



The SAP GUI Scripting API

How to Automate User Interaction -
Technology, Examples and Integration

Christian Cohrs and Gisbert Loff
SAP AG

As a result of this workshop, you will be able to:

- n Benefit from using scripts in your daily work.**
- n Understand the security settings and recommendations.**
- n Access the Scripting Object Model to collect and modify data in SAP GUI.**
- n Use SAP sample applications that help you get started with your own development.**
- n Name some prominent applications built using the SAP GUI Scripting API.**

SAP GUI Scripting...

- n ...is an interface exposed by SAP GUI.
- n ...can make life easier for users by automating repeating tasks.
- n ...is a basis for tools that test the SAP system.
- n ...allows client side applications to collaborate.

Availability:

- n Shipped with SAP GUI 6.20 and future versions
- n Compatible with:
 - u All R/3 versions currently supported by SAP
 - u Applications built on top of Web AS 6.10 to 6.40
- n Non-Dynpro based applications (BSP, Web Dynpro, ...) are not supported. See note 587202 for known limitations.

SAP GUI Scripting for Users

- n **Recording and Playback**
- n **The Scripting Wizard**

SAP GUI Scripting Administration

- n **Client Side and Server Side**

SAP GUI Scripting for Developers

- n **The Object Model**
- n **Available Platforms**

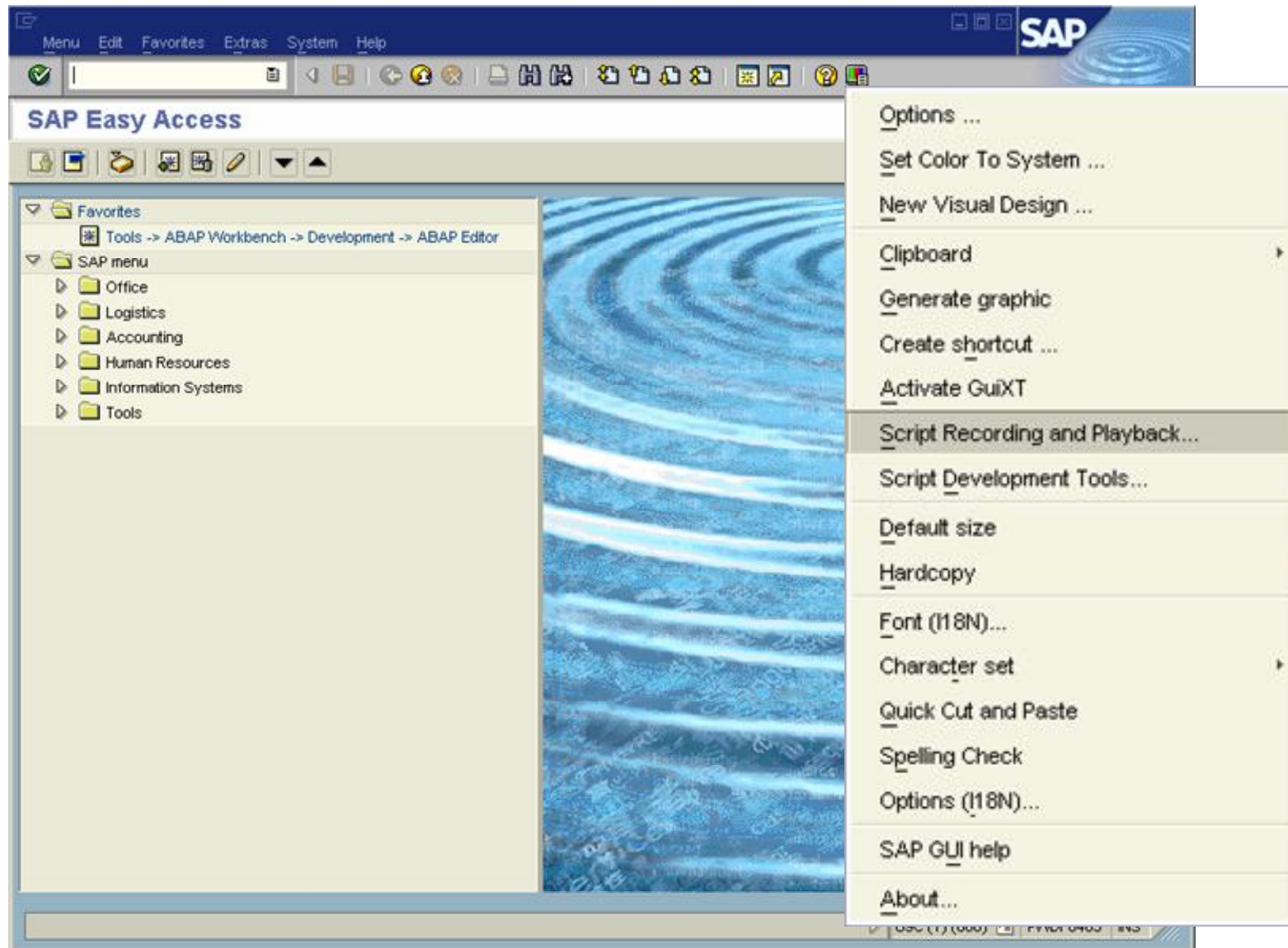
Existing Applications

- n **Focus**
- n **Samples**
- n **Certification Process**

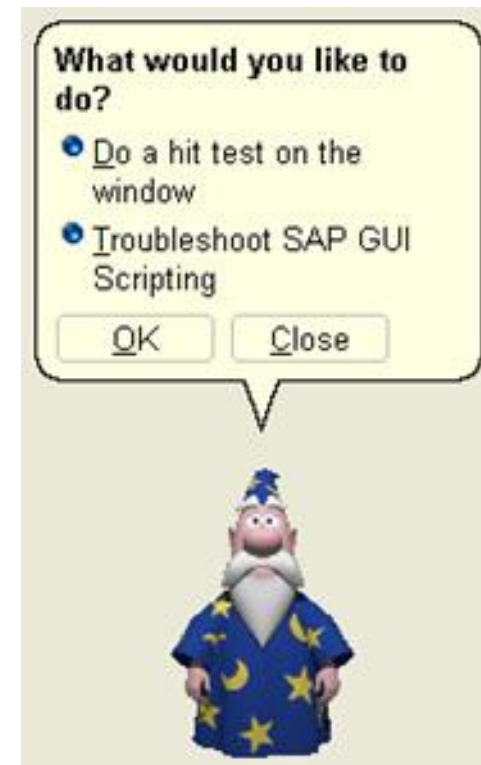
Summary

SAP GUI Scripting for Users

Built-in Scripting Utilities in SAP GUI



Built-in Scripting Utilities in SAP GUI



Built-in Scripting Utilities: Recording



1. Press the Record button to start recording
2. Execute the steps you want to record

Creditor: 4712

Address

Title: []

Name: [] Search term: []

Street: [] P.O. box: []

City: [] Postal code: []

District: []

P.O. Box city: [] P.O. Box pst code: []

Country: [] Region: []

Communication

Language: [] Telex number: []

Telephone 1: [] Telefax number: []

Telephone 2: [] Telefax number: []

Telebox: [] Data line: []



Creditor: 4712

Address

Title: aaa

Name: bbbbbbbbbbbbbbbbbbb Search term: []

Street: cccccccccccccccccccc P.O. box: []

City: dddddddddddddddddddd Postal code: []

District: eeeeeeeeeeeeeeeeeeee

P.O. Box city: ffffffffffffffffffff P.O. Box pst code: []

Country: 999 Region: []

Communication

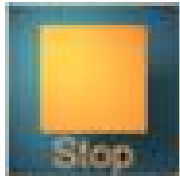
Language: [] Telex number: 1111111111111111

Telephone 1: 3333333333333333 Telefax number: 2222222222222222

Telephone 2: 4444444444444444 Telefax number: []

Telebox: [] Data line: []

Built-in Scripting Utilities: Recording



1. Press the Stop button to stop recording
2. Save the script as a Visual Basic Script (.VBS) file to your file system.

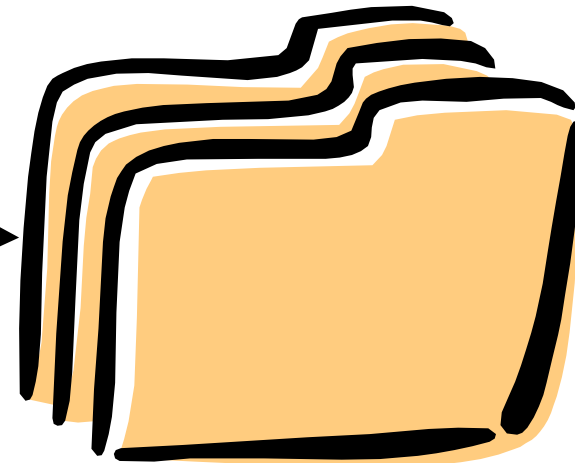
Creditor 4712

Address

Title	aaa	Search term	
Name	bbbbbbbbbbbbbbbbbb		
Street	cccccccccccccccccc	P.O. box	
City	ddddddddddddddddd	Postal code	
District	eeeeeeeeeeeeeeeeee	P.O.Box pst code	
P.O.Box city	ffffffffffff	Region	
Country	ggg		

Communication

Language		Telex number	111111111111111
Telephone 1	333333333333333	Telefax number	222222222222222
Telephone 2	444444444444444	Teletex number	
Telebox		Data line	



Built-in Scripting Utilities: Playback



There are 3 ways to run a script:

1. Press the Play button to select a VBS file from the file system and run it
2. Double-click the file
3. Drop the file onto the SAP GUI window

Creditor 4712

Address

Title

Name

Search term

Street

City

District

P.O. Box city

Country

P.O. box

Postal code

PO Box pst code

Region

Communication

Language

Telex number

Telephone 1

Telephone 2

Telebox

Creditor 4712

Address

Title

Name

Search term

Street

City

District

P.O. Box city

Country

P.O. box

Postal code

PO Box pst code

Region

Communication

Language

Telex number

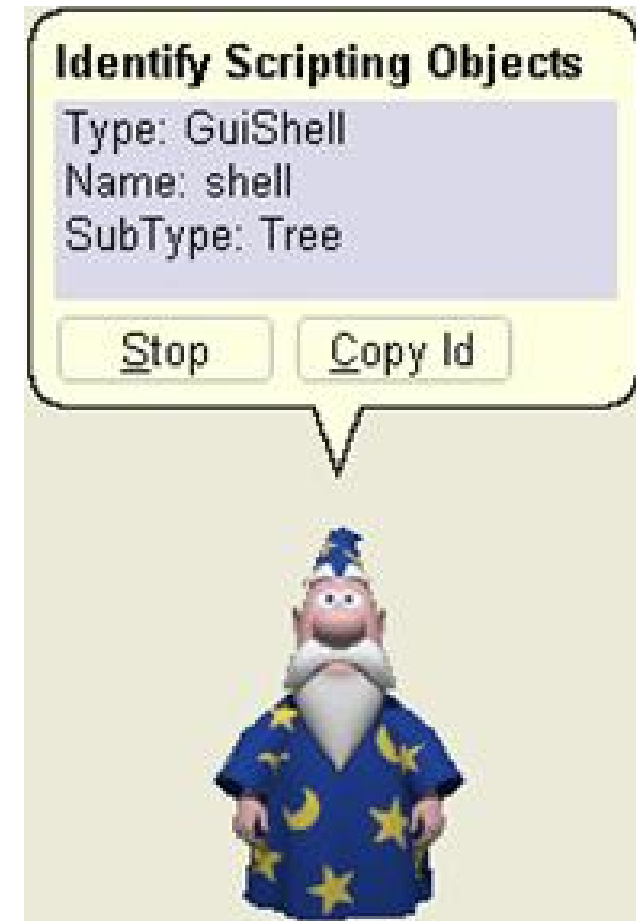
Telephone 1

Telephone 2

Telebox

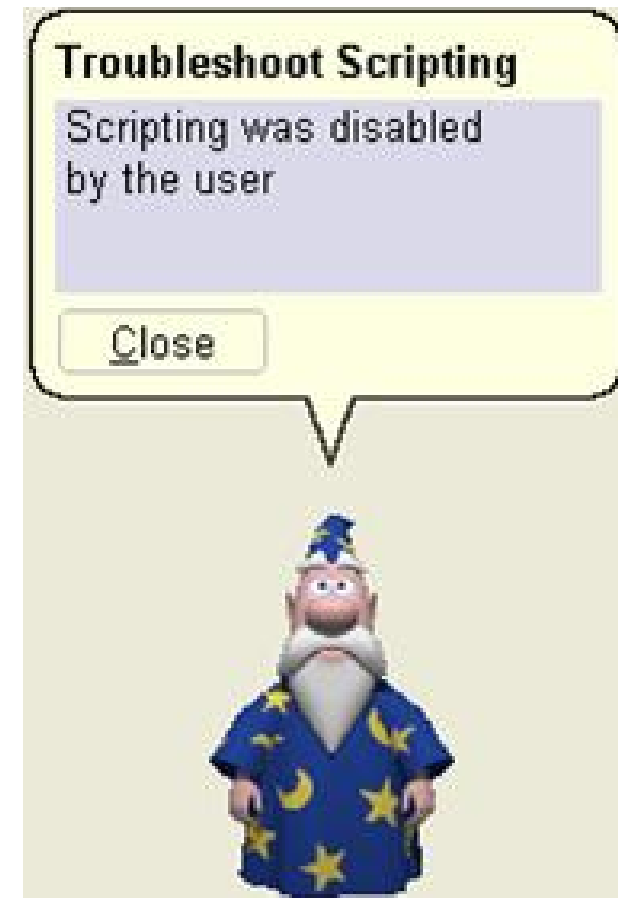


- n **Selecting the hit test option helps you to identify scriptable objects on the screen.**
- n **When you move the mouse pointer over SAP GUI, the Agent displays the Type, Name and SubType property values for any object it finds.**
- n **Pressing 'Copy Id' copies the value of the Id property to the clipboard so that you can use it in your own applications.**



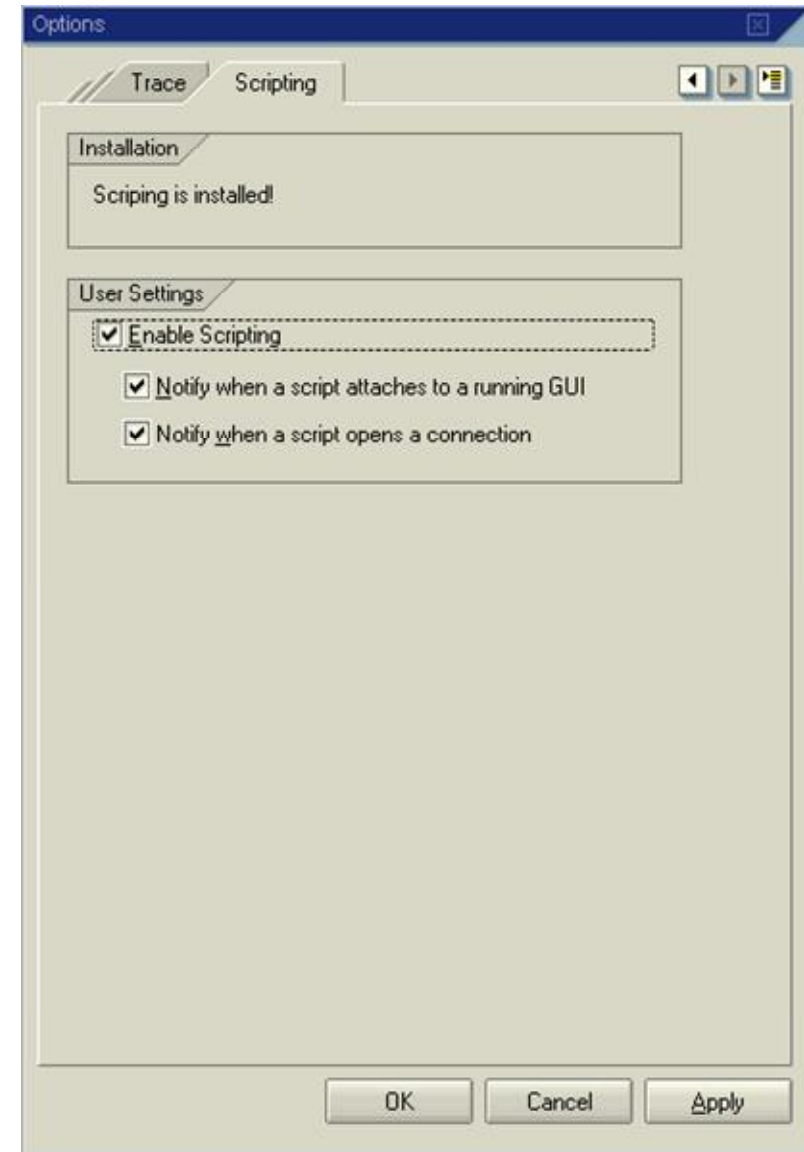


If SAP GUI Scripting does not work, selecting the troubleshoot option may provide you with a possible reason



Troubleshooting Scripting

If Scripting is disabled by the user, check the SAP GUI options dialog.



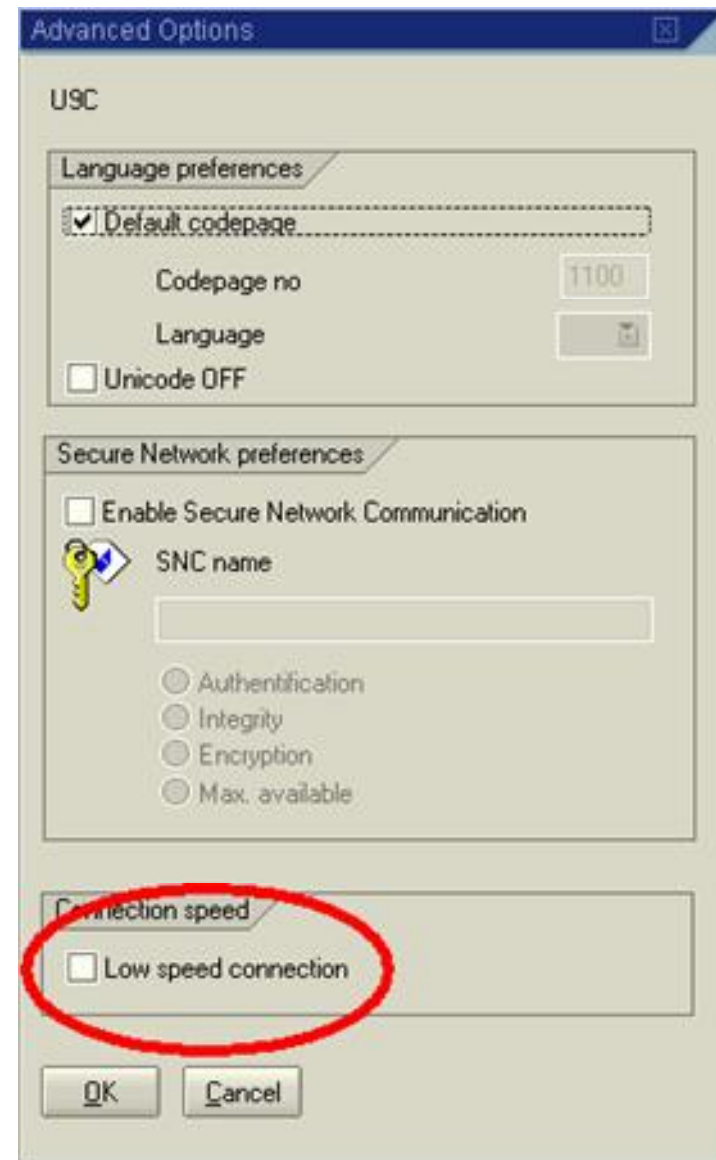
Troubleshooting Scripting

If Scripting is disabled on the server, check the value of the parameter sapgui/user_scripting in transaction rz11.

ParameterName	
sapgui/user_scripting	
Short description(Engl)	Enable or disable user scripting on the frontend.
Appl. area	GUI Frontend
ParameterTyp	Logical value
Changes allowed	Change permitted
Valid for oper. system	All operating systems
DynamicallySwitchable	<input checked="" type="checkbox"/>
Same on all servers	<input type="checkbox"/>
Diff value	FALSE
ProfileVal	FALSE
Current value	TRUE
Switched from	COHRS 07.10.2002 11:07:34

If Low Speed Connection is enabled, disable it in the SAPLogon connection options.

**During a low speed connection, the names of objects are not transmitted
è Ids do not work**



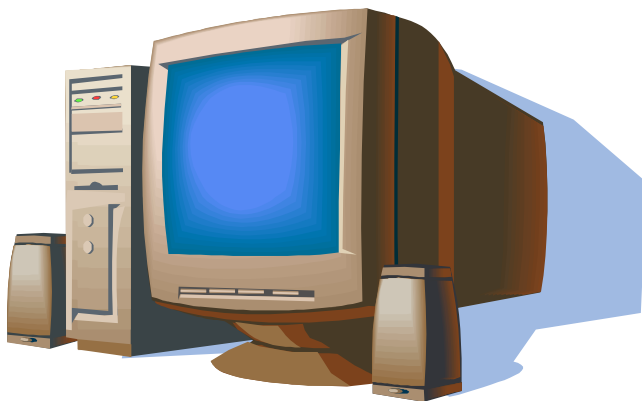
SAP GUI Scripting Administration

There may be reasons to disable SAP GUI Scripting:

- n A script can execute much faster than a user, thereby increasing the load on the system during its execution.**
- n A script may be used to ,grab‘ data from SAP transactions even in cases where a download of the data is disabled.**
- n Users might run scripts they received from somebody else, without knowing what the script will do.**
- n An application that is installed on the client PC can record whatever the user does in SAP GUI (no passwords, though).**

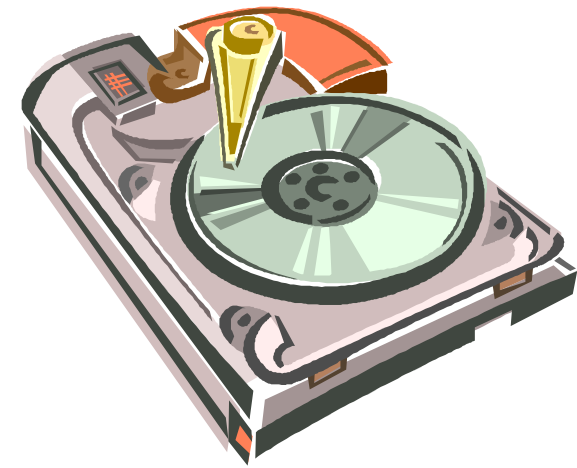
Client Side:

- n Prevent Scripting from being installed with SAP GUI.
- n Disable Scripting within SAP GUI.
- n Notify user whenever a script is about to run.



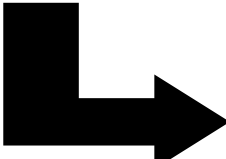
Server Side:

- n Scripting is disabled by default.
- n Scripting can be enabled for any application server using a profile parameter.
- n Note 480149 describes the requirements.

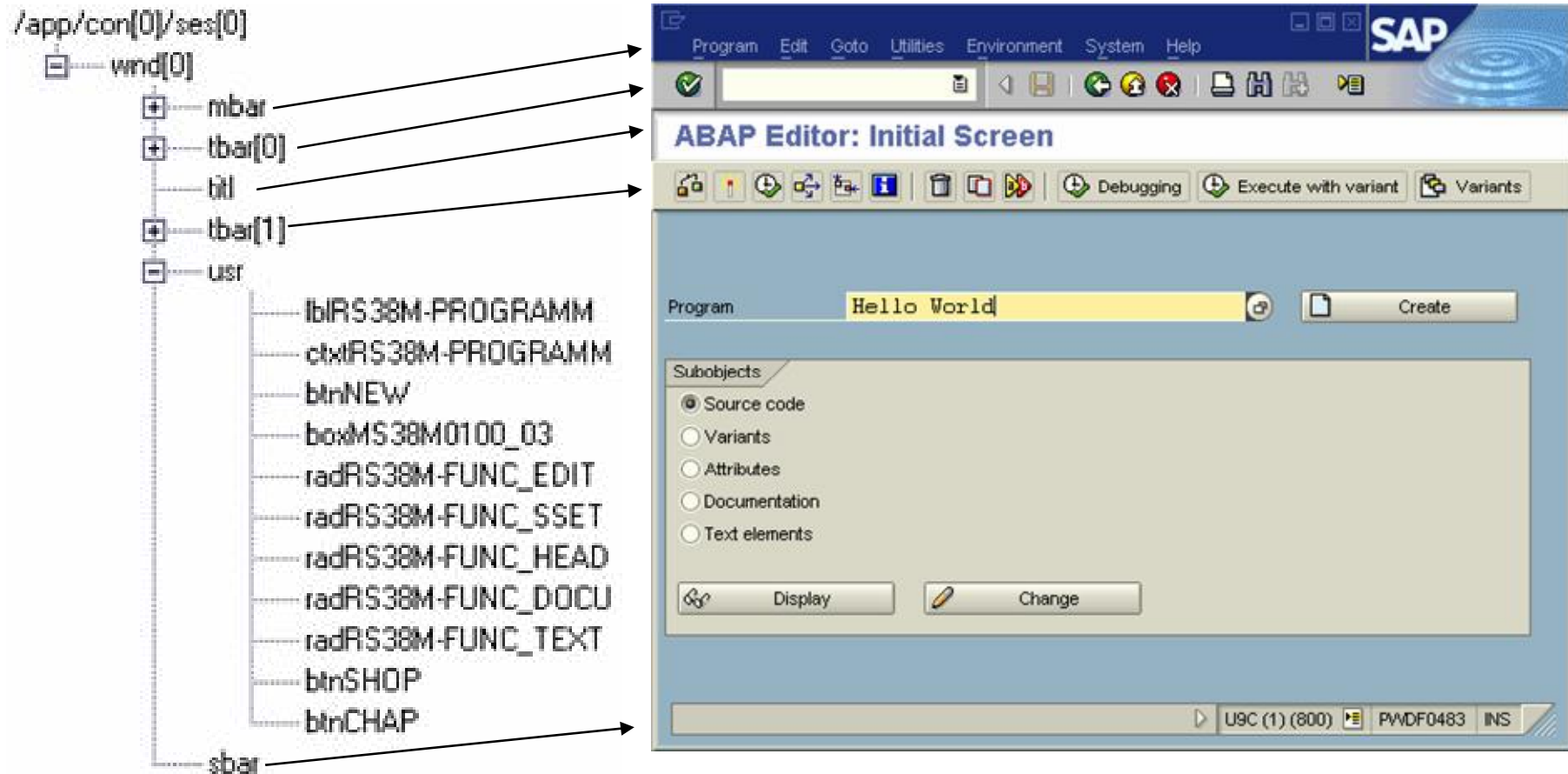


- n Password fields are not recorded.**
- n If you need to connect to SAP systems by setting the username and password, you must store the password in the script. If your script is a plain text file, such as VBS, anybody having access to the file can read your password.**
- n It is recommended that you connect manually to the system, or use Single-Sign-On.**
- n Applications that do not rely on VBS may implement their own encryption functionality when storing password.**

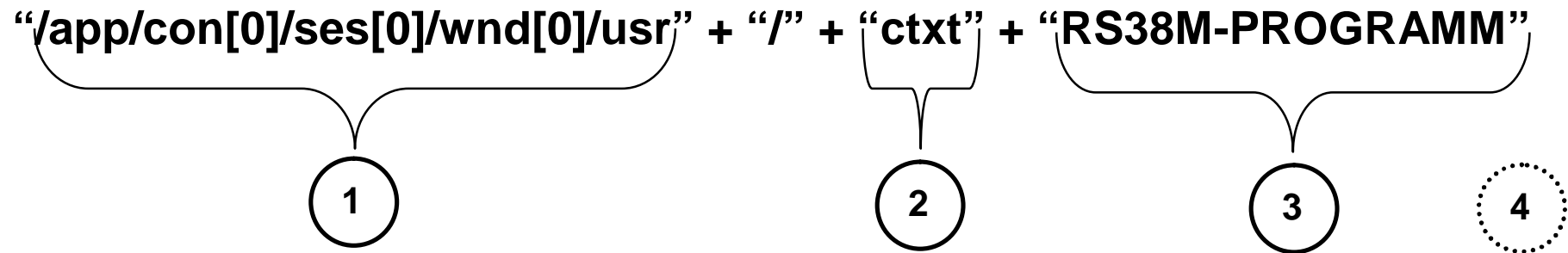
SAP GUI Scripting for Developers



SAP GUI Scripting Object Model: One Session



Identifying objects using unique Ids



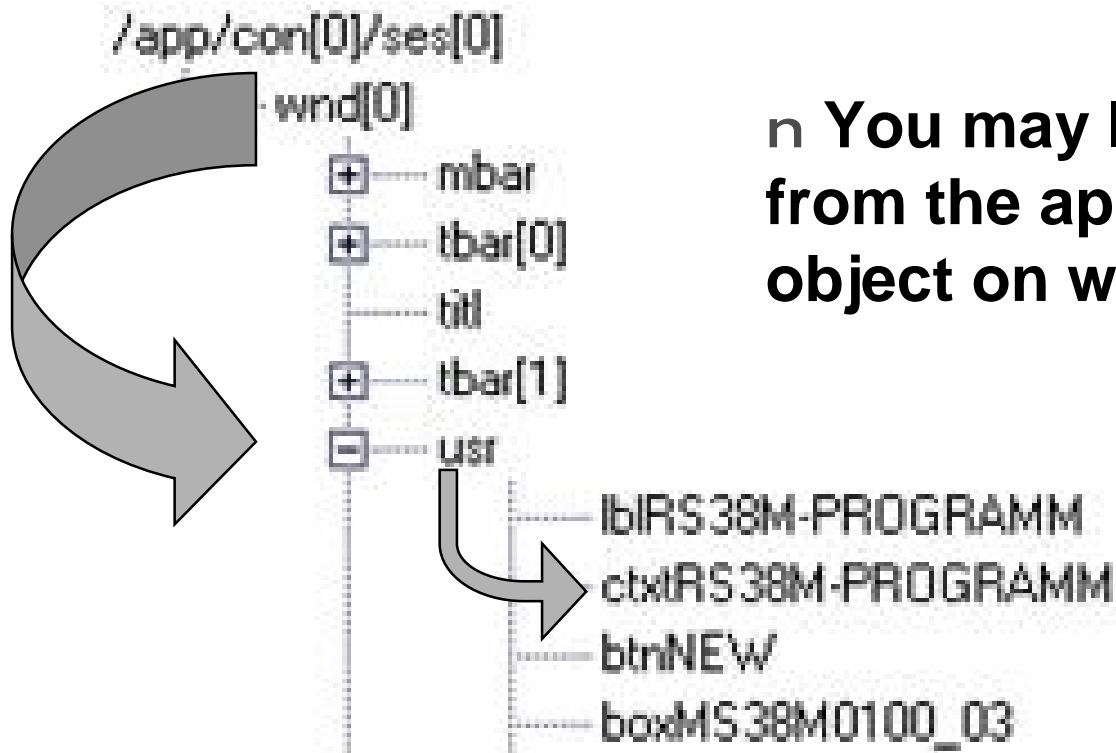
1. Parent object id, followed by ,/‘
2. The type prefix of the object (ctxt: combo text field)
3. The name of the object. For dynpro fields this is taken from the data dictionary.
4. If the id up to here is not unique, then a one or two dimensional index is added: „[1]“ or „[12, 7]“.

Identifying Objects using Relative Ids

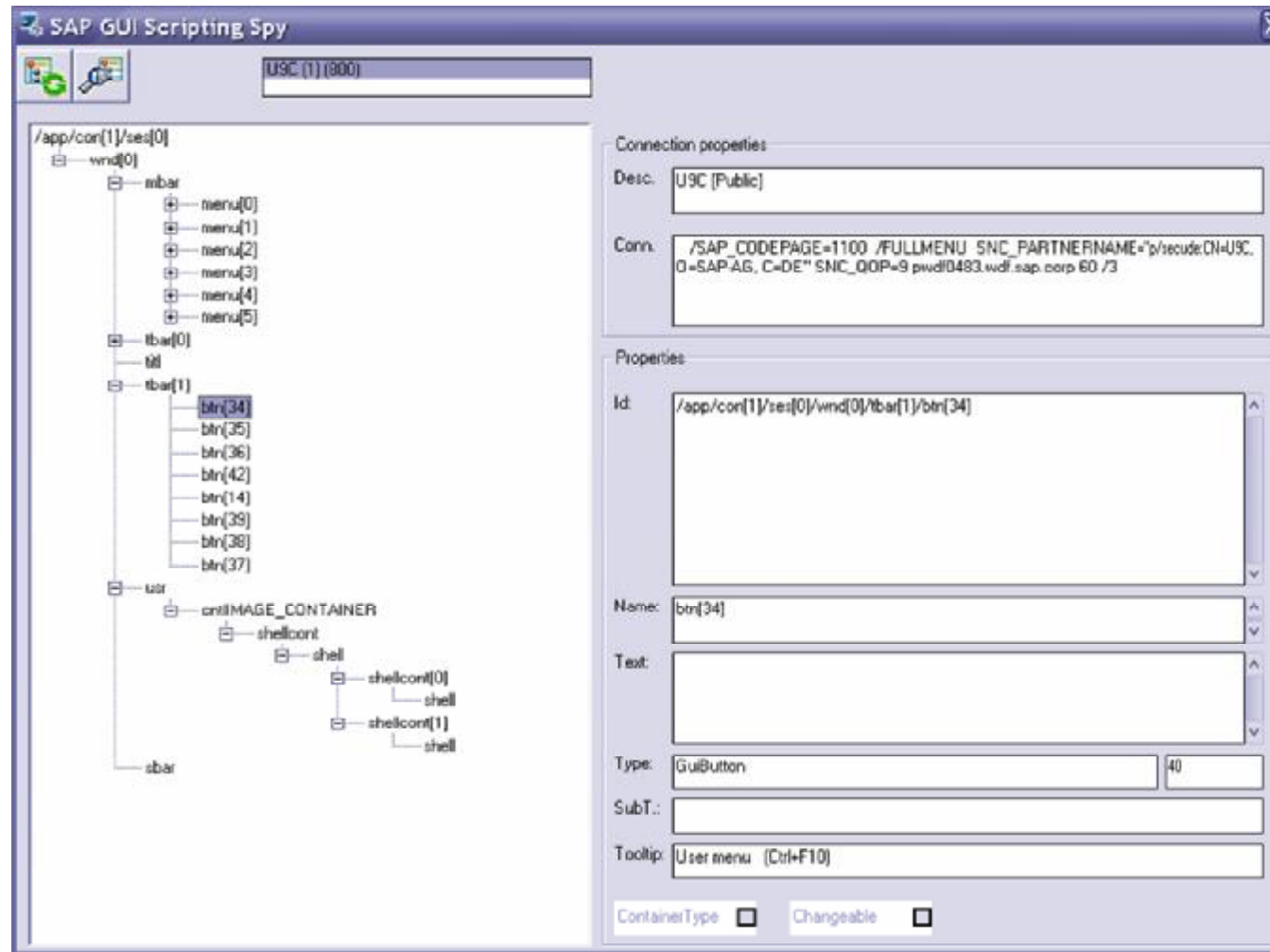
```
session.findById("wnd[0]/usr/ctxtRS38M-PROGRAMM").text =  
"Hello World"
```

n Using a relative Id with findById makes a script more readable.

n You may leave out the path from the application object to the object on which you call findById.



Using the ScreenReader Sample to get Id Information



(It may be even easier to record a script and collect the id information from it.)

Common Object Model for SAP GUI for Windows and SAP GUI for Java

- n The same types of objects are exposed
- n Same set of properties and methods
- n The runtime hierarchy is identical
- n Some differences in accessing the root object and the lifetime of event handlers

Result: Identical JavaScript scripts may be executed using either SAP GUI for Java or SAP GUI for Windows

Platform and Programming Language Independence

	Platforms	Languages
SAP GUI for Windows	Windows 98/2000/XP	Visual Basic (VBS, VBA) JScript C++, C#
SAP GUI for Java	Windows 98/2000/XP MacOS 9/X OS/2 Linux, Solaris, AIX HP-UX, Tru64	JavaScript

Existing Applications

SAP GUI Scripting works on the User Interface




- n Only those actions are possible that are available to the user (unlike GuiXT).**
- n Changes to the user interface can break existing scripts.**
- n Scripts are usually only valid for a given SAP System version.**
- n SAP GUI Scripting can not replace more stable interfaces (BAPI, ...).**

Advantages of SAP GUI Scripting over other interfaces:



- n Many complex controls are supported: Tree, Grid, Textedit,...
- n The same rules of data validation and aggregation apply for a script as for manual input.





Existing Applications: Functional Testing

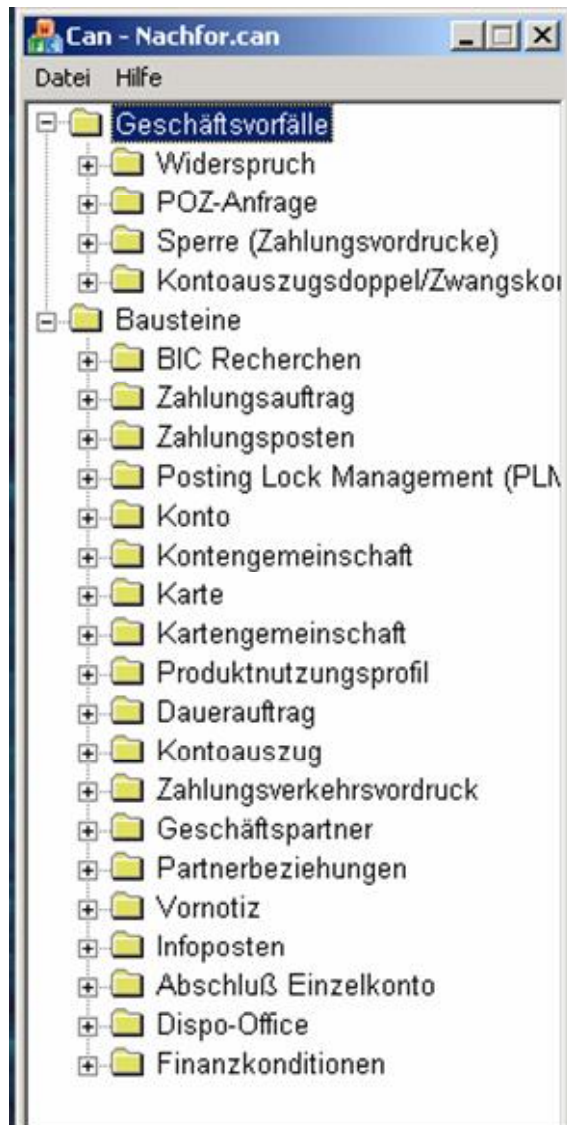
<u>Company</u>	<u>Tool</u>
	eCATT
	TestPartner
	QuickTest Professional

Existing Applications: Load Testing

<u>Company</u>	<u>Tool</u>
 The logo for Mercury Interactive, featuring a stylized 'MI' monogram on the left and the words 'MERCURY INTERACTIVE' in a serif font to its right.	LoadRunner
 The logo for Compuware, featuring the word 'COMPUWARE' in a bold, sans-serif font on the left, followed by a circular graphic composed of the word 'COMPUWARE' repeated many times.	QALoad

Existing Applications: Performance Monitoring

<u>Company</u>	<u>Tool</u>
 The logo for Mercury Interactive, featuring a stylized 'M' with a swoosh and the text 'MERCURY INTERACTIVE'.	Topaz
 The logo for Tivoli software, featuring the word 'Tivoli' in white on a red background, followed by the word 'software' in a grey, lowercase font.	IBM Tivoli Monitoring for Transaction Performance



**Transaction volume:
100.000.000/month**

Integrating relevant applications:

- n **OPC GUI
(non-SAP banking app.)**

- n **Microsoft Office**

- n **SAP GUI**

**„CAN significantly reduces the time
required for entering a transaction“**

Interface Software Certification at SAP

- n To support **successful integration** and to ensure quality and **customer satisfaction**, SAP offers an interface certification program through the SAP Integration and Certification Centers (ICCs) www.sap.com/icc
- n The ICCs provide a rich set of **well documented integration scenarios** that enable third-party vendors to integrate their software with SAP solutions www.sap.com/icc/scenarios
- n In addition to interface certification, ICCs support third-party software vendors by offering **integration consulting services** and **access to SAP systems** for integration testing www.sap.com/icc/service.asp

- n For customers, the advantages of SAP-certified interface software include:
 - n **Faster implementation time and lower integration costs** through the use of SAP-certified third-party software
 - n **Protection of existing investments** in SAP solutions as well as **data integrity** through the use of SAP endorsed integration technologies
www.sap.com/icc/scenarios/technology
 - n Quick and convenient search for all of certified interface products via the **online partner and product directory**
www.sap.com/icc

Advantages for Third-Party Software Vendors

- n When third-party software is successfully certified, a company:

- n Receives the right to use the **SAP tagline**



- n Receives an **SAP Interface Certificate** →



- n Acquires a listing in the **SAP online partner and product directory**
-- a valuable resource for customers and consequently an opportunity for vendors to market their software
www.sap.com/icc

- n Satisfies one of the criteria for becoming an **SAP partner** www.sap.com/partner

- n **Predefined certification scenarios:**
 - n **Computer aided test tools**
(certification available, scenario: BC-eCATT)
 - n **Monitoring tools** (certification planned)
 - n **Load test tools** (certification planned)
- n **For other scenarios the ICC offers certification on an individual basis.**

SAP GUI Scripting emulates user interaction with SAP GUI.

SAP GUI Scripting may be used as a simple macro recording and playback tool.

SAP GUI Scripting may also be used to enable applications to collaborate on top of a powerful object model.

The interface has proven its capabilities in many productive environment scenarios.

Demo



Further Information

è Public Web:

www.sap.com è Solutions è Technology
Service Marketplace: service.sap.com/sapgui



è Consulting Contact

Markus Helfen, Director Test Management Consulting, SAP Retail Solutions
(markus.helfen@sap.com)

è Related SAP Education Training Opportunities

è Related Workshops/Lectures at SAP TechEd 2003

UI101: UI Clients for SAP NetWeaver, 09/10/03, 1:30 PM, 117, Lecture

TEST101: eCATT – Functional Testing, 09/11/03, 4:00 PM, 116, Lecture

TEST151: Testing Business Processes Using eCATT, 09/12/03, 8:00 AM, 123,
Hands-on

TEST201: Integrated Testing, 09/11/03, 10:30 AM, 313, Lecture

Q&A



Hands-on Examples

Logon Information (Windows)

n User : ***

n Password : ***

Logon Information (SAP System)

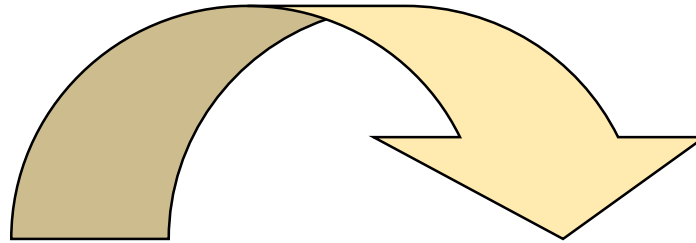
n System : ***

n Client : ***

n User : ***-xy

n Password : ***

**Please replace xy by the number of the laptop
you are working on, e.g. ***-29**



**Please complete your session evaluation
and drop it in the box on your way out.**

**Be courteous — deposit your trash,
and do not take the handouts for the
following session.**

Thank You

The SAP TechEd '03 Las Vegas Team