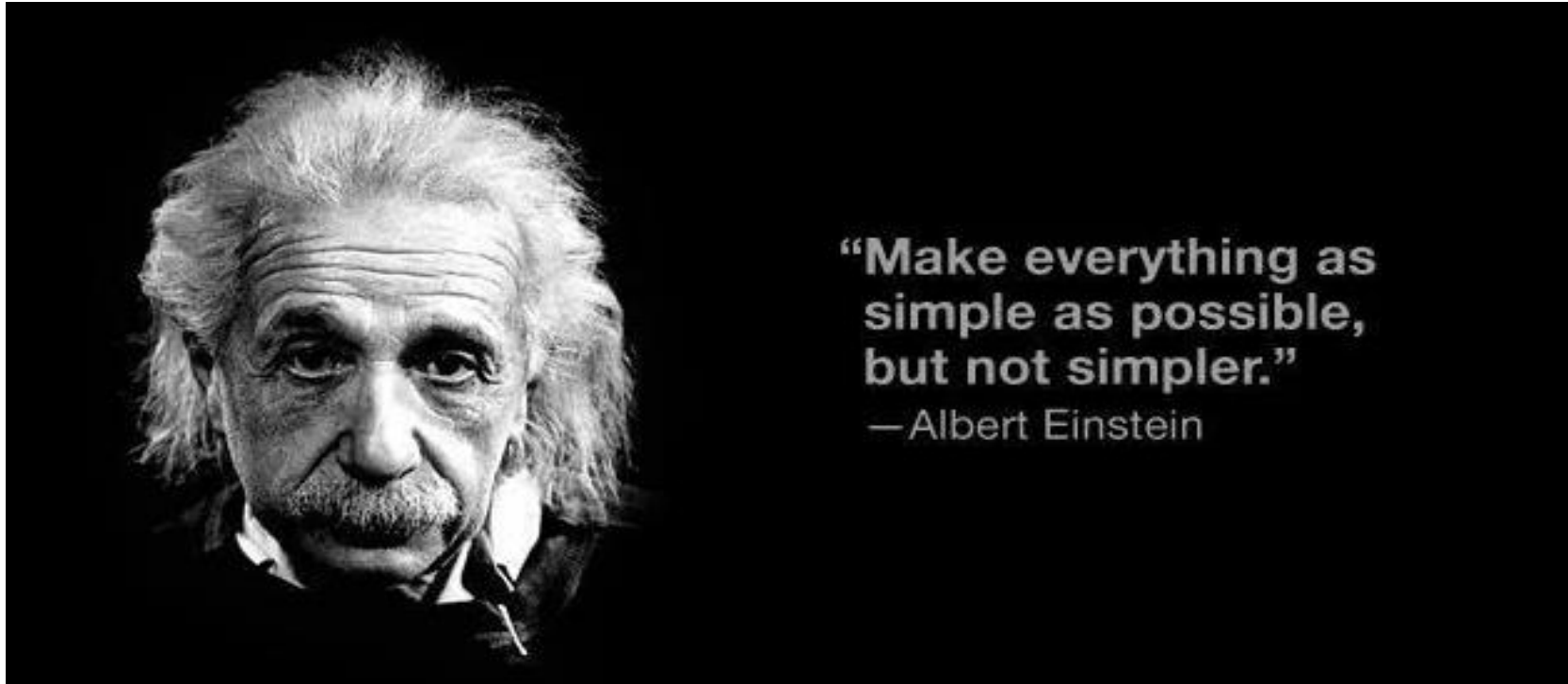


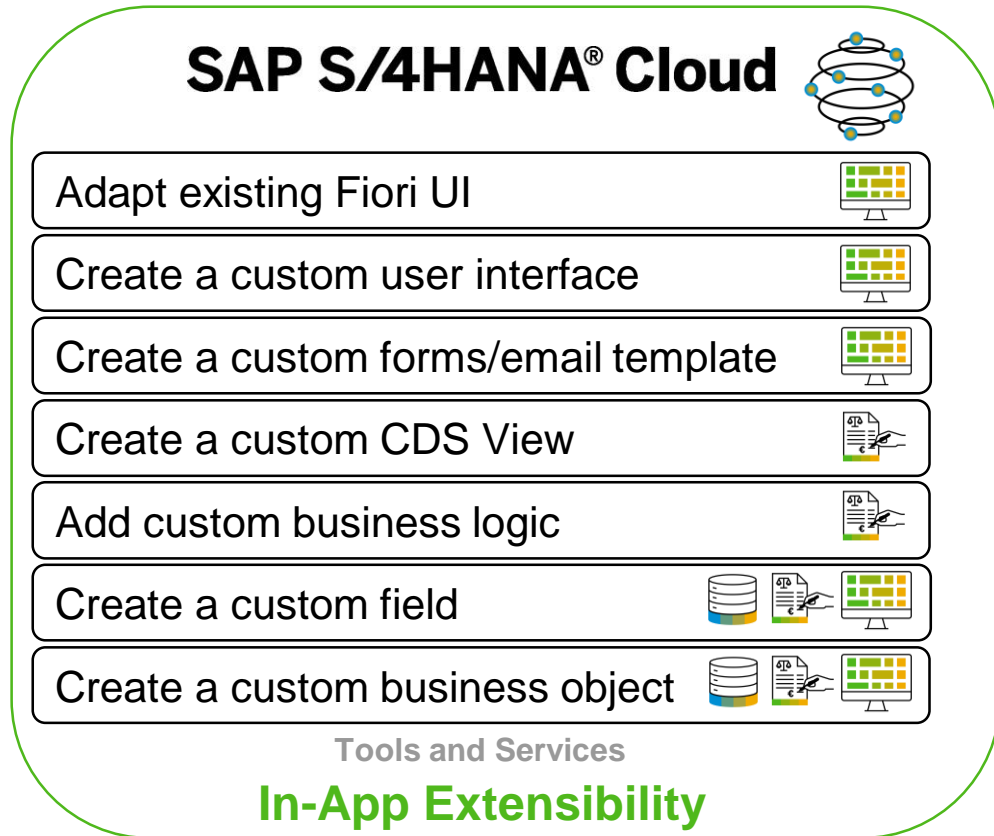
# **In-App Extensibility**



**“Make everything as  
simple as possible,  
but not simpler.”**

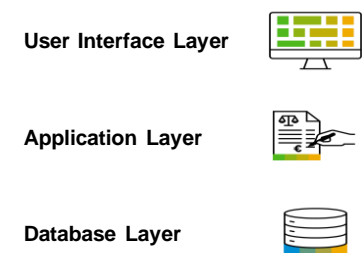
—Albert Einstein

# In-App Extensibility

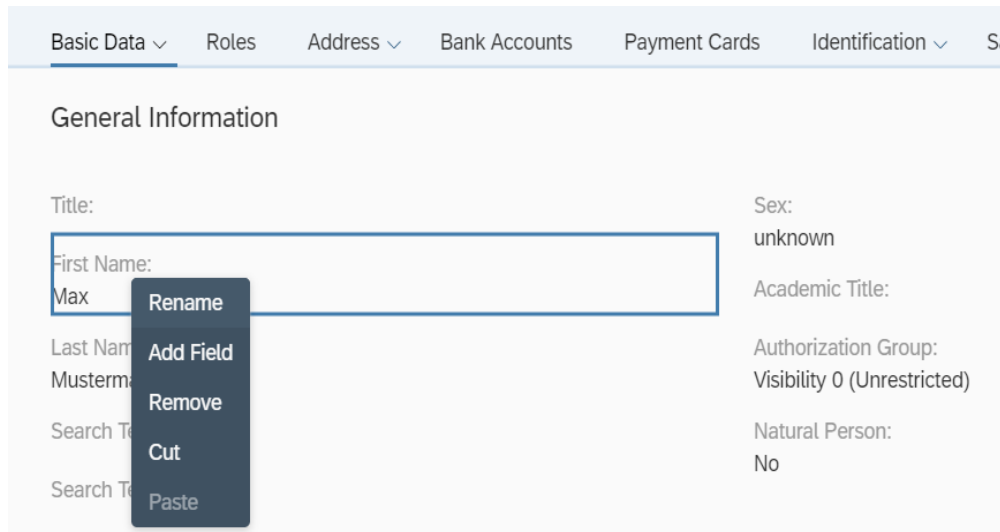
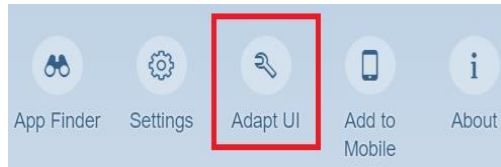


## In-App Extensibility; Enrich the core

- Variants of standard processes and business logic (for example, micro-vertical solutions, localization)
- Focus on company-owned business documents (for example, legal compliance)
- Analytics extensibility (for example, tailored operational reporting for minimized asset allocation)



# Adapt existing Fiori UI



- Change a standard UI to fit the desired usage in a specific business context
- Change the UI the following:
  - Hide fields in a form, table, or filter, hide groups and areas
  - Rename labels
  - Add field to UI from field repository
  - Move form field or UI group, create new groups and move fields into, combine fields into one line, split combined fields
  - Define new filter and table variants

# Custom Fields



New Field

Field Properties

\*Business Context: Procurement: Purchasing Document

\*Label: Category

\*Identifier: YY1\_ Category

\*Tooltip: Category

\*Type: Text

\*Length: 4

Business Context Capacity: 17%

YY1\_Classification

Procurement: Purchasing Document


Create Create and Edit Cancel

General Information UIs and Reports (34) Email Templates (0) Form Templates (5) Business Scenarios (2) OData APIs (1) SOAP APIs (2) BAPIs (0) IDocs (0)

- Create new fields in the application's business context
- Choose different data types (e.g. Number, Text, Associations to SAP Object) to fit the desired usage
- Use this app to create your own fields and enhancement implementations to customize applications and their UIs, reports, email templates, and form templates
- Make your field available in other languages

# Custom Data Source Extensions

Custom Fields and Logic

  
All

New Data Source Extension

\*Data Source:

\*Description:

\*Extension ID:

Create Cancel

Sales: Sales Quotation Form

General Information Field Selection

Available Fields

Field Path	Selected
▼ SalesQuotationItemNode	<input type="checkbox"/>
> SalesQuotation	<input type="checkbox"/>
SalesQuotationItem	<input type="checkbox"/>
> SalesQuotationItemCategory	<input type="checkbox"/>
SalesQuotationItemType	<input type="checkbox"/>
IsReturnsItem	<input type="checkbox"/>
CreatedByUser	<input type="checkbox"/>
CreationDate	<input type="checkbox"/>
CreationTime	<input type="checkbox"/>
LastChangeDate	<input type="checkbox"/>
> Division	<input type="checkbox"/>
Material	<input type="checkbox"/>
OriginallyRequestedMaterial	<input type="checkbox"/>
MaterialByCustomer	<input type="checkbox"/>
InternationalArticleNumber	<input type="checkbox"/>
Batch	<input type="checkbox"/>
ProductHierarchyNode	<input type="checkbox"/>
ProductCatalog	<input type="checkbox"/>
> MaterialSubstitutionReason	<input type="checkbox"/>
MaterialGroup	<input type="checkbox"/>

- Data source extensions enables users to add additional fields delivered with SAP Standard Objects
- Data Source Extensions provide read access to this standard fields

# Custom Logic

Custom Fields and Logic

All

New Enhancement Implementation

Business Context:

Procurement: Purchasing Document

\*BAdI Description:

Final Check in Purchase Order Before Saving

\*Implementation Description:

CUSTOM\_CHECK

Implementation ID:

YY1\_ CUSTOM\_CHECK

Create

Cancel

Available Fields

Filter

BAdI Documentation

Select Variant

purchaseorder:

Click to add value

purchaseorderitems:

Click to add value

purchaseorderschedulelines:

Click to add value

Draft Logic

Published Logic

1 Structure for messages

2 DATA: ls\_message LIKE LINE OF messages.

3

4 \* The example implementation shows how it is prevented that the purchasing group can be change

5 \* has been created

6

7 \* In create case no key for purchaseorder is stored in the database -> the check is not perform

8 IF purchaseorder-db-purchaseorder IS NOT INITIAL

1

2 DATA:

3

4 \* The ex

5 \* has be

6

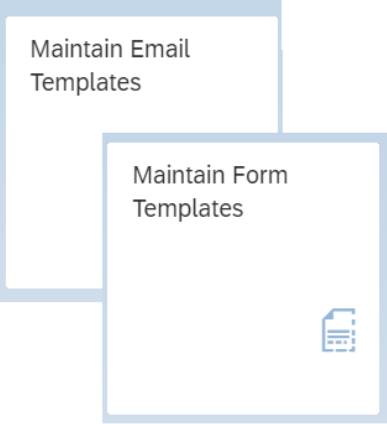
7 \* In cre

8 IF pur

- Extend your business processes
- Make use of restricted ABAP Code in Custom Logic
  - Not allowed: any DB operation except selects from released views, tweaking new tasks, dynamic programming, code generation
- Test draft code before publishing
- BAdI Documentation and sample code is provided

# Custom forms and email templates

## Creation



The diagram shows two overlapping boxes. The top box is labeled 'Maintain Email Templates' and the bottom box is labeled 'Maintain Form Templates'. The bottom box contains a document icon.

General Information   UIs and Reports (24)   **Email Templates (2)   Form Templates (9)**   Bu

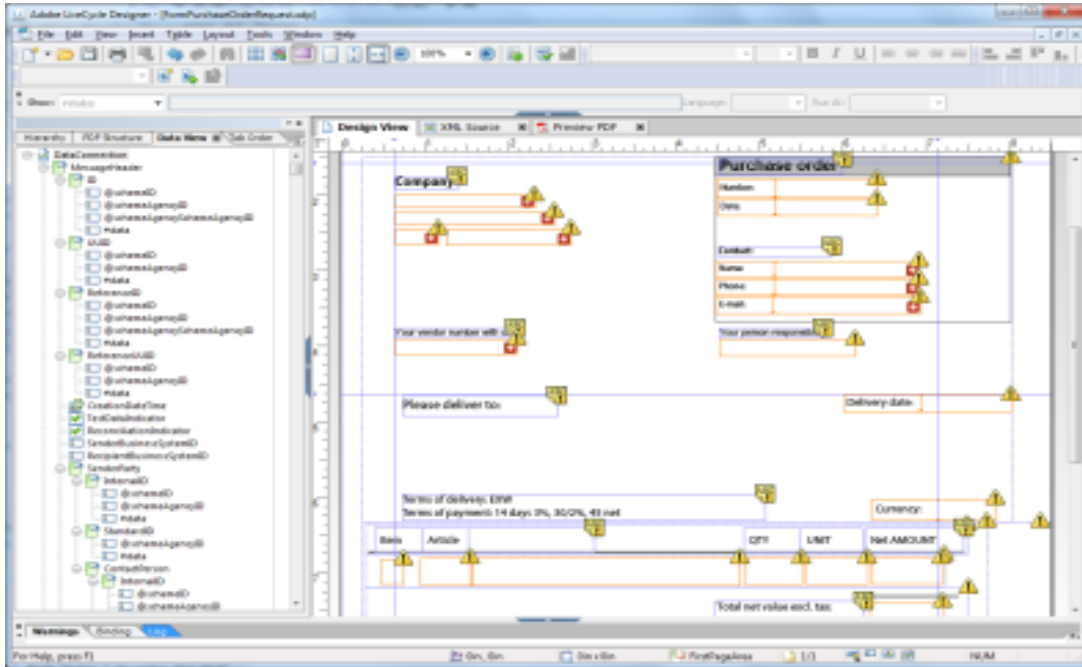
### Form Templates

Description	Field Usage
<a href="#">Credit Memo Request PDF Output</a>	Disabled <a href="#">Enable Usage</a>
<a href="#">Debit Memo Request PDF Output</a>	Disabled <a href="#">Enable Usage</a>
<a href="#">Sales Cash Sale PDF Output</a>	Disabled <a href="#">Enable Usage</a>
<a href="#">Sales Contract PDF Output</a>	Disabled <a href="#">Enable Usage</a>

- Create a new custom Email or Form template based on an existing data source
- Extend your form and email templates with new custom fields
- Reuse existing templates



## Adjust using the Adobe® LifeCycle™ Designer



- One-stop design tool for Form- and Email-templates
- Leveraging the SAP S/4HANA Cloud data sources (OData services and CDS Views)

# Custom Queries



New Query

Query Name:

YY1\_ accproj\_q

Data Source:

AQD\_COSTCENTERCOST\_REL






OK Cancel

## TSM Sales Order Item Query (undefined)

General >>> Field Selection >>> Display >>> Filters

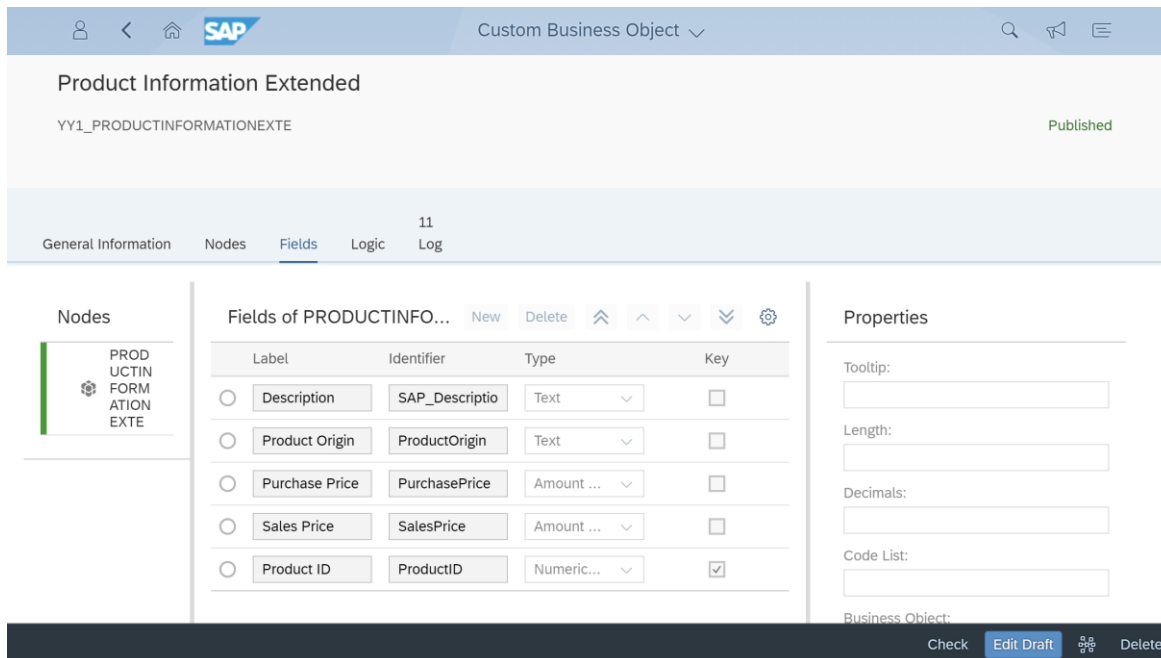
Available Fields (16)

Search Available Fields

Type	Label	Name	Selection
	GrossAmount	GrossAmount	<input checked="" type="checkbox"/>
	GrossAmountCurrency	GrossAmountCurrency	<input checked="" type="checkbox"/>
	Id	Id	<input checked="" type="checkbox"/>
	ItemNumber	ItemNumber	<input type="checkbox"/>
	OrderQuantity	OrderQuantity	<input checked="" type="checkbox"/>

- Search for a query
- Create a new query
- Add or remove custom fields in the new query
- Create Restricted Measures, Calculated Measures and User Input Filters
- Create Hierarchies
- Preview result sets after modifying the query
- Use custom CDS views as a data source
- Reuse pre-delivered queries

# Custom Business Object



The screenshot shows the SAP 'Custom Business Object' configuration page for 'Product Information Extended' (YY1\_PRODUCTINFORMATIONEXTE). The interface includes a top navigation bar with the SAP logo and a search bar. Below the title, the object is marked as 'Published'. A tabbed interface shows 'General Information', 'Nodes', 'Fields', 'Logic', and 'Log'. The 'Fields' tab is active, displaying a table of fields for 'PRODUCTINFO...'. The table has columns for Label, Identifier, Type, and Key. The 'Nodes' sidebar on the left shows a tree structure with 'PROD UCTIN FORM ATION EXTE'. The 'Properties' panel on the right contains fields for Tooltip, Length, Decimals, and Code List. At the bottom, there are buttons for 'Check', 'Edit Draft', and 'Delete'.

Label	Identifier	Type	Key
<input type="radio"/> Description	SAP_Descriptio	Text	<input type="checkbox"/>
<input type="radio"/> Product Origin	ProductOrigin	Text	<input type="checkbox"/>
<input type="radio"/> Purchase Price	PurchasePrice	Amount ...	<input type="checkbox"/>
<input type="radio"/> Sales Price	SalesPrice	Amount ...	<input type="checkbox"/>
<input type="radio"/> Product ID	ProductID	Numeric...	<input checked="" type="checkbox"/>

- Create your own business objects and thus the corresponding database table
- Generate Create and Update OData services for your custom business objects
- Implement custom logic in your custom business object
- Generate your own UI for your custom business object

# Custom Business Object

## Custom Code List



Release Status YY1\_RELEASESTATUS Edit Delete

GENERAL INFORMATION CODE VALUES TRANSLATION

Maximum Code Length: 1 Original Language: English

### CODE VALUES

New ⊕

Code	Description
1	Not Released
2	Released
3	Ready for Calculation
4	Calculated

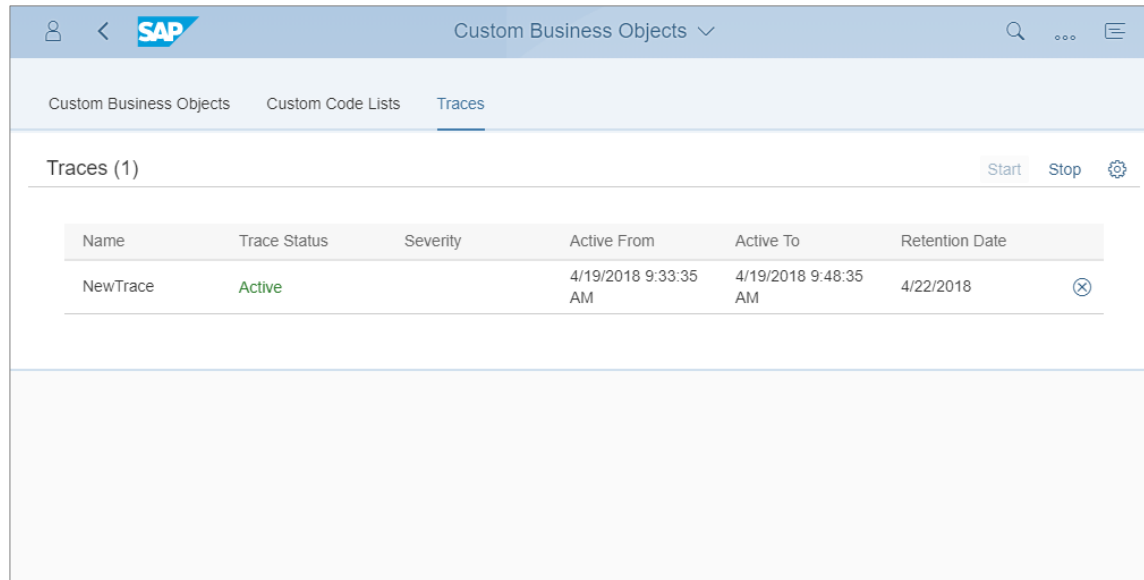
### TRANSLATION

Language ↩

New Delete

- You can reuse a code list in several custom business objects
- A code list consists of code values (example: enUS) and code value descriptions (example English (US))
- After a code list has been transported, you cannot modify or delete code values anymore
- Code values descriptions can be translated

# Custom Business Object Tracing



The screenshot shows the SAP Custom Business Objects Tracing interface. At the top, there is a navigation bar with the SAP logo and a dropdown menu for 'Custom Business Objects'. Below this, there are tabs for 'Custom Business Objects', 'Custom Code Lists', and 'Traces'. The 'Traces' tab is selected. Below the tabs, there is a section titled 'Traces (1)' with 'Start', 'Stop', and a settings icon. A table displays the trace information for a single trace named 'NewTrace'.

Name	Trace Status	Severity	Active From	Active To	Retention Date	
NewTrace	Active		4/19/2018 9:33:35 AM	4/19/2018 9:48:35 AM	4/22/2018	⊗

- Tracing can be used to see which determinations, validations and actions of which custom business object and nodes are being processed in which order.
- You can also trace values of the input, output and changing parameters of validations, determinations, actions and the duration of their execution

# Data privacy policy for Custom Fields and Custom Business Object

Custom fields and custom business objects cannot be marked as relevant for Data Protection & Privacy (DP&P) and cannot be blocked or deleted. Please don't store DP&P relevant content in custom fields or custom business objects

## Custom Fields:

<https://help.sap.com/viewer/f544846954f24b9183eddadcc41bdc3b/1805.500/en-US/57909455bf7c4fdd8bcf48d76c1eae33.html>

## Custom Business Object:

<https://help.sap.com/viewer/f544846954f24b9183eddadcc41bdc3b/1805.500/en-US/b45696ca0d9143cba040797e9c71aa44.html>

# Create a custom user interface in SAP S/4HANA Cloud

The screenshot shows the 'Deployment Options' step in the SAP S/4HANA Cloud deployment process. The breadcrumb trail at the top indicates the sequence: 'Deployment Options' (active), 'Choose Existing Application', 'Select a Transport Request', and 'Confirmation'. The main heading is 'Deploy to SAPUI5 ABAP Repository' with the subtitle 'Deployment Options'. A 'System \*' dropdown menu is set to 'SAP\_DEV\_SYSTEM'. Two radio buttons are present: 'Deploy a new application' (selected) and 'Update an existing application'. An information icon (i) is followed by a warning message: 'The SAPUI5 version of your application is lower than the SAPUI5 version of the selected SAP system. It is recommended to use the same version.' Below this, the versions are listed: 'Application: 1.48.10' and 'SAP system: 1.50.2'. At the bottom, there are 'Previous' and 'Next' buttons, with the 'Next' button highlighted by a red rectangle.

Deployment Options | Choose Existing Application | Select a Transport Request | Confirmation

## Deploy to SAPUI5 ABAP Repository

Deployment Options

System \*

☒ Deploy a new application  
☐ Update an existing application

**i** The SAPUI5 version of your application is lower than the SAPUI5 version of the selected SAP system. It is recommended to use the same version.  
Application: 1.48.10  
SAP system: 1.50.2

- Create your own custom user interface using SAP Web IDE service of the SAP Cloud Platform
- Deploy your UI back to the SAPUI5 ABAP Repository of SAP S/4HANA Cloud
- Step by step tutorial:  
<https://www.sap.com/developer/tutorials/abap-custom-ui-tile.html>

# Custom Core Data Services (CDS) views



New Custom CDS View  
Dependencies: None

General >> Field Selection >> Field Properties >> Parameters >> Filters

Name and Label  
\*Name: YY1\_CDS\_PRODUCT  
\*Label: New Custom CDS View

Select Scenario  
OData API: ☐  
Analytical: ☐ As | Cube

Status Information  
Status: Draft

Other View Properties  
Access Protection: Protected  
Source Origin: Custom CDS View

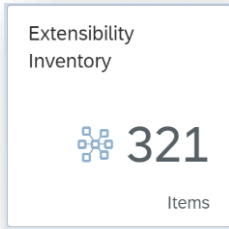
Data Source (1) [Add](#)

Name	Label	Alias	Contains Parameters	Actions
Primary Data Sources (1)				
> I_Product	Product active core entity	I_Product	<input type="checkbox"/>	<a href="#">66</a> <a href="#">@</a>
Associated Data Sources (0)				

- You can use CDS view to:
  - build new analytical cubes and queries
  - consume them in custom code extensions (“BAdIs”)
  - expose them as read OData service



# Extensibility Inventory Application

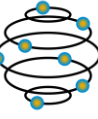


The screenshot shows the SAP Extensibility Inventory application interface. At the top, there's a header bar with the SAP logo and the title 'Extensibility Inventory'. Below this, there's a filter bar with various filters like 'Item Description', 'Last Changed On', 'Last Changed By', 'Deleted', and 'Software Collection'. The main area displays a table of items with columns for Name, Type, Last Changed On, and others. The table lists several items including Classification, Client Grouping, Comment, Comment\_s, Communication Scenario for YY1\_PRD\_SALES\_AREA\_43, Consultant, and Consulting Team.

Name	Type	Last Changed On	ly	Uses	Used By
<b>Classification</b> YY1_SOIA_BADI_BP_CLASSIFICA000	Custom Logic	11/30/2016, 07:51:28			
<b>Client Grouping</b> YY1_CLIENTGROUPING	Custom Field	04/04/2018, 13:27:19	CB9980001059		
<b>Comment</b> YY1_COMMENT	Custom Field	03/09/2017, 16:13:30	John Hunter		
<b>Comment_s</b> YY1_COMMENT_S	Custom Field	03/01/2018, 10:39:03	John Hunter		
<b>Communication Scenario for YY1_PRD_SALES_AREA_43</b> YY1_PRD_SALES_AREA_43	Custom Communication Scenario	04/11/2018, 17:16:06	John	1	
<b>Consultant</b> YY1_CONSULTANT	Custom Business Object	11/27/2017, 18:04:13	Werner Wolf	3	2
<b>Consulting Team</b> YY1_CONSULTINGTEAM	Custom Field	11/24/2017, 17:00:12	Werner Wolf	1	

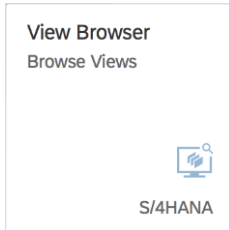
Open Extensibility Inventory History

- Display an overview of your extensibility items and view associations or dependencies between various extensibility items
- See how importing or exporting extensibility items affect other extensibility items



# View Browser

## One stop shop for CDS Views



SAP Main neuer Titel View Browser

1469 Views

Views (249) Standard

Favorite	Tags	Release Status	Name	Description	Application Component	Category	Type	Application ID	Matched In	View Status
<input type="checkbox"/>		No	A_SALESORDERITEM	Sales Order Item (API)	SD-SLS-SO		Composite		Columns:SALESORDERITEMTEXT,4 more	>
<input type="checkbox"/>		No	I_SALESORDERITEMTP	SalesOrder Item(TransactionProcessing)	SD-SLS-SO		Undefined		Columns:SALESORDERITEMTEXT,3 more	>
<input type="checkbox"/>		No	C_SALESORDERITEMTP	SalesOrder Item(TransactionProcessing)	SD-SLS-SO		Consumption		Columns:SALESORDER,3 more	>
<input checked="" type="checkbox"/>		No	C_SALESORDERITEMFS	Sales Order Item	SD-SLS-SO		Consumption		Columns:SALESORDERITEMCATEGORY,3 more	>
<input type="checkbox"/>		No	A_SALESORDERWITHOUTCHARGEITEM	Sales Order Without Charge Item (API)	SD-SLS-SO		Composite		Columns:SALESORDERWITHOUTCHARGEITEM,3 more	>
<input type="checkbox"/>		No	I_SALESORDERTP	Sales Order (Transactional Processing)	SD-SLS-SO		Undefined		Columns:SALESORDER,2 more	>
<input type="checkbox"/>		No	C_SALESORDERIW_F3373	Sales Orders	SD-SLS-SO		Consumption		Columns:SALESORDER,2 more	>
<input type="checkbox"/>		No	C_SALESORDERWITHOUTCHARGEFS	Sales Order without Charge	SD-SLS-SO		Consumption		Columns:SALESORDERWITHOUTCHARGE,2 more	>
<input type="checkbox"/>		No	C_SALESORDERFS	Sales Order	SD-SLS-SO		Consumption		Columns:SALESORDER,2 more	>
<input type="checkbox"/>		No	A_SALESORDERWITHOUTCHARGE	Sales Order Without Charge (API)	SD-SLS-SO		Composite		Columns:SALESORDERWITHOUTCHARGE,2 more	>
<input type="checkbox"/>		No	A_SALESORDERSCHEDEULELINE	Sales Order Schedule Line (API)	SD-SLS-SO		Composite		Columns:SALESORDER,2 more	>
<input type="checkbox"/>		No	A_SALESORDERITEMTEXT	Sales Order Item Text (API)	SD-SLS-SO		Composite		Columns:SALESORDER,2 more	>
<input type="checkbox"/>		No	A_SALESORDERITEMPRELEMENT	Sales Order Item Pricing Element (API)	SD-SLS-SO		Composite		Columns:SALESORDERITEM,2 more	>
<input type="checkbox"/>		No	A_SALESORDERITEMPARTNER	Sales Order Item Partner (API)	SD-SLS-SO		Composite		Columns:SALESORDER,2 more	>
<input type="checkbox"/>		No	A_SALESORDER	Sales Order (API)	SD-SLS-SO		Composite		Columns:SALESORDER,2 more	>
<input type="checkbox"/>		No	C_SALESORDERTP	Sales Orders	SD-SLS-SO		Consumption		Columns:SALESORDER,1 more	>
<input type="checkbox"/>		No	C_SALESORDERSCHEDEULELINE	Schedule Lines of Sales Order Item Factsheet	SD-SLS-SO		Consumption		Columns:SALESORDERITEM,1 more	>
<input type="checkbox"/>		No	A_SALESORDERTEXT	Sales Order Text (API)	SD-SLS-SO		Composite		Columns:SALESORDER,1 more	>
<input type="checkbox"/>		No	A_SALESORDERHEADERPRELEMENT	Sales Order Header Pricing Element (API)	SD-SLS-SO		Composite		Columns:SALESORDER,1 more	>
<input type="checkbox"/>		No	A_SALESORDERHEADERPARTNER	Sales Order Header Partner (API)	SD-SLS-SO		Composite		Columns:SALESORDER,1 more	>

More  
[ 20 / 249 ]

- Displays Core Data Services (CDS) views
- Search for views, view types, tables and fields
- Accessible with business role:  
SAP\_BR\_ANALYTICS\_SPECIALIST

# Supporting Extensibility tools SAP S/4HANA Cloud

## SAP Extensibility Explorer

Get a comprehensive overview about all extension options around SAP S/4HANA Cloud (In-App and Side-by-Side Extensibility)

## View Browser

Search and display analytical and non-analytical queries



## Extensibility Cockpit

Overview about all extension objects of a business context in SAP S/4HANA Cloud



## Roles & Authorization

Access to extension objects can be restricted



## Extensibility Inventory

You can display an overview of your extensibility items and view associations or dependencies between various extensibility items



## Transportation & Lifecycle Management

Export and Import Software Collection are the apps used for transport management of extended objects.



# Thank you.