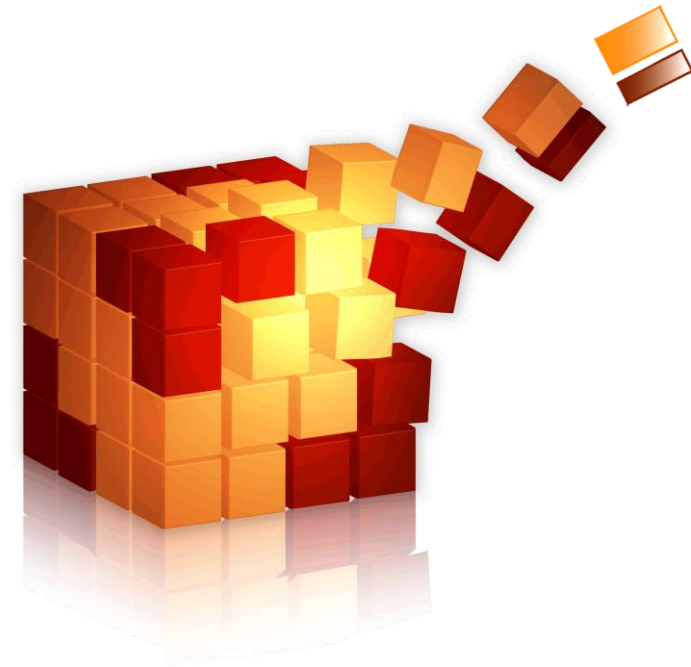


## Reporting with S/4HANA



No	Topic
1	[...]
2	<b>Overview Analytics with SAP S/4HANA</b>
3	Terms & Architecture
4	Out-of-the-Box-Analytics
5	Interaction between S/4HANA Analytics with BW and BI Frontends
6	[...]

# Overview Analytics with SAP S/4HANA

## Business Intelligence Frontends

## SAP S/4HANA Embedded Analytics

End User (View only)

Key User (Modifications)

Embedded BW

Virtual Data Model (IT Staff)

HANA Database

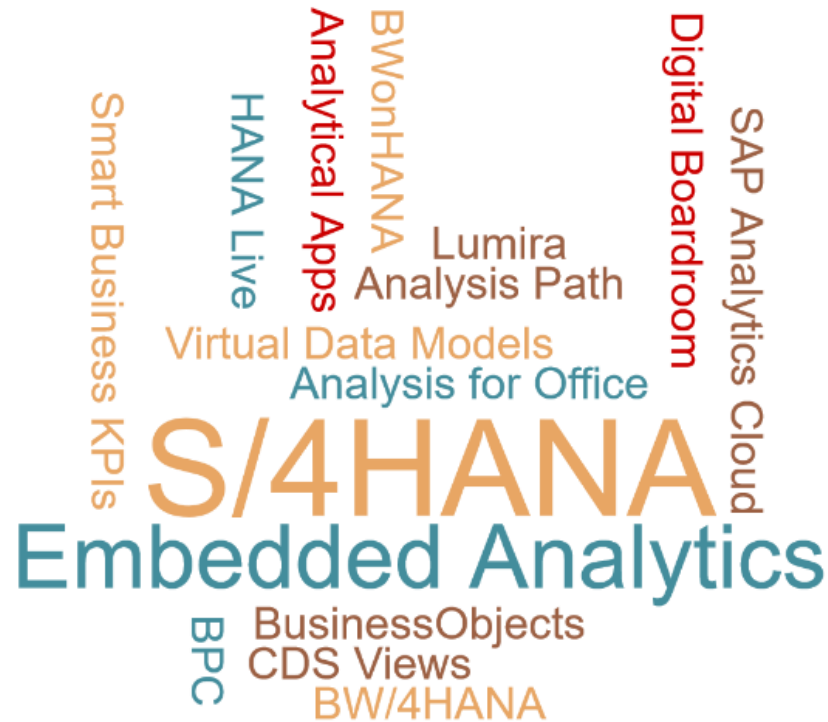
## Enterprise Data Warehouse (Strategic Analytics)

Business Warehouse

Database

# Overview Analytics with SAP S/4HANA

## Options for Reporting



### Reporting with S/4HANA

- In the context of S/4HANA reporting, one encounters many terminologies
- S/4HANA allows reporting via
  - BusinessObjects Tools (Lumira, Analysis for Office etc.)
  - The SAP Analytics Cloud incl. Digital Boardroom
  - Integrated, Fiori-typical Reporting
- Additionally there are possibilities to connect an integrated BW, a full BW (BW on Any DB, BW on HANA or BW/4HANA)
- In connection to reporting the terms „HANA Live“, „Virtual Data Models“ or „CDS Views“ are used.  
You will find details on the next slides.

No	Topic
1	[...]
2	Overview Analytics with SAP S/4HANA
<b>3</b>	<b>Terms &amp; Architecture</b>
4	Out-of-the-Box-Analytics
5	Interaction between S/4HANA Analytics with BW and BI Frontends
6	[...]

# Overview Analytics with SAP S/4HANA

## Business Intelligence Frontends

### SAP S/4HANA Embedded Analytics

End User (View only)

Key User (Modifications)

Embedded BW

Virtual Data Model (IT Staff)

Existing CDS Views

HANA Database

Tables, SQL Views, Stored Procedures, ...

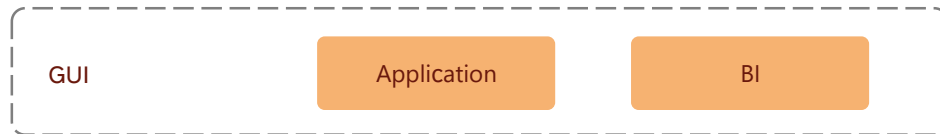
### Enterprise Data Warehouse (Strategic Analytics)

Business Warehouse

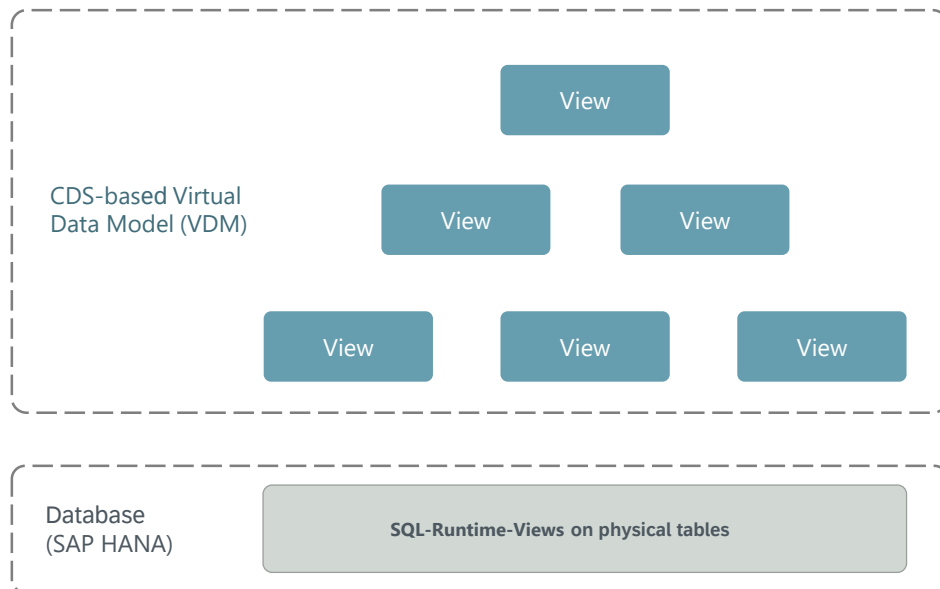
Database

# Terms & Architecture

## Core Data Services (CDS) Views



### SAP S/4HANA

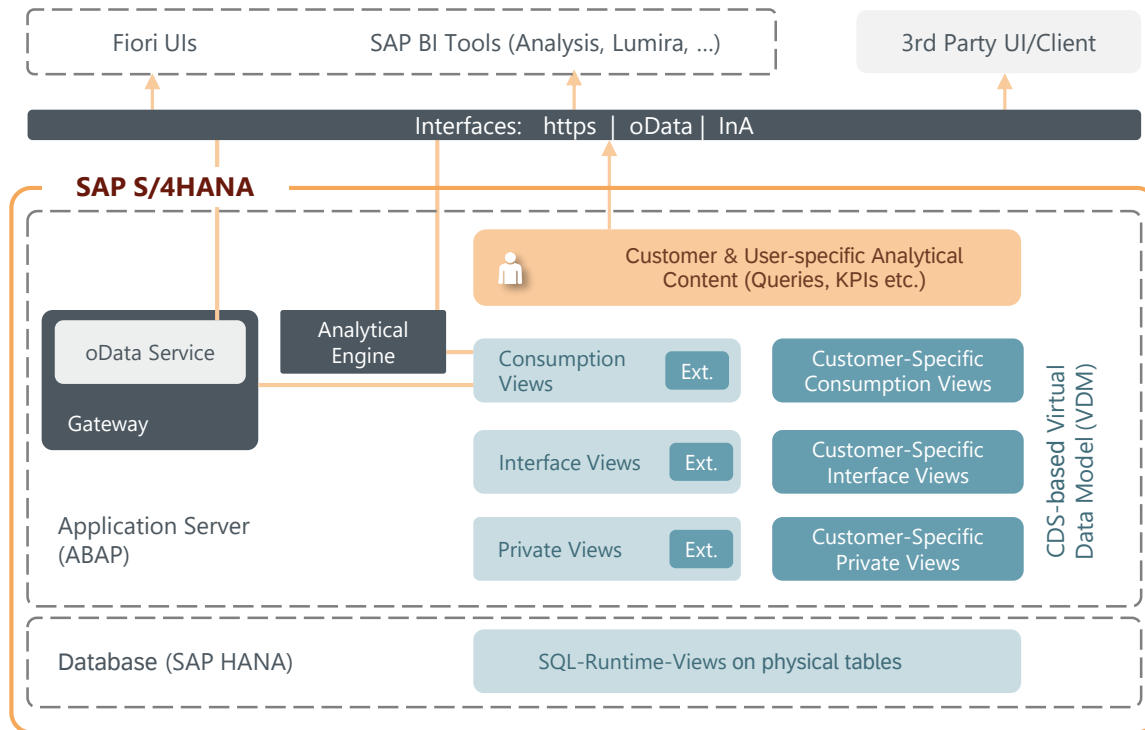


### CDS Views

- CDS Views are SAPs „strategic approach“ for visualizing business content & interrelationships
- There is a big amount (>9.000) of predefined CDS Views available

# Terms & Architecture

## Core Data Services (CDS) Views



- Key-User/Business-User defined Content
- 3rd Party Components (Optional)
- Delivered by SAP (Out-of-the-Box)
- Frameworks & Infrastructure
- SAP Technology Components
- Customer Extensions to existing SAP Objects

### CDS Views

- CDS Views are SAPs „strategic approach“ for visualizing business content & interrelationships
- There is a big amount (>9.000) of predefined CDS Views available
- The „Analytical Engine“ uses CDS Views too
- There is a "Push-Down“ of functionality to the SAP HANA-database, wherever this is possible
- SAP BI Frontends use CDS Views via the SAP Gateway or the Analytical Engine
- End-User-Tools generate CDS Views for analytical Queries

### More information regarding CDS Views

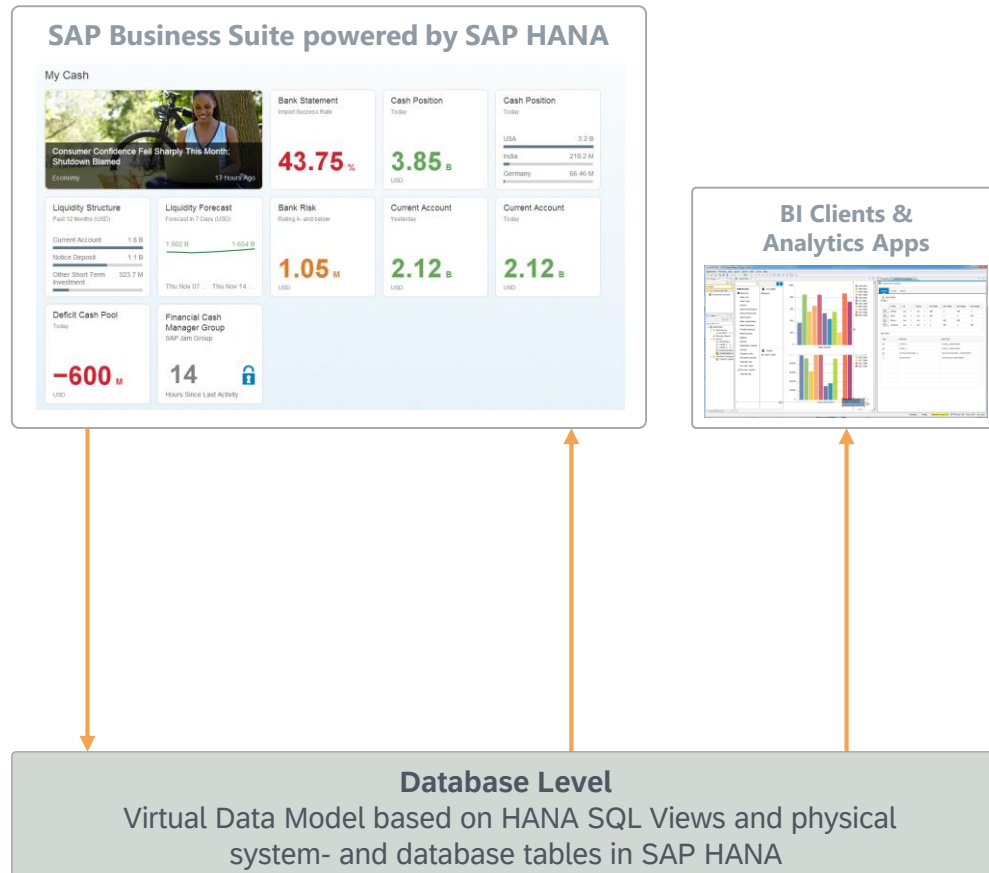
- [SAP Help](#)
- [Core Data Services in SAP S/4HANA \[Blog\]](#)
- [SAP S/4HANA Extensibility – Custom CDS Views in SAP S/4HANA Cloud and differences with SAP S/4HANA \(OP\) \[Blog\]](#)



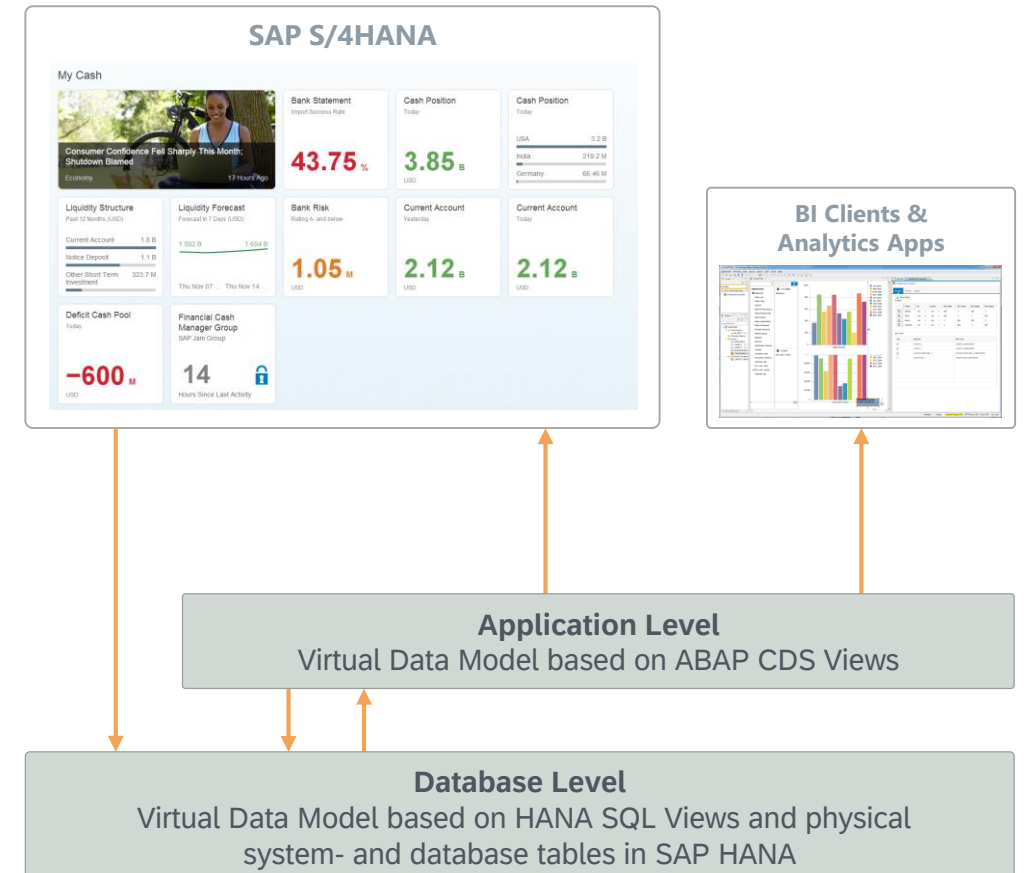
# Terms & Architecture

## HANA Live vs. S/4HANA Embedded Analytics

### SAP HANA Live



### SAP S/4HANA Embedded Analytics

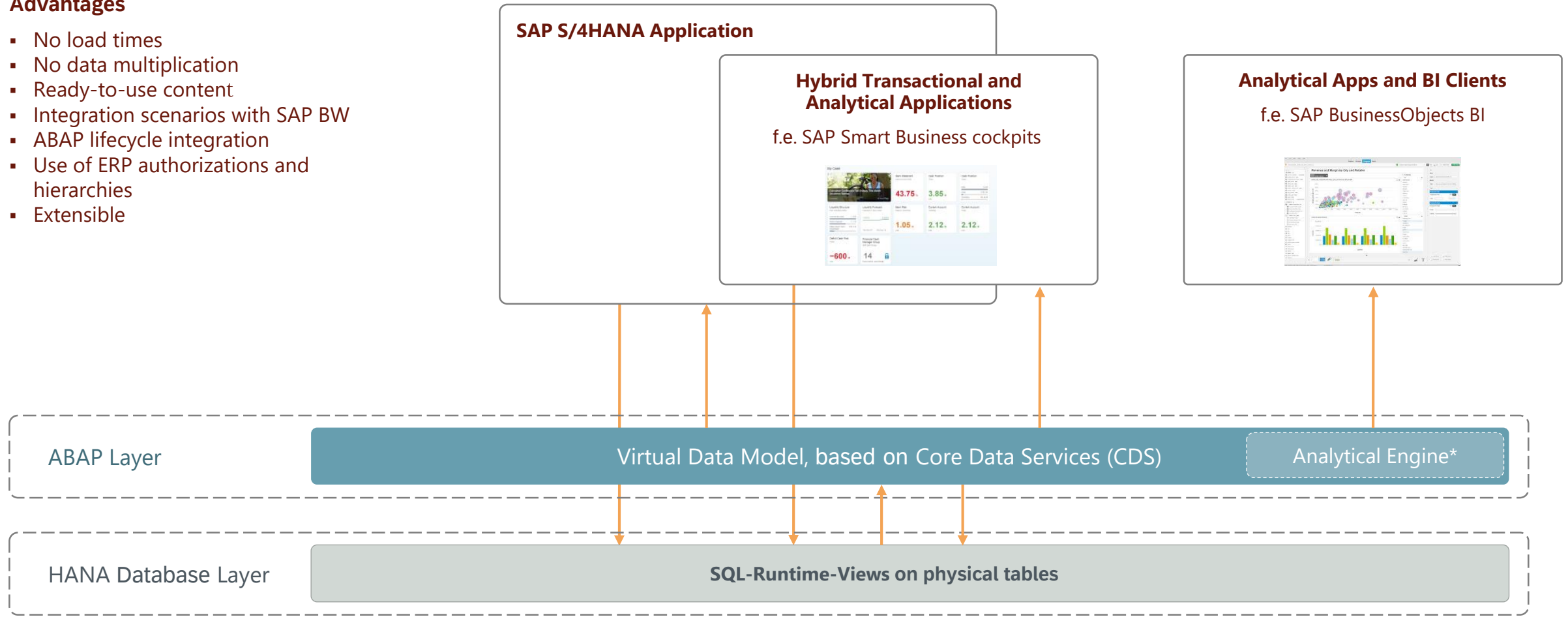


# Terms & Architecture

## S/4HANA Embedded Analytics

### Advantages

- No load times
- No data multiplication
- Ready-to-use content
- Integration scenarios with SAP BW
- ABAP lifecycle integration
- Use of ERP authorizations and hierarchies
- Extensible



\*with transient BEx Queries

No	Topic
1	[...]
2	Overview Analytics with SAP S/4HANA
3	Terms & Architecture
<b>4</b>	<b>Out-of-the-Box-Analytics</b>
5	Interaction between S/4HANA Analytics with BW and BI Frontends
6	[...]

# Overview Analytics with SAP S/4HANA

## Business Intelligence Frontends

### SAP S/4HANA Embedded Analytics

#### End User (View only)

Multi-dimensional Reporting

Smart Business KPIs / Analysis Paths

Query Browser

Overview Page

Analytical List Page

Analytical Fiori App

#### Key User (Modifications)

#### Embedded BW

#### Virtual Data Model (IT Staff)

Existing CDS Views

#### HANA Database

Tables, SQL Views, Stored Procedures, ...

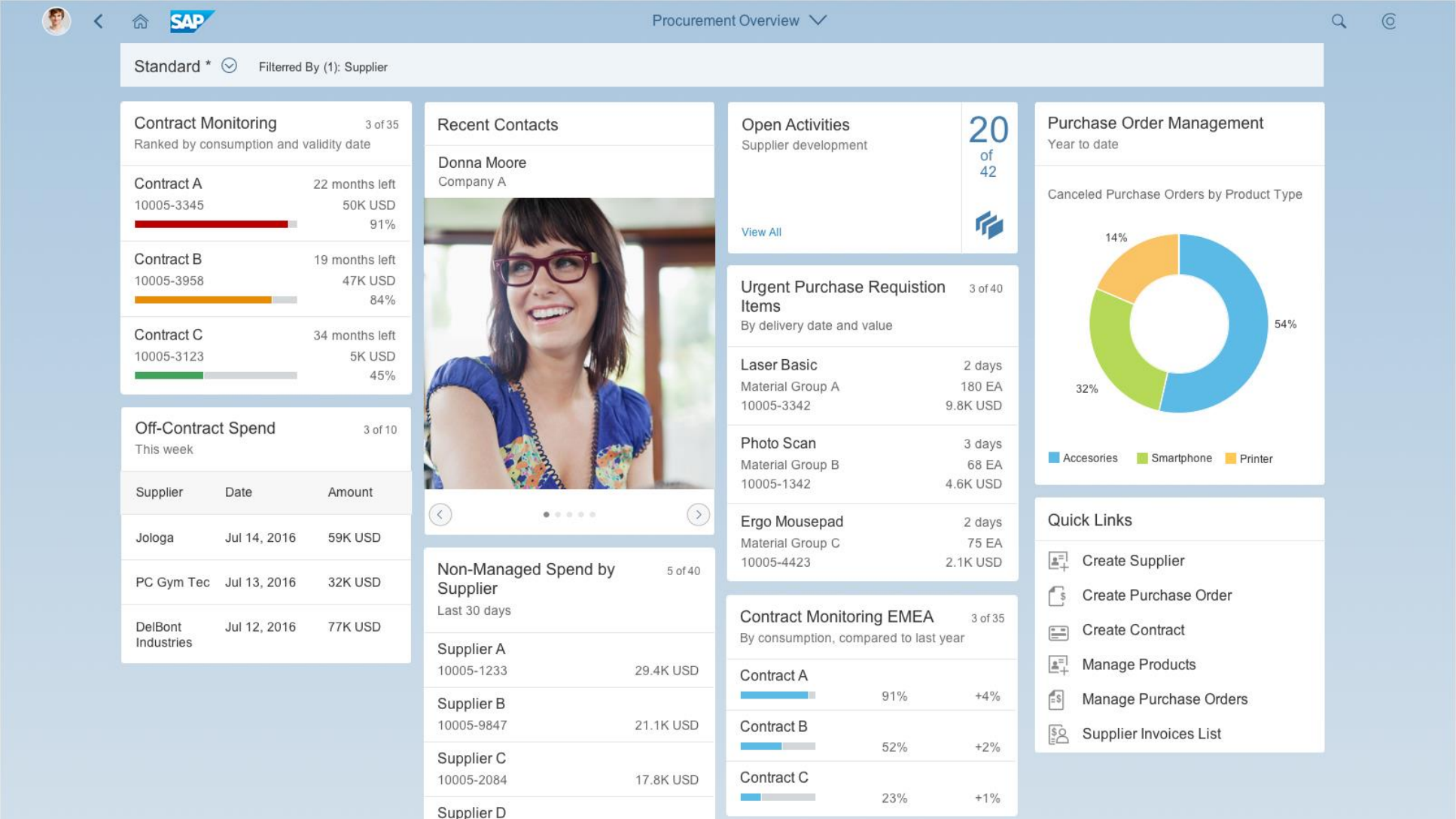
### Enterprise Data Warehouse (Strategic Analytics)

#### Business Warehouse

#### Database

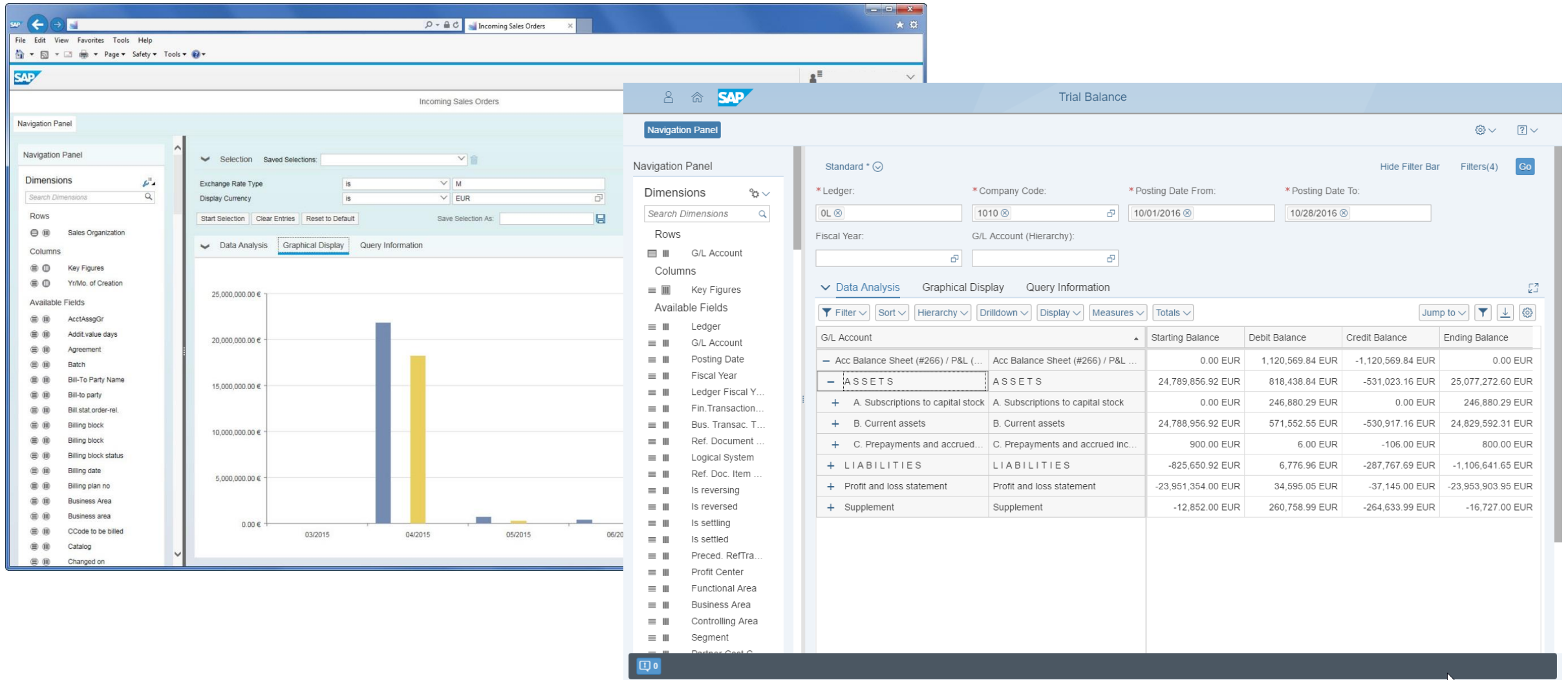
# Out-of-the-Box-Analytics

## Overview Page



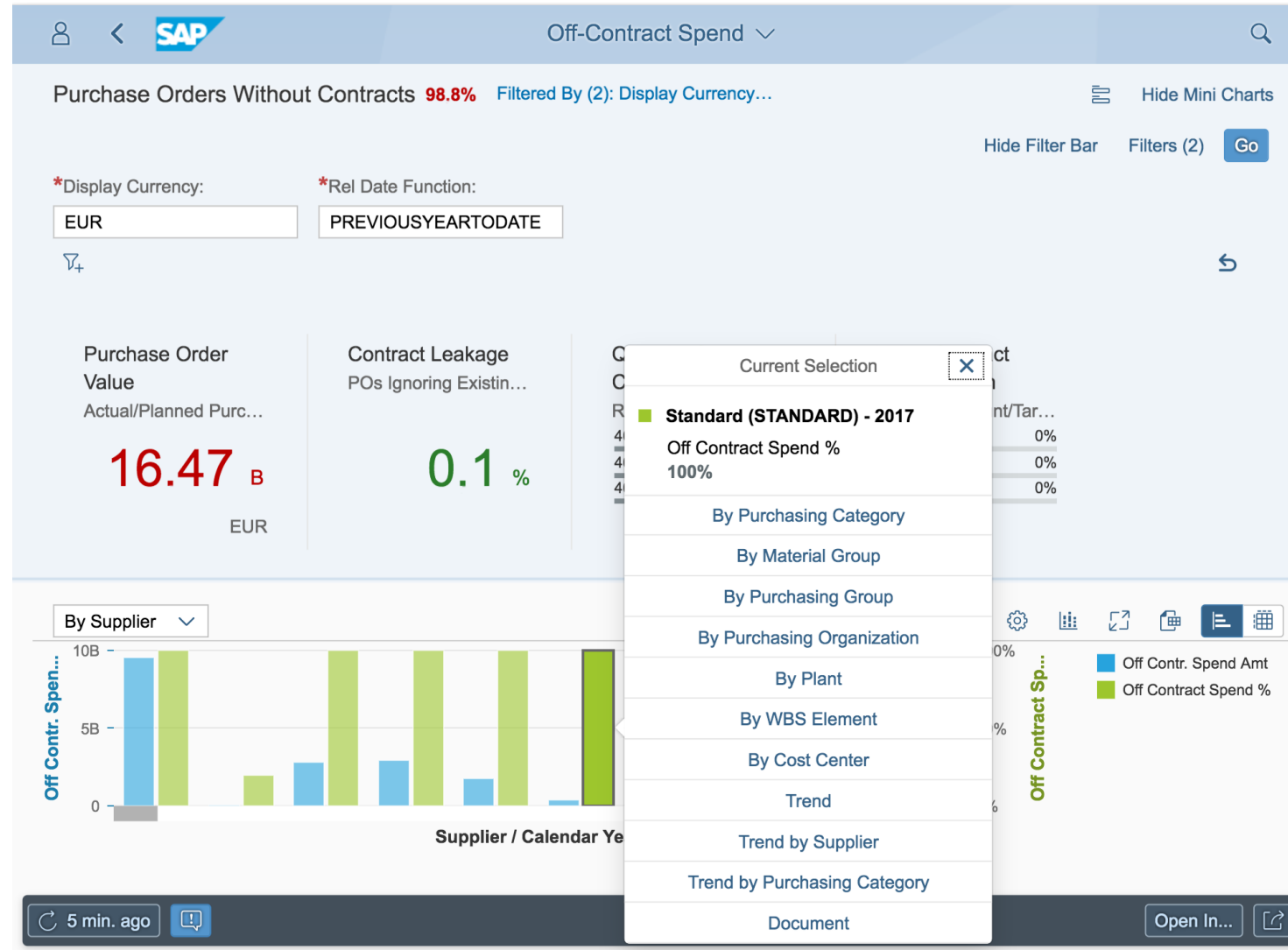
# Out-of-the-Box-Analytics

## Multidimensional Reporting Client



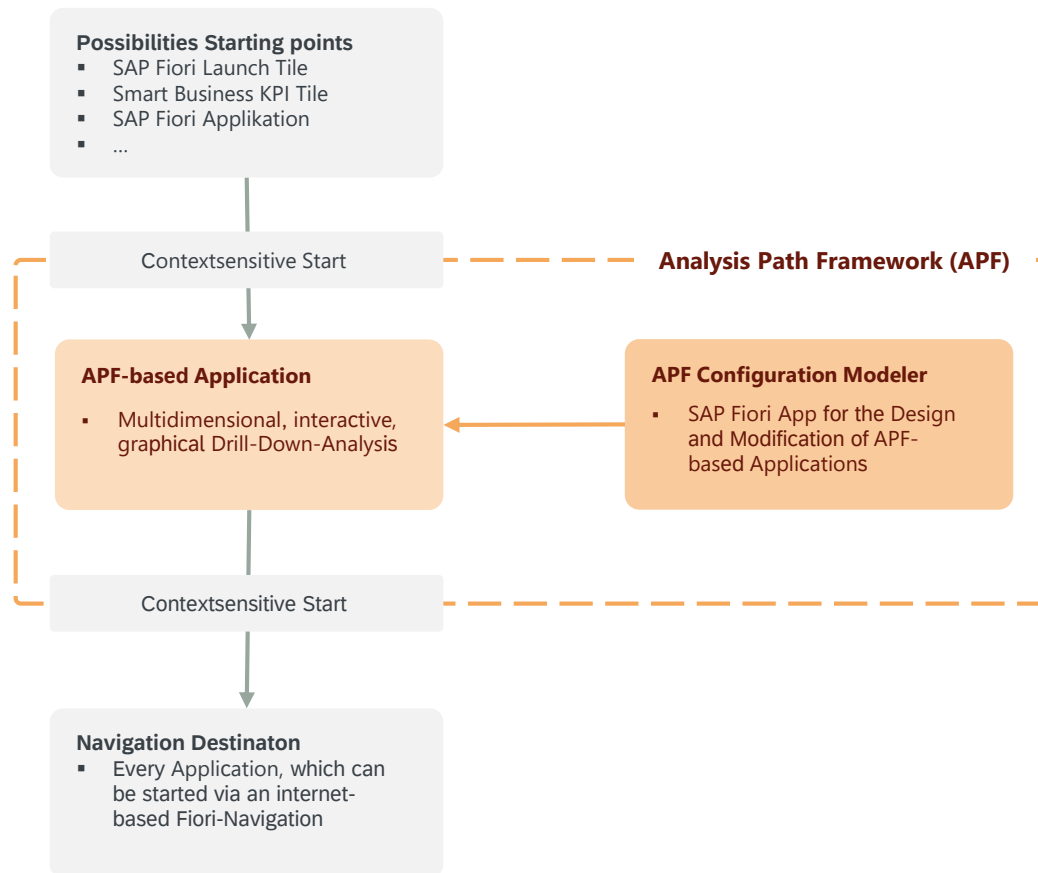
# Out-of-the-Box-Analytics

## SAP Smart Business KPI



# Out-of-the-Box-Analytics

## Analysis Path Framework 1/2



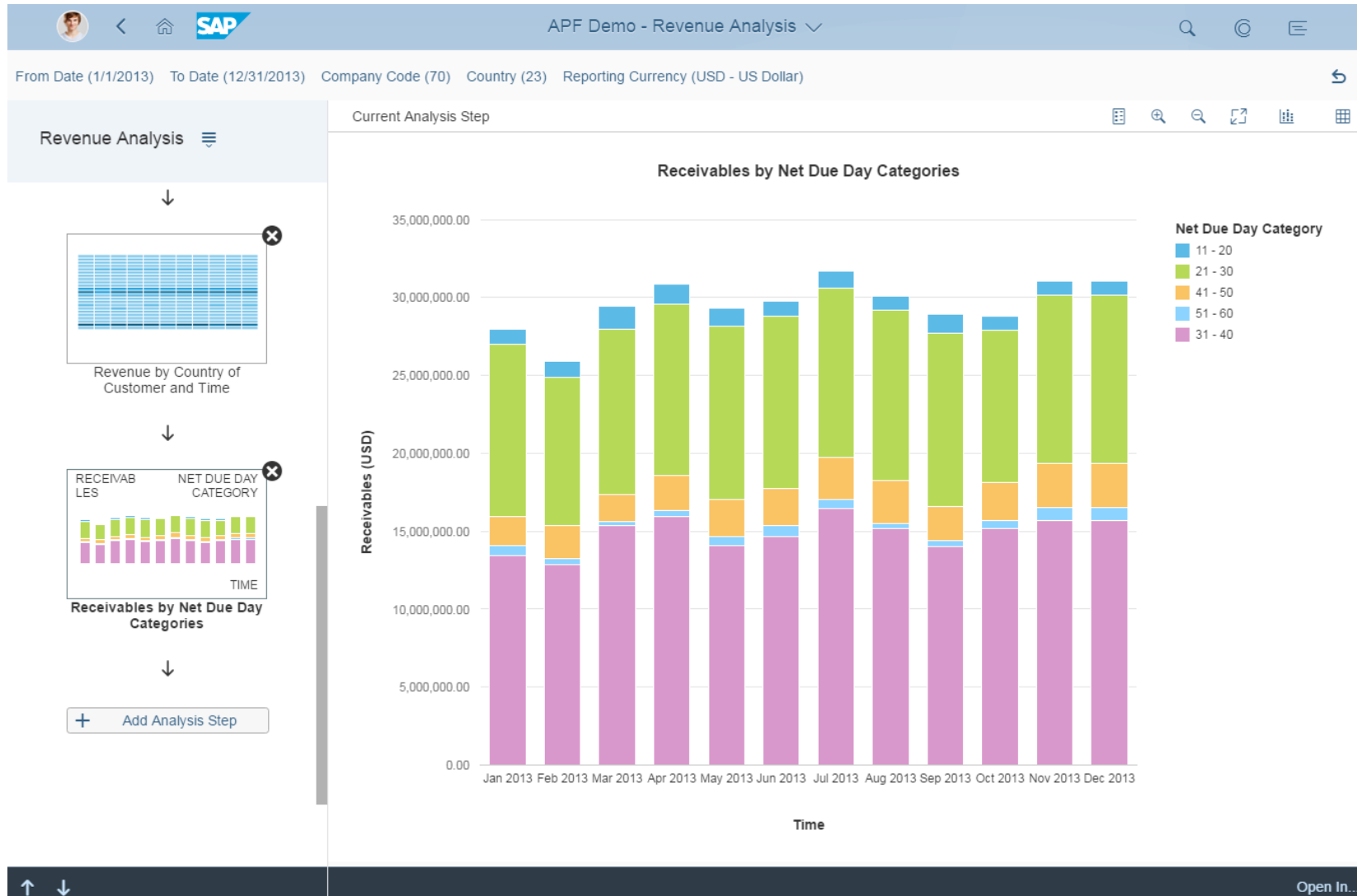
### Analysis Path Framework (APF)

- The APF is a framework for end users to configure interactive, analytical drilldown apps with graphical evaluations.
- APF-based apps allow the user to analyze KPIs from different data sources step by step. This involves context-sensitive jumping from one step to the next.
- The starting point can be different sources, such as Smart Business KPIs or an explicit Fiori tile.
- The APF is based on a number of SAP Fiori Apps



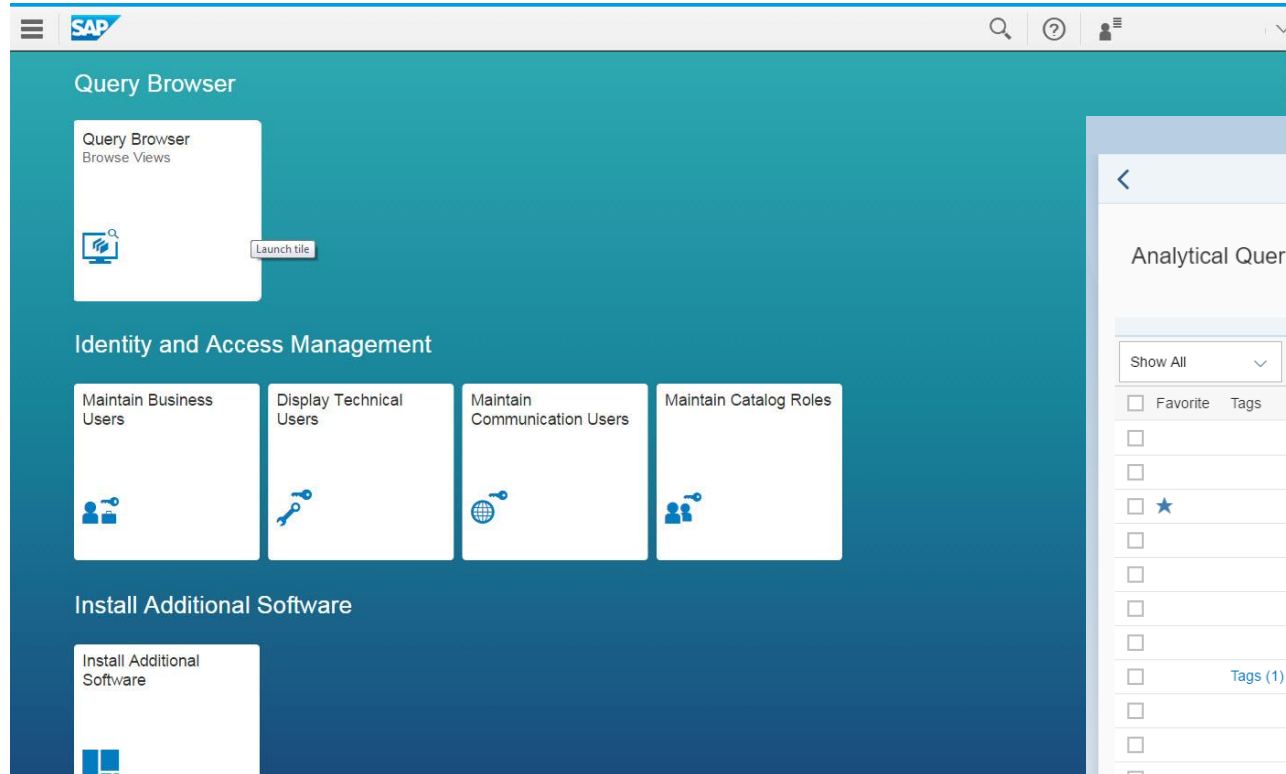
# Out-of-the-Box-Analytics

## Analysis Path Framework 2/2



# Out-of-the-Box-Analytics

## Query Browser



Query Browser

### Analytical Queries

207 Views

Show All

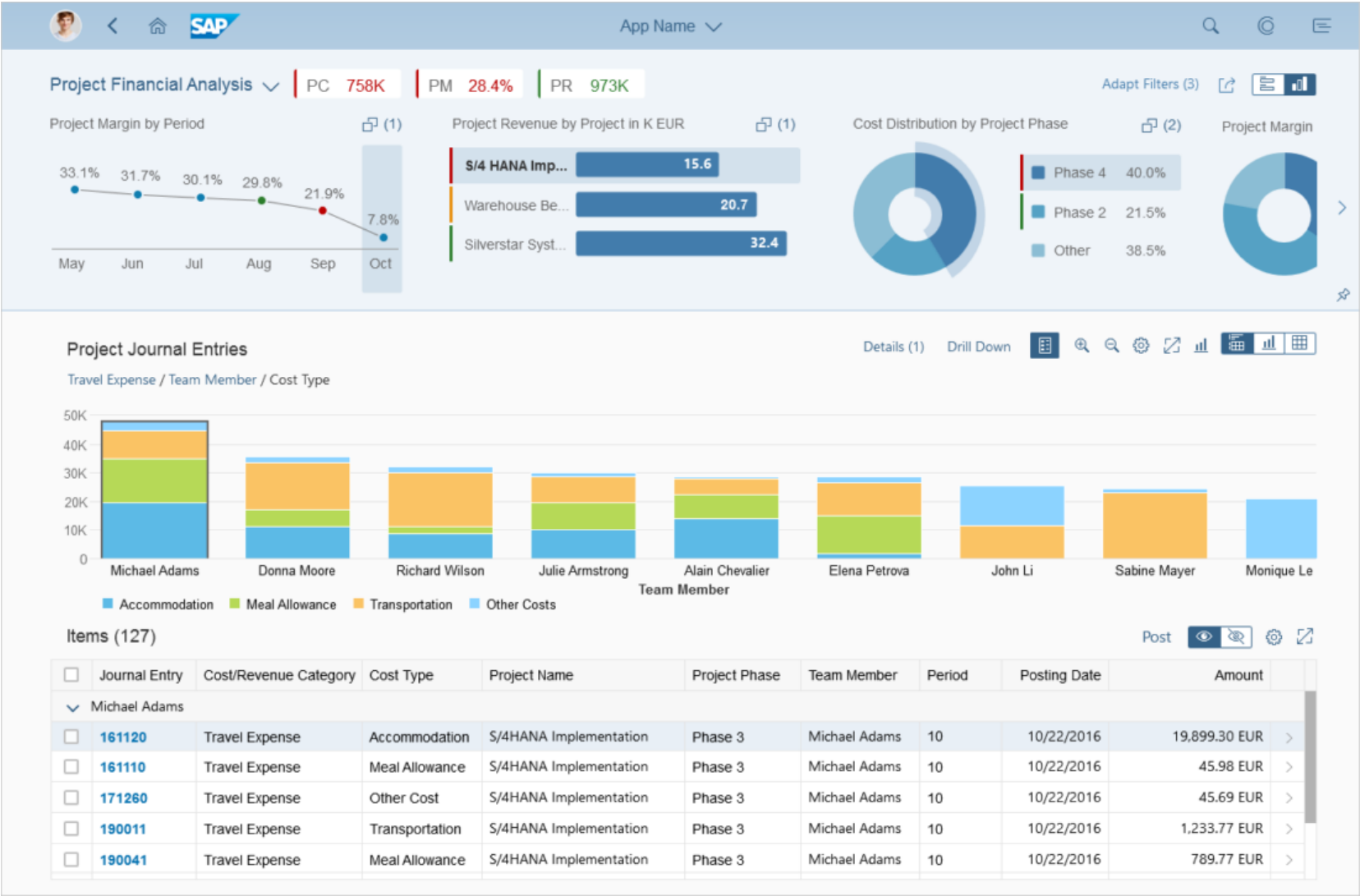
Search

<input type="checkbox"/> Favorite	Tags	View Name	View Description	Application Component
<input type="checkbox"/>		CZ_ACDOCA_QUERY	CZ_ACDOCA_QUERY	SD-SLS
<input type="checkbox"/>		CZ_ACDOCA_QUERY_COPY	CZ_AcDocA_Query_Copy	SD-SLS
<input checked="" type="checkbox"/>		CZ_ACTIVEPROJECTS	Active Projects	FI-GL
<input type="checkbox"/>		CZ_CASHFLOW	CZ_CASHFLOW	FI-GL
<input type="checkbox"/>		CZ_EASILINEITEMS	CZ_EASILineItems	FI-GL
<input type="checkbox"/>		CZ_EASILINEITEMS_WO_PARAMS	EASI Line Items without paramaters	FI-GL
<input type="checkbox"/>		CZ_GLLINEITEMSQ0001	ss	SD-SLS
<input type="checkbox"/>	Tags (1)	CZ_KPIS	CZ_KPIS	FI-GL
<input type="checkbox"/>		CZ_PAYMENTS	payment card	FI-GL
<input type="checkbox"/>		CZ_PROJECTKPIS	CZ_ProjectKPIs	FI-GL
<input type="checkbox"/>		CZ_PROKPIAGGT	Cz_Prokplaggt	FI-GL
<input type="checkbox"/>		CZ_TIMEDEPCHECK	Time Dependency Check	FI-GL
<input type="checkbox"/>		C_ACTUALCASHFLOWANALYTICS	Actual Cash Flow in 90 days	FIN-FSCM-CLM
<input type="checkbox"/>		C_APCASHDISCOUNTFORECAST	Cash discount forecast	FI-GL-IS
<input type="checkbox"/>		C_APCSHDISCUTILIZATION	Account Payable Cash Discount Utilization	FI-GL-IS
<input type="checkbox"/>		C_APDAYSPAYOUTST	Accounts Payable. Days Payables Outstanding	FI-GL-IS
<input type="checkbox"/>		C_APFLEXIBLEAGING	Aging Analysis	FI-GL-IS
<input type="checkbox"/>		C_APFUTUREACCOUNTSPAYABLE	Accounts Payable. Future Accounts Payable	FI-GL-IS

★ Add Tags Open in Design Studio

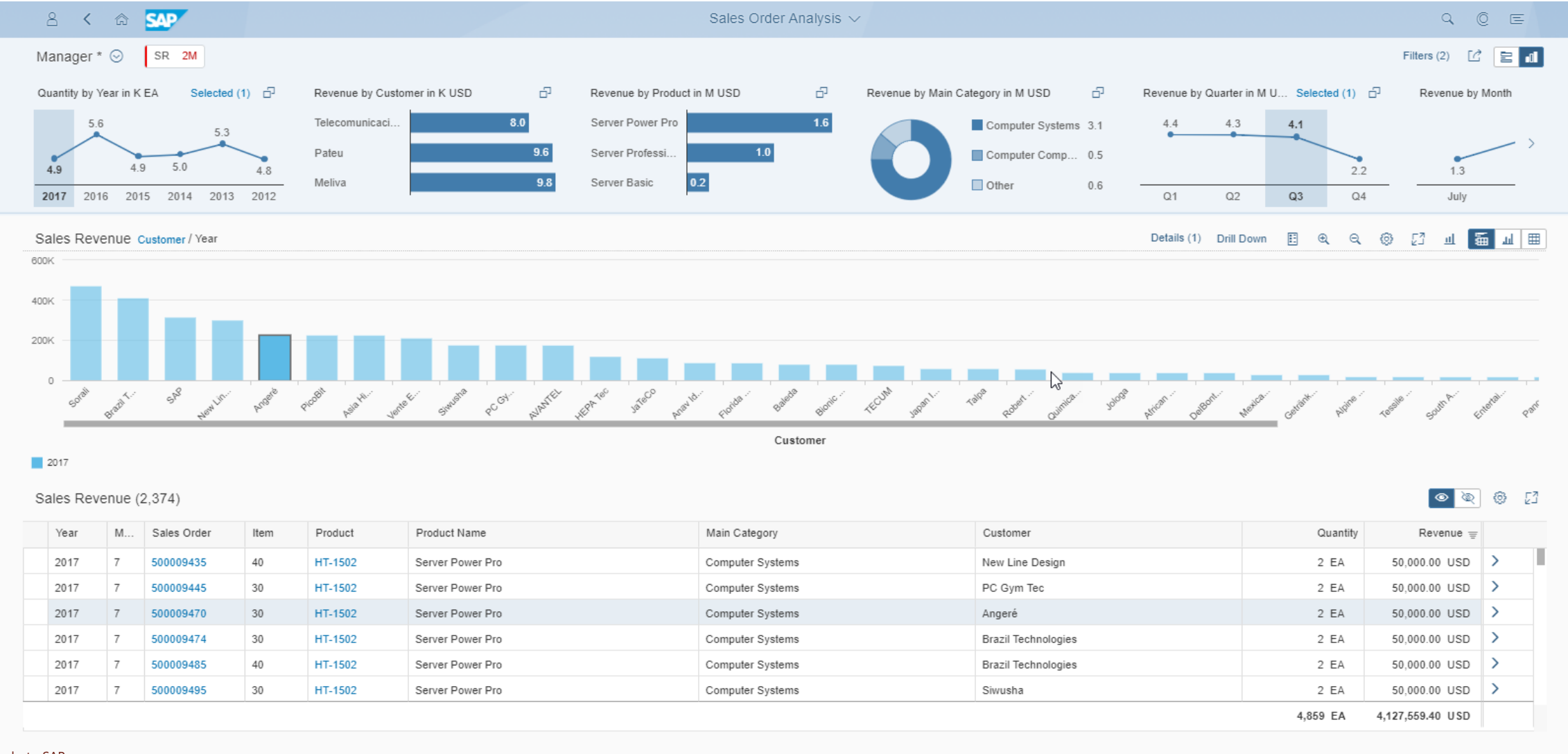
# Out-of-the-Box-Analytics

## Analytical List Page 1/3







# Out-of-the-Box-Analytics


## Analytical List Page 2/3







# Out-of-the-Box-Analytics

## Analytical List Page 3/3: Comparison to a simple list



Application Name 







Page Title 

23  
Errors

50  
Warnings

50  
Completed

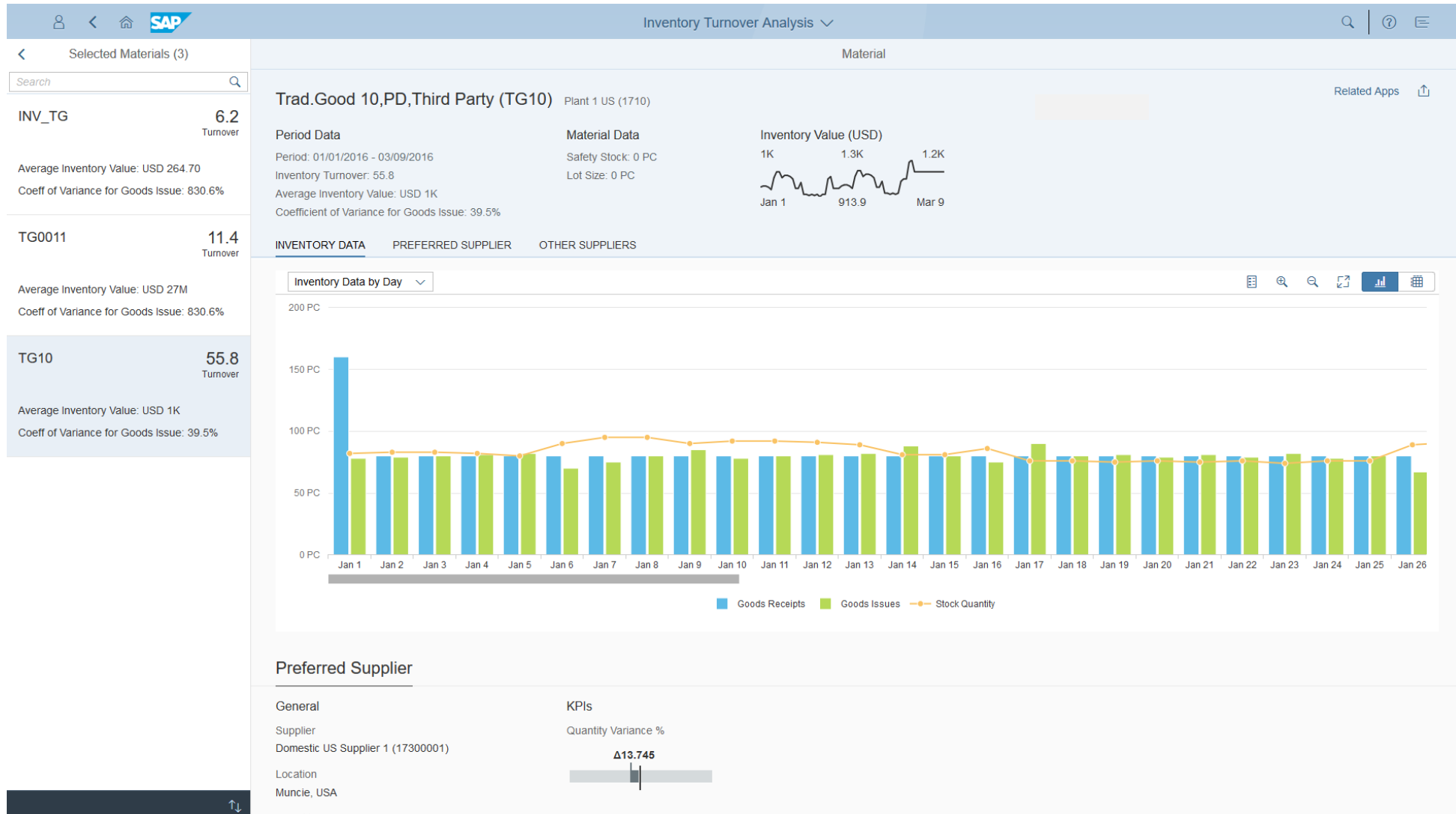
Work Items with Errors (23)



Document Number	Description	User Name	Posting Date	Amount (Local Currency)
<a href="#">10223882001820</a>	AK_012 Revoked	Denise Smith	01.01.2014	12,897.00 EUR
<a href="#">10223882001820</a>		Richard Wilson	01.01.2014	234,197.00 EUR
<a href="#">10223882001820</a>	Regular returns of material i...	Denise Smith	01.01.2014	11,865.99 EUR
<a href="#">10223882001820</a>	A-B45 Revoked on delivery	Richard Wilson	01.01.2014	12,897.00 EUR
<a href="#">10223882001820</a>	AK_012 Revoked	Denise Smith	01.01.2014	12,897.00 EUR
<a href="#">10223882001820</a>	Random Check	Richard Wilson	01.01.2014	12,897.00 EUR
<a href="#">10223882001820</a>		Richard Wilson	01.01.2014	234,197.00 EUR
<a href="#">10223882001820</a>	AK_012 Revoked	Denise Smith	01.01.2014	12,897.00 EUR
<a href="#">10223882001820</a>	A-B45 Revoked on delivery	Richard Wilson	01.01.2014	12,897.00 EUR
<a href="#">10223882001820</a>	Regular returns of material i...	Richard Wilson	01.01.2014	234,197.00 EUR
<a href="#">10223882001820</a>		Richard Wilson	01.01.2014	234,197.00 EUR
<a href="#">10223882001820</a>	Random Check	Richard Wilson	01.01.2014	12,897.00 EUR
<a href="#">10223882001820</a>	Regular returns of material i...	Denise Smith	01.01.2014	11,865.99 EUR
<a href="#">10223882001820</a>	AK_012 Revoked	Denise Smith	01.01.2014	12,897.00 EUR
<a href="#">10223882001820</a>		Richard Wilson	01.01.2014	234,197.00 EUR
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<a href="#">10223882001820</a>	AK_012 Revoked	Denise Smith	01.01.2014	12,897.00 EUR
<a href="#">10223882001820</a>	Random Check	Richard Wilson	01.01.2014	12,897.00 EUR
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<a href="#">10223882001820</a>	AK_012 Revoked	Denise Smith	01.01.2014	12,897.00 EUR
<a href="#">10223882001820</a>	AK_012 Revoked	Denise Smith	01.01.2014	12,897.00 EUR

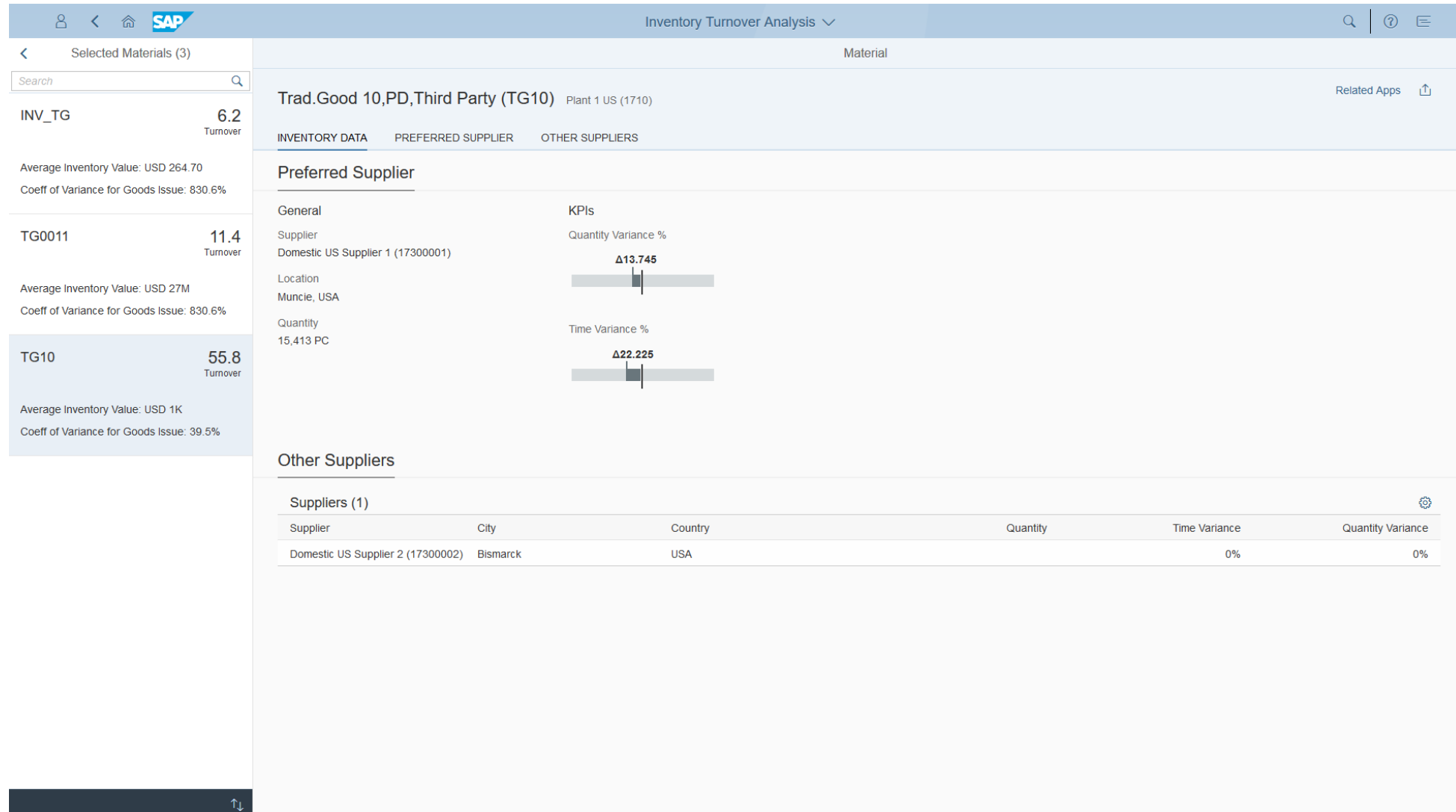
# Out-of-the-Box-Analytics

## Analytical SAP Fiori Applications 1/3



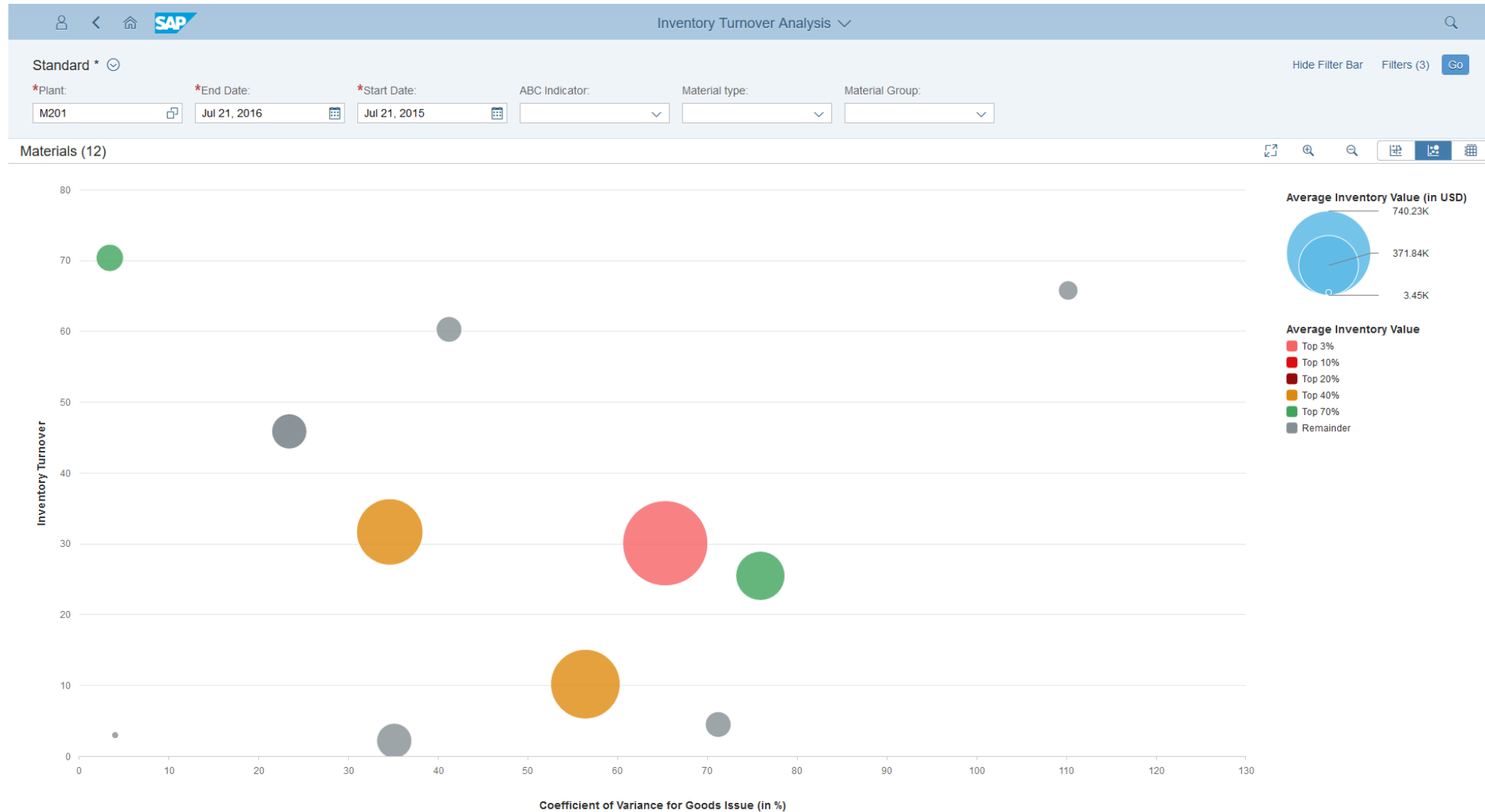
# Out-of-the-Box-Analytics

## Analytical SAP Fiori Applications 2/3



# Out-of-the-Box-Analytics

## Analytical SAP Fiori Applications 3/3





# Overview Analytics with SAP S/4HANA

## Business Intelligence Frontends

### SAP S/4HANA Embedded Analytics

#### End User (View only)

Multi-dimensional Reporting

Smart Business KPIs / Analysis Paths

Query Browser

Overview Page

Analytical List Page

Analytical Fiori App

#### Key User (Modifications)

CDS Key User Tools

KPI Modelling App

#### Embedded BW

#### Virtual Data Model (IT Staff)

Existing CDS Views

#### HANA Database

Tables, SQL Views, Stored Procedures, ...

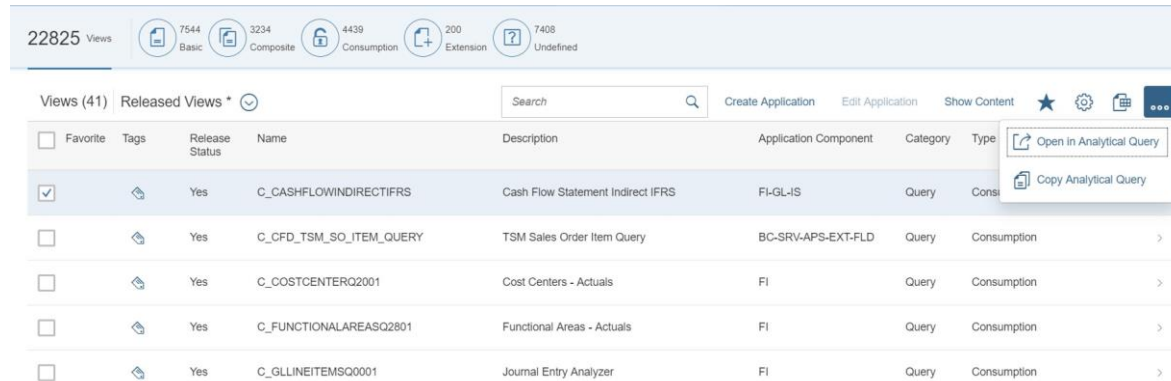
### Enterprise Data Warehouse (Strategic Analytics)

#### Business Warehouse

#### Database

# Out-of-the-Box-Analytics

## CDS Key User Tools 1/3



The screenshot displays the SAP View Browser interface. At the top, there is a header bar with '22825 Views' and several filter icons for Basic (7544), Composite (3234), Consumption (4439), Extension (200), and Undefined (7408). Below the header, a search bar and navigation buttons like 'Create Application', 'Edit Application', and 'Show Content' are visible. The main area contains a table of views with columns for Favorite, Tags, Release Status, Name, Description, Application Component, Category, and Type. The first view, 'C\_CASHFLOWINDIRECTIFRS', is selected, and a context menu is open over it, showing options like 'Open in Analytical Query' and 'Copy Analytical Query'.

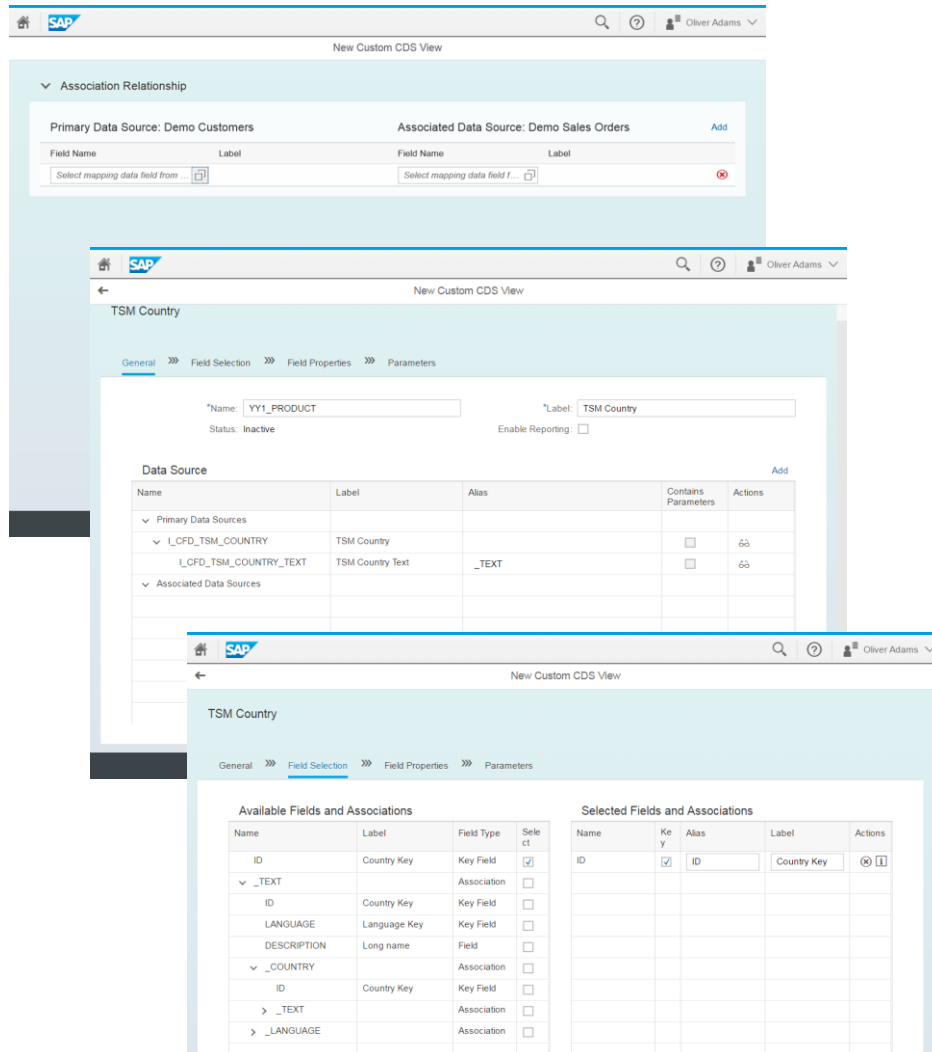
<input type="checkbox"/>	Favorite	Tags	Release Status	Name	Description	Application Component	Category	Type
<input checked="" type="checkbox"/>			Yes	C_CASHFLOWINDIRECTIFRS	Cash Flow Statement Indirect IFRS	FI-GL-IS	Query	Consumption
<input type="checkbox"/>			Yes	C_CFD_TSM_SO_ITEM_QUERY	TSM Sales Order Item Query	BC-SRV-APS-EXT-FLD	Query	Consumption
<input type="checkbox"/>			Yes	C_COSTCENTERQ2001	Cost Centers - Actuals	FI	Query	Consumption
<input type="checkbox"/>			Yes	C_FUNCTIONALAREASQ2801	Functional Areas - Actuals	FI	Query	Consumption
<input type="checkbox"/>			Yes	C_GLLINEITEMSQ0001	Journal Entry Analyzer	FI	Query	Consumption

### View Browser

- The View Browser allows you to display thousands of CDS views and the data accessible via them.
- Views can be found by keyword search using the following fields
  - ID
  - Description
  - Application component
  - Comments
  - Field names
  - Names of database tables
  - Tags
- Views can be marked as favorites and tagged

# Out-of-the-Box-Analytics

## CDS Key User Tools 2/3



### Custom CDS View

- With the Custom CDS View App, key users can model their own CDS views, which can be based on the following sources
  - Public views of the Virtual Data Model (VDM) delivered by SAP.
  - Customer-specific CDS views
- For details, see "[Create and expose a custom CDS view](#)"

# Out-of-the-Box-Analytics

## CDS Key User Tools 3/3

U3 Activate Save Preview

SAP

Custom Analytical Queries

Custom Analytical Queries

Test for CDS Analytics extensibility (YY1\_AAA\_MKT\_INTERACT\_INT\_1)

Status: Inactive

GeneralField SelectionDisplayFilters

Display Fields (0)

Search Display Fields

UpDownAdd

Type	Label	Name	Display	Filter	Remove
	Interaction	Interaction			
	Interaction Channel	InteractionChannel			
	Interaction Type	InteractionType			
	Direction	InteractionDirection			
	Date	InteractionUTCDate			
	Extended Dimension ABC	YY1_CUSTOM_FIELD_IA_MIA			
	Interaction Intrats	NumberOfInteractionInterests			
	Extended Keyfigure DEF	YY1_CUSTOM_VALUE_FIELD_MIA			

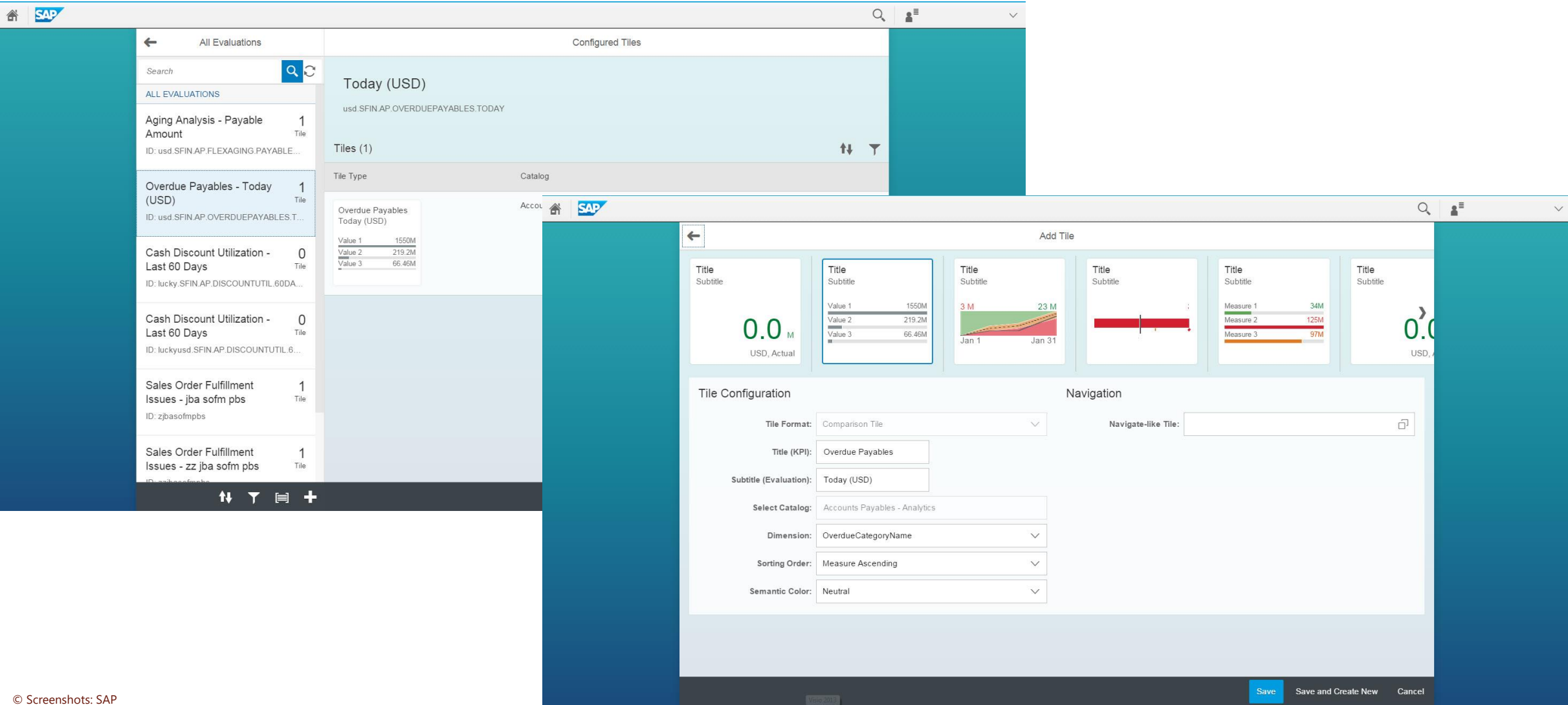
U3 Activate Save Preview

## Custom Analytical Queries

- The Custom Analytical Query App is also called Query Designer because it works similarly to the BEx Query Designer.
- The Query Designer Fiori app allows you to create and customize your own analytical queries.
- For details, see for example [“How to create a custom analytical query and display in a grid based application”](#) oder [“How to Create Custom Analytical Queries for SAP Hybris Marketing Cloud”](#)

# Out-of-the-Box-Analytics

## KPI Modelling App



# Overview Analytics with SAP S/4HANA

## Business Intelligence Frontends

### SAP S/4HANA Embedded Analytics

#### End User (View only)

Multi-dimensional Reports

Smart Business KPIs / Analysis Paths

Query Browser

Overview Page

Analytical List Page

Analytical Fiori App

#### Key User (Modifications)

CDS Key User Tools

KPI Modelling App

#### Embedded BW

#### Virtual Data Model (IT Staff)

Existing CDS Views

CDS View Customizing via ABAP for Eclipse

Creation of CDS View via ABAP for Eclipse

#### HANA Database

Tables, SQL Views, Stored Procedures, ...

### Enterprise Data Warehouse (Strategic Analytics)

#### Business Warehouse

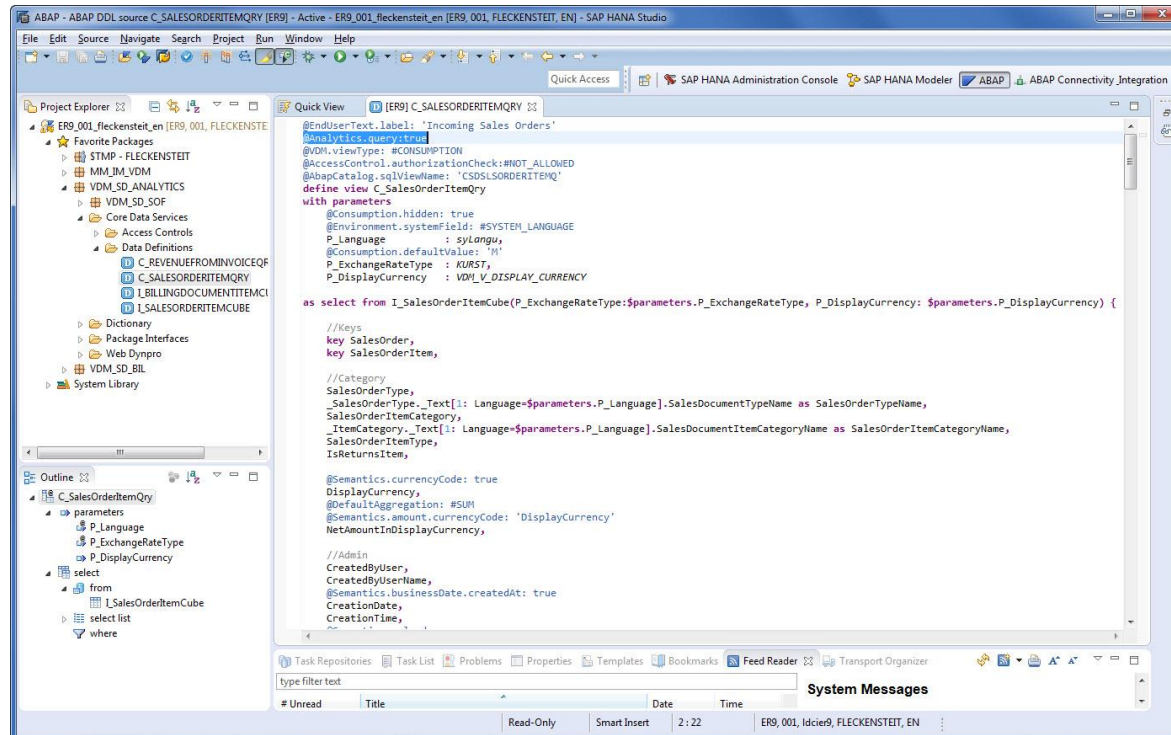
#### Database

# Out-of-the-Box-Analytics

## CDS Views with ABAP for Eclipse

### ABAP for Eclipse

- CDS views can be created and modified by IT using ABAP for Eclipse.
- Details:
  - [ABAP Core Data Services – Introduction \(ABAP CDS view\)](#)
  - [Create a CDS View \(ABAP\)](#)
  - [Create an analytical model based on ABAP CDS views](#)



No	Topic
1	[...]
2	Overview Analytics with SAP S/4HANA
3	Terms & Architecture
4	Out-of-the-Box-Analytics
<b>5</b>	<b>Interaction between S/4HANA Analytics with BW and BI Frontends</b>
6	[...]



# Overview Analytics with SAP S/4HANA

## Business Intelligence Frontends

SAP Analytics Cloud

SAP BusinessObjects Enterprise  
(Analysis for Office, Lumira, ...)

## SAP S/4HANA Embedded Analytics

### End User (View only)

Multi-dimensional Reporting

Smart Business KPIs / Analysis Paths

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CDS View Customizing via ABAP for Eclipse

CDS View Customizing via ABAP for Eclipse

### HANA Database

Tables, SQL Views, Stored Procedures, ...

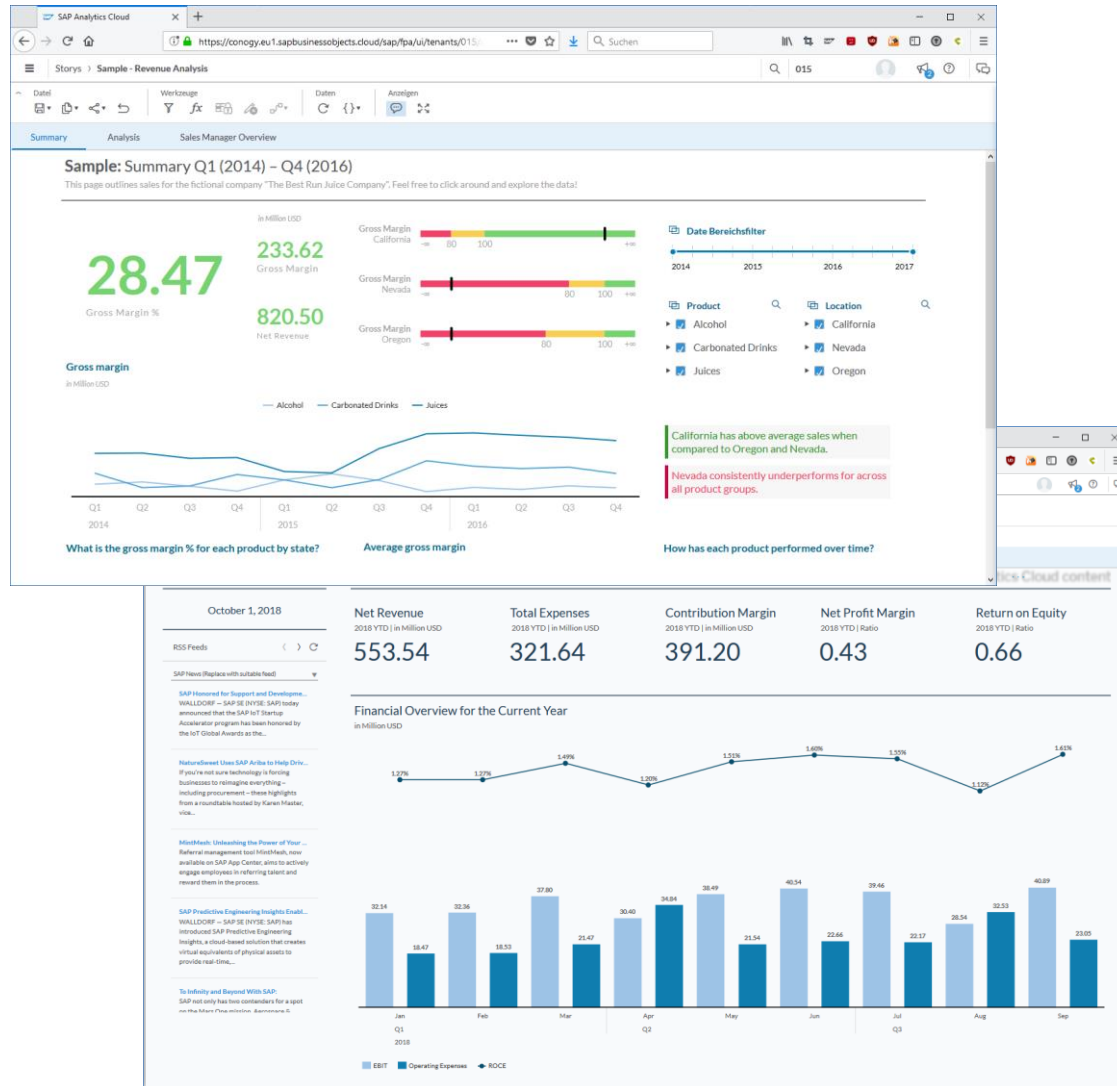
## Enterprise Data Warehouse (Strategic Analytics)

### Business Warehouse

### Database

# Interaction between S/4HANA Analytics with BW and BI Frontends

## SAP Analytics Cloud (SAC)



### SAP Analytics Cloud (SAC)

- SAC is currently only available as a SaaS solution.
- The focus on the SAP Analytics Cloud is a strategic goal of SAP. Nevertheless, parallel investments are being made in on-premise analytics solutions.
- The SAC combines reporting, planning, predictive, and GRC.
- A connection between the SAC and a local on-premise SAP system is possible without the customer's own data leaving the customer's own network.
- SAP Analytics Cloud can connect to BW BEx queries, universes, and SAP S/4HANA, among others.
- Business Content for displaying S/4HANA data is ready for use
- Note: The SAC must be licensed separately!



# Overview Analytics with SAP S/4HANA

## Business Intelligence Frontends

SAP Analytics Cloud

SAP BusinessObjects Enterprise  
(Analysis for Office, Lumira, ...)

## SAP S/4HANA Embedded Analytics

### End User (View only)

Multi-dimensional Reporting

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Query Browser

Overview Page

Analytical List Page

Analytical Fiori App

### Key User (Modifications)

CDS Key User Tools

KPI Modelling App

### Embedded BW

Embedded SAP Business Warehouse 7.5

### Virtual Data Model (IT Staff)

Existing CDS Views

CDS View Customizing with ABAP for Eclipse

CDS View Creation with ABAP for Eclipse

### HANA Database

Tables, SQL Views, Stored Procedures, ...

## Enterprise Data Warehouse (Strategic Analytics)

### Business Warehouse

SAP Business Warehouse 7.X on any DB

SAP Business Warehouse 7.X on HANA

SAP BW/4HANA

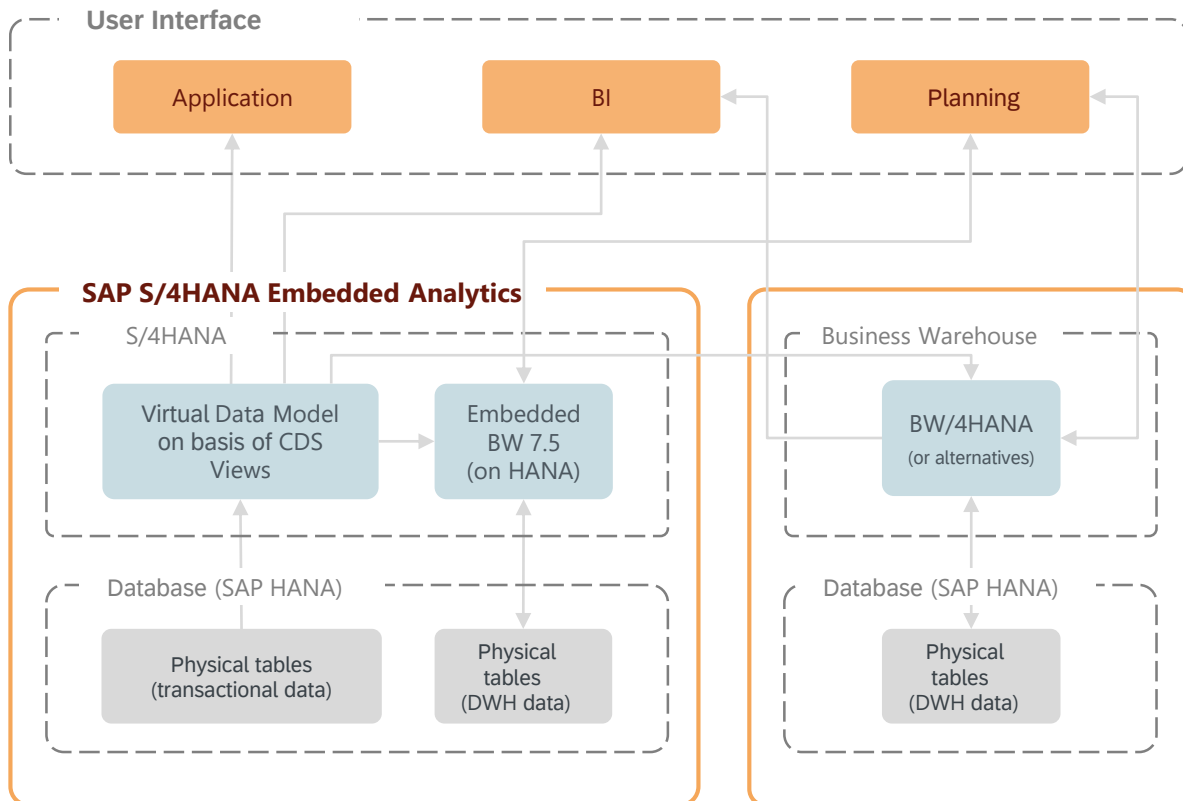
### Database

Any DB

SAP HANA

# Interaction between S/4HANA Analytics with BW and BI Frontends

## Embedded BW vs. Stand-alone BW



### S/4HANA Embedded BW

- The BW integrated in S/4HANA is intended by SAP to support business processes integrated in S/4HANA, e.g. integrated financial planning (aka BPC Optimized).
- It is not recommended to use the integrated BW as an Enterprise Data Warehouse.
- The volume of data in the integrated BW should not exceed 20% of the total data volume.
- The integrated BW is based on BW 7.5 on HANA. A future upgrade to an integrated BW/4HANA is currently not planned.
- All future developments in the area of Business Warehouse will take place in BW/4HANA.

### Stand-alone BW

- Recommended for
  - Bigger data sets
  - Integration of different data sources
- BW/4HANA as the business warehouse of the future