

# Project Approaches

**SAP NetWeaver BW powered by SAP HANA**

Parallel (heterogeneous) System Landscape

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# Disclaimer

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# Agenda

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## Project Approaches to BW on HANA

- Migration vs. New Installation
- Decision drivers, comparison

## Parallel System Landscape (Managing Heterogeneous System Landscapes)

- General Considerations, Recommendations
- Development and transport considerations

## Transport Management between BW on HANA and BW on xDB (RDBMS)

- HANA-optimized InfoProviders
- Other InfoProviders
- Other BW Objects
- BW on HANA 'Mixed' Scenarios

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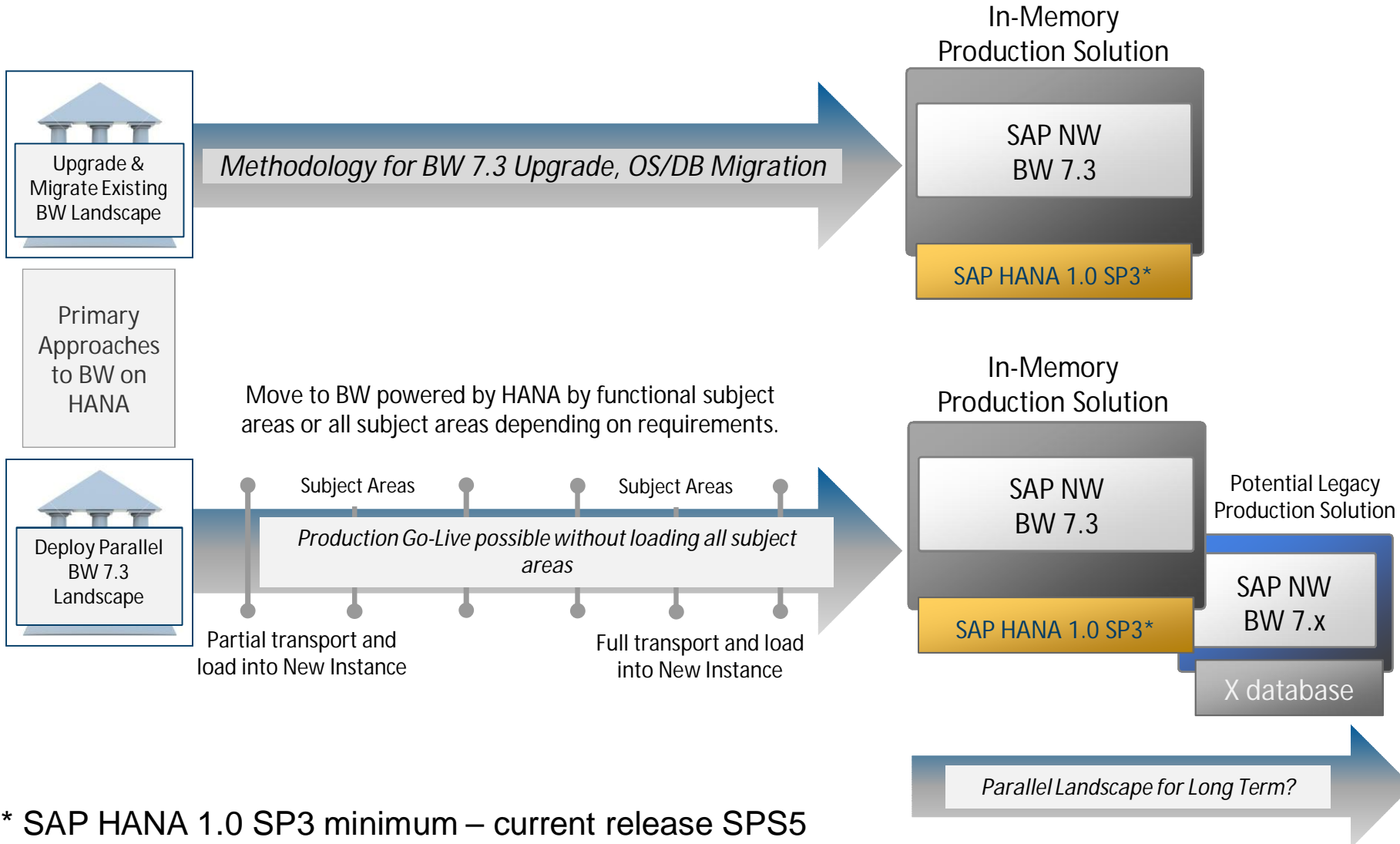
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# Project Approaches to BW on HANA

Two Options to Consider: Migration vs. New Installation

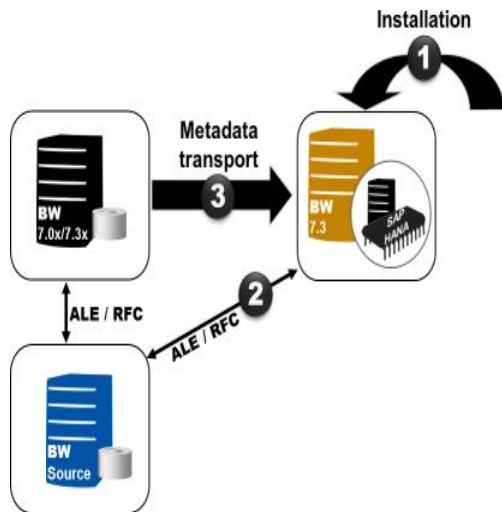


\* SAP HANA 1.0 SP3 minimum – current release SPS5

# Project Approaches to BW on HANA

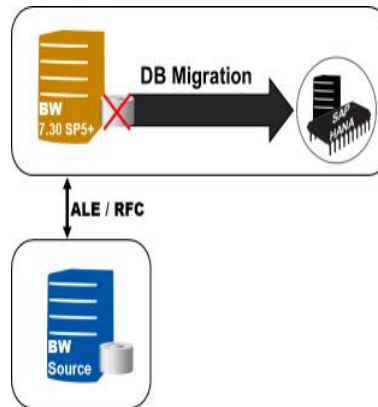
## New Installation and Migration Options

### New installation

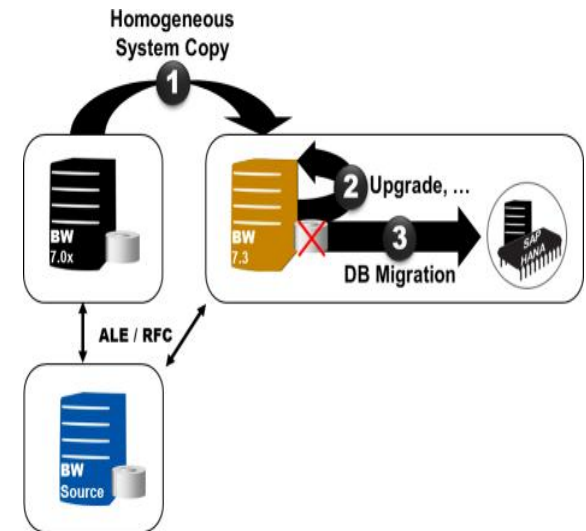


### Migration Options

#### In-place migration



#### Copy, upgrade + migrate



Migration Tools, Technical details for SAP NetWeaver BW:

[Upgrade and Migration - BW on HANA](#)

[Upgrade/Migration/Implementation](#)

[SWPM \(Software Provisioning Manager\)](#)

[Post Copy Automation tool](#)

[Database Migration Option \(DMO\) for SUM](#)

# DMO at a Glance

## Database Migration Option for Software Update Manager

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### Scenario - for 'in-place' migration option

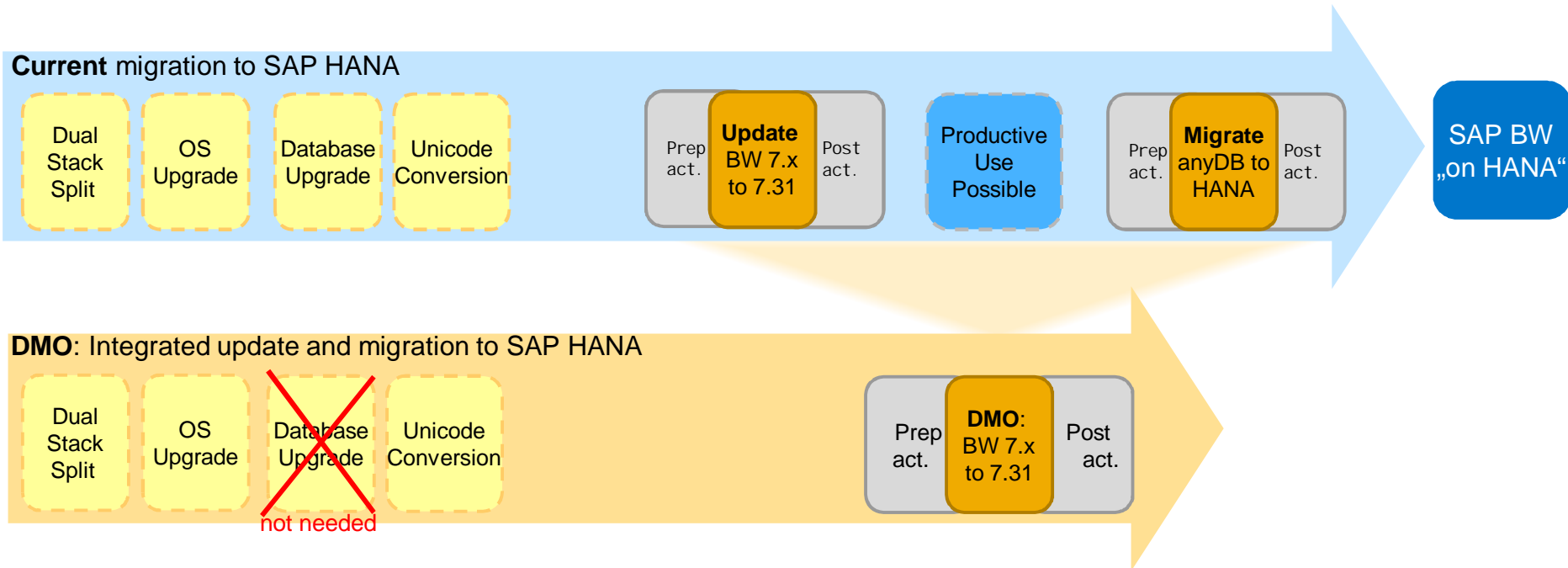
- DMO stands for “database migration option of Software Update Manager (SUM)”
- DMO combines the upgrade and the migration to SAP HANA in one tool: SUM
- DMO for SUM is not yet general available, but we started piloting with customers
- DMO will be available for BW and Suite systems (later this year)
- DMO is part of SUM, so no new product, and no additional license fees

### Benefits


- One downtime instead of two: combination of upgrade and migration
- Less requirements for the DB software version of the existing DB
- Well known tool SUM is used, with improved UI
- Combination of procedures is possible – DMO + PCA (further automation, less TCO)
- Original DB continues to run, but is no longer used to store data – can be reactivated as fallback

# Comparison of Standard and New Migration Processes

New option also reduces time by eliminating prep/post activities



Legend

 \* - may be a necessary step – depends on customer situation, start release

## Information sources

[SCN Blog: DMO - Upgrade and Migrate SAP Systems to HANA \(software logistics\)](#)

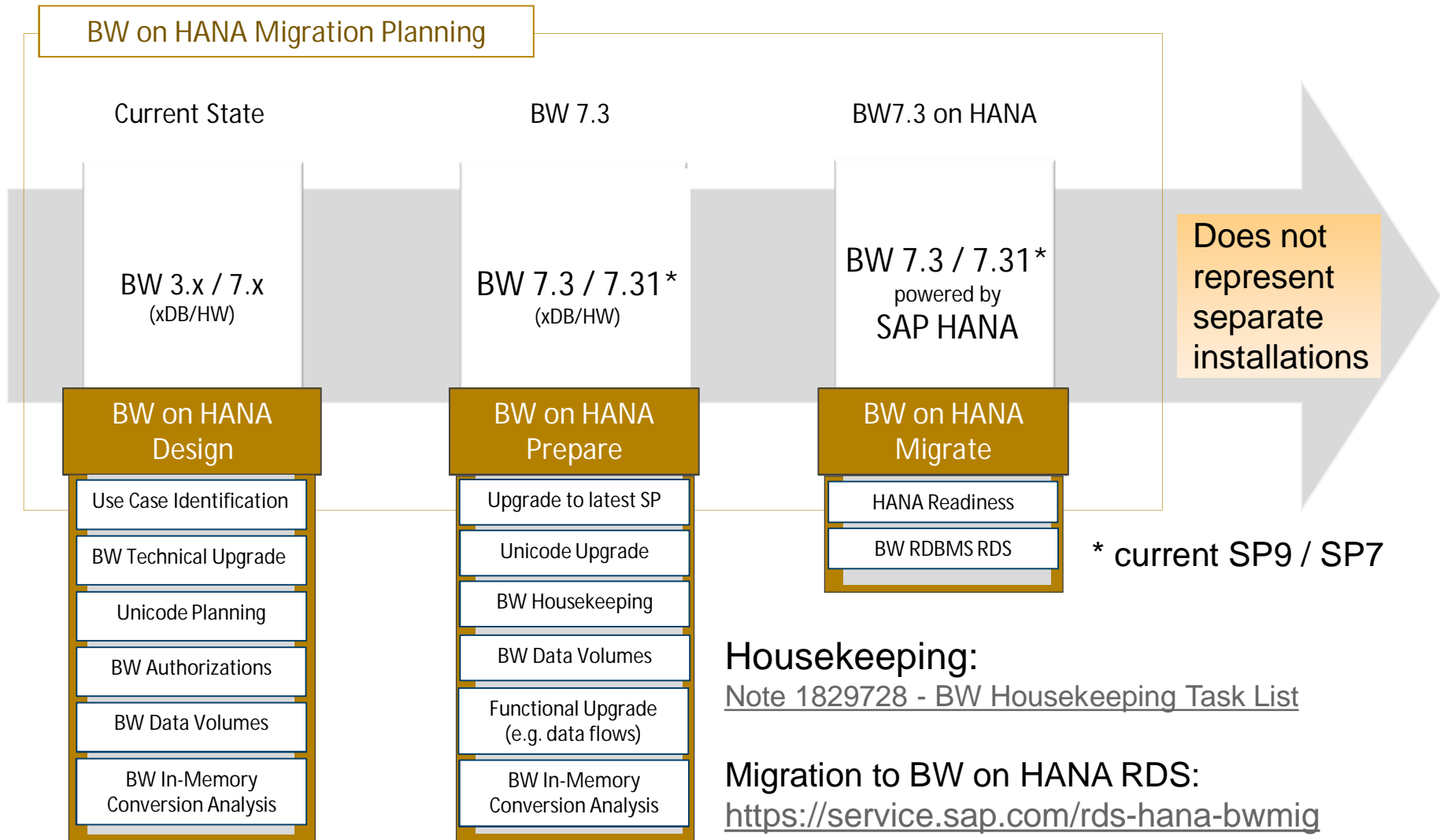
**SAP Note 1799545 on DMO:**

<https://service.sap.com/sap/support/notes/1799545>



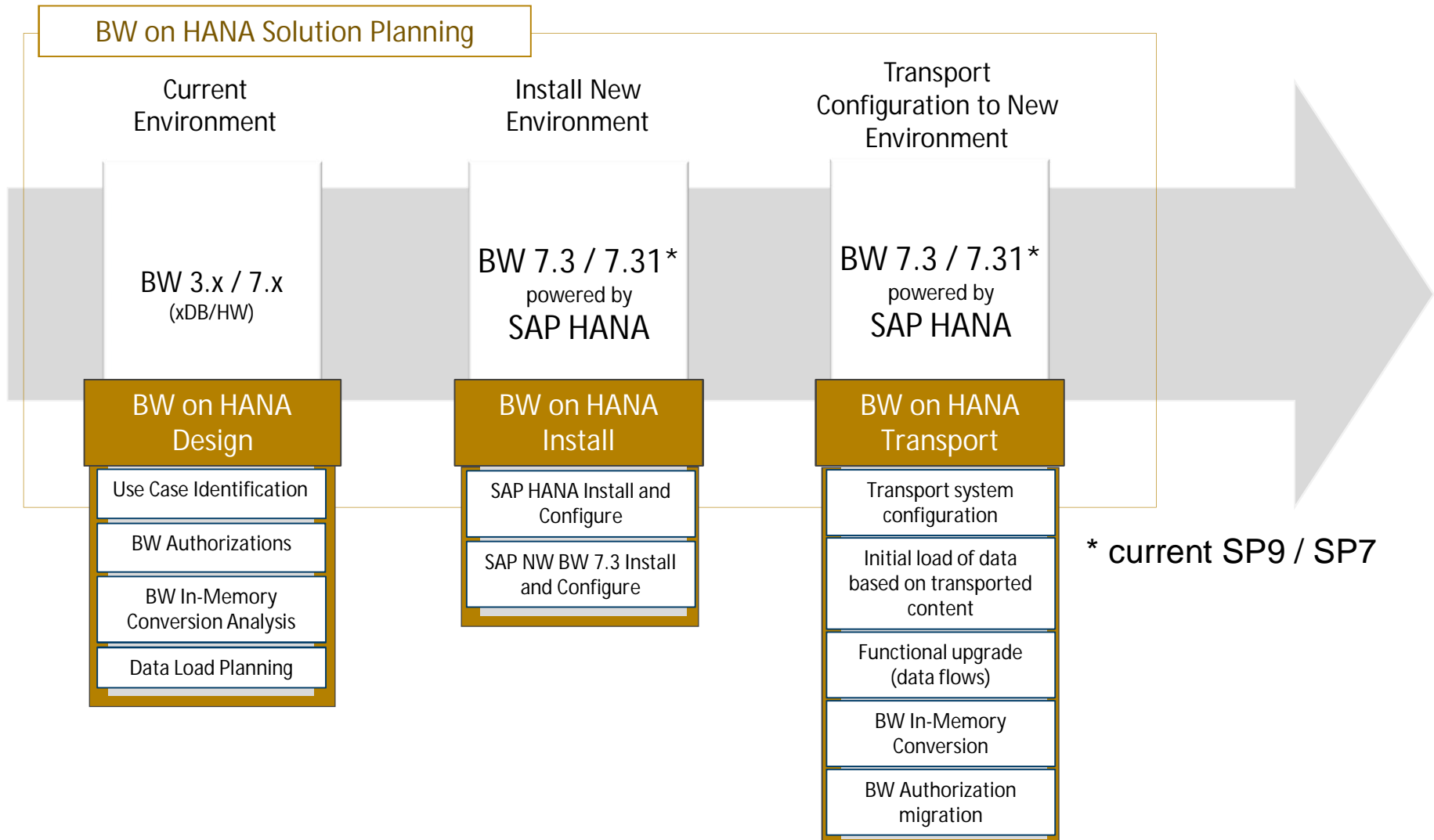
# Project Approaches to BW on HANA

## Migration option – Relevant Project Activities



# Project Approaches to BW on HANA

## New Installation – Relevant Project Activities



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## Project Approaches to BW on HANA

- Migration vs. New Installation
- **Decision drivers, comparison**

## Parallel System Landscape (Managing Heterogeneous System Landscapes)

- General Considerations, Recommendations
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## Transport Management between BW on HANA and BW on xDB (RDBMS)

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- Other BW Objects
- BW on HANA 'Mixed' Scenarios

# What to Consider When Deciding on Options?

Where Do We Go from Here?

## Business Considerations

### Key Drivers

Cost considerations

Use case scenarios

Project duration

Subject Areas

System Consolidation

HANA Impact

## Functional Considerations

### Redesign

Data Latency / Load window

BW Footprint

BW Versions

BW 7.x deployment

## Technical Considerations

### Data Volume

Archiving

BW Landscape – system support

Reporting Tools

Migration options, tools

HM1

**Design should be optimized**

Hartz, Marc, 3/20/2013

# What to Consider When Deciding on Options?

## Business Considerations

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Drivers	▶	What are the drivers for the HANA migration? What are the KPIs and desired outcomes?
Cost	▶	How much the different alternatives cost? Hardware, project, etc.
Project Duration vs. Live Use Case	▶	Do you have any use cases requiring immediate HANA acceleration? Would immediate acceleration of those use cases offset a potentially longer overall project?
Subject Areas	▶	Do you have a sense of how many subject areas can take advantage of in-memory?
System Consolidation	▶	Do you have multiple BW landscapes you would like to consolidate?
HANA Impact	▶	Is the current inclination toward a big bang deployment or an iterative roll-out of new, improved functionality?

# What to Consider When Deciding on Options?

## Functional Considerations

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Opportunity to Re-Architect

Is the current BW configuration meeting the business needs, or is there a desire for redesign?

Data Latency / Load Windows

Are you currently challenged to meet load windows and / or is current data latency impacting the business?

BW Footprint

How much BW configuration do you currently have deployed to users? What is your growth plan?

BW versions

What version of BW do you have deployed currently?

How much of the 7.x content is deployed?

Are you currently utilizing the 7.x dataflows and/or 7.x security?

# What to Consider When Deciding on Options?

## Technical Considerations

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### Data Considerations

How much data are you managing in your current BW landscape?

### Archiving Considerations

Are you currently archiving in ECC? Does ECC contain all the relevant history you require in BW?

### Support Considerations

What is your current system support plan? What is your ability to support multiple BW landscapes?

### Reporting Tools

What reporting tools are currently deployed? How do users access data in the BW system?

### Internal Capabilities

What is your internal team's capabilities and bandwidth to support the project activities?

### Migration options, Tools

What are the technical options, requirements? What tools are available?



# How Have Other Companies Decided What To Do?

Example #1 – Full Upgrade and Migrate – **hidden**

## Why did they choose BW on HANA?

- ▶ Faster reporting
- ▶ Faster data loading
- ▶ Lower TCO
- ▶ Reduced maintenance costs
- ▶ Reduced development costs

## Which option did they choose?

- ▶ Upgrade & migrate existing BW landscape

## How did they decide which option?

### Opportunity to Re-Architect

- ▶ Provided an opportunity to remove layers (e.g. reporting) and flatten the architecture, which provided support and cost benefits
- ▶ Phased parallel landscape approach would delay realization of full benefits

### Data Considerations

- ▶ Current BW system contained large amounts of data
- ▶ Phase parallel landscape approach would have taken too long to meet business needs

### Support Considerations

- ▶ Challenges with supporting data feeds from numerous systems into two BW landscapes
- ▶ Cost of additional hardware and support requirements for two BW landscapes

# How Have Other Companies Decided What To Do?

## Example #2 – Parallel Landscape – hidden

### Why did they choose BW on HANA?

- ▶ Faster reporting
- ▶ Increased end-user self-sufficiency
- ▶ Faster data loading
- ▶ Lower TCO
- ▶ Reduced maintenance costs
- ▶ Reduced development costs

### Which option did they choose?

- ▶ Deploy Parallel BW 7.3 on HANA landscape

### How did they decide which option?

#### Subject Areas

- ▶ Recognized that certain subject areas were most important to in-memory capabilities
- ▶ Completed prioritization analysis to determine top subject areas

#### Opportunity to Re-Architect

- ▶ Not content with their current BW design
- ▶ Wanted to take advantage of some re-design opportunities with in-memory capabilities

#### BW Footprint

- ▶ Current BW system still young
- ▶ Saw opportunity to adjust based on user input

# How Have Other Companies Decided What To Do?

Two examples – How did they decide which option?

## Upgrade and migrate existing BW

### Opportunity to Re-Architect

- ▶ Provided an opportunity to remove layers (e.g. reporting) and flatten the architecture, which provided support and cost benefits
- ▶ Phased parallel landscape approach would delay realization of full benefits

### Data Considerations

- ▶ Current BW system contained large amounts of data
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### Support Considerations

- ▶ Challenges with supporting data feeds from numerous systems into two BW landscapes
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## Deploy parallel BW on HANA

### Subject Areas

- ▶ Recognized that certain subject areas were most important to in-memory capabilities
- ▶ Completed prioritization analysis to determine top subject areas

### Opportunity to Re-Architect

- ▶ Not content with their current BW design
- ▶ Wanted to take advantage of some re-design opportunities with in-memory capabilities

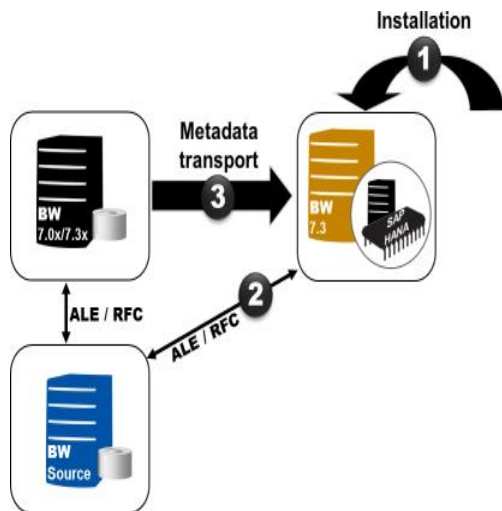
### BW Footprint

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# SAP BW to BW on HANA Implementation Approaches

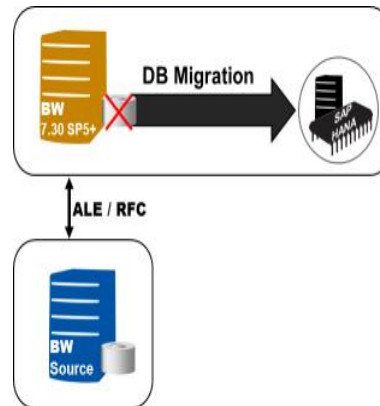
How do they compare?

## New installation



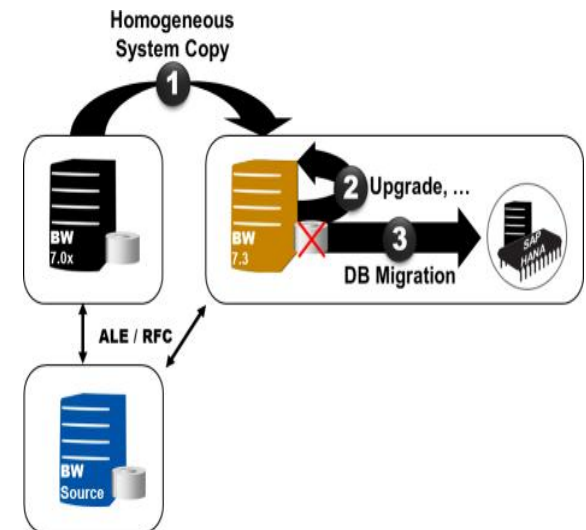
- + Simplifies IT effort
- + Provides opportunity to re-engineer and leave unnecessary data behind
- Requires significant impact analysis and prioritization effort of existing scenarios
- Requires operating 2 Data Warehouses in parallel for an extended period of time
- Extends time to delivery of business ready content (transports, testing, reloading of business data)

## In-place migration



- + Leverage Existing Landscape
- + Improves time to delivery – all content and data is available post migration
- + Scope Defined - No Requirements Gathering
- Increases IT effort
- Downtime Requirement
- No real Fallback option (only via restore)

## Copy, upgrade + migrate



- + Minimized Downtime
- + Enables fast deployment of 2 consistent landscapes for stability and data accuracy checks
- + Improves time to delivery – all content and data is available post migration
- Increases IT effort
- Requires additional migration preparation step Post Copy Automation (PCA) support for all BW interfaces

# SAP BW on HANA migration and project approaches

## Technical Evaluation - summary

	<b>1. New Installation</b>	<b>2. In-Place Migration</b>	<b>3. Copy &amp; Migrate</b>
<b>EDW Redesign planned</b>	+++	-	++
<b>Redundancy in Staging</b>	+	+++	--
<b>EDW Model Consistency</b>	-	+++	++
<b>Transport Restrictions</b>	+++	--	+
<b>Implementation Effort</b>	Medium	Low	Medium
<b>System Availability Impact</b>	Low	High	Low
<b>Operation Cost</b>	High	Low	Medium

# SAP BW on HANA migration and project approaches

## Technical Evaluation - considerations

How to get to BW on HANA	Reasons you would choose	Things to consider
<b>New Installation</b>	<ul style="list-style-type: none"> <li>Minimize downtime for production</li> <li>Parallel production systems (side-by-side operation)</li> <li>Ongoing benchmark</li> <li>Redesign, clean up</li> <li>No need to split dual-stack</li> <li>Functional upgrade (authorizations, dataflow) w/o changing current system</li> </ul>	<ul style="list-style-type: none"> <li>Transports – complex dependencies, restrictions</li> <li>Reload data, request history lost</li> <li>Delta queue management (PCA tool), extractor specifics for one source to two BW (SAP notes: <a href="#">844222</a>, <a href="#">775568</a>)</li> <li>Additional hardware cost (app servers)</li> <li>Not suited for replacement of current prod system</li> <li>Change of System-ID and Logical System</li> <li>Longest duration (redesign/rebuild) – complex landscape to maintain</li> </ul>
<b>In-place migration</b>	<ul style="list-style-type: none"> <li>Minimum overall project duration</li> <li>No additional hardware cost (reuse application servers)</li> <li>No change of SID and Logical System</li> <li>No SAP ECC extractor limitations</li> <li>Multiple change events combined (e.g. Oracle/BW upgrade, OS/DB migration)</li> </ul>	<ul style="list-style-type: none"> <li>Production downtime!!</li> <li>Migration preparation tasks, split dual-stack (<a href="#">Dual-Stack Split</a>)</li> <li>No Parallel production systems (fallback = restore)</li> </ul> <p>For BW &lt; 7.3 SP9</p> <ul style="list-style-type: none"> <li>Analysis authorization</li> <li>BW Technical upgrade to 7.3</li> <li>Unicode conversion</li> <li>Apply latest Support Package</li> </ul>
<b>Copy + Migrate</b>	<ul style="list-style-type: none"> <li>No risk for current production system</li> <li>Downtime only for DB Export</li> <li>Parallel production systems (validation prior cutover)</li> </ul>	<ul style="list-style-type: none"> <li>Migration procedure, preparation tasks, delta queue handling, split dual-stack</li> <li>Change of System-ID and Logical System</li> <li>Parallel production systems</li> <li>PCA support to be validated for all source systems</li> </ul>

# SAP BW on HANA migration and project approaches

Technical Evaluation – considerations 1/2

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## **Technology Switch vs. EDW Redesign**

Is an EDW Redesign planned in the context of the BW on HANA project or is the focus on a technology switch for improved performance, TCO and flexibility on existing models only?

BW on HANA offers much more flexibility and the possibility to implement scenarios streamlined

## **Redundancy in Data Staging**

Will the BW on HANA project result in two separate production systems that have to be supplied both with latest delta data (if redundant data: realignment challenges)

## **EDW Model Consistency**

Risk of diverging corporate meta data (especially master data) - Corporate master data across multiple systems has to be synchronized

## **Landscape Complexity**

Landscape complexity (multiple production systems) – system administration

# SAP BW on HANA migration and project approaches

## Technical Evaluation – considerations 2/2

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### **Transport Restrictions** (more details follow)

Consistency of the productive BW systems has to be ensured

Transporting between BW / RDBMS and BW / HANA systems includes certain technical restrictions

### **Implementation Costs (TCD)**

Additional effort to reload data to new systems or to transport models

Additional effort to redesign and (re)implement, new scenarios

### **System Availability Impact**

Minimize downtimes for end users during migration project

### **Operation Costs (TCO)**

Total cost of ownership will increase as results of a new and additional productive system landscape



HM2

I like the points we have so far!

Should we also add "landscape complexity" in general?

Hartz, Marc, 3/20/2013

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# Parallel BW Landscape

BW on HANA and BW on xDB (non-HANA)

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**SAP strongly recommends to have the same DB platforms across all BW systems of a transport landscape (Development/ Sandbox/ Quality/ Production).**

[SAP Note 1808450 - Homogenous system landscape for on BW-HANA](#)

**When Productive BW on xDB and BW on HANA coexist:**

**Parallel independent System-Landscapes (BW on HANA and BW on xDB)**

## Considerations

- Consistent Metadata (transport)
- Platform (DB) specific scenarios (HANA-specific scenarios, xDB-specific objects)
- Restrictions: cross-DB, cross-release transports

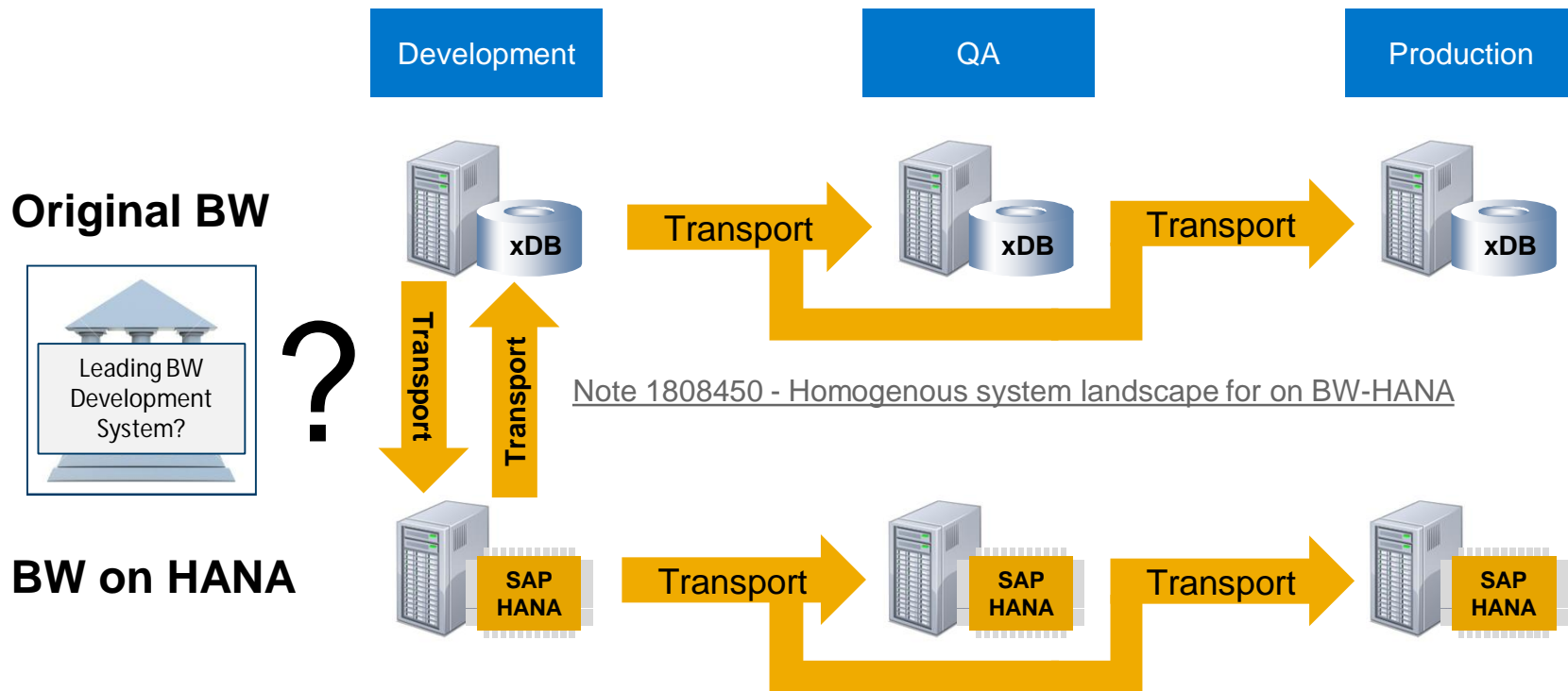
# Parallel BW Landscape

## Development Landscape Considerations

### Co-existing BW on RDBMS and BW on HANA systems

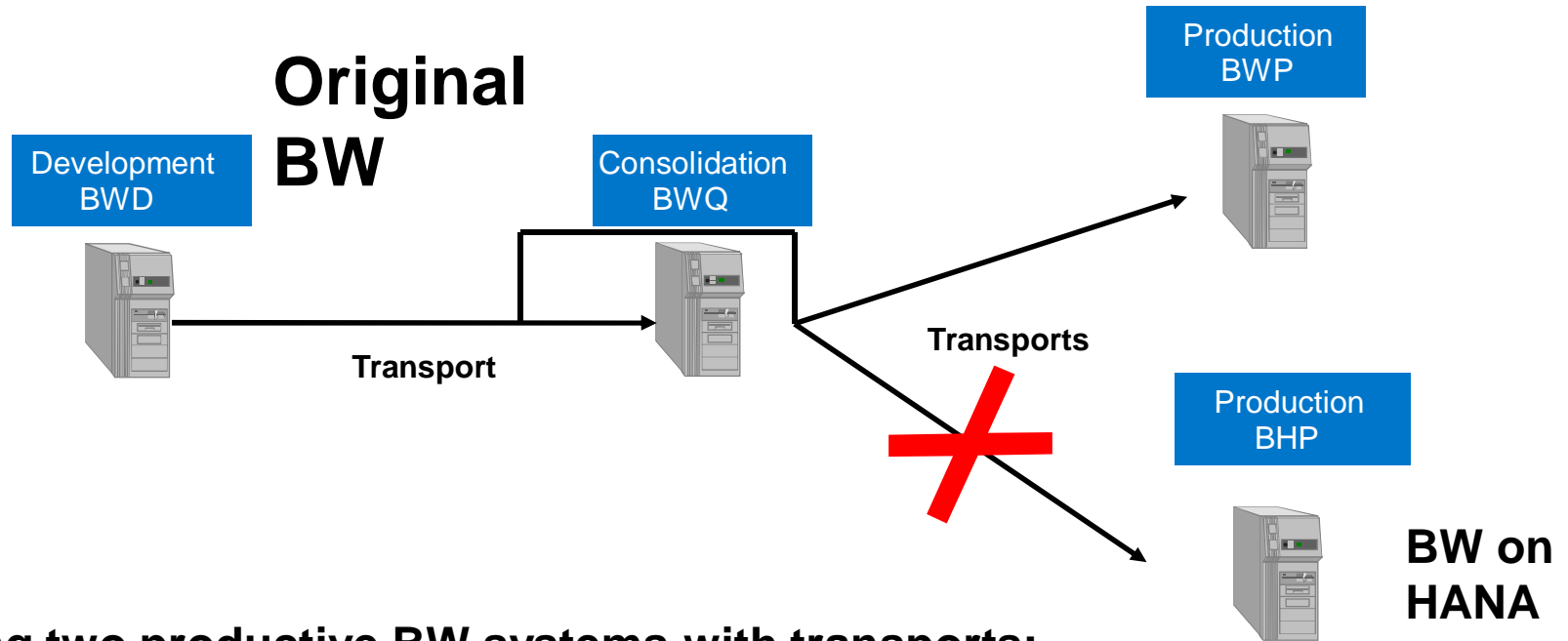
- Complex Global Landscapes – not all systems migrated to HANA
- Original BW and BW on HANA for different use case scenarios

*Parallel Landscape (minimize time of co-existence Landscape)*



# Parallel BW Landscape – Production only

## Development Landscape Considerations



### Feeding two productive BW systems with transports:

- Technically possible but **not recommended**  
(Consider [Note 1808450 - Homogenous system landscape for on BW-HANA](#) )
- **However this should be avoided** as long-term solution as transport/ landscape complexity increase and HANA advantages cannot be fully leveraged (cannot test and develop HANA specific scenarios)

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# Transport Management in Parallel BW Landscape

## General Considerations

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### Transports between Releases

Note 1090842 - Composite note: Transports across several releases

**... consider custom ABAP enhancements as well**

Note 1847431 - SAP NetWeaver BW ABAP Routine Analyzer

### Transports between HANA and non-HANA databases

- Using non-HANA-based development system for a HANA-based production system does not allow you to develop and test HANA-specific objects and processes
- Using a HANA-based development system for a non-HANA-based production system will lead to several problems due to
  - Obsolete objects (e.g. aggregates, DB indexes, obsolete Process types (process chains) )
  - New development paradigms and architecture changes (e.g. reporting on DSO, simplified data flows, new HANA-optimized InfoProviders, 'mixed' scenarios based on native HANA models, InfoCube compression, Inventory handling, CompositeProvider, type of partitioning and pruning, archiving strategy, transformation ABAP code)

**Mixed-platform landscape will cause overhead (TCO) and potential for suboptimal implementation.**

# Transport Management in Parallel BW Landscape

## Development / Design considerations

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### Scenarios available only in BW on HANA

- HANA optimized objects, procedures, Planning Applications Kit
- Streamlined LSA++ architecture
  - Fast Reporting on DataStore Objects will lead to slimmer layer design
- Activate Master Data via DTP
- 'Mixed scenarios'
- Planning Applications Kit ([Note 1637199 - Using the planning applications KIT](#) )

### Additional developments for BW on xDB (after transport from BW on HANA)

- Aggregates management (Change-Runs, Roll-Up Processes)
- Secondary DB Indexes
- Enhance process chains – obsolete process types in HANA
- Authorization: BW Analysis Authorization is mandatory in BW 7.3; if the target system is only BW 7.0 (w/ old concept) or BW 3.x transport is not possible – recreate authorization
- Non-cumulative key-figure handling, like Inventory InfoCubes
- Performance optimization (DSO and InfoCube Partitioning) and Database Operations
- Workspaces



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# Transport Management in Parallel BW Landscape

## Transporting InfoProviders between BW on HANA and BW on RDBMS

### Consider structural differences and DB-specific features

Note 1691096 - Transport of InfoCubes from and to SAP HANA database

Database of the development system	Object Type in the development system	Object already exists in production	Database of the production system	Resulting object Type in the production system
Classic Database	Standard InfoCube	No	SAP-HANA Database	<b>SAP HANA-Optimized InfoCube</b>
Classic Database	InfoCube with Data Persistency in the BWA	No	SAP-HANA Database	<b>SAP HANA-Optimized InfoCube</b>
Classic Database	Standard InfoCube	Yes	SAP-HANA Database	<b>Standard InfoCube</b>
SAP-HANA Database	SAP HANA-Optimized InfoCube	No	Classic Database	<b>Standard InfoCube</b>
SAP-HANA Database	SAP HANA-Optimized InfoCube	Yes	Classic Database	<b>Standard InfoCube *</b>
SAP-HANA Database	SAP HANA-Optimized InfoCube	Yes	Classic Database	<b>InfoCube with Data Persistency in the BWA **</b>
Classic Database	Standard DataStore Object	Yes / No (both cases)	SAP-HANA Database	<b>Standard DataStore Object</b>
SAP-HANA Database	SAP HANA-Optimized DataStore Object	Yes / No (both cases)	Classic Database	<b>Standard DataStore Object</b>

\* InfoCube is already available in the target system as standard InfoCube

\*\* InfoCube is already available in the target system as InfoCube with Persistency only in BWA

# Transport Management in Parallel BW Landscape

## Transporting InfoProviders between BW on HANA and BW on RDBMS

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### DataStore Objects:

Note 1715129 - Transport of DataStore objects in SAP HANA environment

**Source system: Classic DBMS, target system: SAP HANA**

If the SAP-HANA-optimized DataStore object in the target system contains data, the transport terminates with an error message. In this case, you either have to set the property "Optimized for SAP HANA" in the target system and activate the object again, or you have to import a new transport.

Do you need HANA-optimized DSO? <http://scn.sap.com/docs/DOC-41327>,  
<http://www.saphana.com/docs/DOC-3129>

### MultiProvider

No specific considerations – assuming the part-providers transported successfully

### Semantically Partitioned Object

No specific considerations – assuming the part-providers transported successfully

### HybridProvider

The HybridProvider is a transport object in its own right. The metadata of a HybridProvider comprises the properties of the InfoCube and the properties of the DataStore object/VirtualProvider

- InfoCube in the HybridProvider follows the above rules (BWA only InfoCube!)
- HANA-optimized DSO (with RDA) in HybridProvider is not available (always standard DSO)

# Transport Management in Parallel BW Landscape

## Transporting InfoProviders between BW on HANA and BW on RDBMS

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### **CompositeProvider**

- Cannot be transported between xDB (w/ BWA) and BW on HANA
- Classic DB: only available with BWA (limited scenario) – not transportable
- BW on HANA: can only be transported if it consists solely of transportable InfoProviders

### **TransientProvider**

Cannot be transported (no matter what the DB is)

### **Analytic Index**

Supported with BWA and BW on HANA, but cannot be transported between – need to be re-created in the target system

### **Query Snapshot Index**

Supported with BWA and BW on HANA, but cannot be transported between – need to be re-created in the target system

### **VirtualProvider**

No specific considerations, except VirtualProvider on HANA-models (see below)

# Transport Management in Parallel BW Landscape

## Transporting BW Objects between BW on HANA and BW on RDBMS

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### Process Chains

Consider obsolete process types (Obsolete Process Types for SAP HANA Database)

- Transport from xDB to HANA: fails (????) if PC includes obsolete process types -> manual adjustment
- Transport from HANA to xDB: manual adjustment required if xDB specific process types needed

Special process types only for BW on HANA

- Trigger Delta Merge only available and necessary in SAP HANA

### BW Workspace

Cannot be transported (no matter what the DB is)

### InfoObjects

No specific considerations

### Open Hub Destination

Open Hub with specific HANA table destination cannot be transported to xDB (functionality not available)

Otherwise no specific considerations (except BW release-specific functionalities)

### Transformations

Consider ABAP coding and HANA specific optimizations

# Transport Management in Parallel BW Landscape

## Development / Design considerations – Non-cumulative handling

### HANA-optimized non-cumulative InfoCube:

- Flag 'No Marker update' removed for HANA-optimized InfoCubes
- Functionality is replaced by DTP Flag 'Historic values'

Initialization of non-cumulative and Historical data -> compression not required!

DTP for Initialization

2LIS\_03\_BX T90CLN

Stock Initialization for Inventory Management

Extraction Mode: Initial Non-Cumulative for Non-Cumulat...

Extraction Update Execute DTP for History and Delta

Data Target: InfoCube

OIC\_C03

Material Stocks/Movements (as of 3.0B)

Trigger Database Merge

Error Handling: No Update, No Reporting

Maximum Number of Errors per Pack: 100

Creating Error DTPs

No Update without Master Data

Historical Transactions

**Historical Transactions**  
**Turn off for regular delta**

Initialization record stored with  
SID\_0RECORDTP = '1' – 'NCUM  
Initialization' partition of  
/BI0/F0IC\_C03 table

Historical transactions stored with  
SID\_0RECORDTP = '2' – 'NCUM  
History' partition of /BI0/F0IC\_C03  
table

Delta transactions stored with  
SID\_0RECORDTP = '0' –  
'uncompressed' partition of  
/BI0/F0IC\_C03 table

# Transport Management in Parallel BW Landscape

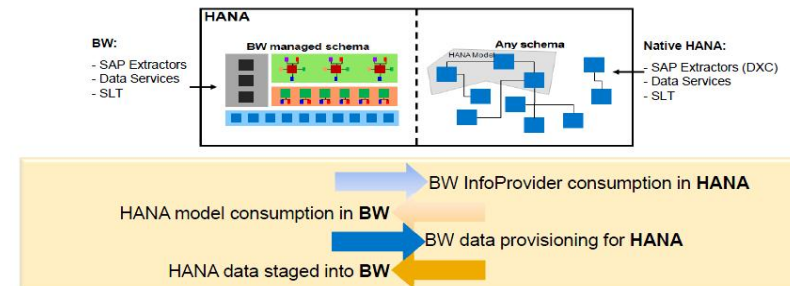
## 'Mixed' Scenarios with BW on HANA

### Consuming HANA-models in BW on HANA

Leverage HANA Datamart scenarios in BW via:

- TransientProvider accessing HANA-model
- Virtual Provider accessing HANA-model
- InfoObjects accessing HANA Attribute view
- HANA-model accessing BW InfoProvider

#### SAP NetWeaver BW – SAP HANA Mixed Scenarios: Combining the strengths of both worlds



#### Mixed scenarios: BW on HANA and HANA Datamart

- Not available in BW on xDB, therefore cannot be transported
- Transport of InfoProviders on HANA-models in the BW on HANA landscape
  - TransientProviders cannot be transported – need to be redeployed in every BW on HANA systems
  - VirtualProviders: can be transported, even if the underlying HANA-model does not exist in the target HANA database
  - InfoObjects: can be transported, even if the underlying HANA Attribute view does not exist in the target HANA database
- Deploy HANA-models
  - Export/Import ([http://help.sap.com/hana/hana\\_dev\\_en.pdf](http://help.sap.com/hana/hana_dev_en.pdf))
  - CTS+ (<http://scn.sap.com/docs/DOC-35874>)

# Appendix

## Further References

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[Using the SAP HANA Database \(Specific functions, system behavior, obsolete functions and tools\)](#)

[Aspects of the HANA-optimized InfoCube](#)

[Reporting on HANA models in BW-on-HANA](#)

[InfoProviders in SAP NetWeaver BW powered by SAP HANA \(webinar replay, presentation\)](#)

[How To - Delta Merge for SAP HANA and SAP NetWeaver BW powered by SAP HANA](#)

[SAP First Guidance – SAP NetWeaver BW 7.30 on HANA Inventory InfoCubes](#)

[What's New with SAP NetWeaver BW 7.30 and BW Accelerator 7.20](#)

[Modeling SAP NetWeaver BW and SAP HANA Mixed Scenarios \(webinar replay, presentation\)](#)

[SAP HANA as Driver of EDW Evolution - LSA++ for BW on SAP HANA \(webinar replay, presentation \)](#)

[How to SELECT in SAP BW Transformations](#)

[CompositeProvider](#)

Follow **SCN** [BW on HANA](#) and [SAP HANA](#)

[SAP How-to Guides for SAP NetWeaver Business Warehouse 7.3 powered by SAP HANA](#)

<https://www.saphana.com/community/resources> -> HANA Solutions -> BW powered by HANA

FAQ BW on HANA <http://www.saphana.com/community/solutions/net-weaver-bw/bwonhanafaq>

### **SAP Education:**

[SAP HANA Education: Course & Certification Program 2013](#)

[BW362](#)



# Appendix

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12 December 12	New Tools to ease Migration to SAP NetWeaver BW on SAP HANA	Sara Hollister
28 November 12	Customizing HWC for Android (SUP 2.1.3)	Daniel Silva
14 November 12	Modeling SAP NetWeaver BW and SAP HANA Mixed Scenarios	Gabor Kovacs
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