Applies to:
SAP Solution Manager EHP 1, ARIS for Business Architect.
For more information, visit the Operations homepage.

Abstract
The article focuses on an approach for the test management through SAP Solution Manager. ARIS for Business Architect is one of the best modeling tools and also provides the functionality to integrate with SAP Solution Manager. In this article we will discuss about the support provided by ARIS for Test scenario modeling and the advanced test management and reporting functionality of SAP Solution Manager.

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1. Introduction

Creation and execution of an end-to-end testing scenario has always been a great challenge for any SAP implementation/rollout project. This process of planning, creation and execution end to end integration test scenarios involves several members from different areas with different background. From SAP Solution Manager Version 4.0, for all SAP projects, SAP recommends to have all the project activities performed from a central platform ‘SAP Solution Manager’. One of the main functionalities of the tool is to have integration between the different SAP systems and a repository for entire solution information. This functionality makes the tool best suited for managing all kinds of test activities from it. However, as the end to end integration test management involves different groups of users, a standalone tool cannot satisfy requirements of each and every individual. For example, from business prospect, you would like to view the entire process flow for the test scenario created, however as a test planner you would like to have the best facility available for organizing, reporting and executing the test plan to meet the business expectations.

SAP Solution Manager provides open interfaces to other SAP and third party systems. Thus it is possible to integrate the Solution Manager system with other tools which can add value to Solution Manager Functionality for test management. This article focuses on the integration of SAP Solution Manager with other tools and the value adds for test management.

2. ARIS Business Architect

SAP and IDS Scheer jointly developed a comprehensive business process modeling tool- ARIS Business Architect. This tool is a web based tool, implements business process modeling offering the complete solution. Different methods and models can be used to model, analyze and optimize the business processes.

Process models and other configuration elements can be exchanged between ARIS Business Architect and SAP Solution Manager.

You can create the business process models in ARIS Business Architect and transfer the information in Solution Manager via synchronization process. This means, you have complete business flow information available in ARIS and at the same time this information once brought to Solution Manager Enables implementing SAP solution based on the business process information, thus aligning business with IT.
3. Pre-requisite

- All SAP systems are connected with SAP Solution Manager via RFC connection and logical components have been created and assigned to the Solution Manager project.

- You have created project in SAP Solution Manager and synchronized with ARIS Business Architect.

- You have modeled the business processes in ARIS and synchronized with SAP Solution Manager for updating the information across the two systems.

- You have assigned documents (process documents/ unit test cases etc.) to the related process or process steps in SAP Solution Manager.

- You have assigned transactions to the relevant process nodes.

4. Model Test Scenarios

Creating and maintaining the end-to-end test scenarios is important as you may need it for several cycles of integration testing. Similarly, it is important to test the end-to-end scenario if there is any change in process/functionality during production support, rollout or upgrade. In other words modeling test scenarios are one time activities and have reusability during entire product life cycle.

An end to end integration test scenario may cut across multiple business scenarios. SAP Solution Manager is constraint, as it doesn’t provide platform for creation of these test scenarios. Also, as the business flow information is available in ARIS Business Architect, so the tool becomes an ideal environment for creation of end to end test scenarios as well.

'With specific test projects, ARIS supports you with the generation of specific test sequences of your implementation projects in SAP Solution Manager, without being bound to the Blueprint structure. This allows you to reuse many end-to-end scenarios from your ARIS business process models to create test scenarios in SAP Solution Manager. You can thus create any number of variants of the test sequences'.

As described by IDS Scheer.

Follow the following method to successfully create and assign the test scenarios:
4.1. Step 1: Transfer Project to ARIS

- If you are working on an implementation project, you need to create a new project of type ‘Implementation’ for storing the test scenarios. Similarly, if you are working on a template project you should create a template project for storing the test scenarios. This project should contain the same logical components in its project landscape as used by the original implementation/template project.

- Transfer the project information in ARIS Business Architect as a folder in the same database where the original project is available. This is to be done by selecting the ‘main group’ folder and using the menu path: SAP-> Advanced-> Download test project.

- You may create the test scenarios in SAP Solution Manager and synchronize with ARIS so that the lists of Integration test scenarios are available in ARIS or you may even model them from scratch in ARIS Business Architect. To create the scenario in ARIS you may model the structure as the SAP value added chain model in VACD (Value Added Chain Diagram) model type of the project folder.
4.2. Step 2: Build Test Scenarios

A business process flow can be very complex and may have several different flow paths as shown below:

For end-to-end test scenario creation you may not require all the possible process paths but rather a small subset of the entire flow which may cut across different business scenarios and processes. Above highlighted region can be regarded as one such particular case. You need to create a test scenario in the test project folder under which this entire flow can be added.

Once the scenario is created in ARIS (or created in Solution Manager and copied to ARIS via synchronization), you need to flip between the actual project where the business process model is available to copy the required once and then paste in the test project folder.

Go to the EPC model available in the project for the required model to be copied. Choose the model and copy it.
• Now you need to navigate to the required project where it is needed to be used. Go to the target scenario created in the test project (Z_IT_SYNC here) and choose the EPC model type from the selection to navigate to the required area for adding the copied process.

• Now in the EPC model area for this scenario paste the copied process as a test object as shown below:

This method of pasting the model objects in the integration test folder enables the parent-child relation between the two objects. This means you will be able to fetch the details of any change occurred with the parent object and update the child.

Repetition of the same procedure will be required for adding all the objects to the test scenario.
When the projects between ARIS and Solution Manager are synchronized for the first time, a unique identifier gets assigned to each structure node of ARIS project as an attribute. This attribute is termed as the SAP ID.

<table>
<thead>
<tr>
<th>SAP ID</th>
<th>DE1E157B8C675FF1AA28001A6435E8C6</th>
</tr>
</thead>
</table>

The new object create via the copy and paste procedure as shown above then gets the same ID as the test source ID and this identifier plays the role of reference for updating the child whenever any change to the parent occurs.

| Test source ID | DE1E157B8C674DF1AA28001A6435E8C6 |

### 4.3. Step 3: Transfer scenarios to SAP Solution Manager

Once all the scenarios are created in the test project folder in ARIS Business Architect, you can transfer the information in SAP Solution Manager. Unlike general information exchange across ARIS and SAP Solution Manager via synchronization, you will be required to transfer the information using option ‘Upload test scenario’.

This process sends the complete information to SAP Solution Manager where you will be able to view the entire structure node in the standard SAP structure format as follows:

```
- Demo IT scenario 1
  - Organizational Units
  - Master Data
  - Business Processes
    - Develop Pricing Strategy
      - Estimate Cost
      - Determine Pricing Strategy
      - Generate forecast
    - Schedule Production
      - Issue material
      - Execute Production
    - Order Capture
      - Determine order type
      - Create Order
```
The structure once pulled in SAP Solution Manager has the parent-child relation (An update to the parent node will enable the system to have auto update to the child node) with the original project in SAP Solution Manager as well. If you open the node information you will be able to view the parent node info as follows:

<table>
<thead>
<tr>
<th>ObjectID</th>
<th>Source</th>
<th>Source Name</th>
<th>ObjectName</th>
<th>Archived</th>
<th>Predecessor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Template Project</td>
<td>ARIS synchronization test plan</td>
<td>Estimate Cost</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

Also, it copies entire information added to the parent node which contains all the transactions/ documentations and other all assignments to the parent node. The relationship helps in updating the test structure nodes whenever the parent node changes. For the first time entire assignment (documents, transactions etc.) will get assigned to the child node. However, afterwards you get the nodes highlighted for whenever structure changes and you want to know the updates to the parent nodes using project upgrade functionality (Tr. SA_PROJECT_UPGRADE). The system also allows you to accept or reject the available updates. This entire process works in a similar way as the process of rollout works between the template and rollout projects.

5. Test Plan Management

Once you have gathered entire structure for all the end-to-end scenarios using ARIS for Business Architect in the new test project Z_IT_SYNC, you also inherit the transactions and unit test cases assigned to each of the ‘process steps’ along with other assignments. These unit test cases can be updated with the new test data required for the completion of current end-to-end scenario testing. Check that you had already assigned the transaction as a test object corresponding to the test scripts. If not, then assign the transaction (required for the execution of the test script) as test object to the script.

A similar exercise for all other process steps prepares you for creation of the test plan. Note that as we have test scripts available at very elementary level, a complete reuse of the test scripts and transaction assignments from unit testing phase is possible.

5.1. Step 1: Test Plan Creation

For the collection of all the end-to-end test scenarios, generate a test plan say ‘Z_DEMO_Integration test plan’. By default all the structure nodes are selected. You may remove the unwanted scripts/process nodes. Check for the system role and then generate the test plan for entire project structure.
Once you have generated the test plan, go to ‘attribute maintenance’ for the test plan. Choose the release schema for the entire test plan by choosing the Status Profile and current status value. Choose Default status profile (for more information see the appendix) and new as current status. This enables the Workflow Active checkbox. Select this option.

This status profile assignment with activating the workflow enables you to send the notification via mail once the test plan is released for test execution to all the testers involved. This also allows you notify different testers whenever any script is assigned to him. Details are described in Appendix: Workflow assignment for test Management.

Note: SAP provides two different standard status profiles, any one of which can serve your purpose. However, you may have your own status profile for execution of the test plan. For more information see the appendix: Workflow assignment for test Management.

Once you have created the test plan, go to the test package assignment. Create a test package (in this case I am using one test package creation per scenario) and assign all the testers, you would like to involve for testing different steps of the scenario. For the Demo IT scenario 1, create a single test package Z_TPK_Scenario1.

5.2. Step 2: Sequencing the Scripts

Once all the testers are assigned to the given test package, you may start creating the sequence for a proper flow of the test execution.
Now, you get the explorer window Test organizer containing the test package and corresponding scripts. Select the test package for which you want to create the test sequence. Assign respective testers to each of the test scripts. You have the choice to select any tester for each of the test scripts. Once the tester assignment is done, create a test sequence for the same. You may choose the number of scripts which you require for a given test execution. A unique ID is assigned to the group of test cases. By default system makes a test sequence which can be changed by moving the scripts up or down. This method of organizing the test scripts allows you to have a sequential test flow mechanism.

### Sequences - Test Organizer

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Tester</th>
<th>User Type</th>
<th>Full Name</th>
<th>SequenceID</th>
<th>Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLARHENCE1201609128618FA1A236014A6A493508505050</td>
<td>f_Determine Projecting Strategy</td>
<td>RWAH</td>
<td>System User</td>
<td>Raj JHA</td>
<td>Variant 1</td>
<td>1</td>
</tr>
<tr>
<td>SOLARHENCE1201609128618FA1A236014A6A493508505050</td>
<td>f_Estimate Cost</td>
<td>TEST123</td>
<td>System User</td>
<td>Raj JHA</td>
<td>Variant 1</td>
<td>2</td>
</tr>
<tr>
<td>SOLARHENCE1201609128618FA1A236014A6A493508505050</td>
<td>f_Generate Forecast</td>
<td>RWAH</td>
<td>System User</td>
<td>Raj JHA</td>
<td>Variant 1</td>
<td>3</td>
</tr>
<tr>
<td>SOLARHENCE1201609128618FA1A236014A6A493508505050</td>
<td>f_Create Material for production order</td>
<td>RWAH</td>
<td>System User</td>
<td>Raj JHA</td>
<td>Variant 1</td>
<td>4</td>
</tr>
<tr>
<td>SOLARHENCE1201609128618FA1A236014A6A493508505050</td>
<td>f_Execute Production</td>
<td>TEST123</td>
<td>System User</td>
<td>Raj JHA</td>
<td>Variant 1</td>
<td>5</td>
</tr>
<tr>
<td>SOLARHENCE1201609128618FA1A236014A6A493508505050</td>
<td>f_Determine Order Type</td>
<td>TEST123</td>
<td>System User</td>
<td>Raj JHA</td>
<td>Variant 1</td>
<td>6</td>
</tr>
<tr>
<td>SOLARHENCE1201609128618FA1A236014A6A493508505050</td>
<td>f_Create Order</td>
<td>TEST123</td>
<td>System User</td>
<td>Raj JHA</td>
<td>Variant 1</td>
<td>7</td>
</tr>
</tbody>
</table>

### Notes:
1. You need to activate the service for webdynpro from Service Maintenance (Tr. SICF) screen.
2. System allows you to add either system user or a business partner as a tester. In any case you should fill in the E-mail address of the tester in the method of communication field. This address is used as a communication media for mail notification to the tester to execute the test script once the previous tester has completed his task.

#### 5.3. Step 3: Test Execution

Completing above two steps for all the test scenarios completes the test plan creation. Then the test coordinator needs to release the test plan. As a test coordinator, you will be required to set the status of test plan as released in the attributes of the test plan. Once you flag the test plan as released, all the testers are notified by mail which alerts them for the start of the test execution. A second mail flows to the tester who has to start executing the test script first (Tr. STWB_WORK).

The first tester will start testing and adding the test results in his/her workbench. It will be required for you as a tester to test the assigned script (shown by okay flag under column Ready to be tested). Open the test script and choose the corresponding test object to go to the respective screen of the satellite system and start testing the script there. If in case you get any error while test execution, you will be required to raise the Service Message for the same. Once you are able to complete the test script, enter the appropriate status in the status maintenance area and set the flag as test ended. If you have checked this button and saved the same, a mail will flow to the next tester to as a notification for starting the test script assigned to him/her.
This way the execution of all the test scripts is done from Solution Manager System.

6. Reporting

You may use the standard Solution Manager functionality for reporting of test plan. This can be done from Analysis screen (Tr SOLAR_EVAL) of SAP Solution Manager or from test plan creation area (STWB_2). You have the option to download the spreadsheet for the status evaluation, messages raised plan analysis etc.

SAP Solution Manager also provides functionality: ‘Solution Manager: Work Center’ (Tr. SOLMAN_WORKCENTER). Here you get entire list of test plans, work lists, reporting etc. at the same place. However, in order to enjoy this transaction you should have following standard roles assigned to you:

- SAP_SMWORK_ITEST
- SAP_SMWORK_BASIC

These roles are not available with SAP_ALL authorization also. So, you must have these roles in addition with your standard authorizations.

Once you have the activities assigned at the smallest level, you have the advantage of reporting at the granular level. You may have the reports which can cover the exact status and have the leverage of impact analysis so that you can avoid future risks and thus have a smooth execution of testing possible. This transaction contents the field from where you can activate the BI contents which makes advance reporting for test workbench possible.
You need to give following details:

**Settings for Test Workbench BI Reporting**

- RFC destination from Solution Manager to BI: NONE
- RFC destination from BI to Solution Manager: NONE
- Hour of daily data extractor run (time zone: CET): 20
- Activate BI Content: [ ]
- Display Log
- Save

Once, the BI content is activated in SAP Solution Manager, you are able to take reports for:

- Test status over time
- Test execution status and service messages
- Message report over a certain time
- Message report by priority over a certain time
All BI reporting analyses are structured according to the same pattern. Following areas are displayed in each analysis:

- Message
- Timeline of data
- Navigation
- Breakdown by test node
- Graphics
- Value table

Let us see the use case with a small example where you need to find the current status of entire test plan:

For evaluation of any test plan status, you need to choose the tab *Test Evaluation* and then you can take report for any selected test plans.

Following graphical view can be obtained for showing the progress of the test plan:

In this way you have a full cycle reporting is possible using BI content activation.

**Note:** A small configuration setting is required before you activate the BI reporting functionality in transaction SOLMAN_WORKCENTER, at following navigation:

*Reference IMG -> SAP Solution Manager -> Basic setting -> BI Setup*
7. Summary

SAP Solution Manager provides open interfaces to different tools which in turn input their expertise in the respective areas and enable the Solution Manager system produce the best environment to suite the business need. For a complete transparent, well organized and systematic test plan management SAP solution Manager uses the ARIS tool for having the entire end-to-end IT scenario flow information, Test workbench and workcenter of Solution Manager and the advance reporting functionality using BI content, thus providing platform for a smooth execution of entire Test Management.

At initial stage the approach may involve some extra efforts, so a small feasibility analysis of the approach to suite your company’s environment would be good before implementing the same. Considering the large extent of reusability, the approach becomes best suited for the companies who need to go for many cycles of testing during the product lifecycle.
Appendix: Test Management Workflow

Creating test cases at step level allows you to have flexibility of involving as many testers as you wish. However, in this case you need to manage this entire group in such a way that execution of the test scripts follows the sequence without involvement of any manual follow-on activities.

SAP Solution Manager provides you the workflow functionality for automatic mail notification to the target user for handover of activity during various phases of test plan management. **STEP 1:** To be able to use test workbench with workflow check that following values are available in the screen at the path in SPRO:

Reference IMG (Tr. SPRO) -> SAP Solution Manager -> Scenario-specific setting -> Test Management -> Extended configuration -> Workflow -> Setup Workflow.

If in case these values are not available in the above screen, use SAP note 1113726. This note gives you the instruction on how to activate the required BC-sets so as to be able to get the values TWTP and TWSQ in the above screen.

**STEP 2:** For handling different phases of test Management, SAP Solution Manager provides two different status profiles namely, DEFAULT and DEFAULTS. Following are the values available for DEFAULT status profile in the path: Reference IMG (SPRO) -> SAP Solution Manager -> Scenario specific setting -> Test Management -> Extended configuration -> Release status profile -> setup release status profile:

However, you are not constraint to the use of these status profiles. You may create your own status profiles and corresponding status values for the execution of your test plan.

**STEP 3:** SAP Solution Manager provides default action profiles:

**TWSQ0001** – test sequence action profile which contains action definitions for different mail triggers during the test execution. This includes notifications for test case assignment for testing, tester sequence swapping or test case reset for retesting. Some standard smartforms are used as the mail content for these notifications. Example: Smartform AGSTWB_SQ_TESTCASE_NEXT is used as the mail content to alert for starting the execution of the assigned test case.

**TWTP0001**- Test plan tester action profile which is used for the mail notification to the testers about the test plan releasing, reopening or locking for execution. Example: AGSTWB_TP_PACK_RELEASED smartform is used by the action definition TWTP0001_MAIL_PACK_RELEASED- Test package released for execution. This action definition is used by the system to send mail to all the testers involved in the test plan for notification about the release of the test plan for execution.

This activity of adding workflow for the test management avoids the manual follow-on activity during each handover of assignment and ensures a well organized and consistent flow of activities.
References


4. Solution Manager learning map: www.service.sap.com/rkt

5. For more information, visit the Operations homepage.
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