Tracking Test Coverage

Article #3 in the 'Intro to QaTraq Pro Series'

Introduction to QaTraq Professional Series
The 'Introduction to QaTraq Professional Series' is a series of 3 articles looking at how the Test Management tool 'QaTraq Professional' can help address some of the common test process issues. In this third article we look at how QaTraq Professional can help you track test coverage and identify areas where testing has been lacking.

www.TestManagement.com

Introduction

Tracking test coverage with traditional Word and Excel based test management approaches is next to impossible. Well perhaps impossible is a little strong but it is definitely time consuming and prone to error. To track test coverage you need to know exactly which tests have been executed and which aspects of the product those tests have touched on. This is not easy data to collate and report on. Take a typical test team with 10 testers, a product which could be split into 30 or 40 components and that is expected to meet perhaps 200 requirements. It is not difficult to see that collating test coverage information using an Excel spreadsheet is going to be difficult in this scenario.

In contrast QaTraq Professional provides both component and requirements based test coverage tracking. Each test case that is written and executed is assigned to both components of the product and requirements of the product. So when you execute a test case you are effectively testing components of the product and testing requirements of the product. More precisely, a test case can cover zero or more components and/or zero or more requirements of the product. So for example running one test case could mean that you have tested one component of the product, but it may also mean you have tested several requirements of the product.

In the next few sections of this article we'll see how QaTraq Professional can be used to:

1. Define product components and requirements
2. Create test cases (that cover components and requirements)
3. Enter test results (against test cases that cover components and requirements)
4. Report on test coverage

Define Products Components and Requirements

In a similar vain to most defect tracking tools QaTraq allows you to define a product and then break that product up in to multiple components. Let us take a fictional "Ethernet Card" that we might be testing as an example. This "Ethernet Card" may consist of a number of different components (please see the example on the right).

Component	Description	Owner	
Connector	Physical RJ45 connector	tester	View
CPU	Onboard Pentium CPU	tester	View
Driver SW	Driver Software	tester	View
Fan	Onboard Fan	tester	View
FPGA	field programmable gate array	tester	View
Memory	1GB Onboard Memory	tester	View

Similarly this "Ethernet Card" may also be expected to meet a number of Requirements (please see the example on the left). With the product, components and requirements clearly defined we can then create test cases which are designed to test these components and requirements.

Title	ID	Product	
Endurance Performance	REQ4	AX5000 Ethernet Card	View
Load Performance	REQ3	AX5000 Ethernet Card	View
Throughput Performance	REQ2	AX5000 Ethernet Card	View

Create Test Cases

Once the product, components and requirements have been defined each test case can then be linked to these components and requirements. So you can specify that Test Case 1 covers Component A and Component B of Product XYZ. Taking this concept further QaTraq allows you to also link test cases to requirements defined for the product. So you could also specify that Test Case 1 covers Requirement 1 and Requirement 2 of Product XYZ.

The example test case for the "AX5000 Ethernet Card", shown on the left, indicates that this test case covers three components (i.e. Connector, CPU and Driver SW components). You can also see that the same test case covers two requirements (i.e. REQ3 and REQ4). When we then use this test case in a test script we can enter test results against the test case which then provides us with important test coverage data for these associated components and requirements.

Enter Test Results

When entering results for a test case you are effectively saying we have tested the components or requirements that this test case is related to. So a "pass" result for a test case is effectively a pass result marked against the related components and requirements. This principal can be seen below where we are entering results for TCA262-1.1. This test case is related to REQ3 & REQ4 so we have effectively logged a pass result against both of these requirements (and also the components covered by this test case).

That is not to say that we have actually "passed" these components and requirements. Obviously we may have many other test cases which cover the same components and requirements. Other Test cases linked to exactly the same requirements and components could have completely different test results logged. This may be the case because other test cases are intrinsically different whilst providing similar coverage.

So in executing different test cases, and recording test results, we build up test coverage data against different requirements and components of the product. To gain visibility of the coverage data for components and requirements we can utilise some of the reports available within QaTraq. Component and Requirement coverage reports within QaTraq allow us to quickly identify the number of tests run against a component or requirement and, more importantly, see what the status of those result are.

Report on Test Coverage

There are four key reports within QaTraq that provide crucial test coverage information:

1. Component Coverage Summary
2. Requirement Coverage Summary
3. Component Coverage Summary vs. Bugs Found
4. Requirement Coverage Summary vs. Bugs Found

Using these reports we can then answer crucial questions like:

➢ For which components have we not executed any test cases?
➢ Which requirements have test case failures logged against them?
➢ How many test cases have been written to test a particular requirement?

Taking this first question as an example we can see from the "Component Coverage Summary" report on the right that we have run 29 test cases which have covered the CPU component for Version 2 of our product. Furthermore we can see that 3 of those test cases actually failed. In contrast the Driver SW component has been covered by only 4 test cases and in this instance the there were no test case failures for this component.
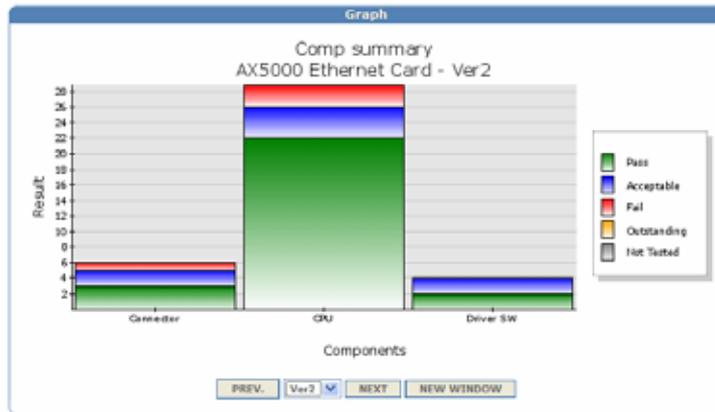
So using this one simple report we can quickly, and accurately, see the test cases executed for particular components of a product and for particular versions of that product.

Top Tips

Top Tip #1
When reporting on test case coverage it is important to note that a single test case result can be logged against multiple components or requirements. So where you have a test case covering more than one component or requirement you will see that the test result is counted once for each requirement or component. This can give the impression that there are more test results than there are test cases/results.

Top Tip #2
Using the filter criteria in the coverage reports you can filter your report results based on versions of the product under test and also the priorities of the test cases. So for example you can see the coverage data for the latest version of the product to be tested and even check that your high priority test cases are providing the required coverage.

Summary

One of the most useful features within QaTraq Professional is the ability to track test coverage. When it comes to critical product release decisions, information like this can be invaluable. Product release decision can only ever be considered well-founded if you have a good idea of your test coverage. With QaTraq Professional not only can you define the components and requirements for which you need to track coverage, but you can drill down using various reports to see exactly what your coverage was for specific versions of the product under test.

About QaTraq Professional Reports

QaTraq Professional reports provide a quick and simple method to report your test status and progress. For more details about the latest reports and instructions on how to install reports please refer to the web site given in the link below.

Reports Overview: http://www.testmanagement.com/proreports.pdf

Related Documents

Please find below a selection of links that will help you get started with QaTraq Professional and help you get the best out of your QaTraq Professional installation.

Home Page: http://www.testmanagement.com

Download Page: http://www.testmanagement.com/download.html

User Guide (Ver. 6):   http://www.testmanagement.com/user_stage_6.html

QaTraq 'In Practice':   http://www.testmanagement.com/in_practice.html

Contact Us

If you would like to provide us with any feedback or comments on this article please contact us through our 'Feedback' web page given in the link below:

Feedback: http://www.testmanagement.com/feedback.php