



# New to GRC or security?

## Learn how include custom code in GRC rulesets, automate repetitive tasks, and troubleshoot complex authorization issues

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Las Vegas

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2024

**SAP**insider

# Deborah Rogers

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SAP GRC, Compliance, Security,  
Herdt Consulting, Inc



- 20 years SAP experience
- Multiple implementations
- ARA, ERM, ARM – SAP GRC
- Conversions to S/4Hana

## Certifications

- CISSP – ISC<sup>2</sup>



# Greg Robinette

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Director of ERP Services  
Herdt Consulting, Inc



- 24 years SAP experience
- Multiple implementations
- AWS Cloud & SAP BTP
- Conversions to S/4Hana

## Certifications

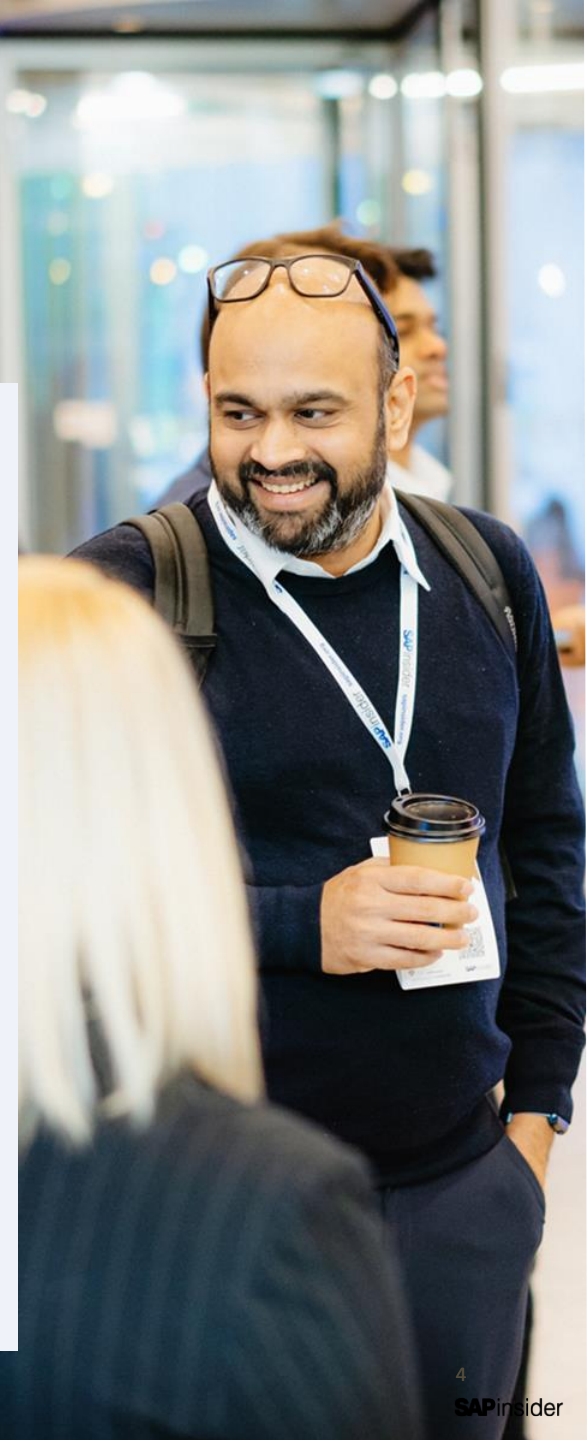
- HR/HCM Consultant - SAP
- CISM, CDPSE – ISACA
- PMP, PMI-ACP
  - Project Management Institute



# What We'll Cover

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- Evaluate source code for GRC categorization
- Capture evidence to support decisions and compliance
- Automate to increase reliability and reduce cost
- Trouble-shoot complex security issues
- Wrap-Up





## Evaluate source code for GRC categorization

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- The Problem
- Eureka Moment
- Scaling it Up
- Key Word List
- Eliminate Noise
- Find Transaction Codes
- Compliance Evidence



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# Sarbanes Oxley and Segregation of Duties (SOD)



SAP  
GRC  
&  
S4  
Hana

<b><i>Sarbanes-Oxley Compliance in Information Systems</i></b>	
<ul style="list-style-type: none"><li>Internal Controls: Systems to ensure reliability of financial reporting</li><li>Documentation: Maintaining records to demonstrate SOX compliance</li><li>Audit Support: Systems designed to facilitate external and internal audits</li></ul>	
<b>Solution</b>	
Technical	<ul style="list-style-type: none"><li>Segregation of Duties: Enforcing user access controls to separate critical functions</li><li>Automated Checks: System configurations to prevent conflicting transactions</li><li>Audit Trails: Monitoring and logging activities for accountability</li></ul>
Business	<ul style="list-style-type: none"><li>Role-Based Access: Defining access rights based on job responsibilities</li><li>Segregation in Systems: Ensuring critical tasks are divided among system roles</li><li>Regular Review: Periodic assessment of role definitions and access rights</li></ul>

# The Problem

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The initial SAP® implementation was 20 years prior

- 4k roles
- 8k users
- 2k custom transactions
- 15 million lines of custom code

Added SAP GRC:

- Access Risk Analysis (ARA)
- Access Request Management (ARM)

**GRC-ARA ruleset does not cover custom transactions**

# Size of Problem

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## 3,400 Unique transactions

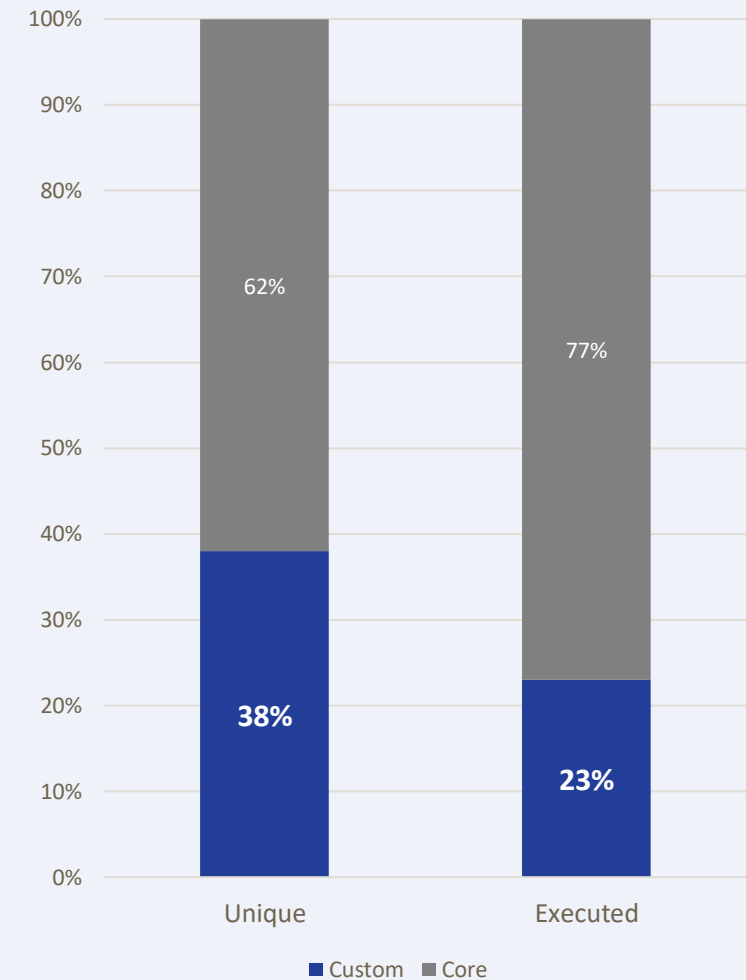
- 62% core / 38% custom

## 1.1 Million annually executed transactions

- 77% core / 23% custom

**Relevant custom transactions should be included in the GRC ruleset**

**1 out of 4 used are not included**



# First Attempts

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## Spreadsheets

- Shared
- Divide and conquer

## Workshops

- Super users
- IT teams

### Descriptions

- Of transactions
- Of programs
- Of Roles

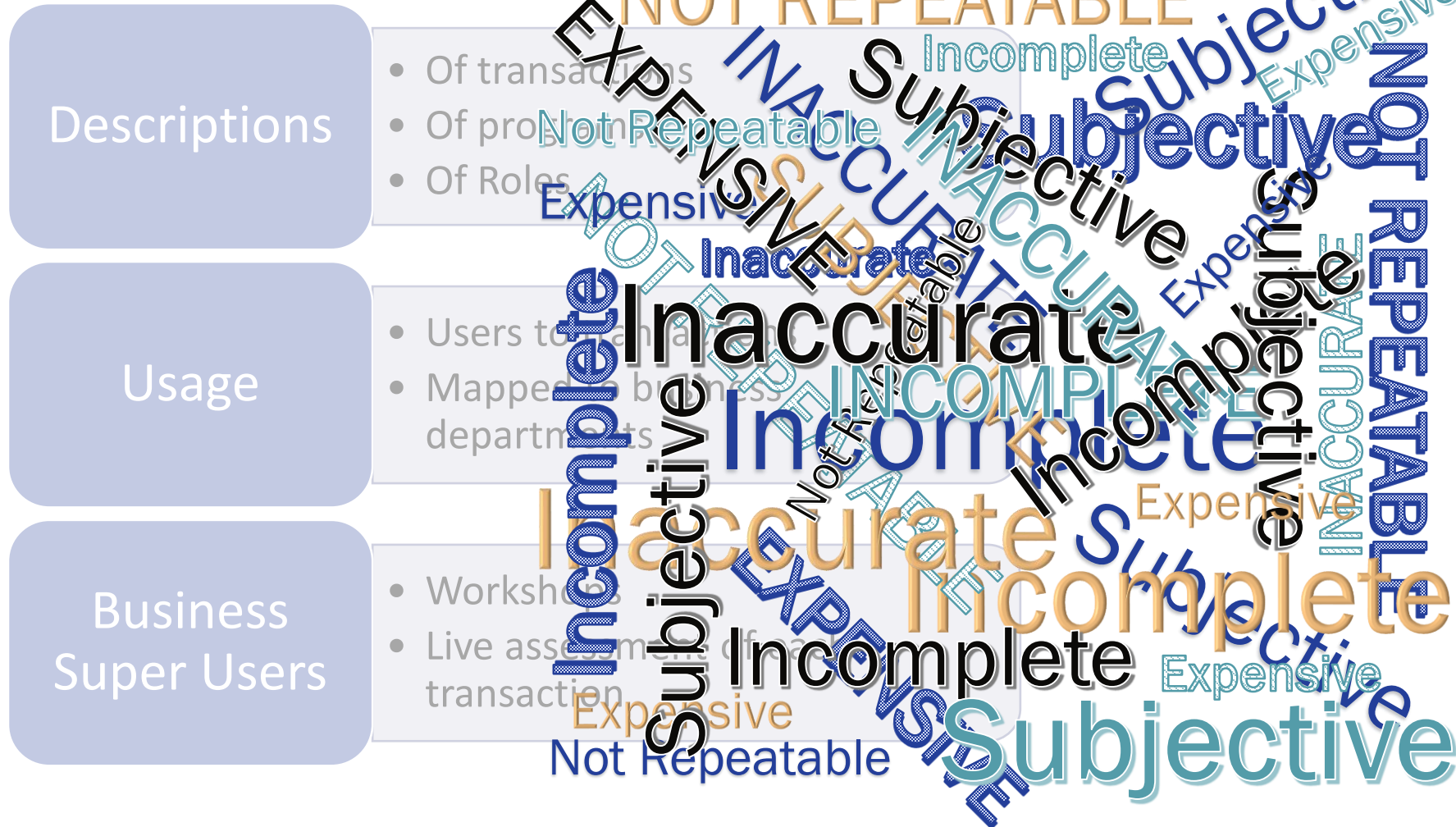
### Usage

- Users to transactions
- Mapped to business departments

### Business Super Users

- Workshops
- Live assessment of each transaction

# First Attempt Issues

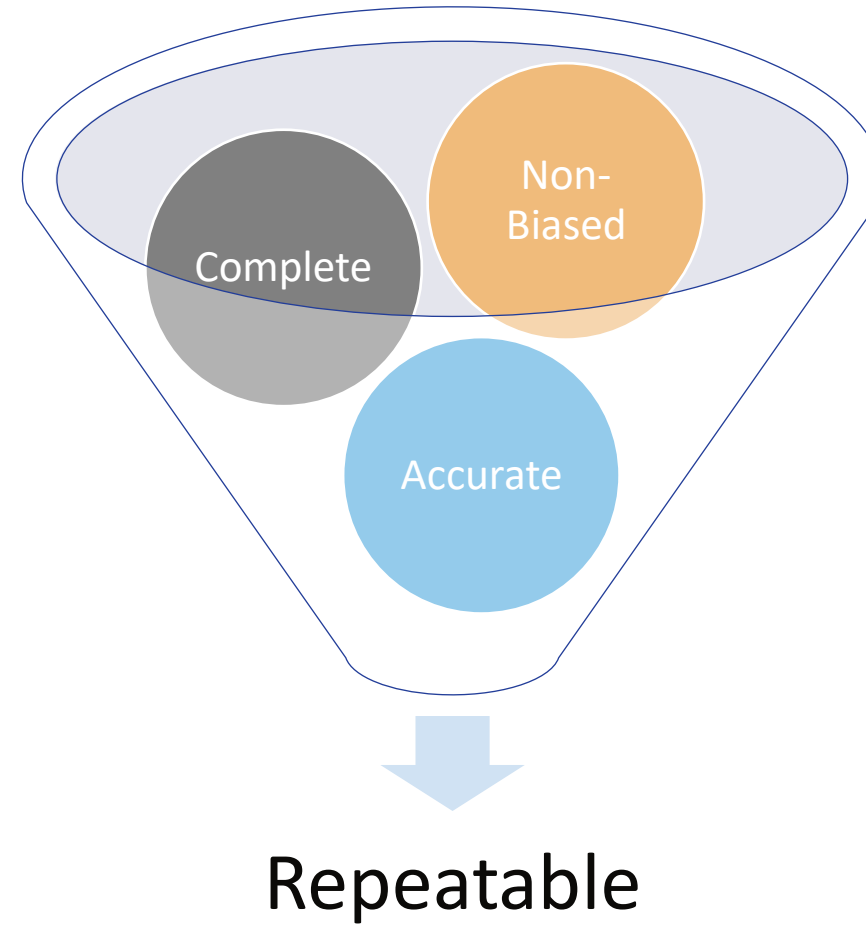


# Process Improvement

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Needed a process that was

- Complete
- Accurate
- Non-Biased
- Programmatic
- Repeatable





## Evaluate source code for GRC categorization

---

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- **Eureka Moment**
- Scaling it Up
- Key Word List
- Eliminate Noise
- Find Transaction Codes
- Compliance Evidence

# Eureka Moment

---

Move from our dependency on internal knowledge and descriptions.....

To source code.....

The only parts we care about is when a user makes updates to the database via the custom code.

```
461  
462  
463     CALL FUNCTION 'BAPI_ACC_DOCUMENT_POST'  
464     EXPORTING  
465         documentheader = w_doc_header  
466     * CUSTOMERCPD      =  
467     * CONTRACTHEADER  =  
468     * IMPORTING
```

# New Rules

---

We do not care about custom code lines that are:

- not accessible to end users
- read only or never save
- affect a non-financial area

Only care when a **user** runs custom code which results in **changes** to the database for the **financial** areas.

```
461  
462  
463     CALL FUNCTION 'BAPI_ACC_DOCUMENT_POST'  
464     EXPORTING  
465         documentheader = w_doc_header  
466     * CUSTOMERCPD      =  
467     * CONTRACTHEADER  =  
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```



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# Scaling Up

Broad categories of how the database can be updated via custom code

Category	Description
BDC Transaction Calls	Batch Data Communication
BAPI Calls	Business Application Programming Interface
Direct table updates	Both SAP and custom tables for finance

SAP provided program to scan source code

Report RS\_ABAP\_SOURCE\_SCAN Active

```
1  *-----  
2  * Scan a set of source code for a particula  
3  *-----  
4  REPORT rs_abap_source_scan MESSAGE-ID eu.  
5  
6  TYPE-POOLS:  
7      slis,  
8      sscr.
```



## Evaluate source code for GRC categorization

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# Build Keyword List for Scan

Knowledge from all prior attempts

GRC rule set default transactions

Experience from other GRC implementations

SAP Table information

- TSTC – SAP transactions
- TSTCP – Parameters for transactions
- CDHDR – Change document header

# 2500 keywords

The screenshot shows the 'Scan ABAP Report Sources' dialog box in SAP. It is divided into several sections for defining search criteria:

- Search Term:** Includes a 'Search String' field with the value 'BAPI\_ACC\_DOCUMENT...' and a checkbox for 'String is regular expression'.
- Report/Dynpro Selection:** A table with fields for 'Program Name', 'Screen', 'Program type', 'Application', 'Program Author', and 'Last changed by'. Each field has a 'to' field and a selection icon.
- Select Package:** Includes a 'Package' field with a selection icon and the value 'Z\*'. It also has a 'to' field and a selection icon.
- Function Group Selection:** Includes a 'Function group' field with a 'to' field and a selection icon.

# Selection Screen

Keywords in search box

Limit to Z\* and Y\* packages – Custom Code

Limit false positives

- +/- 0 lines
- Ignore Comment Lines


Search Range







- ABAP and Dynpro (Code & Screens)


Run in background!





**Scan ABAP Report Sources**

Search Term  
Search String: BAPI\_ACC\_DOCUMEN...  **Keywords**  
☐ String is regular expression

Report/Dynpro Selection  
Program Name:  to    
Screen:  to    
Program type:  to    
Application:  to    
Program Author:  to    
Last changed by:  to  

Select Package  
Package: ☒ Z\*  to   **Z\* and Y\***

Function Group Selection  
Function group:  to  

Class Selection  
Class/Interface:  to  

Search Criteria  
Occurrence +/- x Lines:  0 **Limit false positives  
+/- 0 Lines  
Ignore Comment**  
☒ Expand INCLUDES  
☐ Modification Assistant Changes  
☒ Ignore Comment Lines

Search Range  
☐ ABAP Program(s)  
☐ Dynpro flow logic  
☒ ABAP and Dynpro **ABAP and Dynpro (Code + Screen)**  
☐ Version Database

# Search Program Output

Background Processing (~3 hours)

Spool Output

Export for analysis

~ 50k hits

15,000,000	Lines of custom Code
50,000	Lines in Search Hit Results

Object Name	Line Text
zPROG1	000036 TABLES: BKPF, "Header
	000041 SELECT * FROM TKA02 WHERE BUKRS = BKPF-BUKRS.
	000099 BKPF_XBLNR LIKE BKPF-XBLNR,
	000337 SELECT SINGLE XBLNR INTO BKPF_XBLNR
	000338 FROM BKPF
	000604 CLEAR BKPF_XBLNR.
	000668 CALL FUNCTION 'BAPI_ACC_DOCUMENT_POST'
	000739 AND BELNR = BKPF XBLNR.
zPROG2	000038 CALL FUNCTION 'BAPI_ACC_DOCUMENT_POST'
	000335 SELECT SINGLE XBLNR INTO BKPF_XBLNR
	000338 FROM BKPF
zPROG3	000036 TABLES: BKPF, T001,
	000292 BUKRS LIKE BKPF-BUKRS,
	000293 GJAHR LIKE BKPF-GJAHR,
	000327 SELECT SINGLE * FROM T001 WHERE BUKRS = BKPF-BUKRS.
zPROG4	000191 O_BUKRS LIKE BKPF-BUKRS.
	000195 GJAHR LIKE BKPF-GJAHR,

# Export as Text

Same thing, in notepad  
Horizontal lines become dashes

Problem – program name is only in  
top row

Using excel formulas, pull out and  
push down program name

ScanOutput\_v2024-01-27.txt - Notepad

File Edit Format View Help

Object Name	Line Text
ZPROG1	000036 TABLES: BKPF, "Header
	000041 SELECT * FROM TKA02 WHERE BUKRS = BKPF-BUKRS.
	000099 BKPF_XBLNR LIKE BKPF-XBLNR,
	000337 SELECT SINGLE XBLNR INTO BKPF_XBLNR
	000338 FROM BKPF
	000604 CLEAR BKPF_XBLNR.
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	000335 SELECT SINGLE XBLNR INTO BKPF_XBLNR
	000338 FROM BKPF
ZPROG3	000036 TABLES: BKPF, T001,
	000292 BUKRS LIKE BKPF-BUKRS,
	000293 GJAHR LIKE BKPF-GJAHR,
	000041 SELECT SINGLE * FROM T001 WHERE BUKRS = BKPF-BU
ZPROG4	000191 O_BUKRS LIKE BKPF-BUKRS.
	000195 GJAHR LIKE BKPF-GJAHR,



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# No Risk Lines

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- Page header lines
- Program section lines
- Anything without a valid line number
- 9,300 lines

ID ▾	Program ▾	Line ▾	CodeLine ▾	Impact ▾	Reason
1	Program		Name Dynpro Number	None	NotValidSourceCode
2	Program		Text	None	NotValidSourceCode
3	Program		-----	None	NotValidSourceCode

## More Research

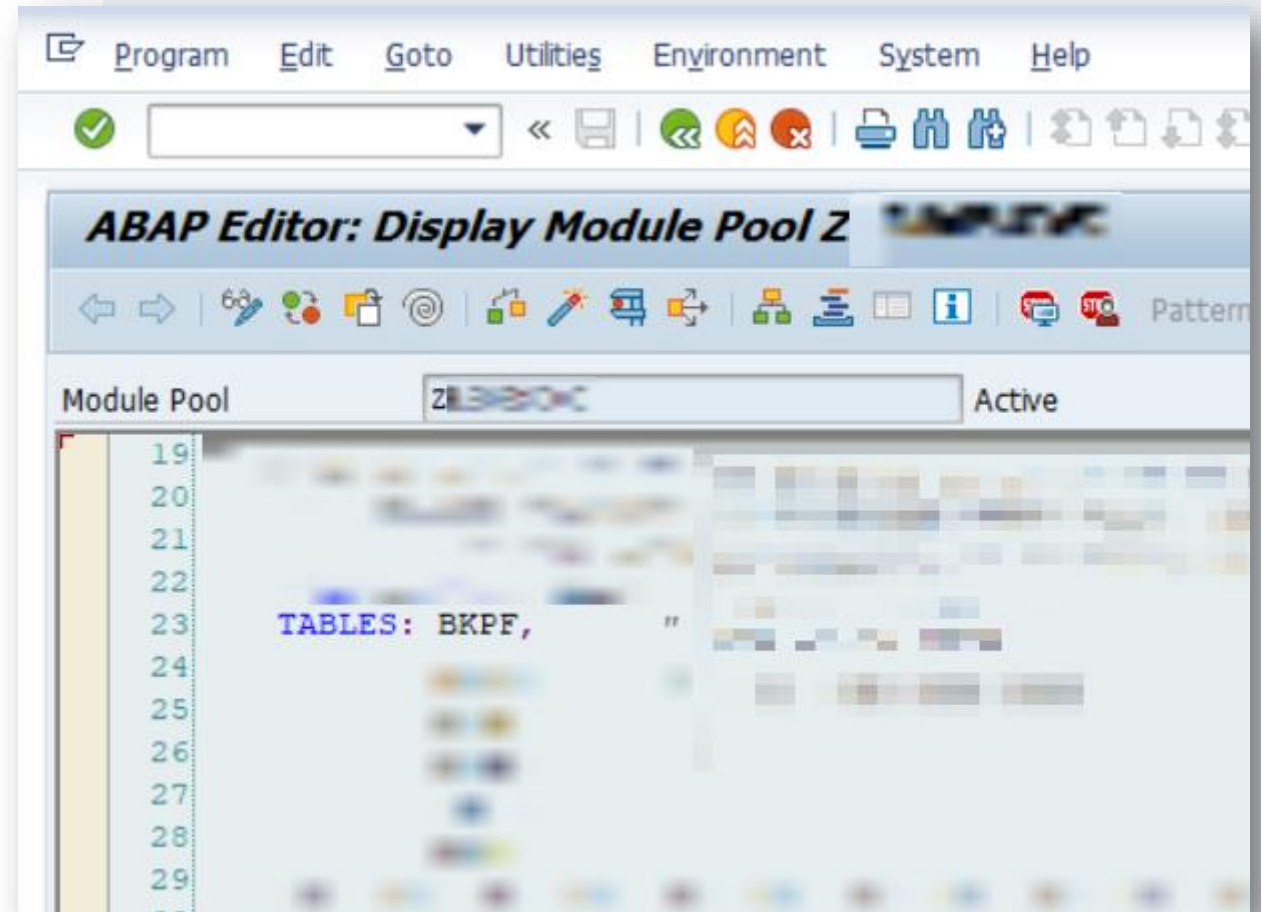
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Example line from spool list

Look at code immediately around it

**Is it making an update to the database?**

Tables statement – Declaration to allocate it in program memory



# Exclusion List – Low Risk

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Identify patterns that are always low risk

Four variations of “BKPF” used in data declarations

Eliminate:

- Data declarations
- Internal table gyrations
- Logical condition tests

150 total exclusion words

Low Risk
BKPF-
BKPF,
BKPF.
LIKE BPKF
CLEAR
FROM
IF
SELECT
TABLES

# Review Low Risk

---

Review all low-risk exclusions,  
document reasoning

Be able to defend the decision

150 Words in our list

**38,000** Lines are eliminated

Whatever remains is high risk to your  
system

50,000	Start
(9,300)	No Risk Header/Footers
(38,000)	Low Risk Statements
2,700	Remaining Statements

## Overall progress

50,000	Start
(9,300)	No Risk Header/Footers
(38,000)	Low Risk Statements
2,700	Remaining Statements

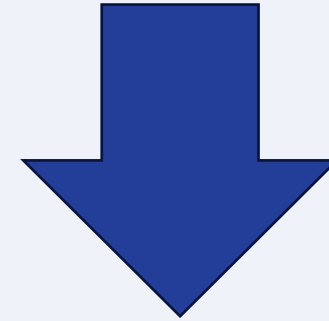
Started with 20 years of custom programming

15 Million lines of custom code

Grouped, categorized, eliminated

- Repeatable
- Non-subjective
- Documented

**15,000,000**  
Lines of Custom Code



**2,700**

High Risk Lines

# Find Transactions

---

Only care when a **user** runs custom code which results in changes to the database for the financial areas.

Some of these programs written for background processes. No impact to Segregation of Duties concerns.

Table	Reason
D010INC	ABAP Includes to main programs
TSTC	Transaction Codes to Programs
TFDIR	Function Module Names
TMDIR	Class and Methods



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# Custom Functions, Classes, and Methods!

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Will not trace directly back to a transaction code

These must be included in your own keyword list and **Scan again!**

Keyword	Description	To Find	Type
AB08	Reverse Line Items	'AB08'	TCodes
ANEK	Document Header Asset Posting	ANEK	Tables
BAPI_ACC_DOCUMENT_POST	Post accounting document	'BAPI_ACC_DOCUMENT_POST'	BAPI
BKPF	Accounting Document Header	BKPF	Tables
ENQUEUE_EFBKPF	Function - locks BKPF table in prep for changes	'ENQUEUE_EFBKPF'	Function
VIEWCLUSTER_MAINTENANCE_CALL	Function - maintains clustered data	'VIEWCLUSTER_MAINTENANCE_CALL'	Function
Z_TABLE_SAVE	Found through TFDIR relevance	'Z_TABLE_SAVE'	Function

# High Risk Breakdown

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2,700 High Risk Lines

- Associated transaction
- Function/Class/Method
- No associated transaction

Review each list in detail

Document decisions

1,700	Lines traced to Transactions
150	Functions found, added to keyword list
850	Lines not linked to Transactions

# High Risk Transactions

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List of 1,700 Lines of code traced to Transactions  
Sorted by unique transaction name

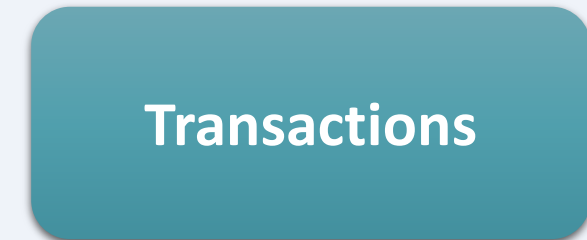
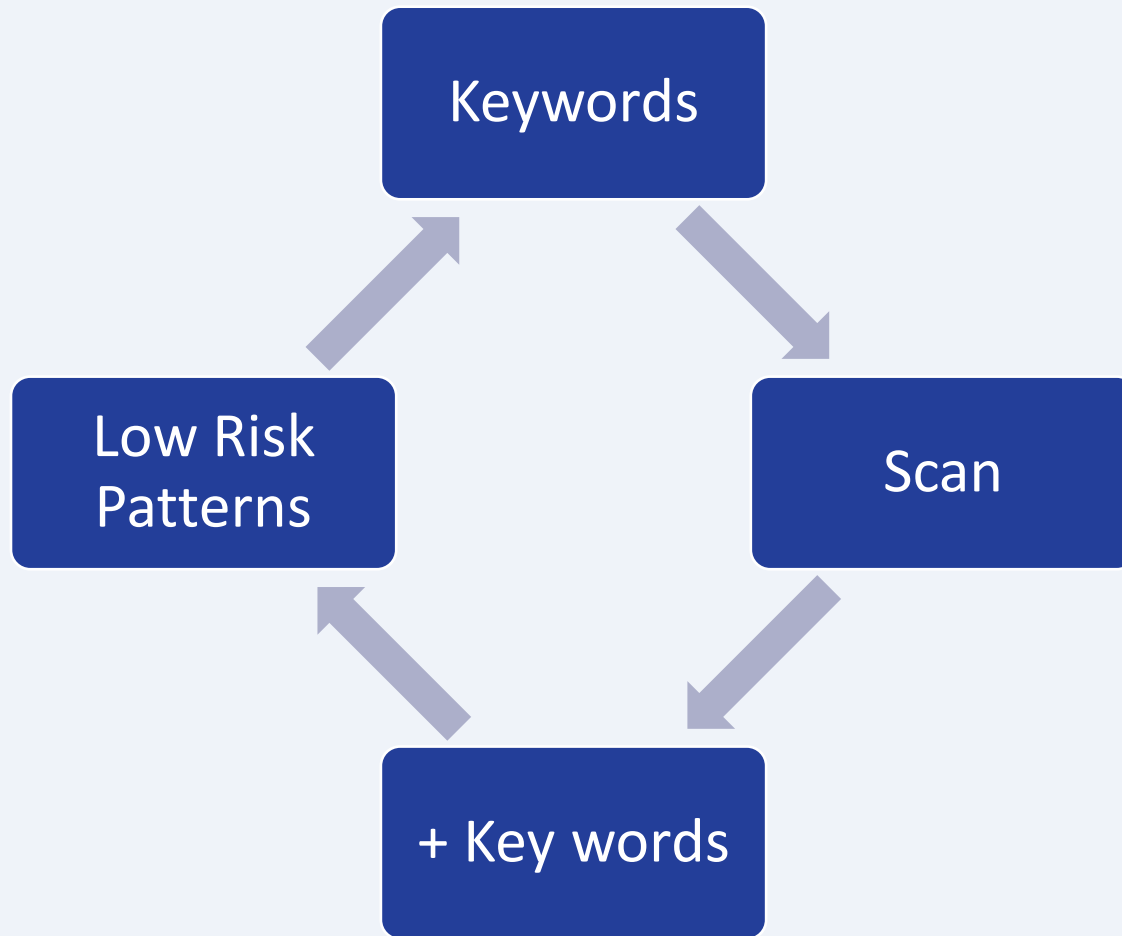
List of Unique Transactions  
Each line marked with accept – and which GRC Function applies

Next Level

- Put rejected lines into a low-risk GRC function
- Adds to credibility for completeness
- Marks that decision was made + adds change control

## Process

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## Evaluate source code for GRC categorization

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# Scan Evidence

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- Keyword List
- Background job from Source Scan
  - Run parameters
  - Results

## Analysis

- Low-Risk patterns and justification
- High-Risk lines – decisions
- Resulting GRC ruleset changes

The screenshot shows the 'Scan ABAP Report Sources' SAP interface. It includes a 'Search Term' section with a 'Search String' field containing 'BAPI\_ACC\_DOCUMEN...' and a checkbox for 'String is regular expression'. Below this is the 'Report/Dynpro Selection' section, which contains a table with fields for 'Program Name', 'Screen', 'Program type', 'Application', 'Program Author', and 'Last changed by', each with a 'to' field and a selection icon. The 'Select Package' section has a 'Package' field with 'Z\*' entered. The 'Function Group Selection' section has a 'Function group' field. The interface is in German, with the title 'Scan ABAP Report Sources' at the top.

# Evidence from Data Analysis

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50,000	Start
(9,300)	No Risk Header/Footers
(38,000)	Low Risk Statements
2,700	Remaining Statements

- Low-Risk patterns and justification
- Statements
- High-Risk lines – decisions
- GRC ruleset additions



1,700	Lines traced to Transactions
150	Functions found, added to keyword list
850	Lines not linked to Transactions

# Automate to increase reliability and reduce cost

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- Manual errors and disengaging
- Built In SAP GUI Scripting
- Record scripts
- Example scripts



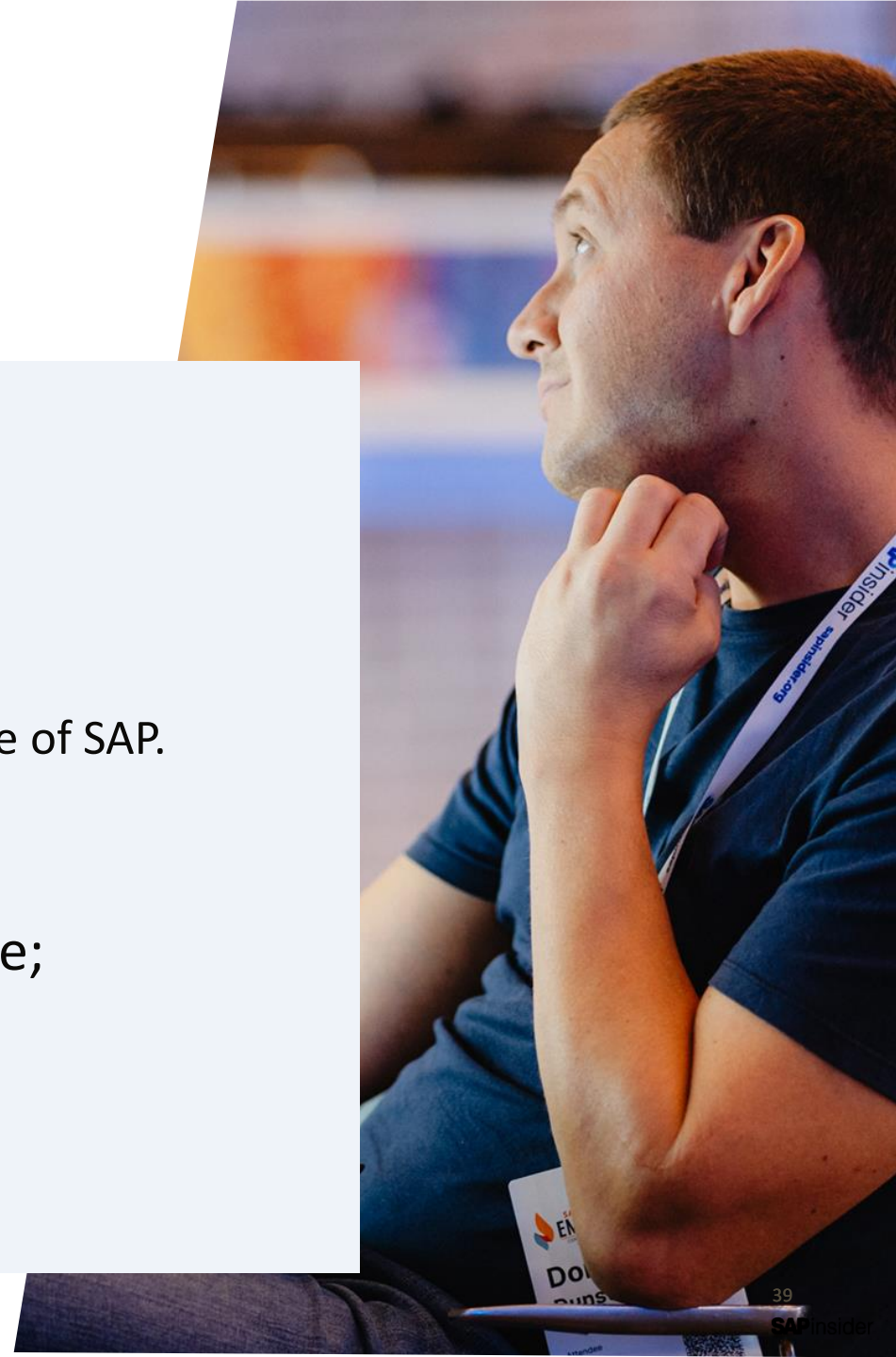
# Repetitive Development Tasks

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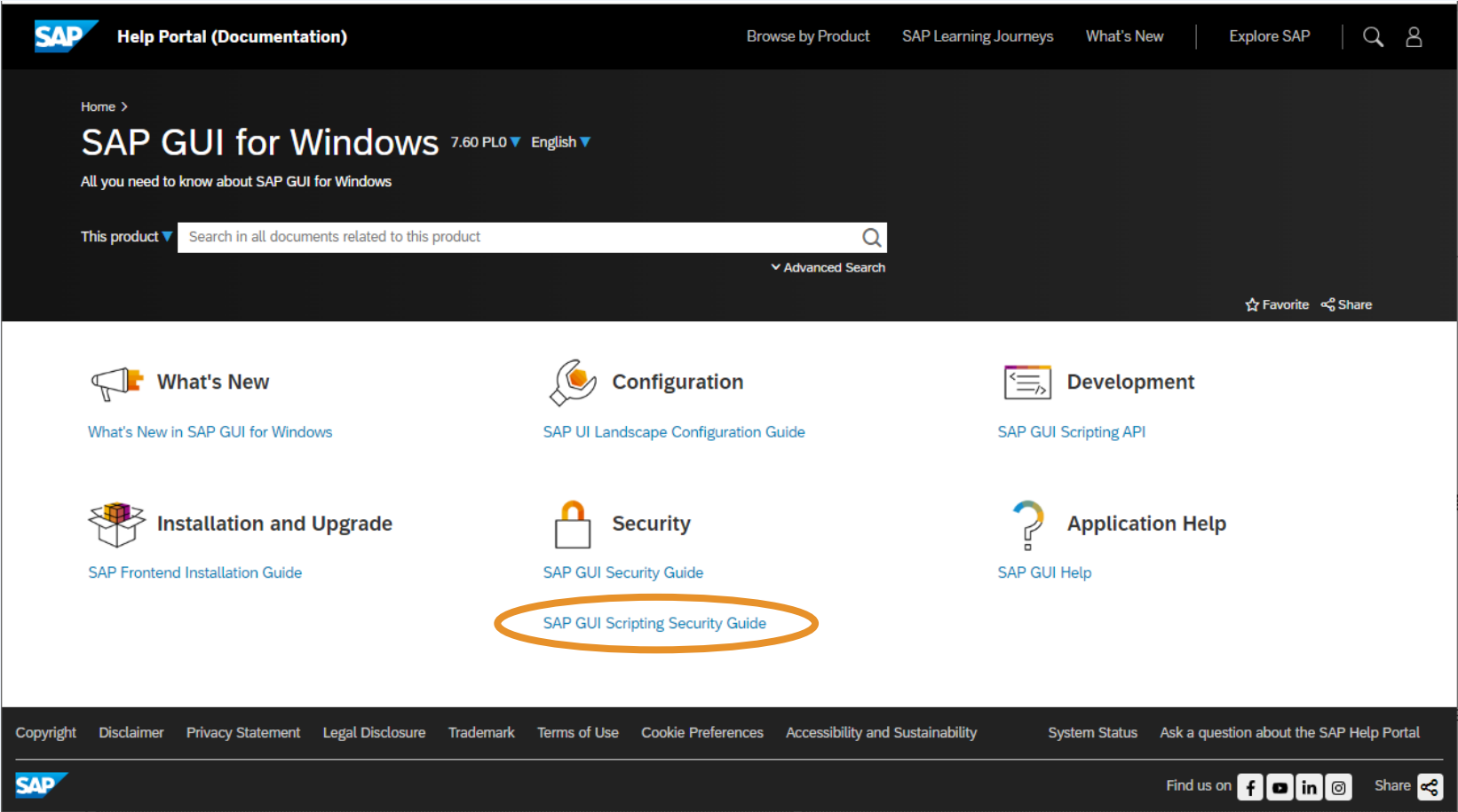
## Examples

- Creating test users and assigning test roles.
- Creating transports for roles.
- Changing user access via SU01 vs SU10.
- Downloading data via SE16N for analysis outside of SAP.

Expect **5%** manual error rate;  
Increases when rushing\*



# SAP GUI Scripting



# GUI Scripting Risks!



Installation

Protecting Critical SAP Systems

Modes for Server Side Protection

Mode Combination for Server Side Protection

Protection on the Client Level

Notes for Users

Security Q&A

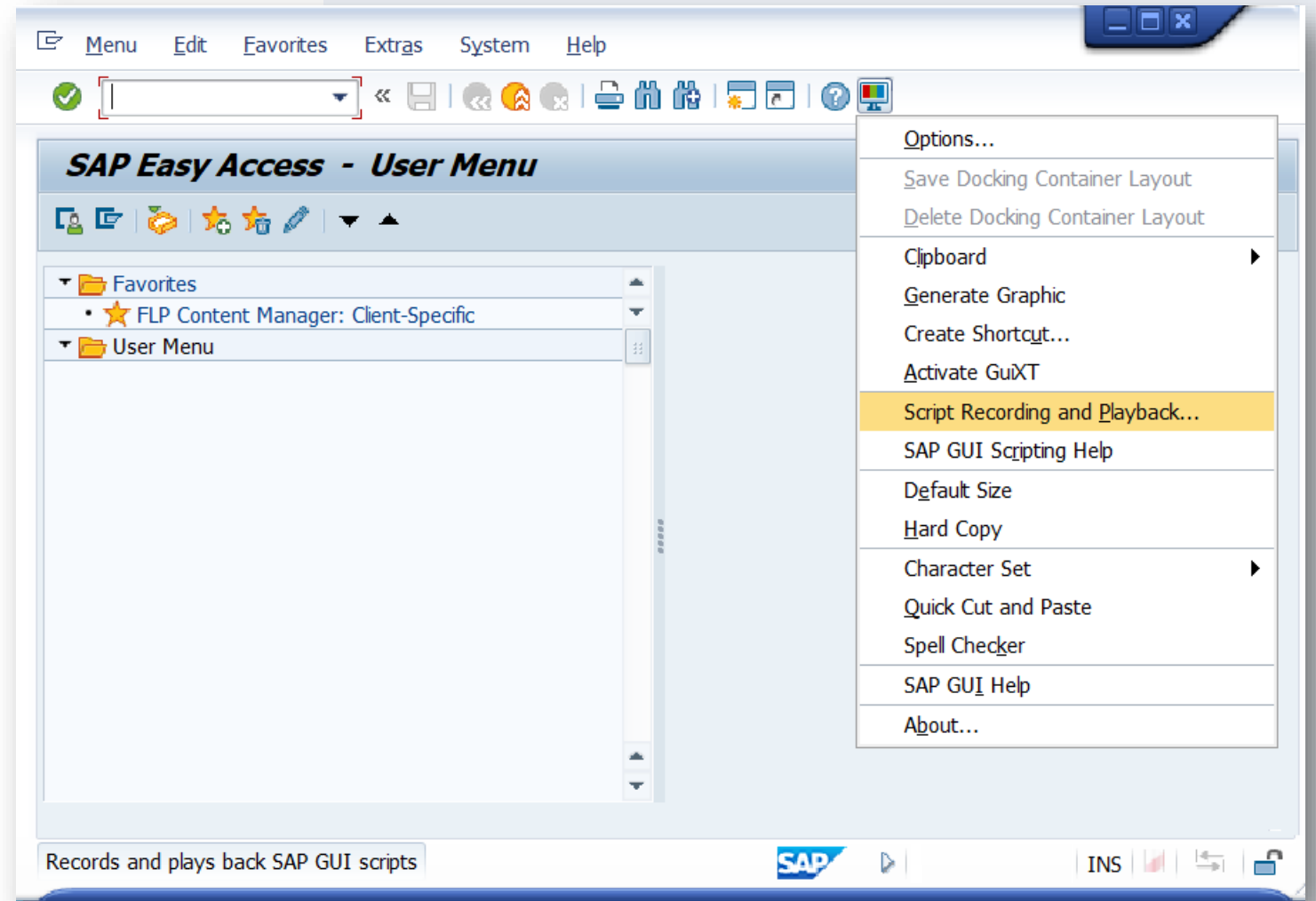
# SAP GUI Scripting

Powerful tool

Recommended to **NOT** use in production

Options button

Then “Script Recording and Playback....”

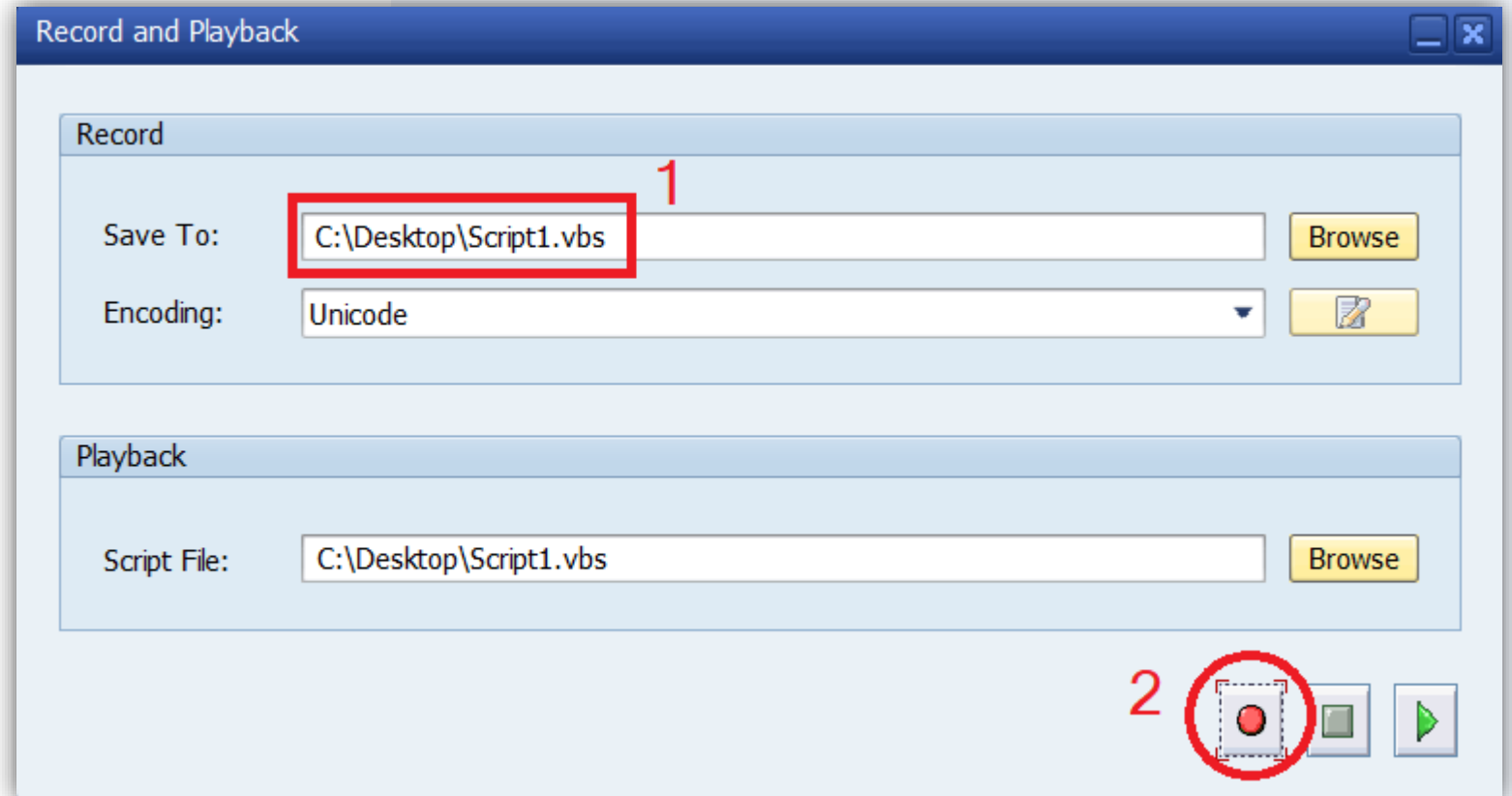


# Record first script

Open “Record and Playback”

1) Set file name for saved script

2) Click record button



# Start repetitive task

Make sure the GUI Scripting Indicator is on



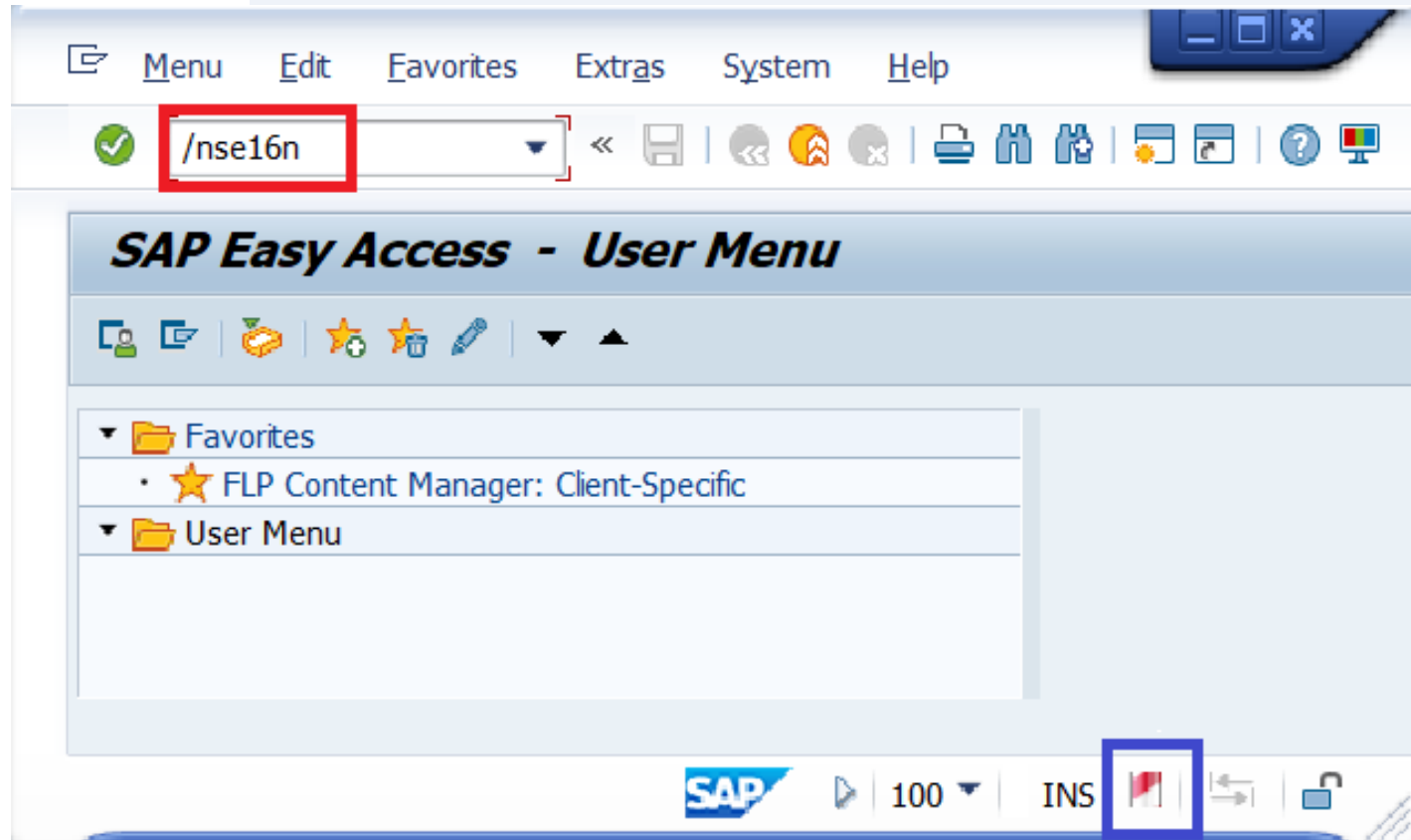
Start with transaction code



Hint: Always start with “/n”

I frequently download data to analyze outside SAP

SE16N General Table display



# Scripting SE16N for Display

Table Name

Blank Maximum Number

Uncheck some fields

Click Execute



Hint: Save as a variant!

Table Display Edit Goto Extras System Help

General Table Display

Background Number of Entries All Entries

Table:

Text table:

Layout:

Maximum no. of hits:

Get Field:

Logon Data (Kernel-Side Use)

☐ No texts

☐ Maintain entries

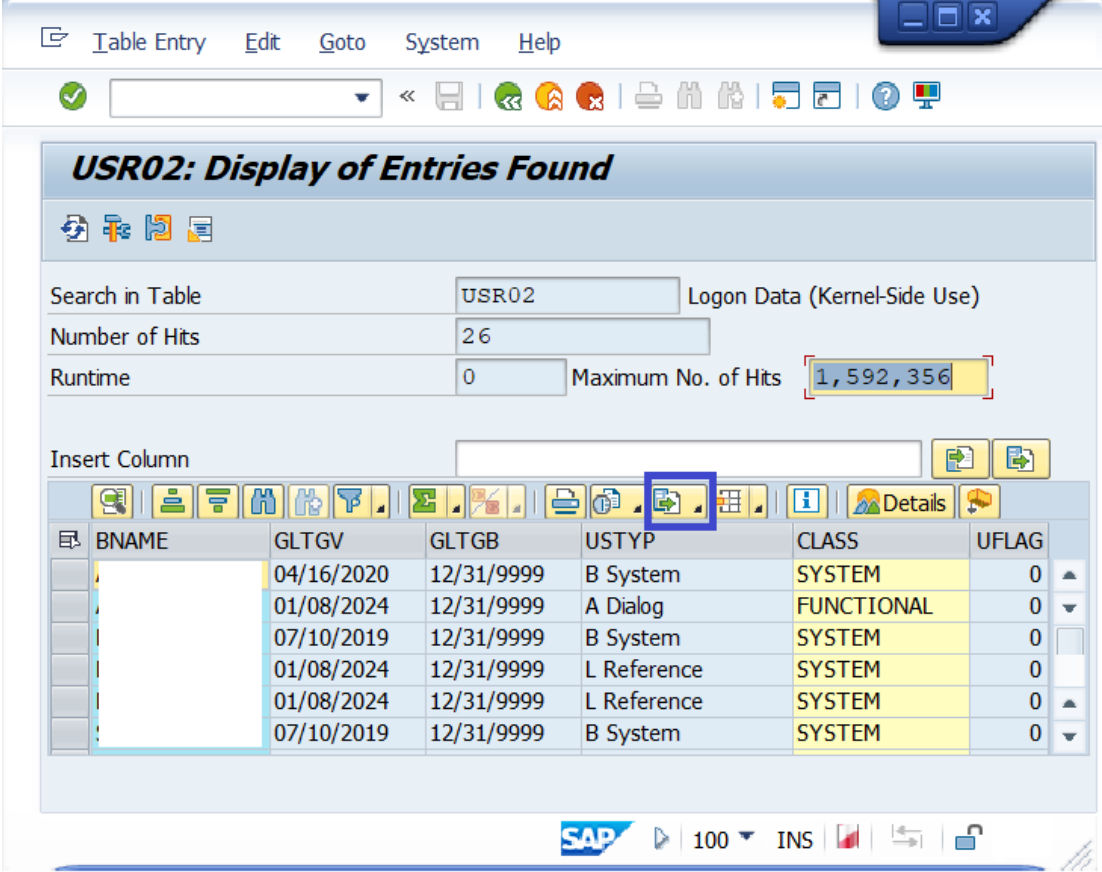
Technical name	O..	Fr.Value	To value	More	Output	Fld name
MANDT						Client
BNAME					<input checked="" type="checkbox"/>	User
BCODE					<input type="checkbox"/>	Initial PW
GLTGV					<input checked="" type="checkbox"/>	Valid from
GLTGB					<input checked="" type="checkbox"/>	Valid to
USTYP					<input checked="" type="checkbox"/>	User Type
CLASS					<input checked="" type="checkbox"/>	User Group
LOCNT					<input type="checkbox"/>	Failed Logons
UFLAG					<input checked="" type="checkbox"/>	User Lock

Numerous rows can cause performance problems

SAP 100 INS

# Scripting: Display Data

With data on the screen  
Click Export button



# Scripting: Export Data as File

Save as Local File

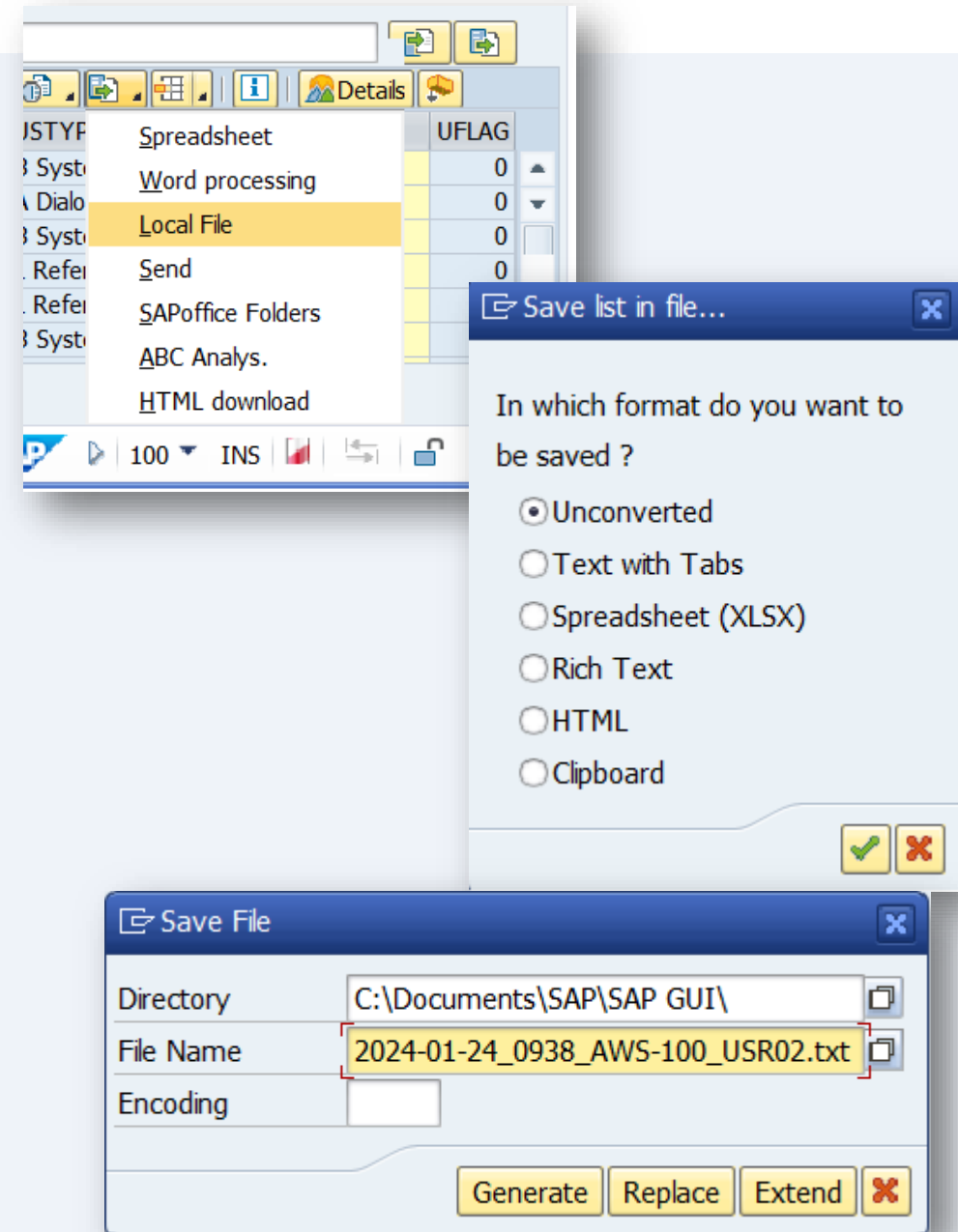
I choose unconverted, you do you

Give it a file name

Click Generate



Hint: Make a habit for filename to include:  
Date, Time, SID-CLI, Table

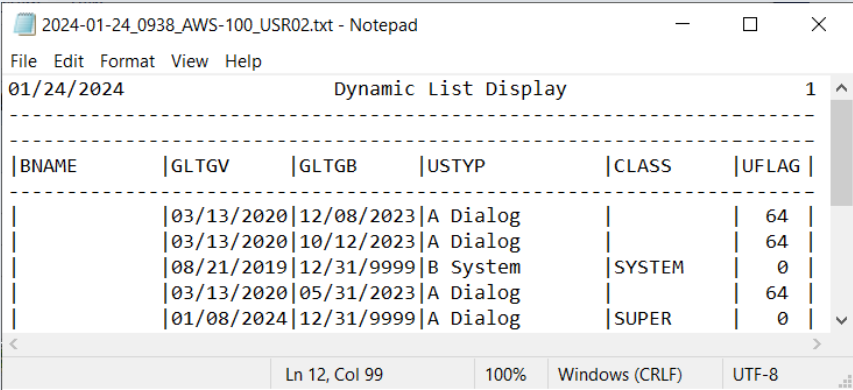
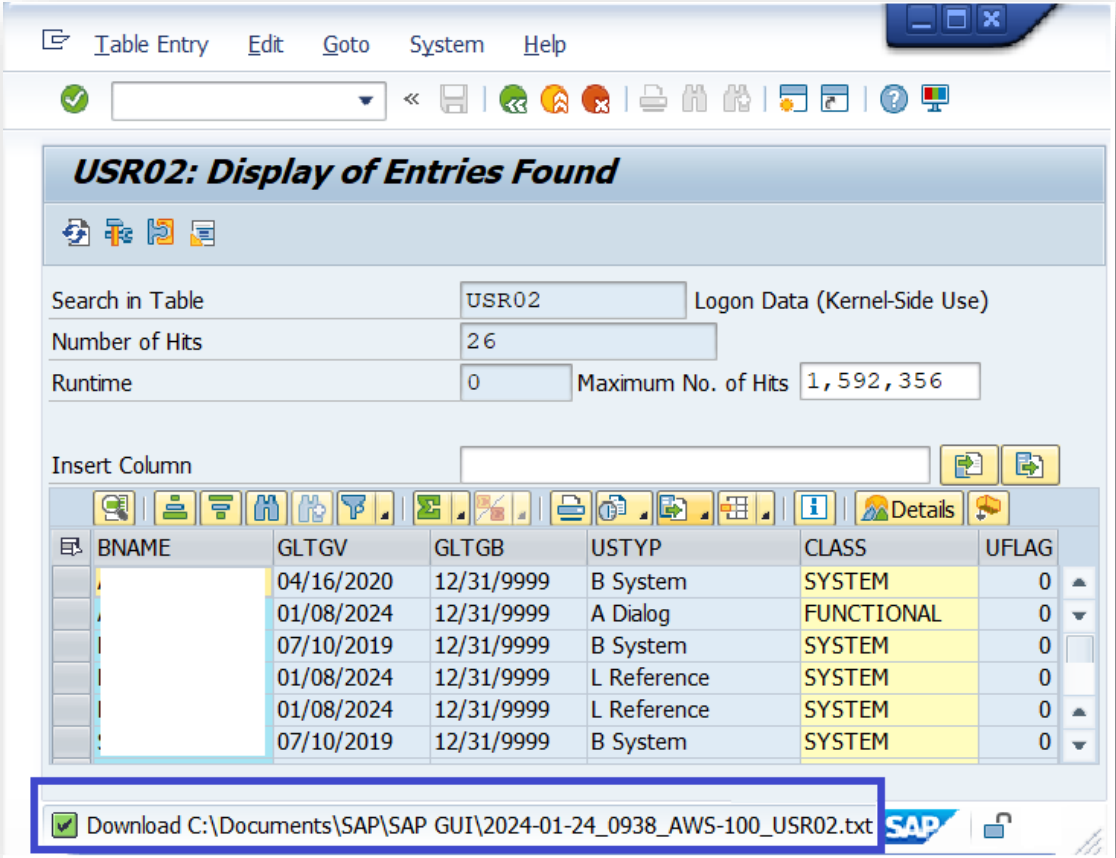


# Scripting: Saved File

File is saved to the default location

Take note of the message in the bottom status bar

Verify that the file is present



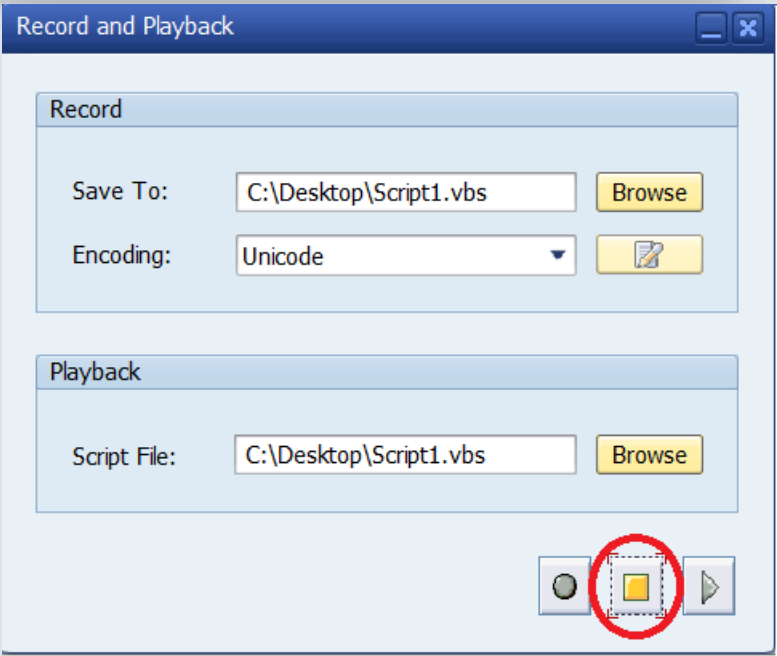
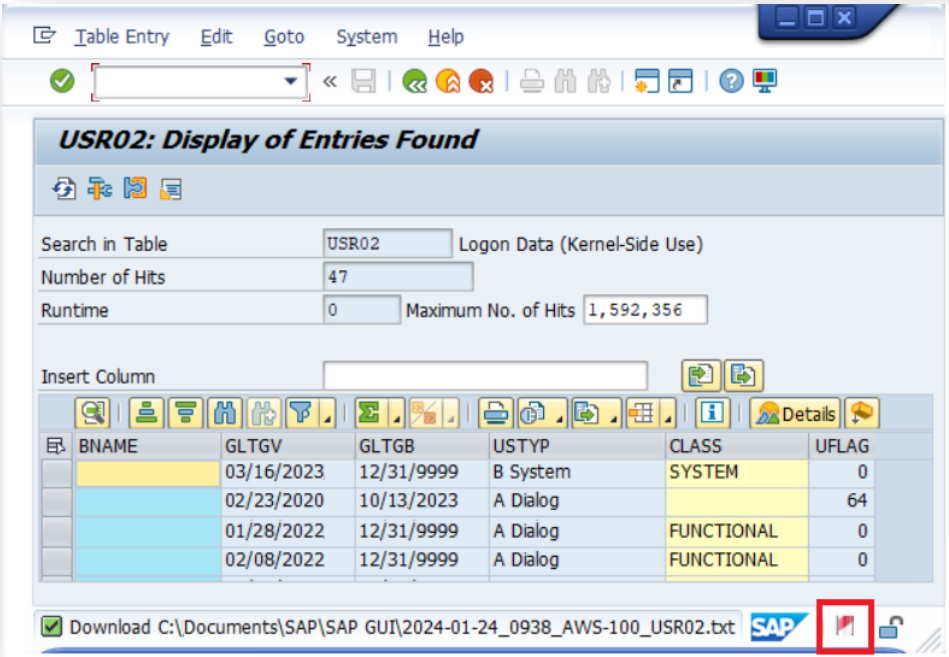
# Stop Script Recording

Sometimes the scripting window is hidden

On main SAP screen, click the “Barber pole” icon

Record and Playback window now visible

Stop script recording



# Script1.vbs File

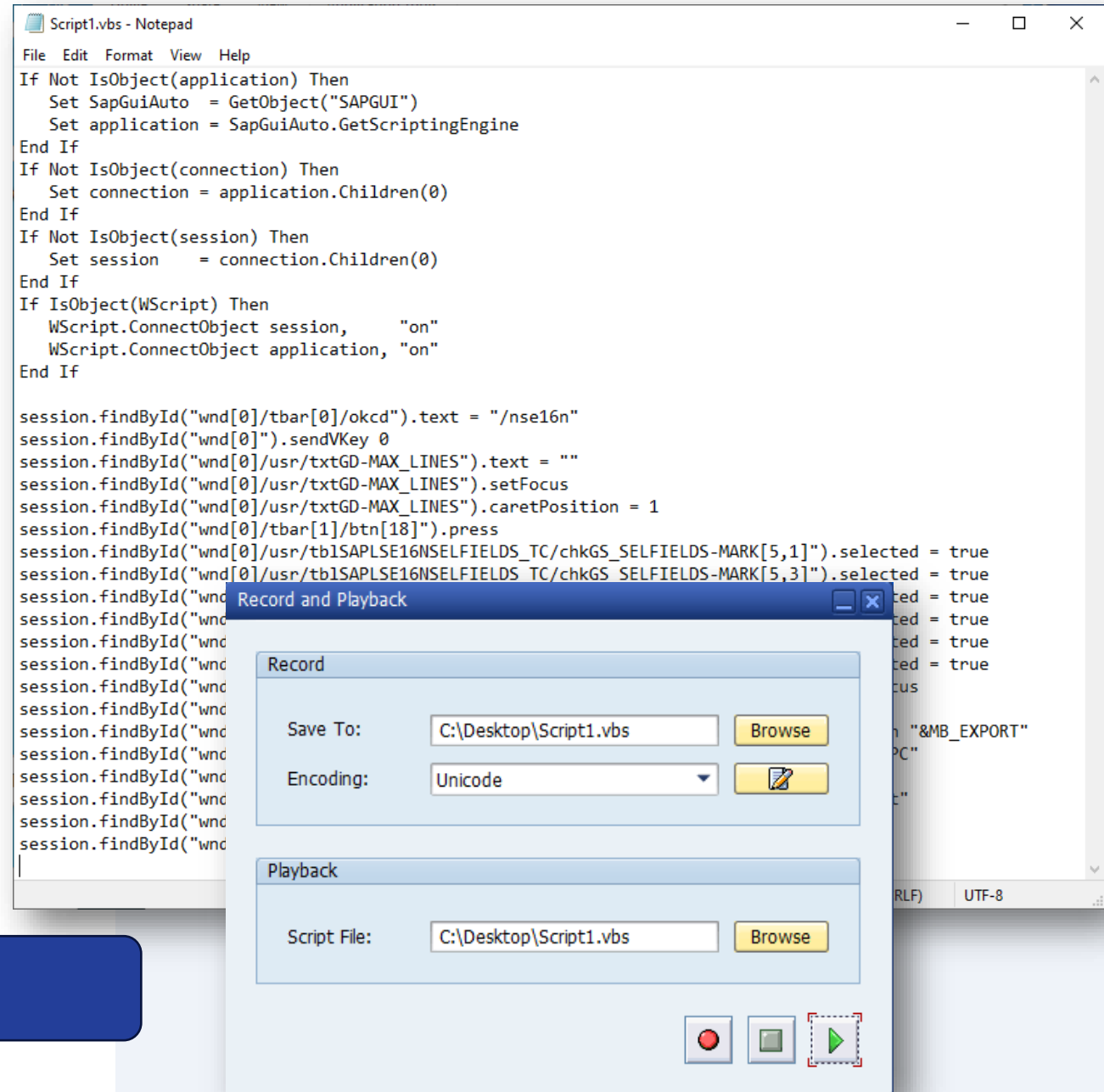
This is the exact file recorded by SAP

Let's say you accidentally delete the exported data.....

You can Playback this exact script again

Replay has limited use

Parameterize the Script!



# Level Up From Recording

Instead of re-running the same exact script, what if you could parameterize it and run it on a variety of things?

This script in your conference take-aways.

Create variant in SE16N.

AutoSave On

Scripting\_SE16N....

Search

FileHomeInsertPage LayoutFormulasDataReviewViewDeveloperHelpAcrobat

Visual Basic

Macros

Record Macro

Use Relative References

Macro Security

Code

Add-ins

Excel Add-ins

COM Add-ins

Add-ins

Insert

Design Mode

Properties

View Code

Run Dialog

Controls

Source

Map Properties

Expansion Packs

Refresh Data

XML

AA17

fx

	A	B	C	D	E
1	Description: This script runs SE16N, puts the table name in, gets the variant listed, displays the data, and saves the out				
2	Flag: Result column below must be blank for the line				
3	Pre-reqs: The SAP session listed below must already be open, the variant must already exist for each table in SE16N,				
4					
5	SystemName	AWS	Run Script		
6	Client	100			
7					
8	Total	2	Success	2	
9	Processed	2	Fail	0	
10	Remaining	0	Blank	0	
11					
12	1	2	3	4	5
13	Table	Group	Variant	Result	Message
14	AGR_USERS	01 - Users	EXPORT	Success	Download C:\Documents\SAP\SAP GUI\2024-01-16_1620_
15	USR02	01 - Users	EXPORT	Success	Download C:\Documents\SAP\SAP GUI\2024-01-16_1620_
16					
17					

Data

ChangeLog

ReadyAccessibility: Investigate

# Trouble-shoot complex security issues

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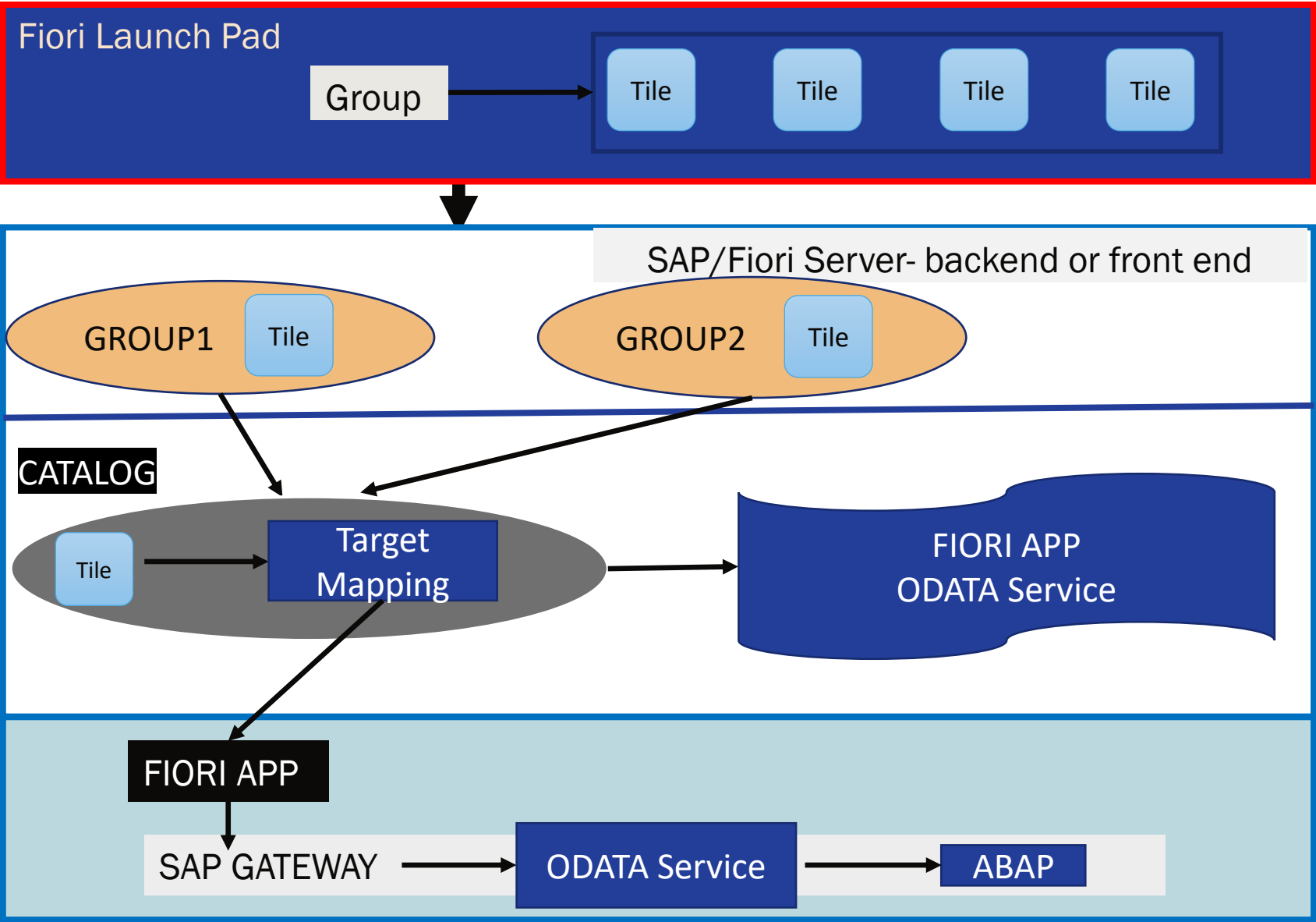
What is a complex authorization issue?

Today we are focused on two areas of complexity often encountered when deploying Fiori or S4 Hana.

- Fiori Issues- a new world of authorization issues we may not recognize or have traditionally considered as SAP authorization issues.
- SAP Employee Business Partner issues that may impact Fiori based operations but seem like authorization issues

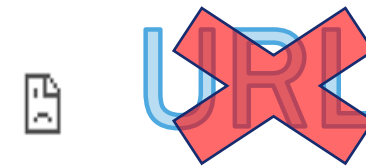


# The Fiori Path



- PFCG Role contains:
- Catalog
  - Group
  - ODATA Service (IWSG)
  - ODATA Service (IWSV)
  - TCODES
  - WEB DYNPRO

## Getting to the Launchpad or Tile URL



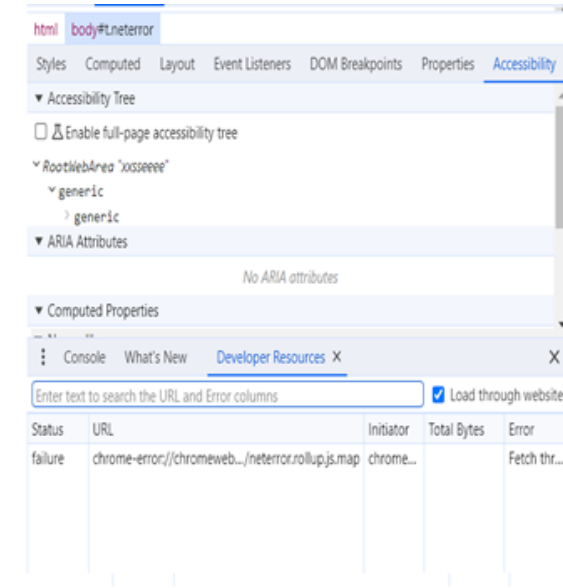
This site can't be reached

Check if there is a typo in xsseeee.

If spelling is correct, [try running Windows Network Diagnostics](#).

DNS\_PROBE\_FINISHED\_NXDOMAIN

Reload



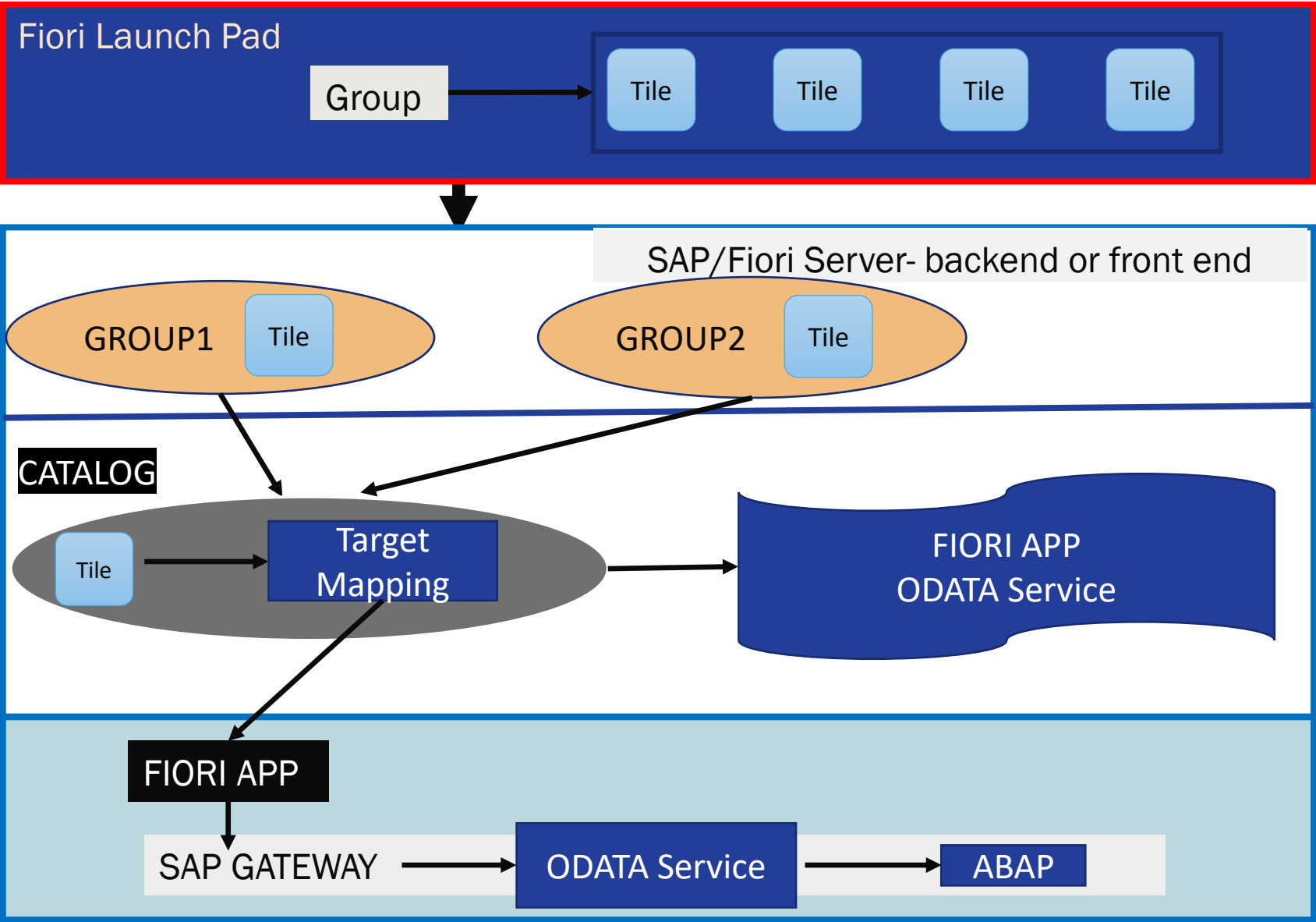
### Access to the Fiori tile/s

Fiori Launchpad (FLP) from SAP GUI- TCODE /UI2/FLP

URL for the FLP- <https://<server>:<port>/sap/bc/ui2/flp/FioriLaunchpad.html>

If you cannot reach the launchpad (or tile) the issue is most likely outside of the any systems related authorization- network issues, port issues, or other issues most likely outside of the actual Fiori code and objects.

# Context for Fiori Auth Issues- *The Fiori Path*



- PFCG Role contains:
- Catalog
  - Group
  - ODATA Service (IWSG)
  - ODATA Service (IWSV)
  - TCODES
  - WEB DYNPRO

# What Are These 'Authorization' Issues In The Fiori Path

---

"Where's this launchpad you keep telling me about?"

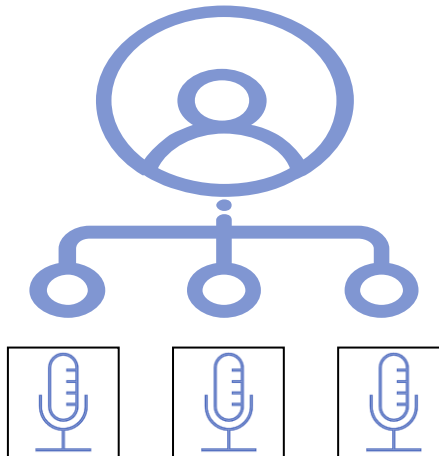
"I cannot find my tile/app."

"Why does this tile say, "Error"?"

"Fiori broke my browser it keeps saying 503 error."

"I can click the button, but nothing works. Well, something is happening, but it does not work right."

"It works but tells me I cannot see what I need to see, and Lisa/John can see it so I should be able to as well."



# Accessing the Launchpad

Fiori Launchpad (FLP) from SAP GUI- TCODE /UI2/FLP

URL for the FLP- <https://<server>:<port>/sap/bc/ui2/flp/FioriLaunchpad.html>

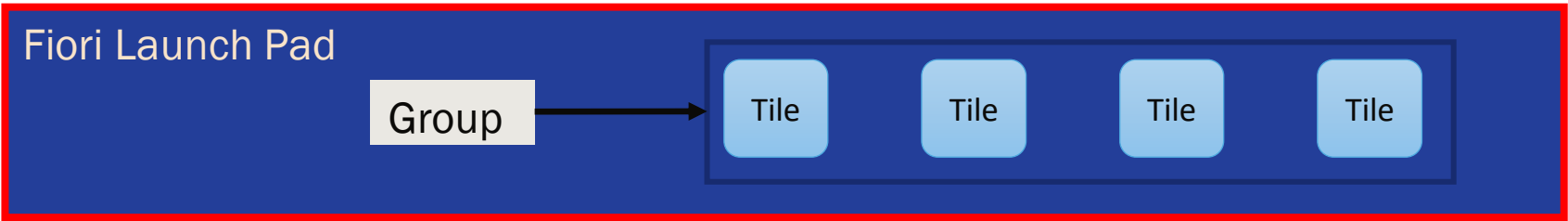
If you cannot reach the launchpad (or tile) the issue may also be caused by a missing authorization, S\_RFCACL. This authorization may manifest in a similar manner and is an SAP system issue not an external issue. This authorization check is linked to RFC users accessing the RFC paths. Here is an example of the authorization in a Gateway role.



Role	Z_GATEWAY
Maint.	0 unmaint. org. levels, 4 open fields
Status	Unchanged

Group/Object/Authorization/Fl...	Maintena...	Value	Text
Object class AAAB	Manually		Cross-application Authorization Objects
Authorization Obje	Manually		Authorization Check for RFC Access
Authorization Obje	Manually		Authorization Check for RFC User (e.g. Truste
Authorizat. T-H	Manually		Authorization Check for RFC User (e.g. Truste
RFC_SYSID	Manually	* *	System ID (for SAP and External systems)
RFC_CLIENT	Manually	* *	RFC client or domain
RFC_USER	Manually	* *	RFC User (SAP or External)
RFC_EQUUSER	Manually	Call by the same user is not possibl...	RFC same user ID
RFC_TCODE	Manually	* *	RFC transaction code
RFC_INFO	Manually	* *	RFC information
ACTVT	Manually	Execute	Activity

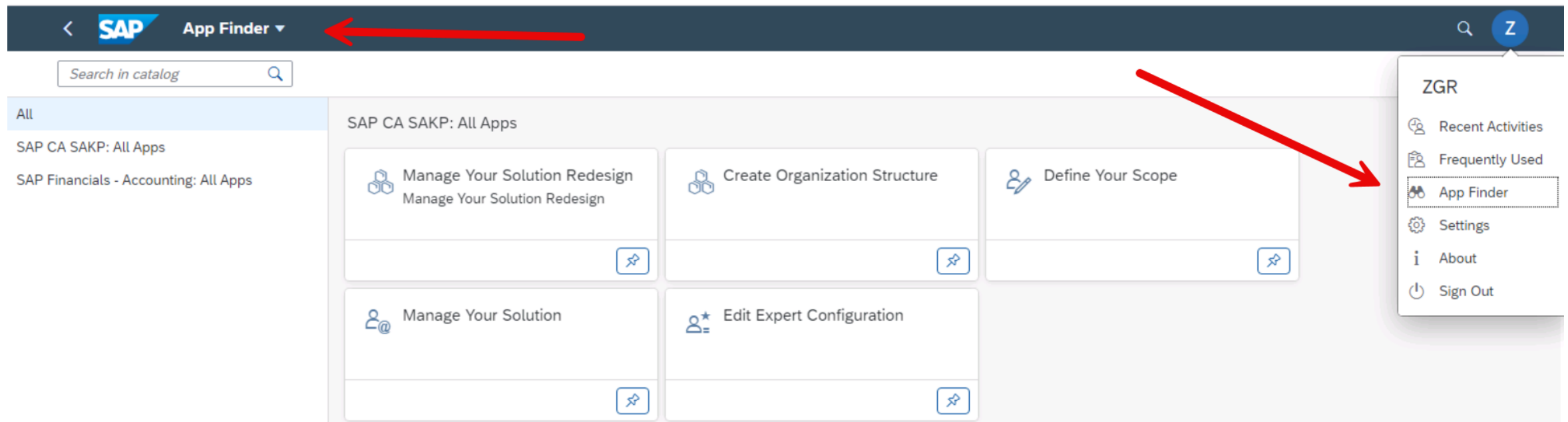


# Launchpad- groups/tiles- Where are they?

Missing tiles / groups:

Enabled personalization in groups — user allowed to hide apps

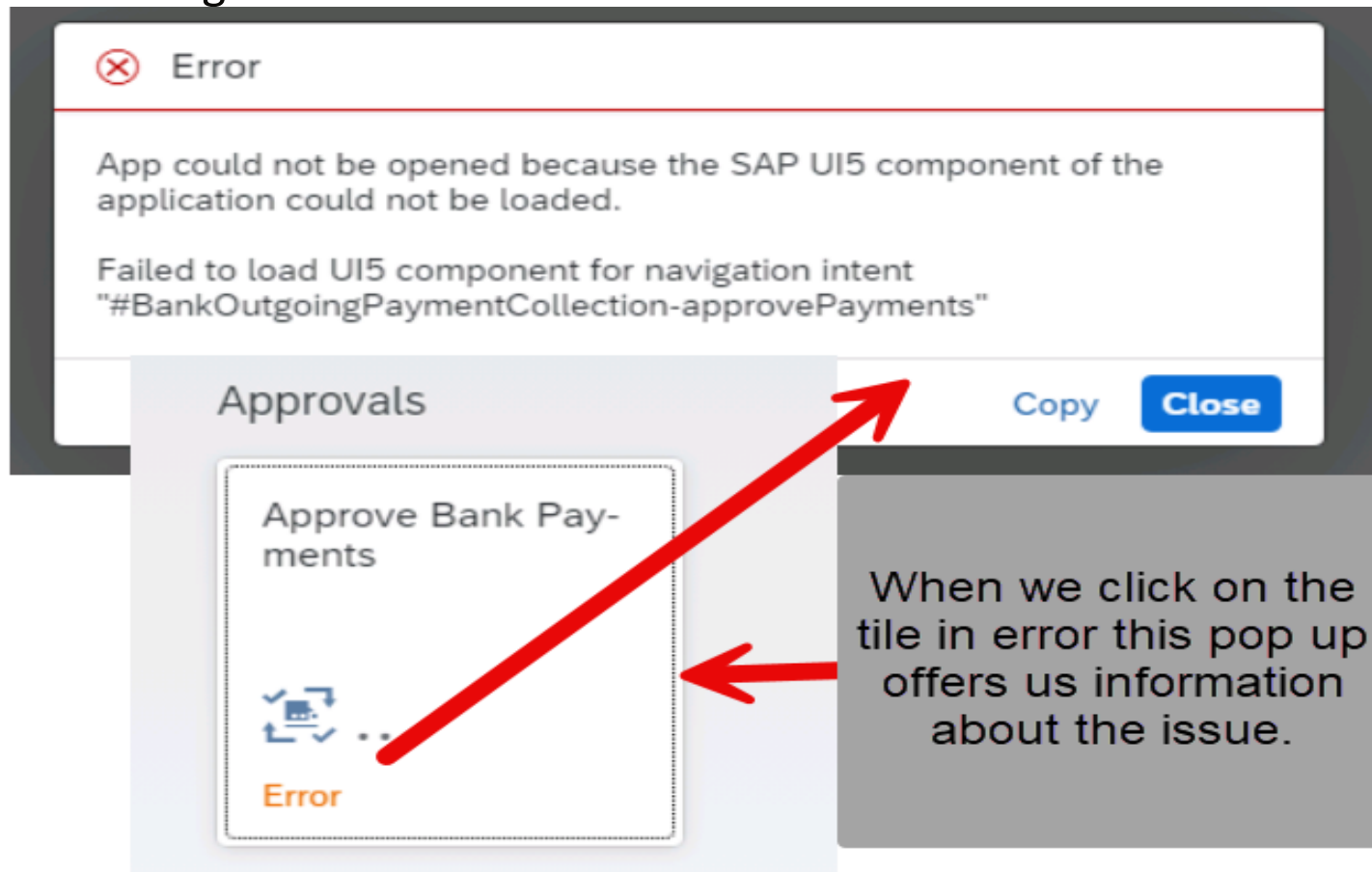
Use the app finder to find your Fiori tiles!



# I found my tiles, but some have an error?

---

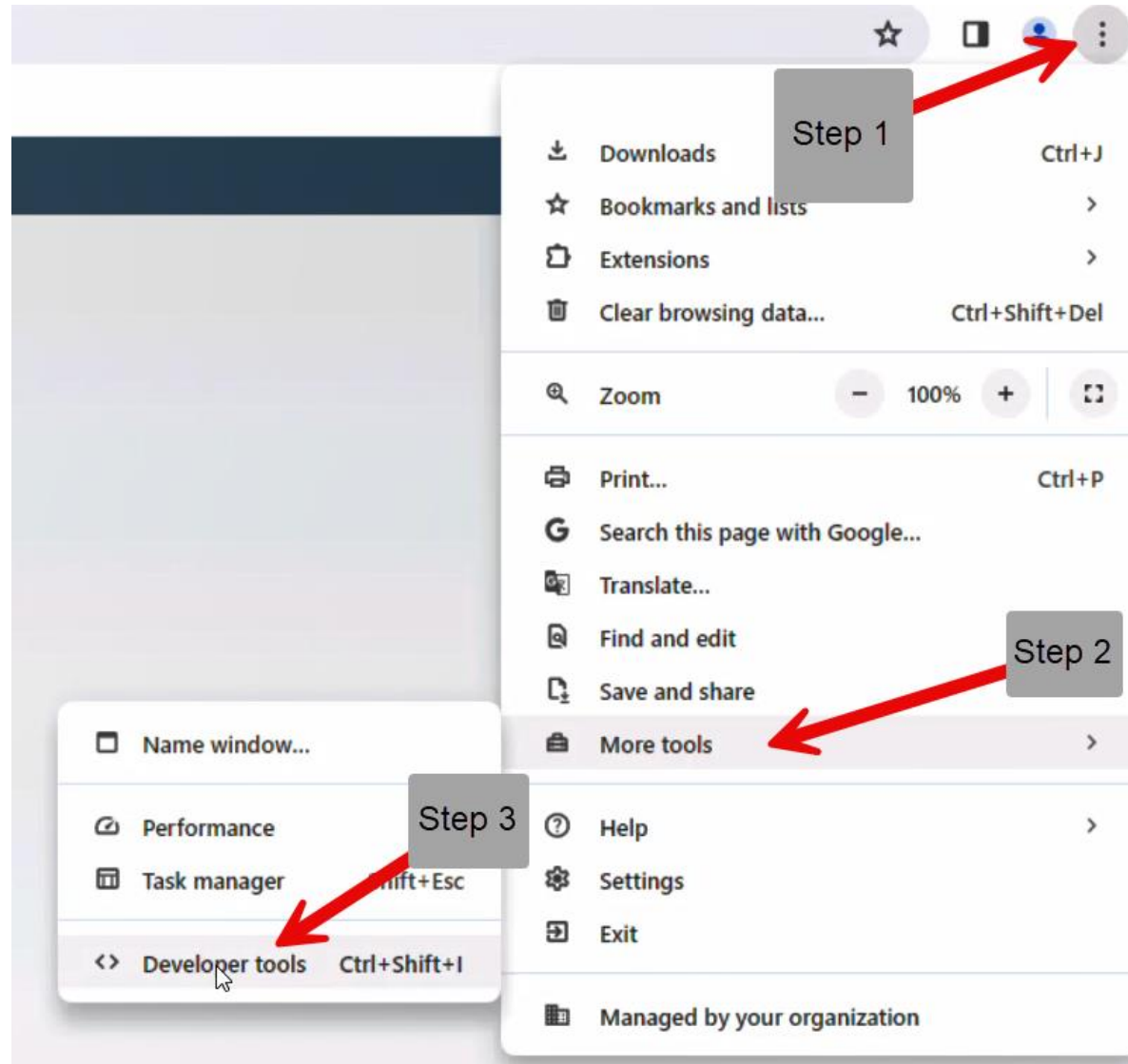
You have your tiles showing up, but they have an error showing. Not all tiles provide the error context shown here. This example error indicates an issue with one of the tile services or elements. We can track the error using browser tools and SAP tools.



# Tracking Fiori Tile Errors- browser tools

This is the CHROME path to the developers' tools. This will provide a look at what the browser is trying to do and the responses from Fiori.

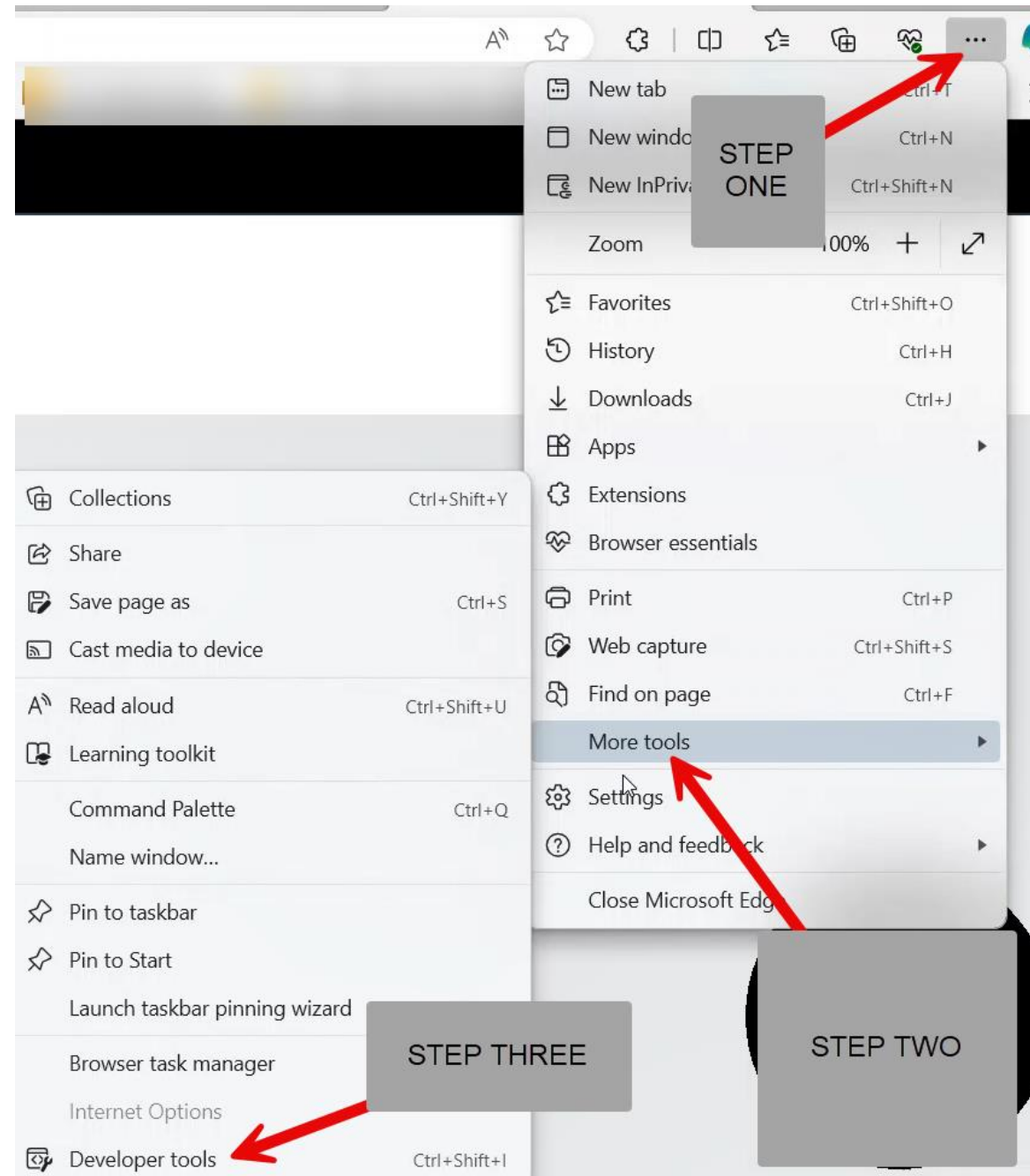
The sequential clicks/steps are indicated in the graphic.



# Tracking Fiori Tile Errors- browser tools

This is the EDGE path to the developers' tools. This will provide a look at what the browser is trying to do and the responses from Fiori.

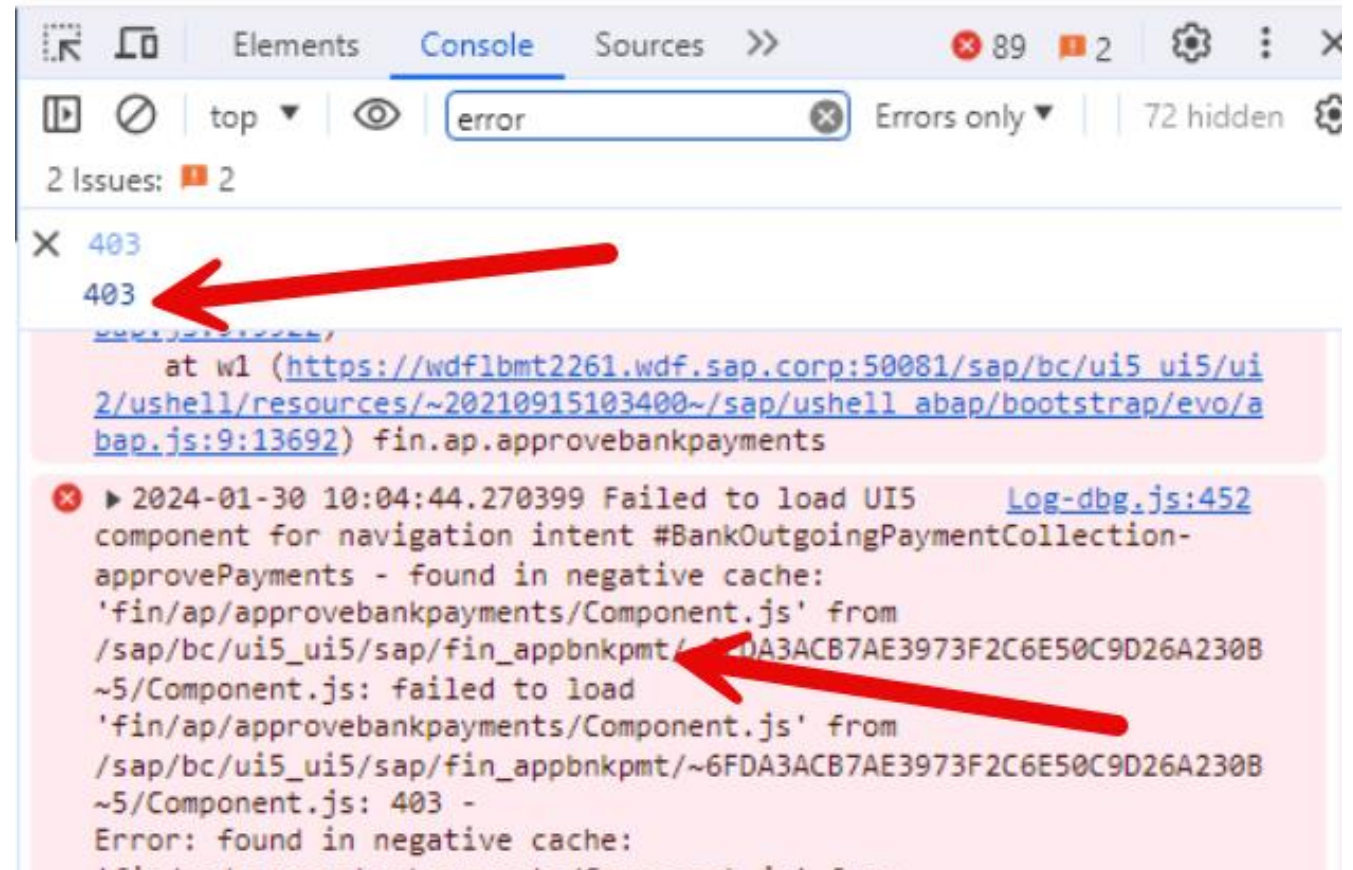
The sequential clicks/steps are indicated in the graphic.



# Tracking Fiori Tile Errors- browser tool outputs

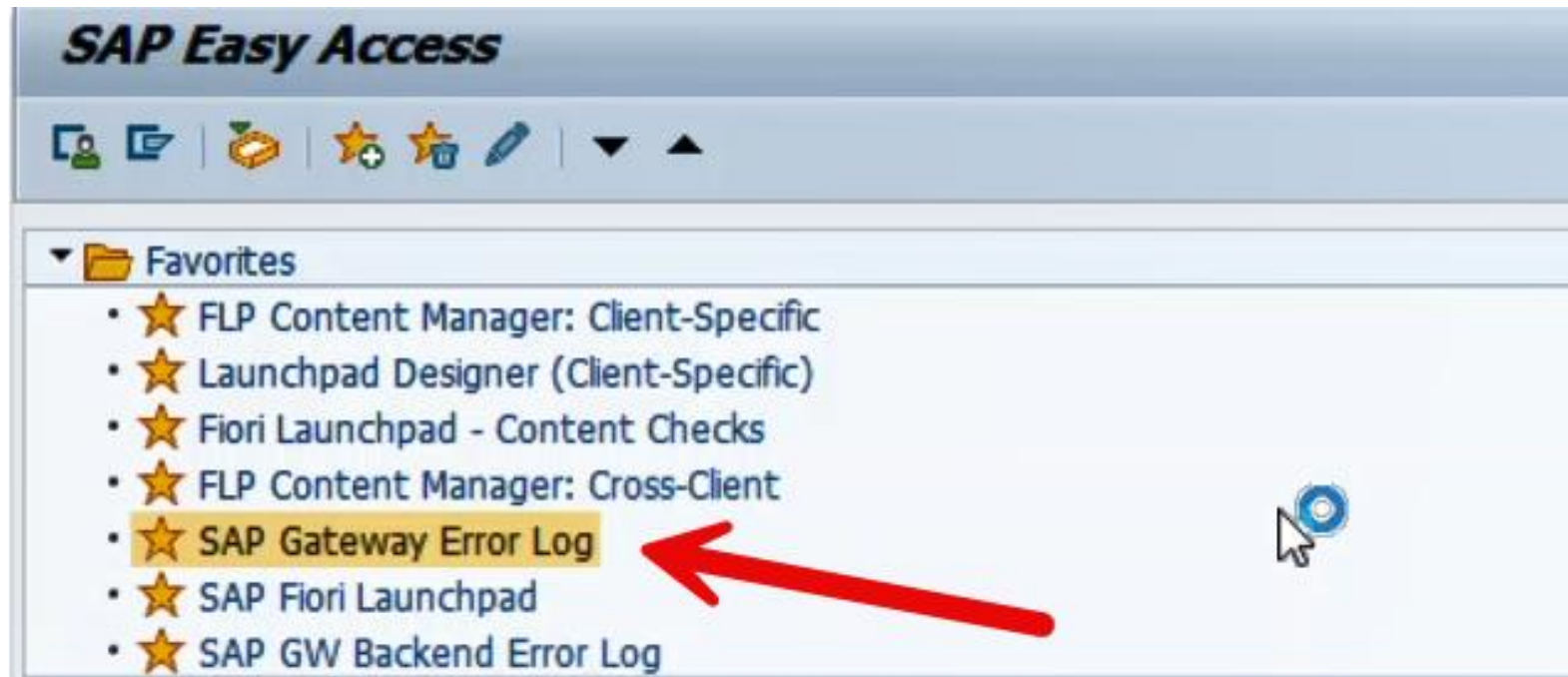
This shows the output of the developer tool- note the 403 error and the indication that the 'approvebankpayment' is missing some component/service.

The path to the service is implied or shown as '/sap/bc/ui5\_ui5/sap/fin\_appbnkpmt'. This is an important clue in discovering the issue.



# Tracking Fiori Tile Errors- SAP GATEWAY

The /IWFND/ERROR\_LOG or /IWBEP/ERROR\_LOG (for a backend/split Fiori architecture) Transaction code will provide a window into issues when we have a tile in the launchpad but errors in executing the tile. The information from the browser developer tool is the first pointer to this next investigative step.



# Tracking Fiori Tile Errors- SAP GATEWAY Error Logs Output

The Error logs in the gateway show where there is a gap or incomplete element to successfully execute the tile function. The most common of these are missing or deactivated services and missing systems alias.

SAP Gateway: Error Log

Re-Select

</

SAP Gateway: Error Log

Re-Select

# Tracking Fiori Tile Errors- SAP GATEWAY Error Logs Details

The log details provide explicit information about the error issues and should be a jumping off point to resolve the issue. In this case we see there is a missing service. Service identification and activation would be the likely way to resolve this.

Group description	Cell Content...
Line	16
Entry Number	1
Date	30.01.2024
Time	16:04:44
User	TB576
T100 Error ID	/IWFND/MED170
T100 Error Info	<a href="#">i</a>
Error Count	5
Request Kind	Server OData v2
Error Text	No service found for namespace "", name 'FAP_APPROVEBANKPAYMENTS_SRV', version '0001'
Application Component	n/a
Package	/IWFND/MED_PER_DEV_LANGU
Program	/IWFND/CL_MED_SRG_DB_ACCESS===CP
Include	/IWFND/CL_MED_SRG_DB_ACCESS===CM00R
Transaction ID	E9D411F695DD4E5A931AFC1AA844FC0F
Line Number	52
Remote Address	10.22.113.31
Date of First Error	30.01.2024
Time of First Error	16:01:52
Expiry Date	13.02.2024

Group description	Cell Content...
Error Count	5
Request Kind	Server OData v2
Error Text	No service found for namespace "", name 'FAP_APPROVEBANKPAYMENTS_SRV', version '0001'
Application Component	n/a
Package	/IWFND/MED_PER_DEV_LANGU
Program	/IWFND/CL_MED_SRG_DB_ACCESS===CP
Include	/IWFND/CL_MED_SRG_DB_ACCESS===CM00R
Transaction ID	E9D411F695DD4E5A931AFC1AA844FC0F
Line Number	52
Remote Address	10.22.113.31
Date of First Error	30.01.2024
Time of First Error	16:01:52
Expiry Date	13.02.2024
Client	400
Location	G
Operation ID	D307447269E11EEEAFF01CD4035636A6
No Payload Authority	D307447269E11EEEAFF01CD4035636A6
Request URI	/sap/opu/odata/sap/FAP_APPROVEBANKPAYMENTS_SRV/***Hide_due_to_secure_log_level***
Log Level	Secure

# Tracking Fiori Tile Errors- SAP GATEWAY Service Activation

One of the most common issues is a service not being activated in the system you are running your Fiori functionality. The transaction code SICF is the service definition transaction allowing you to check the service for its state-activated or deactivated. If you are authorized, you can activate the service and test- likely you will have a Fiori technical team to help complete this task.

Define Services

Filter for Calling ICF Hierarchy

Hierarchy Type

SERVICE

Virtual Host

Service Path

Service Name

Reference Service

Description

Language

EN English

Filter for Detail Information

Created By

Created On

to

Last Changed By

Changed On

to

Define Services

Create Host/Service

External Aliases

System Monitor Inactive

Filter Details

Virtual Host

Service Path

ServiceName

Description

Lang.

EN English

Reference

Apply

Reset

Fine-Tune

Virtual Hosts/Services

Documentation

Refer

fin\_apmanclear

Fiori App - Accounts Payables Manual Cleari...

fin\_apoverview

F2917 - Accounts Payable Overview

Virtual Hosts/Services

Documentation

Reference S

fin\_apmanclear

Fiori App - Accounts Payables Manual Cleari...

fin\_apoverview

F2917 - Accounts Payable Overview

fin\_appbnkpmt

Approve Bank Payments

Source: SAP

66  
SAPinsider

# Tracking Fiori Tile Errors- Some Transaction Codes You May Want To Know

- These transaction codes are usually not accessible in a productive systems unless the systems is open for maintenance with most users locked. The PFCG roles should not move to production until this is completed.

**Maintain Task List SAP\_GATEWAY\_ACTIVATE\_ODATA\_SERV, Build 00001**

Attributes

Autom.	Phase	Comp.	T...	Task	Task Description	Help	Appl. Comp.	Up	Down
	Prepare	CTS		CL_STCT_SET_TRANSPORT_OPTIO...	Set transport options for to be activated OData Services		BC-INS-TC-CNT		
	Configuration	GATEWAY		CL_STCT_INPUT_ODATA_SERVICES	Define OData Services for Activation		BC-INS-TC-CNT	▲	▼
	Configuration	GATEWAY		CL_STCT_MAINTAIN_SYSALIAS_OD...	Select Processing Mode / System Alias for Activation		BC-INS-TC-CNT	▲	▼
	Configuration	GATEWAY		CL_STCT_ACTIVATE_ODATA_SERVI...	Confirm OData Services for Activation		BC-INS-TC-CNT	▲	▼
	Postprocessing	CTS		CL_STCT_DELETE_REQUESTS_ODA...	Delete Requests for OData Services Activation (if newly create...		BC-INS-TC-CNT	▲	

**Task List Attributes**

Description: SAP Gateway - Activate OData Services

Task List Group: [Dropdown]

Task List Tags: [Text Field]

Build Number: 1

Created on: 09.09.2014

Created by: SAP

Changed On: 12.11.2019

Changed by: SAP

Document class: TX

Docu. Object: SAP\_GATEWAY\_ACTIVATE\_ODATA\_S

Config. Class: [Dropdown]

☐ Obsolete

[OK] [Cancel]

- Transaction STCOI — Task List SAP GATEWAY ACTIVATE ODATA SERV
  - Perform configuration tasks in an automated way.

# Tracking Fiori Tile Errors- Some Transaction Codes You May Want To Know

- These transaction codes are usually not accessible in a productive systems unless the systems is open for mainteance with most users locked.
- Transaction /U12/FLPCM\_CUST — Check Services for a catalog
  - This is a check to see if your catalo has all required technical elements.

**Launchpad Content Manager: Client-Specific (Customizing)**

Catalogs Tiles/Target Mappings Roles

Search Tiles/Target Mappings

**Tile / Target Mapping Combinations (294 of 17355)**

St...	T/T...	T/TM Match	Semantic Object	Action	Title/Subtitle/Information	App T...	Application Ressource	SAP Fiori ID	Transaction	Trans
		Tile + TM	BankMessage	manage	Manage Bank Messages	UI5	com.sap.fiori.fin.mbc.ma...	F4385		
		Tile + TM	BankOutgoingPaymentC...	approvePayments	Approve Bank Payments	UI5	fin.ap.approvebankpaym...	F0673A	F0673A	
		TM only	BankStatement	displayBankStatement	Manage Bank Statements	UI5	fin.ar.bankstatements.m...	F1564		
		Tile + TM		manage	Manage Bank Statements / To be processed	UI5	fin.ar.bankstatements.m...	F1564	F1564	
		Tile + TM		reprocessItems	Reprocess Bank Statement Items / To be processed	UI5	fin.ar.bankstatementite...	F1520	F1520	
		Tile + TM	BankStatementReproces...	manage	Manage Bank Statement Reprocessing Rules	UI5	fin.ar.postingrule.manage	F3555	F3555	Cann

**Roles containing tile/target mapping Approve Bank Payments (4)**

Role	Role Description	Service Activation Status
SAP_BR_AP_MANAGER	Accounts Payable Manager	
SAP_BR_CASH_MANAGER	Cash Manager	
SAP_BR_CASH_SPECIALIST	Cash Management Specialist	
Z_GATEWAY	Role for SAP Gateway	

# What Are These 'Authorization' Issues- SAP Employee Business Partner issues

Key elements regarding the employee business partner, user assignment, and the SAP business partner.

- 1) Some integration or use of the employee objects in the HCM area of S4 Hana. Most enterprise systems will have an HR system, like SuccessFactors, that is integrated with the S4 Hana ERP.
- 2) Employee data is integrated to the S4 Hana system allowing representation for a variety of processes and functions.
- 3) The standard and required integration processes creates a personnel number record and an SAP business partner record.
- 4) The user assignment may need to be manually applied if there is not a process to update the employee record automated in the HR integration process.

Most production systems are deployed with these elements in place- errors in SAP employee business partners and access Occurs mostly in test systems or other systems with production level data copied into it.

In a production system these errors are almost always linked to changing and existing employee record to a new user ID.

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In a production system these errors are almost always linked to changing and existing employee record to a new user ID.

# The Link Between the Employee, User-IS, and the Business partner

An employee is hired and the hiring data is received by the SAP ERP system. (PA20)

The employee data is updated with the User-ID

The user ID has been generated and assigned.

A business partner is created

The screenshot shows the SAP PA20 'Basic personal data' screen. At the top, the 'Personnel no.' is 908, 'Name' is 'tester testy', 'EE group' is '1 Active', and 'EE subgroup' is 'Y1 Employees'. The 'Pers.area' is '1010 Germany'. Below this, there are two tabs: 'Basic personal data' and 'Basic data'. The 'Basic personal data' tab is active, showing a list of infotypes with their status. The 'Communication' infotype is highlighted with a red arrow. To the right, there is a 'Period' section with radio buttons for 'Period', 'Today', 'All', 'From curr.date', 'To Current Date', 'Current Period', 'Curr.week', 'Current month', 'Last week', 'Last month', and 'Current Year'. A 'Choose' button is at the bottom of the 'Period' section. At the very bottom, there is a 'Direct selection' section with fields for 'Infotype' and 'STy'.

Infotype	Text	St...	Status
Actions			✓
Organizational assignment			✓
Personal data			✓
Addresses			✓
Communication			✓

# The Link Between the Employee, User-IS, and the Business partner

An employee is hired and the hiring data is received by the SAP ERP system.

**The employee data is updated with the User-ID (PA20 Infotype )**

The user ID has been generated and assigned.

A business partner is created

PersNo	908	Name	tester testy
EE group	1 Active	Pers.area	1010 Germany
EE subgroup	Y1 Employees		
Start	01.01.2023	to	31.12.9999
		Chng	31.01.2024 ZGR_01

Communication

Type	0001	System user name (SY-UNAME)
System ID	TB576	

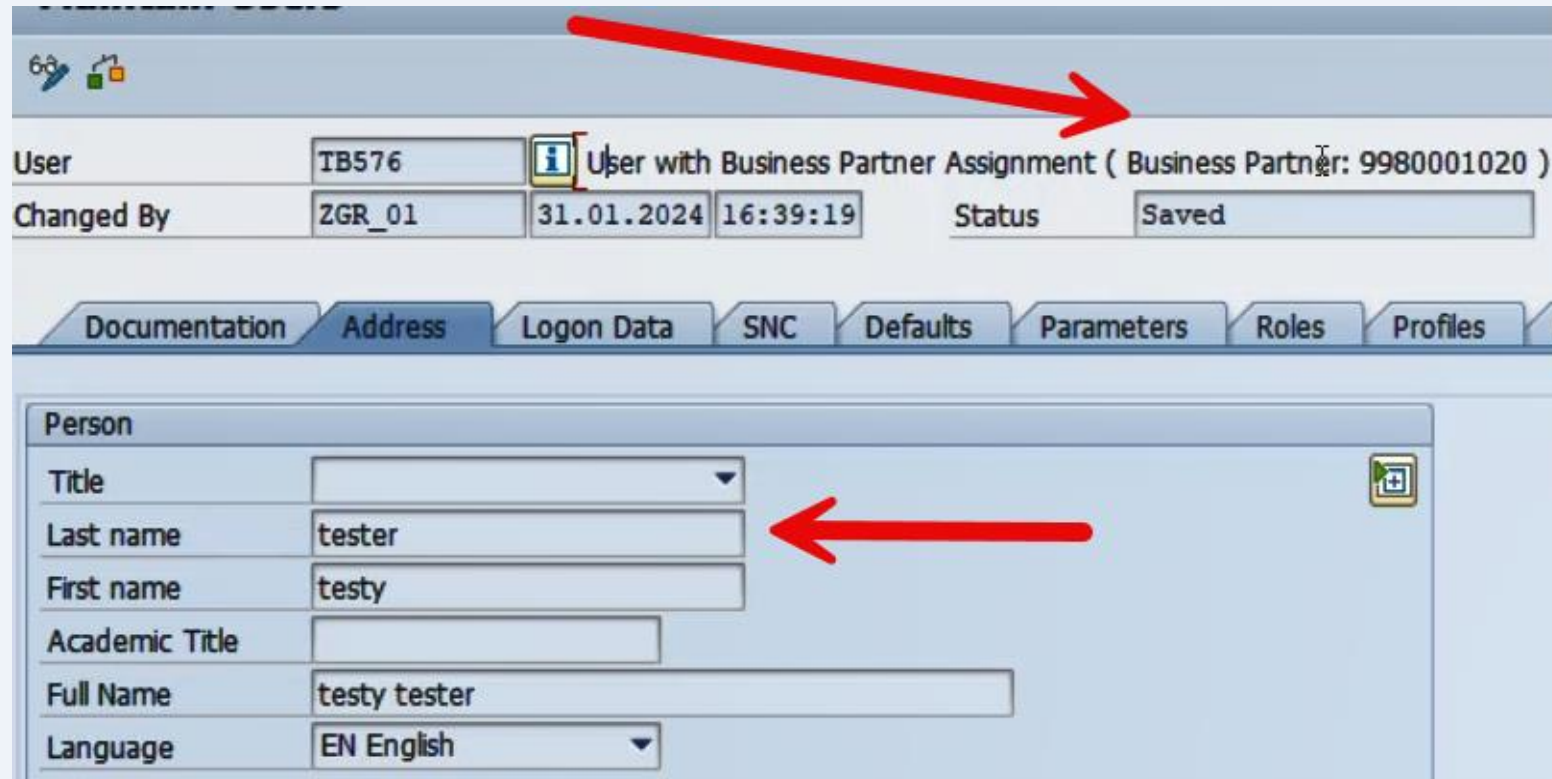
# The Link Between the Employee, User-IS, and the Business partner

An employee is hired and the hiring data is received by the SAP ERP system.

The employee data is updated with the User-ID

**The user ID has been generated and assigned. (SU01D)**

A business partner is created



The screenshot shows the SAP SU01D transaction screen. At the top, the 'User' field contains 'TB576'. To its right, a blue information icon is followed by the text 'User with Business Partner Assignment ( Business Partner: 9980001020 )'. Below this, the 'Changed By' field shows 'ZGR\_01', the date is '31.01.2024', the time is '16:39:19', and the 'Status' is 'Saved'. A tabbed interface below includes 'Documentation', 'Address', 'Logon Data', 'SNC', 'Defaults', 'Parameters', 'Roles', and 'Profiles'. The 'Person' section contains fields for 'Title', 'Last name' (filled with 'tester'), 'First name' (filled with 'testy'), 'Academic Title', 'Full Name' (filled with 'testy tester'), and 'Language' (set to 'EN English'). Two red arrows are overlaid: one points from the top header area to the 'User with Business Partner Assignment' text, and the other points from the right side to the 'Last name' field.

# The Link Between the Employee, User-IS, and the Business partner

An employee is hired and the hiring data is received by the SAP ERP system.

The employee data is updated with the User-ID

The user ID has been generated and assigned. (SU01D)

A business partner is created (BP, BUP)

**Maintain Business Partner**

Person Organization Group General

Worklist Find

Find 1 Business Partn... By 4 Name

Name1 test\*

Name2

Max. hits 100 Start

Partner	Description	Name 1/
1000232	test / 12345 Replicate	test
1000240	test 30 Changed / 30303 Replicate	test 30
9980001020	testy tester	tester

**Display Person: 9980001020, role Employee**

Person Organization Group General Data

Business Partner 9980001020 testy tester

Display in BP role BUP003 Employee

Address Address Overview Identification Control Status

Personal Data

Sex Unknown

Marital Status

Nationality DE

Date of Birth 01.01.1975

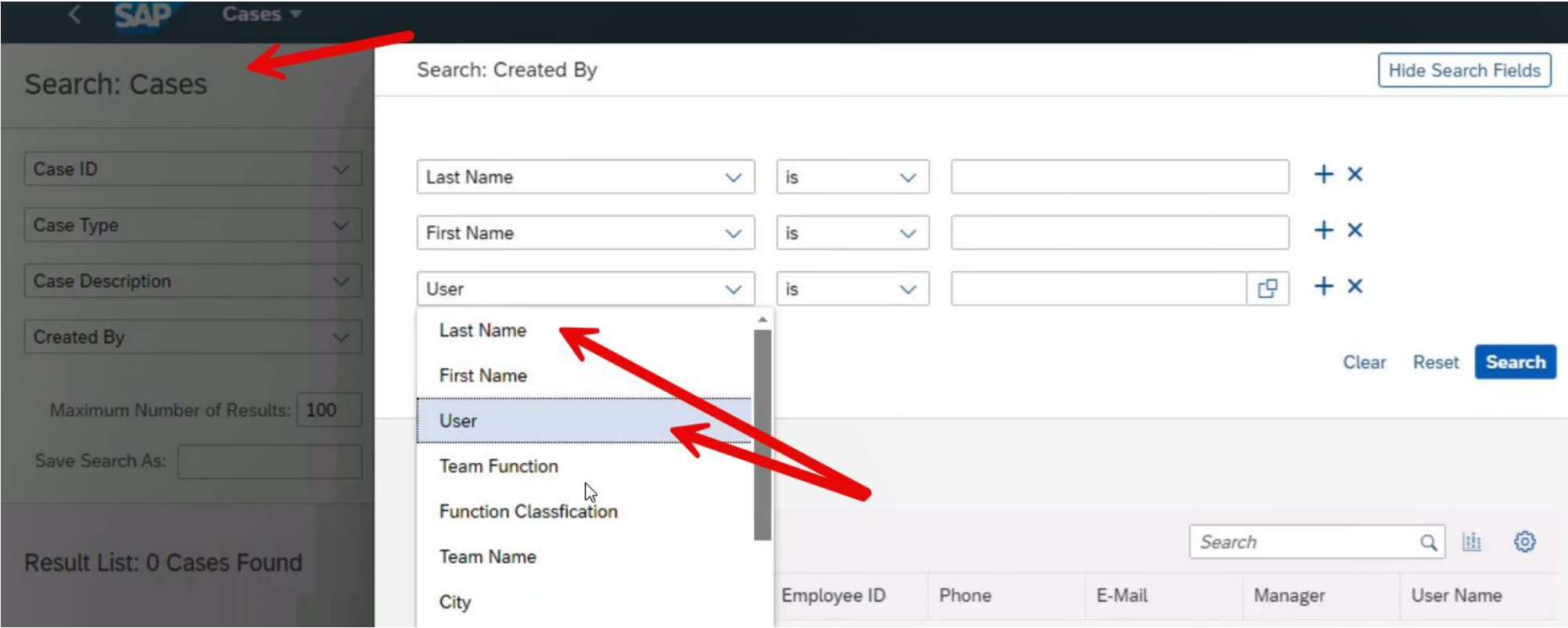
Employee Data

Personnel number 908

User Name TB576

# The Link Between the Employee, User-IS, and the Business partner- and a Fiori APP

Fiori Apps utilize the BP-Employee-User relationship found by the business partner data to execute many functions especially those where employees, users, or other person related data is linked.



# The SAP Employee(EE) Business Partner(BP) Links to the USER ID

Once the EE BP is created there are key connections between elements of the BP, users and address data.

The User is tied to the EE BP through a set of tables and fields. Tracing them to see if there is missing is done through this sequence.

Use transaction code SE16N and follow this path: **USR21** → ADRP → BUT000 → BUT100

**General Table Display**

Background | Number of Entries | All Entries | View Maintenance

Table: USR21 | User Name/Address Key Assignment

Text table: | No texts

Layout: | Maintain entries

Maximum no. of hits: 500

Get Field

Selection Criteria

Fld name	O.	Fr. Value	To value	More	Output	Technical name
Client						MANDT
User		tb576			✓	BNAME
Person Number					✓	PERSNUMBER
Address Number					✓	ADDRNUMBER
Cost center					✓	KOSTL
Start menu					✓	START_MENU

**USR21: Display of Entries Found**

Search in Table: USR21 | User Name/Address Key Assignment

Number of hits: 1

Runtime: 0 | Maximum no. of hits: 500

Insert Column

Group description	Cell Content
Client	400
User Name	TB576
Person Number	57280
Address Number	57281
Identity Add. Type	4
Business Partner GUID	D307447269E11EDEB08AE7D66AFEDA...
Description	testy tester
Identity GUID	710969AF437F1EEEAEC497ADDF519B5E
Organization Type	C
Address Number	23382

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Use transaction code SE16N and follow this path: USR21 → **ADRP** → BUT000 → BUT100

General Table Display

Background

Number of Entries

All Entries

Search

Filter

Sort

Print

Help

Table

ADRP

Persons (Business Address Services)

☐ No texts

☐ Maintain entries

Maximum no. of hits

500

Get Field

Selection Criteria

Fld name	O.	Fr.Value	To value	More	Output	Technical name
Client						CLIENT
Person Number		57280			<input checked="" type="checkbox"/>	PERSNUMBER
From					<input checked="" type="checkbox"/>	DATE_FROM
Address Version					<input checked="" type="checkbox"/>	NATION
To					<input checked="" type="checkbox"/>	DATE_TO
Title					<input checked="" type="checkbox"/>	TITLE

ADRP: Display of Entries Found

Search in Table

Number of hits

Runtime

Insert Column

Person

From

Ver

57280

01.01.0001

ADRP

Persons (Business Address Services)

Details

Group description	Cell Content
Client	400
Person Number	57280
from	01.01.0001
To	31.12.9999
First name	testy
Last name	tester
Full Name	testy tester
Converted	M
Person group	BP
Search Term 1	TESTER
Search Term 2	TESTY
First name	TESTY
Last name	TESTER
Creation language	EN
Address UUID	D307447269E11EDEB08AE7D66AFF1A...

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Once the EE BP is created there are key connections between elements of the BP, users and address data.

The User is tied to the EE BP through a set of tables and fields. Tracing them to see if there is missing is done through this sequence.

Use transaction code SE16N and follow this path: USR21 → ADRP → **BUT000** → BUT100

**General Table Display**

Background Number of Entries All Entries

Table: BUT000 BP: General data I

Text table: No texts

Layout: Maintain entries

Maximum no. of hits: 500

Get Field

Field name	O.	Fr.Value	To value	More	Output	Technical name
Changed on					✓	CHDAT
Changed at					✓	CHTIM
BP GUID		269E11EDEB08AE7D66AFF1A9B			✓	PARTNER_GUID
Address Number					✓	ADDRCOMM
Partner Converted					✓	TD_SWITCH
Is Org. Center					✓	IS_ORG_CENTRE

**BUT000: Display of Entries Found**

Search in Table: BUT000 BP: Client

Number of hits: 1

Runtime: 0 Maximum no. of hits

Insert Column

Business Partner BPC	Ty...	Grp.	Extern.N...	SrchTerm...	SrchTerm...	On
9980001020	1	BPEE	TESTER	TESTY		

**Details**

Group description	Cell Content...
Client	400
Business Partner	9980001020
Partner Cat.	1
Grouping	BPEE
Search Term 1	TESTER
Search Term 2	TESTY
Last name	tester
First name	testy
Full Name	testy tester
Correspondence lang.	EN
Nationality	DE
Person Number	57280
Unknown	X
Language	EN
Date of Birth	01.01.1975
Birth Date Status	K
Name 1/Last Name	TESTER
Name 2/First name	TESTY
Created by	ZGR_01
Created on	31.01.2024

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Once the EE BP is created there are key connections between elements of the BP, users and address data.

The User is tied to the EE BP through a set of tables and fields. Tracing them to see if there is missing is done through this sequence.

Use transaction code SE16N and follow this path: USR21 → ADRP → BUT000 → **BUT100**

**General Table Display**

Background Number of Entries All Entries

Table: BUT100

Text table

Layout

Maximum no. of hits: 500

BP: Roles

No texts

Maintain entries

Get Field

Selection Criteria

Fld name	O.	Fr.Value	To value	More	Output	Technical name
Client						MANDT
BusinessPartner		9980001020			✓	PARTNER
BP Role					✓	RLTYP
Diff.type value					✓	DFVAL
Valid From					✓	VALID_FROM
Valid To					✓	VALID_TO

**BUT100: Display of Entries Found**

Search in Table: BUT100 BP: Roles

Number of hits: 1

Runtime: 0 Maximum no. of hits: 500

Insert Column

Business Partner	BP Role	DifType
9980001020	BUP003	

Details

Group description	Cell Content
Client	400
Business Partner	9980001020
BP Role	BUP003
Valid From	20.230.101.000.000
Valid To	99.991.231.235.959

## Wrap Up

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- Learned how to categorize vast amounts of custom code into GRC rules
- Acknowledge importance of gathering evidence as you work
- Improve efficiency and accuracy with scripting in non-production systems
- Troubleshooting Fiori access issues



# Where to Find More Information

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*Panko, Raymond. (2008). Thinking is Bad: Implications of Human Error Research for Spreadsheet Research and Practice.*

<https://community.sap.com/topics/gui/scripting>

- “SAP GUI Scripting.” *Community*, SAP, [community.sap.com/topics/gui/scripting](https://community.sap.com/topics/gui/scripting). Accessed 21 Jan. 2024.

[https://help.sap.com/docs/sap\\_gui\\_for\\_windows?version=760.00](https://help.sap.com/docs/sap_gui_for_windows?version=760.00)

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# Key Points to Take Home

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- Build a key words list from all available sources
- Record evidence as you go
- Practice defending why code lines were or were not included
- Automate and script repetitive manual tasks in your non-production boxes for increased reliability and efficiency
- Recognize the difference between Fiori authorization issues and system issues

# Thank you! Any Questions?

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Please remember to complete  
your session evaluation.

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