VERIFICATION AND VALIDATION AS DEFINITION OF QUALITY IN THE SOFTWARE TESTING

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Quality of software defines by several metrics described by standards, like ISO/IEC 9126 (external and internal quality, quality in use). It's called quality metrics. There are 1 functional characteristic and 9 non-functional characteristics in quality metrics [1].

But how we can better understand what to do in practice with this metrics. Software testing helps us to measure the quality of software in terms of the number of defects found, the tests run, and the system covered by the tests. We can do this for both the functional attributes of the software and for the non-functional software requirements and characteristics.

Software testing is a process that should be done during the development process. In other words software testing is a verification and validation process. The purpose of software verification and validation is to help the development organization build quality into the software during the software life cycle.

Verification: the process of evaluating a system or component to determine whether the products of a given development phase satisfy the conditions imposed at the start of that phase. Formal proof of program correctness.

In other words, to make sure the product behaves the way we want it to.

Validation: the process of evaluating a system or component during or at the end of the development process to determine whether it satisfies specified requirements [2, 3].

In other words, to make sure the product is built as per customer requirements.

Software quality has many dimensions, each requiring a different testing approach. How do we know all the different types of tests we need to do? Not all is described by standards in software area. And some useful ideas are described in books [4]. The Agile Testing Quadrants matrix (table 1) (introduced by Brian Marick and further worked by Lisa Crispin) helps testers to understand the relationship between the various forms of tests [5-7].

	Table 1
Verification	Validation
Quadrant 2	Quadrant 3
This Quadrant focuses on requirements	System or acceptance level
System testing level	Business facing tests that critique the
	product
Quadrant 1	Quadrant 4
The internal code quality is the main	Technology facing tests that critique the
focus in this quadrant	product
Unit testing level	Performance, load, stress, security tests
Component testing level	
Integration testing level	

Verification and validation processes are presented through all software testing process. If look at the Table 1, we can see how quadrants can be divided on verification and validation processes. So that, Quadrant 1 and Quadrant 2 are related to verification process. And Quadrant 3 and Quadrant 4 – to validation process.

References

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6. Agile Testing Automation, 2015 http://swtester.blogspot.com/2015/04/agile-testing-automation.html.

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