SAP HANA data warehousing

Vision & Roadmap

March 2016

Product Management SAP HANA DW

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Agenda

Introduction

SAP DW Strategy

Components & Roadmap

Game Changing Trends Transform the Steadily Growing Data Warehouse Market

Data

Location – cloud, data lakes

Types – behavioral data, IoT

Volumes – PB, > 40% growth YoY

People

Performance – real-time results

Scope – predictive, agile analytics

Value – new & unused data (> 85%)

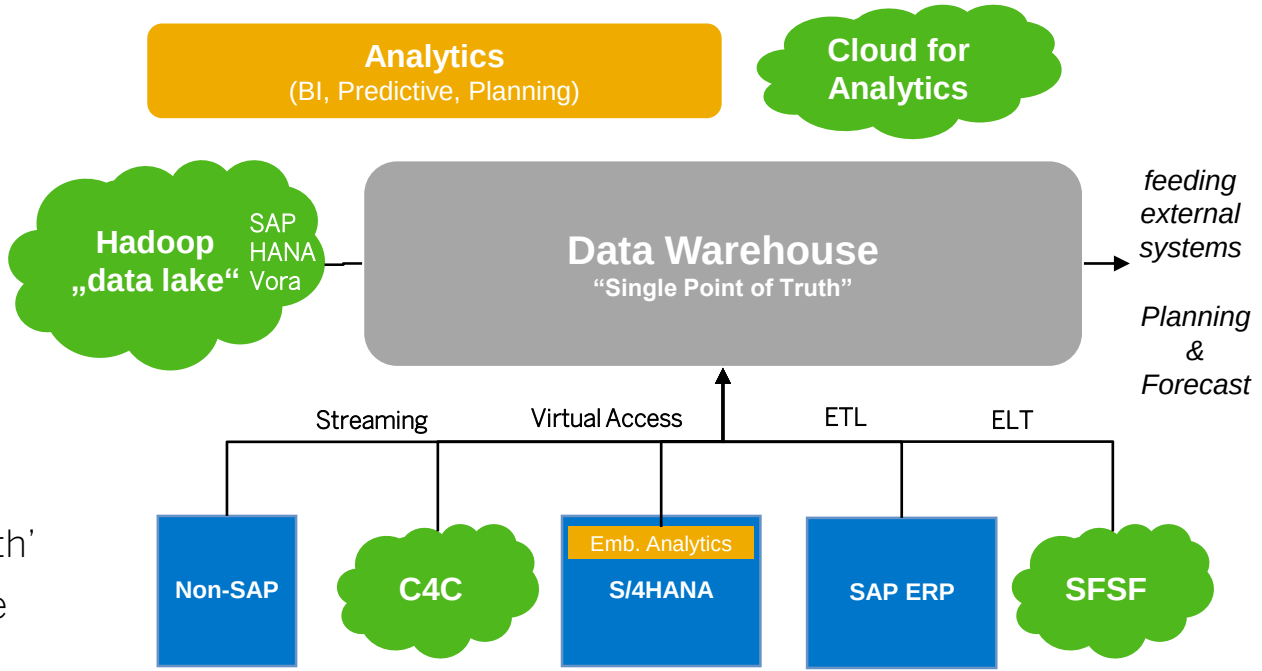
Why is still data warehousing necessary?

Characteristics

- Consolidates data across the enterprise
- Standardized data model
- Supports decision making

Main Tasks

- Define common semantics
- Harmonize data values
- Establish a ‘single version of truth’
- Provide a single, comprehensive source of current and historical information



Market Expectations

Gartner [1] "Emerging data sources, trends and technologies challenge the effectiveness of data warehouses in supporting analysis and decision making."

IDC [2]: " The data warehousing market based on relational databases will continue to be disrupted by several non-relational and/or non-schematic information management software categories. Data warehouses will not disappear as they have a key place in an organization's data architecture."

*[1] "2016 Strategic Roadmap for Modernizing Your Data Warehouse Initiatives" Mark Beyer and Lakshmi Randall, Gartner, October 2016

*[2] Worldwide Business Analytics Software Forecast, 2016–2019 by Dan Vesset et al, IDC, July 2016. Doc # 257402

Agenda

Introduction

SAP DW Strategy

Components & Roadmap

Progress from an Advanced Basis

SAP Technology

- SAP HANA, BW … leading In-Memory platform, comprehensive DW solution
- SAP's cloud strategy … steadily growing technology and solution portfolio
- Hadoop integration … superior analytics for Hadoop with SAP HANA Vora

Data Warehouse and SAP HANA Customers

- SAP HANA customers … 14500+
- SAP BW on HANA … 3000+
- SAP Power Designer … 50000+

Current Portfolio – Tool Use Cases

SAP Agile Data Preparation / Information Steward

- **Data Lineage**: monitor flow of data across models (until avail. via Information Steward)
- Empowers to discover, assess, define, monitor and improve **data quality**

SAP HANA extended appli-cation Server

- Full embed a featured **application server, web server,** and **development environment**

SAP Power Designer

- **Conceptual & Logical Modeling**, Reverse-Engineering, Impact Analysis, Model Comparison, New Model Versioning

SAP HANA EIM Services

- Provides **ETL services & data replication**, advanced data transformation and data quality functionality
- Design & Implement **Data Flows**

SAP HANA Modeler

- Technically **implement and model** HANA Artifacts
- **Administrate** SAP HANA models

SAP HANA Application LM

- Organize HANA Artifacts to Delivery Units for **transports** across systems (Versioning, Revisions)

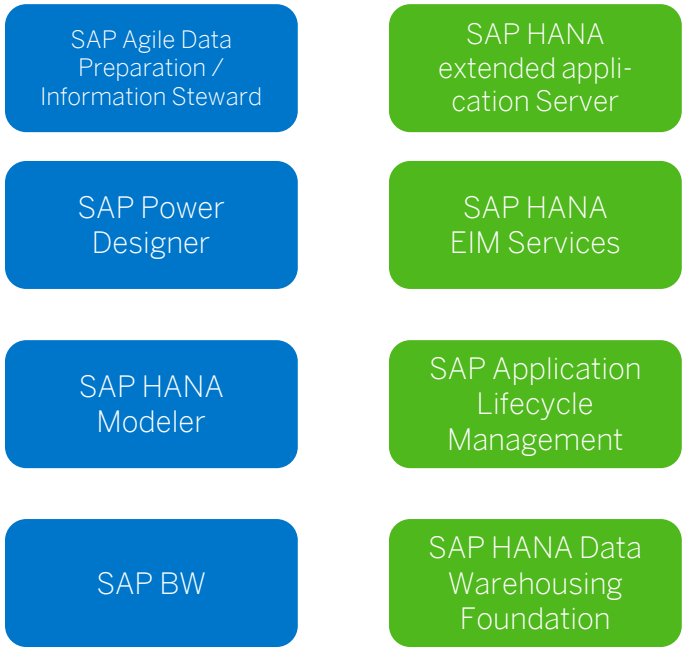
SAP BW

- **Data Warehouse application** with **complete stack** for modelling, ETL and life cycling

SAP HANA Data Warehousing Foundation

- Data Distribution Optimizer for **efficient administration** of large environments
- Data Life Cycle Manager for **data temperature /aging** management

Current Portfolio – Assessment



All tools of portfolio are available and used today, further components will be developed.

Custom Data Warehouses / Data Marts with these tools exists.

Tools are independent from each other with a lack of integration for end-to-end DW deployment and operations.

Addressable market potential not used with offering.

Direction of Development

Establish SAP HANA data warehousing as the leading data warehousing platform for ...

the Cloud ... shape & provide advanced DW services for the cloud transition

all Data ... offer a broad data management platform for analytics across all data types and volumes

one Truth ... provide semantic harmonization for physical & virtual data access strategies and distributed processing for any source

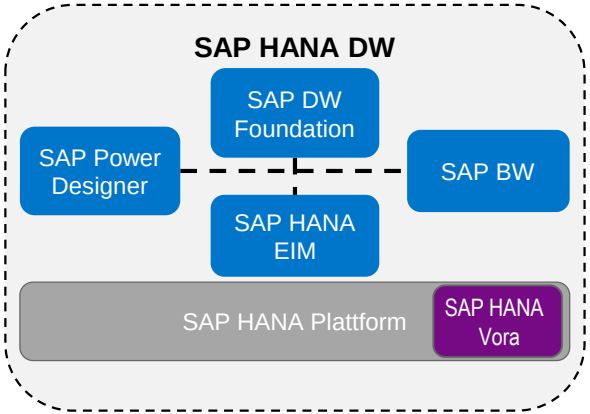
SAP HANA DW – Strategy

Planning and definition
2016

Execution and delivery
2016 - 2018

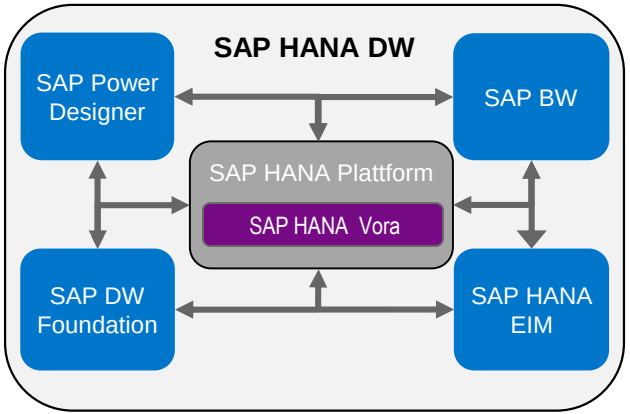
Vision

Analytics
(SAP BI Suite, Predictive, Planning)



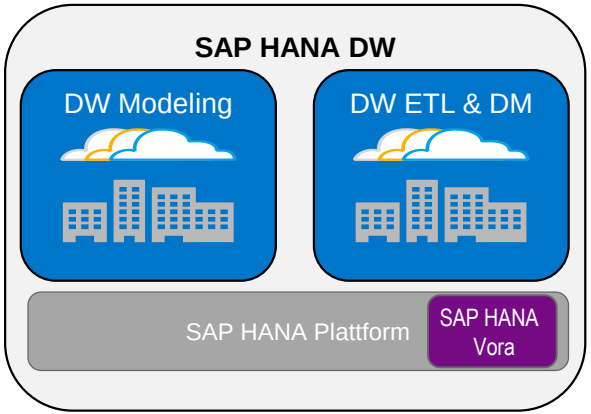
Market presence in data warehousing with a clear roadmap

Analytics
(SAP BI Suite, Predictive, Planning)



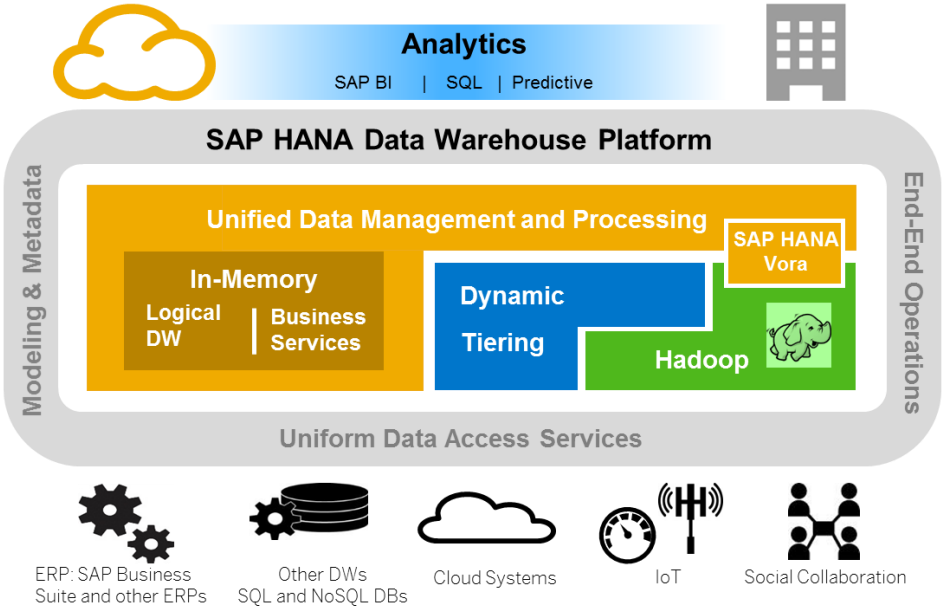
Strong and simplified offering with tight integration

Analytics
(SAP BI Suite, Predictive, Planning)



Convergence into one technology stack addressing BW and SQL-based DW needs

SAP HANA DW – Future-Proof Data Management Platform for Analytics



Serve standard **SQL-based** and **BW-style** data warehousing in order to ...

meet future demands

- LDW for dynamically changing system landscapes
- Cloud and hybrid deployment
- Integration of any data types and Big Data technologies
- Scale out to high volumes and data lakes

go beyond other DW offerings

- Top out-of-the-box integration to SAP solutions – on-premise and in cloud environments
- Real-time processing power of HANA
- Hadoop integration with SAP HANA Vora
- HANA-based analytic business services
- HANA-optimized re-usable business content

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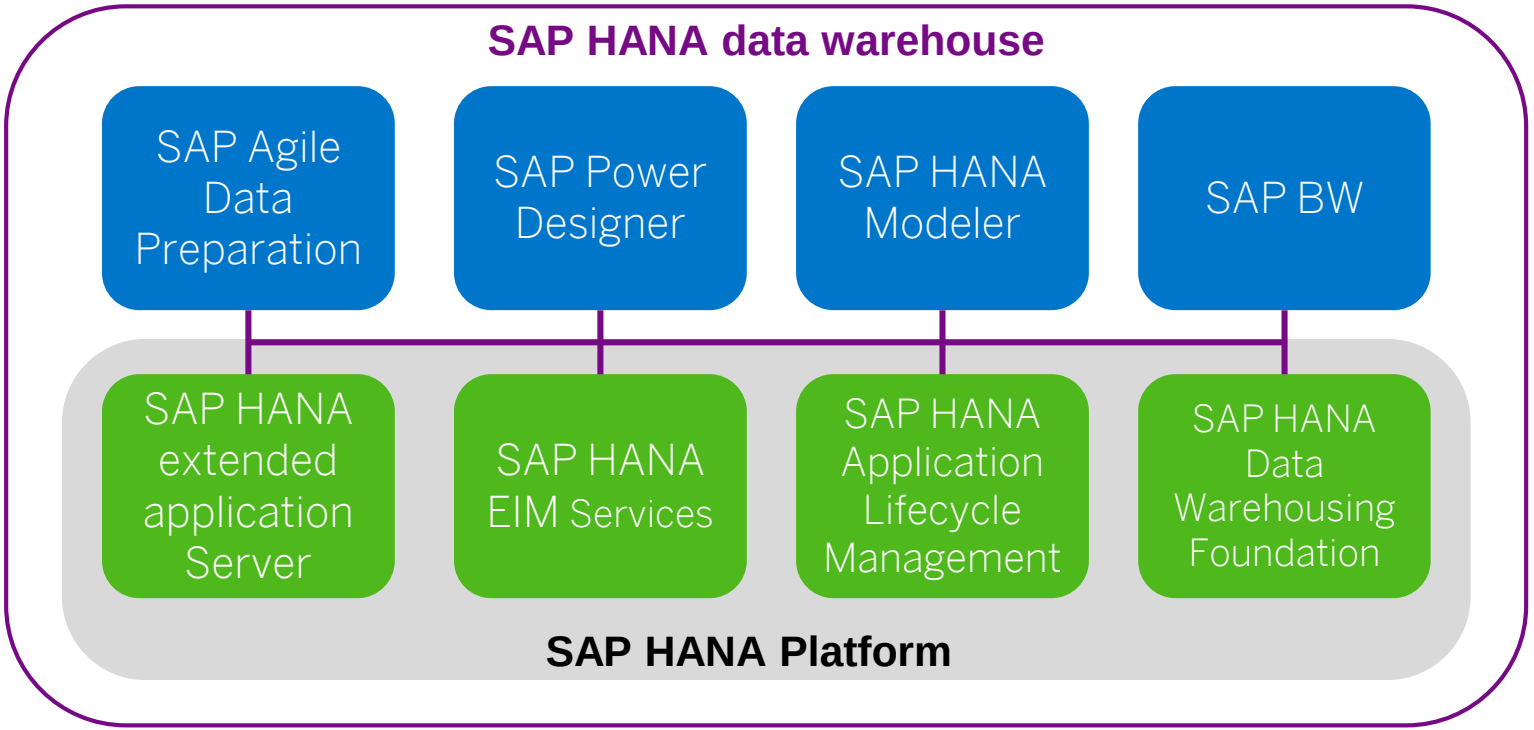
SAP DW Strategy

Components & Roadmap

Components of SAP HANA data warehouse



Development Focus - Principles

All tools continue to exists & evolve within their respective domain

COLLABORATE

Enable tools to collaborate

e.g. shared repositories across tools

INTEGRATE

Gradually work on tool's overlaps

e.g. SAP BW and SAP HANA EIM

EMBRACE

Modern DW environments

e.g. Big Data, Hadoop, SAP HANA Vora

Development Focus 2016

Modeling & Metadata

Integrated top-down modeling of DW artefacts with SAP Power Designer

Consistent release management and impact analysis across DW models

Consolidation of BW modeling objects optimized for SAP HANA

Data Management & Processing

Unified data processing across databases and data lakes

High performance business services, e.g. for inventory handling, planning and resource allocation

Data Access Services

SAP HANA EIM becomes the central data integration component of the SAP HANA DW

Flexible adapters for logical data warehousing covering SAP, third party and Big Data sources

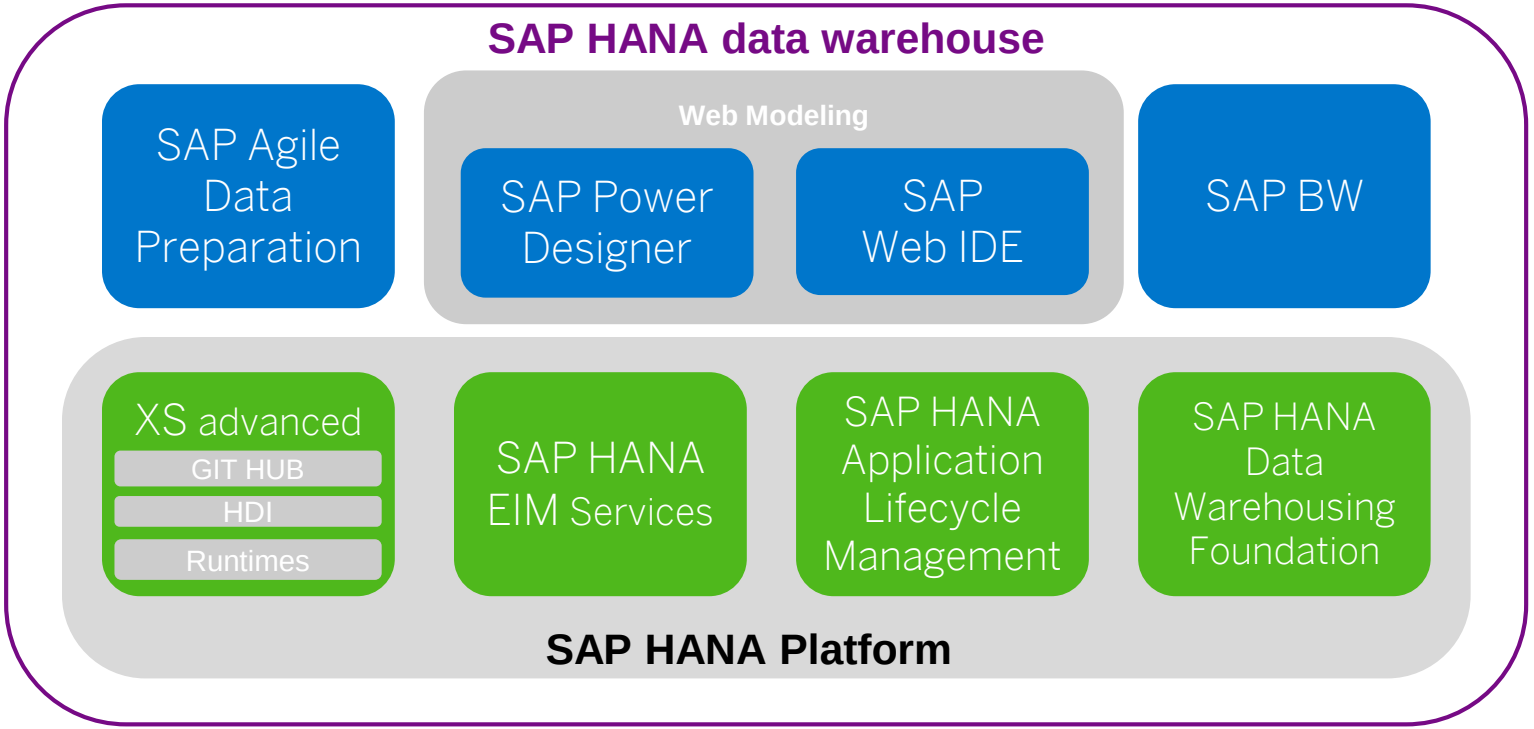
End-to-End Operations

Uniform scheduling and monitoring services for SAP HANA DW data flows

Advanced data distribution services for scale out and dynamic tiering

Comprehensive life cycle services for HANA DW components

Outlook



Modeling & Metadata

Integrated web modelling with SAP Power Designer and SAP Web IDE
- Generation of SAP HANA artefacts (HANA CalcViews)
- Business and process modeling for SAP BW and HANA artefacts
- Design time creation of CDS entities definition files

Consistent management of DW models in SAP HANA
- GIT & HDI as common content management for HANA DW components
- Consistent release and versions management for packages via GIT
- Design and runtime impact analysis on dependencies across HANA models

Consolidation of BW models for HANA-optimized data warehousing
- Two central InfoProviders only: ADSO and CompositeProvider (e.g. seman. Gr.)
- New and simplified Business Content for BW on HANA
- SAP BW edition for HANA - only using HANA-optimized modeling objects

Planned for 2016

Integrated top-down modeling of DW artefacts with SAP Power Designer

Consistent release management and impact analysis across DW models

Consolidation of BW modeling objects optimized for SAP HANA

Data Management & Processing

Data Access Services

End-to-End Operations

Modeling & Metadata

Data Management & Processing

Data Access Services

SAP HANA EIM becomes the central component for data integration
- Logical DW with adapters for physical and virtual data integration
- Flexible switching between data access methods
- Support of extractors and S/4HANA via RFC adapter
- Access to Big Data sources (e.g. Hadoop and NoSQL DB)
- Integration of real-time data streams (e.g. integration in BW)
- Data lineage and impact analysis for data sources
- Extended data quality and transformation possibilities with integration in BW (e.g. geocoding, best record)
- Seamless connectivity to cloud sources via adapter (e.g. SFSF)
- EIM flowgraphs supporting HANA CDS definitions

End-to-End Operations

Planned for 2016

SAP HANA EIM becomes the central data integration component of the SAP HANA DW

Flexible adapters for logical data warehousing covering SAP, third party and Big Data sources

Planned for 2016

Unified data processing across databases and data lakes

High performance business services, e.g. for inventory handling, planning and resource allocation

Data Management & Processing

Unified data processing across data tiers and sources
- Multi-tiering between HANA, DynamicTiering and Hadoop via DLM
- Hadoop as NLS for SAP BW, possibility to access via SAP HANA Vora
- Integration with SAP HANA Vora to enable analyses for Hadoop data
- Data provenance across DW data tiers

Continuous extension of high performance HANA business services
- Further push-down of BW business functionality (e.g. formula excep. aggr.)
- Advanced services for inventory handling and planning processes
- Additional algorithms for PAL, e.g. for sequential pattern mining

Modeling & Metadata

Data Access Services

End-to-End Operations

Modeling & Metadata

Data Management & Processing

Data Access Services

Planned for 2016

Uniform scheduling and monitoring services for SAP HANA DW data flows

Advanced data distribution services for scale out and dynamic tiering

Comprehensive life cycle services for HANA DW components

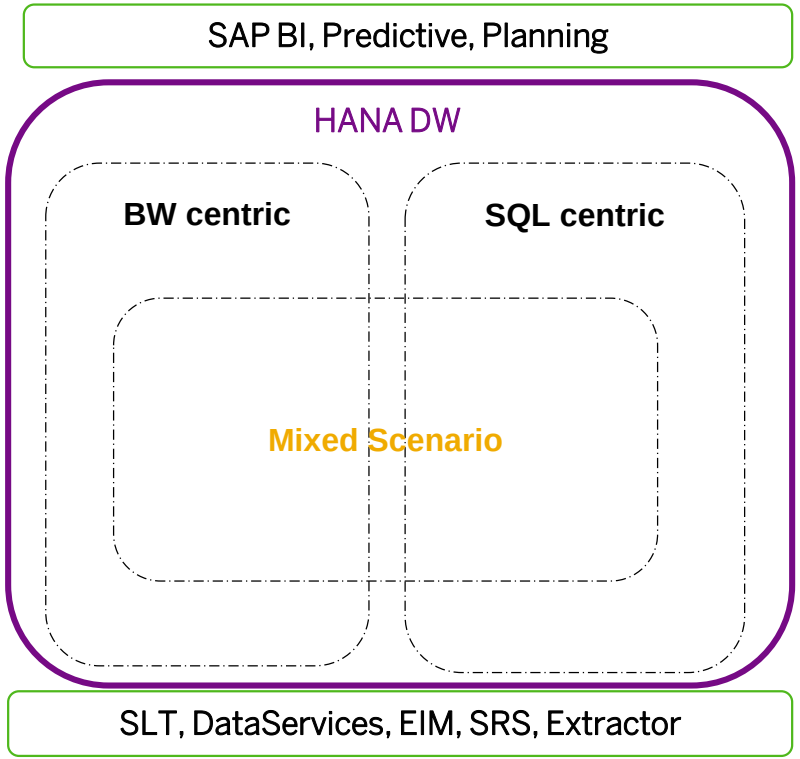
End-to-End Operations

Uniform scheduling and monitoring services for data flows
- Common HANA scheduling framework for EIM, BW Process Chains and third party data integration tools
- Monitoring services for EIM-based data access processes

Advanced data distribution services for scale out and dynamic tiering
- Optimization of data distribution for HANA scale-out landscapes (e.g. join-path analysis)
- Set-up of automated data placement for dynamic tiering

Life cycle management and administration
- Life cycle services for HANA DW components, e.g. for branching, packaging and transport (e.g. GIT integration)
- Web-based administration and monitoring tools for BW

SAP HANA DW – Summary



SAP HANA DW as flexible and modern data warehouse framework

1. SQL centric approach is a valid and positioned scenario for data warehousing with tooling for implementation
2. SAP BW will further be developed and integrated with HANA DW components
3. Independent from starting point HANA DW components can be added and used in a mixed architecture at a later point in time

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