SAP Solution Manager – Test Workbench

Testing of SAP-centric Solutions

Application Lifecycle Management
Active Global Support (AGS)
SAP AG
E2E Integration Testing of SAP Solutions
Test Process embedded in the SAP Application Lifecycle

Type of Change

- New SAP Solution
  - Implementation of new SAP Solution
- SAP Solution Update
  - SAP Support Packages
  - SAP Legal Change Packages
  - SAP Enhancement Packages
  - Customizing changes
  - Custom Code
  - Interface changes

Test Scope Identification

- Business Blueprint
  - Business Blueprint Update
  - Identification of Business Processes affected by SAP Solution Updates
  - Recommendation of business processes for regression tests

Test Planning

- System Setup
  - Test Plan setup
  - Compilation of Test Packages
  - Assignment of Testers
  - Setup of Test System
  - Creation of Test Data

Test Execution

- Development of Test Cases
  - Test Plan setup
  - Compilation of Test Packages
  - Assignment of Testers
  - Setup of Test System
  - Creation of Test Data
  - Manual tests
  - Automated tests
  - Integration Validation
  - Incident Management
  - Performance tests
  - Test status and progress reporting
  - Test sign-off

Deploy Changes to Production

- Deployment of changes through transports from Test to Production system
  - SAP Support packages, Legal Change Packages, Enhancement Packages
**E2E Integration Testing of SAP Solutions**
Options for SAP Customers

### Option 1

**Type of Change**
- **New SAP Solution**
- **SAP Solution Update**

**Test Scope Identification**
- **Business Blueprint**
- **Change Impact Analysis**

**Test Planning**
- **Test System Setup**

**Test Execution**
- **Apply Changes to Production**

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**Solution Manager Business Blueprint**
- Setup of business process catalog
- Business requirements

**Solution Manager Business Process Change Analyzer** *
- Identification of processes affected by code / customizing changes

**SAP TDMS**
- Setup of lean test systems

**Solution Manager Test Workbench**
- Test planning

**Solution Manager Test Workbench**
- Manual testing

**Solution Manager eCATT**
- Admin of automated tests

**Automated Tests**
- **UI based Tests**
  - QTP
- **Application-logic Tests**
  - eCATT

**LoadRunner**
- Performance Tests

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* Availability with SAP Solution Manager 7.0 EhP1
Test Planning, Execution and Reporting

Test Planning

- Business Blueprint with assigned Test Cases
- Test Scope Identification: Blueprint for new Solution, Change Impact Analysis for Solution Update
- Test Coverage check: Test Case review and creation of missing test cases
- Test Case Assignment Report
- Sign-Off of Test Scope

Generate Test Plans and Packages for selected Test Cases

Assign Tester to Test Package

- Test Planning: Select Test Cases for specific Phases (Test Plan)
- Distribute Test Cases to Testers (Test Package)
- Define Test Workflow (Sequences)

Test Execution

- Tester Worklist to start manual and automated Tests

Key Capabilities

- Predefined Test Systems
- E-Mail notification via Workflow
- Status and Result Documentation

Test Reporting

Role based Capabilities:

- Status Reporting (Realtime & BI)
- Messages Reporting (Realtime & BI)
- Test Progress (BI)

Status Analysis

Status Progress
Test Workbench - Test Planning
Quick Access via Test Management Work Center

- Intuitive navigation to access Test Plan and Test Packages and related features
- Standard Queries All Test Plans / My Test Plans to list all or only own Test Plans
- Users can create their own queries can be defined based on various selection criteria
Test Workbench - Test Planning

Challenges in Test Planning

Challenges:

- High volume of Processes and Test Cases to be managed
- Different variants of same Business Process may need to be reflected in Test Planning
- Different Type of Tests may require different Test Case selection
  - Unit Test
  - Integration Test
  - Regression Test
  - Automated Test
  - …
- How to find the right Test Cases for Test to be planned?

SAP Approach:

- Classification of Business Processes and Test Cases via Attributes
- These Attributes can be used in Test Case selection when generating Test Plans
- Business Process Change Analyzer* which allows automated risk based Test Plan Generation

* Available with SAP Enterprise Support
Test Workbench - Test Planning
4 Options to generate Test Plans

1. Manual Selection
   Individual selection of Test Cases based on Business Process Structure
   Benefit: High flexibility

2. Business Process Attribute Filter
   Allows to filter Test Cases based on Business Process Attributes like:
   - Status
   - Team Members
   - Keywords
   - SAP/Customer Attributes
   Benefit: Useful for high volume processing

3. Test Case Attribute Filter
   Allows to filter on Test Cases Attributes like:
   - Test Case Type
   - Search Terms
   - Priority
   - Status assigned to the individual Test Case
   Benefit: Useful for high volume processing

4. Business Process Change Analyzer
   Automated selection of Test Cases based on Change Impact Analysis performed with the Business Process Change Analyzer
   Benefit: Less Test Planning effort, Reduced Risk

Benefits:
- Provides flexibility and efficiency regarding Test Planning for different Test Types: Unit Test, Module, Process and Scenario Integration Tests / Manual and Automated Tests / Ad-hoc Test based on business criteria or Change Impact Analysis

* Available with SAP Enterprise Support
**Test Workbench - Test Planning**

Workflow support for Test Execution via Test Sequences

**Standard approach:**

- **Test Plan**
- **Test Package**
  - Test Case 1
  - Test Case 2
  - Test Case 3
  
  Several Testers (Tester Pool) are assigned to a collection of Test Cases (Test Package)

**Sequence approach:**

- **Test Plan**
- **Test Package**
  - 1. Create Sales Order
  - 3. Post Goods Issue
  
  In addition to standard approach you can assign each Test Case to a Tester and the sequence of test cases can be processed as workflow

Example: As soon Test Case 1 has been processed successfully by Tester 1, Tester 2 will be notified by E-Mail that Test Case 2 is ready to be tested

**Benefit:**
- Less coordination effort during complex scenario tests and accelerated test execution
Test Workbench - Test Execution
Test workflow with Sequences

Tester 1
Worklist of Tester 1 on assigned Test Package

Tester 1 set to Status ‘OK’

Tester 2
E-Mail notification

Worklist of Tester 2 after Tester 1 is finished
Test Workbench - Test Planning
Release Status Schema for Test Plans

Simplified example to highlight the benefit of Release Status Schema for test plans

<table>
<thead>
<tr>
<th>Phase</th>
<th>Test Planning</th>
<th>Test Execution</th>
<th>After Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>New</td>
<td>Released</td>
<td>Protected</td>
</tr>
<tr>
<td>Impact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test plan is open for changes</td>
<td>Test plan is closed for changes</td>
<td>Test plan is closed for changes</td>
</tr>
<tr>
<td></td>
<td>Test plan is closed for execution</td>
<td>Test plan is open for execution</td>
<td>Test plan is closed for execution</td>
</tr>
</tbody>
</table>

Workflow active:
- Automated E-Mail notification to all Tester that test execution phase is started
- Automated E-Mail notification to all Tester that Test execution phase has ended

Benefit:
- Allows phased approach with Q-Gates and Sign Off with electronic signature to meet legal requirements
**Test Workbench - Test Execution**

**Test Management Work Center: Tester Worklist**

- Tester Worklist - Quick Access to your Test Packages and related features
- For the Tester all assigned Test Packages appear directly in the Work Center
- Standard Queries My Released, My Assigned and My Protected available
- Useful information about Test Status, Release Status of Test Plan and corresponding messages listed

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**SAP Solution Manager: Work Centers**

![Image of SAP Solution Manager Work Centers](image-url)
Test Workbench - Test Execution
Tester Worklist: Entry point to execute manual and automated Tests

Assigned Test Packages appear in the Worklist of the Tester

Test Package with relevant Test Cases

Benefit:
- Direct access to the Test Cases
- Direct access to relevant Transaction in Test system
- Direct access to Test Result Documentation: Set Status, Create Test Note, Create Defect Message if needed
- Access to results data of predecessor test which may be needed for current test
1. Status Maintenance

- Set Test Status

2. Test Note: Document Test Results incl. Test Data and Screenshot

- Create Sales Order
  - Project: Logistics
  - Created By: Jeff Quality
  - Created On: 01.09.2008
  - 1 Preparation
    - Check system access via Test Object in your work list
  - 2 Test Execution
    - Execute Transaction: Code VAB1 in the Test System via Test Object field in your work list
    - Enter Order Type: D1. for Standard Order
    - Enter values for Sales Organization, Distribution Channel and Division you got from Test Data Attachment and pass Error
    - Enter values for Sold-To Party, Ship-To Party you got from Test Data Attachment
    - Enter the current date for 'Bill-to' and 'Delivery Date'
    - Enter values for Material, Quantity and Unit you got from Test Data Attachment and pass Error
    - If available confirm Pop-Up regarding changed Delivery Date.
    - Press Save Button.
  - 3 Test Result
    - Expected Result: Test Order is created successfully
    - Actual Result: Test Order is created successfully
    - 2.1 Screened
      - Double click on the status line. A pop-Up appears.
      - Press ALT+P to make a screen shot to be pasted into the Test Note in Test Workbench.

Benefit:
- Transparency and Traceability about Test Results
- Meet legal requirements via Digital Signature
- Test Case Description can be used as template for Test Note
- Test Note can be used to handover Result Data to be used for subsequent Tests
Test Workbench - Test Execution

Typical process to report test related errors

Role

Test Workbench

Tester

- Execute Test
- Error? (Yes or No)
  - Yes
  - Create Message
  - Root Cause Analysis
  - Solution Available?
    - Yes
      - Provide Solution
      - Apply Correction
    - No
      - Create Correction

Service Desk

Service Desk Employee 1st Level

- Perform Root Cause Analysis
- Solution Available?
  - Yes
  - Provide Solution
  - Apply Correction
  - No
    - Create Correction

Developer 2nd Level

- Yes
  - Provide Solution
  - Apply Correction
- No
  - Create Correction
Test Workbench - Test Execution
Integration with Service Desk

**Benefit:**
- Allows you to use similar support processes already established for other support areas
- Smooth collaboration between different parties e.g. Tester, Service Desk (1st level), Developer (2nd level)
- Allows to Report on test related messages and their status within Test Workbench
- Enhanced traceability regarding Test Errors and efficient follow-up
**Test Workbench - Test Execution**  
Automated Testing integrated into Test Workbench

Automated tests are seamlessly integrated into Test Workbench

**Benefits**

- Test planning for manual and automated test cases within same environment
- Test execution for manual and automated test cases via Work Center „Test Management“
- Test reporting for all types of tests within single environment

**Option 1**

- **Solution Manager Business Blueprint**
  - Setup of business process catalog
  - Business requirements
- **SAP TDMS**
  - Setup of lean test systems
- **Solution Manager Test Workbench**
  - Test planning
- **Solution Manager Test Workbench**
  - Manual testing
- **SAP**
- **Automated Tests**
  - Admin of automated tests
- **UI based Tests**
  - GTP  
  - Test Partner
- **Application-logic Tests**
  - eCATT
- **LoadRunner**
  - Performance Tests
Test Execution

eCATT Test Automation

Test Automation of SAP Business Processes via eCATT

- **Business Processes**
  - Sales Order
  - Delivery & Shipment
  - Billing & Payment Receipts
  - Return & Complaint Handling

- **eCATT Test Automation**
  - Import
  - Test Data Container
  - Parameter
  - eCATT Script 1
  - eCATT Script 2
  - eCATT Script 3
  - eCATT Script 4

- **SAP System Landscape**
  - Landscape 1 (Dev)
  - Landscape 2 (Test)
  - CRM Dev 1
  - CRM Test 2
  - R/3 Dev 1
  - R/3 Test 2
  - ERP Dev 1
  - ERP Test 2

- **Strengths**
  - Testing of complex business process scenarios like Order-to-Cash and Procure-to-Pay
  - Advanced functionality to test backend business logic (function modules, SOA services, test result verification at SAP table / database level, …)
  - Central definition via SAP Test Workbench combined with execution in distributed systems
  - Central repository for test data
Additional ROI resulting from the deployment of the eCATT scripts in the Support Package upgrade test

atomy

Saving 45 days or approx. 90% !!!

- No key user involved in this test!
- Detection of errors in business critical processes
- Detection of errors in printing program

„With our eCATT scripts, the involvement of key users in the Support Package upgrade test could be entirely avoided.“

Lothar Hafner, INVISTA Cluster Lead

„The test automation gives us security: if the scripts run without any errors we can be sure that our business critical processes run properly and we can minimize the risk.”

Lothar Hafner, INVISTA Cluster Lead

„With the help of the structures within the SAP Test Workbench we were able to train the employees of the application provider along our business processes and to assess the quality of their progress. The saving effect was enormous, however, difficult to quantify.

Lothar Hafner, INVISTA Cluster Lead
**Test Execution**
Automated Tests for non-SAPGUI using eCATT & HP QTP

### Test Design

**Launch eCATT and call HP QTP**

Record non-SAPGUI application via HP QTP + save script within eCATT

![Diagram](image1.png)

### Test Execution

**Work Center „Test Management“** → User executes assigned Tester Worklist

- Test Worklist: Execution of eCATT Test Configuration
- eCATT executes HP QTP script
- QTP scripts executes non-SAPGUI application
- eCATT & QTP Test logs

![Diagram](image2.png)

**Test Workbench: Test result reporting**
- Manual tests
- Automated eCATT / HP QTP tests

![Diagram](image3.png)
Test Workbench - Test Reporting
Integrated Reporting for Test Results, Test Progress and Messages

Different Roles require different views and granularity on Test Status, Defects messages and Test Progress.

SAP Test Workbench offers:
- Suitable reporting capabilities for each role
- Different levels of entry (Project, Solution, Test Plan)
- Possibility to drill-down to single Test Cases and Defect Messages.
- Switch between absolute or percentage view
- New integrated SAP BI based graphical reports e.g. for Test Progress
Use Cases for Test Reporting in Test Process

Type of Change
- New SAP Solution
- SAP Solution Update

Test Scope Identification
- Business Blueprint
- Change Impact Analysis

Sign-Off Test Scope
- Test Case Coverage for Business Processes?

Sign-Off Test Plans
- Coverage of Test Cases in Test Plans and Test Packages?

Test Execution
- Test Completeness?
- Error message resolution?

Test Status and Progress?
- Detected Errors and related messages?

Apply Changes to Production

Test documentation due to legal requirements
Test Workbench - Test Reporting
Test Evaluation – Overview and access to several Reporting features

- Provides an overview on Test Status and related Messages
- Standard Queries All Test Plans / My Test Plans to list all or only own Test Plans
- User specific queries can be defined based on various selection criteria
- Allows to drill down to further details based on selected Project, Solution or Test Plan
Test Workbench - Test Reporting
Capabilities supporting Test Preparation and Planning

**Goal**
Check test case coverage for your Business Processes to support Sign-Off for Test Scope and Test Planning

**Scope**
- Reports assignment of Test Cases to process structure and potential gaps
- List of Test Cases without assignment to Test Plans or Test Packages
- Various selection criteria and filter available
  - Priority
  - Keywords
  - ...

**Benefits**
- Transparency during Test Scope Definition and Test Planning is key for reliable test results
Goal
Check test status for current test phase and status of related messages
Provide aggregated as well as detailed information

Scope
• Provide the latest test relevant information:
  • Test Status, Result Documentation
  • Defect Messages with Status and Priority
• Central entry point via Work Center - Test Evaluation for selected
  • Template (Project / Solution)
  • Test Plan
• Aggregated views on different levels:
  • Template Structure (Project / Solution)
  • Test Plan, Test Packages
  with the possibility to drill down to the single Test Cases

Benefit
Provides efficient and flexible way to get a snapshot about running or completed Test activities and related Messages. Decision support for Test Sign-Off
Test Workbench - Test Reporting
Visualized Test Status Reporting based on SAP BI

**Goal**
Provide state-of-the-art reporting - intuitive, flexible and extendable

**Scope**
- Enable several to report earlier tests and visualize the test progress
- Complementation to the Status Info System
- Implemented Reports:
  - Test status over time
  - Test execution status and messages
  - Messages by Priority and Status
- Easy setup: no BI expertise necessary for standard reports
- Customer individual reports / dash boards can be built

**Benefit**
Provides efficient and flexible way to visualize day to day Test Status and progress, Messages
**Test Workbench - Test Reporting**

**Test Report - Documenting Test Coverage and Results**

**Goal**
Meet legal requirement regarding Test Documentation

**Scope**
Provide all test related information in one document:
- Project / Solution
- Test Plan - Responsible Person
- Test Plan - Overall Results Status - Percentage and absolute view
- Related Messages
- System(s) under Test
- Involved Processes
- Keywords
- Tester assignment
- Test Case Description incl. attributes
- Status history per Test Case
- ...

**Benefit**
Efficient solution to get prepared for external audits.
“The integrated functions of SAP Solution Manager have enabled us to streamline and accelerate our test processes and thereby significantly increase test management efficiency in our upgrade projects to SAP ERP 6.0.”

Bernd-Matthias Seele, Project Manager, E.ON IS

“Our employees were able to use the test functions after only one hour of training. This has contributed to a high level of acceptance among employees from the user departments.”

Bernd-Matthias Seele, Project Manager, E.ON IS
“With SAP Solution Manager we can test system adjustments far more quickly than we used to be able to. Test distribution, performance, checking, and validation are also a lot more transparent now.”

Detlev Voss, Test Manager, Südwestfalen Energie und Wasser AG

**Benefits**
- Extensive overview of functions, interfaces, and whole IT solution landscape provides a sound foundation for decisions
- Modeled structures can be reused in future IT projects
- Standardized documentation serves as a basis for audits
- New test management system simplifies and shortens testing process
- Basis is established for automated tests
- Ease of use promotes employee buy-in
- Good work results were obtained with little training effort