ACCELERATING SAP: INNOVATION IN TEST AUTOMATION

Worksoft White Paper
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Enterprises fight a constant battle against backlog: competitive and market pressures drive deadlines to deliver more functionality in more locations for more products and services. While a crucial advantage of the SAP architecture is that configuration changes can be made easily to expose or modify capabilities quickly, how do you best avoid unintended consequences when it comes to changes in your configuration?

And it’s not just enhancements and expansion, either. The added pressure of regulatory and audit compliance means each and every change event requires verification that critical business processes are still accurate and available.

Then, your organization must also take into account the new technology enablers offered by SAP as well as interfaces to legacy applications that have to be implemented and tested. SAP NetWeaver, services-oriented architectures (SOA), and Web services interconnect systems within and across enterprises, further expanding the scope of change.

How do you ensure that your organization and systems can handle this change, the extensive testing required, all without slowing time to market? In typical testing, the same end to end process—such as order to cash or procure to pay—may be executed hundreds of times to verify all of the different types of orders, materials, delivery options and pricing rules. This testing not only consumes scarce and valuable resources, it delays the time to deliver desired capabilities that may impact revenue and/or operating costs significantly.

So how can you accelerate your upgrades to meet the demands of the business while still managing the risks that are inherent in making changes? This white paper analyzes the challenges around traditional testing strategies—manual or automated using record/play—and presents a strategy for innovation that increases your delivery velocity, improves the productivity of your business experts, and assures the availability and accuracy of your business processes after each and every change.

INTRODUCTION
**MANUAL TESTING**

For most SAP customers, the majority of functional testing today is performed manually. This is primarily due to the fact that deep subject matter expertise is needed to understand the business process variations and rules, and the subject matter experts also have other responsibilities besides testing. Therefore, they are called in as needed to verify the functional needs for their area.

There are several drawbacks to a manual approach, the most obvious being the amount of time it takes. As described above, the same process may be executed hundreds of times for each transport, and this not only extends the project timeline but it consumes scarce and valuable resources from the business. If the project is running late test coverage must be sacrificed, which in turn increases the risk of production failures or roll-backs which are perhaps even more costly.

There are other less obvious risks. One is that manual test approaches tend to be more informal than others. That is, the test cases and techniques are subject to the skills and preferences of the tester, leading to inconsistency and unreliability. This makes the coverage and resulting quality unpredictable and not repeatable from one transport to the next.

Another downside is that manual testing is so time-consuming that testers may not have the time to thoroughly document the tests or the results, or they do so in an inconsistent way. Even if test documentation was originally created for the initial roll-out, it may not be kept current for changes. This leads to a lack of management visibility and an inability to support compliance audits or regulatory requirements.

Finally, it is difficult to coordinate the testing of end to end business processes that span various solution modules. Business process experts are often organized around functional areas, yet the risk of up and downstream impact from changes dictates that processes be tested across departments and modules.

Because of these challenges, many companies have sought to automate their functional testing of their SAP solutions using tools commonly known as record/playback.

**RECORD/PLAY**

Record/play is a seductive idea: simply perform the test manually and record the steps into a script that can be replayed multiple times. Unfortunately, while this approach is presented as easy to implement, it produces poorly structured, undocumented and unstable tests that are not reusable or maintainable.

Recorded scripts are unstable because they are sensitive to the slightest changes. If the application is running more slowly at some times than others, the script can get out of synchronization and result in errors. Or if an unexpected condition arises, the script has no logic to recover and continue. Even changes in lists of data can cause recorded scripts to fail.

These types of scripts also create a high maintenance overhead because they contain hard-coded data. This means that if you want to test a hundred different order variations, for example, your script will repeat the same steps hundreds of times. Naturally if a change is made to the order process, the script will have to be updated hundreds of times.

The lack of any logic within these scripts also precludes making decisions or changing the workflow based on test results. For example, a particular material code may trigger a special window to appear that otherwise does not. Using the record/play approach requires that there be two separate scripts—one for each condition. When you take into account the large number of similar cases, this leads to a high degree of redundancy.

The only way to overcome these challenges with recorded scripts is to employ the underlying scripting language to manage timing, detect and recover from errors, make decisions, parameterize the data values and read external data sources. Scripting is essentially programming and requires advanced technical skills, which excludes the very business process experts whose knowledge is required for effective testing.

Companies who decide to make the investment in coding soon find themselves with thousands of lines of code that had to be maintained. Often the code was written by contractors who are no longer available and new coders prefer to rewrite the code. This code itself is rarely documented and creates an unreasonable maintenance burden, reducing the time and resources available to add new tests.

As a result, most test automation efforts are abandoned. It simply takes too long to develop and maintain all of the code, and costs too much to have skilled coders on staff or as consultants, that most revert to manual testing after much frustration and expense. This is evidenced by literally billions of dollars of test tool shelfware that is abundant in all market segments.

*Until now.*
Worksoft was founded to overcome the issues associated with automation, and Worksoft Certify was developed to provide an analyst-friendly test automation solution that requires no coding, is powerful yet easy to use, and automates the majority of the maintenance required by changes.

Instead of the record/play/script model in which business process experts must first document their test cases and then scripting tool experts convert them to code, Worksoft Certify allows the tests to be documented using point and click and then immediately executed. No code is written, generated or maintained. The tests are developed in a standard, structured format and stored as data in a shared repository where they can be easily managed, maintained and reused.

And because all tests are stored as data, Worksoft Certify can span multiple applications, platforms and technologies to perform true end-to-end business process verification. A single Worksoft Certify test session can seamlessly span SAP, Web, mainframe and client/server—even SOA message layers—to exercise both up and downstream results.

This innovative approach empowers all stakeholders—developers, testers, business analysts and business process experts—to capture their knowledge and reuse it through manual and automated tests and data. The technical barriers are removed, and the time and cost to implement are reduced by half or more.

Here’s how it works:

**INSTALL AND CONFIGURE**

Worksoft Certify is easy to install and configure. The Worksoft Certify repository can be installed on a shared server or individual PC. From there, the users and groups are added and their access rights assigned. Next the SAP modules and any related legacy applications are defined, then organized into projects.

An application map is created for each SAP module or other application as illustrated in Figure 1. An application map is an inventory of screens, windows or pages and the fields or objects they contain. This map can be created by simply navigating through SAP and learning the screens and fields interactively, or it can be entered manually using the Worksoft Certify map editor.

Manually defining the map is actually very powerful: it allows you to anticipate changes before they are delivered so that you can develop test cases before the software is developed. This provides guidance to the developers so they develop the right product, and reduces overall time to market by having tests ready when the code is.

Worksoft Certify comes already stocked with many of the most common SAP transaction screens already mapped, which saves even more time. Simply incorporate any modifications for your configuration and let Worksoft Certify walk you through any needed process updates as described in the Maintain section below.

**DOCUMENT TRANSACTIONS**

Once the application map exists—whether used out of the box from Worksoft Certify, learned interactively or defined manually—you can develop your SAP transactions and define end to end business processes using point and click. Just select the application or module, the screen or window, choose the field or object of interest, define the data parameters and determine how to respond to results.
Processes can span any application or platform, including any custom or legacy applications you may have integrated with SAP. At each and every step, Worksoft Certify manages timing synchronization, verifies that the screen context is correct, and allows you to make decisions based on test results to control the workflow.

You can even document processes to be executed manually as shown in Figure 2. All of your test documentation, results and reports are managed and maintained in the same shared repository as automated tests, providing you with a single view of your SAP implementation quality and readiness.

By constructing reusable components that drive data entry or data verification against each transaction, you can quickly assemble a complete library of building blocks that can be assembled into any order needed to perform the workflow variations dictated by different business rules and data.

**ADD TEST DATA**

Comprehensive testing requires exercising the same transactions and business processes for many different scenarios and conditions. Instead of making you create tests for each requirement, Worksoft Certify allows you rapidly expand your test coverage by just adding multiple variations of data values to exercise business rules and conditions. As illustrated in Figure 3, Worksoft Certify automatically loops through the data, row by row, to repeat the process and log results for every row. Worksoft Certify can also capture data during execution and save it to a file for later input or verification.

Test data can be supplied to a process dynamically from a number of sources including files, databases or other screens. This data is captured and stored in the Worksoft Certify repository where it can be easily shared and reused.

**EXECUTE AND ANALYZE**

Once your transactions are documented and your data is defined, you are ready to execute. No coding necessary. Worksoft Certify provides unattended, automated test execution or fully interactive manual testing. As illustrated in Figure 4, you can step through your transactions, set breakpoints, monitor data values and capture the screen anytime you wish or only when errors occur. You have complete control over your test process while Worksoft Certify captures a detailed, step-by-step results log including captured screen images.

All test results are stored in the Worksoft Certify repository, providing an audit trail that documents your test process for compliance and other needs.

**MAINTAIN**

As new modules or locations are rolled out, or as enhancements or upgrades are implemented or even as service packs are installed, you can continually expand and maintain your test cases to be sure that business processes still operate as expected after every change.
This is where Worksoft Certify’s repository design really shines. Simply identify the nature of the change—new or changed screens or fields, or new data values to exercise new rules, locations or products—and let Worksoft Certify guide you through instant impact analysis and automated updates. By comparing the previous application map to the new one (see Figure 5), Worksoft Certify shows you every single difference—whether a change to an existing component, a deletion or an addition—on every process and detailed step. You can locate all references to a data element with only one click, allowing you to quickly assess the need for new values or conditions.

Once you understand the impact of these changes, you can make global changes automatically in most cases. There is no need to wade through complex script files, looking for potential impact and changing code that then has to be debugged and tested. And all of these changes are also documented so you have a complete audit trail.

With Worksoft Certify’s innovative and efficient approach to maintenance, you can not only keep your automated test library current after changes, you can keep up with new requirements and continually expand your coverage.

### SUMMARY

Worksoft Certify delivers a powerful value proposition that is uniquely suited to the SAP marketplace. By documenting and executing a comprehensive test library of SAP transactions and end-to-end business processes, Worksoft Certify allows you to make your resources more productive, reduces the time to deliver value to the business, and assures that critical operations are undisturbed by unintended consequences of changes. Your tests are now consistent, predictable and transferable, allowing you to focus on what’s changing instead of what should not change.

Best of all, you don’t have to take our word for it. Worksoft will prove the value of Worksoft Certify to you—at your location, in your environment, in front of your very eyes—in one day. Contact us to schedule your own transformation.