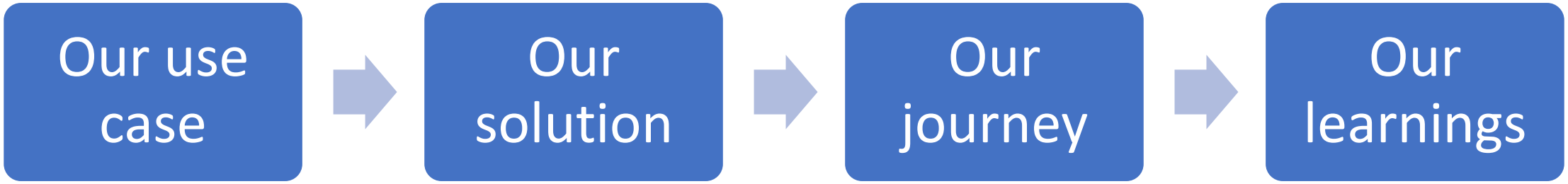
Full steam ahead: e-invoicing with CDS, RAP and Fiori Elements – progress or just hot air?

Agenda



Frank Engert
CEO

Chief Enthusiasm Officer for ABAP

Our use case

Global e-invoicing

E-invoicing challenge I - data format

```
<cbc:NumeroFattura>Fattura-2025-001</cbc:NumeroFattura>
<cbc:DataEmissione>2025-03-07</cbc:DataEmissione>
<cbc:CodiceTipoFattura>380</cbc:CodiceTipoFattura>
```

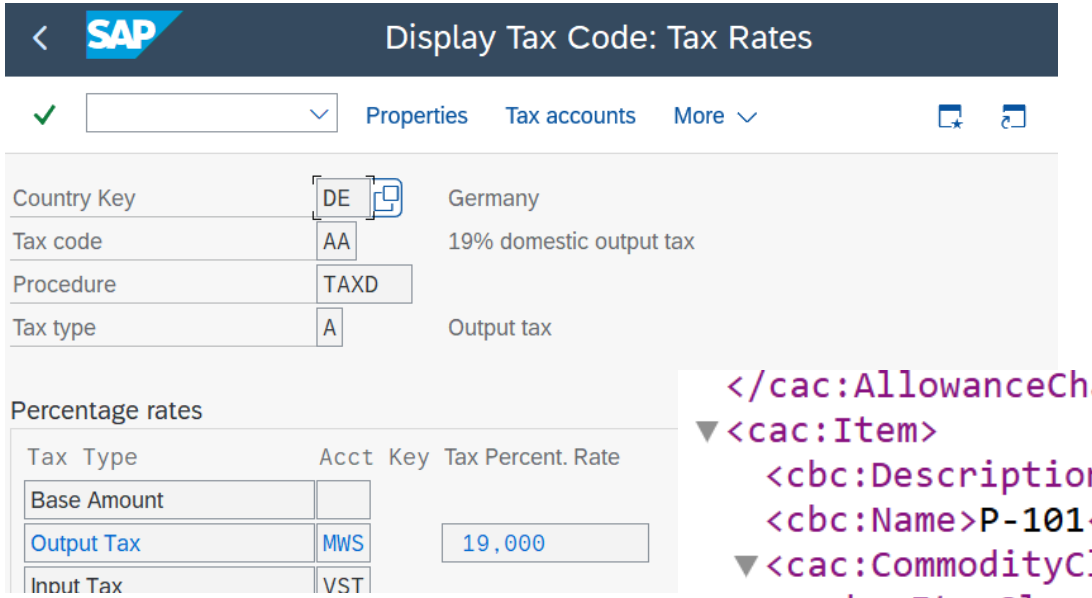
```
<cbc:NumerFaktury>Faktura-2025-001</cbc:NumerFaktury>
<cbc:DataWystawienia>2025-03-07</cbc:DataWystawienia>
<cbc:KodTypuFaktury>380</cbc:KodTypuFaktury>
```

```
<cbc:InvoiceNumber>Facture-2025-001</cbc:InvoiceNumber>
<cbc:IssueDate>2025-03-07</cbc:IssueDate>
<cbc:InvoiceTypeCode>380</cbc:InvoiceTypeCode>
```

E-invoicing challenge II – transmission channels

- **E-Mail**
  - Germany
- **PEPPOL**
  - Germany
  - Belgium
- **Webservice-API**
  - Poland: KSeF (Krajowy System e-Faktur)
  - Italy SDI (Sistema di Interscambio)

E-invoicing challenge III –SAP value mapping




```
</cac:AllowanceCharge>
▼<cac:Item>
  <cbc:Description>Pumpe PRECISION 101</cbc:Description>
  <cbc:Name>P-101</cbc:Name>
 ▼<cac:CommodityClassification>
    <cbc:ItemClassificationCode listID="BM" listVersionID="">KLEINE PUMPE</
  </cac:CommodityClassification>
 ▼<cac:ClassifiedTaxCategory>
    <cbc:ID>S</cbc:ID>
    <cbc:Percent>19.000</cbc:Percent>
   ▼<cac:TaxScheme>
      <cbc:ID>VAT</cbc:ID>
    </cac:TaxScheme>
  </cac:ClassifiedTaxCategory>
</cac:Item>
▼<cac:Price>
  <cbc:PriceAmount currencyID="EUR">6579.66</cbc:PriceAmount>
```

Our solution

Global E-Invoice Cloud
- multitenant SaaS offering
on SAP BTP ABAP Environment

Faktura anlegen

Bearb.Fakturavorrat | Übersicht Fakt. | Positionsauswahl | Abbrechen | Beenden

Vorgabedaten

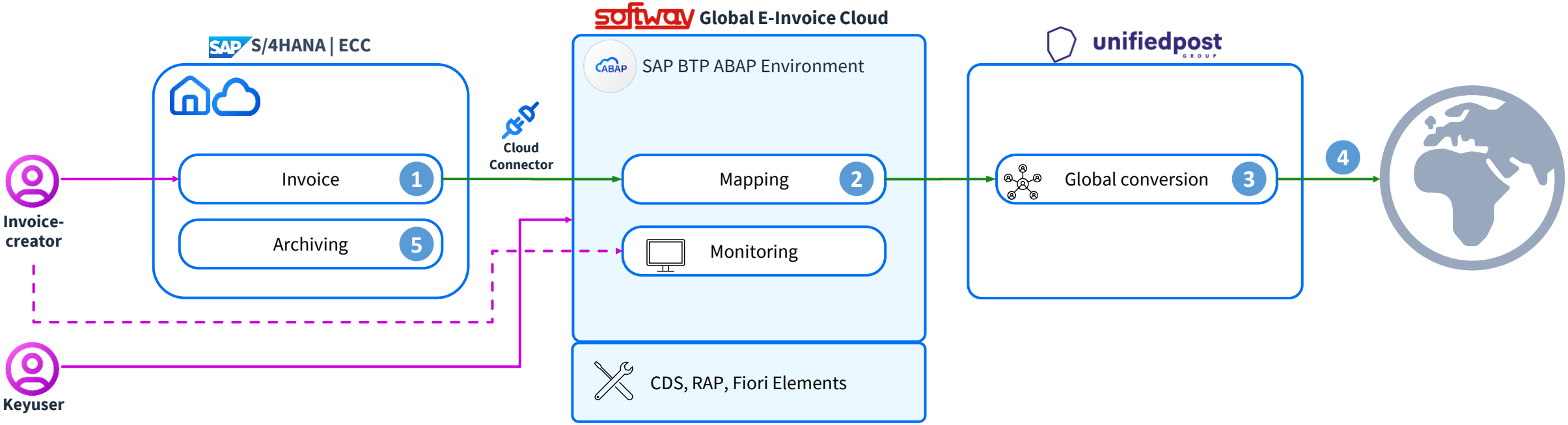
Fakturaart		LeistErstDat	
Fakturadatum		Preisdatum	

Zu verarbeitende Belege

Beleg	Pos.	Vertriebsbelegtyp	Bearbeitungsstatus	Fa...
80017225				

Country: Italy

Architecture



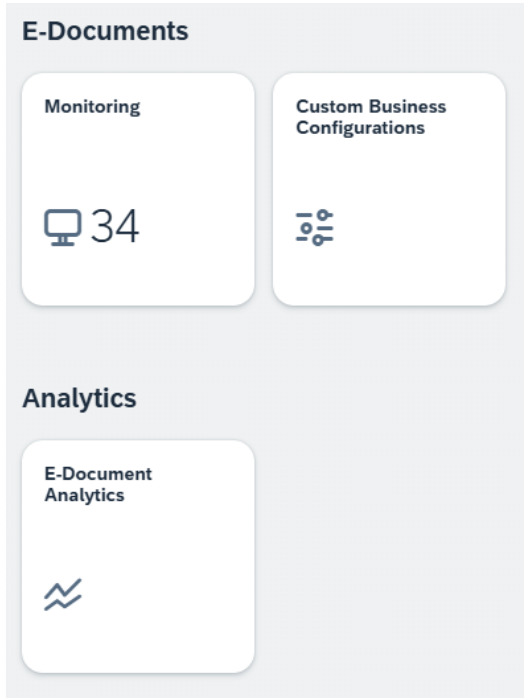
1. Invoice is created and submitted to the Softway Global E-Invoice Cloud
2. Invoice is received, mapping is carried out and transmitted to unifiedpost
3. Invoice is converted into the respective country-specific format (e.g. XRechnung, ZUGFeRD)
4. Invoice is transmitted to the invoice recipient as an XML file via the defined transmission path (e.g. e-mail, Peppol)
5. Invoice is sent as XML file | ZUGFeRD PDF archived in country-specific format on SAP invoice

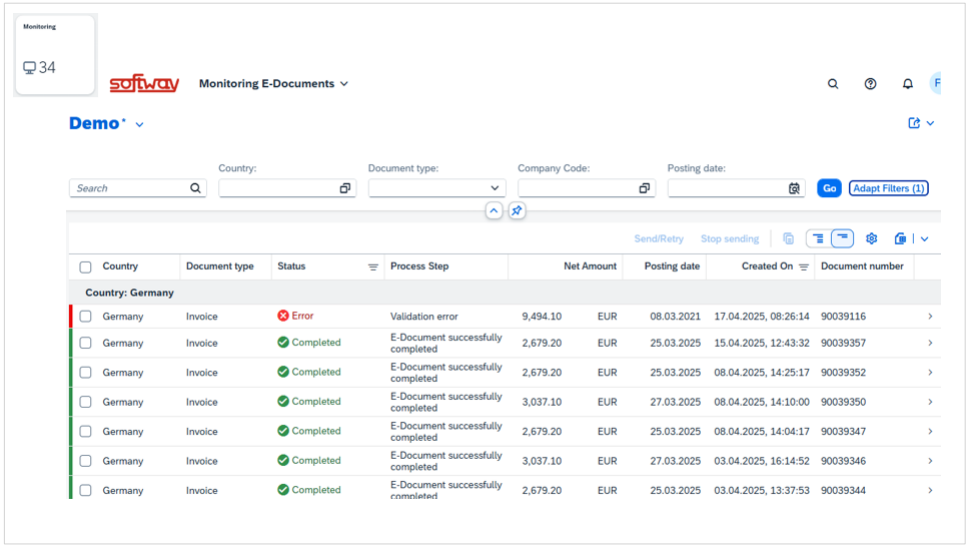
Invoice-creator

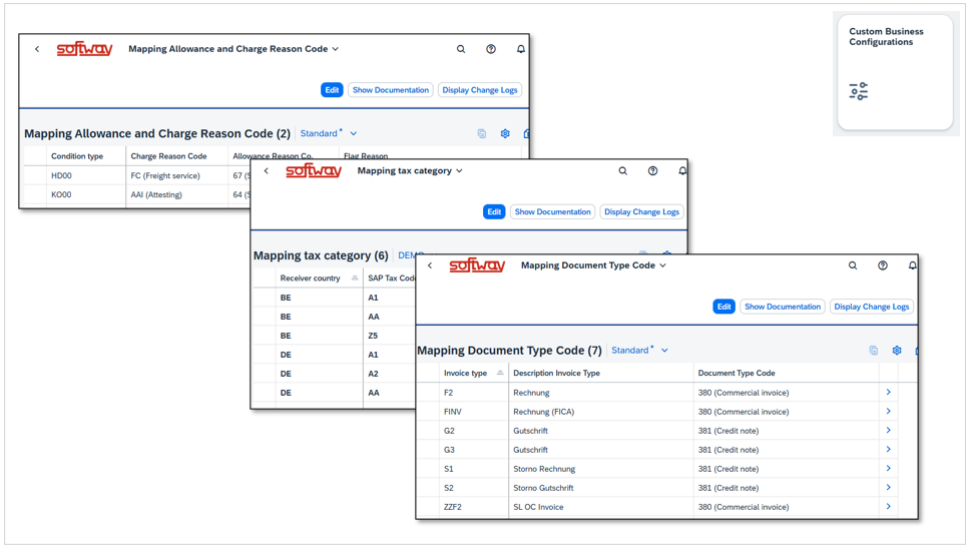
Creates invoices in the SAP system, can track his invoices in monitoring.

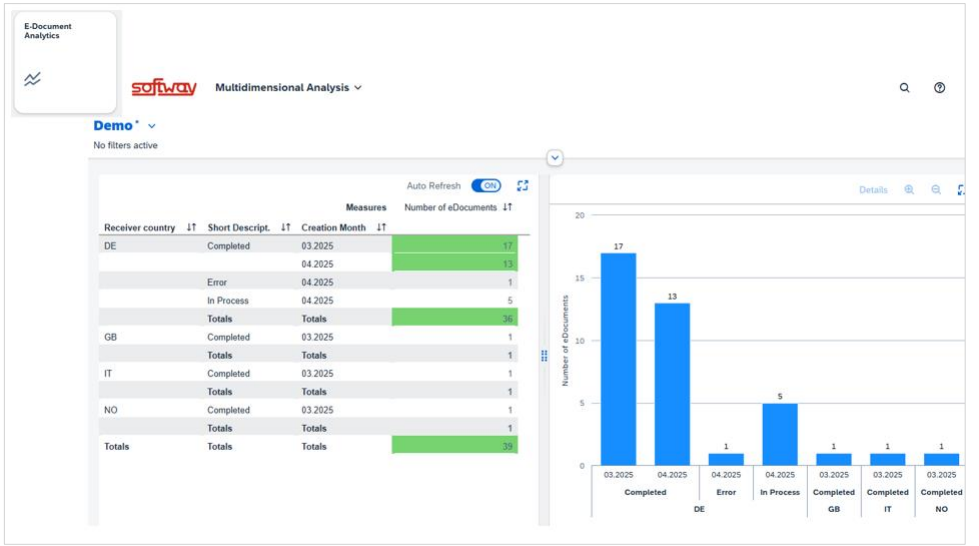
Keyuser

Has extensive permissions to track all invoices in monitoring. Can also clean up mapping errors, use dashboards, and make other settings such as email notifications.


E-Documents
Monitoring
34
Custom Business Configurations
Analytics
E-Document Analytics


Monitoring
34
Monitoring E-Documents
Demo
Country:
Document type:
Company Code:
Posting date:
Search
Go
Adapt Filters (1)
Send/Retry
Stop sending
Country
Document type
Status
Process Step
Net Amount
Posting date
Created On
Document number
Country: Germany
Germany Invoice Error Validation error 9,494.10 EUR 08.03.2021 17.04.2025, 08:26:14 90039116
Germany Invoice Completed E-Document successfully completed 2,679.20 EUR 25.03.2025 15.04.2025, 12:43:32 90039357
Germany Invoice Completed E-Document successfully completed 2,679.20 EUR 25.03.2025 08.04.2025, 14:25:17 90039352
Germany Invoice Completed E-Document successfully completed 3,037.10 EUR 27.03.2025 08.04.2025, 14:10:00 90039350
Germany Invoice Completed E-Document successfully completed 2,679.20 EUR 25.03.2025 08.04.2025, 14:04:17 90039347
Germany Invoice Completed E-Document successfully completed 3,037.10 EUR 27.03.2025 03.04.2025, 16:14:52 90039346
Germany Invoice Completed E-Document successfully completed 2,679.20 EUR 25.03.2025 03.04.2025, 13:37:53 90039344


Custom Business Configurations
Mapping Allowance and Charge Reason Code
Edit
Show Documentation
Display Change Logs
Mapping Allowance and Charge Reason Code (2)
Condition type
Charge Reason Code
HD00 FC (Freight service)
K000 AAI (Attesting)
Mapping tax category
Mapping tax category (6)
Receiver country
BE A1
BE AA
BE Z5
DE A1
DE A2
DE AA
Mapping Document Type Code
Mapping Document Type Code (7)
Invoice type
Description Invoice Type
Document Type Code
F2 Rechnung 380 (Commercial invoice)
FINV Rechnung (FICA) 380 (Commercial invoice)
G2 Gutschrift 381 (Credit note)
G3 Gutschrift 381 (Credit note)
S1 Storno Rechnung 381 (Credit note)
S2 Storno Gutschrift 381 (Credit note)
ZZF2 SL OC Invoice 380 (Commercial invoice)


E-Document Analytics
Multidimensional Analysis
Demo
No filters active
Auto Refresh
ON
Measures
Number of eDocuments
Receiver country
Short Descript.
Creation Month
DE Completed 03.2025 17
04.2025 13
Error 04.2025 1
In Process 04.2025 5
Totals Totals 36
GB Completed 03.2025 1
Totals Totals 1
IT Completed 03.2025 1
Totals Totals 1
NO Completed 03.2025 1
Totals Totals 1
Totals Totals Totals 39
Details
Number of eDocuments
20
15
10
5
0
17
13
1
5
1
1
1
03.2025 Completed DE
04.2025 Completed DE
04.2025 Error DE
04.2025 In Process DE
03.2025 Completed GB
03.2025 Completed IT
03.2025 Completed NO

Monitoring

34

Monitoring E-Documents

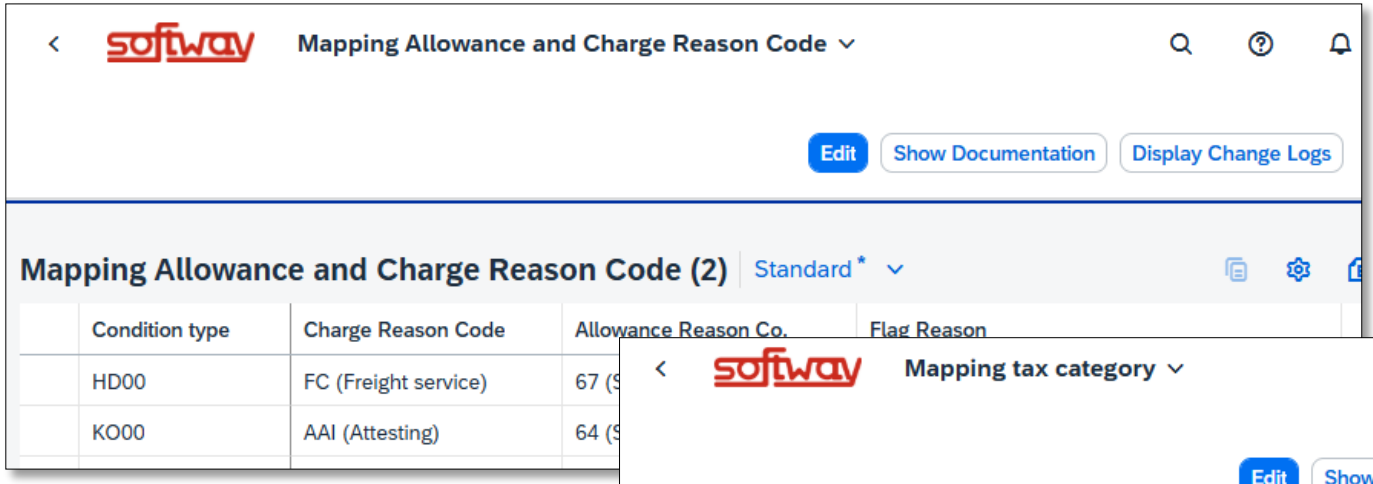
Demo*

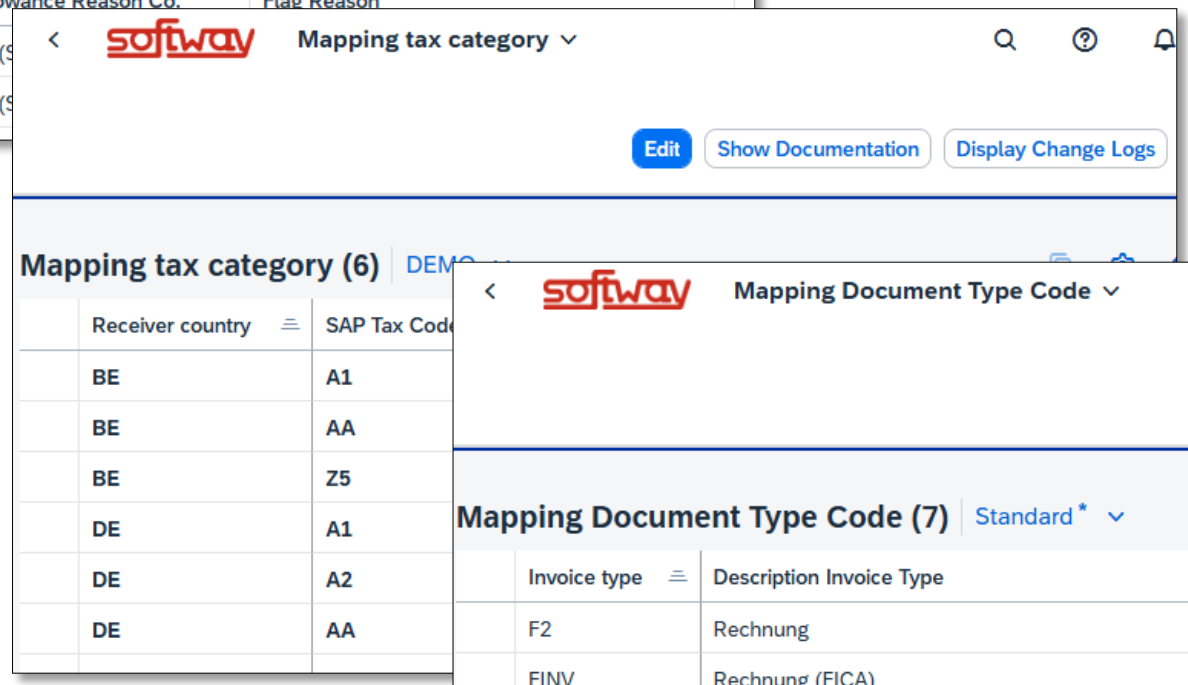
Search | Country: | Document type: | Company Code: | Posting date: | Go | Adapt Filters (1)

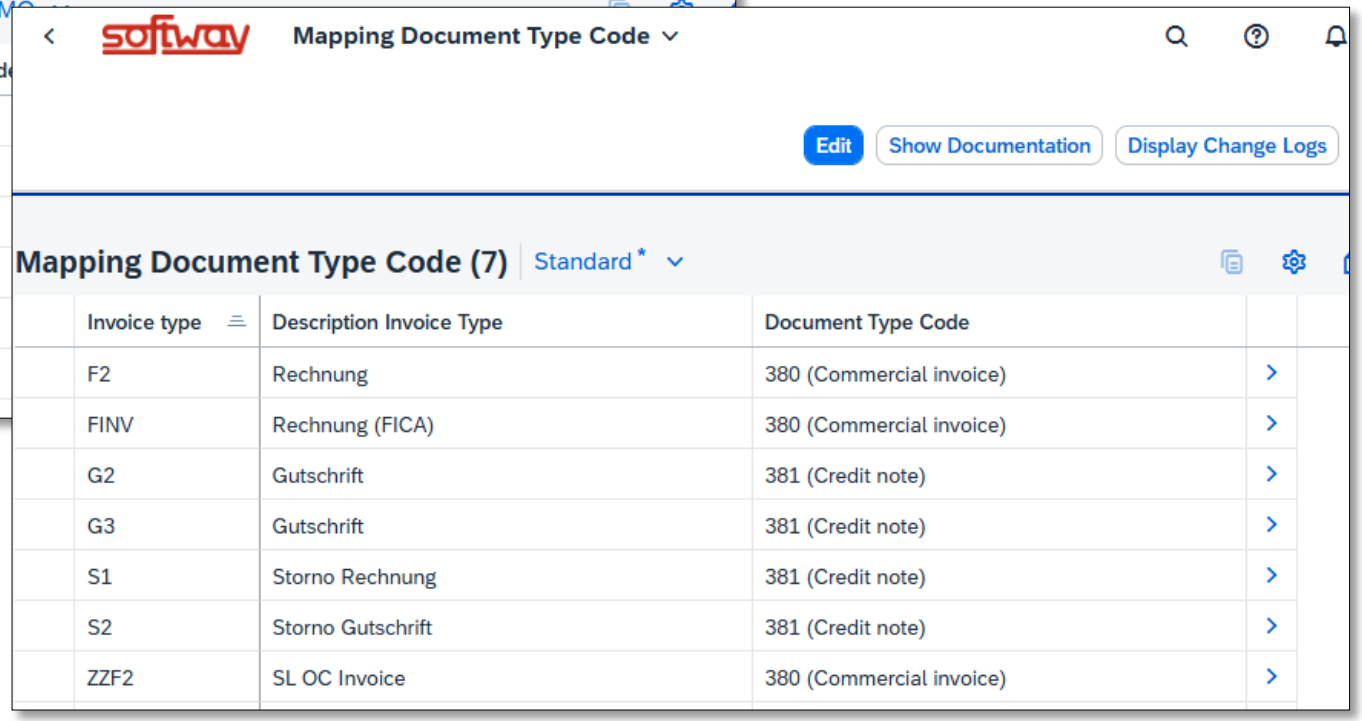
Send/Retry | Stop sending

Country	Document type	Status	Process Step	Net Amount		Posting date	Created On	Document number
Country: Germany								
Germany	Invoice	Error	Validation error	9,494.10	EUR	08.03.2021	17.04.2025, 08:26:14	90039116
Germany	Invoice	Completed	E-Document successfully completed	2,679.20	EUR	25.03.2025	15.04.2025, 12:43:32	90039357
Germany	Invoice	Completed	E-Document successfully completed	2,679.20	EUR	25.03.2025	08.04.2025, 14:25:17	90039352
Germany	Invoice	Completed	E-Document successfully completed	3,037.10	EUR	27.03.2025	08.04.2025, 14:10:00	90039350
Germany	Invoice	Completed	E-Document successfully completed	2,679.20	EUR	25.03.2025	08.04.2025, 14:04:17	90039347
Germany	Invoice	Completed	E-Document successfully completed	3,037.10	EUR	27.03.2025	03.04.2025, 16:14:52	90039346
Germany	Invoice	Completed	E-Document successfully completed	2,679.20	EUR	25.03.2025	03.04.2025, 13:37:53	90039344

Custom Business Configurations







E-Document Analytics

softway Multidimensional Analysis

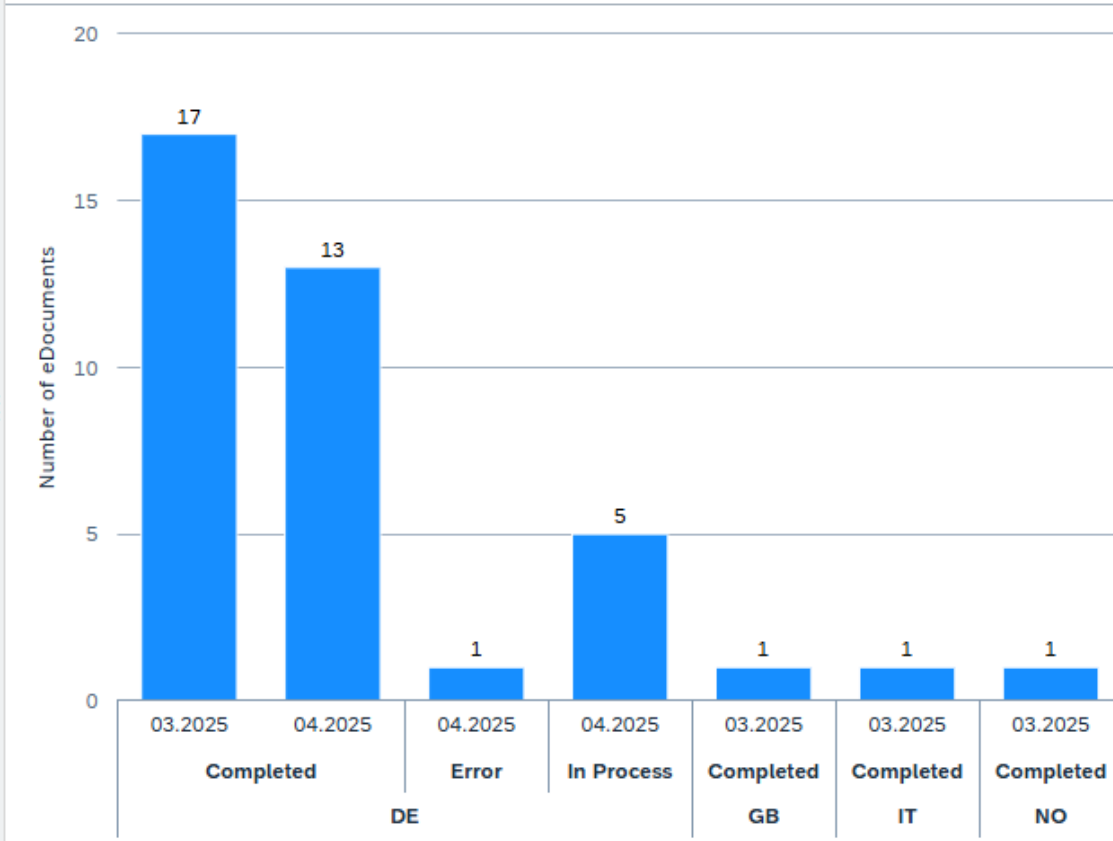
Demo*

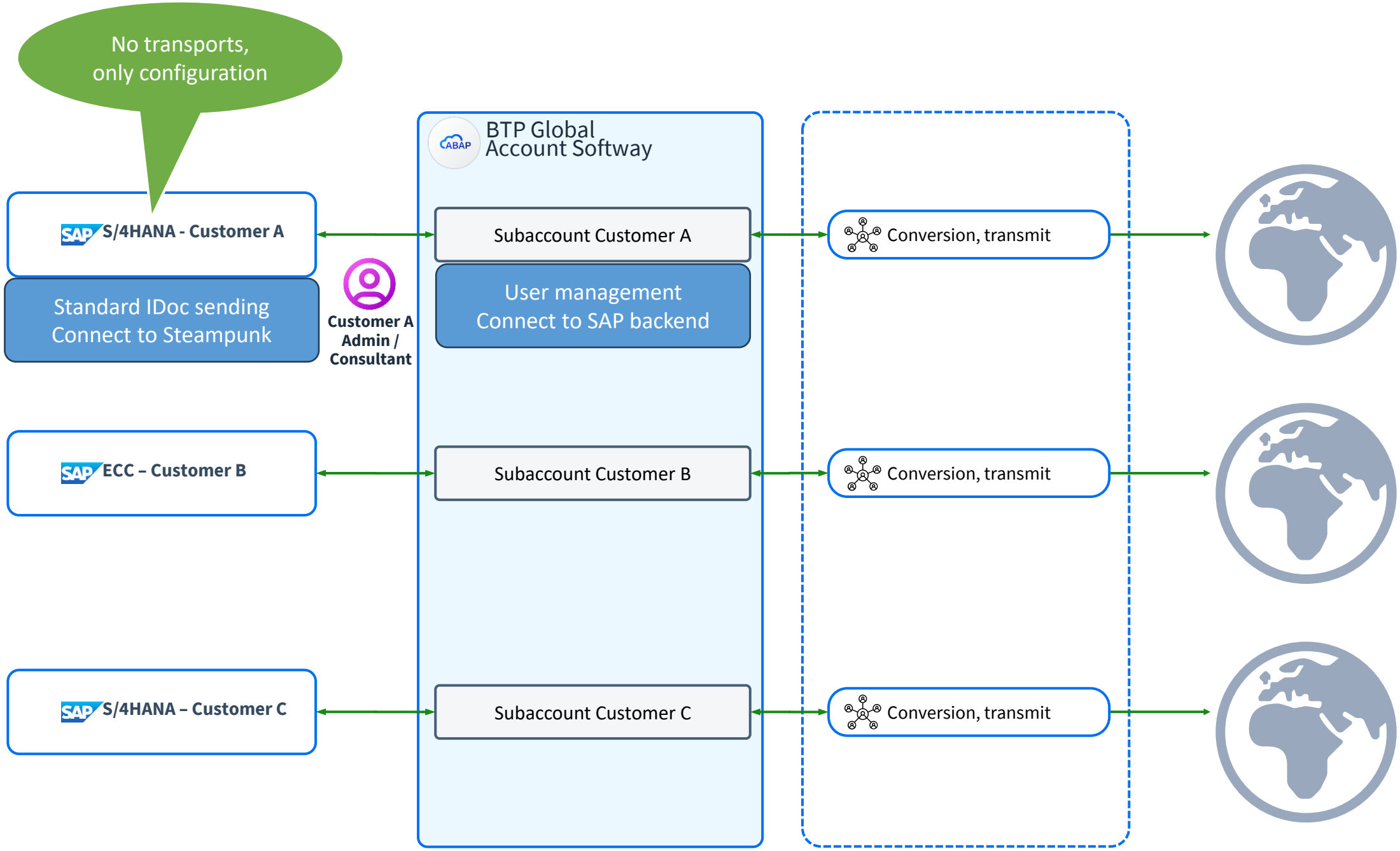
No filters active

Auto Refresh ON

			Measures	Number of eDocuments
Receiver country	Short Descript.	Creation Month		
DE	Completed	03.2025		17
		04.2025		13
	Error	04.2025		1
	In Process	04.2025		5
	Totals	**Totals**		36
GB	Completed	03.2025		1
	Totals	**Totals**		1
IT	Completed	03.2025		1
	Totals	**Totals**		1
NO	Completed	03.2025		1
	Totals	**Totals**		1
Totals	**Totals**	**Totals**		39

Details




No transports,
only configuration
BTP Global
Account Softway
S/4HANA - Customer A
Standard IDoc sending
Connect to Steampunk
Customer A
Admin /
Consultant
Subaccount Customer A
User management
Connect to SAP backend
Conversion, transmit
ECC – Customer B
Subaccount Customer B
Conversion, transmit
S/4HANA – Customer C
Subaccount Customer C
Conversion, transmit

Our journey

Step back ~ 2 years

Approach

Get up to date about technology

ABAPConf

@abapconf · 3390 Abonnenten · 129 Videos

This is the video channel for the ABAPConf live transmission for the sessions. Here you c ...mehr

abapconf.org und 4 weitere Links

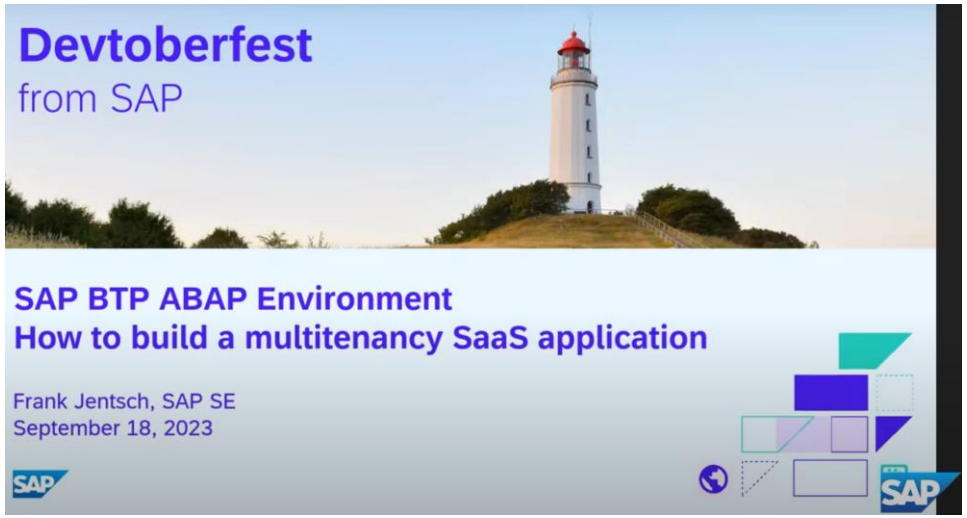
Abonnieren

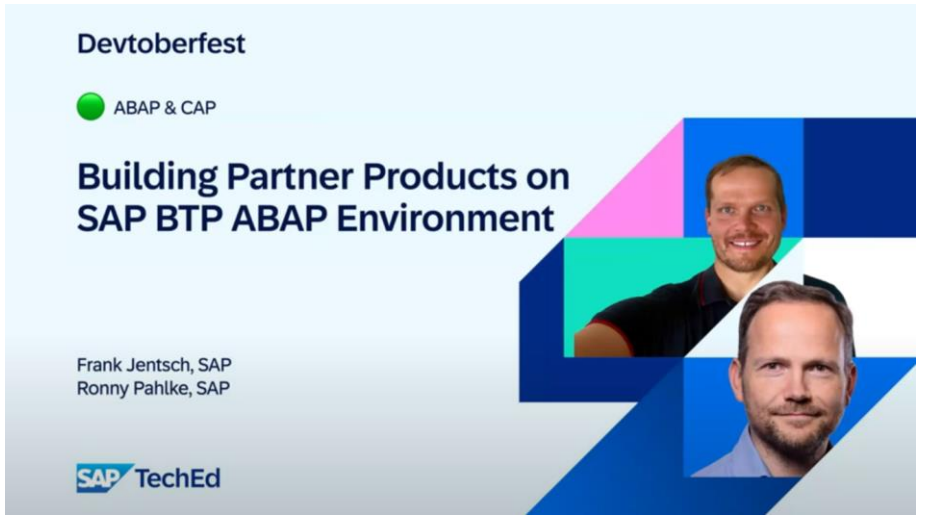
Übersicht Videos Live Playlists

ABAPConf

912 Aufrufe • vor 6 Monaten

Our ABAPConf teaser video





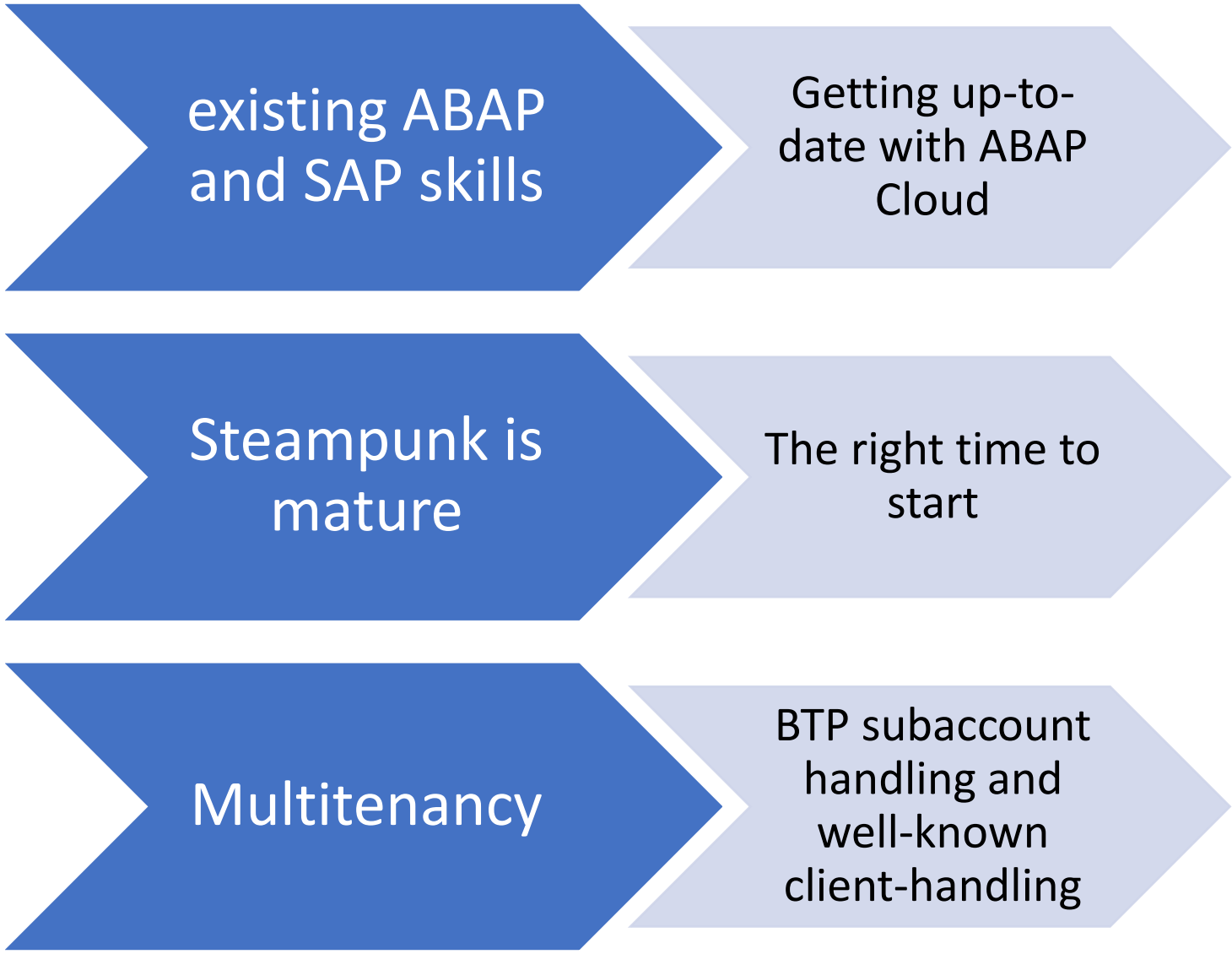
Proof of Concept I

Free Tier Option

Decision

Why Steampunk?

3 main reasons



Upskilling

Enter new (ABAP) world

Building a Learning Journey

Get a skill overview	Build and Execute customized Workshops	Training on the Job
• Common problems • Insufficient skills in new technologies • Different personalities	• Talking about the target • Scheduling Trainings dependent on skill level • Thinking about grouping people with different “daily doings” together	• 1:1 Support • Help make the right architectural decisions • Solving Tasks and Problems together

Schulung:
ABAP RESTful Application
Programming Model (RAP)
Einführung RAP
SUPERDRY
Brandeis
Consulting

Proof of Concept II

To deepen understanding

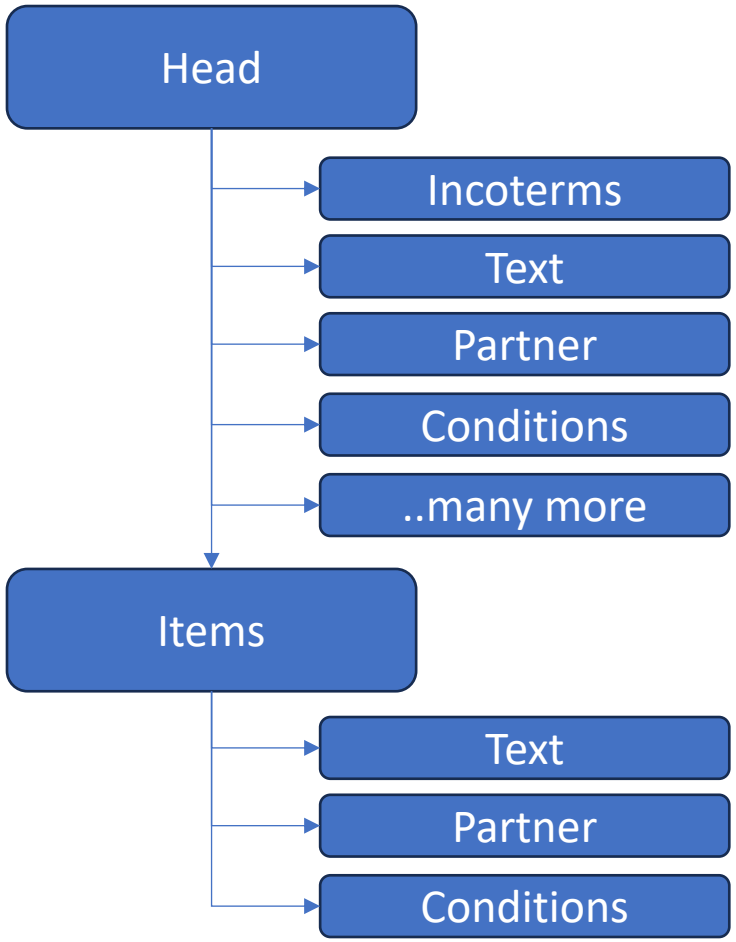
softway

Development

Getting things done

Developing the RAP Object

- How complex can an Invoice-Object become?
- Let‘s start:

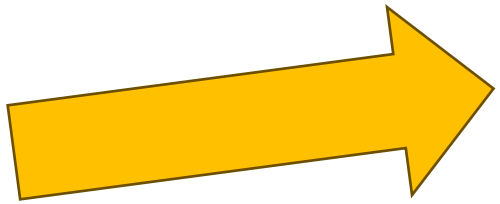


In Total:

- 26 Tables!
- 26 Base-Views
- 26 Consumption-Views
- 26 Interface-Views
- 26 Draft Tables
- 3 Behavior Definitions
- 26 Implementation Classes!

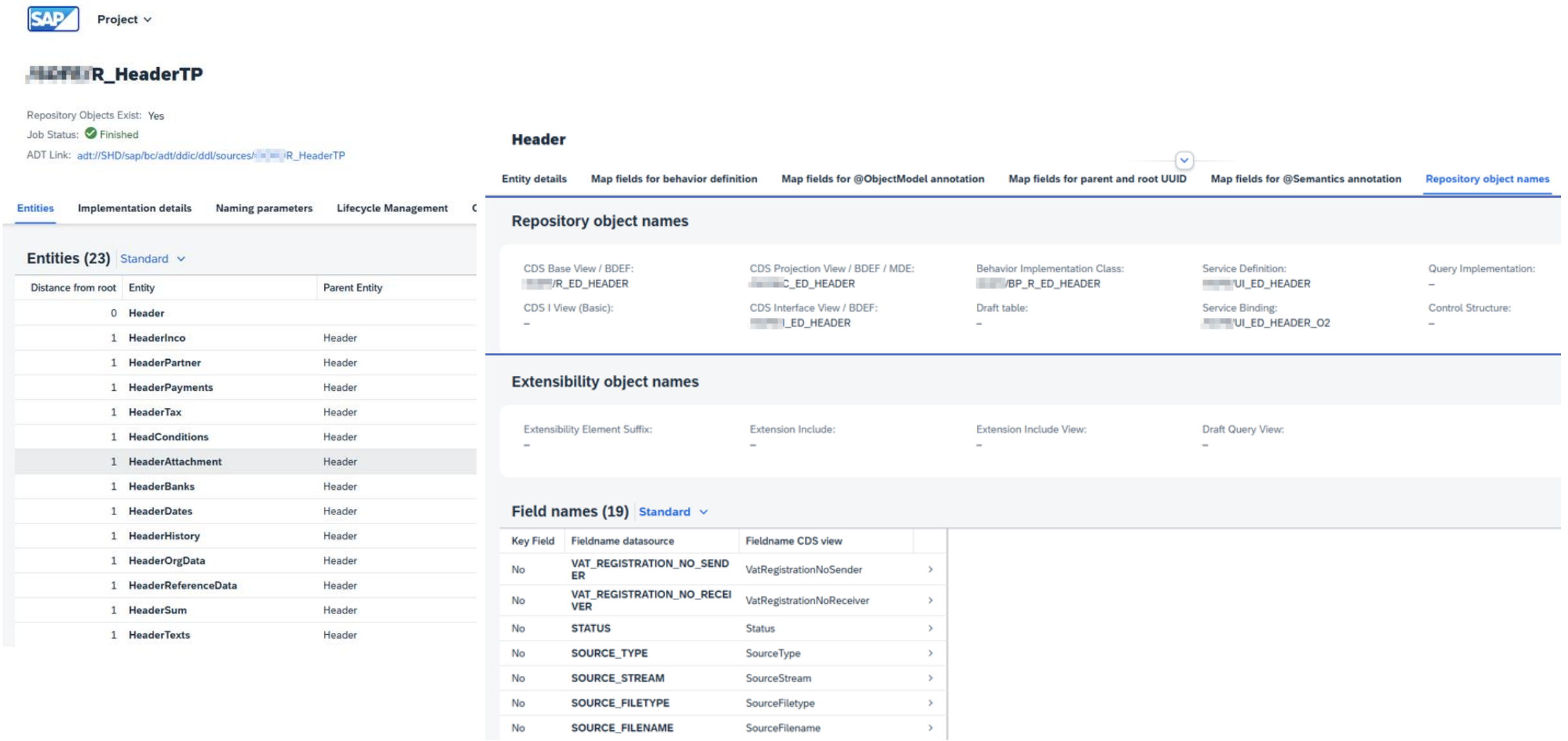
RAP Generator

- We use the right one ☺



- Alternatives:
  - Do it manually
  - The ADT Build in Version
  - The AI Based Version

RAP Generator (2)



RAP Generator (3)

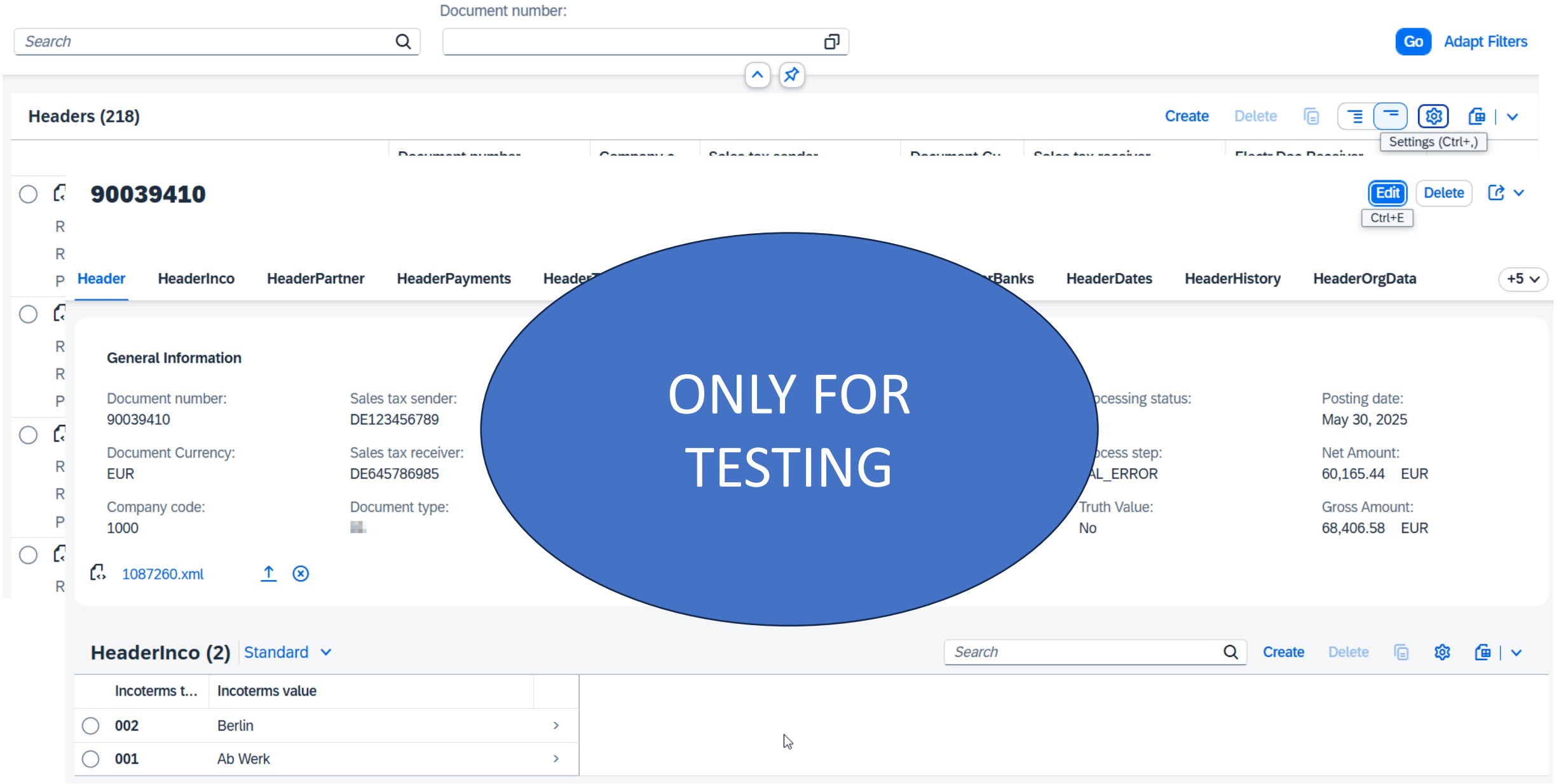
» Pro-Tipp: Play around with simple Use-Cases before using in Real-Life Projects!

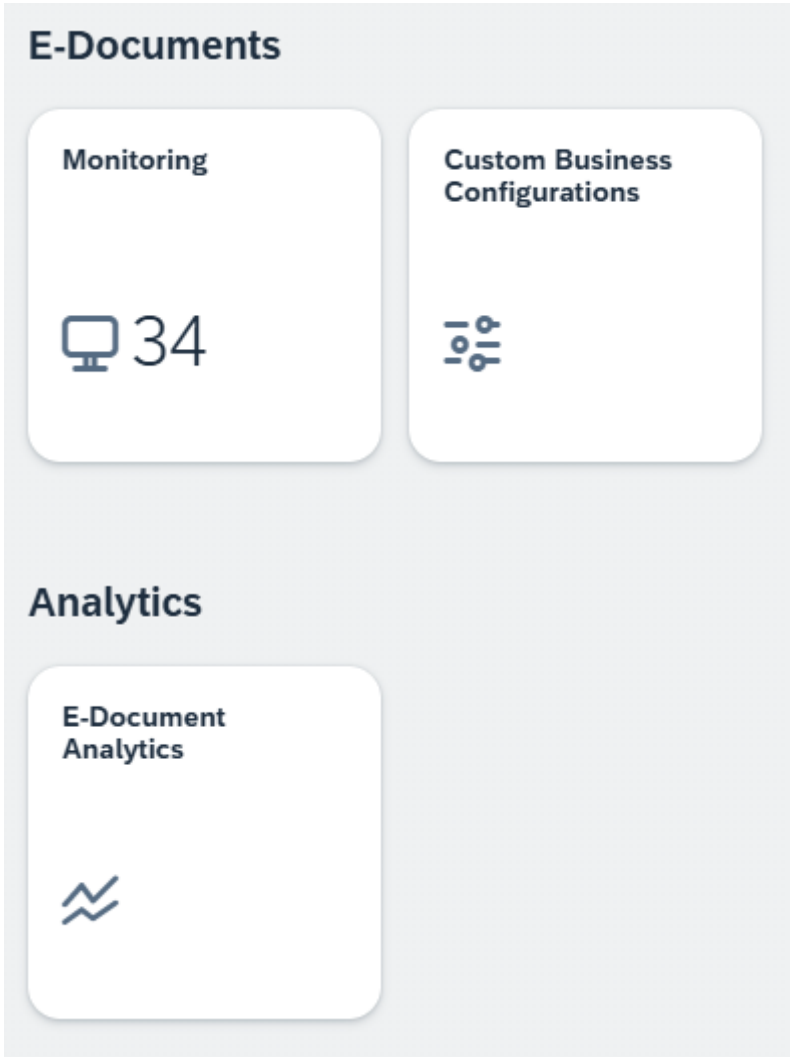
Standard *

No filters active

Projects (6)

RAP BO Name	Root Entity Name	Implementation_Key Type	Repository objects exist	DataSourceType
R_Header04TP	Header	managed_uuid	Yes	table
R_Header03TP	Header	managed_uuid	No	table
R_Header02TP	Header	managed_uuid	Yes	table
R_Header02TP	Header	managed_uuid	No	table
R_Header01TP	Header	managed_uuid	No	table
R_HeaderTP	Header	managed_uuid	No	table


Document number:
Search
Go
Adapt Filters
Headers (218)
Create
Delete
Settings (Ctrl+,)
90039410
Edit
Delete
Ctrl+E
Header
HeaderInco
HeaderPartner
HeaderPayments
HeaderDates
HeaderHistory
HeaderOrgData
+5
General Information
Document number:
90039410
Sales tax sender:
DE123456789
Posting date:
May 30, 2025
Document Currency:
EUR
Sales tax receiver:
DE645786985
Net Amount:
60,165.44 EUR
Company code:
1000
Document type:
Truth Value:
No
Gross Amount:
68,406.58 EUR
1087260.xml
ONLY FOR TESTING
HeaderInco (2)
Standard
Search
Create
Delete
Incoterms t...
Incoterms value
002
Berlin
001
Ab Werk


E-Documents
Monitoring
34
Custom Business Configurations
Analytics
E-Document Analytics

Invoice

90039116

Send/Retry | Stop sending

General Information | History | Protocol | Attachment

Document number: 90039116

Status: Validation error

Recipient: Becker Stuttgart

Created On: 17.04.2025, 08:26:14

Document type: Invoice

Posting date: 08.03.2021

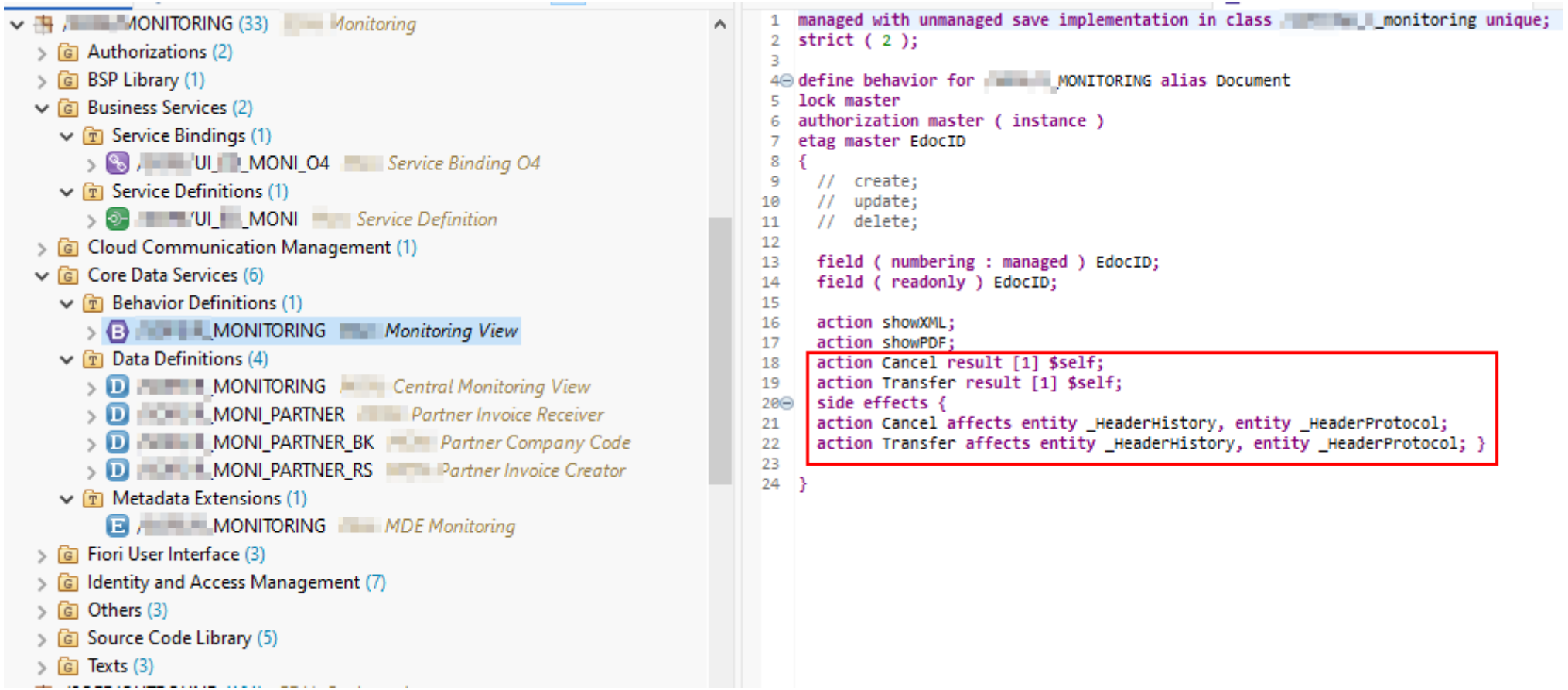
Company Code: 1000 - BestRun Germany Martin Steiner, Kathrin Walther, Bernd Zecha, Dondogmaa Lchamdondog

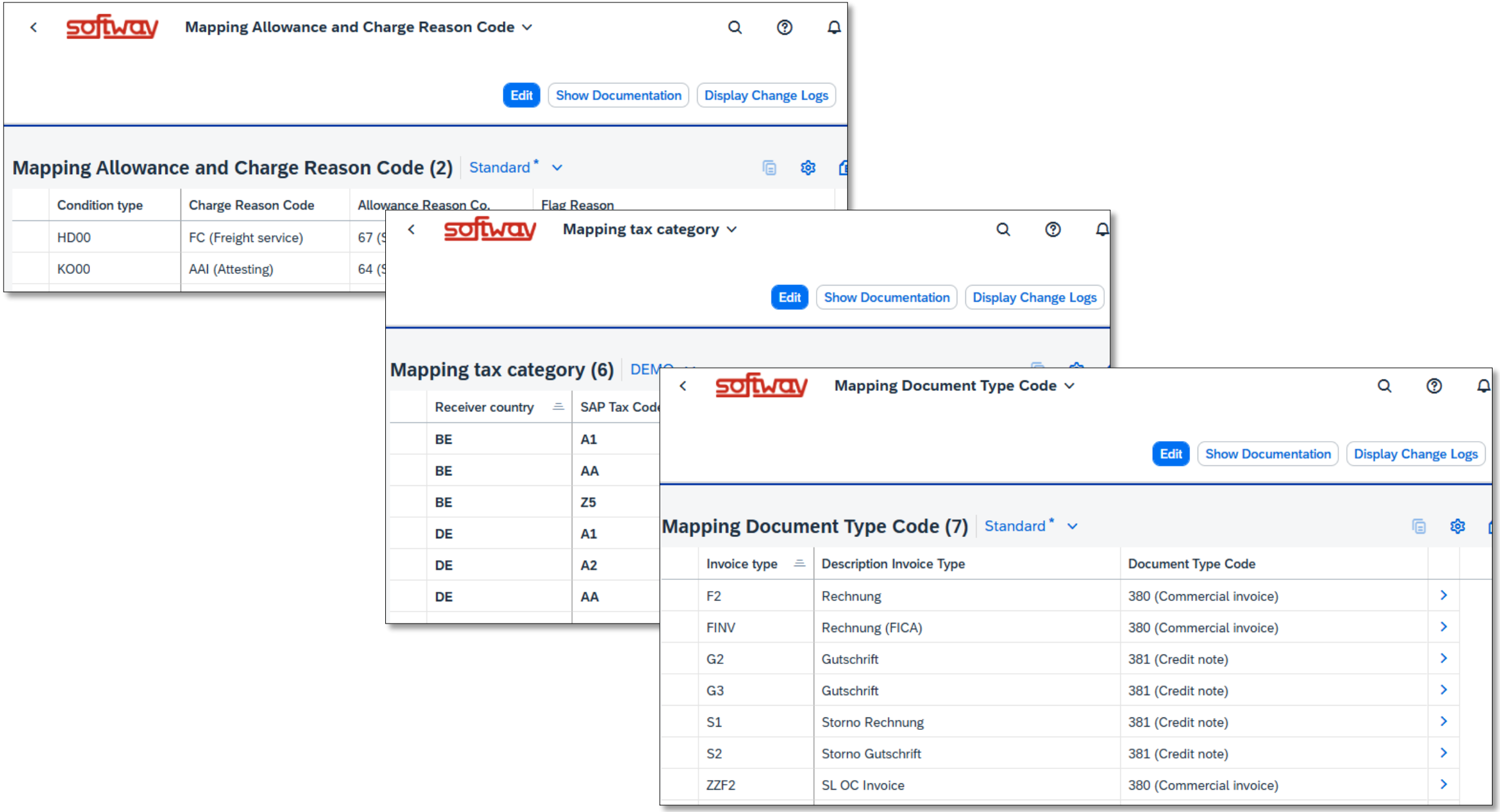
Document Creator:

History (4)

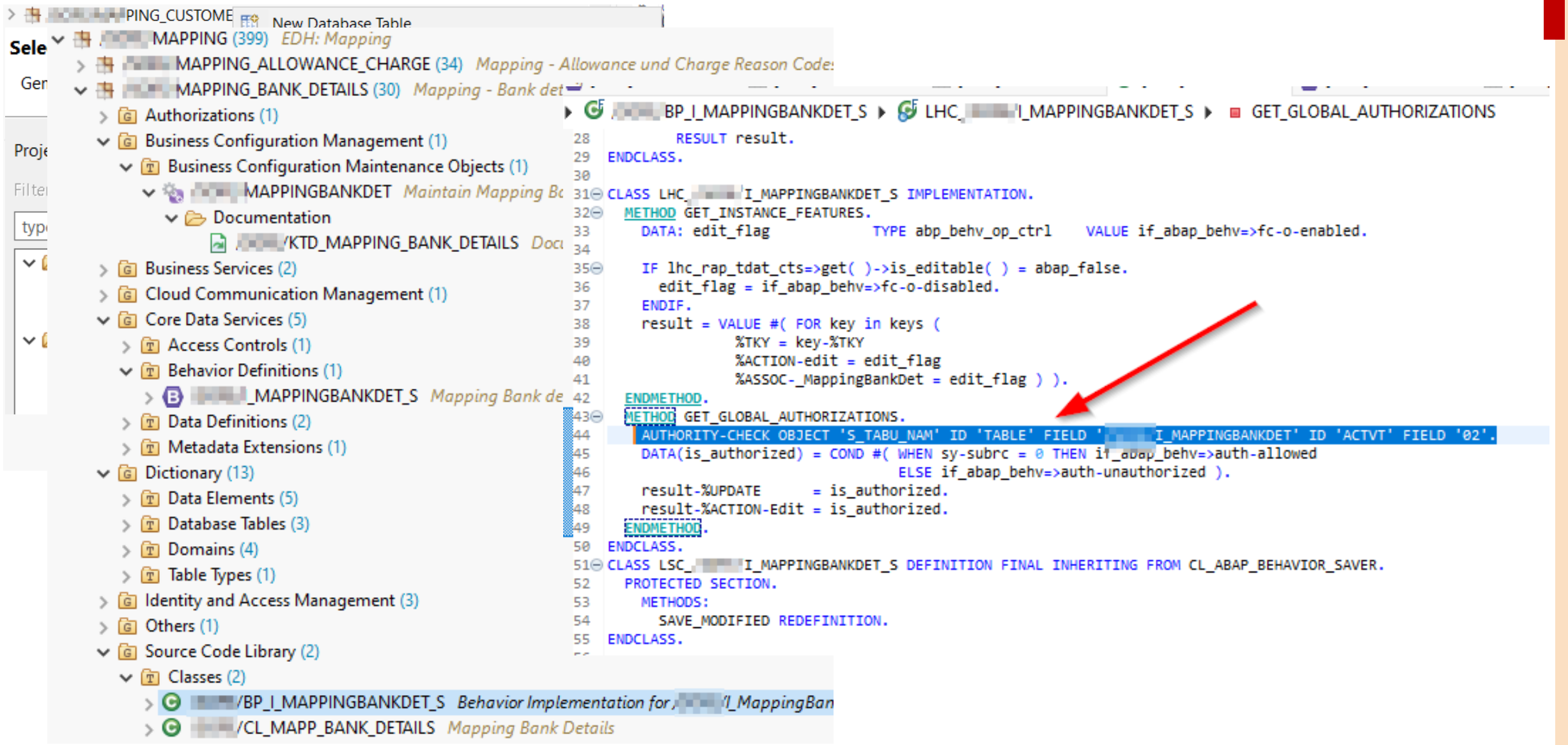
Status	Process Step	Time stamp
Error	Validation error	17.04.2025, 08:27:12
In Process	Sent	17.04.2025, 08:26:21
In Process	E-Document received	17.04.2025, 08:26:14
In Process	E-Document created	17.04.2025, 08:26:14

“Normal” RAP BO



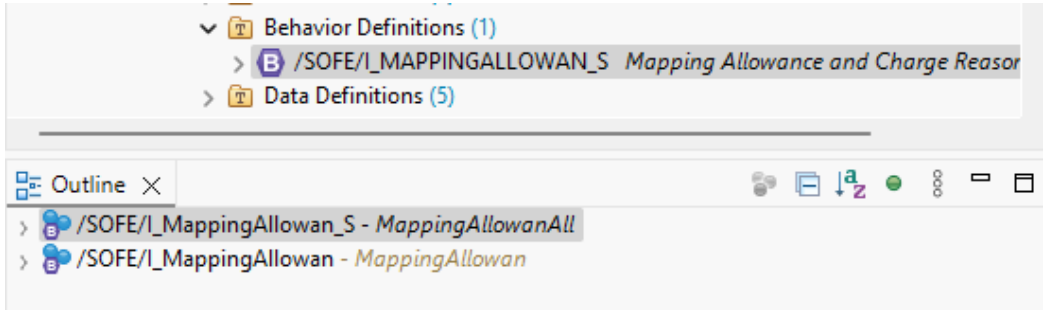

Mapping Allowance and Charge Reason Code
Edit
Show Documentation
Display Change Logs
Mapping Allowance and Charge Reason Code (2)
Standard
Condition type
Charge Reason Code
Allowance Reason Co.
Flag Reason
HD00
FC (Freight service)
KO00
AAI (Attesting)
Mapping tax category
Edit
Show Documentation
Display Change Logs
Mapping tax category (6)
Receiver country
SAP Tax Code
BE
A1
BE
AA
BE
Z5
DE
A1
DE
A2
DE
AA
Mapping Document Type Code
Edit
Show Documentation
Display Change Logs
Mapping Document Type Code (7)
Standard
Invoice type
Description Invoice Type
Document Type Code
F2
Rechnung
380 (Commercial invoice)
FINV
Rechnung (FICA)
380 (Commercial invoice)
G2
Gutschrift
381 (Credit note)
G3
Gutschrift
381 (Credit note)
S1
Storno Rechnung
381 (Credit note)
S2
Storno Gutschrift
381 (Credit note)
ZZF2
SL OC Invoice
380 (Commercial invoice)

Use of Business Configuration (classic: SM30)



Business Configuration Maintenance Objects

- Nice-2-Knows:
- Singleton-Entity:



- Adaption/Extension?

- At the moment, no Generator does UPDATES
- Adding and Changing any Logic in generated Code is not to be affected by any regeneration

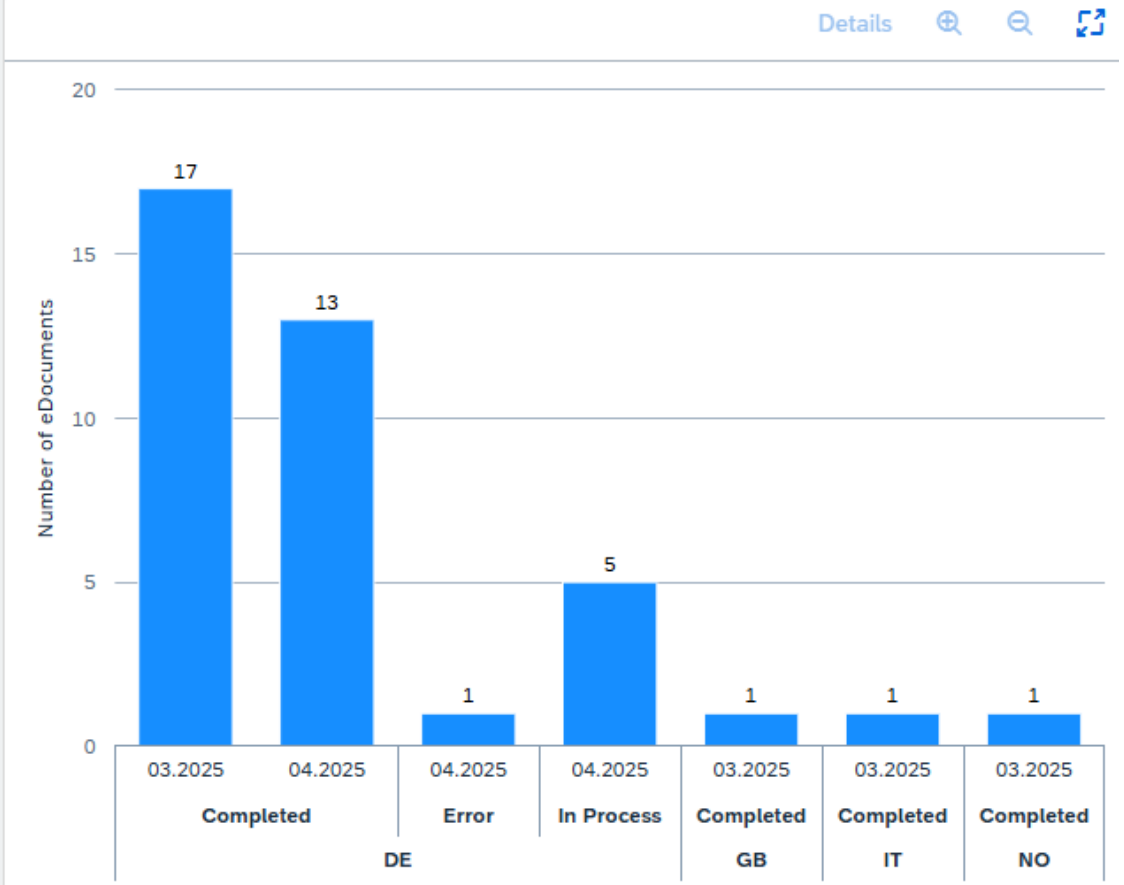
Multidimensional Analysis

Demo *

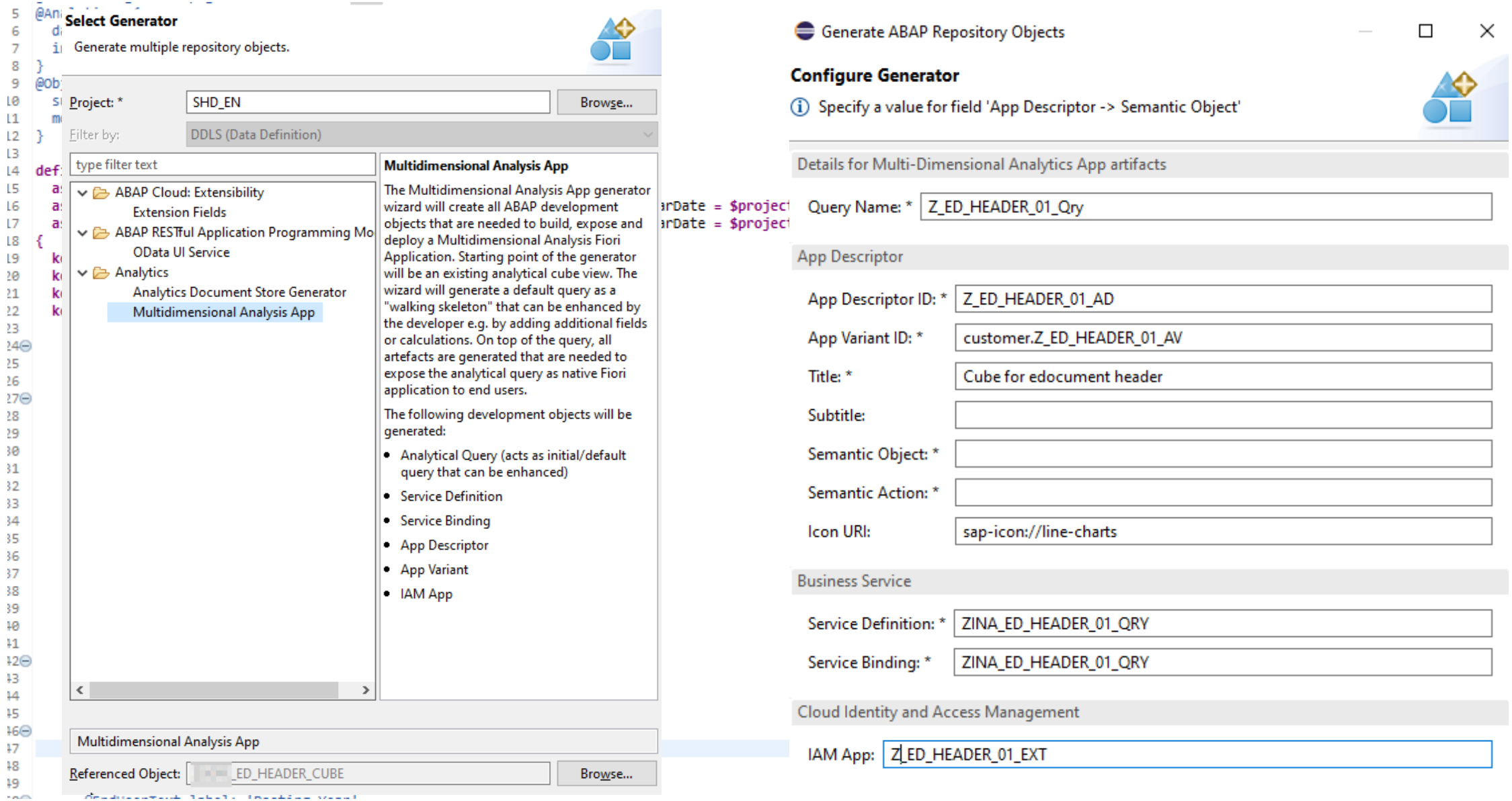
No filters active

Auto Refresh ON

Receiver country	Short Descript.	Creation Month	Measures: Number of eDocuments
DE	Completed	03.2025	17
		04.2025	13
	Error	04.2025	1
	In Process	04.2025	5
	Totals	**Totals**	36
GB	Completed	03.2025	1
	Totals	**Totals**	1
IT	Completed	03.2025	1
	Totals	**Totals**	1
NO	Completed	03.2025	1
	Totals	**Totals**	1
Totals	**Totals**	**Totals**	39



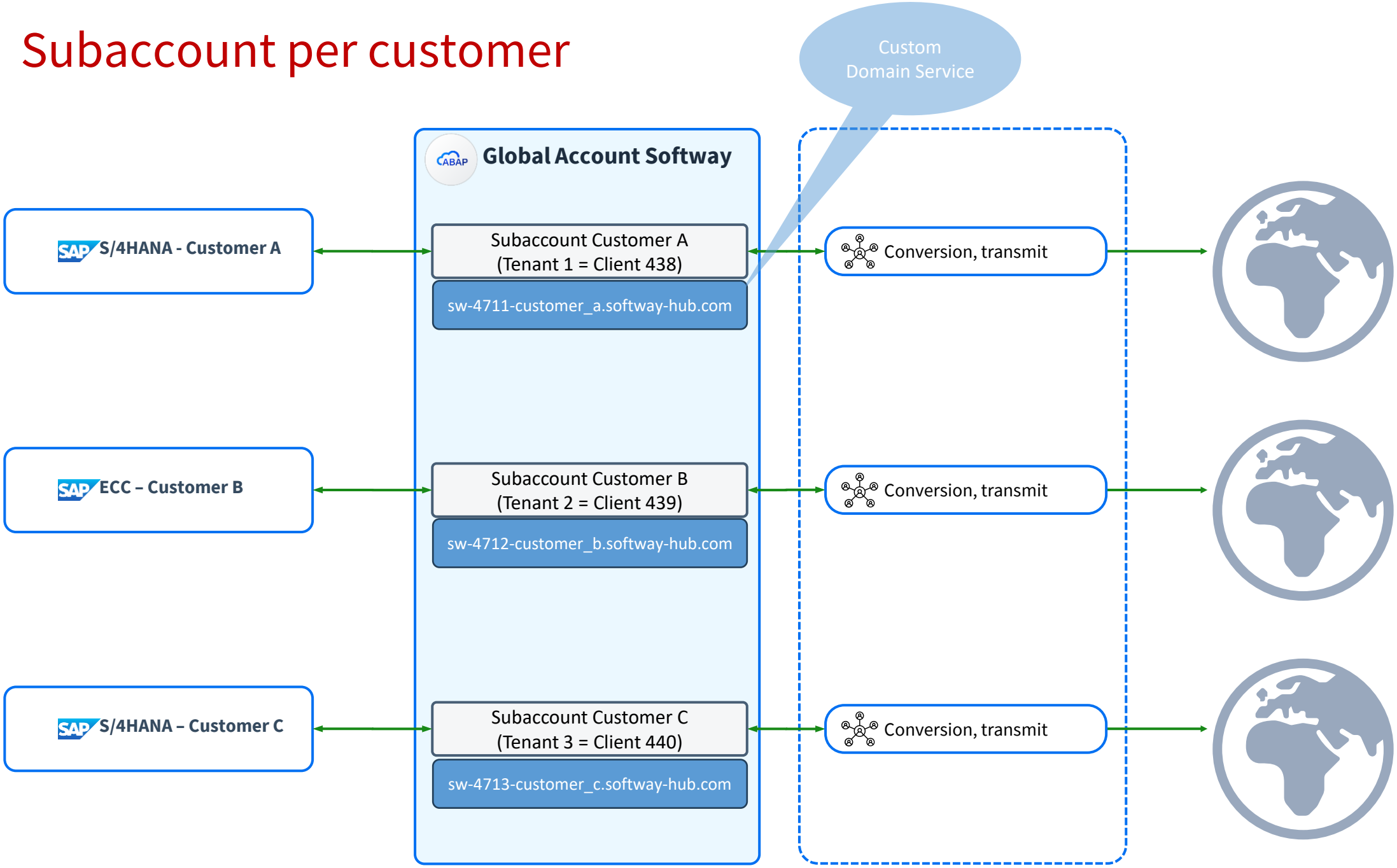
Multidimension Analysis App Generator



BTP

Every customer gets his own home

Subaccount per customer



Learnings

ABAP Cloud in the Cloud

Where are our beloved test data containers?

Testdatencontainer	ZTDC_[redacted]_V1_SAP	Version	1
Titel	GENERATED BY API (User: FE[redacted] / Time: 2[redacted])		

Variante	Beschreibung	GS_OUTPUT_SAP	DO
ECATTDEFAULT		<INITIAL>	
[redacted]_V1	[redacted] Auftrag 15426 (Remote-Daten)	<VALUE>	<?x
[redacted]_V1_1	[redacted] Auftrag 14423 (2 Seiten, 3 Pos.)	<VALUE>	<?x
[redacted]_V1_2	[redacted] Auftrag 14423 (12 Pos.)	<VALUE>	<?x

GS_OUTPUT_SAP

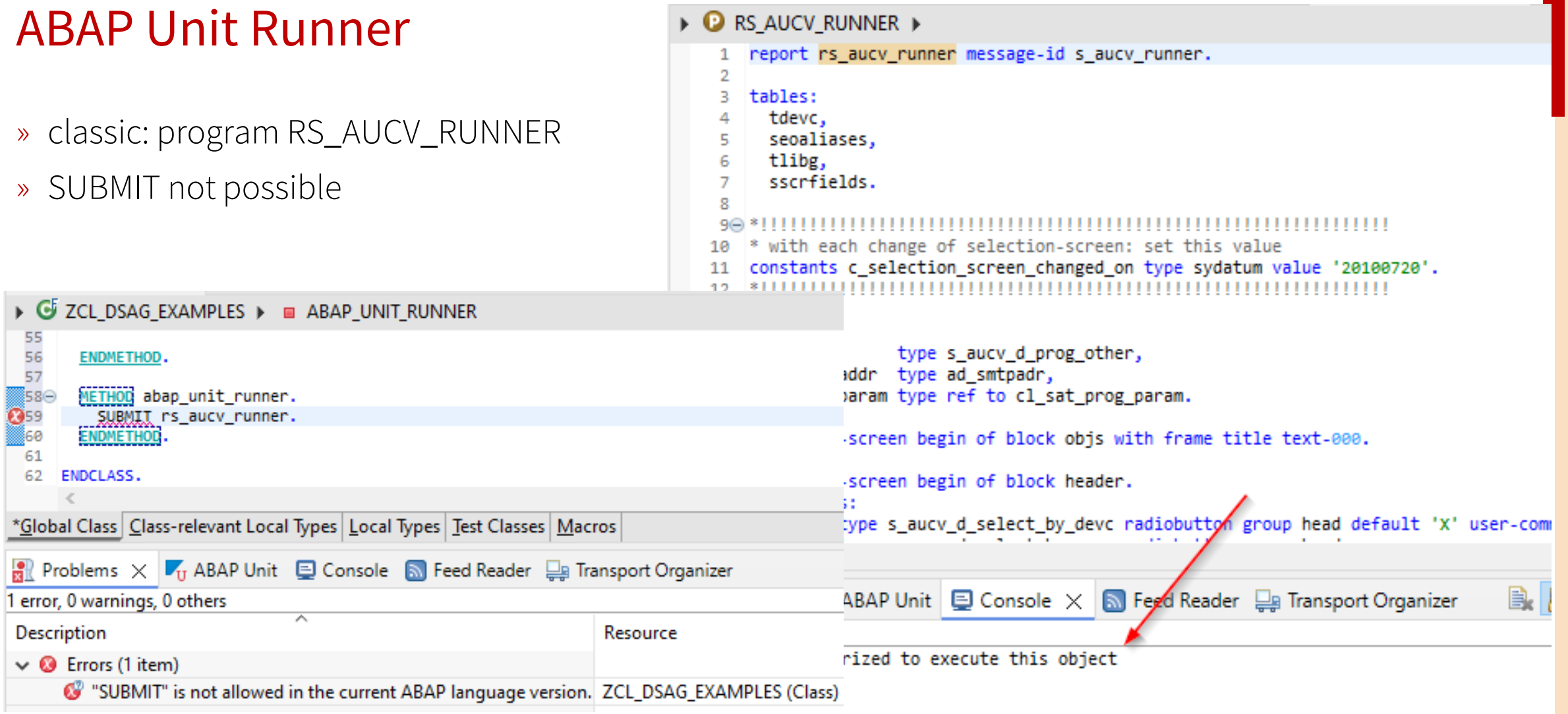
- IS_INTERFACE
  - HEAD_DETAIL
    - VBDKA

ANRED	
ADRNR	0000006901
ADRNP	
ADDRESS_TYPE	1
NAME1	'Becker Stuttgart'
NAME2	
NAME3	
NAME4	
STRAS	'Triberger Strasse 42'

No transactions,
no dynpros,
no reports

ABAP Unit Runner

- classic: program RS_AUCV_RUNNER
- SUBMIT not possible



Frank Engert • Sie
CEO Softway AG | Podcaster | We ❤ Formulare
3 Monate •

A must have for everyone who develop on BTP ABAP and value software quality. This job checks overnight if all unit tests are green.

Thanks Björn 👍

Björn Schulz • 1.
Lead Developer | SAP Mentor | Blogger
3 Monate •

How can you regularly run your #ABAP unit tests on the #ABAP environment and have the results sent to you? There is currently no standard for this:

Übersetzung anzeigen

BTP - ABAP Unit Runner
software-heroes.com

Software-Heroes

Encapsulation

We encapsulate the logic for the individual components and distribute them to the corresponding components. We need a core component for scheduling and retrieving the ABAP unit run, a component for parsing the XML file and a component for sending the email.

- *Z_AUR* (15) *ABAP Unit Runner*
  - *Z_AUR_CORE* (5) *Core Functions*
    - *Classes* (3)
      - ZCL_AUR_CORE_FACTORY *AUnit Factory for Core*
      - ZCL_AUR_PARSER *AUnit Parser*
      - ZCL_AUR_RUNNER *AUnit Runner*
    - *Interfaces* (2)
      - ZIF_AUR_PARSER *AUnit Parser (Interface)*
      - ZIF_AUR_RUNNER *AUnit Runner (Interface)*
  - *Z_AUR_JOB* (7) *Application Job*
    - Application Job Catalog Entries (1)
    - Application Job Templates (1)
    - Application Log Objects (1)
    - Authorization Defaults (TADIR) (1)
    - *Classes* (1)
      - ZCL_AUR_JOB_RUNNER *AUnit Application Job*
    - IAM Apps (1)
    - Message Classes (1)
  - *Z_AUR_MAIL* (3) *Mail Functions*
    - *Classes* (2)
      - ZCL_AUR_MAIL *AUnit Mail*
      - ZCL_AUR_MAIL_FACTORY *AUnit Factory for Mail*
    - *Interfaces* (1)
      - ZIF_AUR_MAIL *AUnit Mail (Interface)*

Others

- Application Jobs
- Application Log
- Business Catalogs
- Communication scenarios
- Inbound / Outbound services

SAP Support

Our Companions

Jörg Brandeis
SAP training from pro's

Sören Schlegel
ABAP Nerd | SAP Champion

Gregor Wolf
Community Guru | SAP Mentor

Björn Schulz
Blogger | SAP Mentor

We Formulare
Der SAP Formular Podcast
#18
E-Rechnung nach dem
Clean Core Prinzip
unifiedpost
GROUP

deezer

SAP BTP ABAP Roundtable #24 – 25. June

SCAN ME

Meeting Information

When:

- **June 25th**, 10:00 - 11:00 AM CET – Zoom Meeting (**please register** in advance)

Who:

- All interested **customers, partners,** and **stakeholders** are invited to join this roundtable
- **BTP ABAP team**:
  - Frank Jentsch (Product Lead for SAP BTP ABAP Environment)
  - Iwona Hahn (BTP ABAP Product Management)
- **Partner Softway AG:** Frank Engert (CEO)

Preliminary Agenda:

- Product update for SAP BTP ABAP Environment
- "Global E-Invoice Cloud" - managed SaaS solution on SAP BTP ABAP Environment: live demo, subaccount handling, customer onboarding, system connections
- Q&A

Looking forward to meeting you!

Register Now!

Frank Engert
CEO

Chief Enthusiasm Officer for ABAP