Change Impact Analysis with Business Process Change Analyzer (BPCA) of SAP Solution Manager

ALM Solution Management, AGS, SAP AG
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Testing of SAP-centric Business Processes
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
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**
- Test System Setup

**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

**Change Deployment**
- Deployment of changes through transports from Test to Production system
  - SAP Support packages, Legal Change Packages, Enhancement Packages
Test Management
Products and Capabilities integrated with SAP Solution Manager 7.1

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

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
SAP TAO

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

BPCA

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Change Impact Analysis

SAP Solution Manager – Business Process Change Analyzer (BPCA)
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 (OTC)
  - Quotation
  - Sales Order
  - Outbound Delivery
  - Goods Issue
  - Billing

**Trace to identify objects by process**

- Manual execution of process step

**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?"

**BPCA use cases**

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

**BPCA Change Impact Analysis**

Order to Cash
- Sales Order → code change
- Delivery
- Goods Issue → UI change
- Billing
- Procure to Pay
- Create PO → customizing change

**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)
Business Process Change Analyzer (BPCA)

Use Cases
BPCA Use Case 1: Customizing Changes
SAP Solution Manager 7.0 SP18

BPCA Use Case 1: Customizing Changes*

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

SW Change
Customizing Changes
Identification of impacted business processes
Generation of Test Plan

Transport

DEV → TST → PRD

Change Impact Analysis
Test Recommendation

(*) Note: BPCA of SAP SolMan 7.1 SP01: additional precision through tracing of key fields of SAP customizing tables

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BPCA Use Case 2: Custom Code Developments
SAP Solution Manager 7.0 SP18

Example: Extention of existing SAP screen with custom required field

Custom Code Developments

Change Impact Analysis

Identification of impacted business processes

Test Recommendation

Generation of Test Plan

Transport

DEV → TST → PRD
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

Test Recommendation

Generation of Test Plan

End-user training plan

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BPCA Use Case 3: Planned EhP Business Function Activation

SAP Solution Manager 7.0 SP23

1) BPCA Selection Screen

2) BPCA Business Function Selection: select available, but inactive Business Functions

3) BPCA analysis results: Process Steps impacted by planned Business Function activation

(*) Available with SAP Solution Manager 7.0 SP23
BPCA Use Case 4: Test Scope Optimization for SP/ EhP Deployment
SAP Solution Manager 7.1 SP01

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
BPCA Use Case 4: Test Scope Optimization for SP/ EhP Deployment
SAP Solution Manager 7.1 SP01

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 plan

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

Ranking of impacted Process Steps
Business Process Change Analyzer (BPCA)

Customer Feedback and Customer POC Projects
SOKA-BAU & SOKA – IT Gains Significant Time and Test Effort Reduction with SAP® Solution Manager

QUICK FACTS

SOKA – BAU & SOKA – IT
- Headquarters: Wiesbaden, Germany
- Industry: Insurance
- Revenue: € 4.8 billion
- Employees: 1,200
- Web site: [www.soka-bau.de](http://www.soka-bau.de)  [www.soka-it.de](http://www.soka-it.de)
- SAP® solution and services: SAP ERP, SAP BW, SAP Solution Manager, SAP Consulting

Challenges and Opportunities
- Implement extension of proven test management capabilities of SAP Solution Managers by using functional enhancements of Enhancement Package 1

Objectives
- Optimize test planning through Business Process Change Analyzer (BPCA)
- Improve test execution via deployment of test sequence functionality
- Increase user and process efficiency though html-based work center for test and incident management
- Raise quality of SAP solution documentation though deployment of Solution Documentation Assistant (SoDocA)

Implementation Highlights
- Email notifications for all status changes of test cases & central access and administration for all test relevant information
- Set-up of new wizard for SAP Solution Manager configuration within three hours

Why SAP Services
- End-to-end functionality and excellent integration into existing SAP solution landscape
- Possibility to leverage and re-use of already achieved results

Key Benefits
- Risk-based test scope identification leading to considerable reduction of test efforts
- Significant time savings within test preparation
- Streamlined communication during test execution
- Role-based approach for all test activities supported by new customer work-center

“We can significantly reduce our test efforts which affect our SAP solution operations by using a risk – based test scope identification provided by the Business Process Change Analyzer of SAP Solution Manager.”

Roland Krüger
Manager SAP Customer CoE
SOKA-IT
## EMEA Customer - Proof of Concept Project (POC)
### Project Steps and Effort

<table>
<thead>
<tr>
<th>Project Step</th>
<th>Activity</th>
<th>Effort</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP Solution Manager Upgrade</td>
<td>- Update SAP Solution Manager 7.0 SP19 to SP20</td>
<td>5.5 hours</td>
</tr>
<tr>
<td></td>
<td>- SAP Solman agent update in managed system</td>
<td>No additional effort</td>
</tr>
<tr>
<td>„Lean“ Solution Documentation</td>
<td>- Business process definition in MS Excel</td>
<td>Already available</td>
</tr>
<tr>
<td></td>
<td>- Fitment for existing process structure to 3 level hierarchy in SAP Solution Manager</td>
<td>30 minutes</td>
</tr>
<tr>
<td></td>
<td>- Business process modeling of MM-Procurement processes in ARIS and upload into SAP Solution Manager (for 5 business processes incl.steps)</td>
<td>2 hours for 5 business processes</td>
</tr>
<tr>
<td>BPCA setup</td>
<td>- BPCA preparation: trace (TBOM) for each business process via manual process execution</td>
<td>5h for 14 processes (14 variants of procurement process)</td>
</tr>
<tr>
<td></td>
<td>- BPCA analysis for 5 software changes including customizing and program changes</td>
<td>15 min for each analysis</td>
</tr>
</tbody>
</table>
## EMEA Customer - Proof of Concept Project (POC)

### POC Results

<table>
<thead>
<tr>
<th>Change type</th>
<th>Change description</th>
<th>BPCA change impact analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customizing change</td>
<td>Change invoice tolerances</td>
<td>Invoice Verification step in all the processes was impacted</td>
</tr>
<tr>
<td>Customizing change</td>
<td>Changes to account group</td>
<td>Purchase Order, Goods Receipt Invoice Receipt, RFQ, Adjudication, Contract were impacted due to the common customizing table</td>
</tr>
<tr>
<td>Customizing change</td>
<td>ALV output for purchasing list displays</td>
<td>Expidite process was impacted as expected</td>
</tr>
<tr>
<td>New org structure</td>
<td>Changes resulting out of a new Org Structure for a new company acquired</td>
<td>Definition of plants was impacted as expected</td>
</tr>
<tr>
<td>SAP Support Package</td>
<td>Support package on ECC Enhancement Package - SAPKA70103</td>
<td>Results as expected. Impact on custom code was also identified.</td>
</tr>
<tr>
<td>Custom Code Change</td>
<td>Changes to program SAPMZZC35 after an SP Upgrade for PO Creation</td>
<td>Results as expected. Impact on ZC35 transaction.</td>
</tr>
</tbody>
</table>

**Summary:** Correct change impact analysis for all changes evaluated
Business Process Change Analyzer (BPCA)

Preparation steps and options for TBOM generation
BPCA – Preparation
Business Process Documentation

Lean Process Documentation
BPCA requires a process hierarchy, system information and executables to be documented in a project or a solution.

- Process hierarchy
  - Business scenario
  - Business processes
  - Business steps

- System information
- Transactions, custom development
BPCA Technical Bill of Material (TBOM)
TBOM Example for Business Transaction: Create Sales Order (VA01)
Business Scenario “Order to Cash”

User selects process step in SAP Solution Manager

User executes the process step while BPCA traces all SAP objects used by the process step

Generated TBOM contains Code Objects, User Interfaces and Tables used
BPCA Preparation
TBOM generation using test automation tools

Business Scenario “Order to Cash”

- Quotation
- Sales Order
- Delivery
- Billing

Process Step „Sales Order“

- Customer SAP Landscape (SAP ERP, …)

create TBOM during test case execution

<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>

Business Blueprint

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

assign TBOM to Process Step
Automated TBOM Creation
Reusing automated test scripts in SAP Solution Manager 7.0

Approach

- Create a new automated script which can launch the business transaction from SAP Solution Manager - SOLAR01
- Modify existing automated scripts to avoid launching business transactions directly on ERP systems
- Call existing automated scripts from the new wrapper script

Benefits

- Reduction in initial efforts to create TBOMs and there by reduced time to value with BPCA
- Reduction in TBOM maintenance efforts
**Goal**: Collaboration work flow between quality teams and business process teams to create TBOM

**Manual TBOM creation in SAP Solution Manager 7.1**

**ToDo Lists for Business User**

**Quality Expert**
- Identify missing TBOMs
- Create work list & assign BPX
- Review completed work items
- TBOMs created

**Business Process Expert**
- Run Business Transaction
- TBOM is created in background
- Close work item

**Process work Items**
- Review work list
- Process Work item
- Notification

**Create and Manage Work list**

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### SAP Solution Manager 7.0 / 7.1
#### BPCA – TBOM generation Approaches

<table>
<thead>
<tr>
<th>TBOM creation</th>
<th>SAP SolMan 7.0</th>
<th>SAP SolMan 7.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Manual TBOM recording by User</td>
<td>Standard functionality</td>
<td>Standard functionality</td>
</tr>
<tr>
<td>2) ToDo Lists for Business User</td>
<td></td>
<td>QM creates list of missing TBOMs and send workflow item to business user who creates TBOM during normal business operations</td>
</tr>
<tr>
<td>3) Manual TBOM recording by Tester</td>
<td></td>
<td>Tester execution of manual test case gets option to create TBOM on the fly</td>
</tr>
<tr>
<td>4) Automated Tests – Test Option 1</td>
<td>Workaround via eCATT or 3rd party test tools like HP QTP</td>
<td>Test Automation Framework eCATT and 3rd party test tools (eCATT, HP QTP, Worksoft, IBM RFT – more to come)</td>
</tr>
<tr>
<td>5) Automated Tests – Test Option 2</td>
<td>SAP TAO 2.0 SP04 (Nov 2010)</td>
<td>SAP TAO 2.0 SP04 (Nov 2010)</td>
</tr>
</tbody>
</table>
Customer Benefits
Business Process Change Analyzer

Customer Benefits

Precise insight

- Identification of critical business processes affected by planned change events

Improved handling of change events

- Support for customer’s change committee to decide on SPs, EhPs or Custom triggered changes for SAP production systems

Risk-based Test Planning

- Recommendation for subsequent regression tests
Further Information
Best Practices / Next Practice: Regression Testing of SAP-centric Business Processes

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
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

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

Classroom Training E2E220

Testing SAP Solutions
www.sap.com/services/testing

Professional Services
www.sap.com/services/testing

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Test Management
Overview and Detail Presentations and Offline Demos

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

Information
- Presentations
- Offline Demos

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

Information

E2E Integration Testing: http://service.sap.com/testing
SAP TAO: http://service.sap.com/saptao
Application Lifecycle Management: http://service.sap.com/alm
SAP Standard for Test Management: http://service.sap.com/supportstandards
SAP Solution Manager e-learning material: http://service.sap.com/rkt-solman

Regional SAP Contacts

<table>
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<tr>
<th>Region</th>
<th>Product Sales</th>
<th>Professional Services</th>
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<tbody>
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<td>North America</td>
<td><a href="mailto:jonathan.lerner@sap.com">jonathan.lerner@sap.com</a></td>
<td><a href="mailto:jim.bisordi@sap.com">jim.bisordi@sap.com</a></td>
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<td><a href="mailto:steven.medeiros@sap.com">steven.medeiros@sap.com</a></td>
<td><a href="mailto:sebastien.aubrey@sap.com">sebastien.aubrey@sap.com</a></td>
</tr>
</tbody>
</table>
Thank You!
Appendix

1. BPCA Use Case 1: Customizing Changes
2. BPCA Use Case 2: Custom Code Development
3. BPCA Use Case 3: Planned activation of inactive Business Functions
4. BPCA Use Case 4: SP / EhP Deployment and Test Scope Optimization
BPCA Use Case 1: Customizing Changes

**Trigger:** Request from Business Department

- Business Transaction „Create Sales Order“
- Change field „Purchase Order“ from optional to mandatory input
- How: Customizing change

**Business Transaction:** Create Sales Order (VA01)
BPCA Use Case 1: Customizing Changes

Step 1
Customizing Change Implementation

- SPRO > Sales and Distribution > Basic Functions > Log of Incomplete Items > Define Incompleteness Procedures

Change in Customizing View

Transport
BPCA Use Case 1: Customizing Changes

Step 2

Change Impact Analysis via BPCA

• Select the change (Transport Request)
• Select the SAP Solution Manager project including Business Blueprint and TBOM
• Run the BPCA analysis
BPCA Use Case 1: Customizing Changes

Step 3
Analyze Results
• Identify the process steps impacted by the change

Create Testplan
• Create a Test Plan for regression testing
BPCA Use Case 2: Custom Code Development

**Trigger:** Request from Business Department

- UI Enhancements in Transaction VA01 to have a new icon for organizational data

**Business Transaction:** Create Sales Order (VA01)
BPCA Use Case 2: Custom Code Development

Step 1:
Developer implements the changes in ABAP Workbench and creates a transport request
BPCA Use Case 2: Custom Code Development

Step 2
Change Impact Analysis

- Select the change (Transport Request)
- Select the SAP Solution Manager project (with Business Blueprint and TBOMs)
- Run the BPCA analysis
BPCA Use Case 2: Custom Code Development

Step 3
Analyze Results
- Identify the process steps impacted by the change

Create Testplan
- Create a Test Plan for regression testing
BPCA Use Case 3: Planned activation of inactive Business Functions

**Trigger:** Request from Business Department

- Request to Activate a business function for “Configurable Sales Interface”
- Business Function: LOG_SD_CI_02
BPCA Use Case 3: Planned activation of inactive Business Functions

Step 1:
- Test coordinator runs a BPCA analysis before activating the business function
BPCA Use Case 3: Planned activation of inactive Business Functions

Step 2:
- Test coordinator searches for the business function
BPCA Use Case 3:
Planned activation of inactive Business Functions

Step 3
Change Impact Analysis

- Review the impact of the business function
- Use results for decision making, test effort planning
BPCA Use Case 4:
Test Scope Optimization for SP or EhP Deployment

Trigger:
IT request to implementing Support Package 04 for ECC 6.0

Content of ECC 6.0 SP04

[Diagram showing list of content for ECC 6.0 SP04]
BPCA Use Case 4: Test Scope Optimization for SP or EhP Deployment

Step 1:
- Test coordinator runs a change impact analysis for ECC6.0 SP04
BPCA Use Case 4: Test Scope Optimization for SP or EhP Deployment

Step 2:
- Test coordinator starts BPCA Test Scope Optimization
BPCA Use Case 4:
Test Scope Optimization for SP or EhP Deployment

Step 3:
Test coordinator optimizes the test scope based on
1. Test Coverage
2. Test Efforts
3. Business process priority
BPCA Use Case 4: Test Scope Optimization for SP or EhP Deployment

Step 4:
- Create a test plan for the optimized test scope