The SAP GUI Scripting API

How to Automate User Interaction - Technology, Examples and Integration

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Learning Objectives

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

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

SAP GUI Scripting...

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

Availability:

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

SAP GUI Scripting for Users
  - Recording and Playback
  - The Scripting Wizard

SAP GUI Scripting Administration
  - Client Side and Server Side

SAP GUI Scripting for Developers
  - The Object Model
  - Available Platforms

Existing Applications
  - Focus
  - Samples
  - Certification Process

Summary
SAP GUI Scripting for Users
Built-in Scripting Utilities in SAP GUI
Built-in Scripting Utilities in SAP GUI

- Options...
- Set Color To System...
- New Visual Design...
- Clipboard
- Generate graphic
- Create shortcut...
- Activate GuiXT
- Script Recording and Playback...
- Script Development Tools...
- Default size
- Hardcopy
- Font (18N)...
- Character set
- Quick Cut and Paste
- Spelling Check
- Options (18N)...
- SAP GUI help
- About...

What would you like to do?
- Do a hit test on the window
- Troubleshoot SAP GUI Scripting

OK Close
1. Press the Record button to start recording
2. Execute the steps you want to record
1. Press the Stop button to stop recording
2. Save the script as a Visual Basic Script (.VBS) file to your file system.
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
Selecting the hit test option helps you to identify scriptable objects on the screen.

When you move the mouse pointer over SAP GUI, the Agent displays the Type, Name and SubType property values for any object it finds.

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.
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.
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  
Id's do not work
SAP GUI Scripting Administration
There may be reasons to disable SAP GUI Scripting:

- A script can execute much faster than a user, thereby increasing the load on the system during its execution.

- A script may be used to ‘grab’ data from SAP transactions even in cases where a download of the data is disabled.

- Users might run scripts they received from somebody else, without knowing what the script will do.

- An application that is installed on the client PC can record whatever the user does in SAP GUI (no passwords, though).
SAP GUI Scripting Administration: Security Settings

Client Side:

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

Server Side:

- Scripting is disabled by default.
- Scripting can be enabled for any application server using a profile parameter.
- Note 480149 describes the requirements.
Password fields are not recorded.

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.

It is recommended that you connect manually to the system, or use Single-Sign-On.

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

- Using a relative Id with `findElement` makes a script more readable.

- You may leave out the path from the application object to the object on which you call `findElement`.
(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

- The same types of objects are exposed
- Same set of properties and methods
- The runtime hierarchy is identical
- 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

<table>
<thead>
<tr>
<th>Platforms</th>
<th>Languages</th>
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<tbody>
<tr>
<td>SAP GUI for Windows</td>
<td>Windows 98/2000/XP Visual Basic (VBS, VBA) JScript C++ , C#</td>
</tr>
<tr>
<td>SAP GUI for Java</td>
<td>Windows 98/2000/XP MacOS 9/X JavaScript</td>
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<td>OS/2 Linux, Solaris, AIX</td>
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<td>HP-UX, Tru64</td>
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Existing Applications
SAP GUI Scripting works on the User Interface

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

- Many complex controls are supported: Tree, Grid, Textedit,…
- The same rules of data validation and aggregation apply for a script as for manual input.
<table>
<thead>
<tr>
<th>Company</th>
<th>Tool</th>
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<tbody>
<tr>
<td>SAP</td>
<td>eCATT</td>
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<tr>
<td>Compuware</td>
<td>TestPartner</td>
</tr>
<tr>
<td>Mercury Interactive</td>
<td>QuickTest Professional</td>
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## Existing Applications: Load Testing

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<tbody>
<tr>
<td>Mercury Interactive</td>
<td>LoadRunner</td>
</tr>
<tr>
<td>Compuware</td>
<td>QALoad</td>
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## Existing Applications: Performance Monitoring

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<th>Company</th>
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<tr>
<td><img src="image" alt="Mercury Interactive" /></td>
<td>Topaz</td>
</tr>
<tr>
<td><img src="image" alt="Tivoli Software" /></td>
<td>IBM Tivoli Monitoring for Transaction Performance</td>
</tr>
</tbody>
</table>
Transaction volume: 100,000,000/month

Integrating relevant applications:

- OPC GUI
  (non-SAP banking app.)
- Microsoft Office
- SAP GUI

„CAN significantly reduces the time required for entering a transaction“
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](http://www.sap.com/icc)

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](http://www.sap.com/icc/scenarios)

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](http://www.sap.com/icc/service.asp)
Advantages for SAP Customers

For customers, the advantages of SAP-certified interface software include:

- **Faster implementation time and lower integration costs** through the use of SAP-certified third-party software

- **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](http://www.sap.com/icc/scenarios/technology)

- **Quick and convenient search** for all of certified interface products via the **online partner and product directory**
  
  [www.sap.com/icc](http://www.sap.com/icc)
When third-party software is successfully certified, a company:

- Receives the right to use the SAP tagline
- Receives an SAP Interface Certificate
- 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](http://www.sap.com/icc)
- Satisfies one of the criteria for becoming an SAP partner [www.sap.com/partner](http://www.sap.com/partner)
Predefined certification scenarios:

- Computer aided test tools (certification available, scenario: BC-eCATT)
- Monitoring tools (certification planned)
- Load test tools (certification planned)

For other scenarios the ICC offers certification on an individual basis.
Summary

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.
Further Information

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

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

Related SAP Education Training Opportunities

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
Questions?

Q&A
Hands-on Examples
Hands on Examples

Logon Information (Windows)

- User: ***
- Password: ***

Logon Information (SAP System)

- System: ***
- Client: ***
- User: ***-xy
- Password: ***

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

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