Test Management Overview

ALM Solution Management, AGS, SAP AG
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Orchestrate Your Solution with SAP Solution Manager

Run SAP like a Factory

Application Lifecycle Management

Incident, Problem & Request Management  Portfolio & Project Management

Business Process Operations

Solution Documentation & Implementation

Application Operations

Change, Test & Release Management

Integration Validation

Maintenance Optimization & Security

Single Source of Truth
Agenda

Testing of SAP-centric Business Processes

Change Impact Analysis

Test Management with SAP Solution Manager 7.1

Test Management with SAP Solution Manager 7.1, SAP QC and SAP TAO

Further Information
Testing of SAP-centric Business Processes
Test Management
Test Management 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 Design
  - Solution Configuration

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

**Test Planning**
- Development of Test Cases
- Test Plan setup
- Compilation of Test Packages
- Assignment of Testers
- Setup of Test System
- Creation of Test Data

**Test System Setup**
- Manual tests
- Automated tests
- Integration Validation
- Incident Management
- Performance tests
- Test status and progress reporting
- Test sign-off

**Deployment**
- Deployment of changes through transports from Test to Production system
- SAP Support packages, Legal Change Packages, Enhancement Packages

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Advanced SAP Customer: Change Management and Test Activities

**Activities:**

- **Planning of changes – scope and dates**
- **Sign-off**
- **Blueprint update**

<table>
<thead>
<tr>
<th>SAP Systems</th>
<th>DEV</th>
<th>DEV</th>
<th>TST 1</th>
<th>TST 2</th>
<th>TST 1</th>
<th>PRD</th>
<th>PRD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan &amp; Approve Changes</td>
<td>Implement Changes</td>
<td>Initial Scenario Tests</td>
<td>Integration Tests</td>
<td>Load Tests</td>
<td>PRD Cutover</td>
<td>PRD Stabilization</td>
<td></td>
</tr>
</tbody>
</table>

- **Create scenario test plan & sign-off**
- **Execute manual scenario tests**
- **Update Config / Dev as needed**
- **Document and resolve defects**

- **Cycle 1 manual** integration tests of changed processes

- **Cycle 2 automated** regression tests of remaining prio 1 processes

- **Cycle 3 UAT by Business Users**

- **Create performance test plan & sign-off**
- **Execution of Performance Tests**
- **Review of test results, validation, documentation and sign-off**

- **Final transport from TST to PRD**
- **System and process verification**
Test Management
End-to-End Testing of SAP-centric Solutions

Customer Pain Points
1. Tests in heterogeneous system landscapes
2. Software updates affecting mission-critical business processes
3. Test system setup and test data management
4. Effort for creation and maintenance of automated tests

SAP Strategy for Test Management
- SAP Solution Manager acts as central hub to manage SAP change events and E2E Integration Testing
- Superior functionality from risk-based test planning, manual /automated functional and performance testing to status reporting and sign-offs
- Integration of Partner Test Suites
Test Management
Products and Capabilities integrated with SAP Solution Manager 7.1

Business Blueprint
Order to Cash (O2C)
- Quotation
- Sales Order
- Outbound Delivery
- Goods Issue
- Billing

BPCA

Test Option 1
SAP Solution Manager
Work Center
Test Workbench

SAP Solution Manager
Test Automation Framework
HP QTP and other integrated ISV test automation tools

Test Option 2
SAP Quality Center by HP

Test Option 3
Rational software
Quality Manager, ReqPro, ...

New SAP Solution
SAP Solution Update
Change Impact Analysis
Test Planning
Test System Setup
Test Execution
Change Deployment

Advanced
Advanced
New
Advanced
New
Advanced

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Leverage the experience of other SAP customers and find out what works best for them.

Content

- Regression tests as integral part of the software change process
- 9 Recommendations for regression testing
- Customer use cases from Colgate-Palmolive, Ferrero, Sara Lee, ConAgra Foods, Soka-Bau

Best Practice available at

SDN: http://www.sdn.sap.com/irj/sdn/alm-test-management

Best Practices: Regression testing of SAP-centric Business Processes
9 Recommendations

1. Lean documentation of important business processes
2. Setup of lean test systems
3. Test automation for critical business processes
4. Comprehensive test data for automated regression tests
5. Provisioning of easy to use manual tests
7. Unattended ('lights out') execution of automated regression tests
8. Manual test execution with guidance for business users
9. Management of the change process
Change Impact Analysis
Business Process Change Analyzer (BPCA)
Motivation and Approach

**Motivation**

**SAP Solution updates occur frequently**
- SAP triggered: Support Packages, Enhancement Packages
- Customer triggered: Customizing changes, Custom code development

**Pain Point**

*Which critical business processes are affected by planned changes?*

**Approach**

- **SAP Solution Update**
- **Change Impact Analysis**
  - Identification of business processes affected by change
  - Risk-based Test Recommendation
- **Test Planning**
  - Test Case review and creation of missing test cases
  - Test Plan generation
- **Test Execution**
  - Regression Tests
    - Manual Tests
    - Automated Tests
Business Process Change Analyzer (BPCA)

**Preparation**

Business Blueprint

- Order to Cash (O2C)
  - Quotation
  - Sales Order
  - Outbound Delivery
  - Goods Issue
  - Billing

Trace to identify objects by process

Manual execution of process step

Automated

BPCA Trace Result (TBOM)

- Transactions
- ABAP Code: Function modules, ...
- UI: Dynpro 1000, ...
- Tables: Customizing, Master Data

**Change Impact Analysis**

“Which critical Business Processes will be affected by planned changes?”

1) Customizing changes
2) Custom code development
3) Business Function activation
4) SP and EhP deployment

**Risk-based Test Scope Identification**

“Can I get a recommendation for regression tests?”

BPCA Test Scope Optimization and Test Plan Generation

- Identification risk-based test scope based on affected process steps
- Test Scope Optimization
- Semi-automatic test plan generation (automated for Test Option 1)

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BPCA
TBOM generation using test automation tools

Business Scenario
“Order to Cash”

automated Test Case
execute

Process Step „Sales Order“

Customer SAP Landscape (SAP ERP, …)

create TBOM during test case execution

Business Blueprint

assign TBOM to Process Step

<table>
<thead>
<tr>
<th>Test Option</th>
<th>Test Management</th>
<th>Test Automation Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SAP Solution Manager – Test Automation Framework</td>
<td>HP QTP, SAP eCATT, WS Certify, …</td>
</tr>
<tr>
<td>2</td>
<td>SAP Quality Center</td>
<td>SAP TAO</td>
</tr>
</tbody>
</table>

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BPCA Use Case 1: **Customizing Changes**

Example: „Create Sales Order“ – input field „Purchase Order: optional → mandatory

Change Impact Analysis

Customizing Changes

Identification of impacted business processes

Test Recommendation

Generation of Test Plan

(*) Note: BPCA of SAP SolMan 7.1 SP01: additional precision through tracing of key fields of SAP customizing tables
Business Process Change Analyzer
SAP Solution Manager 7.0 SP18

BPCA Use Case 2: **Custom Code Developments**

**Example:** Extention of existing SAP screen with custom required field

- Custom Code Developments
  - DEV
  - Transport
  - TST
  - PRD

- Change Impact Analysis
- Identification of impacted business processes
- Test Recommendation
- Generation of Test Plan
BPCA Use Case 3: Planned activation of inactive Business Functions

Example: inactive Enterprise Business Function „Advanced Order Processing and Billing“

deployed EhP → DEV → TST → PRD

Change Impact Analysis

Identification of impacted business processes before BF activation

Generation of Test Plan

Test Recommendation

End-user training plan
Business Process Change Analyzer
SAP Solution Manager 7.1 SP01

BPCA Use Case 4: SP / EhP Deployment and Test Scope Optimization

Example: Deployment of EhP 4 for SAP ERP

SAP Support Package / Enhancement Package Deployment

Change Impact Analysis
Identification of impacted business processes

Test Recommendation
Generation of Test Plan with risk-based test scope
Business Process Change Analyzer
Test Scope Optimization for SAP Support Packages and EhPs

Key Message
- Test Scope Optimization: identification of test cases based on # changed SAP objects and test effort
- Approach: changed SAP objects should be tested at least once
- Not all affected process steps have to be included in the regression test

100% Test coverage reached
96% Test coverage selected by Change Manager

Ranking of impacted Process Steps
Test Management with SAP Solution Manager 7.1
### E2E Test Management

**Capabilities of Test Option 1 with SAP Solution Manager 7.1**

#### SAP Solution Manager 7.1

![Diagram of SAP Solution Manager 7.1](image)

- **Test Case Setup**
  - Business Blueprint

- **Test Planning**
  - **Test Workbench**
    - Test Script Creation
    - Test System Assignment
    - Test Data Assignment

- **Test Execution**
  - **Test Workbench**
    - Manual Tests
    - Automated Tests
  - **Other 3rd party test automation tools**
    - eCATT
    - HP QTP
    - Certifiable Interfaces

- **Change Impact Analysis**
  - Business Blueprint

- **Test System Setup**

- **Test Workbench - Work Center**
  - BW Reporting
  - Partner Reports

#### Goals with SAP Solution Manager 7.1

1. Extended functionality of BPCA for risk-based test scope identification
2. Improved usability for manual testers
3. Smooth integration of 3rd party test automation tools with SAP Solution Manager
Manual Test Execution with SAP Solution Manager 7.0

Tester Worklist

<table>
<thead>
<tr>
<th>Test Plan</th>
<th>Errors</th>
<th>No Result</th>
<th>OK</th>
<th>Test Case</th>
<th>Test Object</th>
<th>Status</th>
<th>Message</th>
<th>Note</th>
<th>Status Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order-to-Cash</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create Sales Order</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O2C_Create_ERP_Sales_Order</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create Outbound Delivery</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Errors, Retest Required</td>
</tr>
<tr>
<td>O2C_Create_Delivery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post Goods Issue</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Untested</td>
</tr>
<tr>
<td>O2C_Post_Goods_Issue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test Script

Start of Business Transaction

Test Status and Incident

Test result documentation
Manual Test Execution with SAP Solution Manager 7.1
Convinient access for manual Testers

Tester Worklist

1. Easy access for manual testers from Work Center Test Management

2. Test Packages assigned to Tester including status

3. Test Cases of selected Test Package
   - Start of execution
   - Test status
   - Test Notes
   - Incidents
Manual Test Execution with SAP Solution Manager 7.1
Convinient test case execution for manual Testers

Create Sales Order

1 Prerequisites
Master data for products and customer, as well as sales organization

2 Test Data
Standard test data is included in the following test script. Please use the value help functionality in the SAP test system to obtain additional test data.

3 Test Execution
Your test package includes a button to start the business transaction Create Sales Order (transaction code VA01).
Manual Test Execution with SAP Solution Manager 7.1
Convinient test case execution for manual Testers

**Manual Test Case**

1. Test script is displayed to Tester
2. Start Execution → direct launch of SAP transaction in assigned test system
3. Tester enters Test Status
4. Test Note: Tester enters actual test results / screenshots
5. Messages: direct creation of incidents
SAP Customer: Ferrero
Test Execution using test management capabilities of SAP Solution Manager

Manual test case execution
• It is possible to manage the collaboration between users and development team during the test (create internal messages, log tests, review the testing status)

Automated test case execution
• eCATT has been used as tool to automate the testing process and to create test data for user acceptance test

Reporting
• Status Info System enables Test Coordinator to view the progress of all test packages and test plan
• Drilldown to tester notes and incidents allows tracking of critical tests
• Test cases, test packages and test plan can be locked
### Required Effort to setup Manual Testing

<table>
<thead>
<tr>
<th>Basic Configuration (one-time activities)</th>
<th>Approx. Effort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activate Solution Manager Services</td>
<td></td>
</tr>
<tr>
<td>Setup Work Center for Test Management</td>
<td></td>
</tr>
<tr>
<td>Activate Workflow Functionality</td>
<td></td>
</tr>
<tr>
<td>Set-Up Automatic E-Mail Notification for Testers</td>
<td>2 days</td>
</tr>
<tr>
<td>Activate BI Reporting</td>
<td></td>
</tr>
</tbody>
</table>

*Based on a Project comprising 3 Processes with an average of 10 Process Steps per Process.*

How-To Guide available at SAP Service Marketplace

http://service.sap.com/testing → More Information
### Manual Testing
Disadvantages of manual testing compared to automated testing

<table>
<thead>
<tr>
<th>Test coverage within tight timelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Lack of time to execute regression tests may potentially compromise Performance &amp; Reliability</td>
</tr>
<tr>
<td>■ Overcompensating scope of testing may result in more testing than may be really required and project delays</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Defects in Production Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Insufficient test coverage leads to a higher amount of defects not found before cut-over of changes from test to production landscape</td>
</tr>
<tr>
<td>■ Testing accuracy due to not being able to test all variants</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ High costs for manual testers involved in recurring regression tests</td>
</tr>
<tr>
<td>■ High costs to fix errors in production landscape</td>
</tr>
<tr>
<td>■ Finding errors late in the development process could delay delivery</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Complexity increasing with added business processes and modules implemented</td>
</tr>
<tr>
<td>■ Manual testing cannot keep pace with expansion of applications</td>
</tr>
</tbody>
</table>
### New SAP Offering for Test Automation

<table>
<thead>
<tr>
<th>Offering</th>
<th>What’s new?</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP Solution Manager 7.1</td>
<td><strong>Test Automation Framework</strong> to manage and integrate automated test scripts like HP QTP, test data, system under test, etc.</td>
</tr>
<tr>
<td>HP Quick Test Professional 11</td>
<td><strong>HP QTP</strong> with extended functionality for test data and test system handling for automated tests of SAP and non-SAP applications</td>
</tr>
<tr>
<td>2 Licenses of HP QTP *</td>
<td><strong>2 licenses of HP QTP</strong> for all SAP customers with SAP Enterprise Support, PSLE or Max Attention contract</td>
</tr>
</tbody>
</table>

**Goal**
Support SAP customers to move from manual to automated regression tests in a convenient, reliable and cost efficient fashion for SAP and non-SAP applications.
SAP Solution Manager 7.1
New Test Automation Framework integrates 3rd party Test Automation Tools

- Seamless integration of 3rd party test automation tools with Business Process hierarchy of SAP SollMan
- Test Data for parameters of test script provided by Test Data Container
- Test System info linked with test script
- Scheduling for unattended execution of automated tests
- Exception reports and Workflows
- Status and Progress Reports integrated with 3rd party test logs
- Workflow-based repair order after failed test execution from Tester to responsible Test Engineer
- Central repair environment for Test Engineer with integrated BPCA
Test Automation Framework

(1) Definition of automated Tests and assignment to Process Steps

- Seamless creation of automated test cases from SAP Solution Manager business process hierarchy with 3rd party test automation application.
- SAP Solution Manager provides Test Data and System Landscape to auto Test Case
- SAP provides 2 interfaces to link 3rd Party Test Automation tools with Test Management of SAP Solution Manager. 3rd party tool vendors can receive an SAP certification.

Business Processes

Test Configuration

- Test Script: QTP
- Test Data:
  - Doc Type: OR
  - Customer: C 1000, C 3500
  - Product: P-100, X-500
- System Data
  - other test automation tools
Test Automation Framework
Fast Test Script Creation

Direct access from SAP Solution Manager → Editor of 3rd Party Test Automation Tool → SAP Test System
Test Automation Framework
Parameterization of test scripts and SAP Test Data Container

SAP Test Configuration

1. New test script

3. Test Data variant generated by script parameters

    I_ORDER_TYPE  I_SOLD_TO_PARTY  I_SALES_ORG  I_DIST_CHAN

4. Wizard to map test data from TDC to Test Configuration

Test Data Container (TDC)

<table>
<thead>
<tr>
<th>Order Type</th>
<th>Customer</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR</td>
<td>C1000</td>
<td>P-100</td>
</tr>
<tr>
<td>OR</td>
<td>C2000</td>
<td>P-200</td>
</tr>
</tbody>
</table>

3rd party test script

2. (Automatic) Replacement of static value (customer „C1000“) with parameter (I_SOLD_TO_PARTY)
Test Automation Framework
System Data Container - Assignment of Systems under Test

SAP Solution Manager

Test Configuration
- Test Script
- Test Data
- System Data

System Landscape Documentation

<table>
<thead>
<tr>
<th>Solution</th>
<th>System Role</th>
<th>Test execution</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP ERP</td>
<td>DEV</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>TST</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>PRD</td>
<td>not allowed</td>
</tr>
<tr>
<td>SAP CRM</td>
<td>DEV</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>TST</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>PRD</td>
<td>not allowed</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

Client (Laptop / Desktop)
Execution of Test Scripts

Handover of system access information (RFC, ...)

No hard coded system information

Customer Test System Landscape (SAP ERP, …)
UI Technologies used in SAP-centric Business Processes

**Goal**

Provide **test automation** for all typical business processes used by SAP customers including SAP and non-SAP applications.

---

**HP QTP supports the following Business Scenarios / UI technologies***:**

<table>
<thead>
<tr>
<th>SAP vs. non-SAP Business Process</th>
<th>Example</th>
<th>UI Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 % SAP</td>
<td>SAP CRM, SAP ERP, SAP Portal</td>
<td>SAPGui, Web-Dynpro ABAP, BSP, ...</td>
</tr>
<tr>
<td>SAP-centric</td>
<td>SAP CRM, SAP ERP + partner product for price determination</td>
<td>SAPGui, Web-Dynpro ABAP, BSP, html, .Net, JavaScript, ...</td>
</tr>
<tr>
<td>Non-SAP</td>
<td>Partner application or non-SAP application for HR processes</td>
<td>Html, .Net, JavaScript, ...</td>
</tr>
</tbody>
</table>

(*) see HP website for a complete list of supported UI technologies
Test Automation Framework

(2) Test Execution

- Tester Worklist - manual and automated tests can be executed from the same html-based Work Center
- Exception reports support the tester to identify failed tests
- Scheduling of tests enable unattended test execution at night time with subsequent exception reports the next morning
Test Automation Framework

Test Execution

SAP Solution Manager
Work Center „Test Management“ – Tester Worklist

User starts test execution

Test Automation Framework
Test Script Test Data Test Systems

Test Script
HP QTP

Test execution
handover of
Script + Test Data + Test System

run

Test System
SAP and non-SAP

Test Config reads test data

TDC Test Data Container (TDC)
Test Automation Framework
Scheduling of unattended automated tests

Scheduling
Scheduling of unattended automated tests in local or remote locations

Unattended Test Execution
Unattended execution of automated test on Test PCs

Analysis
Notification about test execution status and subsequent failure analysis

Test System Landscape (SAP ERP, SAP CRM, ...)

Test Engineer - Location 1
Test PCs - Location 2

Business Analystist
Test result analysis

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Test Automation Framework

(3) Integrated Test Status and Progress Reporting

- Multiple reporting options for Test Coordinators, Test Engineers, Testers and Project Manager
- Management of Test Plans: Completeness and gap reports for included test cases
- Test status and trend reports to monitor progress of test activities and problem solving
- Drilldown from test status reports to 3rd party test tool logs and dashboards
Test Automation Framework

(4) Accelerated repair of damaged tests

- Software changes of SAP Solutions can damage automated test cases → fast repair required
- Workflow to request repair activities - from Test Executor to Test Engineer
- Environment for test engineer to access the log, re-run the test and display/edit the test script
- Change Impact Analysis (BPCA) integrated into test case maintenance

**Workflow:** Tester requests repair activity after failed test case execution

**Central Repair Environment** for Test Engineer to repair test case

**Change Impact Analysis** for damaged test cases
Test Automation Framework
Workflow & Analysis for accelerated repair of damaged tests

1. Requests repair activity after failed test case execution

2. Receives message in Damaged Test Case Worklist
3. Analyses and repairs the test case

Central environment for analysis and repair

4. Requests retest

5. Performs retests
6. Confirms successful repair
Test Automation Framework

Customer Benefits

Test Coverage
- More business processes can be tested in a testing cycle
- Defects are caught earlier in test system before they move to production system

Flexibility
- Customers can jump-start their test automation project with 2 licenses of HP QTP
- All major vendors providing test automation tools are integrated via certifiable SAP interfaces

Costs
- Save cost by engaging less manual testers
- Fast Return on Investments

Accelerated Approach
- Workflow and analysis functions speed of the identification and repair of damaged test case
- Central repair environment for Test Engineer
More Information for SAP Customers and Partners

1. How To Guide „Test Automation Framework“
2. How To Guide „HP QTP“
4. Detailed Presentation
5. Offline Demos
6. Download and Activation Key for HP QTP

Available via SAP Service Marketplace
http://service.sap.com/testing → Additional Information → Test Management
Test Management with
SAP Solution Manager 7.1, SAP QC 11 and
SAP TAO 2.0
SAP Quality Center by HP
Design Time: Activities to create Test Requirements and manual Test Scripts

1. Select Business Blueprint
- Order to Cash (O2C)
  - Quotation
  - Sales Order
  - Outbound Delivery
  - Goods issue
  - Billing

2. Transfer

   SAP Solution Manager

   SAP SolMan Adapter for QC

3. Create Test Requirements

4. Create Test Scripts

   SAP Quality Center by HP

   SAP Quality Center by HP

5. Define Test Set

   SAP Quality Center by HP

   SAP Quality Center by HP

5. Assign to Tester
SAP Quality Center by HP
Run Time: Test execution of manual tests

1. Email notification
2. Open Test Set
3. Read Test Script
4. Execute test
5. Enter test results
6. Create Defect
7. Auto-create Incident
8. Solve Incident

Test Coordinator → Tester

Test System

SAP SolMan – Service Desk

Configurator / Developer
New Approach for manual Testing: HP Sprinter

- Floating windows with test step guidance for Tester
- Smart Defects
- Recording of User Actions (list) and Story Board (screenshots)
- Full integration with Quality Center for Test Script selection and results
- Data injection – partially working for SAPGUI
Manual Testing
Disadvantages of manual testing compared to automated testing

- **Test coverage within tight timelines**
  - Lack of time to execute regression tests may potentially compromise Performance & Reliability
  - Overcompensating scope of testing may result in more testing than may be really required and project delays

- **Defects in Production Systems**
  - Insufficient test coverage leads to a higher amount of defects not found before cut-over of changes from test to production landscape
  - Testing accuracy due to not being able to test all variants

- **Costs**
  - High costs for manual testers involved in recurring regression tests
  - High costs to fix errors in production landscape
  - Finding errors late in the development process could delay delivery

- **Complexity**
  - Complexity increasing with added business processes and modules implemented
  - Manual testing cannot keep pace with expansion of applications
SAP TAO – at a Glance

Mission

- Changing the testing paradigm from manual testing to “Testing by Composition”
- Reducing costs and risks for testing after SAP solution updates

Approach

- Automated Test Cases are composed out of test components (not single command lines) – to accelerate the repair of damage test scripts after SAP Solution changes.
- Test Components with parameters for input fields generated automatically by SAP TAO
- Test Data: First iteration is automatically created and linked to input parameters

Integration

SAP Solution Manager

Application Lifecycle Management

SAP TAO

Automatic test script & test component generation

SAP Quality Center + HP QTP

Test Management: planning, test case composition and test execution

Customer SAP Landscape
SAP TAO
Test Automation of Business Processes using SAP TAO

Business Scenario “Order to Cash”

SAP TAO Process Flow Analyzer

Business Analyst executes business transaction from SAP TAO

SAP Quality Center by HP

Test Components for each SAPGUI subscreen with parameters for all fields

Test Case composed out of Test Components with parameters for all input fields

File with Test Data for each input parameter

Quotation  Sales Order  Delivery  Goods Issue  Billing
SAP TAO test scripts

- Test script variants can be built easily via additional Test Components, Flows and Test Data
- Scenario tests can be built easily through composition of the appropriate single test
SAP TAO
Test Execution with SAP TAO built test scripts

SAP Quality Center by HP

Test Script execution

Test data file

During test execution test data is entered into input fields of the SAP business process

SAP Test System

Test results

<table>
<thead>
<tr>
<th>Iteration</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Passed</td>
</tr>
<tr>
<td>#2</td>
<td>Passed</td>
</tr>
<tr>
<td>#3</td>
<td>Failed</td>
</tr>
</tbody>
</table>
Typical software changes affecting automated tests

1. Customizing changes for process step (optional field → mandatory field, ...)
2. Custom Code changes for process step (additional mandatory fields, additional screens, ...)

Customer benefit: SAP TAO provides accelerated repair functionality through rapid and semi-automated exchange of central test components
Accelerated Repair of SAP TAO test scripts

After software change in SAP Solution

1. Identify affected SAP TAO tests scripts
   → info from change team, failed execution, BPCA analysis

2. Repair SAP TAO test scripts
   → provide parameter value for new screen field or
   → insert missing test components

3. Consolidate SAP TAO test script and scenario test

4. Provide input data in test data file

After repair of SAP TAO test scripts

1. Identify affected SAP TAO tests scripts
   → info from change team, failed execution, BPCA analysis

2. Repair SAP TAO test scripts
   → insert missing test components or
   → inspection and exchange of outdated test components

3. Consolidate SAP TAO test script and scenario test

4. Provide input data in test data file

Accelerated repair of damaged SAP TAO test scripts
SaraLee Reduces Risk After an Upgrade via SAP® Test Acceleration and Optimization

QUICK FACTS

Sara Lee Corporation
- Location: Downers Grove, Illinois
- Industry: Consumer products
- Products: Coffee, meat, bakery goods
- Revenue: US$10.7 billion
- Employees: 33,000
- Web Site: www.saralee.com
- SAP Solutions: SAP Test Acceleration and Optimization, SAP Solution Manager application management solution, SAP Quality Center application by HP,
- Implementation Partners: FocusFrame Inc. and Accenture

Challenges and Opportunities
- Optimize core operations by upgrading to the latest version of the SAP® ERP Application
- Ensure business continuity and meet quality objectives
- Perform sufficient functional and regression testing in tight time frame

Objectives
- Reduce testing time and effort with automated testing solutions
- Find, fix, and centrally manager defects before software changes are used by the business

Implementation Highlights
- Upgrade completed in 8 months across international IT landscape
- Partner built and maintained test scripts

Why SAP
- Trusted solution provider
- Comprehensive test automation solution optimized for existing SAP Software landscape

Benefits
- 80% reduction in the cost of comprehensive regression testing
- 90% decrease in the number of defects found by operations (after changes went into production)
- 70% reduction in test execution time
- Elimination of all critical defects before going into production
- More time and resources available to perform testing of 80% to 90% of critical functionality (up from 10%) and 80% of noncritical functionality

"With SAP Test Acceleration and Optimization, we’ve reduced the number of issues found by our users after going live with an upgrade or software changes, which has boosted continuity and reduced risk.”

Joost Knoop
Solution Architect
Sara Lee Corporation

QUICK FACTS
CA uses SAP Test Acceleration and Optimization to Automate End-to-End Testing

### Challenges and Opportunities
- Need for regression testing around major releases or during the application of support packs
- Inadequate manual testing; processes not tested within project timeframes
- Prior automation approach of using record-and-play not scalable to changes

### Objectives
- Decrease costs of using contracted employees to do testing
- Decrease internal testing costs for the business users
- Reduce time of E2E test cycles
- Improve end user and customer satisfaction
- Increase accuracy and efficiency by reducing human factor and increasing automation
- Increase test coverage

### Implementation Highlights
- Automated 40 test cases during pilot
- Discovered that out of 1,231 test cases included in E2E, only 211 were unique
- After completion, 62 E2E test sets will be included in test bed against SAP ERP, SRM, and Portal for future releases

### Why SAP
- SAP TAO works with complete testing toolset (QC, BPT, QTP) that we already use
- Cost-effective solution
- Offers best of breed software

### Benefits
- Decreased external contractor costs
- Easier to maintain in a rapidly changing environment
- Relieved business users from out-of-scope testing duties
- Testing is more consistent, accurate and efficient
- Broadened testing scope and shortened testing cycles
- Allows for more frequent deployments

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### QUICK FACTS

**CA**
- Location: Islandia, NY
- Industry: Application Software
- Products and Services: IT Management Software
- Revenue: 4.34B
- Employees: 13,700
- Web Site: www.ca.com
- SAP Solutions and Services: SAP Quality Center by HP, SAP Test Acceleration and Optimization
- Implementation Partners: SAP Consulting, FocusFrame, Inc.

“In our organization, change is the only constant. I can’t imagine how it would be feasible to maintain a complete E2E test bed without a robust tool like TAO and BPT to allow for quick mass modifications.”

Liza Galano
Project Manager
CA

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**SAP Solutions and Services**
- SAP Quality Center by HP
- SAP Test Acceleration and Optimization

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“...robust tool like TAO and BPT to allow for quick mass modifications.”

Liza Galano
Project Manager
CA
ConAgra Foods leverages SAP® Solution Manager, SAP Quality Center and Test Acceleration and Optimization

**Challenges and Opportunities**

Testing was manual and labor intensive

Conversion of critical business process manual test cases into automated scripts leveraging SAP Test Acceleration and Optimization

Implement automation as efficiently as possible with a pre-selected group of teams to include P2P, OTC/OIR, RM, FI and ALM.

**Objectives**

Increase the quality of testing through automation of pre-existing test cases

Decrease the amount of time and resources required for testing while increasing quality

**Implementation Highlights**

Implemented automation for parts of 3 super macro processes included in ConAgra’s end-to-end integration test phase

Increased the amount and quality of testing that could be completed within approved test cycle timeframes for unit, scenario and integration test phases

**Why SAP**

□ The SAP Test Acceleration and Optimization application allowed us to implement a test strategy that didn't require an overly technical team to automate critical business processes

□ The SAP TAO allowed us to automated tests quickly and efficiently with less maintenance than standard record and playback automation

**Benefits**

□ Automated majority of End to End test cases

□ Decreased test execution time for teams that have automated test scripts

□ Automation has helped process teams to meet very aggressive schedules and produce quality releases using fewer resources

□ Enhanced ability to implement quarterly releases and multiple plant rollouts with confidence, high quality and on-time

"By implementing SAP Solution Manager, HP Quality Center and the SAP Test Acceleration and Optimization application (TAO), we have increased our ability to complete Testing on-time and with much higher quality”

Kevin Needham
Director Information Technology
ConAgra Foods

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Customer Benefits

**Test Coverage**
- More business processes can be tested in a testing cycle
- Defects are caught earlier in test system before they move to production system

**Accelerated Approach**
- Fast, convenient and semi-automatic way to generate automated test cases
- Simple, easy and streamlined approach for maintenance of test cases

**Costs**
- Save cost by engaging less manual testers
- Fast ROI with in 2-3 test cycles

**Tangible Benefits**
- Up to 40% reduction in testing effort.
- Up to 30% savings in maintenance of test cases
Further Information
Test Management – Information Sources

Infos, Presentations, Demos
http://service.sap.com/testing

ALM Infos, Presentations, Demos
http://service.sap.com/alm

SAP AGS Whitepaper Test Management
http://service.sap.com/supportstandards

SAP Enterprise Support

Professional Services
www.sap.com/services/testing

Remote Service
Expert Guided Implementation
http://service.sap.com/alm-services

Classroom Training E2E220

Testing SAP Solutions
Test Management
Overview and Detail Presentations and Offline Demos

SAP Service Marketplace: http://service.sap.com/testing

More Information: http://service.sap.com/testing -> Additional Information
Test Management
Information and SAP Contacts

Information

E2E Integration Testing: [http://service.sap.com/testing](http://service.sap.com/testing)
SAP TAO: [http://service.sap.com/saptao](http://service.sap.com/saptao)
Application Lifecycle Management: [http://service.sap.com/alm](http://service.sap.com/alm)
SAP Solution Manager e-learning material: [http://service.sap.com/rkt-solman](http://service.sap.com/rkt-solman)

Regional SAP Contacts

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<th>Region</th>
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Thank You!