Focused Build for SAP Solution Manager 7.2

Plan and Execute Tests

Digital Business Services, SAP SE
December 2016
Agenda

1. SAP Solution Manager 7.2
2. Focused Build for SAP Solution Manager
3. Requirements to Deploy (R2D) Process managed by Focused Build
4. Test Suite of SAP Solution Manager – Overview
5. Test Suite within agile Innovation or Transformation Projects
6. Test Suite of SAP Solution Manager – Test Suite Capabilities
7. Key Take Aways and Summary
8. Appendix – Unit Tests, functional Tests of analytical applications (BW based)
SAP Solution Manager 7.2
Yes, we’re open! For business. For innovation. For non-SAP.

Business processes drive IT
- Predict and measure business value
- Build what the business needs, when they need it
- Single source of truth, always up-to-date, used by everyone every day

Integration & Openness
- The lifecycle platform for managing processes, applications and systems
- Drive continuous improvement based on productive usage
- Generic third-party interfaces
- Collaboration between customer, partners, and SAP

For SAP and non-SAP
- For SAP S/4HANA & Digital
- For cloud & hybrid
- Out-of-the-box Implementation and operations content
SAP Solution Manager 7.2 Extends Towards Building Innovation

Run
- Request to Fulfill

Build
- Requirement to Deploy
- Portfolio to Project

Detect to Correct

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SAP Solution Manager 7.2
Optimal for Your Digital Business Transformation

One Process Landscape for Business and IT

Launchpad, Apps and Dashboards

Process Management

New User Experience

Agile Innovation

Cloud & Hybrid

TRANSPARENT requirements to deploy

DIGITAL BUSINESS

SAP S/4HANA and SAP customer solutions

On-Premise, Hybrid and Cloud Solutions

SAP HANA

SAP Solution Manager on SAP HANA
SAP Solution Manager 7.2 in a nutshell

SAP Solution Manager 7.2 delivers 4 key value scenarios

- Portfolio to Project: Portfolio Management → Project Management
- Requirement to Deploy: Demand → Design → Development → Test → Deploy
- Detect to correct: Monitor → Incident → Problem → Optimize
- Request to Fulfill: Service Catalogue → Service Request → Service Fulfillment

Value scenarios - Life-cycle view
SAP Solution Manager Integration Model
Three Different Change Paces in Requirement to Deploy

<table>
<thead>
<tr>
<th>Fix</th>
<th>Innovate</th>
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<td>Trigger</td>
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<tr>
<td>Scope</td>
<td>Transformation projects, new solutions</td>
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<td>Process Impact</td>
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<td>Approval</td>
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Trigger Business disruption or standard change
Scope Small
Process Impact None
Approval Individual
Deployment Unbundled on request or bundled with release

Trigger Improvement request
Scope Medium
Process Impact Minimal
Approval Individual
Deployment Bundled with release

Trigger Transformation projects, new solutions
Scope Large
Process Impact Significant
Approval Pre-Approved
Deployment Bundled with release
SAP Solution Manager 7.2
Functional Areas

- Portfolio to Project
  - Process Management
  - Test Suite
  - Business Process Operations
  - Application Operations
  - Data Volume Management
  - Change Control Management
  - IT Service Management
  - Custom Code Management
  - Landscape Management

- Requirement to Deploy
  - Project Management

- Detect to correct

- Request to Fulfill
SAP Solution Manager 7.2
Release Schedule

H2/2015

Ramp-Up

H1/2016

Go To Release

End 2017

Time to Upgrade

End 2025
Focused Build for SAP Solution Manager
Software Change Events
What are the triggers for software changes and what is their magnitude?

**Short-term Fixes and Continuous Improvements**

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**Enhance**

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**New SAP Solutions**

**Innovation and Transformation Projects**

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<tr>
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</tr>
</tbody>
</table>
Innovation and Transformation Projects
SAP supports you with professional methodology and applications provided by Focused Build for SSM

Existing or new SAP Solutions as basis for further innovation or transformation

Business Suite +

Innovation and Transformation Projects
- New or extended business processes
- Integration of additional applications
- Adjustment of existing Custom Applications

Focused Build for SAP Solution Manager supports your projects with methodology and turn-key software solution to manage your innovation and transformation needs

Requirements Management

Agile Projects and Release Management

Modern applications for agile dev. projects

Project Governance and Solution Readiness

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Focused Build: The Big Picture

Software Solutions for Innovative Business Models

- Understand customers’ new business models
- Accelerate innovation based on preconfigured building blocks

Model Companies on the SAP platform powered by SAP HANA

- Out-task development
- Deliver as one team

One Methodology and Integrated Tool Chain

- Document target operating models end-to-end (transactional and analytical landscape) to derive roles’ and personas’ workspaces.
- Identify gaps requiring major investment and prototype individual parts in early sprints.
- Go from the big picture down to the details, and use the standard tools for ONE Service.
- Automate project reporting based on percentage of completion by developers and consultants.
Focused Solutions for SAP Solution Manager  
Enter a New World And Start Thinking Differently

Focused solutions are turnkey solutions, made for immediate consumption. 
Ready-to-run. Highly preconfigured and automated. Delivers all you need: Features, training … 
Based on SAP Solution Manager. Available to all customers.

Here is an example from our daily lives: Having Dinner

**Cook your own meal**
- Decide what you want to eat
- Find a recipe
- Make a shopping list
- Shop ingredients
- Prepare ingredients
- Set the table
- Eat
- Wash the dishes

**Go out to dine**
- Decide what you want from the menu
- Order
- Eat
- Go home

You enjoy the preparation and eat your own food. You order, and enjoy.
Value for Business and Discovery Teams

Collaborate with the Business
Capture new business models, target operating models and requirements.

Manage show & tell, testing and training with the business
- Constant feedback loops with business
- Prototyping instead of lengthy blueprinting on paper
- Discovery jumpstarted with model company per industry

Scope what needs to be built
- Prepare work packages for solution build
- Validate functional gaps with MCC industry architects
- SAP R&D to sign off application landscape

Model office shares the vision with the business
Effective collaboration via publication in multiple languages, and a common notation supporting business sign-offs
GSS must play the role model for SAP leadership in digital economy: Run Excel-free
Value for Build Teams and Solution Delivery

Prototypes replace traditional blueprinting
- Business reviews every few weeks using agile methods
- Scope changes tightly monitored to safeguard project budget

Collaborate for solution delivery
Manage specifications and designs for requirements (WRICEF & gaps) in virtual project rooms and development factories.

Manage agile development in waves and sprints
- Share resources across customers and scale with partners
- Share software building blocks globally
- Track project progress from solution readiness perspective: One single source of truth for the Virtual Project Room

Automation of project work
- Configuration automation via RDS
- Transport automation Dev to QAS to PRD
- Test planning automation for UAT and regression testing
SAP Solution Manager orchestrates and tracks solution readiness

- Consistent methodology and integrated “requirements to deploy” content and toolset
- Quality Gates per wave and phase with defined deliverables, synchronized with the SAP back-end to allow global project governance as well as demand and capacity management across customers

Solution Readiness Dashboard

- Visible risk and issue management
- Ready-to-use work break-down structure enriched with customer-specific work packages for the solution.
- Automated delivery progress dashboards
- Big-picture reporting on program and project level

Run SAP and transition to operations and support is integral part of the implementation
Focused Build project is structured in **five phases**

- **Phases** are distinct periods of time during a project that structure work streams so that at the end of an individual phase outcomes are available.
- In a **release**, you capture and aggregate all information relevant for building and deploying the customer solution. A release is the entity that is shipped at the go-live.
- A release is subdivided into **waves**. A wave comprises a well-defined functional scope of work packages that is formally signed-off by customer key-users.
- The lowest level is the **sprint**. In agile development, a sprint is a defined period of time during which software development has to provide deliverables for review. The backlog of a sprint is based on the prioritization of backlog items, i.e. work items.
Transparent Requirements-to-Deploy
Incremental deployment with constant feedback loops with the business

**Releases** synchronize project go lives and ensure continuous delivery and integration.

**Project** to bundle deliverables. Multiple and parallel projects are possible.

**Phases** ending with **Quality Gates**
Short prepare and scope, incremental build

**Waves** ending with **Touch and Feel** by the business
(~ 8 – 12 weeks)

**Sprints** with **Show and Tell** sessions to the business (~ 2 weeks)

**Program Level**
- Release automation
- Automated reporting
- Pragmatic documentation handling
- Automated completion tracking
- Test planning & execution automation
- Jira Integration, unit test automation, transport automation

**Scaled agile orchestration**

**Team Level**
- Continuous delivery and automation
- Pragmatic documentation handling
- Automated completion tracking
- Automated reporting
- Test planning & execution automation
- Jira Integration, unit test automation, transport automation
Transparent Requirements-to-Deploy
Release Management to synchronize projects and keep them under control

Reduce Risks, Simplify Go-Live Process, and Decrease Test Efforts

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Remote Delivery

**Focused Build for SAP Solution Manager**
Required for all MaxAttention Co-Engineering projects, optional for business standard projects.
Focused Build for Application / Software

PMO
- Create project plan
  - Track project readiness, issues and risks
  - Manage scope change
- Manage q-gate deliverables, sign-off
- Hand-over release to customer
  - Project plan
  - Release, waves, and sprints

Discovery Team (Business)
- Discovery WS for requirements

Build Team (Plan)
- Create work package
- Assign work items & build teams
- Manage show & tell

Build Team (Development)
- Develop, configure, unit test
- Document work item & progress
- Release work item
- Defect correction
- Plan & execute SFT, FIT, UAT, RT (per wave)
- Manage defects

Test Management
- Manage defects

Release Management
- Build, test and validate release
- Manage hyper-care

- Process model
  - Application landscape
  - Requirements & gaps

- Functional specification
  - Config. guide, test cases
  - System landscape

- Tech. design
  - Dev. Objects in transports

- Test request
  - Test plan

- Release
You get the solution you need. If you don’t need it, don’t buy it.

+ It’s ready-to-run.
+ All the benefits of a personal consulting solution without the cost involved.
+ You get complete maintenance and support.
+ You only pay what you use. No hidden costs. No shelf ware.
+ Everybody can get it easily and instantly through SAP Store.
+ Risk-free test drive, anywhere, anytime.

= Starting at only € 250 per user.

Looking for more information? Local partners are available.
Value added by methodology & tools

- Automated visibility of solution readiness against due dates, with integrated risk management
- Management of distributed development teams
- Agile release and software engineering with optional JIRA integration
- Automated test planning, change & release management to support continuous delivery & integration and DevOps
- Full integration of demand, project, process, change, release and test management
The Requirements to Deploy (R2D) Process
managed by Focused Build for SAP Solution Manager 7.2
Test Suite embedded in the R2D Process
Business Processes, Requirements and links to Process Steps

1. **Business Processes** with assigned Process Steps and Executables.

   Approaches to create BP
   - SAP Best Practices
   - SAP Model Companies
   - Custom defined and modeled business processes

   **Solution Documentation**
   - E2E Business Processes
     - E2E BP 1
   - Modular Processes
     - Business Process A
       - Process Step 1
       - Process Step 2
     - Business Process B
       - Process Step …
   - **Process Step Library**
     - Area - Process Steps
   - **Executable Library**
     - ACH - Executables

2. **Requirements** defined by LOB business users, business process experts, or key users
   - Req definition within Solution Documentation
   - Visibility of Req within Process Diagrams

3. **Requirements** linked to Process Steps

   **Requirements Management**
   - Requirement 1
   - Requirement 2
   - Requirement 3
Test Suite embedded in the R2D Process
Requirement (REQ) – Work Package (WP) – Process Steps in Solution Documentation

User activities

1. Requirements Management: Create Work Packages (WP) for Requirements (REQ with n:m relationship)

Note: WPs are linked to Solution Documentation nodes indirectly through the existing link of REQ to Process Steps

<table>
<thead>
<tr>
<th>REQ</th>
<th>WP</th>
<th>Relation</th>
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<tbody>
<tr>
<td>REQ 1</td>
<td>WP 1</td>
<td>1:1</td>
</tr>
<tr>
<td>REQ 2</td>
<td>WP 2</td>
<td>1:n</td>
</tr>
<tr>
<td></td>
<td>WP 3</td>
<td>1:n</td>
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<tr>
<td>REQ 3</td>
<td>WP 4</td>
<td>m:1</td>
</tr>
<tr>
<td>REQ 4</td>
<td>WP 4</td>
<td>m:1</td>
</tr>
</tbody>
</table>

Solution Documentation

E2E Business Processes
- E2E BP 1

Modular Processes
- Business Process A
  - Process Step 1
  - Process Step 2
- Business Process B
  - Process Step …

Process Step Library
- Area - Process Steps

Requirements Management

- Test Suite embedded in the R2D Process
- Requirements Management: Create Work Packages (WP) for Requirements (REQ with n:m relationship)
- Note: WPs are linked to Solution Documentation nodes indirectly through the existing link of REQ to Process Steps
Test Suite embedded in the R2D Process
Solution Documentation nodes – Functional Spec – Work Package

**User activities**

1. Requirements Management: open Work Package – Tab Solution Documentation

2. WP – Tab Solution Documentation: create and assign functional Spec to Process Step for which REQ / WP exists (Req type „Gap“)

**Notes:**

- Best Practice: 1 functional Spec for each WP
- functional Specs for Req. of type WRICEF can be assigned at Executable Library level as well
Test Suite embedded in the R2D Process
Work Package – Work Item – Project / Release – Wave - Sprint

User activities

1. Requirements Management: Creation of 1-n Work Items for each Work Package

2. Project Management: Definition of Project (Release), Waves and Sprints and associated timelines

3. Project Management: assignment of
   1. Work Packages to Wave
   2. Work Items to Sprints
Test Suite embedded in the R2D Process
Single Functional Tests (SFT) and Functional Integration Tests (FIT)

User activities

1. Solution Documentation / Test Management: create SFT and assign at Blueprint node for which functional Spec (and WP exists) (Sprint activity)

2. Solution Documentation / Test Management: create FIT and assign to Business Processes (Wave activity)
Test Suite of SAP Solution Manager 7.2

Overview
SAP Solution Manager - Test Suite

Overview

Test Suite covering both technical tests for code objects as well as functional tests at process level

Test Case Types

- Unit (UT) and Configuration Tests (CT)
- Single Functional Tests (SFT)
- Functional Integration Tests (FIT)
- User Acceptance Tests (UAT)
- Regression Tests (RT)

Roles:
Quality Manager, Release Manager, Test Coordinator, Tester, Developer, Functional Consultant and Business Users
SAP Solution Manager - Test Suite
A full-blown application for manual / automated testing and change impact analysis

Functional Scope
- Manual and automated functional tests
- Automated change impact analysis of maintenance activities for test scope optimization of regression tests
- New requirements triggering semi-automated test planning for user acceptance tests and functional integration tests
- High degree of test automation possible
- Supports agile development approach within requirements-to-deploy process through Focused Build for SAP Solution Manager
- Seamlessly integrated with SAP Solution Manager Process Management, Solution Documentation, ChaRM, ITSM, …

SAP and non-SAP Solutions
- SAP Business Suite
- SAP S/4HANA (On-Premise, Cloud Edition)
- Non-SAP applications (On-Premise, Cloud)

Integration
- Test system refresh and test data provisioning
- 3rd party test automation tools

Single Source of Truth
- All related information in 1 central SAP Solution Manager system
- No complex data replications

SAP Solution Manager Test Suite is the default Test Suite for all SAP customers, except for customers with a strategic decision for a partner test suite
SAP Solution Manager – Test Suite

Capabilities

Solution Documentation
- Executable Library
- Process Step Library
- Business Processes

Change Impact Analysis
- Test scope estimation before upgrade
- Scope and Effort Analyzer (SEA)
- Test scope optimization during upgrade
- Business Process Change Analyzer (BPCA)

Test Cases
- Manual Tests
- Automated Tests

Test Plan Management
- Test Plan
- Test Packages
- Test Sequences
- Tester assignment

Test Execution
- Manual Test Execution
- Automated Test Execution
- Defect Management

Test Suite Analytics
- Gap reports
- Status reports
- Progress reports
- Dashboard

Test Data
- SAP TDMS
  - Lean test system setup and refresh
- Test Data Container (TDC)
  - Test data provisioning for manual and automated tests

Test Automation Framework
- CBTA (Component Based Test Automation)
- HP UFT
- WS Certify
- other 3rd party test automation tools

Supported UI technologies by SAP test tools: SAPGUI, WD-ABAP, CRM Web-Client, SAPUI5, Fiori, …
Partner test tools: all other UI technologies
SAP Solution Manager - Test Suite
Capabilities by Standard Test Suite and Focused Build

Focused Build for SAP Solution Manager

- Demand
- Design
- Development
- Test
- Deploy

Test Suite related
- Requirements / Work Package based Test Plan Generation
- Exchange of assigned Testers to Test Packages
- Simplified Manual Test Execution
- Test Suite Dashboard

SAP Solution Manager – Test Suite

- Solution Documentation
- Change Impact Analysis
- Test Planning
- Test System Setup
- Test Execution and Analytics

- Manual Test Cases
- Automated Test Cases
- Test Automation Framework with 3rd party test tool integration
- Test Composition Environment to manage SAP and partner tools
- Test Data Management
- Change Impact Analysis
- Test Plan and Test Package Management
- Test Execution of manual and automated tests
- Gap and Completeness Analytics
- Test Execution Analytics
Test Suite within agile Innovation or Transformation Projects
# Test Case Classification

Classification of all test cases to define their purpose

<table>
<thead>
<tr>
<th>Test Case Classification</th>
<th>Description</th>
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<tbody>
<tr>
<td>UT (Unit Tests)</td>
<td>Manual or automated tests performed by developers at software object level</td>
</tr>
<tr>
<td>SFT (Single Functional Tests)</td>
<td>Manual tests performed by functional consultants, key user or other expert outside LOB</td>
</tr>
<tr>
<td>UAT (User Acceptance Tests)</td>
<td>Manual tests performed by business process experts (BPx) or key users</td>
</tr>
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<td>FIT (Functional Integration Tests)</td>
<td>Manual tests performed by functional consultants, business process experts (BPx) or key users</td>
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<td>Manual or automated tests performed by functional consultants or key users or other expert outside LOB</td>
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Requirement to Deploy with Change Pace: Innovate
Requirements based Test Approach

Demand and Design ➔ Development ➔ Test ➔ Deploy ➔ Run

Definition and Specification ➔ Implementation and Configuration ➔ Functional Tests ➔ Process Tests ➔ Build Release ➔ PRD use

Requirements

Work Packages (WP)

Functional Specifications (Spec document)

Work Items (Technical Design document)

Software Implementation and related Configuration

Single Functional Tests

Unit Tests

Functional Tests

Process Tests

User Acceptance Test

Regression Tests (optional)

Functional Integration Tests (final)

Regression Tests (final)

Functional Integration Tests (final)

User Acceptance Test (final)

Integration Validation
Requirement to Deploy with Change Pace: Innovate
Test execution during and across Waves and Sprints

Deploy phase
- Final Functional Integration Tests to validate E2E processes with new functionality
- Final Regression Tests
  Change Impact Analysis + Test Scope
  Optimization + RT execution for all impacted business processes
- Final UAT: get sign-off from business key users
- Integration Validation: Performance tests, interface tests, etc to prepare go-live
SAP Solution Manager Integration Model
Best-Practice Approach for Branch Setup

Production branch
• Production branch represents the productive solution

Operations branch
• Operations branch to apply monitoring instrumentation

Maintenance branch
• Maintenance branch to change the productive solution

Innovation branches
• Import branch to import new best-practice processes
• Design branch to design customer target operating model
• Development branch to build the actual operating model

As-is solution
To-be solution

Locked
Change controlled
## Test Suite
### Test Activities by System Role for new Innovations

**DEV System**
- Customer Dev System
- Development and Customizing
- Unit Tests by developers (code changes) and consultants (customizing) – potentially using a separate client of the Dev system
- Transport to QAS system after successful Unit Test and Sprint Review meeting

**QAS System**
- Customer QAS System
- Functional Tests of new functionality from Sprints
- Functional Integration Tests to verify new functionality in the context of the overall Business Process
- UAT by business key users
- Regression Tests to verify that new developments have no negative impact
- Performance Tests – in case of no add.Q system

**Pre-PRD (optional)**
- Functional Integration Tests
- User Acceptance Tests
- Performance Tests of business processes including new functionality

**PRD System**
Overview of Transport Procedure for ABAP Based Systems

Customizing of the applications and development is done in **customizing + development client (100)**.

Client specific customizing can be transported locally to the **test client (400)** and to **data migration test client (300)** using transaction SCC1. The development and customizing requests remain open in **customizing + development client (100)** until the unit and functional tests in **test client (400)** or **data migration test client (300)** are successfully completed.

If the implementation was successfully tested in **test client (400)**, the change request is released and imported locally into all target clients.

The released change requests can be imported into QAS (e.g. at the end of a sprint)

After a successful test in QA: transport into PRE-PROD

After a successful test in PRE-PROD: transport into PROD
Test Suite of SAP Solution Manager 7.2

Process Flow and Test Suite Capabilities
Test Suite
Capabilities by Standard Test Suite and Focused Build

Focused Build for SAP Solution Manager

- Demand
- Design
- Development
- Test
- Deploy

Test Suite related
- Requirements / Work Package based Test Plan Generation
- Exchange of assigned Testers to Test Packages
- Simplified Manual Test Execution
- Test Suite Dashboard

SAP Solution Manager – Test Suite

- Solution Documentation
- Change Impact Analysis
- Test Planning
- Test System Setup
- Test Execution and Analytics

- Manual Test Cases
- Automated Test Cases
- Test Automation Framework with 3rd party test tool integration
- Test Composition Environment to manage SAP and partner tools
- Test Data Management
- Change Impact Analysis
- Test Plan and Test Package Management
- Test Execution of manual and automated tests
- Gap and Completeness Analytics
- Test Execution Analytics
Test Suite
R2D Test Planning and Execution

Work Streams
- Test Preparation
  - Setup of Solution Documentation
  - Setup of Projects and Release
  - Create and select Requirements
  - Create Work Package
- Test Planning
  - Check Assignment of Test Cases to Work Packages
- Test Execution
  - Access Tester Worklist
  - Test Case execution (manual / automatic)
  - Document test Result / set status/ create defects
  - Defect Correction (Developer provides fix)
  - Retest and set test case status

Tasks
- Create / Assign Test Cases to Process Steps
  - Assign Test Case to Work Package
Test Suite of SAP Solution Manager 7.2

Process Flow and Test Suite Capabilities

Test Planning
Test Suite
Creation of Test Plan and Test Packages and Tester Assignments

Solution Documentation

- Solution
  - Business Process
    - Sales Scenarios
      - Order to Cash
        - Create Sales Order
        - Create Delivery
        - Create Billing
      - Rush Order
    - Procurement Scenarios
      - Standard Procurement
        - Create Purchase Req
        - Create Purchase Order
  - Process Step Library
  - Executable Library

Test Plan

- Solution
  - Business Process
    - Sales Scenarios
      - Order to Cash
        - Create Sales Order
        - Create Delivery
        - Create Billing
      - Procurement Scenarios
        - Standard Procurement
          - Create Purchase Req
          - Create Purchase Order

Test Packages

- Solution
  - Business Process
    - Sales Scenarios
      - Order to Cash
        - Create Sales Order
        - Create Delivery
        - Create Billing
    - Procurement Scenarios
      - Standard Procurement
        - Create Purchase Req
        - Create Purchase Order

Tester Assignment
# Test Planning

Activities to prepare Functional Test Execution: Test Data refresh for QAS Systems

<table>
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<th>What</th>
<th>Who</th>
<th>Where</th>
<th>How</th>
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<tbody>
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<td>Availability of up-to-date</td>
<td>Consultants</td>
<td>QAS systems</td>
<td>1. Transport of configuration changes from DEV to QAS system</td>
</tr>
<tr>
<td>• Configuration data</td>
<td>Domain Experts</td>
<td></td>
<td>2. Manual posting of master / transactional data or</td>
</tr>
<tr>
<td>• Master data</td>
<td></td>
<td></td>
<td>3. Automated tests to auto-create master - / transactional data</td>
</tr>
<tr>
<td>• Transactional data</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

---

**Diagram:**

- **Development**
  - DEV System
- **Test activities**
  - QAS System
  - Pre-Production
- **Productive use**
  - Production
Test Planning
Activities to prepare Functional Test Execution: Provisioning of Test Data for manual Tests

<table>
<thead>
<tr>
<th>What</th>
<th>Who</th>
<th>Where</th>
<th>How</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provisioning of test data to be used during test execution, i.e. data entry for required fields</td>
<td>Consultants</td>
<td>Test Data Container within SAP Solution Manager</td>
<td>Test data planning based on required fields of involved business transactions</td>
</tr>
<tr>
<td></td>
<td>Domain Experts</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Test Script**

**Business Process Order to Cash (O2C)**

**Variant 1: Standard Order**

1. **Test Case Information**
   - Test name: Order to Cash (O2C)
   - Test case description: Business Process Order to Cash (O2C)
   - Test case ID: TDC_020

2. **Test Data**
   - Use test data from Test Data Container (TDC) in this test case.
   - TDC URL: [TDC URL]

3. **Test Execution**
   - Please execute the following transactions in the following sequence:
     1. Create Quotation
     2. Create Sales Order
     3. Create Delivery
     4. Create Transfer Order
     5. Create Invoice
     6. Billing

**Test Data Provisioning**

test data planning or data upload

| Link | Test Data Container (TDC) |
Test Plan Management for R2D
Activities to prepare Functional Tests

- Requirements → Work Packages → Work Items → Software Implementation and related Configuration

Work Package – Test Case assignment
information used to identify test scope

Test Preparation
Create / update tests

- Single Functional Tests
- User Acceptance Tests
- Functional Integration Tests
- Regression Tests

Test Plan / Test Packages / User assignment

- SFT Test Plan
- UAT Test Plan
- FIT Test Plan
- RT Test Plan

Change Impact Analysis (BPCA) to identify test scope

Solution Documentation

- Process Steps
- Business Processes
Test Plan Management for R2D
Assignment Analysis between Processes – Requirements - Work Packages – Test Cases

Assignment Analysis*

Benefits

- View assignment of Requirements and Work Package to Solution Documentation
- Identify Process Steps with Work Packages, but missing Test Cases
- Identify Work Packages with missing Test Case assignments
- Create and assign missing Test Cases via DropDocs

* Capability provided by Focused Build for SAP Solution Manager
Test Plan Management for R2D
Application to generate Test Plans based on Test Cases assigned to Work Packages

Test Plan Generation*

Benefits

- Convenient Test Plan generation based on Test Cases assigned to Work Packages
- New Test Plans include all important attributes, e.g. Project assignment, planned start/end date which is equal to Wave of the Project and Test Classification, e.g. Single Functional Test (SFT)

* Capability provided by Focused Build for SAP Solution Manager
Test Plan Management for R2D
Automatic update of Project with latest Test Plan status

Project with Test Plan status information*

Benefits

- Project Manager of the PMO can easily track whether Test Plans have been created for the dedicated purpose, e.g. Single Function Test (SFT) or Functional Integration Test (FIT)
- Test Plan status changes are transparent for the Project Manager without accessing Test Suite

* Capability provided by Focused Build for SAP Solution Manager
Test Plan Management for R2D
Assignment of existing Test Plans to Project

Test Plan assignment to Project*

Benefits

- Test Plans generated with standard Test Plan Management functionality can be assigned to Project and Wave
- Adjustment of Test Plan start and end date to dates of the Wave

* Capability provided by Focused Build for SAP Solution Manager
## Test Planning

### Scope of automated Tests

#### Process Step 1

<table>
<thead>
<tr>
<th><strong>Unit Tests</strong></th>
<th><strong>Functional Tests</strong></th>
</tr>
</thead>
</table>
| **Purpose:** automated tests to verify software features at lowest possible level | **Purpose:**  
1. User Acceptance Test (UAT): Extension of Business User tests to cover more process variants  
2. Regression Test: ensure software quality and configuration, validate negative side effects |
| **When:** during Sprint in DEV System before transport to QAS System | **When:** After Sprints in QAS System |
| **Tool examples:** ABAP Unit, JUnit, OPA5, QUnit, XSUnit | **Tool examples:** SAP Solution Manager CBTA, eCATT, HP-QTP |
Test Suite of SAP Solution Manager 7.2

Process Flow and Test Suite Capabilities

Test Execution
Test Execution
Activities during Test Execution (1)

Tester
Consultant

Manual Test Execution

Test Case

Test Execution

Test Status

Defect creation – if required

Test activities

• Launch simplified Manual Test Execution (SAPUI5)
• Read the assigned Test Case
• With 1 button start execution of the business transaction in the Q system
• Enter data to input fields of the business transaction as outlined in the test case section „test data“
• Specify the test status after execution
• Create a screenshot, if requested by the Test Coordinator
• Create a Defect, if something went wrong including a meaningful description and screenshot
# Test Execution

## Activities during Test Execution (2)

<table>
<thead>
<tr>
<th>Role</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developer</td>
<td><strong>Defect assessment</strong></td>
</tr>
<tr>
<td>Consultant</td>
<td><strong>Software correction</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Configuration adjustment</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Transport</strong></td>
</tr>
<tr>
<td>Tester</td>
<td><strong>Retest</strong></td>
</tr>
<tr>
<td>Consultant</td>
<td><strong>Test status</strong></td>
</tr>
</tbody>
</table>

### Defect management activities

- **Defect assessment**: user handling mistake, code problem, configuration problem
  - In case of problem: code correction and/or configuration adjustment
  - Unit test "re-test" by developer or consultant
  - Transport of correction from development to test system
  - Retest in Q system by Tester or Consultant using Simplified Manual Test Execution
  - Tester set test status to "ok" in case that the retest was successful

![Image of Defect Assessment](image1.png)

![Image of Software Correction](image2.png)

![Image of Configuration Adjustment](image3.png)

![Image of Transport](image4.png)

![Image of Retest](image5.png)

![Image of Test Status](image6.png)
Test Execution
Test Activities during Test Execution (3)

Test Coordinator

Test status reporting

Test Coordinator activities
- Check test status and test execution progress on a regular basis
- Follow-up on Defects with high priority that are not getting resolved in-time
- Information to Project Manager in case of delays or expected delays
- Sign-off after successful end of Regression Tests

Inform Project Manager

Test sign-off

OK
Test Suite
Test execution during multiple Sprints

Sprint 1
Sprint Planning  Dev/Config  Unit Test

Sprint 2
Sprint Planning  Dev/Config  Unit Test

Sprint 3
Sprint Planning  Dev/Config  Unit Test

Functional Integration Tests

Functional Integration Tests
Test Execution
Convenient access for manual Testers to test cases, test execution, defect creation and status setting

Simplified Manual Test Execution*

Benefits
- Tester can easily view Test Packages and included Test Cases assigned to him / her
- The tester can quickly open the assigned test script to get familiar with the test steps that shall be executed
- Convenient access with 1 click to the test system to perform test execution
- Intuitive status setting, test note and optional defect creation

* Capability provided by Focused Build for SAP Solution Manager
Test Package Management

Tester Assignment and Readiness*

Benefits
- Ability to exchange testers within Test Packages after start of test execution, e.g. when assigned tester gets ill
- Ability for Test Coordinator to check whether particular testers can start test execution („ready to test“)

* Capability provided by Focused Build for SAP Solution Manager
Defect Resolution Process

**Testing Team**

**L1 Support Team**

**Change Management Team**

- Defect Creation
- Defect Processing
- Defect Correction
- Requirement Management

Fix?  Enhancement?
Test Management
Defect with new Transaction Type S1DM integrated with Defect Correction

- A new Transaction Type (S1DM) with Lean UI created for Defect
- Once a Test Plan is assigned to SAP Project, it gets Release Information from SAP Project
- When a Defect is created for such a Test Plan, the Test Plan passes on the release information to the Defect
- Changing the status of a Defect can trigger automatic creation of a Defect Correction
- Once a Defect Correction is created, Release information is auto populated eliminating any error in Landscape and Release selection
Test Execution
Defect creation

- If the testers run into unexpected situation, Defect creation can be triggered.
- Solution Manager 7.2 supports multiple Transaction Types for Defect creation. The tester is expected to know the correct Transaction type to be selected for his area.
- The context of Test case including Solution Documentation information is passed to the Defect automatically.
Defect is created

- Tester creates the Defect using SMTE
- If the Test Plan was associated with SAP Project, that information is passed to the defect in the background
- Tester can provide component to trigger team determination or enter the L1 Support team in 'Processor' field
L1 Support team analyzes Defect

- L1 team analyzes the defect
- In case of Master Data or user Error type of issues, a Defect can be resolved by L1 Support team
- In case a fix is required which needs a 'Transport', a follow up Defect Correction is created by using the Status 'Awaiting Defect Correction'
Defect is forwarded to L2 Support Team

- In the Defect Correction, the 'Change Cycle' is populated automatically since Release information is passed from Defect to Defect Correction.
- The status update of Defect Correction, updates the status of Defect automatically so that Tester/L1 support team can track the progress.
L2 Team requests for information

- The description or attachments may not be sufficient for L2 Team
- L2 Team can use Text type 'Required Information' to ask more information from stakeholders and then set the status to 'Information Requested'
- This updates the status of Defect to 'Information Required'
- The text entered in the Defect Correction is also passed to the Defect
Information is provided

- L1 support team or the tester can provide information
- The text is entered using the text type 'Info for Defect Correction' and status is updated to 'Information Provided'
Tester confirms Defect

- The tester is notified via status change or email once the Solution is Provided
- Tester can retest and set the status of Defect to confirmed
- This automatically sets the status of related Defect Correction to confirmed
Test Suite of SAP Solution Manager 7.2

Process Flow and Test Suite Capabilities

Test Execution Analytics
Test Suite Analytics
Classification of Test Suite Analytics

Overview

Completeness and Gap Reports

Test Execution Analytics and Progress Analytics

Test Management Dashboard
Test Suite Analytics
Dashboard for Test Manager and Test Coordinators

Test Suite Dashboard*

- Test Coordinator can assess multiple test plans in a fast and convenient fashion
- Status of open test executions and defects in graphical format
- Details in table format
- Test execution progress
- Test Coordinators can monitor defects created from test executions by priority and resolutions status

* Capability provided by Focused Build for SAP Solution Manager
Key Takeaways
Key Takeaways (1)

Test Management
- Test Types: Unit Tests, SFT, UAT, FIT, RT
- Roles: Quality Manager, Test Manager, Test Coordinator, Tester

Test Management embedded in Requirements-to-Deploy Process
- Requirements (and Work Packages) and functional Specifications are assigned to SOLAR Blueprint Nodes, e.g. Process Steps
- Single Functional Tests (SFT) are assigned to the same Blueprint Nodes, i.e. Process Steps
- Functional Integration Tests (FIT) are assigned to Business Processes

Test activities within agile development projects
- Requirements, Functional Specs, WP, Work Items have corresponding test case types
- QAS and Pre-PRD Systems are the important test systems
- Waves and Sprints are the important entities to define when and which test activity shall be performed
Key Takeaways (2)

**Test Activities embedded in the R2D process**
- Test Planning
- Test Execution
- Analytics and Sign-Off

**Test Planning**
- Standard Test Management functionality to create and assign Test Cases, plan and assign Test Data, generate Test Plans, Test Packages and assignment of manual testers
- New R2D Application: Assignment of existing Test Plans to SAP PPM project
- New R2D Application: Assignment Analysis and Generation of Test Plan – based on Work Packages

**Test Execution**
- Workflow to trigger test execution
- Simplified application for endusers involved in manual test executions
- Status and Defect Management
- Advanced handling of Defect and Defect Corrections
Key Takeaways (3)

**Gap and Completeness Reports**
- Test Coordinators are able to identify missing test cases, missing assignments to WPs or outdated test plans

**Test Execution Reports**
- Comprehensive reporting of test status with multiple drill-down options to assess status details, such as reported Defects and their priority and resolution status

**Test Management Dashboard**
- Very attractive analytical application for Quality and Test Managers to assess the overall status
- Status and Progress information for 1 to multiple projects and related test plans
- Drill-down into test execution progress and defect resolution status
Summary
SAP Solution Manager - Test Suite
Test Suite and Focused Build for SAP Solution Manager 7.2

The Test Suite of SAP Solution Manager 7.2 is the *default functional test solution for all SAP customers* – no other Test Suite required*

**Customer Benefits**

- All that is needed to test SAP Business Suite, SAP S/4HANA and digital industry solutions
- Supports SAP, non-SAP and hybrid solutions – on premise and cloud editions
- Widely-adopted by several thousand SAP customers and SAP IT
- Automated test planning for innovation and maintenance activities
- State-of-the-art test automation with low maintenance for automated test scripts
- Seamlessly integrated with all SAP Solution Manager 7.2 applications
- No data replication to third-party repositories required – providing low TCO
- Supports all functional test types, e.g. Single Tests, Integration Tests, Regression Tests

SAP Products SAP TAO and SAP Solution Manager Adapter for HP ALM have been removed from the SAP portfolio, there is no impact on existing customers. Customers requesting integration and test automation with HP ALM can do so via service request.
SAP Solution Manager 7.2 – Test Suite
Information Sources
SAP Solution Manager Knowledge Resources

Knowledge Resources

- **SAP Enterprise Support Academy**
  - Expert Guided Implementation
  - Accelerated Innovation Enablement
  - Guided-Discovery Tutorials
  - Meet the Expert
  - Learning Maps

- **SAP Classroom Trainings**
  - Setup & Configuration (SMx)
  - Functional Overview and Usage (E2Ex)

- **Demo Systems**
  - Public Demo Systems
  - Private Evaluation System (CAL)

- **Focused Solutions**
  - Focused Solutions Circle
  - Focused Solutions Curriculum

- **Introduction**
  - (Management Competence)
  - YouTube Playlists

- **Key Value Chains**
  - (Core Competence)
  - Media Center (Product videos, Guided-Discovery Tutorials)

- **Functional Areas**
  - (Expert Competence)
  - Expert WIKIs

- **Product Documentation**
- **Community Forum in SCN**
- **Overview Publication (“the book”)**
- **Expert Publications**

*) Planned availability Q1 2017

Click in the box for further details!
### Test Suite – more information for customers and partners

<table>
<thead>
<tr>
<th>Source</th>
<th>Link</th>
</tr>
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<tbody>
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<td>Media Center for SAP Solution Manager</td>
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<td>Wiki for SAP Solution Manager</td>
<td><a href="http://scn.sap.com/docs/DOC-47361">http://scn.sap.com/docs/DOC-47361</a></td>
</tr>
<tr>
<td></td>
<td>→ Test Management → SAP Solution Manager 7.2</td>
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</tbody>
</table>
Appendix

Unit Tests
Unit Tests - Introduction

Unit tests are fast running automated tests that make sure a specific part of your program works as intended. They test specific methods of a dedicated module and have a clear pass/fail condition. Unit tests are a great tool for developers to identify errors instantly even before manual testing can be done to make sure their code works. We can consider unit testing as an automated error-detect-and-prevention mechanism.

SAP Employee Network - Wiki for Agile Software Engineering (ASE)
Nena Raab, SAP SE
Unit Tests (UT)  
Motivation and Prerequisites

Motivation

- Technical Test of every software development to ensure code compliance and validation of technical design
- Robustness of custom code created during the project

Prerequisites

- Functional Specification and Technical Design available
- Developer has successfully completed the development/configuration activities
- Standard Code Checks like ABAP Test Cockpit (ATC) are performed for new developments
Test Isolation
The principal idea of Test Isolation is to reduce the scope of the code you want to test by breaking up dependencies, especially the test-hindering ones.

Legend:
- = dependend on component (DOC)
- = mock objects
= Test Isolation - similar terms: mock, fake, stub

Link ASE Wiki – Test Isolation: https://wiki.wdf.sap.corp/wiki/display/ASE/Test+Isolation
### Test Management

#### Unit Tests – Overview of available Tools*

<table>
<thead>
<tr>
<th>Technology</th>
<th>Unit Test Tool</th>
<th>Tool for test isolation / mocking / test data</th>
<th>Availability for SAP and SAP Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABAP</td>
<td>ABAP Unit</td>
<td>Test Data Container (TDC)</td>
<td>SAP + SAP customers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Test Double Framework</td>
<td>SAP + SAP customers (SAP NW 7.40 SP09)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Avalon (for CDS Views, AMDP)</td>
<td>Pilot phase (SAP internal)</td>
</tr>
<tr>
<td>Java</td>
<td>JUnit</td>
<td>Mockito</td>
<td>SAP + SAP customers</td>
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<td></td>
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<td>EasyMock</td>
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<tr>
<td>SAPUI5 / Fiori (client)</td>
<td>OPA5</td>
<td>Mock Server</td>
<td>SAP + SAP customers included in SAPUI5 web IDE</td>
</tr>
<tr>
<td>JavaScript (client)</td>
<td>QUnit</td>
<td>Sinon</td>
<td>SAP + SAP customers included in SAPUI5 web IDE</td>
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<tr>
<td>XS for JavaScript (Server)</td>
<td>XSUnit</td>
<td>Jasmine</td>
<td>SAP + SAP customers</td>
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<tr>
<td>HANA DB Artefacts</td>
<td>XSUnit</td>
<td>Mockstar</td>
<td>SAP + SAP customers</td>
</tr>
</tbody>
</table>

* detail presentation available in SAP JAM
Appendix
Test Management for analytical Applications
Test Management for analytical Applications
Introduction: Test Scope

Traditional BW Architecture with data extraction from SAP / non-SAP solutions into BW

Ad-hoc & drilldown Reports, Dashboards, Scorecards

↑ BEx Query

Runtime: OLAP Processor

Repository: BW InfoProvider

Data Transfer – Data Cleansing - Transformation

SAP Solutions
any DB or HANA

Non-SAP

Test Scope 1
Consistent BW Query results based on OLAP Processor using various data access and optimization features

Test Scope 2
Data consistency between source (outside / inside BW) and BW target repositories
Test Management for analytical Applications
Introduction: Test Approach Alternatives

<table>
<thead>
<tr>
<th>Traditional BW Architecture</th>
<th>Test Scope</th>
<th>Test Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ad-hoc &amp; drilldown Reports, Dashboards, Scorecards</td>
<td>1. Consistent BW Query results based on OLAP Processor using various data access and optimization features</td>
<td>1. Manual tests by experts</td>
</tr>
<tr>
<td>Runtime: OLAP Processor</td>
<td>2. Data consistency between source (outside / inside BW) and BW target repositories</td>
<td>2. Automated BW Query result tests using reference data (transaction RSTT etc.)</td>
</tr>
<tr>
<td>Repository: BW InfoProvider</td>
<td></td>
<td>3. ABAP Unit Tests</td>
</tr>
<tr>
<td>Data Transfer – Data Cleansing - Transformation</td>
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<tr>
<td>SAP Solutions</td>
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<td>any DB</td>
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<td>HANA</td>
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<tr>
<td>Non-SAP</td>
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</table>
Appendix
additional details
# Test Suite

## Test Classification

<table>
<thead>
<tr>
<th>Test Case</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><strong>Unit Test</strong></td>
<td></td>
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<tr>
<td><strong>Single Functional Test</strong></td>
<td></td>
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<tr>
<td><strong>Functional Integration Test</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Regression Test</strong></td>
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</tr>
</tbody>
</table>

### Unit Test

**When**
during Sprint – before Sprint Review, after Developer has finished SW development / configuration

**Who**
Developer

**What**
SW validation at lowest technical level, e.g. function module

**Where**
DEV– customer landscape

**Test Case**
no test case

Manual test execution or automated using ABAP Unit, Junit, Selenium, ...

### Single Functional Test

**When**
after Sprint Review Meeting

**Who**
SAP Functional Consultant from the customer project team (and SME of Dev Factory)

**What**
Functional Software validation at process steps or single feature level

**Where**
QAS - customer landscape

**Test Case**
Functional test cases assigned to Process Steps

### Functional Integration Test

**When**
Recurring tests after new functionality of Sprints became available

**Who:**
- SAP Functional Consultant from the customer project team
- Customer SME
- Customer Business User (at a later point in time)

**What:**
Functional test of Business Processes (PH and E2E BP)

**Where**
QAS - customer landscape

**Test Case**
FIT test cases assigned to Business Processes

### Regression Test

**When:**
Recurring tests after new functionality of Sprints became available

**Who:**
- SAP Functional Consultant from the customer project team
- Customer SME
- Test Automation Tool

**What:**
Regression test of priority 1 processes to verify that developments do not negatively impact processes

**Where:**
QAS - customer landscape

**Test Case**
RT test cases assigned at Process Step or Business Process
Information Links

- **Buy Focused Solutions:**
  https://www.sapstore.com/search?text=focused

- **Focused Solutions Website:**
  https://support.sap.com/focused

- **Focused Solutions Circle Partners:**
  https://support.sap.com/solution-manager/focused/focused-solutions-circle.html

- **Focused Solutions Knowledge Center (SAP internal):**
  https://jam4.sapjam.com/groups/about_page/7R883J7EyUUpEzqhhzoYCN

- **Questions about Focused Solutions?**
  Contact us at focused.solutions@sap.com
Thank you.

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