



DMM301 – Benefits and Patterns of a Logical Data Warehouse with SAP BW on SAP HANA



Ulrich Christ/Product Management SAP EDW (BW/HANA)

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Agenda

Introduction

- Diverse BI Landscapes
- Logical Data Warehousing with SAP BW 7.40 powered by SAP HANA
- System Demos

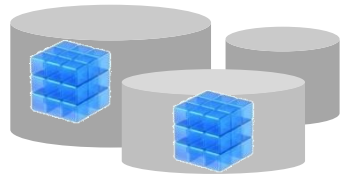
LSA++ Incremental Data Warehousing

- Simplified and Incremental Architectures
- System Demos
- Raw and Business Oriented Data Warehouse

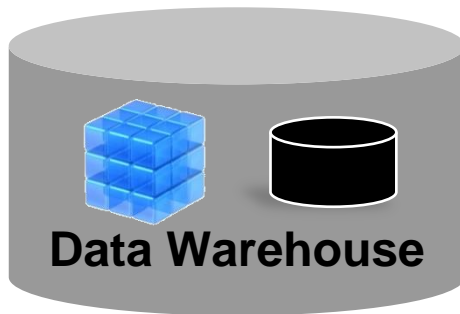
Wrap up

- Key Takeaways

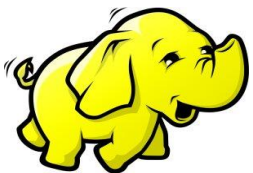
Introduction – Diverse BI Landscapes



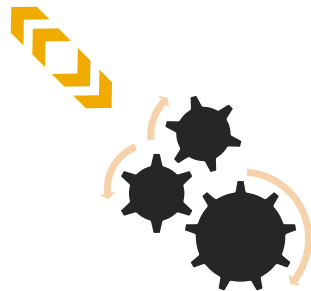
Data Marts



Data Warehouse



Big Data clusters



Operational BI

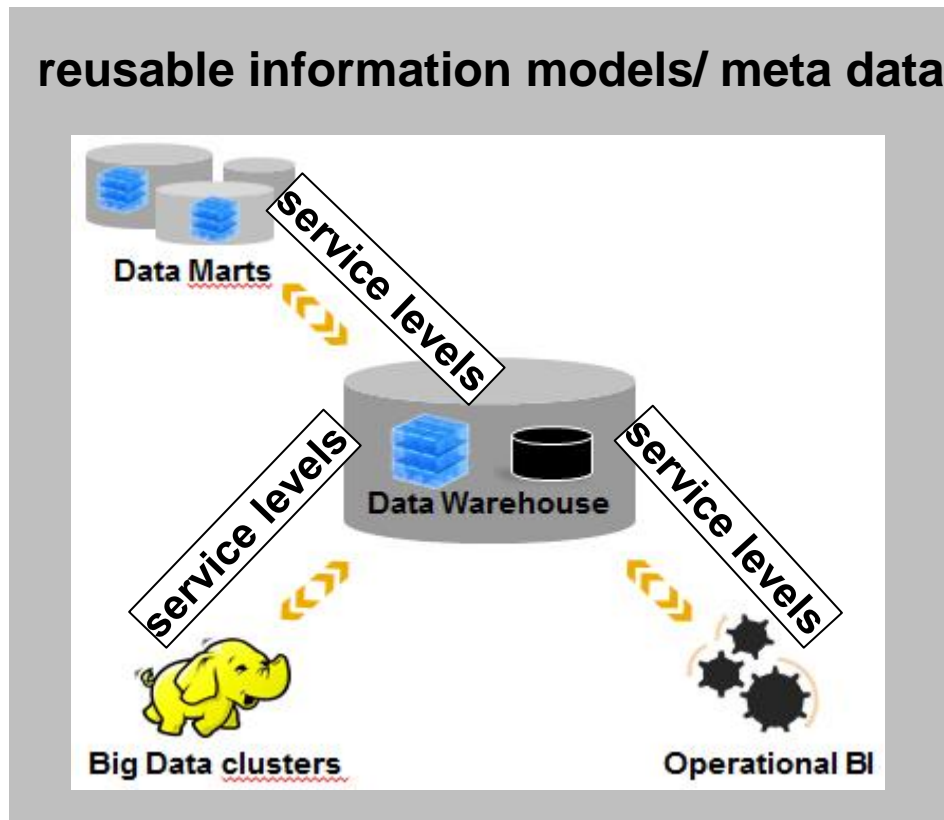
Today's BI landscapes consists of multiple information management approaches with different characteristics

The (Enterprise) Data Warehouse is a central component which addresses services like

- **Consolidation**
- **Integration**
- **Managed (business) consistency**
- **Reproducibility**
- **Availability**
- **Auditability**
- **Reliability**
- **any Snapshot**
- **Time travel** enablement
- **Predictive analysis** foundation
- **Stable interoperability**
- **Maintainable business transformation complexity**
- **Handle resource limitations**
- ...

Introduction – the Logical Data Warehouse

Service level requirements driven



Logical Data Warehousing describes architectures that

- combine these approaches under a reusable layer of information models
- choose or change the approach according to service levels or use case characteristics

Gartner and LDW – Logical Data Warehouse

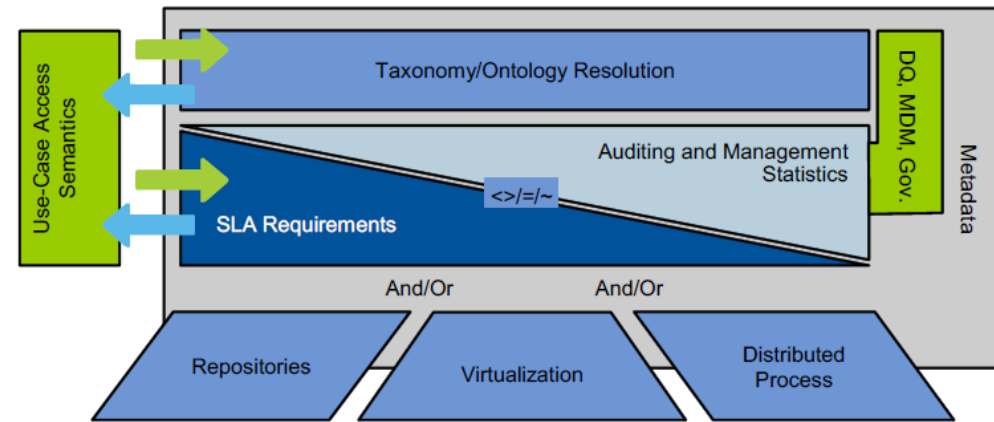
The role of reusable metadata for flexibility and simplicity

The LDW consists primarily of services and metadata.

The metadata must be **reusable** across all classes of services operating. For example,

- as data virtualization jobs begin to specify recurring relationships in data, **moving the virtual data toward** a high-performance **repository** rendering.
- or, if a distributed process emerges as commonly used over time, the same metadata should be **usable to convert** the process into a data integration job and move the results **to tables ...in a repository**

Figure 1. Logical Data Warehouse Reference Framework



DQ = data quality; Gov. = governance; MDM = master data management

Source: Gartner (June 2012)

Reusable Metadata

- The metadata must be **reusable** across all classes of services
- Same metadata should be **usable**
- **to move the virtual data toward** a repository
- **to convert** the process .. results **to tables ...in a repository**

Repositories	Virtualization	Distributed process
<i>EDW, DMs, ODS physical consolidated</i>	<i>read the data in place</i>	<i>managed service call to external provider</i>

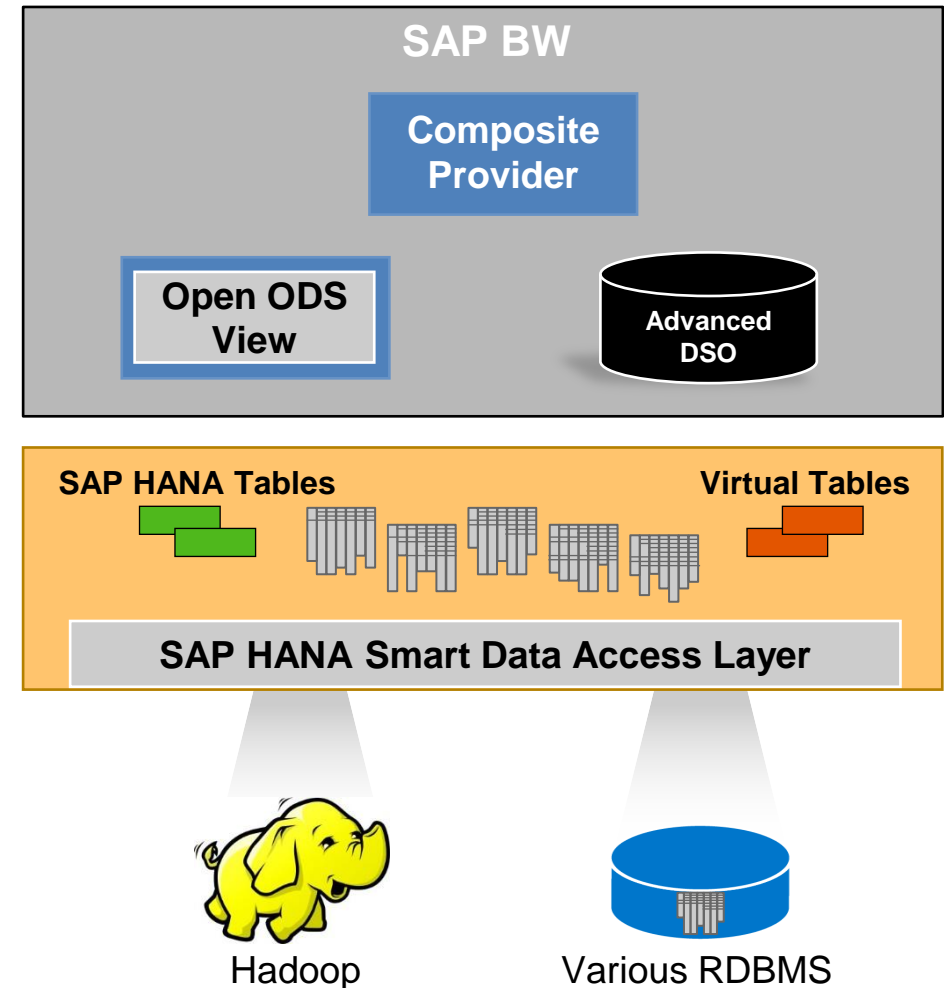
Logical Data Warehousing with SAP BW on SAP HANA

Reusable, flexible Metadata Layer in SAP BW

- Open ODS View to adapt tables/views in SAP HANA and external sources
- CompositeProvider to build sophisticated virtual data marts
- Advanced DataStore Object as central repository object

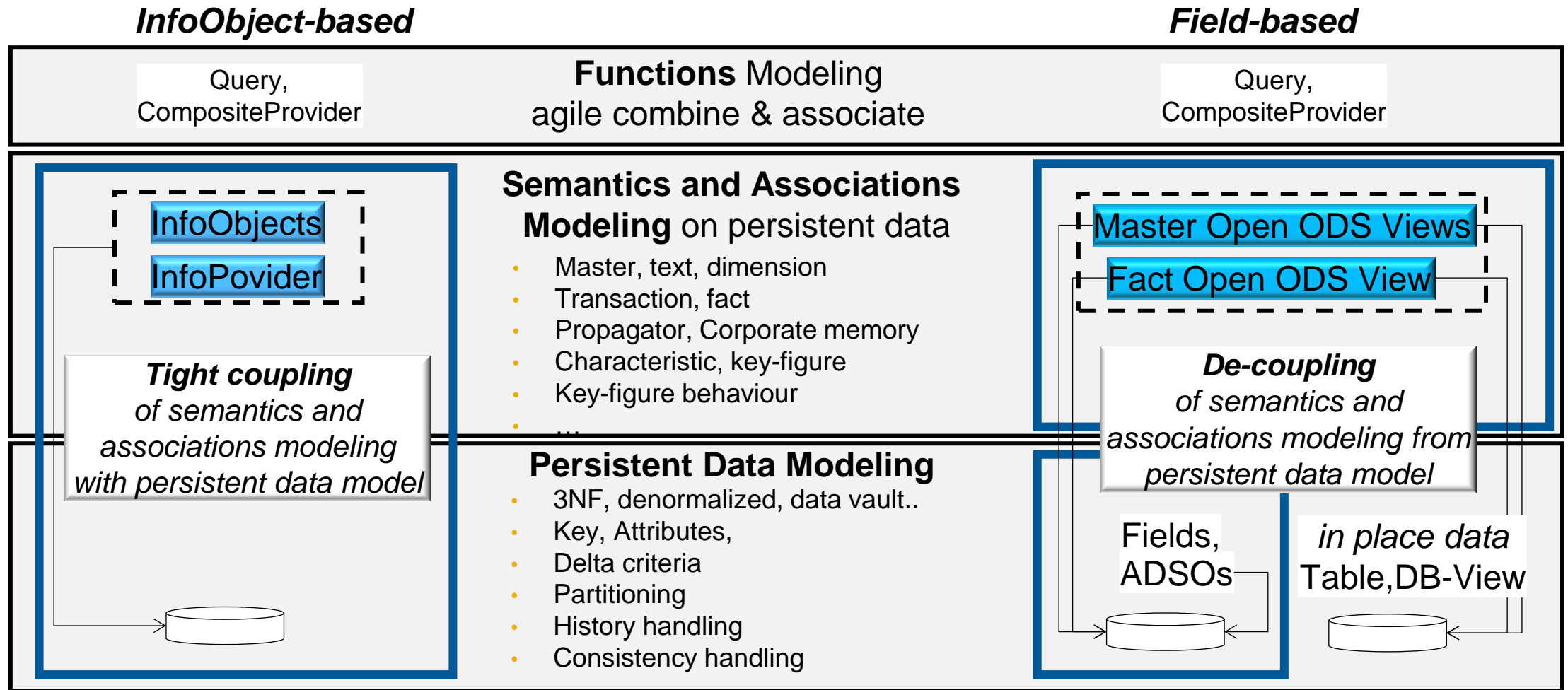
SAP HANA Smart data access

- SAP HANA's federation capability
- provides transparent SQL access to, and across a variety of database systems



BW Open ODS Views and the LDW

Decoupling persistent data from semantics & associations modeling

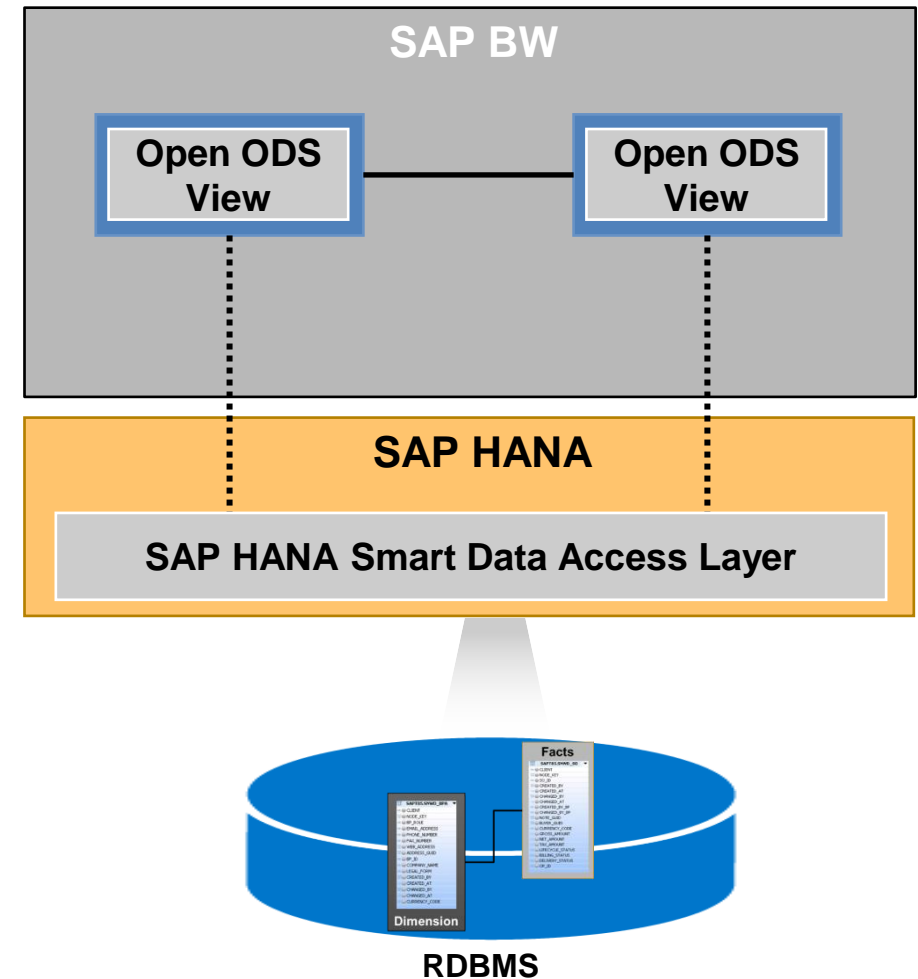


System Demo Part 1

Address data outside of the BW repository

Virtualized Access

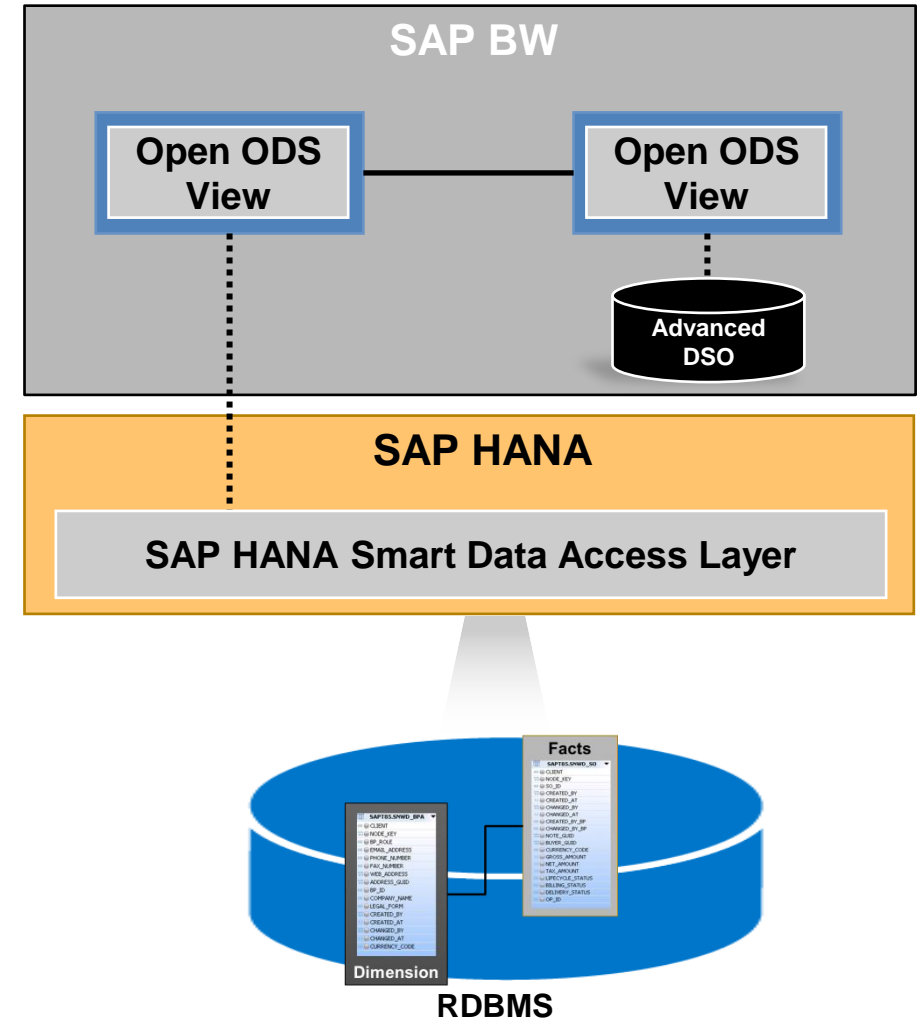
- Data Mart / parts of Data Mart residing in an external database
- Adapt model via Open ODS Views
- Run query on Open ODS Views



System Demo Part 2

Moving to SAP BW

- Enrich Open ODS View with BW semantics
- Generate Advanced DSO from Open ODS View
- Re-run query on Open ODS Views



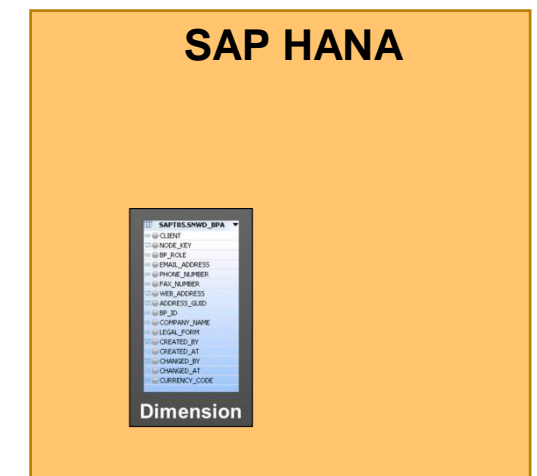
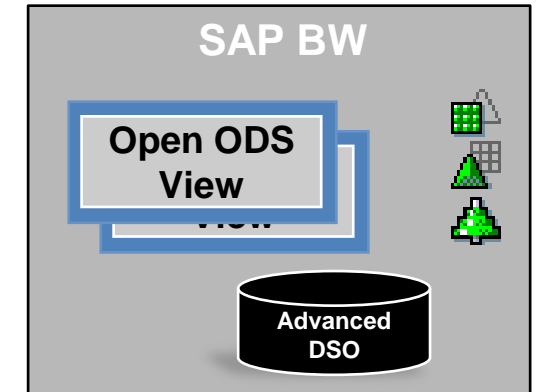
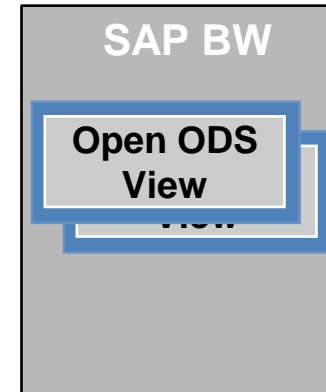
Recap

Simplification

- Initial steps with SAP BW become really simple
- Ready to use advanced SAP BW functionality
 - OLAP
 - Data flow, data management, ...
 - Security/authorizations, ...

Incremental („bottom up“) modelling approach

- start with given structures
- work with data interactively
- enrich and extend iteratively



LSA++

Incremental Data Warehousing

How does this impact flexibility and agility of the Data Warehouse?

Modeling and BI Architecture

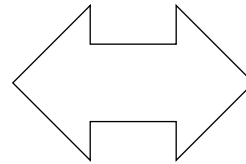
Top-Down & Bottom-Up Modeling Perspective

Top Down modeling

Business/ Domain Integrated BI (E) DWH

- DWH-model based BI
- High design governance, focus on
 - Consistency, history
 - Cross process integration
 - Common
 - Coded data
 - Master data/ dimensions
 - Interpretation of data

Different design approaches
of landscape components
lead to data & meta data
movements/ redundancy



Missing alignment
possibilities lead to
islands & inconsistencies

Bottom Up modeling

- OLTP-model based BI
- Low design governance, focus on
 - Flexibility, Independency
 - Virtualization / low cost BI
 - Most recent/ actual data

Operational / Local BI Source system - Open ODS

Modeling and BI Architecture

There is no 'neither .. nor' - Reconciling Top-Down and Bottom-Up Approaches

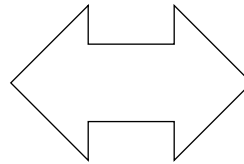
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**Service level requirements ⇒
leverage bottom up
modeling flexibility
where it shows value**

Different design approaches
of landscape components
lead to data
movements/ redundancy



Missing alignment
possibilities lead to
islands & inconsistencies

Bottom Up modeling

**Service level requirements ⇒
evolve Local/ Operational BI
to DWH
where it shows value**

- OLTP-model based BI
- Low design governance, focus on
 - Flexibility, Independency
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**Operational / Local BI
Source system - Open ODS**

Modeling and BI Architecture

There is no 'neither .. nor' - Reconciling Top-Down and Bottom-Up Approaches

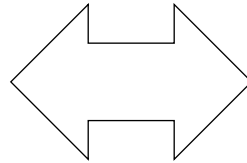
Top Down modeling

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Service level requirements ⇒
leverage bottom up
modeling flexibility
where it shows value

Different design approaches
between high vs low
design governance allowing
an evolutionary design



Missing instead
moving data & meta data
islands & inconsistencies

Bottom Up modeling

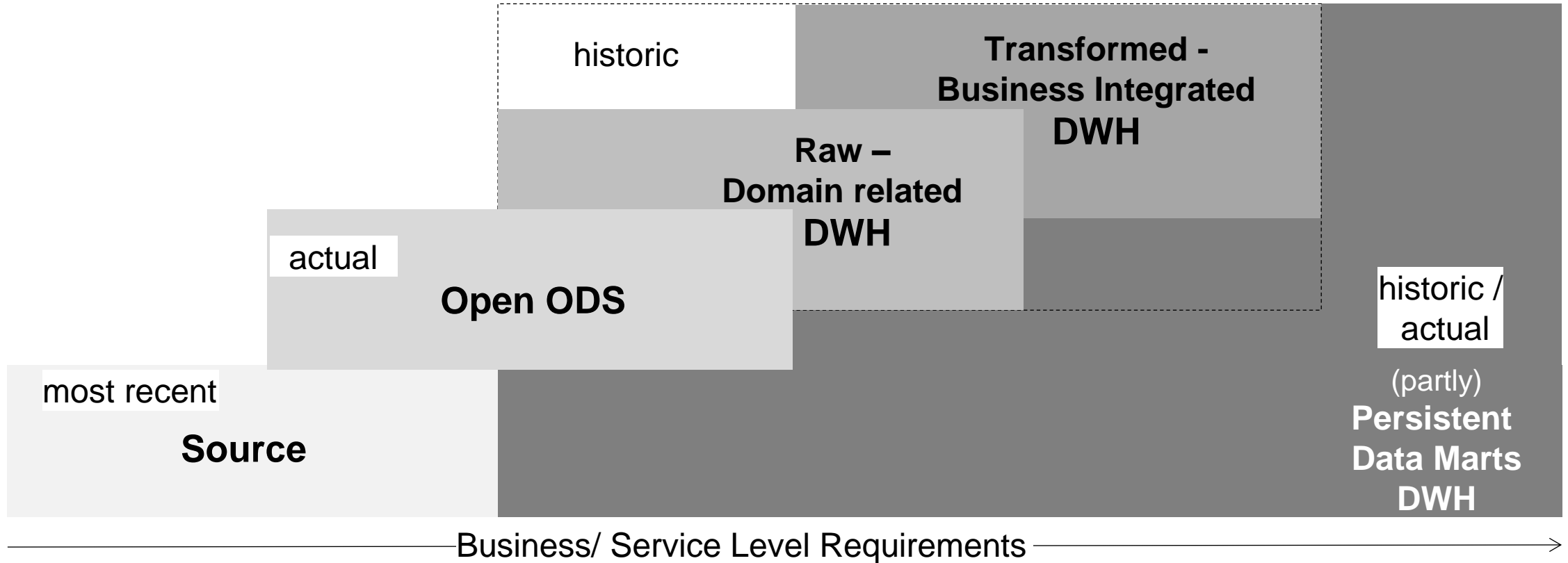
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evolve Local/ Operational BI
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Operational / Local BI
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Simplified and Incremental Architectures

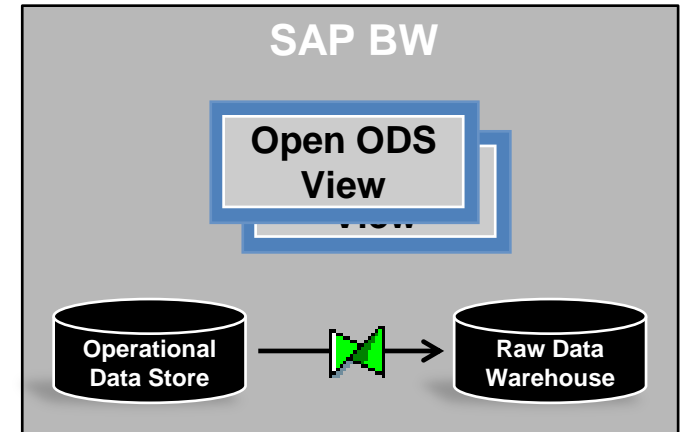
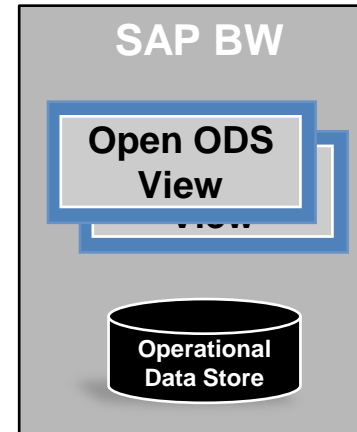
Reusable meta data - Virtual Data Marts – fact / dimension views



System Demo Part 1

From ODS to Raw Data Warehouse

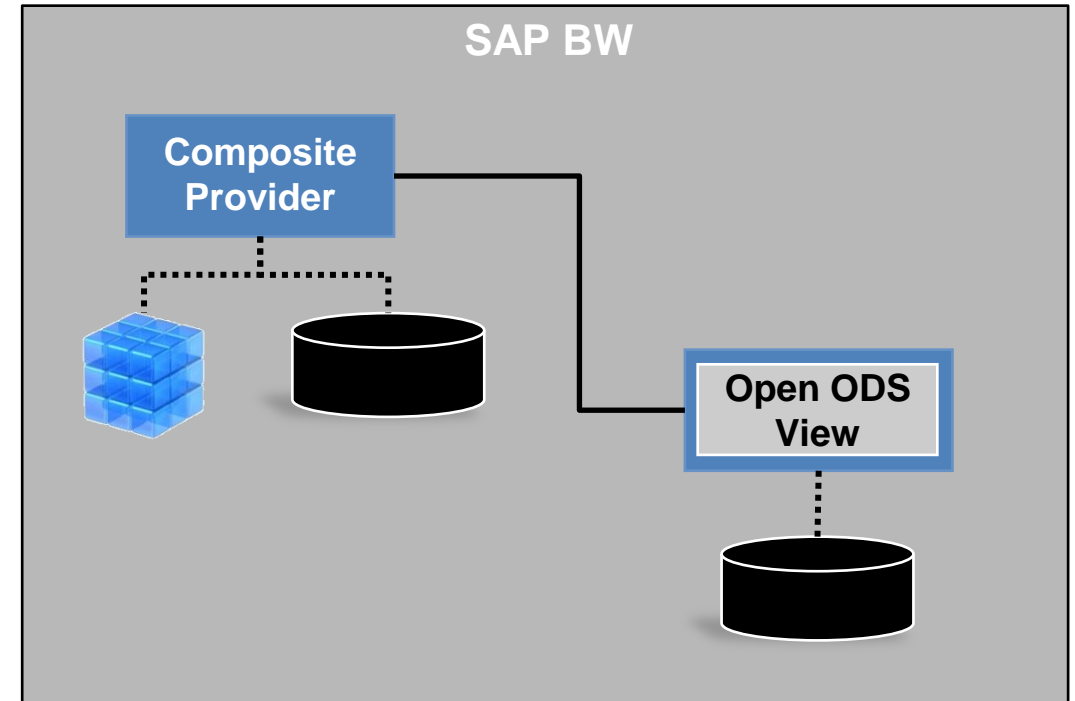
- Data flow to historize ODS data
- Extend Open ODS View



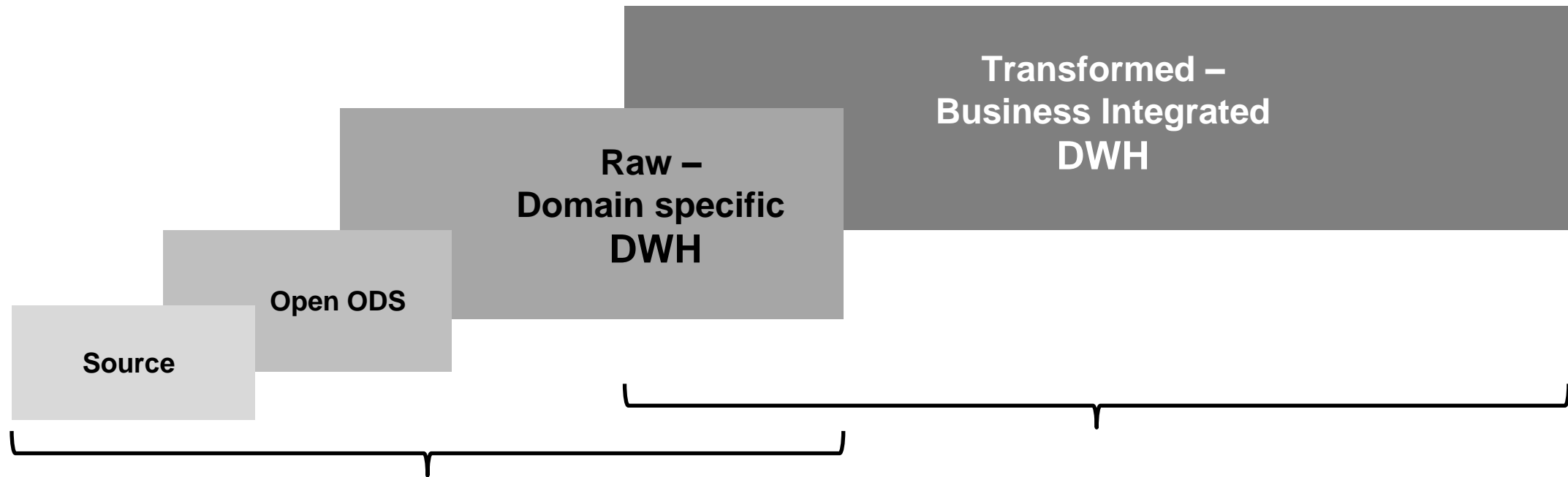
System Demo Part 2

Extending the Business Integrated Data Warehouse

- Extend CompositeProvider with attributes from Open ODS View



Raw and Business Integrated Data Warehouse



Governed by Sources

- Structures, Changes, Scheduling
- Domain specific entities, some degree of reuse
- „bottom up“

Governed by Business Requirements

- Harmonized, consolidated, agreed-on structures
- Central, highly reusable entities
- „top down“

Wrap Up

Key Takeaways

SAP BW 7.40 powered by SAP HANA

- Supports the Logical Data Warehouse paradigm
- Provides lean and agile mechanisms to integrate and leverage external data
- LSA++ continues to evolve to provide more services on source level data



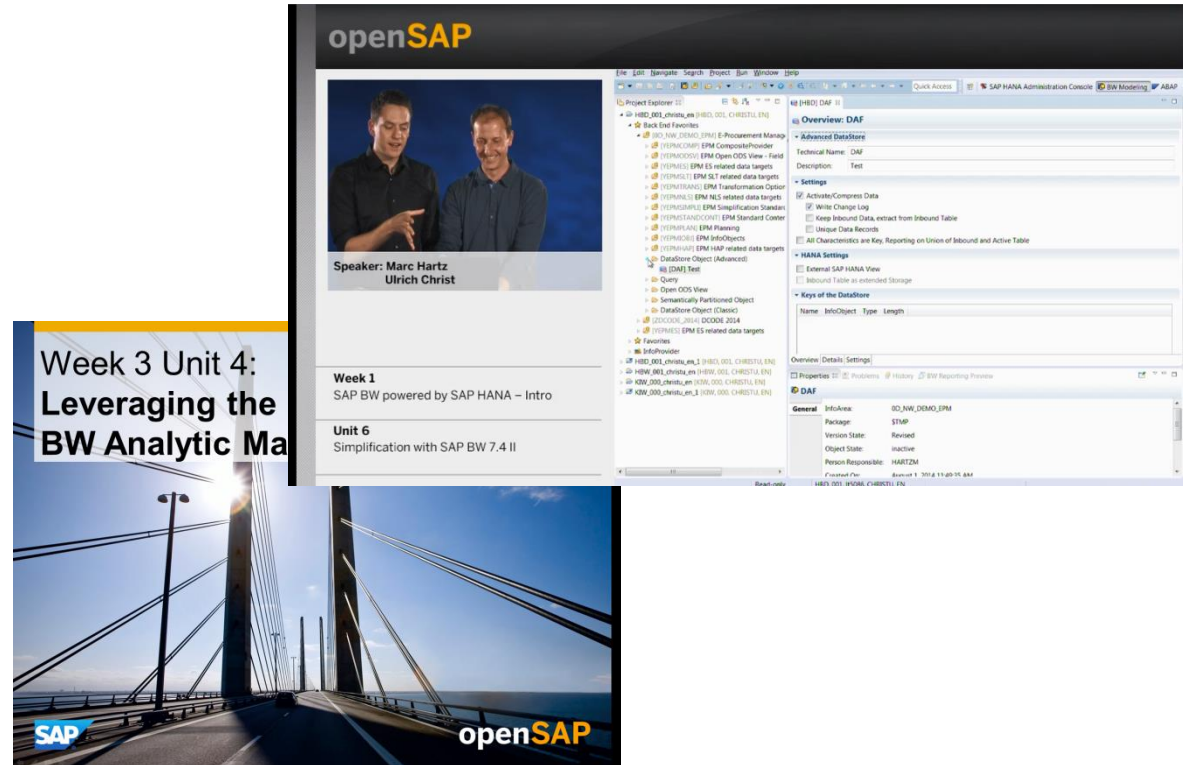
Information

UPCOMING:

openSAP SAP Business Warehouse powered by SAP HANA course

- 4 Weeks of videos, demonstrations and explanation focused on SAP BW 7.4 powered by SAP HANA
- **Free Participation & Record of Achievement**

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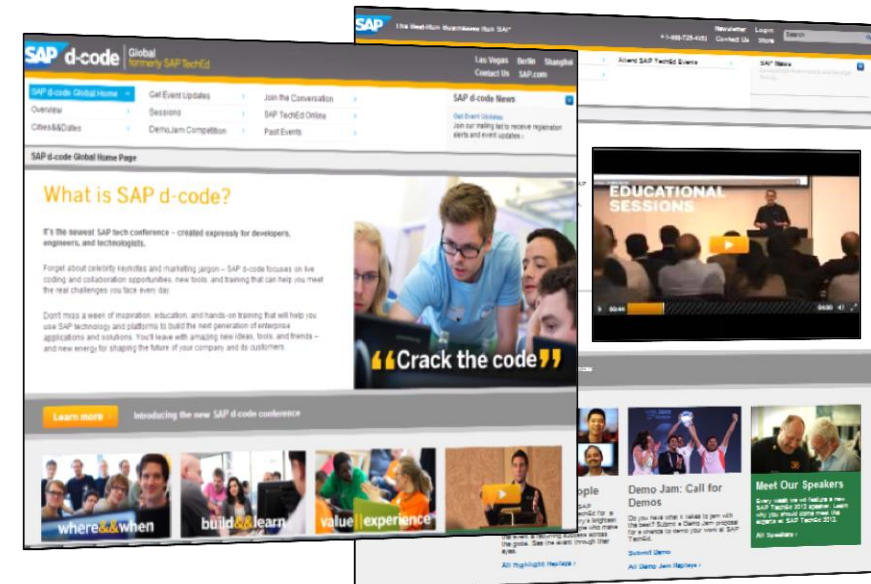
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