Leveraging HANA Graphical Modeling for Analytic Reports

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Agenda

Why graphical view modelling

Features of graphical view modeling

New modeling environment
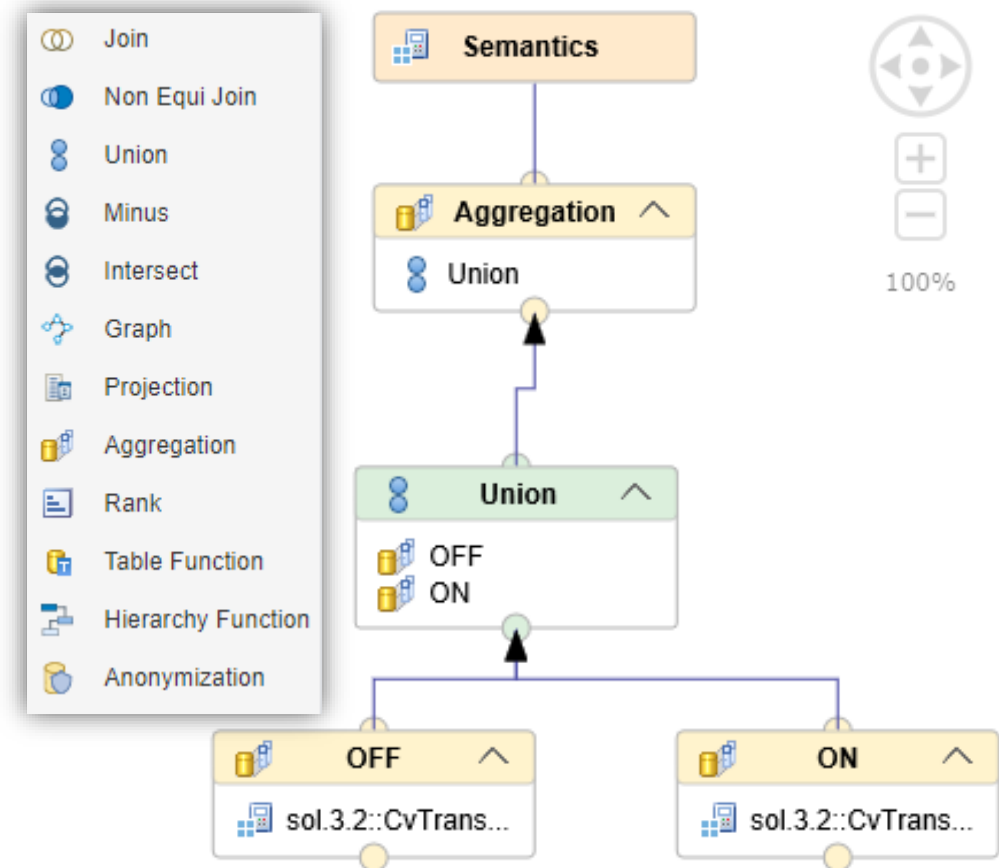
How to get there

Demo: Simple modeling example

Why graphical view modeling

SAP HANA View Modeling with SAP Web IDE for SAP HANA – Graphical Modeling

Use **graphical modeling** to
structure large development projects
foster communication about development objects
achieve **good performance**
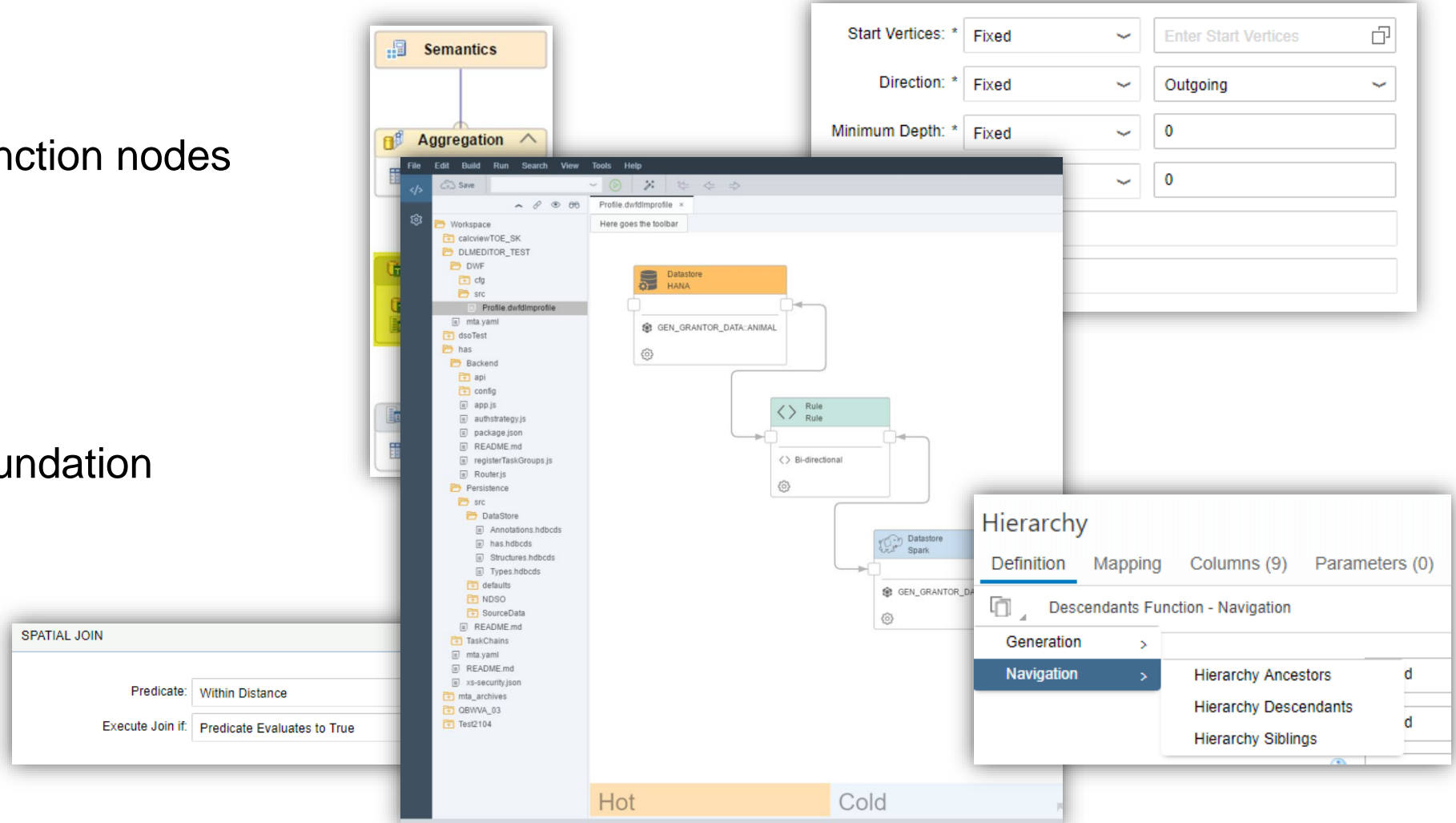automatically **benefit** from future **improvements**

Features of graphical view modelling

SAP HANA View Modeling with SAP Web IDE for SAP HANA – Integration with other components

Close integration with

- SQLScript via table function nodes

- Graph scenarios

- Spatial scenarios

- Data Warehousing Foundation

- SQL hierarchies

Calculation Views offer close coupling to internal optimizations

- push-down of filters

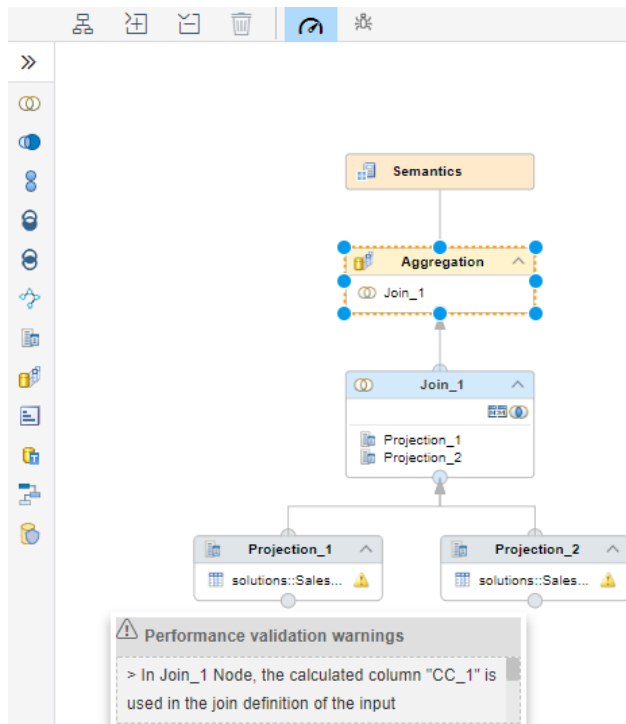- join-pruning

- union-pruning

- column pruning

SAP HANA View Modeling with SAP Web IDE for SAP HANA – Analysis of Models

Improve performance using

Performance Analysis Mode

Debug View Mode
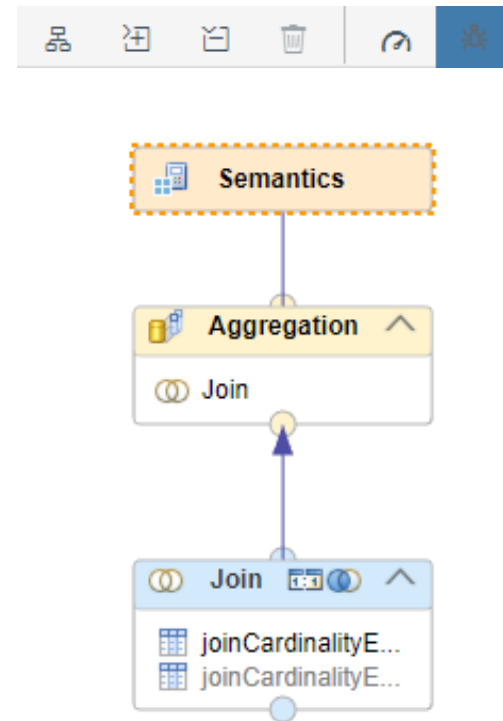
Get detailed insight into your models by

- model outline

- auto documentation

- lineage analysis

- various data preview options

Make use of various OLAP features

- Restricted columns

- Calculated columns

- Currency conversion

- Temporal joins

- Ranking

- Star joins

- Anonymization

Make use of various OLAP features

- Input parameters

- Hierarchies

- History tables

- Client handling

- Analytic Privileges

- Masking

New Features in Web IDE (Selection)

Table function nodes that can be integrated into data flow

Masking of sensitive columns

Set operations

Reuse of defined currency conversion settings (reference / copy)

Different accuracy settings for currency conversion

More flexible filters and setting of keep flag

Improved data insight tools

For more details see: Live Expert Series: What's New in SAP HANA 2.0 SPS 02

New Features in Web IDE (SPS03)

Anonymizing data (k-anonymity,differential privacy)

Non-equi joins

More referential join options

SQL hierarchy functions

Extract parameters from base view

Additional currency conversion options

Multi-join

Union pruning configuration dialog

Graph and hierarchy preview
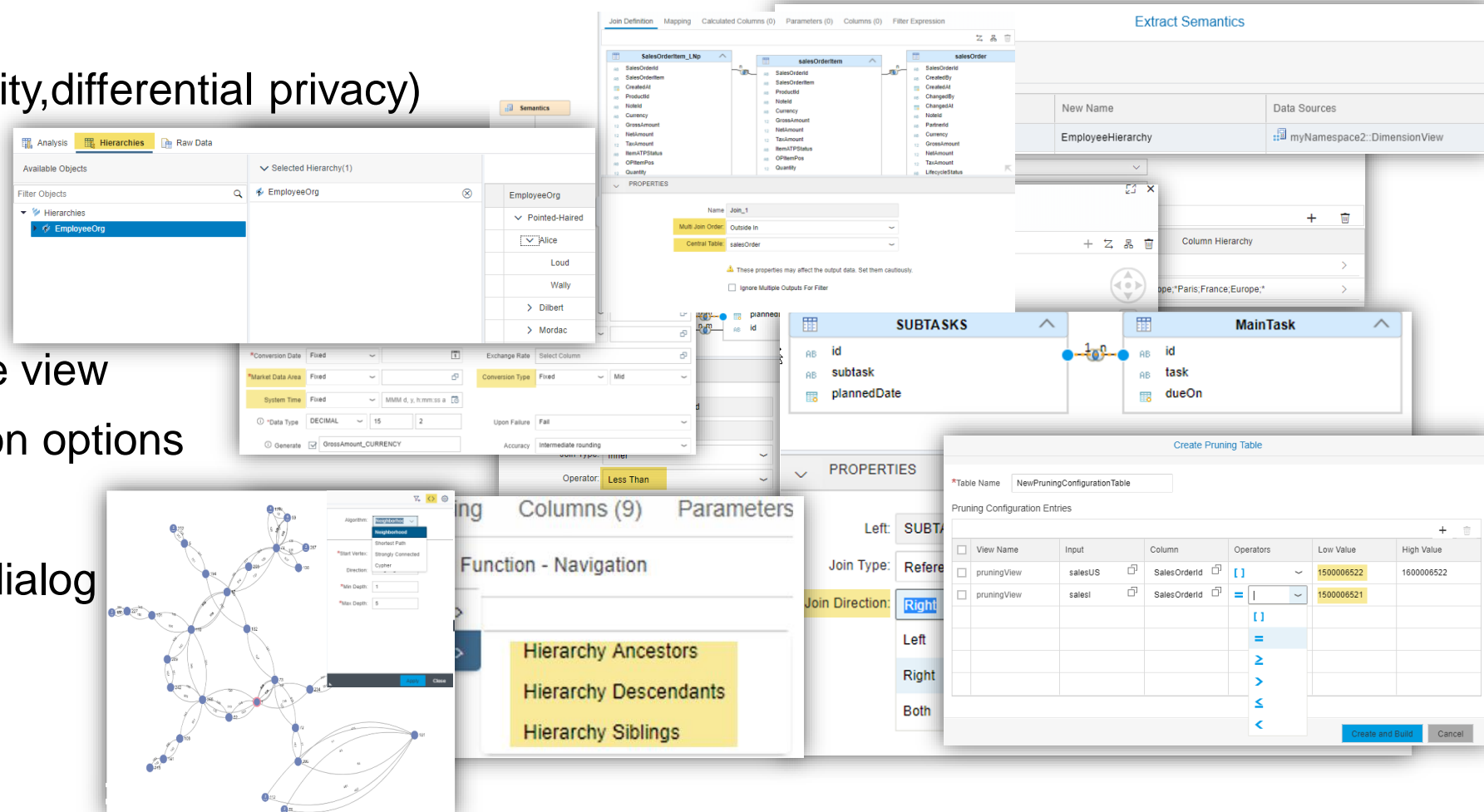
For more details see: Live Expert Series: What's New in SAP HANA 2.0 SPS 03

New Features in Web IDE (SPS04)

Model-based parallelization

Flexible ranking

Influence processing flow by session variables

Fuzzy search

K-anonymity enhancements

New Features in Web IDE (SPS04)

SQL hierarchy enhancements

Schema based synonym creation

Tailored mapping display

Improved search functionality

Convert column name to uppercase

New Features in Web IDE (SPS04)

Swapping order in minus nodes

Navigate to included view

Hyperlink metadata

Pending deployment indication
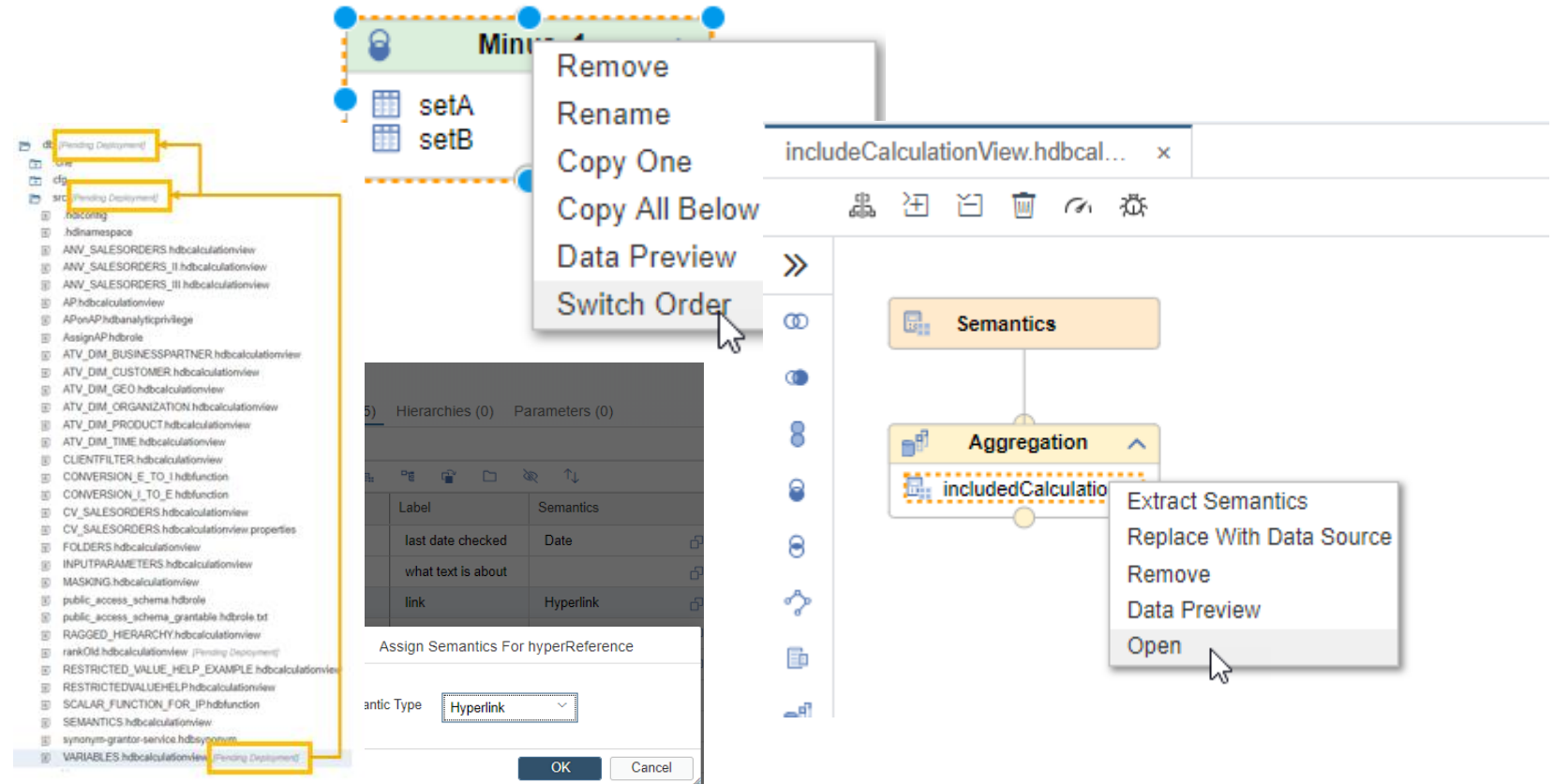
New modelling environment
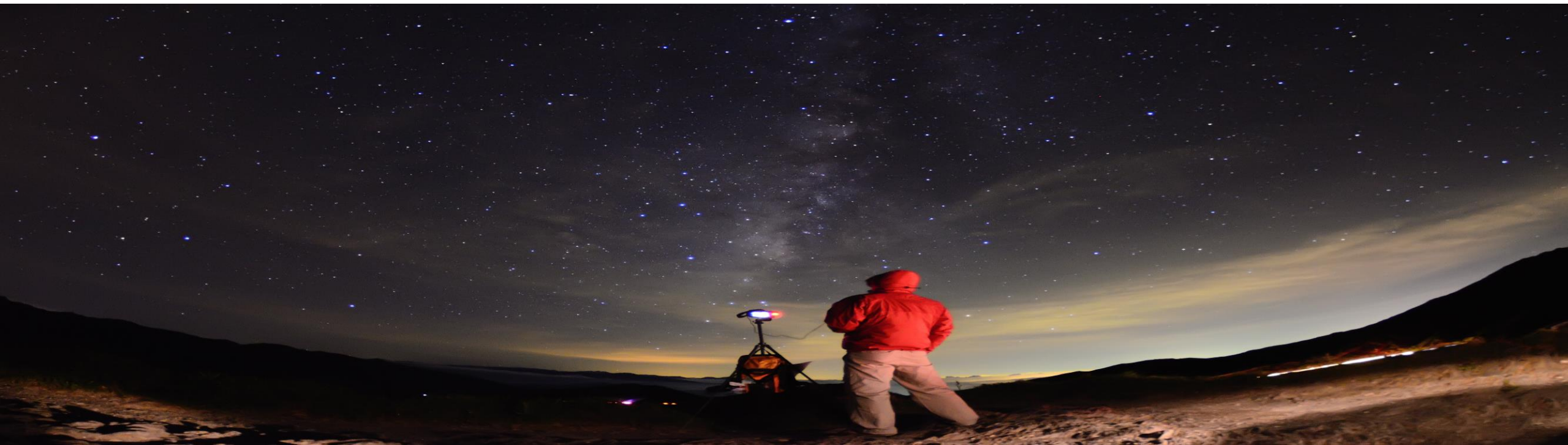
Unified Development Environment

SAP HANA Studio – **Modeler Eclipse-perspective**
- focus is on HANA View modeling

SAP HANA Studio – **Development Eclipse-perspective**
- supports application and database design-time artifacts and offers repository functionality
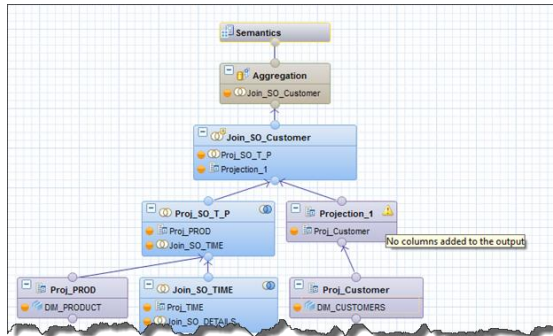
SAP HANA Web-based Development Workbench
- supports application and database design-time artifacts
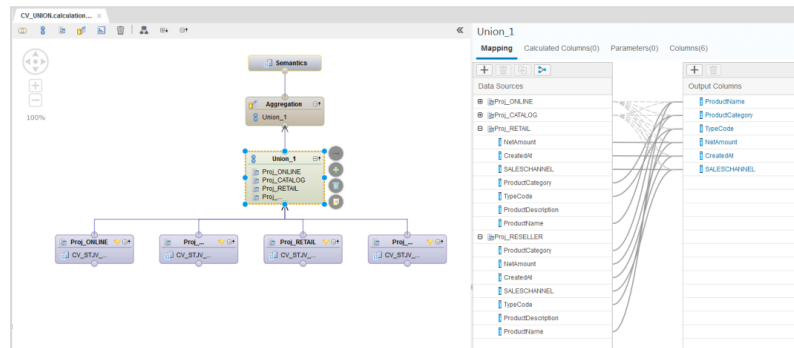
SAP Web IDE for SAP HANA
- new Development tooling platform for SAP HANA
- modeling
  - uses interface framework of SAP Web IDE
  - runs in browser (no separate installation of client tool needed)
  - deploys via new HANA deployment infrastructure
- examples of other artifacts with graphical editors in Web IDE: CDS, NDSO

2714742 - SAP Web IDE for SAP HANA 2.0 SPS 04 - Central Release Note
2396214 - Transition to SAP HANA Extended Services Advanced and SAP HANA Cockpit - Fading out XS Classic and HANA Studio
2465027 - Deprecation of SAP HANA extended application services, classic model and SAP HANA Repository

Web IDE: Unified development environment

Development/modeling in one unified environment

Graphical interface for CDS entities, Calculation Views, Data Warehouse Foundation artefacts*

Version management via well established GIT approach

➜ With this infrastructure complex modeling projects can easily be implemented with a detailed insight into development artefacts and lifecycle management

➜ Native data warehouses provide speed and agility of HANA and structured approaches to modeling and loading

Data structures
Core Data Services

Calculation Views

Data flows
Smart Data Integration / HANA EIM

Impact and Lineage
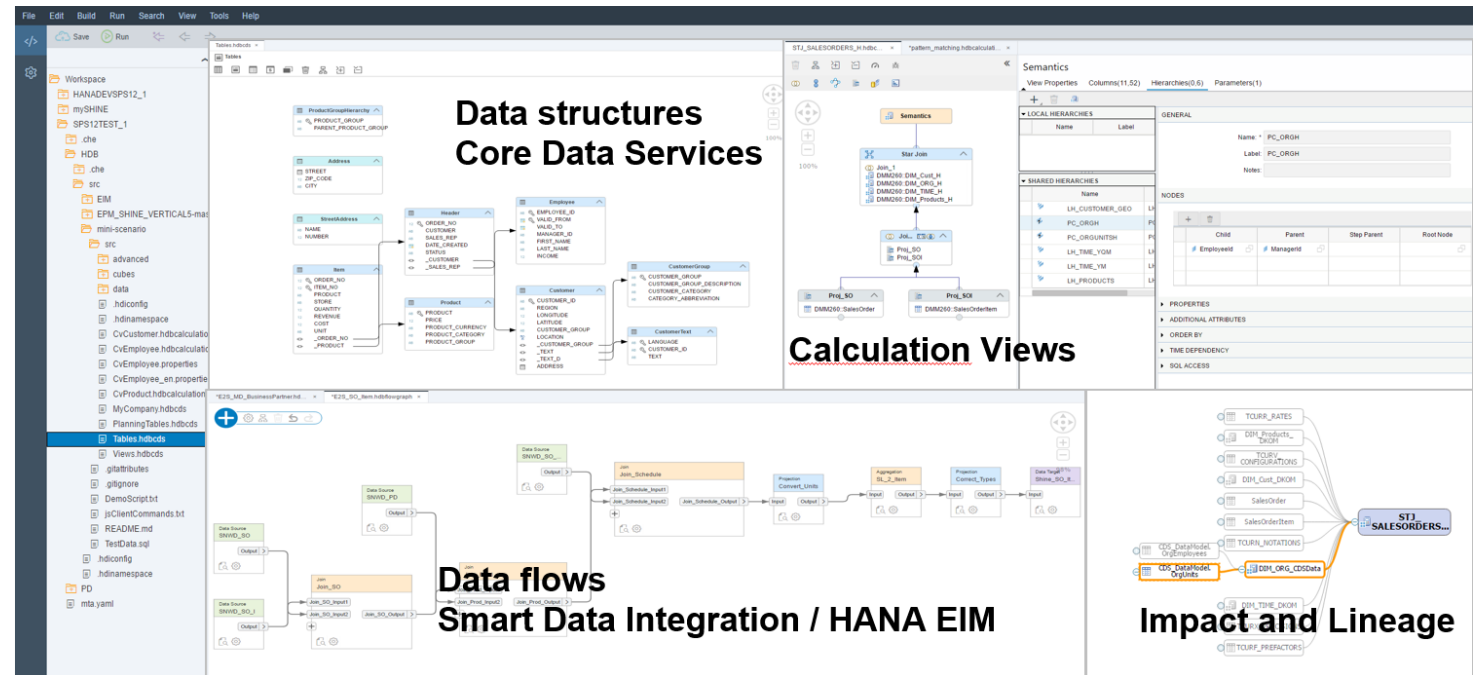
*This feature is made available and activated with **SAP HANA Data Warehousing Foundation** release supporting **SAP HANA 2.0.**

Comprehensive graphical modeling tools for streamlined development

Benefits of New Development Environment

- **Strategy**
  - Proposed new environment for modeling and developing (SAP Note 2465027)
  - Supports move into cloud environment
- **Power**
  - New development features only made available in new development environment
  - Industry-standard versioning tool (Git)
- **TCO**
  - Common development environment for various development artifacts
  - No local development tool installations needed anymore (also no additional open ports needed)
  - Good integration with automation tools (e.g., Gerrit, SAP Note 2287418)
  - Better activation performance and better parallel development
- **Security**
  - High-isolation of development and developed artifacts: more control about data visibility ("open" vs. "restricted" container in same system) and less interference between developers

HANA Deployment Infrastructure (HDI)

Graphically modeled artefacts that are **not** supported in HDI

- Attribute View
- Analytic View
- Script-based Calculation View
- XML-based classical analytic privileges
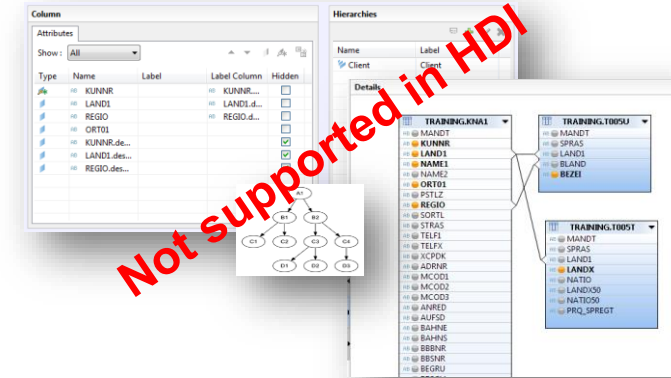
Attribute View
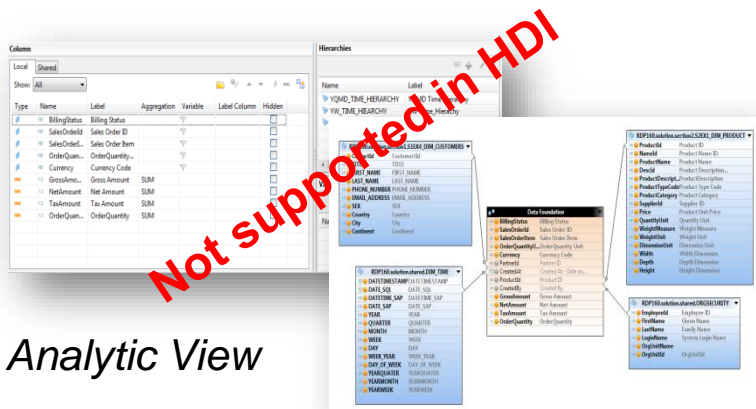
Analytic View

Script-based Calculation Views
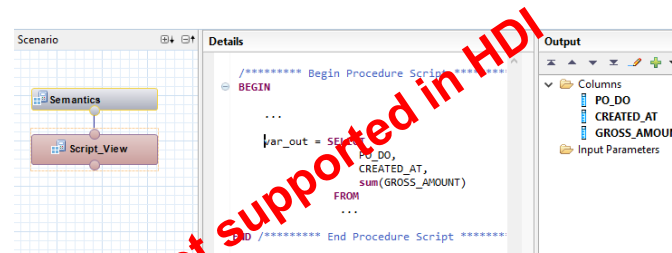
XML-based classical analytic privileges
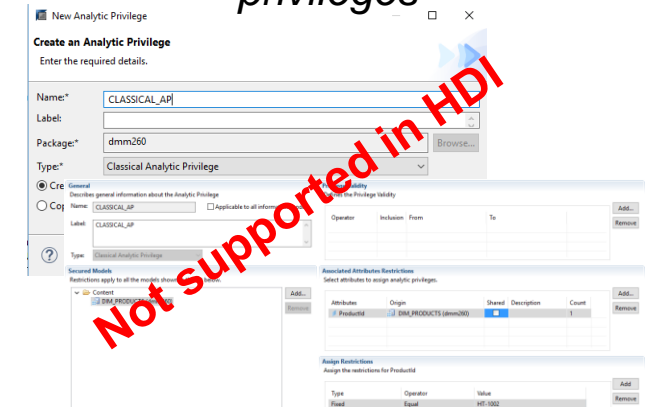
How to get there

Calculation View: Unified Artifact

Attribute View
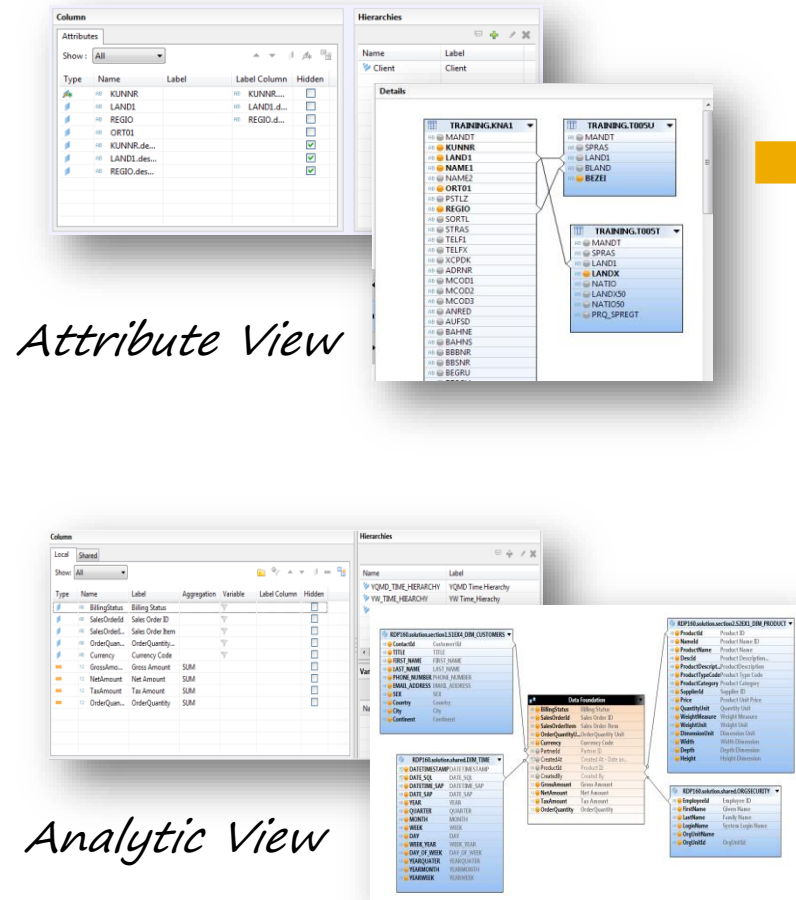
Script-based Calculation Views
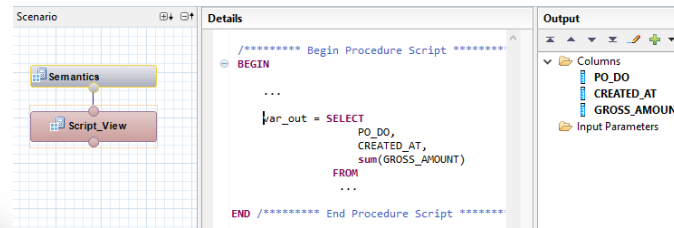
Analytic View

Graphical Calculation Views
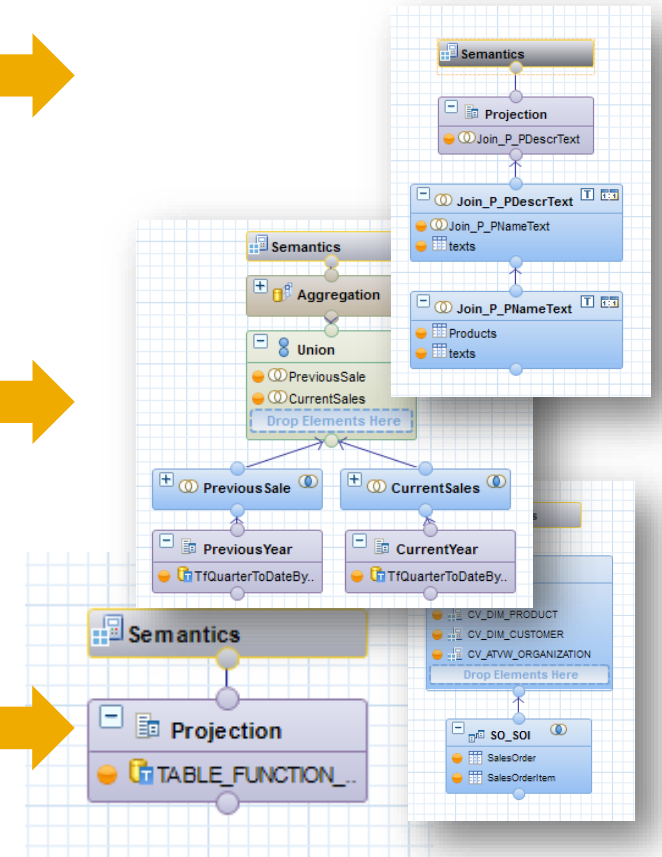
Steps into the New Environment

Before HANA 2.0 SPS02   **HANA 2.0 SPS03**

Attribute Views, Analytic Views, Script-based Calculation Views, Classical Analytic Privileges

SAP HANA Studio
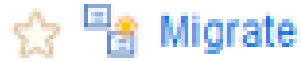
Migrate

Graphical Calculation Views, SQL Analytic Privileges

Operating System

```
xs-migration  --target-dir /root/tmp/test_migration/result DU1,sap.com
```

ZIP-File   ZIP-File
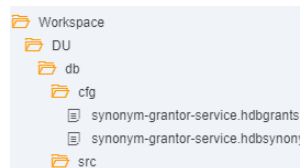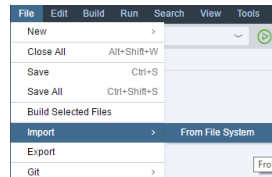
for details see blog
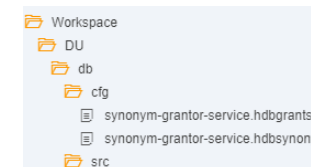
for details see
documentation

SAP HANA Studio Migration
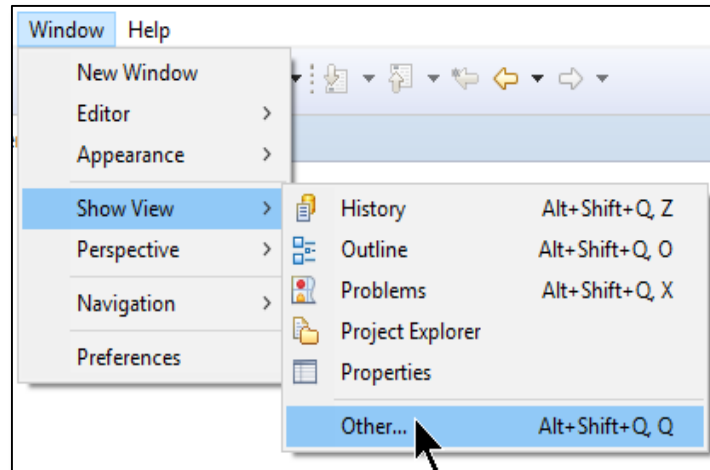
open "Quick View"
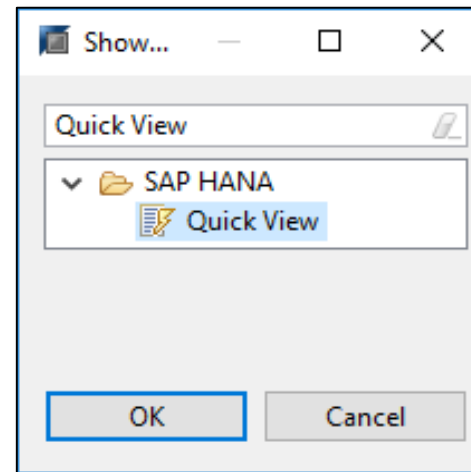
select "Migrate"

choose source
objects for migration

SAP HANA Studio Migration Example (1)

Source artefacts

- foundation
  - China
    - Attribute Views (3)
    - Analytic Views (2)
    - Calculation Views (1)
  - EU
  - GB
    - Attribute Views (3)
  - India
    - Attribute Views (2)
    - Analytic Views (4)
  - US
    - Attribute Views (3)
    - Analytic Views (4)

Start migration

Quick View

Migrate

▼ SAP HANA Modeler
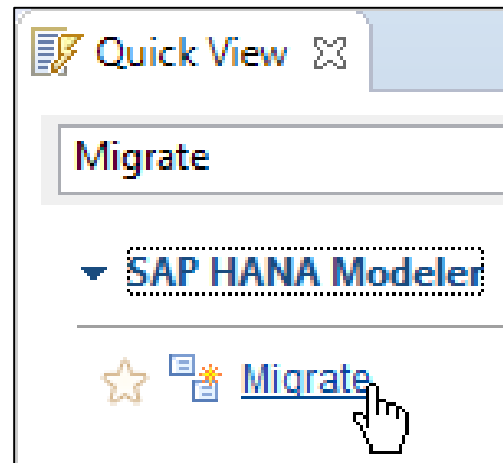
☆ Migrate

Select type of artefacts

Migrate

Migrate Objects

Select a migration type and a folder to save the migration job log.

- ◉ ▼ Attribute views and analytic views to calculation views.

  Select if you want to migrate existing attribute views or analytic views in a package to standard graphical calculation views.

- ○ ▶ Script-based calculation views to graphical calculation views and table functions.

- ○ ▶ Classical XML-based analytic privileges to SQL analytic privileges.

SAP HANA Studio Migration Example (2)

Source artefacts
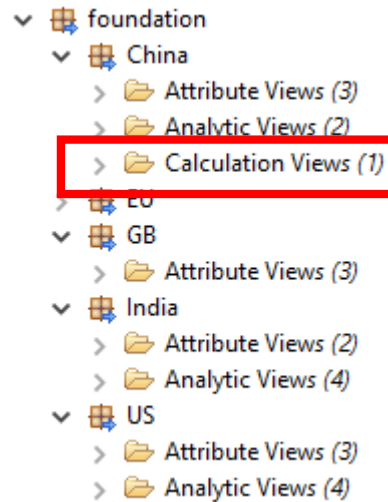
Calculation Views are not listed because they are irrelevant for migration

individual views can be selected
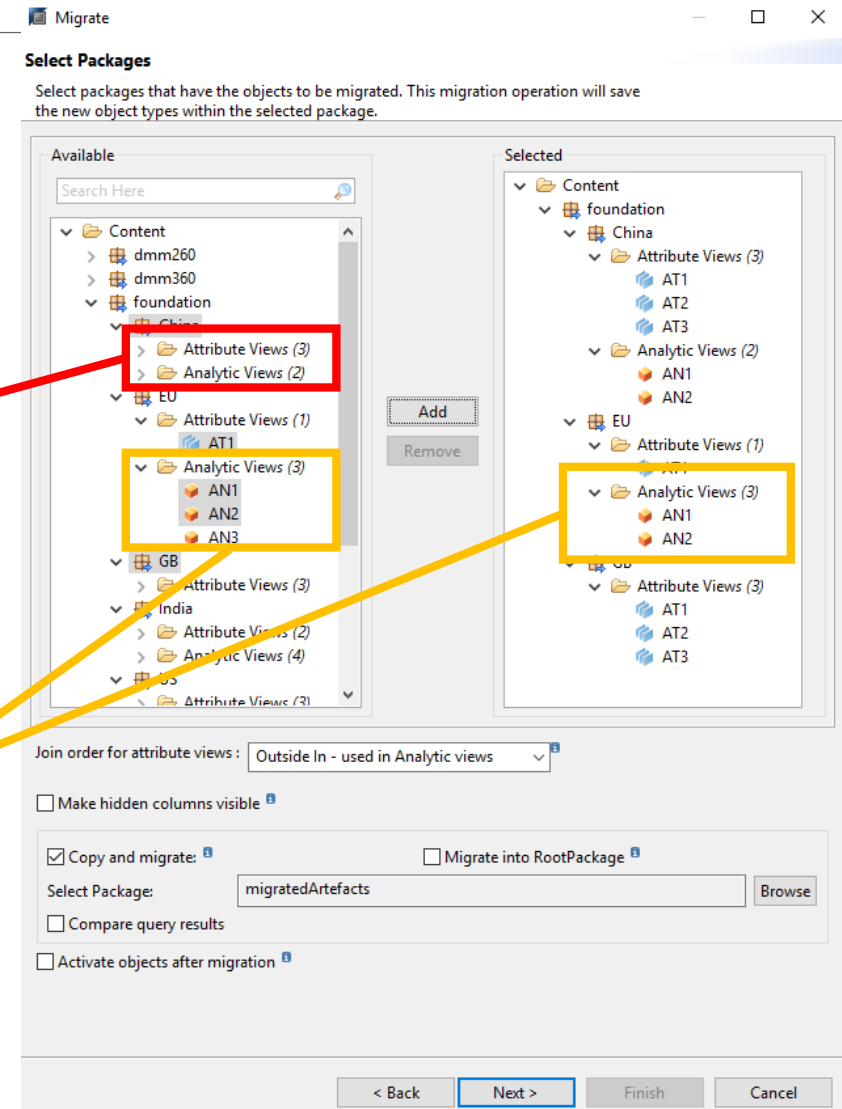
SAP HANA Studio Migration Example (3)

Job status

Migrated artefacts

Migration log

Migration Summary:

Migration	Total Objects Selected	Success	Failures	Need actions
Attribute views and analytic views to calculation views.	11	11	0	0

Migration Details:

Selected Object	Resulted Objects	Migration Status	Comments	Impacted Objects
foundation.EU::AN2	Calculation View migratedArtefacts.foundation.China::AT1 Calculation View migratedArtefacts.foundation.China::AT2 Calculation View migratedArtefacts.foundation.China::AT3 Calculation View migratedArtefacts.foundation.EU::AT1 Calculation View migratedArtefacts.foundation.GB::AT1 Calculation View migratedArtefacts.foundation.GB::AT2 Calculation View migratedArtefacts.foundation.GB::AT3 Calculation View migratedArtefacts.foundation.China::AN1 Calculation View migratedArtefacts.foundation.China::AN2 Calculation View migratedArtefacts.foundation.EU::AN1 Calculation View migratedArtefacts.foundation.EU::AN2	Success	• Object migrated successfully • No filters defined on columns in this calculation view.	
foundation.EU::AN1	Calculation View migratedArtefacts.foundation.China::AT1 Calculation View migratedArtefacts.foundation.China::AT2 Calculation View migratedArtefacts.foundation.China::AT3 Calculation View migratedArtefacts.foundation.EU::AT1	Success	• Object migrated successfully • No filters defined on columns in this calculation view.	

Migration into XSA (Example continued)

Migration is running

Invoke XSA Migration Assistant

./xs-migration --zip --target-dir Target DU,org

Migration Report

XS Migration Report DU

| **Summary** | **File statistics** | **File List** | **Steps Detail** |

Project Information

Project: DU - 0.0.0
Content: 1 DU, DU (pm) -0.0.0, including 5 packages and 11 objects
System: undefined://ld9537:30015, SID:SP2, version 2.00.020.00.1499763572
HALM version:
migration tool: 1.0.4

Migration Steps

The objects from the provided delivery units have been exported from the system, analyzed, migrated, and have been written into an XS Advanced folder structure. Follow the steps shown below in order to complete the migration.

Step 1 - Migration of Security Concept Required

The security concept has changed with XS Advanced and is incompatible with XS Classic. Manual migration steps are required in order to complete the migration of this application to XS Advanced.
For information about the XS Advanced security concept read the XS Advanced Migration Guide.

1 warning   Detail List

```
sp2adm@ld9537:/usr/sap/SP2/HDB00/work/migration/xs-migration> ./xs-migration --zip --target-dir TARGET DU,pm
initializing...
Reading input
Using target directory: TARGET
Initializing database connection to source database...
Database connection successful
Preparing SQL parser...
SQL parser prepared
Verifying specified Delivery Units...
Delivery Units verified
Exporting and migrating delivery units:
DU (pm)
from system: ld9537:30015

Retrieving Public Synonyms...
Checking target directory...
Target directory ok, generating project structure...
Collecting files of Delivery Units...
Collecting packages...
Collecting all objects...
11 Files collected.
Writing original application source to TARGET/migration/orig-src
11 Files written
Starting preprocessing
Root HDI namespace is migratedArtefacts.foundation
Start processing...
Handling file: /migratedArtefacts/foundation/China/AN1.calculationview
Handling file: /migratedArtefacts/foundation/China/AN2.calculationview
Handling file: /migratedArtefacts/foundation/China/AT1.calculationview
Handling file: /migratedArtefacts/foundation/China/AT2.calculationview
Handling file: /migratedArtefacts/foundation/China/AT3.calculationview
Handling file: /migratedArtefacts/foundation/EU/AN1.calculationview
Handling file: /migratedArtefacts/foundation/EU/AN2.calculationview
Handling file: /migratedArtefacts/foundation/EU/AT1.calculationview
Handling file: /migratedArtefacts/foundation/GB/AT1.calculationview
Handling file: /migratedArtefacts/foundation/GB/AT2.calculationview
Handling file: /migratedArtefacts/foundation/GB/AT3.calculationview
Processing finished
 Starting Post-Processing...
Generating security files
Starting migration of Calcviews...
Total calculation view and analytic privilege files: 11 successful: 11 failure: 0
Migration of Calviews finished with success
Generating Synonyms for database artifacts
Writing TARGET/db/srcsynonym-grantor-service.hdbsynonym
Writing TARGET/db/cfgsynonym-grantor-service.hdbsynonymconfig
Writing TARGET/db/cfgsynonym-grantor-service.hdbgrants
Generating descriptors
Post-Processing finished
Writing report data
Report url: TARGET/report.html
Generating zip file
Migration finished.
```
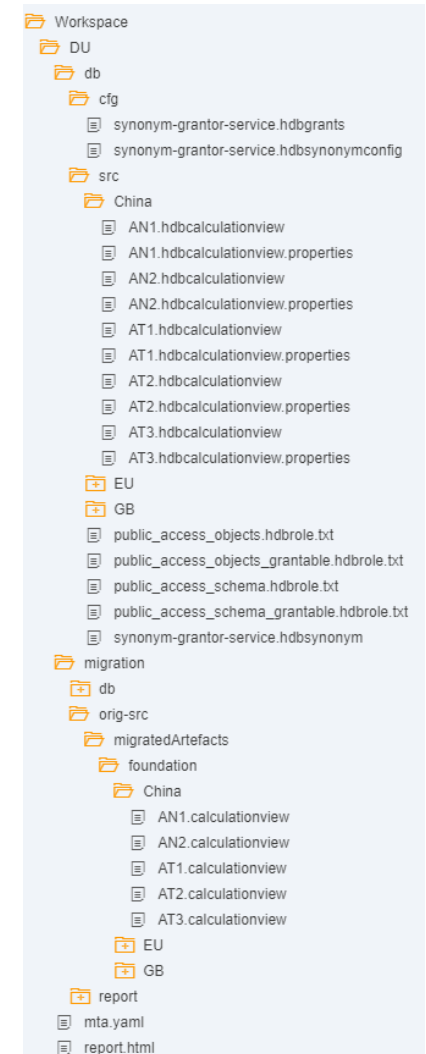
Import migrated views into workspace (Example finished)
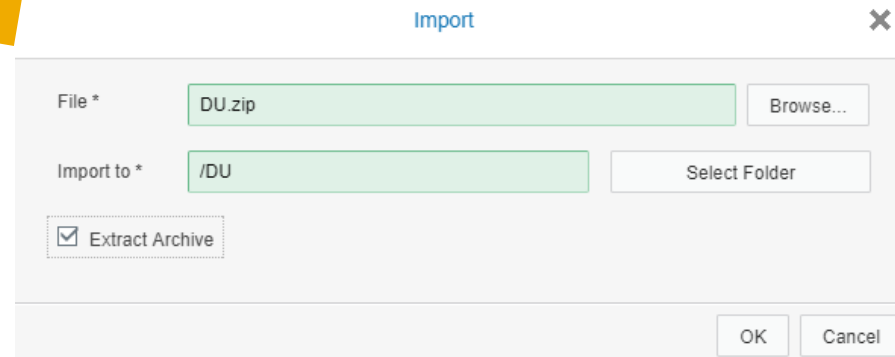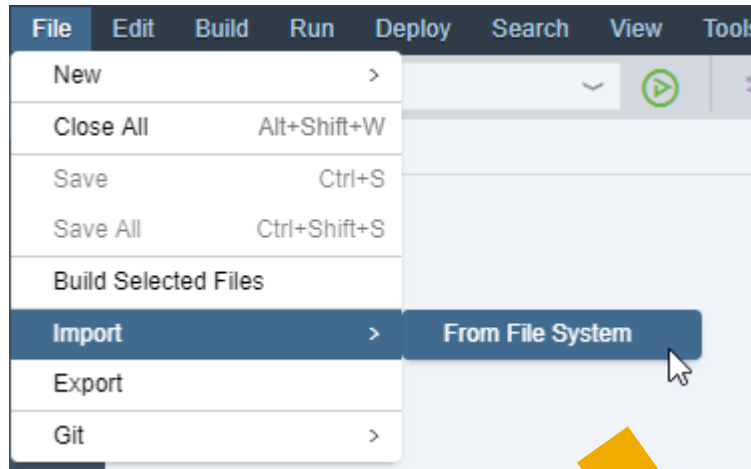
Migrating to Calculation Views

Further information
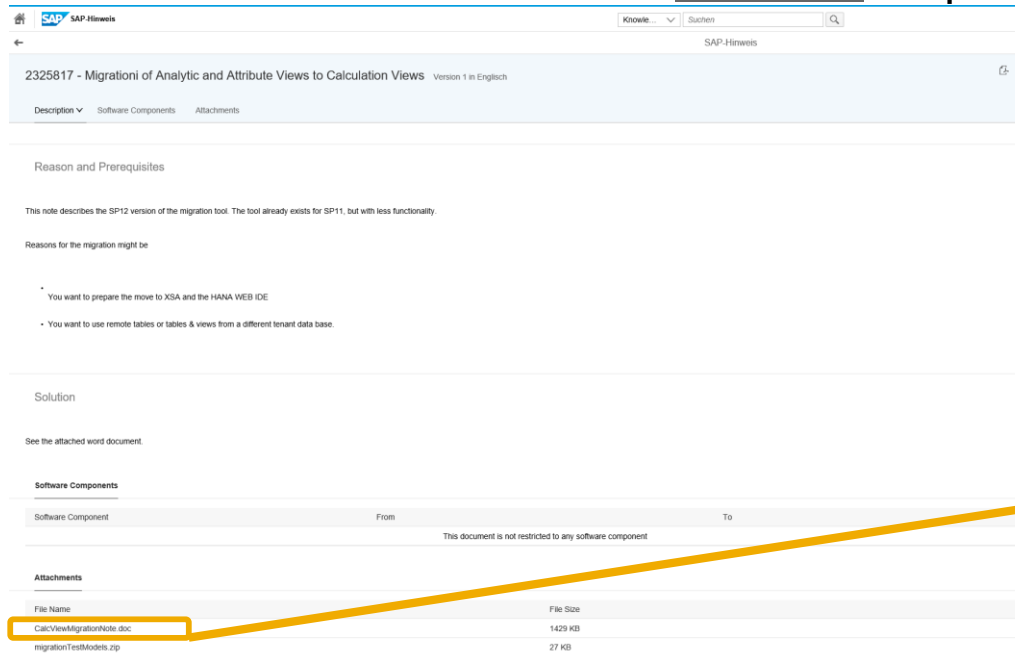
- general migration steps are discussed in this blog and here
- see attachment of SAP Note 2325817 for potential issues

- BW contexts:
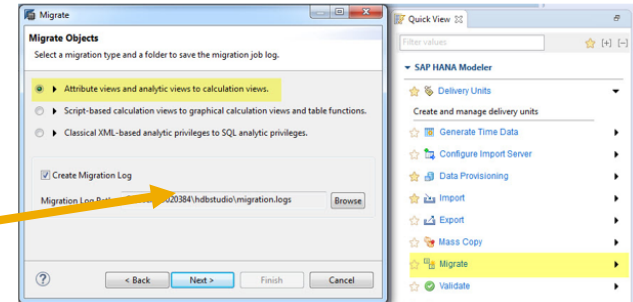 - generate only Calculation Views as external views: 2236064
  - integration with HDI: 2463312
  - access to BW objects: 2723506

Migration into XSA

migration documentation
- [SAP HANA XS Advanced Migration Guide](#)
- SAP HANA XS Migration Assistant 1 SAP Note [2493252](#)

2493252 - SAP HANA XS Advanced Migration Assistant 1   Version 1 in English

Component: BC-XS-TLS-MIG	Category: Upgrade information	Corrections: 0	
Priority: Correction with medium priority	Release Status: In Process	Manual Activities: 0	SAP Note/KBA Number
		Prerequisites: 0	

Description   Software Components   Support Package Patches   This document refers to   Attributes

Symptom

This is the release note for SAP HANA XS Advanced Migration Assistant 1

You want to install SAP HANA XS Advanced Migration Assistant 1 or upgrade from a previous version.

Other Terms

HANA 2.0, XSA, XSC, HDI, Migration, XS Advanced, XS Classic

Reason and Prerequisites

SAP HANA extended application services, advanced model, (XS advanced) provides a comprehensive platform for the development and execution of native data-intensive applications that run efficiently in SAP HANA. It thus succeeds XS classic as the default application programming model for SAP HANA. XS advanced is a polyglot application platform that supports several programming languages and execution environments, for example, Java and Node.js. The classic XS JavaScript (XSJS) is supported by a framework running in the Node.js run time.

Run the SAP HANA XS Advanced Migration Assistant on Windows clients with direct access to the source SAP HANA system's SQL port, or directly on the SAP HANA appliance.

Solution

SAP HANA XS Advanced Migration Assistant 1 for SAP HANA 2.0 SPS02 is a stateless client component. Either for new installations or for upgrades, just unzip the corresponding SCV "XSAC Migration 1" from Software Download Center at https://support.sap.com/swdc

Following features have been changed or added since SPS01:

- Staged migration (changed)
  Migrate an XS classic application to XS advanced in semantic units using the XS Advanced Migration Assistant.
- HTA mode (changed)
  A new option (--hta) for the XS Advanced Migration Assistant, which produces output that does not include information about permissions defined in .hdbgrants artifacts or role artifacts that are used to enable public access to synonym targets
- Migrating flowgraphs (new) and timeseries (new)
  Flowgraphs and timeseries are part of the completely automated migration strategy using the XS Advanced Migration Assistant.

See SAP HANA XS Advanced Migration Guide on SAP Help Portal http://help.sap.com/hana_platform for complete product documentation.

```
                 usr/sap/SP2/HDB00/work/migration/xs-migration> ./xs-migration
initializing...
Reading input
Usage: xs-migration [OPTION]... DU_Name[,DU_Vendor]
Migrate a XSC Delivery Unit identified by its Name (and Vendor) to a XSA-compatible MTA-project.

Options:

  --name                        project name (default: name of first DU or package)

  --version                     project version (default: version of first DU)

  --description                 project description (default: description of first DU)

  --target-dir <directory>      directory where project is created - directory must not exist

  --packages <pkg[,...]>        packages to include in migration
                                [pkg] = package-name[:include-subpackages]
                                include-subpackages = true | false (default=true)
                                example: com.sap.db:true

  --exclude-packages <pkg[,...]>   packages to exclude from migration
                                [pkg] = package-name[:exclude-subpackages]
                                exclude-subpackages = true | false (default=false)
                                example: com.sap.db:true

  --generate-manifests          generate a manifest.yml and manifest-op.yml file

  --zip                         add the migration result to a zip folder for import into SAP Web IDE

  --synonym-target-provider     location of synonym-target-provider file
                                needs target-release to be >= 2.0SP01

  --activate-public-access <type>  specify what public-access-role should be active, valid values for
                                <type> are 'objects' and 'schema'

  --generate-providers          generate a synonym-target-provider configuration for every found schema
                                (see staged migration documentation for details)
                                needs target-release to be >= 2.0SP01

  --hta                         enable hta-mode
                                this mode produces a hta-compatible output without hdbgrants files and public-access roles

  --target-release <release>    specify the version of the target hana system
                                valid entries are 2.0SP00 and 2.0SP01 - default is 2.0SP01


The database connection needs to be specified with the following environment variables

  HANA_HOST       Hana server host name
  HANA_SQL_PORT   SQL Port
  HANA_USER       User name
  HANA_PASSWD     Password
  HANA_CERTIFICATE   certificate file when using ssl encryption (X509 PEM)


If the source database does not support the procedure SYS.GET_OBJECTS_IN_DDL_STATEMENT,
an external parse system can be specified with the following environment variables


  HANAEXT_HOST       Hana server host name
  HANAEXT_SQL_PORT   SQL Port
  HANAEXT_USER       User name
  HANAEXT_PASSWD     Password
  HANAEXT_CERTIFICATE   certificate file when using ssl encryption (X509 PEM)
```

https://influence.sap.com/SAPHANAPlatform
Your channel for submitting ideas to improve the SAP HANA Platform
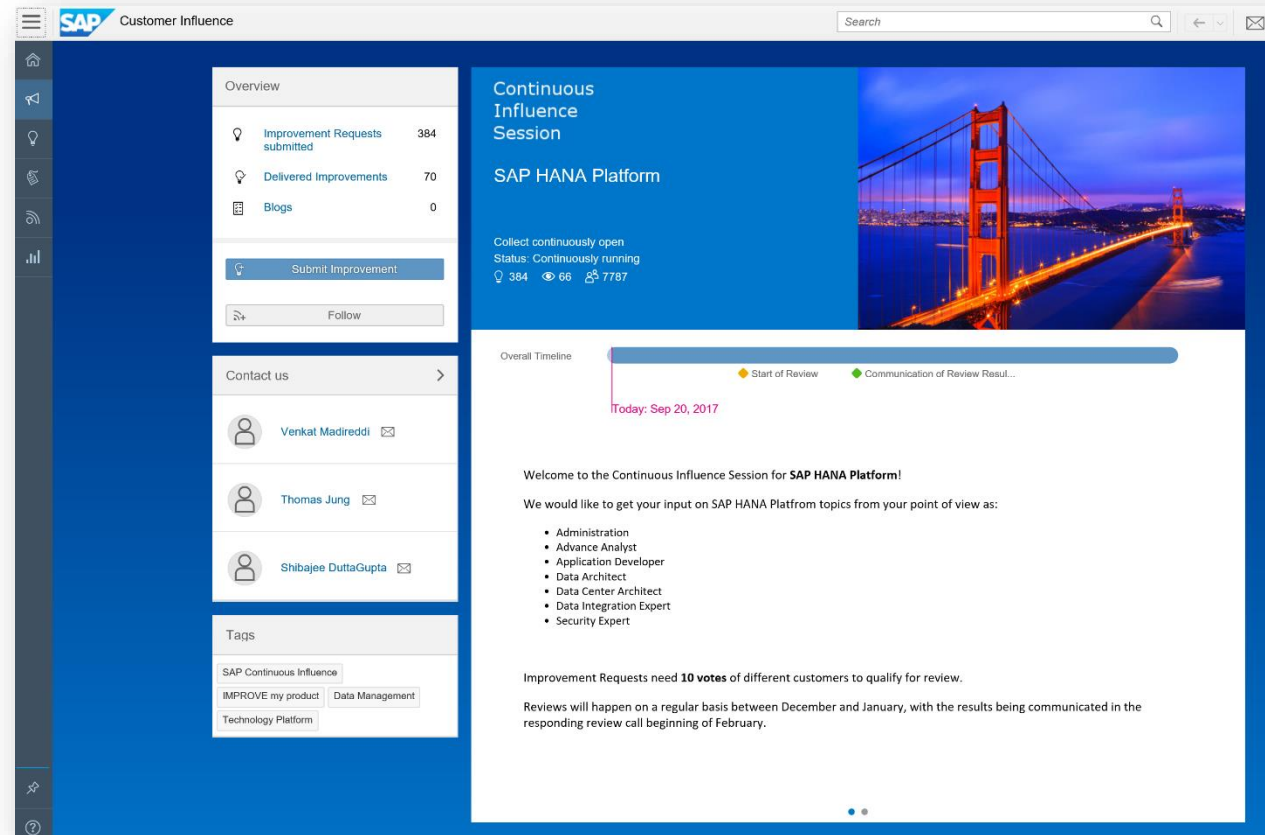
Submit your
Improvement Requests

Vote for other valuable
Improvement requests

Development will review all
Improvement Request that
have more than **10** votes

Suitable requests are
built into a future release

Thank you!

Jan Zwickel: Jan.Zwickel@sap.com

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