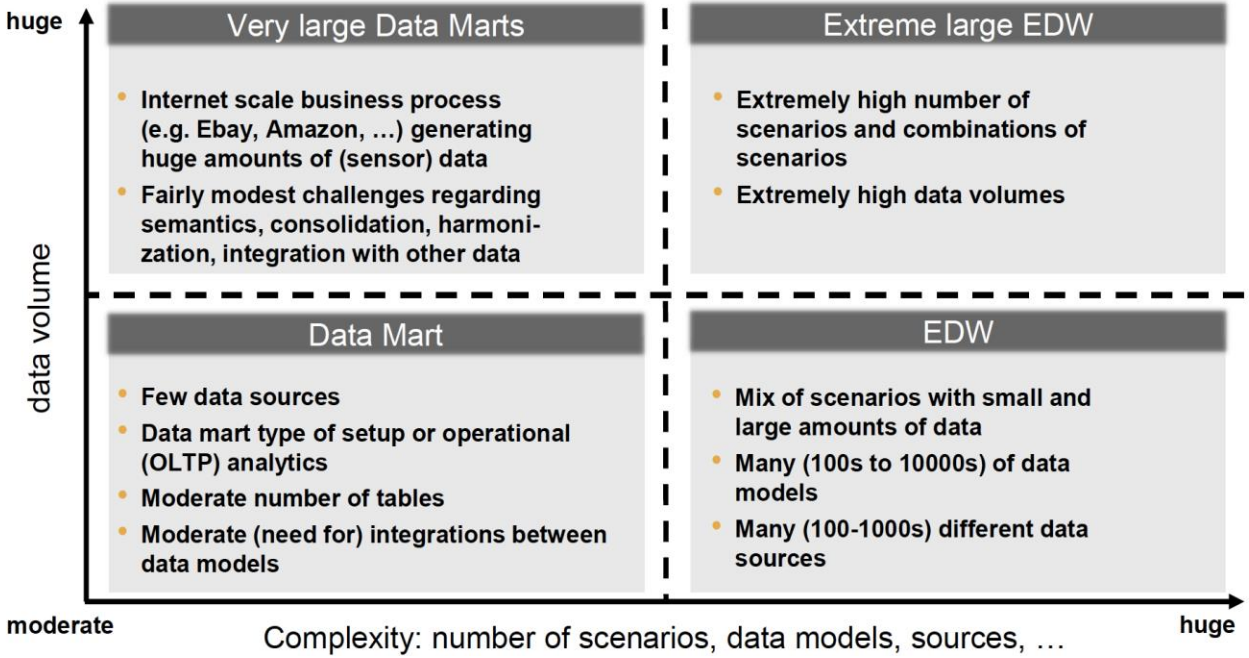
Agenda

- What is Enterprise Data Warehousing (EDW)?
- Introduction to Layered Scalable Architecture (LSA)
- Migration from LSA to LSA++
- New SAP BW 7.40 Modeling and Provisioning Artifacts
  - Operational Data Provisioning (ODP) and Operational Data Queue (ODQ)
  - Open ODS View
  - Advance DSO
  - Composite Provider
  - Automatic HANA View Generation
- Conclusion

Why Enterprise Data Warehousing (EDW)

- Consolidate the data across the enterprise to get a consistent and agreed view on your data
  - "Having data is a waste of time when you can't agree on an interpretation.“
- EDW requires a database + “X”
- SAP BW (BW) is the “X” as EDW with BW provides a flexible and scalable EDW solution
  - Highly integrated tools for modeling, monitoring and managing the EDW
  - Open for SAP and non-SAP systems

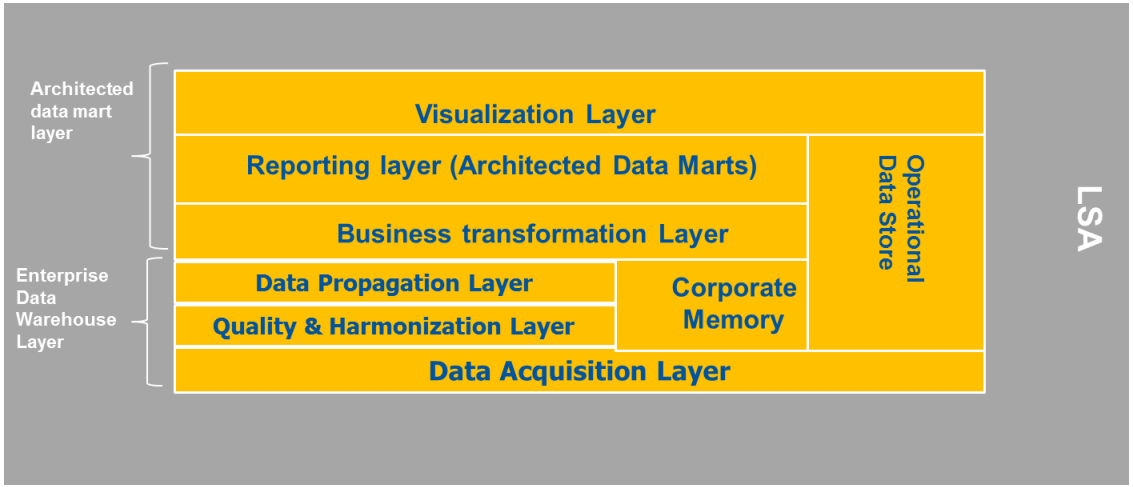
EDW vs. Datamarts



Layered Scalable Architecture

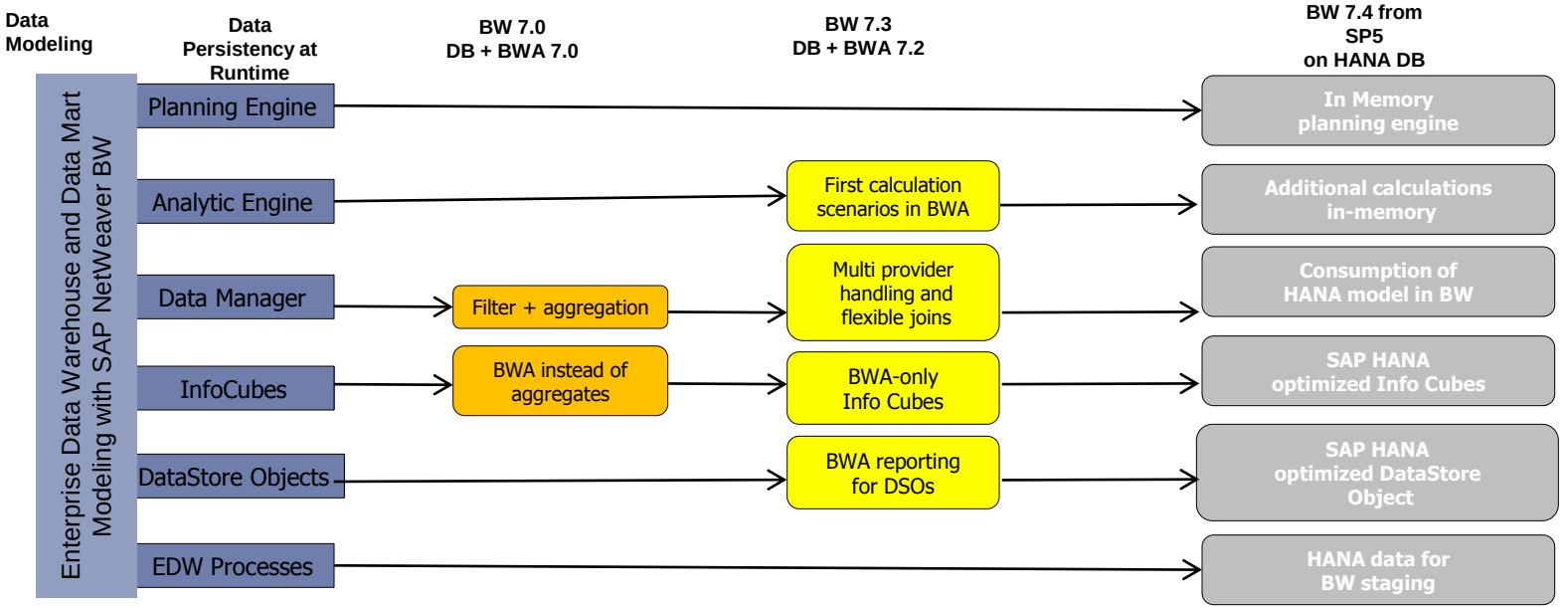
LSA is the accepted approach for building EDW guaranteeing a consistent, highly available and maintainable data foundation for an agreed interpretation of BI & Reporting.

- Transparency
- Flexibility
- Scalability
- Robustness



Source: SAP

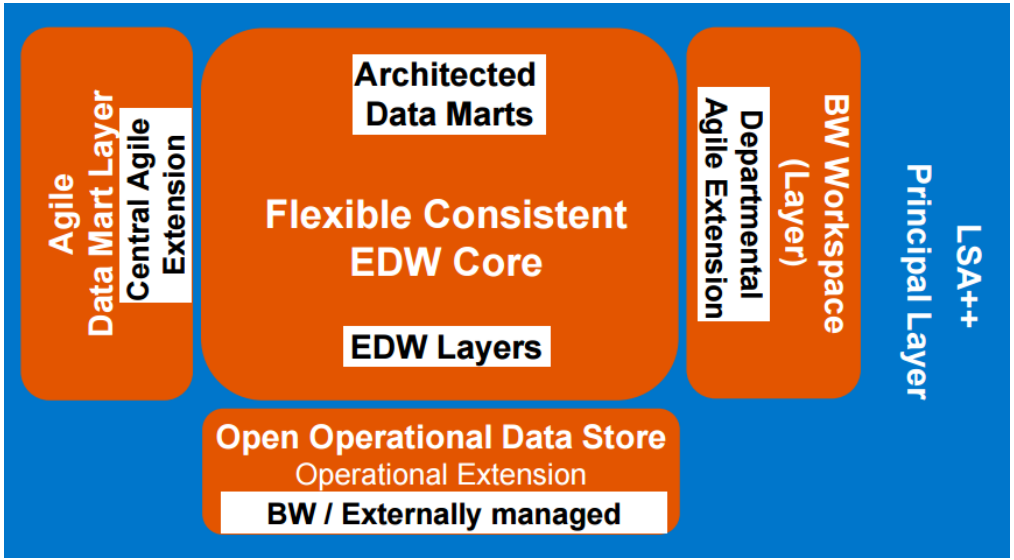
In-Memory Evolution



Source: SAP

Journey From LSA to LSA++

- Migrate to Hana- Optimized objects
- Streamline EDW Core
- Enhance Virtualization Layer
- Introduce additional layers
  - Open Operational Data Store
  - Agile Data Mart Layer
- Resulting LSA++

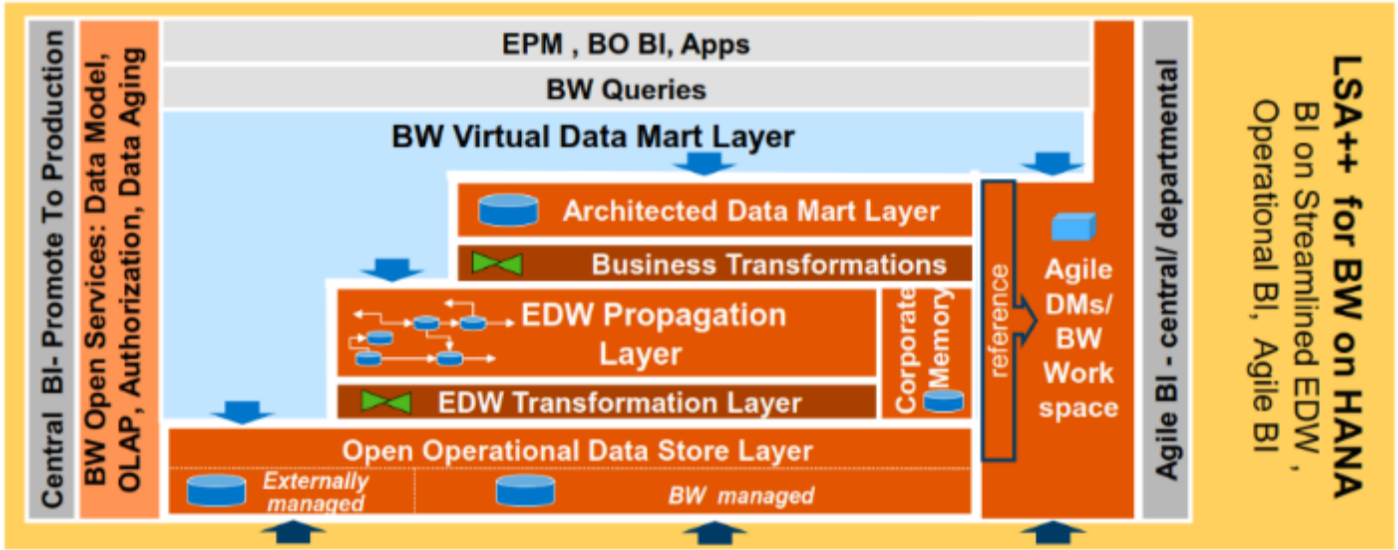


LSA vs. LSA++

- LSA
  - No reporting on Propagator.
  - Result of transformations stored in additional persistent Layer, known as Architected Data Mart.
  - Virtualization Layer only on top of Architected Data Mart and only UNION (Multiproviders).
- LSA++
  - Reporting on Propagator is allowed.
  - Consequently, necessary transformation are moved from the Business Transformation Layer into Query Design and are thus executed upon query execution.
  - Virtualization layer on top of both Architected Data Marts and Propagator and using UNION (Multiproviders) and JOIN (Composite Provider).

LSA++ Holistic Framework

BI Streamlined: On EDW, Operational BI, Agile BI, Virtualization



Source: SAP

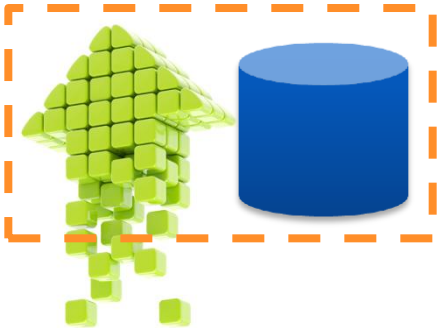
LSA ++ Layers and Services

LSA++ Open ODS Layer

Integrate data into the EDW with more Extensive and Flexible options…

Data Sources can be consumed virtually into an Open ODS View

Combined with BW InfoObjects or Models



Generate DataSource from the Open ODS View and ETL data into BW

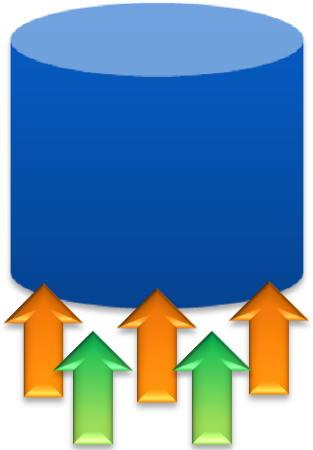
LSA++ Open ODS Layer: Services

- BW EDW Services
  - Open ODS Layer as source for persistent EDW providers
  - Open ODS Layer Provider as virtual part of the EDW
- BW Operational Data Services
  - Real time replication into BW - SLT
  - Immediate querying on any delivered data – no staging into EDW necessary (Operational BI)
  - Data Modeling
- BW Integration Services
  - Transfer/Consume HANA Modeler schemas in BW and vice versa

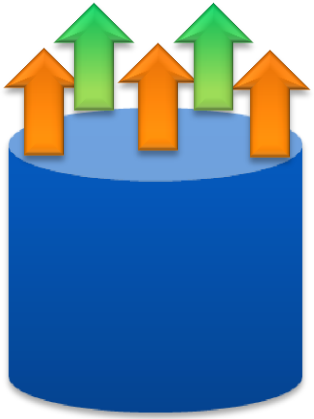
EDW Propagation Layer

HANA Optimized DataStore Objects

Greater flexibility due to faster loading and activation times



Greater flexibility as all data is visible in the data propagation layer



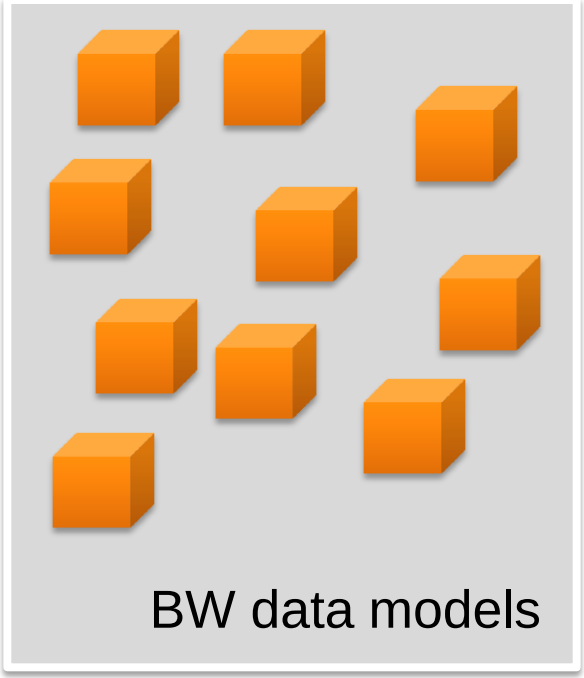
Greater flexibility due to queries directly on the data propagation layer

Architected Datamart Layer

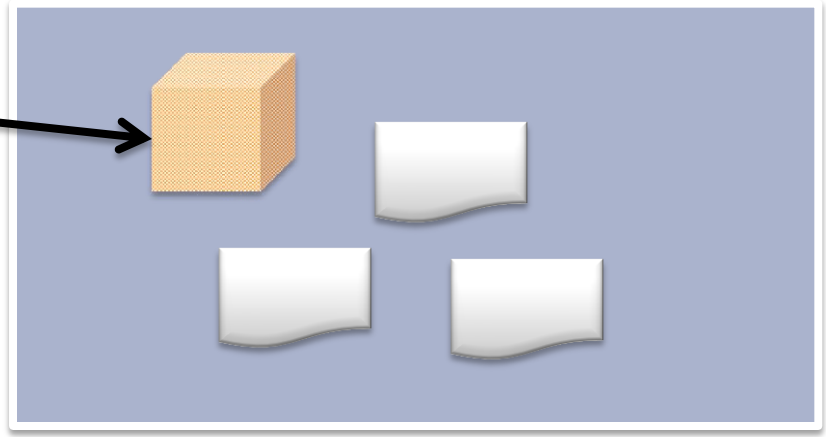
SAP HANA-optimized InfoCubes offer the following advantages:

- Data can be loaded faster because no DIMIDS are required.
- Data modeling is simpler. Multidimensional modeling is not necessary because the dimensions are only used as structuring criteria and do not have any effect on system performance. Aggregates and DB indexes are not required.

Agile BI with WorkSpaces



BW data models exposed in Workspace, not copied



Workspace with local data

Advantages of BW workspaces

- Excellent, rapid prototyping tool for business
- Balances flexibility and control
- Better adoption of new solutions as they can be tested well on hand before full scale implementation
- Performance and central access, eliminates long downloads, and maintains information security.
- The BW Workspace Designer runs in a browser and can also be embedded in the SAP Portal. This means that there is no extra software to install.

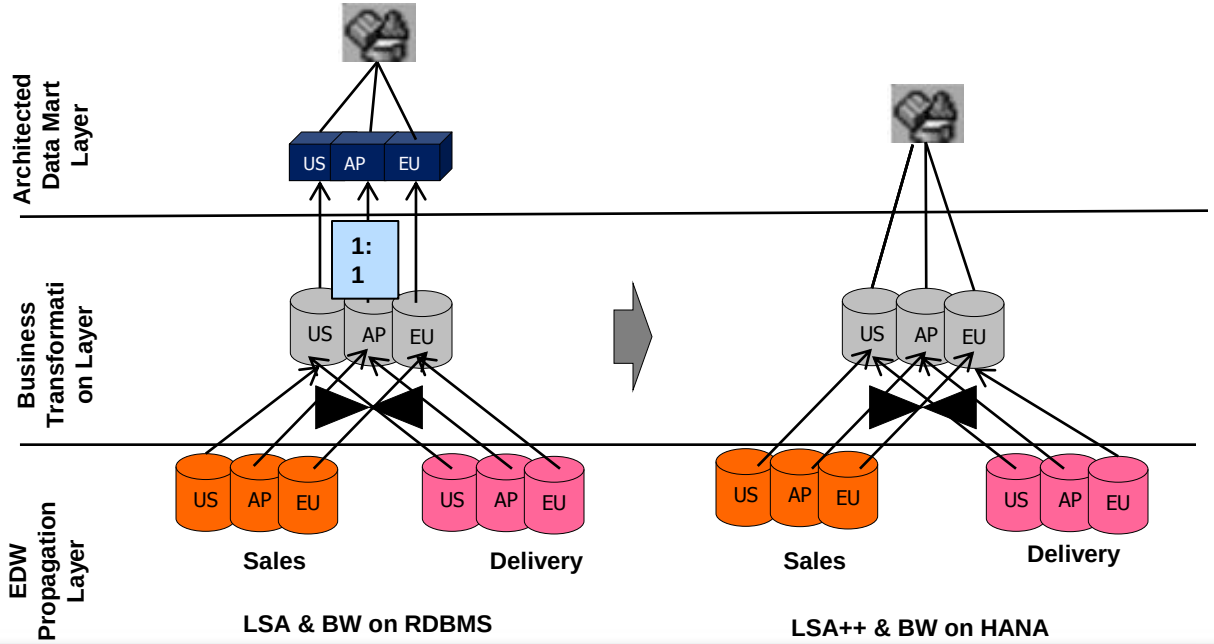
Streamline the Consistent EDW

- Reducing number of persistent provider, esp. InfoCubes.
- Optimized design and implementation of persistent providers.
- Reducing change impact on persistent providers.

Streamlined consistent EDW core for flexibility and lower TCO/TCD with HANA optimized InfoProviders, Direct data provisioning and real-time master data.

Streamlined EDW: Where are the InfoCubes…?

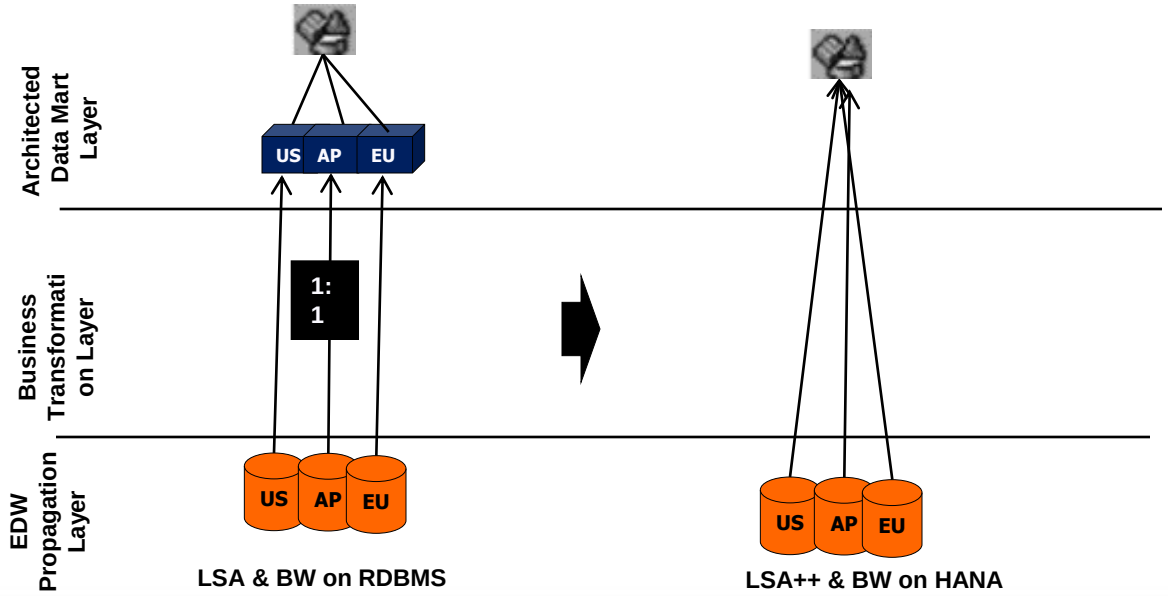
Obsolete: InfoCubes as Accelerator on Business Transformation Layer DSOs



Source: SAP

Streamlined EDW: Query on granular data

EDW Propagation Layer as Query Target



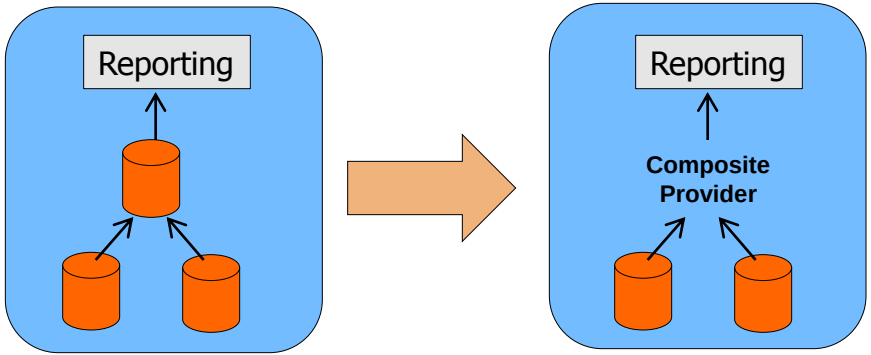
Source: SAP

Streamlined EDW - Virtual Data Mart Layer

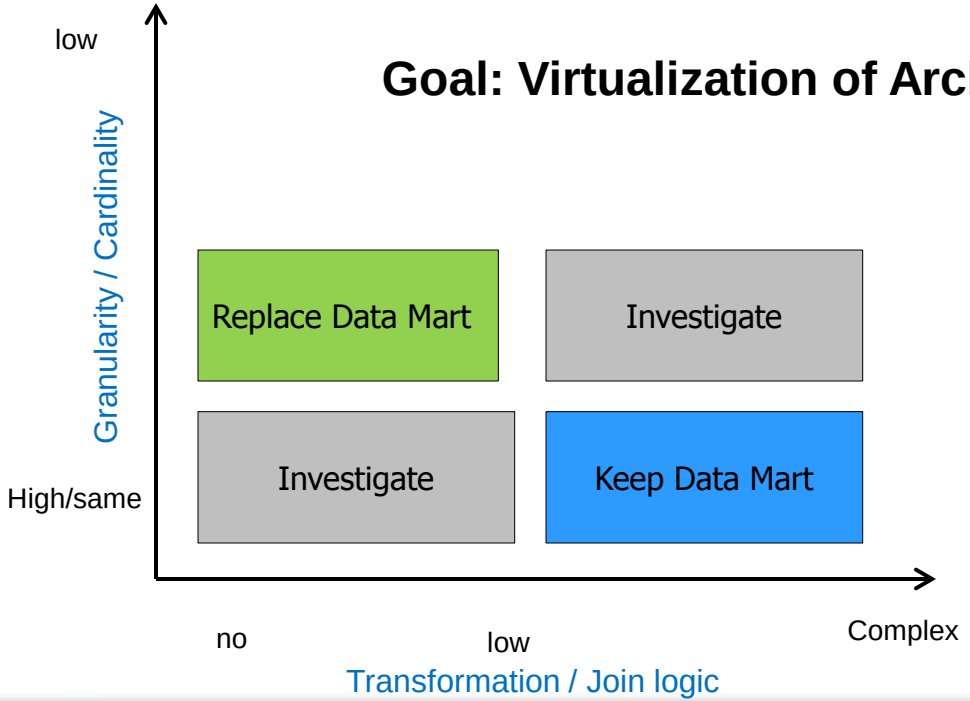
Virtualization or Persistent Join? What are your options -

Scenario: Multiple Data Store Objects need to be Joined into a single Infoproviders.

- UNION in Multiproviders doesn't correspond to reporting requirements.
- LSA: BW transformation and updating(overwrite of DSO)
- LSA++: Composite Provider



Decision for Composite Provider

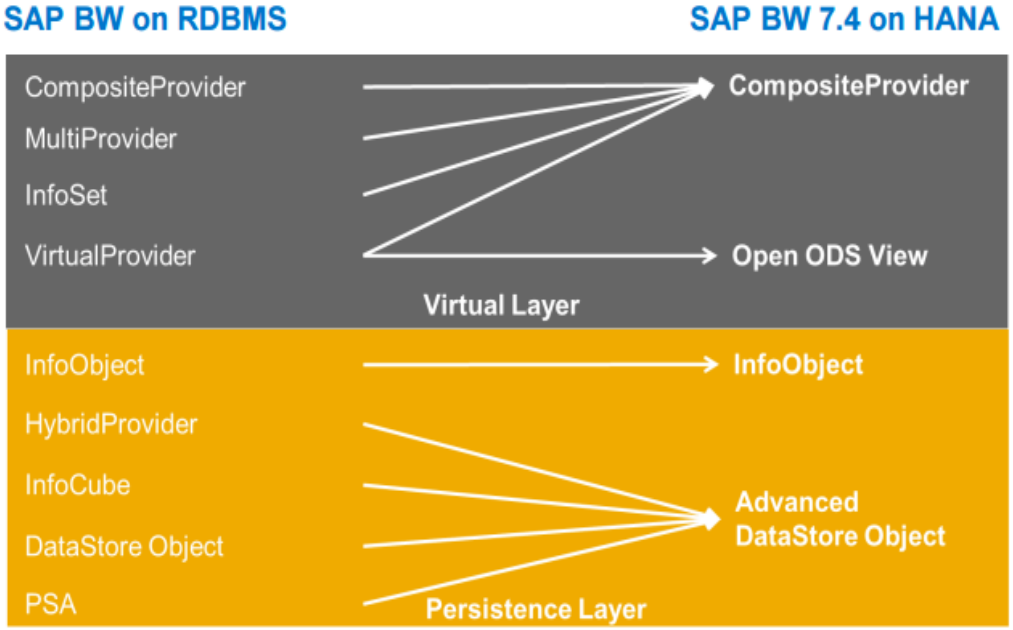


New Artifacts with BW 7.4

New Artifacts with BW 7.40

- Data Provisioning
  - Operational Data Provisioning through ODQ
- Data Modeling
  - Open ODS View
  - Composite Provider
  - Automatic Generation of HANA Models
- Data Federation
  - Smart Data Access

BW 7.4 Consolidated Objects



Source: SAP

SAP BW 7.4 on HANA consolidates existing InfoProviders

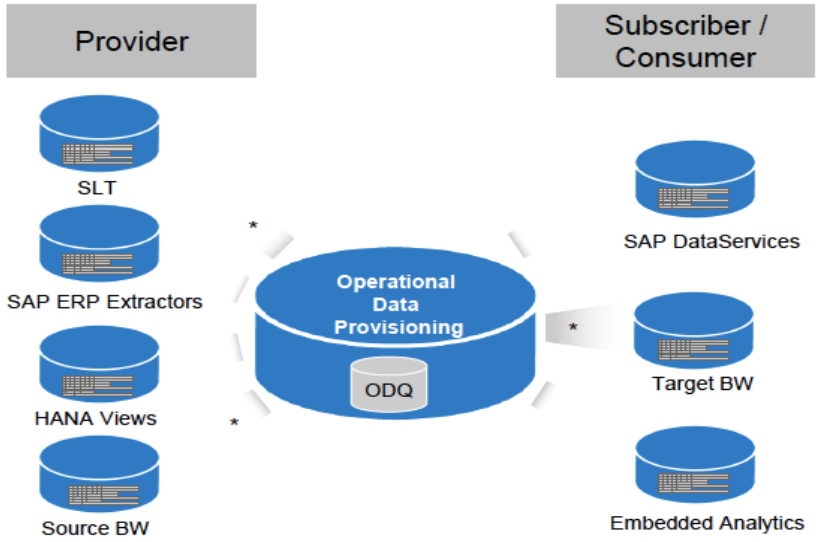
- CompositeProvider as new object to define joins between InfoProviders
- Open ODS View for virtual access to external sources
- InfoObject to model semantically rich master data
- Advanced DataStore Object as the new object for persistence management

Traditional InfoProviders still exist but future innovations are focused on the consolidated objects of SAP BW 7.4 on HANA

Operational Data Provisioning

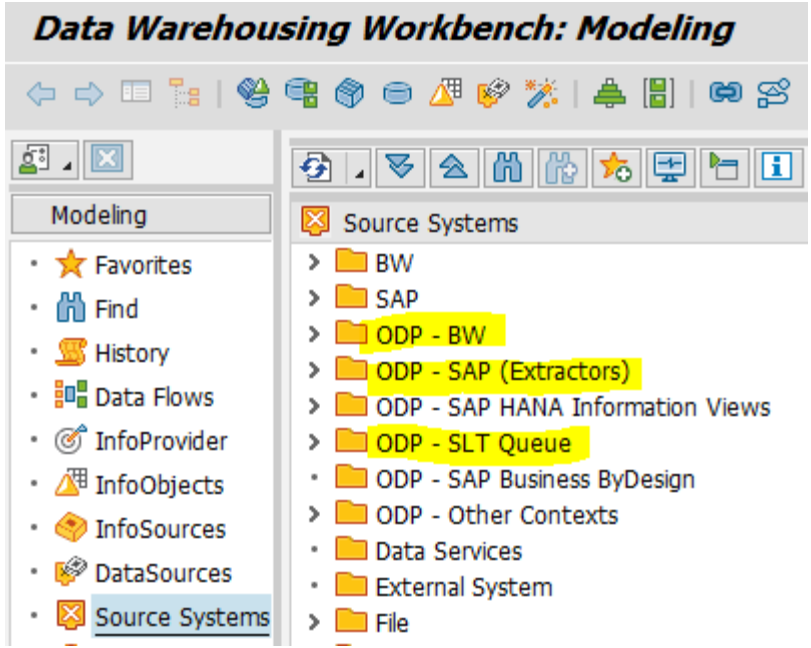
Operational Data Provisioning (ODP)

- Enables extract once deploy many with EOIO Quality of Service
- Time stamp based recovery mechanism with configurable data retention periods
- Highly efficient compression (up to 90%)
- Intelligent parallelization options for subscribers in high volume scenarios



Source: SAP

ODP based scenarios for BW 7.40

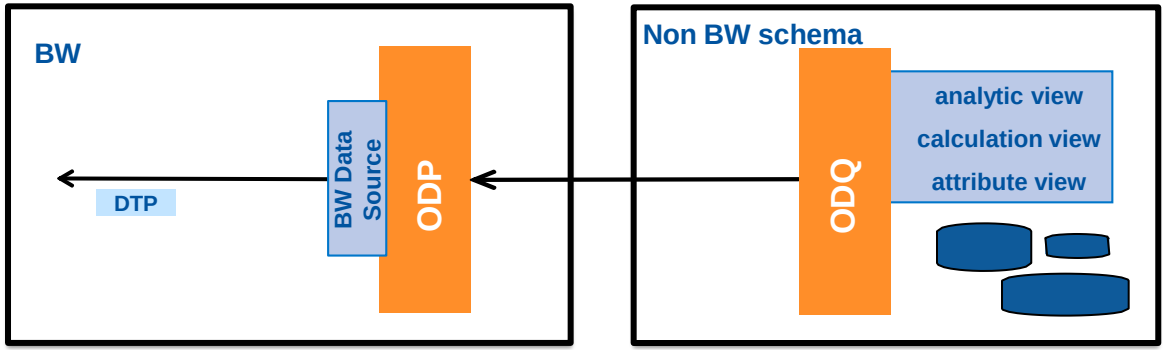


Main use cases available with BW 7.40:

- ODP based Data Provisioning Aspects for SAP ERP Sources
- SLT/ODP based real-time replication
- ODP based data transfer between BW systems

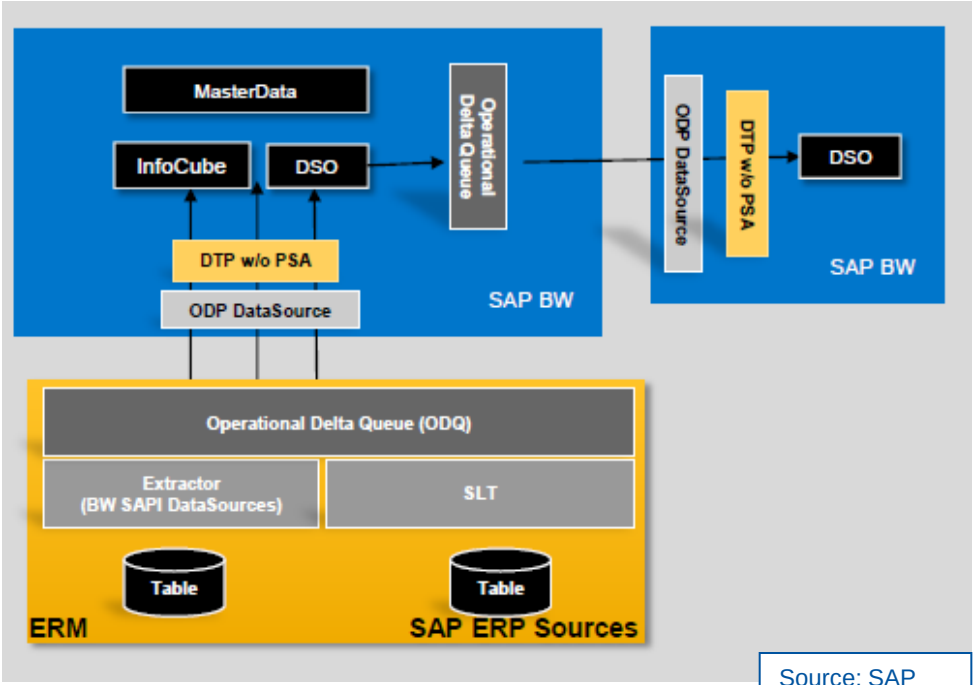
ODP – HANA Context

- Complementary to DB Connect
- Direct loading of HANA views via DTP into BW infoproviders (PSA optional)



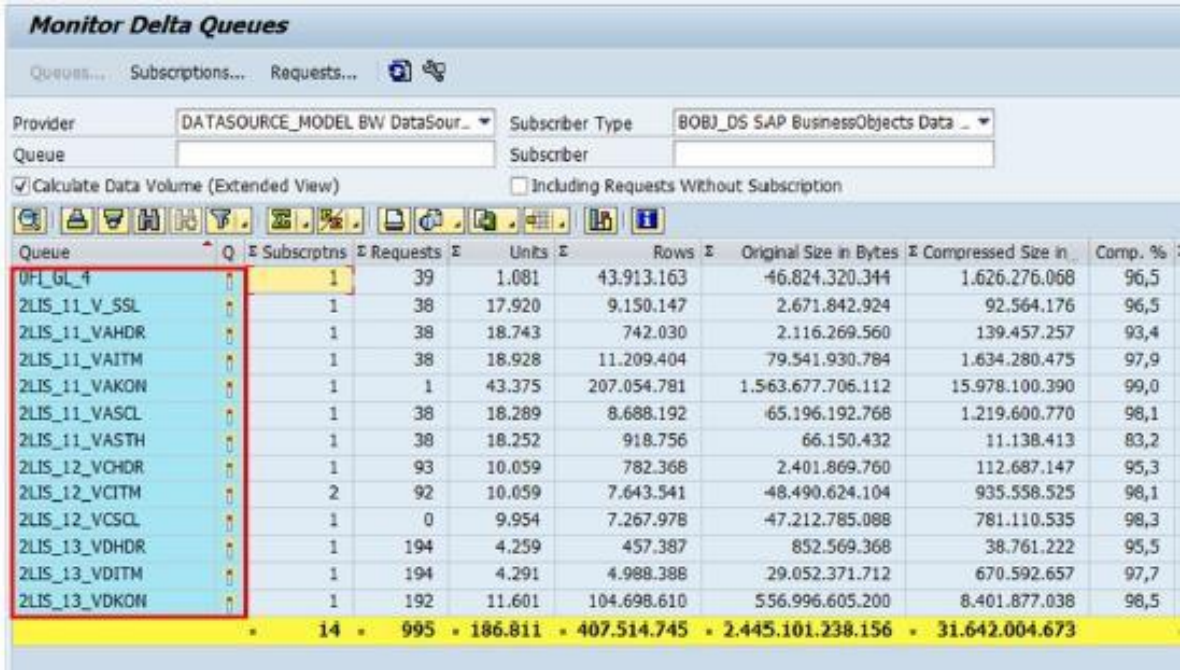
ODP – Extractor Context

- Direct loading into BW infoproviders (PSA optional)
- Scheduled or real-time daemon
- Synchronous RFC instead of ALE/IDOC
- Flexible Recovery
- Multiple Subscribers



Source: SAP

ODQ Monitor (t/c ODQMON vs. RSA7)



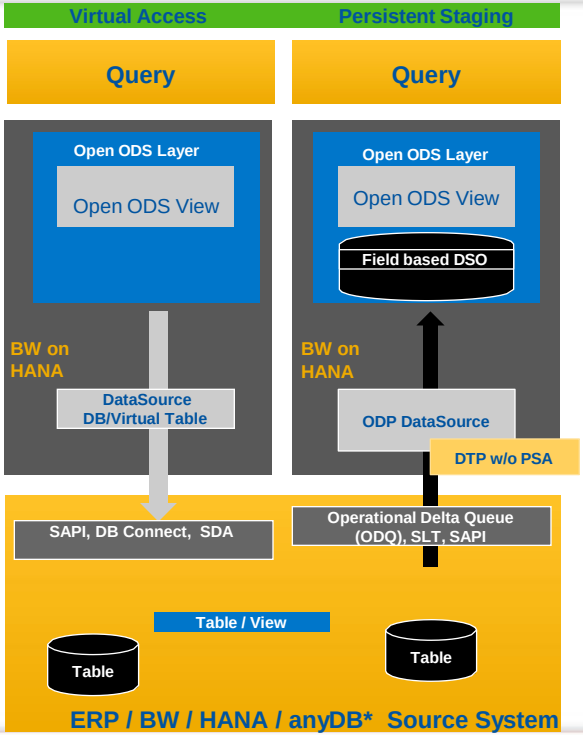
Queue	Q	Subscriptns	Requests	Units	Rows	Original Size in Bytes	Compressed Size in	Comp. %
0FI_GL_4		1	39	1.081	43.913.163	46.824.320.344	1.626.276.068	96,5
2LIS_11_V_SSL		1	38	17.920	9.150.147	2.671.842.924	92.564.176	96,5
2LIS_11_VAHDR		1	38	18.743	742.030	2.116.269.560	139.457.257	93,4
2LIS_11_VAITM		1	38	18.928	11.209.404	79.541.930.784	1.634.280.475	97,9
2LIS_11_VAKON		1	1	43.375	207.054.781	1.563.677.706.112	15.978.100.390	99,0
2LIS_11_VASCL		1	38	18.289	8.688.192	65.196.192.768	1.219.600.770	98,1
2LIS_11_VASTH		1	38	18.252	918.756	66.150.432	11.138.413	83,2
2LIS_12_VCHDR		1	93	10.059	782.368	2.401.869.760	112.687.147	95,3
2LIS_12_VCITM		2	92	10.059	7.643.541	48.490.624.104	935.558.525	98,1
2LIS_12_VCSCL		1	0	9.954	7.267.978	47.212.785.088	781.110.535	98,3
2LIS_13_VDHDR		1	194	4.259	457.387	852.569.368	38.761.222	95,5
2LIS_13_VDITM		1	194	4.291	4.988.388	29.052.371.712	670.592.657	97,7
2LIS_13_VDKON		1	192	11.601	104.698.610	556.996.605.200	8.401.877.038	98,5
		14	995	186.811	407.514.745	2.445.101.238.156	31.642.004.673	

ODQ Q&A

- Can ODP be deployed in parallel with the traditional delta queue approach? Yes it is possible, but multiplies the data.
- Should we change to ODP based extraction with all existing extractors? No, but consider ODP as framework for all your future implementations of new data flows into you BW system for ECC and SLT extraction.
- Can we use ODP data replication for a generic datasource? Yes, but you will need to implement SAP note 1585204

Open ODS Views

Open ODS View



- Represents a view on a source and adds analytic metadata to it.
- Does not have separate storage for transaction data or master data.
- You can specify whether a specific field should be interpreted as a key figure or characteristic
- Open ODS views are available if the BW system is running on the SAP HANA database.
- Open ODS views cannot be defined for hierarchies.

Source: SAP

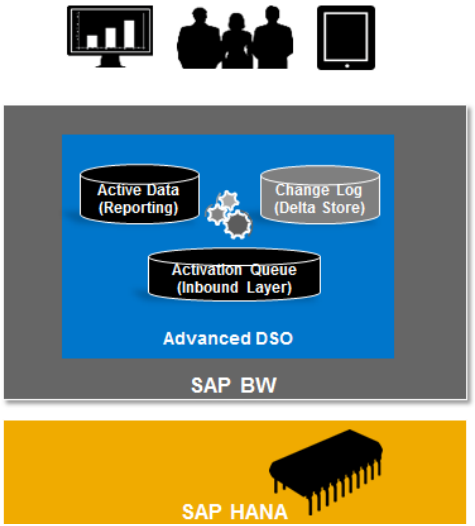
Open ODS View – Summary & Options

How to achieve persistent and non-persistent in each of the options…

Source ⇒ Access ⇓	ERP	HANA	SDA
Direct (Non-Persistent)	Open ODS View on SAP Datasources	Open ODS View on HANA Table/View	Open ODS View on HANA Remote Table
Staged (Scheduled/Real-time)	Field-based DSO derived from Open ODS View	1) Field-based DSO derived from Open ODS View 2) HANA Table/View as ODP Datasource	Field-based DSO derived from Open ODS View

Simplified Modeling: Advanced DSO

Advance DSO



The next generation of Data Store Object is ADSO

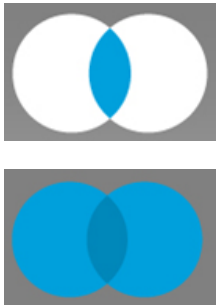
- Combines InfoObject and Field based modeling
- One type of InfoProvider with different settings to consolidate DSO and InfoCubes
- The fast, no activation required loading of the Write Only -DSO,
- The 3-table approach in standard DSO's
- The 'every characteristic is key' approach of the InfoCube: Supports upto 120 key fields

ADSO can be used for : Data Acquisition Layer / Corporate memory / Data Propagation or Reporting Layer

Virtualization, Integration, Simplification…

The Power of Composite Providers

HANA Tables/Views

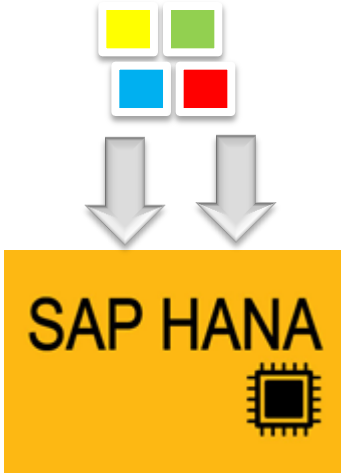


BW InfoProviders

Union & Join

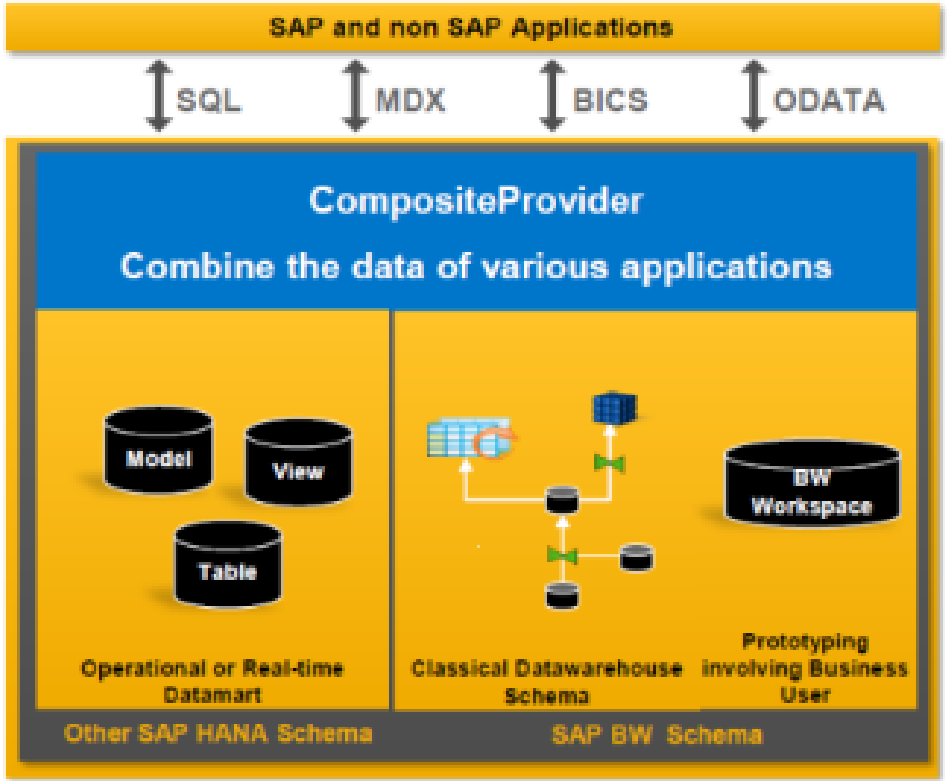
MultiProvider
InfoSet
Transient provider
Virtual provider

Composite Provider



Composite Provider is fully processed in HANA

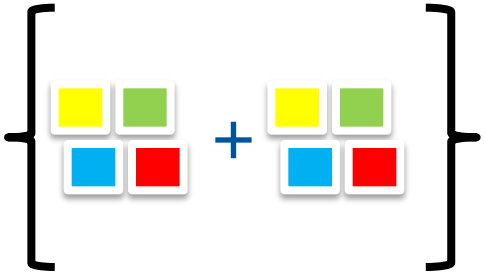
Composite Provider: In LSA++ EDW



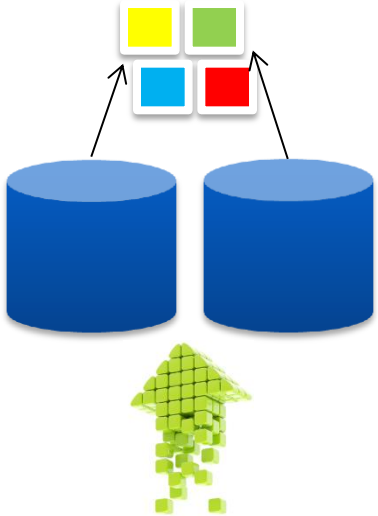
Source: SAP

External Database Hadoop ERP BW

Composite Provider: More details…



Union between
2 Composite Providers



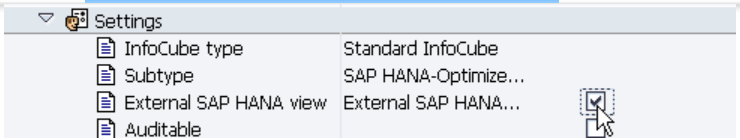
Join Open ODS Views
Add Nav Attrs

- Modern Eclipse based UI
- Option to include Inventory key figures
- Possibility to include in planning scenarios

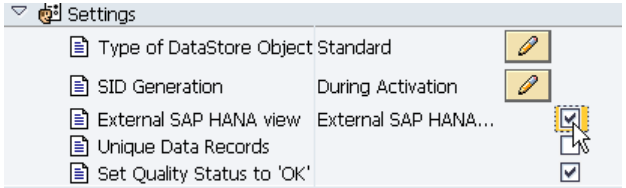
Automatic HANA View Generation

Automatic HANA View Generation

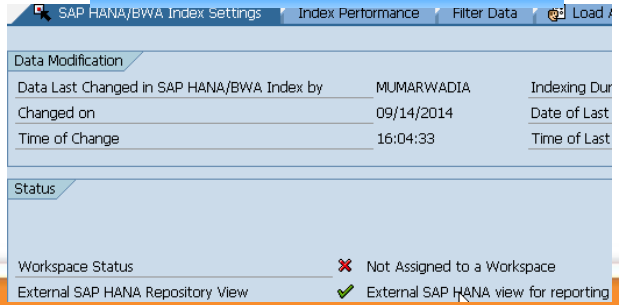
Info cube



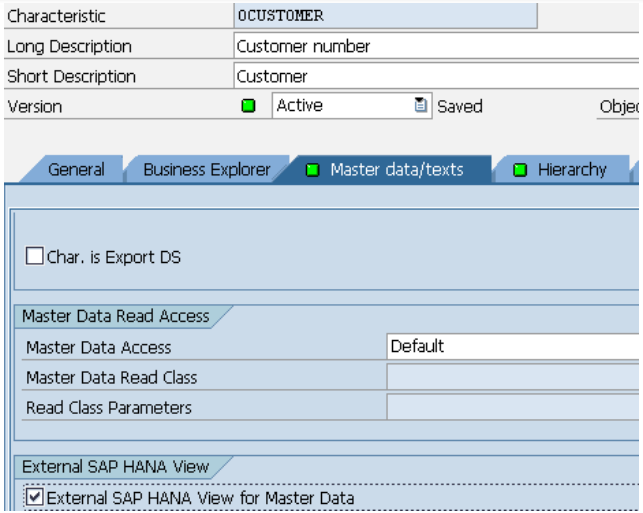
DSO



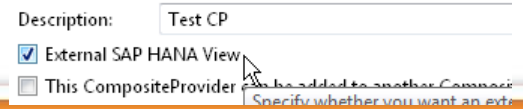
Query



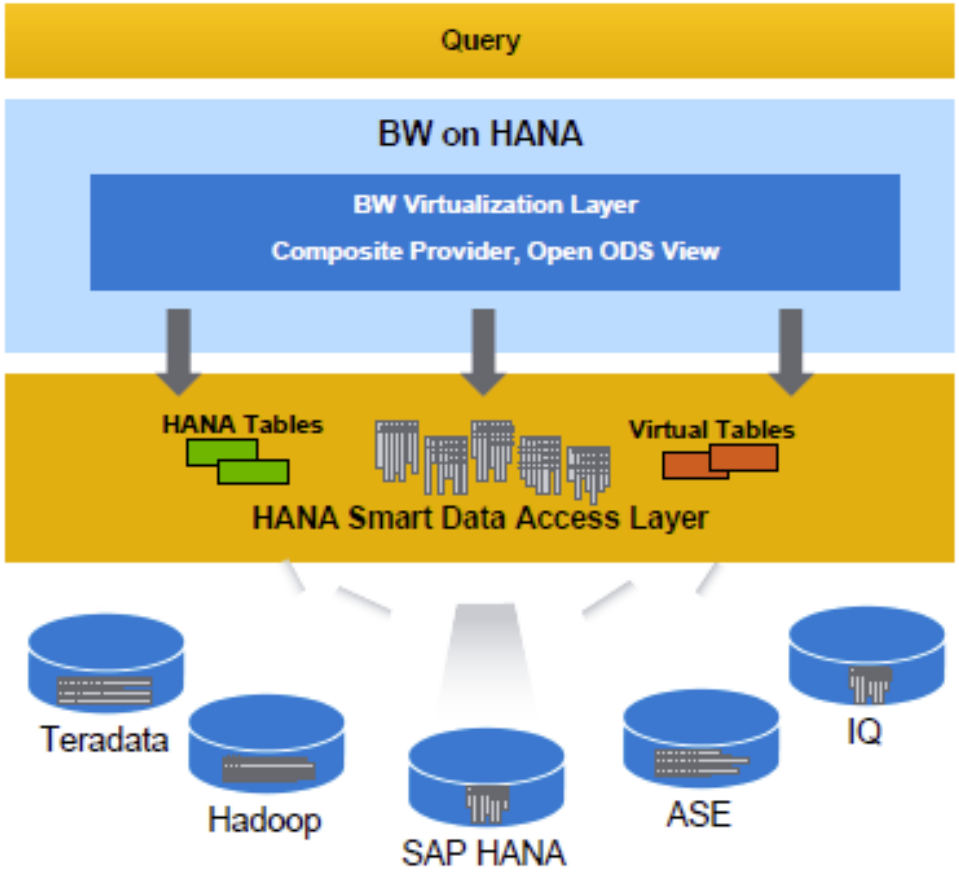
Info objects



Composite Provider



Smart Data Access: Logical EDW



- Smart data access – read access to relational and non-relational sources via ODBC
- Enables access to remote data access just like “local” table
- Supports data location agnostic development
- No special syntax to access heterogeneous data sources
- BW based Analytic Services on external data

Conclusion

- SAP BW 7.40 SP8+ provides many new artifacts to:
  - Quickly consume external data in a direct or lightweight persistent manner.
  - Combine and integrate such external data with existing BW models using union and join operations that are HANA-optimized
  - Provide a new robust provider/subscriber framework for data provisioning with reduced latency and persistency or direct access

THANK YOU FOR PARTICIPATING

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