TESSY V3.1 Features

Frank Büchner, May 2014 --- 002

New features in TESSY V3.1 (compared to TESSY V3.0)

Contents

1 Additional Coverage Measures 2
2 Generation of Tests 4
3 Requirement Management Enhancement 5
4 Notes 6
5 Improved Command Line Interface 6
6 Test Overview Report 7
7 Renumbering of Test Cases 8
8 Show Actual Value 9
9 Show Failed Only 9
10 User-defined Test Report Names 10
11 Integration With .mzt/MBT Suite by sepp.med 10
12 Integration With winIDEA by iSystem 10

1 Additional Coverage Measures

With the additional coverage measures TESSY adheres better to the requirements of different standards with respect to functional safety. The new coverage measures are:

- Entry Point Coverage
- Statement Coverage
- Decision Coverage
- Function Coverage

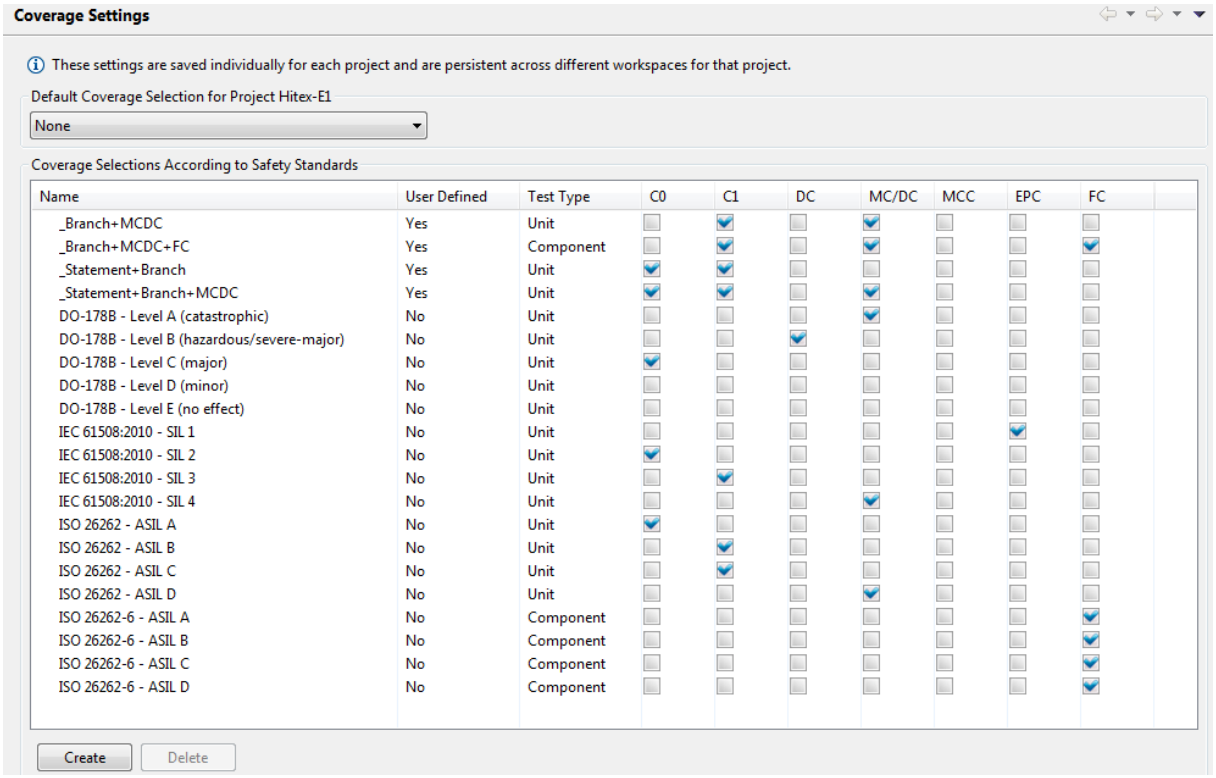

Fig. 1: Tessy preselects code coverage measures related to standards

Entry Point Coverage, for instance is highly recommended in IEC 61508 for SIL 1 applications; Decision Coverage is required by DO-178B/C on level B and Function Coverage is recommended for instance by ISO 26262 for software integration testing. Furthermore, TESSY allows determining Statement Coverage, a measure mentioned in several standards.

You can define your own set of preferred coverage measures.

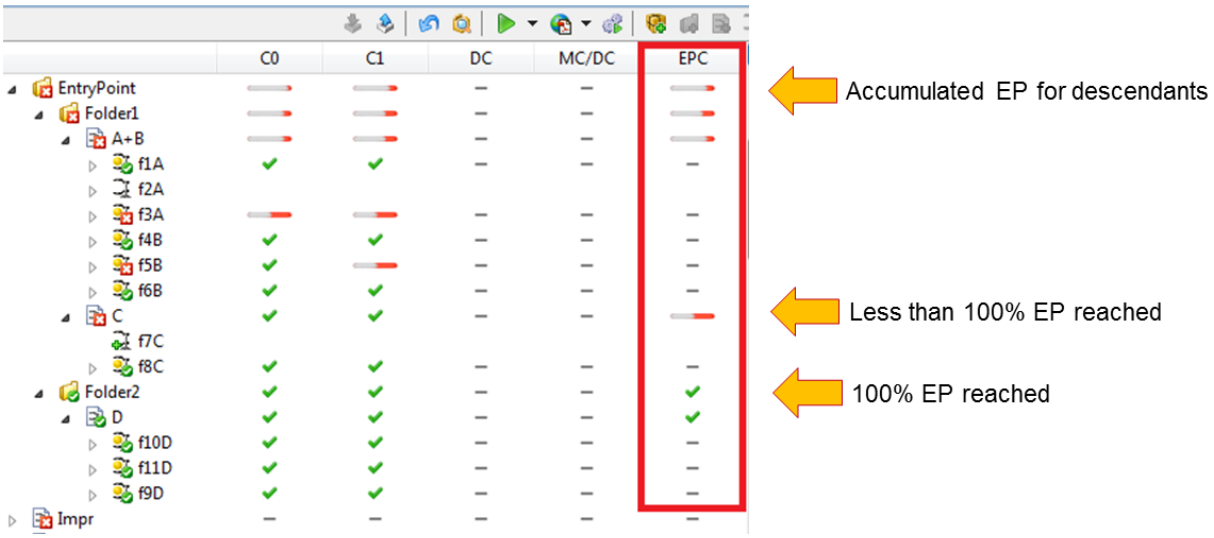

Fig. 2: Entry Point Coverage (EPC) for unit testing: Any function still untested?

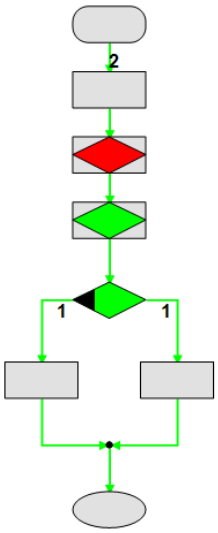

Fig. 3: Decision Coverage (DC): Both branches executed, but 100% DC not reached

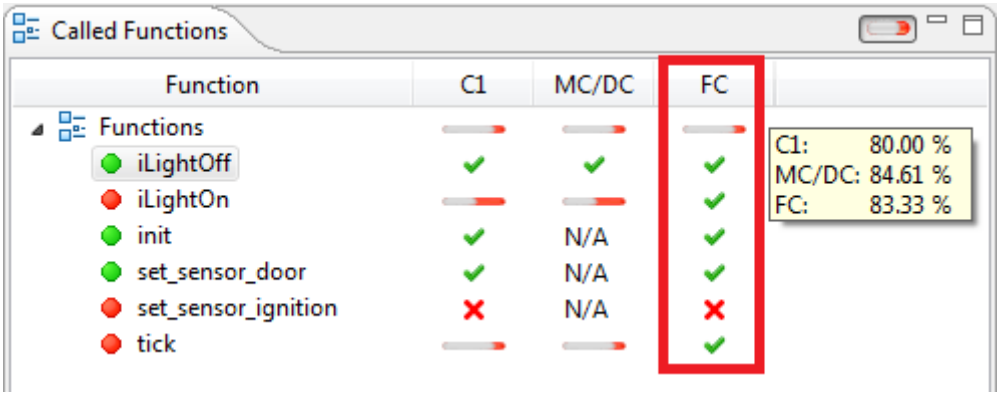

Fig. 4: Function Coverage (FC) for integration testing: Any function still untested?

2 Generation of Tests

The automatic generation of tests is possible by specifying several single values or ranges of values for input variables. From this TESSY generates a test case containing test steps for all combinations of the input values. This provides a comfortable means of test generation. The original input is saved and can be reused.

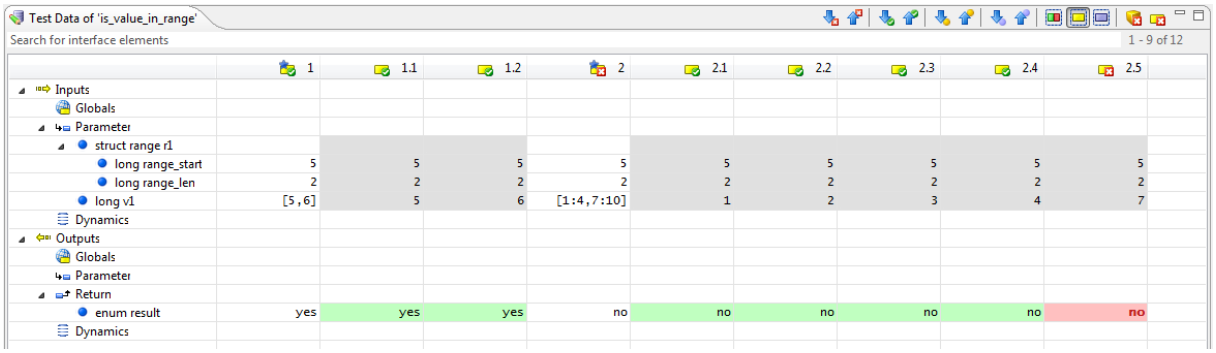

Fig. 5: Values and ranges of values are combined to form test steps

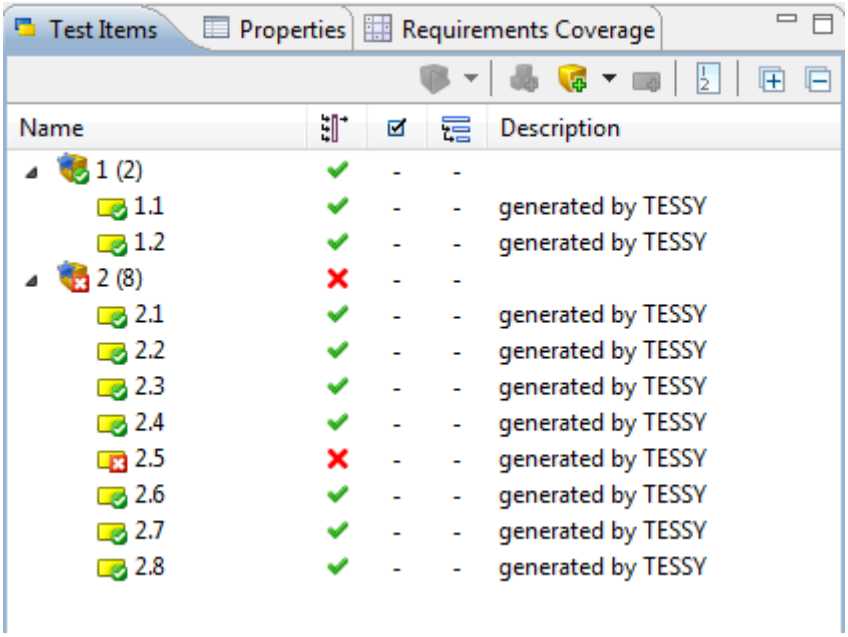

Fig. 6: The generated tests

3 Requirement Management Enhancement

TESSY V3.1 can now import requirements in Requirements Interchange Format (**ReqIF**). This allows importing requirements from various requirement management tools, e.g. DOORS. Additionally, requirement identifiers in TESSY can now be arbitrary strings (including characters, what was not possible in TESSY V3.0). Furthermore, Tessy can generate/export requirements in PDF and HTML format.

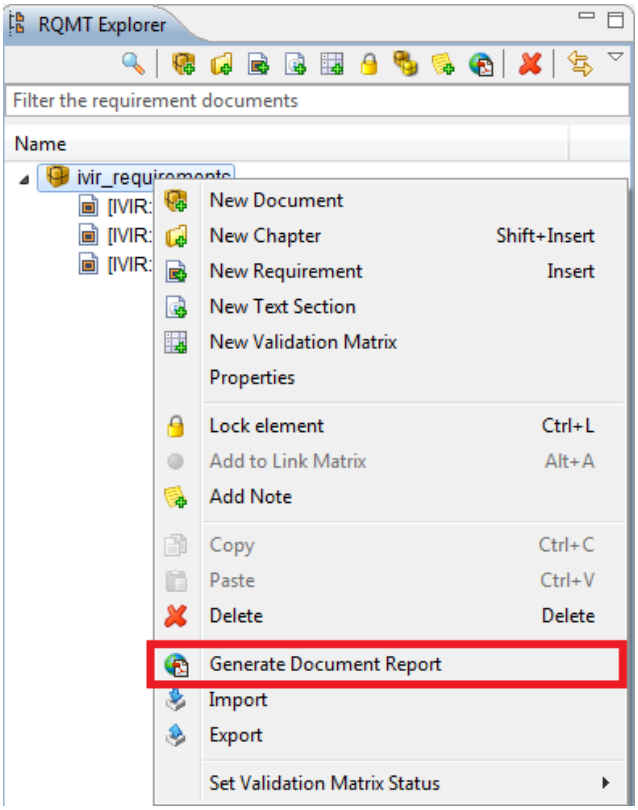

Fig. 7: Create the requirements document in PDF format

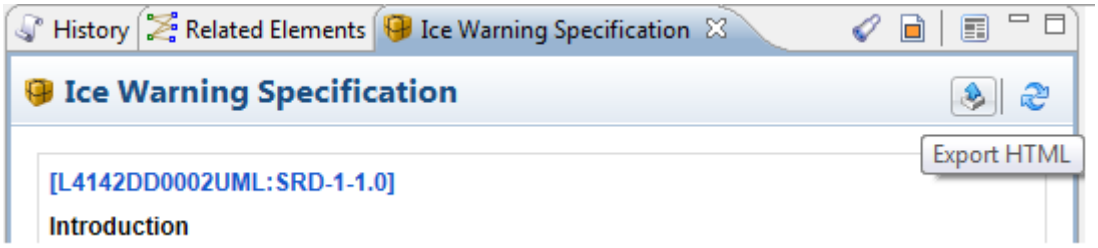

Fig. 8: Create the requirements overview document in HTML format

4 Notes

TESSY V3.1 is able to add notes to elements like requirements, test objects or test cases (and also to remove them ☺). This enables easy management of to-do lists or to give hints on special facts.

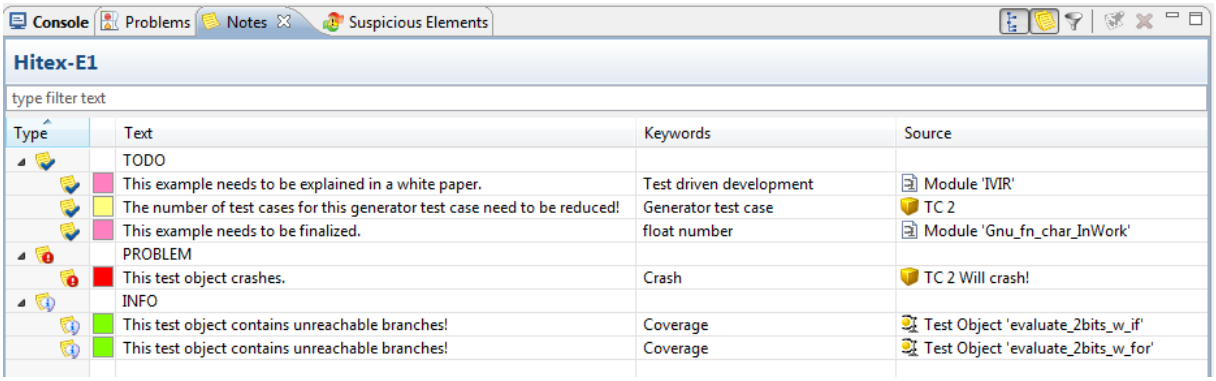

Fig. 9: The Notes view gives an overview of all notes

5 Improved Command Line Interface

TESSY V3.1 also integrates an improved command line interface. This enables TESSY to be used for “continuous integration”. Different to the hitherto solution the graphical user interface is no longer needed for command line execution (“TESSY headless”).

```
set PATH=%PATH%;"c:\Programs\Razorcat\TESSY_3.1\bin"
tessyd
tessycmd.exe connect
tessycmd.exe select-project "Hitex-E1"
tessycmd.exe select-test-collection "Hitex-Examples"
tessycmd.exe new-folder -test-collection "BatchRestore"
tessycmd.exe restore-module "c:\Projects\Tessy31\Hitex-E1\BatchRestore\Hitex-Examples.BatchRestore.Categorize.tmb"
tessycmd.exe restore-module "c:\Projects\Tessy31\Hitex-E1\BatchRestore\Hitex-Examples.BatchRestore.Triangle.tmb"
tessycmd.exe disconnect
tessyd shutdown
pause
```

Fig. 10: Example for a DOS batch file which restores test data from TMB files

```
set PATH=%PATH%;"c:\Programs\Razorcat\TESSY_3.1\bin"
tessyd
tessycmd.exe connect
tessycmd.exe select-project "Hitex-E1"
tessycmd.exe -a exec-test c:\Projects\Tessy31\Hitex-E1\BatchRestore\BR.tbs
tessycmd.exe disconnect
tessyd shutdown
pause
```

Fig. 11: Example for a DOS batch file which executes a preselected set of tests

6 Test Overview Report

The Test Overview Report now contains links to the detailed test results of each single test object. The Test Overview Report is generated if several test objects are executed all at once without user interaction (Batch Test).

No.	Name	C1	MC/DC	Test Cases	Result
	Hitex-E1	100 %	91.66 %	1 of 10 failed	✖
	Hitex-Examples	100 %	91.66 %	1 of 10 failed	✖
	BatchRestore	100 %	90 %	1 of 8 failed	✖
	Categorize	100 %	100 %	4 of 4 passed	✔
1	categorize	100 %	100 %	4 of 4 passed	✔
	Triangle	100 %	75 %	1 of 4 failed	✖
2	is_triangle	100 %	75 %	1 of 4 failed	✖
	Classification-Trees	100 %	100 %	2 of 2 passed	✔
	Array+Pointer	100 %	100 %	2 of 2 passed	✔
3	array_to_pointer	100 %	100 %	2 of 2 passed	✔
4	pointer_to_array	-	-	-	⚠

Fig. 12: Test object list of the Overview Test Report with links to the detailed test results

7 Renumbering of Test Cases

TESSY V3.1 features the renumbering of test cases to close gaps which are created when test cases are deleted.

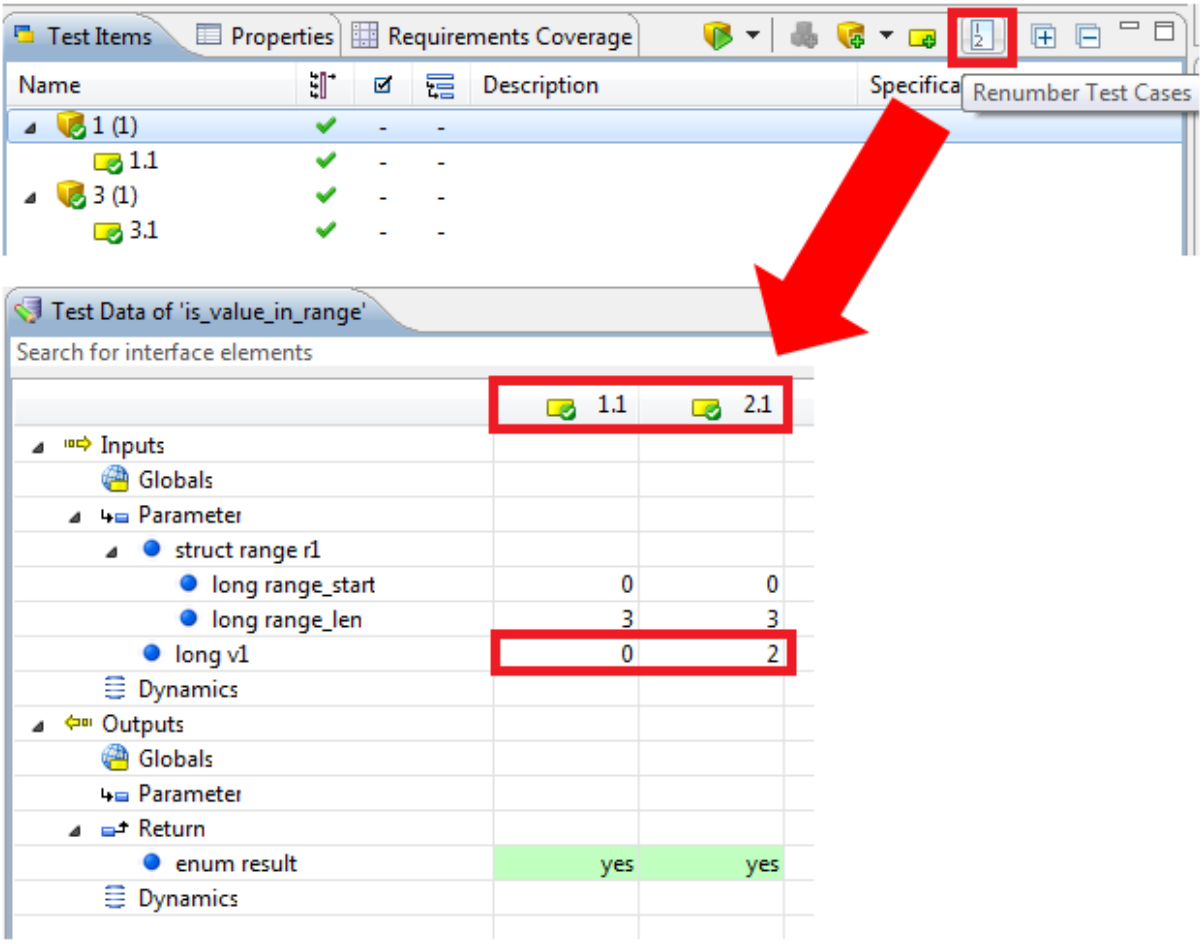

Fig. 13: Renumbering of test cases closes gaps

8 Show Actual Value

In the Test Data view it is now possible to see the actual values together with the expected values of a test case. Up to now, this was only available by tooltips.

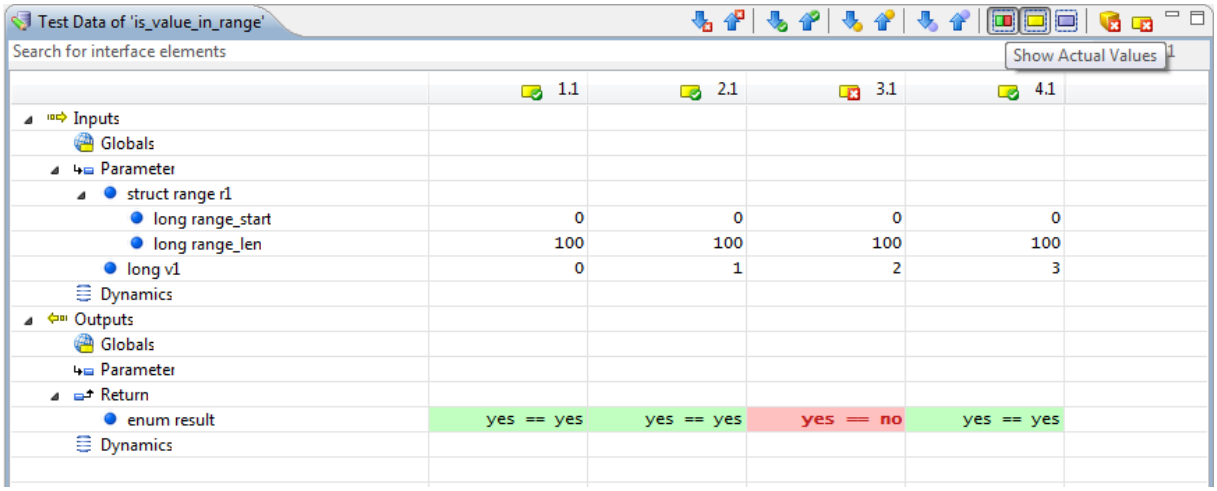

Fig. 14: Both expected and actual value can be shown in the Test Data view

9 Show Failed Only

In the Test Data view it is now possible to see only the failed test cases (or the failed test steps).

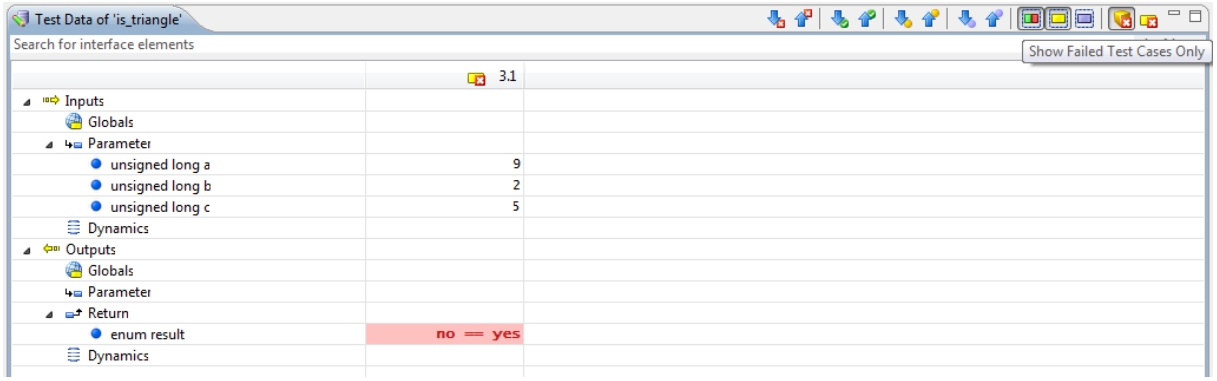

Fig. 15: Only failed test cases can be shown in the Test Data view

10 User-defined Test Report Names

TESSY V3.1 allows user-defined names for the test reports generated by TESSY. Using place holders (tokens), TESSY can incorporate e.g. project names or the current date in the file name. The settings will be stored for each project separately.

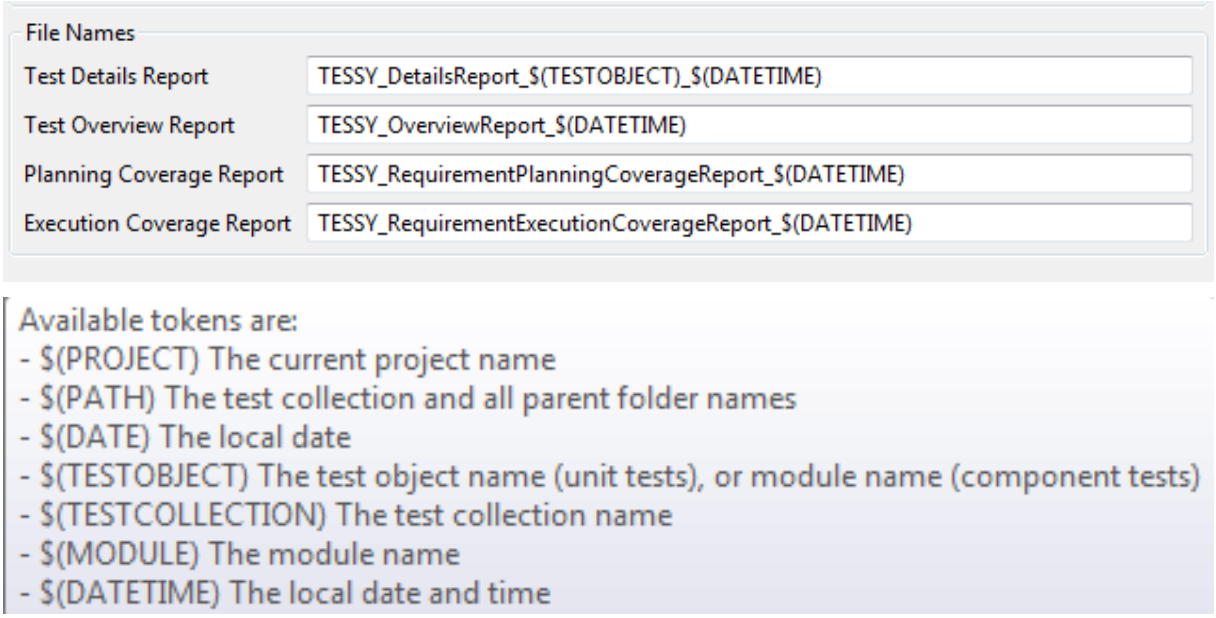

Fig. 16: User-defined test report names are now possible

11 Integration With .mzt/MBT Suite by sepp.med

TESSY V3.1 can execute test which are created by the tool .mzt/MBT for model-based test generation from the company sepp.med. TESSY enables hereby the execution of the test on different microcontroller target hardware using the most common cross compilers.

12 Integration With winIDEA by iSystem

TESSY V3.1 features an interface to winIDEA from company iSystem. Using this interface, TESSY V3.1 can be used to perform unit tests on the unchanged user application (Original Binary Test, OBT). This combination allows using the comfortable test data input and management features of TESSY together with the test execution on the target hardware by winIDEA.

The Author

Frank Büchner, Hitex Development Tools GmbH, frank.buechner@hitex.de

Any comments or questions to this document are welcome.

