Enterprise Architect

User Guide Series

Testing

How to manage testing? Use Sparx Systems Enterprise Architect as a complete Test Management bed to create and manage tests and test scripts for model elements, including test cases generated from JUnit and NUnit testing and Testpoint Management.

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Date: 2020-01-20

Version: 15.1

CREATED WITH ENTERPRISE ARCHITECT

Table of Contents

Testing

It is important in any project to perform quality control of both the process and the output of the project; Enterprise Architect provides several facilities for testing and validating your model structure and content, including Integration with the unit testing tools JUnit and NUnit.

Facilities

Facility	Description
Testing	Create and manage test scripts for model elements. Explore the Testing UI supporting unit, integration, scenario, system, acceptance and inspection tests.
Model Validation	Check UML elements, diagrams or Packages against known UML rules (identified in configuring validation) and constraints defined within the model, using the Object Constraint Language (OCL). Define your own checks against custom rules and constraints. See the

	[Model Validation](#) topic for more information on setting up model validation rules.
Testpoint Management	Pass or fail application tasks, viewing test results in real time as the program executes and results are saved. See the section on [Testpoints](#) management for more information on setting up and running automated tests.

Test Management
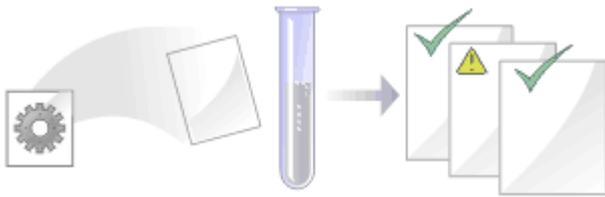
Enterprise Architect is not only a UML Modeling environment, it is also a complete Test Management environment. Using Enterprise Architect you can create and manage test scripts for model elements, developing unit, integration, scenario, system, acceptance and inspection tests; these can include test cases generated from xUnit testing and Testpoint Management.

You can also import tests from other elements, generate them from scenarios, and generate test documentation and reports; you can indicate the presence of tests on an element by displaying test information in a compartment of the element in a diagram.

It is simple to attach even complex tests to any model element. Keeping the model elements and the testing documentation in one integrated model significantly improves the communication between the test-team and the software developers and architects.

The system's detailed search facilities make it easy to find failing test cases, test cases not run and test cases that have been passed; using the testing and search capabilities, it is easy to navigate through the model and quickly locate problem spots, design flaws and other critical issues.

Test Tasks

Tasks	Detail
Create Tests	You initially create tests in either the 'Test Details' dialog or the Testing window. Typically, you create: • Unit tests for things that are being built, such as Classes and components • Integration tests to test how components work together • System tests to ensure the system meets business requirements • Acceptance tests to test user satisfaction • Scenario tests to test the end-to-end suitability and functionality of the application • Inspection tests for peer review of things that are being built using a well defined process These test categories are otherwise referred to as test Classes; the type of Class is internally identified by a value from 1 to 6 corresponding to the test

	types in the order as listed.
Using Tests	Tasks that you might perform via the Testing window when working with tests include: • Create and edit test records • Import a scenario from an element or a Package as a test • Import an internal requirement or constraint as a test • Import a test from another element • Create a maintenance item from a test • Move or copy tests between test classes • Print the list of tests of the current test class for the element • Delete the test

Notes

• Most of the listed tasks relate to a tests for a single element

• You can display the Testing window for an element on a diagram, by clicking on the element and pressing the T key

• You can make a set of tests available to a number of

elements by performing the listed tasks on a Test Case element and then associating that Test Case with each of the other elements; the Test Case element also helps to make tests more visible in diagrams, the Browser window, windows and searches

Create Test Records

When you need to create or edit a test record on an element, for any of the six types of test, you can do so using either:

- The Testing window (to quickly set up or change test records, and perform operations on them)

- The 'Test details' dialog (To create test records with more Notes information, which you can also add through the Notes window)

- The Properties window for Test items (to edit the properties of existing tests - see the *Properties window for Test Items* Help topic)

Whichever type of test you are recording, you complete effectively the same fields.

Access

Ribbon	Construct > Testing > Tests > <test class> : overtype *Add new <testtype>* (Testing window)
Keyboard Shortcuts	Click on the element : Alt+2 > Testing : <test class> : overtype *Add new <testtype>* (Testing window)
	Click on the element on a diagram | Press the T key (Testing window)

| Other | On the Testing window, click on the icon or the icon to display the 'Test details' dialog |

Create a test record in the Test details dialog

Field/Button	Action
Test	Type the name of the test. This can be any alphanumeric text string you want to use.
Auto	As an alternative to typing in the name, click on this button to insert predefined auto-counter text; if you do not have auto-counter text configured, an information message displays. If you already have some text in the 'Test' field, it is over-written by the auto-counter text.
Class	This defaults to the class of test you selected in displaying the dialog. If this is not the class you require, click on the drop-down arrow and select the

	appropriate value.
Type	Click on the drop-down arrow and select the value indicating the type of test (Load, Regression or Standard).
Run Date	Click on the check box and then on the drop-down arrow and select the date on which the test is to be run (or when it was last run).
Run By	Click on the drop-down arrow and select the name of the person who is to run, or has run, the test. (Possible values are derived from the Project Author definitions in the 'People' dialog - select the 'Configure > Reference Data > Model Types > People > Project Authors' ribbon option.)
Result	Click on the drop-down arrow and select the value indicating the current status of the test (Not Run, Pass, Fail, Deferred or Cancelled).
Checked By	Click on the drop-down arrow and select the name of the person who is to check, or has checked, the results of the test.

Description	Type a description of the test; you can format the text using the Notes toolbar at the top of the field. The text you type here is also shown in the Notes window, under the 'Description' heading.
Input	Type in the input data provided to the test; you can format the text using the Notes toolbar at the top of the field. The text you type here is also shown in the Notes window, under the 'Input' heading.
Acceptance Criteria	Type the acceptance or test success conditions; you can format the text using the Notes toolbar at the top of the field. The text you type here is also shown in the Notes window, under the 'Acceptance Criteria' heading.
Results	Type the results of the last test; you can format the text using the Notes toolbar at the top of the field. The text you type here is also shown in the Notes window, under the 'Results' heading.
Apply	Click on this button to save the data you have entered and to add the entry to the Testing window and the Browser window, keeping the 'Test details' dialog

	open.
OK	Click on this button to save all new data and close the 'Test details' dialog.
New	Click on this button to clear the data entry fields ready for defining another test.
left chevron/right chevron	If there are existing tests, click on these buttons to display the details of the previous test or next test in the sequence.
Close	Click on this button to discard all unsaved data and close the dialog.

Create a test record in the Testing window

Depending on your screen width and the fields you have exposed in the Testing window using the 'Field Chooser' dialog, you might need to scroll the window left and right to see all fields. As it is possible to change the sequence of fields across the window, the fields might not be in the order as documented.

Field/Button	Action
<test class>	Click on the drop-down arrow and select

drop down in Toolbar	the appropriate test class for the new test.
Test	Overtype the *Add new <test type>* text with the name of the new test.
Status	Click on the field and on the drop-down arrow, and select the appropriate status.
Test Class	Defaults to the same class as shown in the Toolbar field. If you decide that this test is of the wrong class, you can either change the Toolbar field and continue creating further tests of the new class, or click on the drop-down arrow and select the correct class for this test only, continuing to create further tests of the original class.
Type	Click on the drop-down arrow and select the appropriate test type - Load, Regression or Standard.
Run By	Click on the drop-down arrow and select the name of the person who ran - or will run - the test.
Checked By	Click on the drop-down arrow and select the name of the person who checked - or

	will check - the results of the test.
Description	Type in a short description or explanation of the test.
Last Run	Type in the date on which the test was last executed, in dd/mm/yyyy format.

Notes

- When you display the Testing window for an element and double-click on the item, the details display in the 'Test Details' dialog where you can edit them
- To delete an item, click on it on the Testing window and click on the Delete icon in the window toolbar; in response to the confirmation prompt, click on the Yes button
- A further possibility for generating and editing Test items is to right-click on the *Testing* category in the 'Element' tab of the Browser window - or the required item within the list - and select menu options to perform the required operation
- To change the element for which to create or edit test items, click on the element in a diagram or the 'Project' tab of the Browser window
- In the Corporate, Unified and Ultimate editions of

Enterprise Architect, if security is enabled you must have 'Manage Tests' permission to add, update and delete test records

Show Test Script Compartments

When you have created a Test record, it is useful to make the test visible on its parent element. You can do this by displaying the test within a Test Script compartment on the element as it displays in a diagram. Any element that is capable of displaying a compartment, and that has a test assigned to it, can show test scripts in a diagram.

Show the Test Scripts on an element in a diagram

Step	Action
1	Open a diagram containing the element with the attached test items.
2	Double-click on the diagram background to display the diagram 'Properties' dialog. Click on the 'Elements' tab.
3	In the 'Show Compartments' panel, select the 'Testing' checkbox.
4	Click on the OK button to save the setting.

Each test item now appears in the *test scripts* compartment of the diagram element. Items of each type are grouped together so that, for example, all Unit tests on the element are grouped under the heading 'Unit', and all Integration tests on the element are grouped under the heading 'Integration'.

If you click on a test item, and the Notes window and/or Testing window are open, the test details are immediately displayed in them. If you double-click on the item, the 'Test details' dialog opens, showing the details of that test.

Example

CCBookClientPanel

«SM_Activity»
+   CCBookClientPanel
+   GetBook: CBook

~   bookpanel(): CCBookPanel

test scripts
Unit
      Valid Inputs   Pass

Integration
      Pass on output   Not Run

maintenance
Issue
      Run time   New
      Triggers   New

Properties Window for Test Items

When the Properties window is open, it displays the properties of the selected object or assigned item, including a Test record for an element. You might select the Test in the Testing window, the *test scripts* compartment of an element on a diagram, or in the 'Element' tab of the Browser window.

The Properties window identifies the test class of the test just under the toolbar, and shows the current values for the:

- Test name
- Test type
- Run date
- Result
- 'Run by' user, and
- 'Check by' user

You can change the value for each of these fields (except for the 'Test' field), clicking on the drop-down arrow and selecting a new value.

For the 'Test' field, you can either overtype the test name or click on the ⬚ icon and apply any autonaming convention you have configured for test items.

The toolbar options operate on the parent element for the test. Any changes you make are automatically saved and displayed elsewhere when you click off the field.

Move or Copy Tests Between Test Classes

After you define a test within one test class (Unit, Integration, System, Acceptance, Inspection or Scenario), you might decide that the test either is better suited to another test class, or forms a good template for tests in other classes. If so, you can either move or copy the test to the other class lists.

Access

Click on the element containing the test records.

Ribbon	Construct > Testing > Tests > <test class> > Right-click on test to move/copy Start > Desktop > Share > Testing > Right-click on test
Keyboard Shortcuts	Alt+2 > Testing : right-click on test to move/copy

Move or copy a test

Step	Action
1	Click on the appropriate option - 'Move to' or 'Copy to'. A list of test classes displays.
2	Click on the test class to which to move or copy the test. A confirmatory prompt displays.
3	Click on the Yes button to confirm the move or copy.
4	In the 'Test Class' field in the Testing window toolbar, click on the drop-down arrow and select the test class you moved/copied the test into, to check that the Test has been added. Double-click on the test to open the 'Test details' dialog, and make any necessary changes to the Test record.
5	If you are copying the test to more than one other test class, repeat steps 1 to 4 for the next class to copy to.

Notes

- If you move or copy a test into the Scenario Tests class, some unassociated data could be lost

Create Maintenance Item From Test

If an element fails a test, one likely consequence is that a Defect (Issue) item has to be raised in model maintenance to correct the problem. You can generate this Defect item directly from the test that failed.

Access

Select the element containing the failed test, then use one of the methods outlined here to display the Testing window or 'Element' tab of the Browser window

Ribbon	Construct > Testing > Tests > <test class> > Right-click on test > Create a Maintenance Defect from this test
	Start > Desktop > Share > Testing > <test class> > Right-click on test > Create a Maintenance Defect from this test
	Design > Element > Editors > Element Browser > Testing > <test class> > Right-click on test > Create a Maintenance Defect from this Test
Keyboard Shortcuts	Alt+2 > Testing : <test class> | Right-click on test | Create a Maintenance Defect from this Test

Create a Maintenance item from a test

Step	Action
1	The system immediately creates the Defect item and displays a confirmation message box. Click on the OK button to clear the message.
2	Open the Defects window (the 'Construct > Change Management > Defects > Show Defects Window' ribbon option). The window shows a Defect item having the same name as the test.
3	Double-click on the Defect item to open it in the 'Defect details' dialog, and edit the item as necessary - you might provide values for the 'Reported By', 'Status' and 'Priority' fields.

Import Scenario as Test

If you are creating a test for a scenario from either a single element or many elements in a Package, you do not have to manually re-type the scenario details into the test record. You can generate the test into the 'Scenario Tests' class of one element from one or more scenarios in any element in the model.

Within the Scenario Test record, the scenario description is copied to the 'Description' tab. If a scenario contains a specification, its Action steps are also copied to the 'Description' tab under the heading 'Structured Specification'.

Access

Click on the element containing the test records, and use one of the methods identified here to display the 'Import Scenario' dialog.

Ribbon	Construct > Testing > Tests > <test class> > right-click on test list > Import Element Scenario(s) or
	Construct > Testing > Tests > <test class> > right-click on test list > Import Package Scenario(s) or
	Start > Desktop > Share > Testing > <test

	class> > right-click on test list > Import Element Scenario(s) Start > Desktop > Share > Testing > <test class> > right-click on test list > Import Package Scenario(s)
Keyboard Shortcuts	Alt+2 > Testing : right-click on test list | Import Element Scenario(s) or Alt+2 > Testing : right-click on test list | Import Package Scenario(s)

Import a scenario from a single element

Field/Button	Action
Select element	If you are copying scenarios from a different element to the target element, click on the drop-down arrow and select the source element. The list identifies elements that have scenarios that can be imported. Otherwise, leave this field blank.
Show related elements	Select this checkbox to restrict the list of selectable elements to those that are

only	related to the target element.
Limit selection to these Object Types only	If you want to restrict the list of selectable elements to only those of specific types, type in those element types in a comma-separated list.
Refresh	Click on this button after changing any of the field values, to refresh the list of available elements in the 'Select element' field drop-down.
Select items to import	Lists the scenarios defined in the source element. Select the scenario(s) to import. If you do not use the 'Select element' field, any scenarios listed are from the current element to which this test record belongs. If you have selected a different element, the scenarios come from that element.
Import As	Defaults to the test class of the Test you selected to populate from the scenario. If you need to change this, click on the drop-down arrow and select a different test class from the list.
All	Click on this button to select all scenarios listed in the 'Select items to import' field.

None	Click on this button to clear the selection of scenarios listed in the 'Select items to import' field.
Import	Click on this button to import the selected scenario(s).

Import scenarios from the elements in a Package

Field/Button	Action
Limit selection to these Object Types only	If you want to restrict the selected elements to only those of specific types, enter those element types in a comma-separated list. This version of the 'Import Scenario' dialog lists all scenarios against all elements in the Package; it does not enable you to select a specific element, but does enable you to filter the list of scenarios to those from specific types of element.
	Click on this button after changing the

Refresh	'Limit Selection...' field value, to refresh the list of available elements in the 'Select items to import' field.
Select Items to import	Lists the scenarios defined in the selected elements in the Package. Select the scenario(s) to import.
All	Click on this button to select all scenarios listed in the 'Select items to import' field.
Import As	Defaults to the test class of the Test you selected to populate from the scenario. If you need to change this, click on the drop-down arrow and select a different test class from the list.
None	Click on this button to clear the selection of scenarios listed in the 'Select items to import' field.
Import	Click on this button to import the scenarios from each element as Scenario tests.

Notes

- In the Corporate, Unified and Ultimate editions of Enterprise Architect, if security is enabled you must have 'Manage Tests' permission to add, update and delete test records

Import Test From Other Elements

If you have created useful tests in one element, you can import those tests into any other element through the Testing window or 'Element' tab of the Browser window, and so avoid having to duplicate the test information manually. You open the Testing window for the empty target element and then select the source element that contains the tests to import.

Access

Select target element, then:

Ribbon	Construct > Testing > Tests > \<test class> | Right-click on test list | Import Test from other Element (s) Start > Desktop > Share > Testing > \<test class> > Right-click on test list | Import Test from other Element(s)
Keyboard Shortcuts	Alt+2 > Testing | Right-click on test list | Import Test from other Element(s) or Alt+9 : Testing > \<test class> > Right-click > Import Test from other Element(s)

Import a test

The 'Import Element Tests' dialog displays.

Field/Button	Action
Select element	Click on the drop-down arrow and locate and select the source element. This list identifies elements that have tests that can be imported.
Show related elements only	Select this checkbox to restrict the list of selectable elements to those that are related to the target element.
Limit selection to these Object Types only	If you want to restrict the list of selectable elements to only those of specific types, type in those element types in a comma-separated list.
Refresh	Click on this button after changing any of the field values, to refresh the list of available elements in the 'Select element' field.
Select items to import	Lists the tests defined in the source element. Select the test(s) to import.

	If you have not used the 'Select element' field, any tests listed are from the current element to which this test record belongs. There is no purpose in importing these.
Import As	Defaults to the test class of the Test you selected to populate from the other element. If you need to change this, click on the drop-down arrow and select a different test class from the list.
All	Click on this button to select all tests listed in the 'Select items to import' field.
None	Click on this button to clear the selection of tests listed in the 'Select items to import' field.
Import	Click on this button to import the selected test(s).

Notes

- In the Corporate, Unified and Ultimate editions of Enterprise Architect, if security is enabled you must have 'Manage Tests' permission to add, update and delete test

records

Import Requirement or Constraint as Test

If you are creating a test against an internal requirement or internal constraint of an element, you do not have to manually re-type the details into the test record in the 'Test details' dialog. You can generate a testing record on the element from the requirement or constraint.

The test record is generated into the Testing window under the currently-selected test class, and the requirement or constraint description is copied to the 'Description' tab for the test record.

Access

Select an element, then use one of the methods outlined here to display the Testing window or 'Element' tab of the Browser window.

Ribbon	Construct > Testing > Tests > <test class> > Right-click on test list > Import Element Constraint(s) or Import Element Requirement(s)
	Start > Desktop > Share > Testing > <test class> > Right-click on test list > Import Element Constraint(s) or Import Element Requirement(s)

	Design > Element > Editors > Element Browser > Testing > <test class> > Right-click on test list > Import Element Constraint(s) or Import Element Requirement(s)
Keyboard Shortcuts	Alt+2 > Testing : <test class> | Right-click on test list | Import Element Constraint(s) or Import Element Requirement(s)
	Alt+9 : Testing > <test class> > Right-click > Import Element Constraint(s) or Import Element Requirement(s)

Import a requirement or constraint as a test

Step	Action
1	On the 'Import Constraint' or 'Import Requirements' dialog (the two dialogs are identical) review the list of internal requirements or constraints in the selected element.
2	Click on one of the items to import as a Test, or

	press Ctrl+click on more than one to import several. The 'Import As' field defaults to the test class of the Test into which you are importing the requirement or constraint details. If you need to change this, click on the drop-down arrow and select a different test class.
3	Click on the OK button. Each item is added to the list of tests in the Testing window, under the appropriate <test-type>, as a standard, 'Not Run' test. Double-click on one item to open the 'Test details' dialog to edit the test details; thereafter, just click once on the next test item to edit that in the 'Test details' dialog.

Notes

- In the Corporate, Unified and Ultimate editions of Enterprise Architect, if security is enabled you must have 'Manage Tests' permission to add, update and delete test records

Test Documentation

After you have recorded a number of test scripts and results against elements in the model, you can output the information as a report in Rich Text Format, using the 'Generate Test Documentation' dialog. You can select the types of test to include or exclude in the report and whether to include child Packages, and enter the file location to which to generate the report.

Click on the Generate button to produce the report.

You can also run a number of searches to show the results - where generated - of tests:

- Not Run
- Not Checked
- Recently run
- Recently Passed
- Recently Failed
- Recently Deferred
- Run on recently modified elements
- Run in the last week
- Run in the last 30 days

Access

Select a Package, then use the ribbon options:

Ribbon	Construct > Testing > Outcomes > Report (to display the 'Generate Test Documentation' dialog) Construct > Testing > Not Run Construct > Testing > Not Checked Construct > Testing > Outcomes > <report type>