Standard Glossary of Terms used in Software Testing

Version 3.1

Expert Test Manager Terms

International Software Testing Qualifications Board

acceptance testing

Ref: After IEEE 610   **See Also:** user acceptance testing

Formal testing with respect to user needs, requirements, and business processes conducted to determine whether or not a system satisfies the acceptance criteria and to enable the user, customers or other authorized entity to determine whether or not to accept the system.

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accuracy

Ref: ISO 9126   **See Also:** functionality

The capability of the software product to provide the right or agreed results or effects with the needed degree of precision.

Agile Manifesto

A statement on the values that underpin Agile software development. The values are: individuals and interactions over processes and tools, working software over comprehensive documentation, customer collaboration over contract negotiation, responding to change over following a plan.

Agile software development

A group of software development methodologies based on iterative incremental development, where requirements and solutions evolve through collaboration between self-organizing cross-functional teams.

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analytical test strategy

A test strategy whereby the test team analyzes the test basis to identify the test conditions to cover.

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availability

Ref: IEEE 610

The degree to which a component or system is operational and accessible when required for use. Often expressed as a percentage.

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best practice

A superior method or innovative practice that contributes to the improved performance of an organization under given context, usually recognized as "best" by other peer organizations.

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black-box testing

Synonyms: specification-based testing

Testing, either functional or non-functional, without reference to the internal structure of the component or system.

cause-effect diagram

Ref: After Juran

Synonyms: fishbone diagram , Ishikawa diagram

A graphical representation used to organize and display the interrelationships of various possible root causes of a problem. Possible causes of a real or potential defect or failure are organized in categories and subcategories in a horizontal tree-structure, with the (potential) defect or failure as the root node.

certification

The process of confirming that a component, system or person complies with its specified requirements, e.g., by passing an exam.

change management

See Also: configuration management

(1) A structured approach to transitioning individuals and organizations from a current state to a desired future state. (2) Controlled way to effect a change, or a proposed change, to a product or service.

code

Ref: IEEE 610

Computer instructions and data definitions expressed in a programming language or in a form output by an assembler, compiler or other translator.

code coverage

An analysis method that determines which parts of the software have been executed (covered) by the test suite and which parts have not been executed, e.g., statement coverage, decision coverage or condition coverage.

commercial off-the-shelf (COTS)

Synonyms: off-the-shelf software

A software product that is developed for the general market, i.e. for a large number of customers, and that is delivered to many customers in identical format.

complexity

See Also: cyclomatic complexity

The degree to which a component or system has a design and/or internal structure that is difficult to understand, maintain and verify.

component

Synonyms: module , unit

A minimal software item that can be tested in isolation.

component testing

Ref: After IEEE 610

Synonyms: module testing , program testing , unit testing

The testing of individual software components.

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condition

See Also: condition testing

Synonyms: branch condition

A logical expression that can be evaluated as True or False, e.g., A>B.

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confidence interval

In managing project risks, the period of time within which a contingency action must be implemented in order to be effective in reducing the impact of the risk.

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configuration

The composition of a component or system as defined by the number, nature, and interconnections of its constituent parts.

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configuration control

Ref: IEEE 610

Synonyms: change control , version control

An element of configuration management, consisting of the evaluation, coordination, approval or disapproval, and implementation of changes to configuration items after formal establishment of their configuration identification.

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configuration management

Ref: IEEE 610

A discipline applying technical and administrative direction and surveillance to identify and document the functional and physical characteristics of a configuration item, control changes to those characteristics, record and report change processing and implementation status, and verify compliance with specified requirements.

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confirmation testing

Synonyms: re-testing

Testing that runs test cases that failed the last time they were run, in order to verify the success of corrective actions.

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consultative test strategy

A test strategy whereby the test team relies on the input of one or more key stakeholders to determine the details of the strategy.

control chart

Synonyms: Shewhart chart

A statistical process control tool used to monitor a process and determine whether it is statistically controlled. It graphically depicts the average value and the upper and lower control limits (the highest and lowest values) of a process.

control flow

A sequence of events (paths) in the execution through a component or system.

convergence metric

A metric that shows progress toward a defined criterion, e.g., convergence of the total number of tests executed to the total number of tests planned for execution.

cost of quality

The total costs incurred on quality activities and issues and often split into prevention costs, appraisal costs, internal failure costs and external failure costs.

coverage

Synonyms: test coverage

The degree, expressed as a percentage, to which a specified coverage item has been exercised by a test suite

dashboard

See Also: corporate dashboard, scorecard

A representation of dynamic measurements of operational performance for some organization or activity, using metrics represented via metaphors such as visual dials, counters, and other devices resembling those on the dashboard of an automobile, so that the effects of events or activities can be easily understood and related to operational goals.

data quality

An attribute of data that indicates correctness with respect to some pre-defined criteria, e.g., business expectations, requirements on data integrity, data consistency.

decision

A program point at which the control flow has two or more alternative routes. A node with two or more links to separate branches.

defect

Synonyms: bug , fault , problem

A flaw in a component or system that can cause the component or system to fail to perform its required function, e.g., an incorrect statement or data definition. A defect, if encountered during execution, may cause a failure of the component or system.

defect management tool

See Also: incident management tool

Synonyms: bug tracking tool , defect tracking tool

A tool that facilitates the recording and status tracking of defects and changes. They often have workflow-oriented facilities to track and control the allocation, correction and re-testing of defects and provide reporting facilities.

defect report

Ref: After IEEE 829

Synonyms: bug report , problem report

A document reporting on any flaw in a component or system that can cause the component or system to fail to perform its required function.

deliverable

Any (work) product that must be delivered to someone other than the (work) product's author.

domain

The set from which valid input and/or output values can be selected.

effectiveness

See Also: efficiency

The capability of producing an intended result.

efficiency

Ref: ISO 9126

(1) The capability of the software product to provide appropriate performance, relative to the amount of resources used, under stated conditions. (2) The capability of a process to produce the intended outcome, relative to the amount of resources used.

entry criteria

Ref: Gilb and Graham

The set of generic and specific conditions for permitting a process to go forward with a defined task, e.g., test phase. The purpose of entry criteria is to prevent a task from starting which would entail more (wasted) effort compared to the effort needed to remove the failed entry criteria.

error

Ref: After IEEE 610

Synonyms: mistake

A human action that produces an incorrect result.

exercised

A program element is said to be exercised by a test case when the input value causes the execution of that element, such as a statement, decision, or other structural element.

exit criteria

Ref: After Gilb and Graham

Synonyms: completion criteria , test completion criteria

The set of generic and specific conditions, agreed upon with the stakeholders for permitting a process to be officially completed. The purpose of exit criteria is to prevent a task from being considered completed when there are still outstanding parts of the task which have not been finished. Exit criteria are used to report against and to plan when to stop testing.

fail

Synonyms: test fail

A test is deemed to fail if its actual result does not match its expected result.

failure

Ref: After Fenton

Deviation of the component or system from its expected delivery, service or result.

fault attack

See Also: negative testing, security attack

Synonyms: attack

Directed and focused attempt to evaluate a specific quality characteristic of a test object by attempting to force specific failures to occur. Usually focused on reliability or security.

feature

Ref: After IEEE 1008

Synonyms: software feature

An attribute of a component or system specified or implied by requirements documentation (for example reliability, usability or design constraints).

feature-driven development

See Also: Agile software development

An iterative and incremental software development process driven from a client-valued functionality (feature) perspective. Feature-driven development is mostly used in Agile software development.

Function Point Analysis (FPA)

Method aiming to measure the size of the functionality of an information system. The measurement is independent of the technology. This measurement may be used as a basis for the measurement of productivity the estimation of the needed resources, and project control.

functional testing

See Also: black-box testing

Testing based on an analysis of the specification of the functionality of a component or system.

functionality

Ref: ISO 9126

The capability of the software product to provide functions which meet stated and implied needs when the software is used under specified conditions.

impact analysis

The assessment of change to the layers of development documentation, test documentation and components, in order to implement a given change to specified requirements.

indicator

Ref: ISO 14598

A measure that can be used to estimate or predict another measure.

input

A variable (whether stored within a component or outside) that is read by a component.

integration

The process of combining components or systems into larger assemblies.

integration testing

See Also: component integration testing, system integration testing

Testing performed to expose defects in the interfaces and in the interactions between integrated components o systems.

interoperability testing

See Also: functionality testing

Synonyms: compatibility testing

Testing to determine the interoperability of a software product.

maintainability

Ref: ISO 9126

The ease with which a software product can be modified to correct defects, modified to meet new requirements, modified to make future maintenance easier, or adapted to a changed environment.

maintenance

Ref: IEEE 1219

Modification of a software product after delivery to correct defects, to improve performance or other attributes, or to adapt the product to a modified environment.

maturity

Ref: ISO 9126   **See Also:** Capability Maturity Model Integration, Test Maturity Model integration, reliability

(1) The capability of an organization with respect to the effectiveness and efficiency of its processes and work practices. (2) The capability of the software product to avoid failure as a result of defects in the software.

measure

Ref: ISO 14598

The number or category assigned to an attribute of an entity by making a measurement.

measurement

Ref: ISO 14598

The process of assigning a number or category to an entity to describe an attribute of that entity.

methodical test strategy

A test strategy whereby the test team uses a pre-determined set of test conditions such as a quality standard, a checklist, or a collection of generalized, logical test conditions which may relate to a particular domain, application or type of testing.

metric

Ref: ISO 14598

A measurement scale and the method used for measurement.

milestone

A point in time in a project at which defined (intermediate) deliverables and results should be ready.

model-based test strategy

A test strategy whereby the test team derives testware from models.

model-based testing (MBT)

Testing based on or involving models.

Myers-Briggs Type Indicator (MBTI)

An indicator of psychological preference representing the different personalities and communication styles of people.

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non-functional testing

Testing the attributes of a component or system that do not relate to functionality, e.g., reliability, efficiency, usability, maintainability and portability.

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operational profile

The representation of a distinct set of tasks performed by the component or system, possibly based on user behavior when interacting with the component or system, and their probabilities of occurrence. A task is logical rather that physical and can be executed over several machines or be executed in non-contiguous time segments.

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operational profiling

See Also: operational profile

The process of developing and implementing an operational profile.

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output

A variable (whether stored within a component or outside) that is written by a component.

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pass

Synonyms: test pass

A test is deemed to pass if its actual result matches its expected result.

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path

Synonyms: control flow path

A sequence of events, e.g., executable statements, of a component or system from an entry point to an exit point.

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performance

Ref: After IEEE 610   **See Also:** efficiency

Synonyms: time behavior

The degree to which a system or component accomplishes its designated functions within given constraints regarding processing time and throughput rate.

performance testing

See Also: efficiency testing

Testing to determine the performance of a software product.

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planning poker

See Also: Agile software development, Wideband Delphi

A consensus-based estimation technique, mostly used to estimate effort or relative size of user stories in Agile software development. It is a variation of the Wideband Delphi method using a deck of cards with values representing the units in which the team estimates.

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predicate

See Also: decision

A statement that can evaluate to true or false and may be used to determine the control flow of subsequent decision logic.

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priority

The level of (business) importance assigned to an item, e.g., defect.

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process

Ref: ISO 12207

A set of interrelated activities, which transform inputs into outputs.

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process improvement

Ref: CMMI

A program of activities designed to improve the performance and maturity of the organization's processes, and the result of such a program.

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process-compliant test strategy

A test strategy whereby the test team follows a set of predefined processes, whereby the processes address such items as documentation, the proper identification and use of the test basis and test oracle(s), and the organization of the test team.

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project

Ref: ISO 9000

A project is a unique set of coordinated and controlled activities with start and finish dates undertaken to achieve an objective conforming to specific requirements, including the constraints of time, cost and resources.

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project risk

See Also: risk

A risk related to management and control of the (test) project, e.g., lack of staffing, strict deadlines, changing requirements, etc.

quality

Ref: After IEEE 610

The degree to which a component, system or process meets specified requirements and/or user/customer needs and expectations.

quality assurance

Ref: ISO 9000

Part of quality management focused on providing confidence that quality requirements will be fulfilled.

quality attribute

Ref: IEEE 610

Synonyms: quality characteristic , software product characteristic , software quality characteristic

A feature or characteristic that affects an item's quality.

quality control

Ref: after ISO 8402

The operational techniques and activities, part of quality management, that are focused on fulfilling quality requirements.

quality gate

A special milestone in a project. Quality gates are located between those phases of a project strongly depending on the outcome of a previous phase. A quality gate includes a formal check of the documents of the previous phase.

quality management

Ref: ISO 9000

Coordinated activities to direct and control an organization with regard to quality. Direction and control with regard to quality generally includes the establishment of the quality policy and quality objectives, quality planning, quality control, quality assurance and quality improvement.

quality risk

See Also: quality attribute, product risk

A product risk related to a quality attribute.

RACI matrix

A matrix describing the participation by various roles in completing tasks or deliverables for a project or process. It is especially useful in clarifying roles and responsibilities. RACI is an acronym derived from the four key responsibilities most typically used: Responsible, Accountable, Consulted, and Informed.

reactive test strategy

A test strategy whereby the test team waits to design and implement tests until the software is received, reacting to the actual system under test.

reactive testing

Testing that dynamically responds to the system under test and test results being obtained. Typically reactive testing has a reduced planning cycle and the design and implementation test phases are not carried out until the test object is received.

regression testing

Testing of a previously tested program following modification to ensure that defects have not been introduced or uncovered in unchanged areas of the software, as a result of the changes made. It is performed when the software or its environment is changed.

regression-averse test strategy

A test strategy whereby the test team applies various techniques to manage the risk of regression such as functional and/or non-functional regression test automation at one or more levels.

release note

Ref: After IEEE 829

Synonyms: item transmittal report , test item transmittal report

A document identifying test items, their configuration, current status and other delivery information delivered by development to testing, and possibly other stakeholders, at the start of a test execution phase.

reliability

Ref: ISO 9126

The ability of the software product to perform its required functions under stated conditions for a specified period of time, or for a specified number of operations.

requirement

Ref: After IEEE 610

A condition or capability needed by a user to solve a problem or achieve an objective that must be met or possessed by a system or system component to satisfy a contract, standard, specification, or other formally imposed document.

requirements-based testing

An approach to testing in which test cases are designed based on test objectives and test conditions derived from requirements, e.g., tests that exercise specific functions or probe non-functional attributes such as reliability or usability.

result

See Also: actual result, expected result

Synonyms: outcome , test outcome , test result

The consequence/outcome of the execution of a test. It includes outputs to screens, changes to data, reports, and communication messages sent out.

review

Ref: After IEEE 1028

An evaluation of a product or project status to ascertain discrepancies from planned results and to recommend improvements. Examples include management review, informal review, technical review, inspection, and walkthrough.

risk

A factor that could result in future negative consequences.

risk assessment

See Also: product risk, project risk, risk, risk impact, risk level, risk likelihood

The process of identifying and subsequently analyzing the identified project or product risk to determine its level of risk, typically by assigning likelihood and impact ratings.

risk identification

The process of identifying risks using techniques such as brainstorming, checklists and failure history.

risk management

Systematic application of procedures and practices to the tasks of identifying, analyzing, prioritizing, and controlling risk.

risk-based testing

An approach to testing to reduce the level of product risks and inform stakeholders of their status, starting in the initial stages of a project. It involves the identification of product risks and the use of risk levels to guide the test process.

root cause

Ref: CMMI

A source of a defect such that if it is removed, the occurrence of the defect type is decreased or removed.

S.M.A.R.T. goal methodology (SMART)

A methodology whereby objectives are defined very specifically rather than generically. SMART is an acronym derived from the attributes of the objective to be defined: Specific, Measurable, Attainable, Relevant and Timely.

scrum

See Also: Agile software development

An iterative incremental framework for managing projects commonly used with Agile software development.

security

Ref: ISO 9126   **See Also:** functionality

Attributes of software products that bear on its ability to prevent unauthorized access, whether accidental or deliberate, to programs and data.

security testing

See Also: functionality testing

Testing to determine the security of the software product.

severity

Ref: After IEEE 610

The degree of impact that a defect has on the development or operation of a component or system.

smoke test

See Also: build, verification test, intake test

Synonyms: confidence test , sanity test

A subset of all defined/planned test cases that cover the main functionality of a component or system, to ascertaining that the most crucial functions of a program work, but not bothering with finer details.

software

Ref: IEEE 610

Computer programs, procedures, and possibly associated documentation and data pertaining to the operation of a computer system.

software quality

Ref: After ISO 9126   **See Also:** quality

The totality of functionality and features of a software product that bear on its ability to satisfy stated or implied needs.

specification

Ref: After IEEE 610

A document that specifies, ideally in a complete, precise and verifiable manner, the requirements, design, behavior, or other characteristics of a component or system, and, often, the procedures for determining whethe these provisions have been satisfied.

standard

Ref: After CMMI

Formal, possibly mandatory, set of requirements developed and used to prescribe consistent approaches to the way of working or to provide guidelines (e.g., ISO/IEC standards, IEEE standards, and organizational standards).

standard-compliant test strategy

A test strategy whereby the test team follows a standard. Standards followed may be valid e.g., for a country (legislation standards), a business domain (domain standards), or internally (organizational standards).

statement coverage

The percentage of executable statements that have been exercised by a test suite.

static analysis

Analysis of software development artifacts, e.g., requirements or code, carried out without execution of these software development artifacts. Static analysis is usually carried out by means of a supporting tool.

suitability

Ref: ISO 9126   **See Also:** functionality

The capability of the software product to provide an appropriate set of functions for specified tasks and user objectives.

system

Ref: IEEE 610

A collection of components organized to accomplish a specific function or set of functions.

system integration testing

Testing the integration of systems and packages; testing interfaces to external organizations (e.g., Electronic Data Interchange, Internet).

system testing

Ref: Hetzel

Testing an integrated system to verify that it meets specified requirements.

system under test (SUT)

See test object.

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test

Ref: IEEE 829

A set of one or more test cases.

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test analysis

The process of analyzing the test basis and defining test objectives.

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test approach

The implementation of the test strategy for a specific project. It typically includes the decisions made that follow based on the (test) project's goal and the risk assessment carried out, starting points regarding the test process, the test design techniques to be applied, exit criteria and test types to be performed.

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test architect

(1) A person who provides guidance and strategic direction for a test organization and for its relationship with other disciplines. (2) A person who defines the way testing is structured for a given system, including topics such as test tools and test data management.

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test automation

The use of software to perform or support test activities, e.g., test management, test design, test execution and results checking.

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test basis

Ref: After TMap

All documents from which the requirements of a component or system can be inferred. The documentation on which the test cases are based. If a document can be amended only by way of formal amendment procedure, then the test basis is called a frozen test basis.

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test case

Ref: After IEEE 610

A set of input values, execution preconditions, expected results and execution postconditions, developed for a particular objective or test condition, such as to exercise a particular program path or to verify compliance with a specific requirement.

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test condition

Synonyms: test requirement , test situation

An item or event of a component or system that could be verified by one or more test cases, e.g., a function, transaction, feature, quality attribute, or structural element.

test control

See Also: test management

A test management task that deals with developing and applying a set of corrective actions to get a test project on track when monitoring shows a deviation from what was planned.

test data

Data that exists (for example, in a database) before a test is executed, and that affects or is affected by the component or system under test.

test deliverable

See Also: deliverable

Any test (work) product that must be delivered to someone other than the test (work) product's author.

test design technique

Synonyms: test case design technique , test specification technique , test technique

Procedure used to derive and/or select test cases.

test environment

Ref: After IEEE 610

Synonyms: test bed , test rig

An environment containing hardware, instrumentation, simulators, software tools, and other support elements needed to conduct a test.

test estimation

The calculated approximation of a result related to various aspects of testing (e.g., effort spent, completion date, costs involved, number of test cases, etc.) which is usable even if input data may be incomplete, uncertain, or noisy.

test execution

The process of running a test on the component or system under test, producing actual result(s).

test execution automation

The use of software, e.g., capture/playback tools, to control the execution of tests, the comparison of actual results to expected results, the setting up of test preconditions, and other test control and reporting functions.

test implementation

The process of developing and prioritizing test procedures, creating test data and, optionally, preparing test harnesses and writing automated test scripts.

test item

See Also: test object

The individual element to be tested. There usually is one test object and many test items.

test level

Ref: After TMap

Synonyms: test stage

A group of test activities that are organized and managed together. A test level is linked to the responsibilities in a project. Examples of test levels are component test, integration test, system test and acceptance test.

test management

The planning, estimating, monitoring and control of test activities, typically carried out by a test manager.

test management tool

A tool that provides support to the test management and control part of a test process. It often has several capabilities, such as testware management, scheduling of tests, the logging of results, progress tracking, incident management and test reporting.

test manager

Synonyms: test leader

The person responsible for project management of testing activities and resources, and evaluation of a test object. The individual who directs, controls, administers, plans and regulates the evaluation of a test object.

test mission

See Also: test policy

The purpose of testing for an organization, often documented as part of the test policy.

test object

See Also: test item

Synonyms: system under test

The component or system to be tested.

test objective

A reason or purpose for designing and executing a test.

test oracle

Ref: After Adrion

Synonyms: oracle

A source to determine expected results to compare with the actual result of the software under test. An oracle may be the existing system (for a benchmark), other software, a user manual, or an individual's specialized knowledge, but should not be the code.

test plan

Ref: After IEEE 829

A document describing the scope, approach, resources and schedule of intended test activities. It identifies amongst others test items, the features to be tested, the testing tasks, who will do each task, degree of tester independence, the test environment, the test design techniques and entry and exit criteria to be used, and the rationale for their choice, and any risks requiring contingency planning. It is a record of the test planning process.

Test Point Analysis (TPA)

Ref: TMap

A formula based test estimation method based on function point analysis.

test policy

A high-level document describing the principles, approach and major objectives of the organization regarding testing.

test process

The fundamental test process comprises test planning and control, test analysis and design, test implementation and execution, evaluating exit criteria and reporting, and test closure activities.

test progress report

Synonyms: test report

A document summarizing testing activities and results, produced at regular intervals, to report progress of testing activities against a baseline (such as the original test plan) and to communicate risks and alternatives requiring a decision to management.

test schedule

A list of activities, tasks or events of the test process, identifying their intended start and finish dates and/or times, and interdependencies.

test strategy

A high-level description of the test levels to be performed and the testing within those levels for an organization or programme (one or more projects).

test tool

Ref: TMap   **See Also:** CAST

A software product that supports one or more test activities, such as planning and control, specification, building initial files and data, test execution and test analysis.

test-driven development (TDD)

A way of developing software where the test cases are developed, and often automated, before the software is developed to run those test cases.

tester

A skilled professional who is involved in the testing of a component or system.

testing

The process consisting of all lifecycle activities, both static and dynamic, concerned with planning, preparation and evaluation of software products and related work products to determine that they satisfy specified requirements, to demonstrate that they are fit for purpose and to detect defects.

usability

Ref: ISO 9126

The capability of the software to be understood, learned, used and attractive to the user when used under specified conditions.

validation

Ref: ISO 9000

Confirmation by examination and through provision of objective evidence that the requirements for a specific intended use or application have been fulfilled.

verification

Ref: ISO 9000

Confirmation by examination and through provision of objective evidence that specified requirements have been fulfilled.

white-box testing

Synonyms: clear-box testing , code-based testing , glass-box testing , logic-coverage testing , logic-driven testing , structural testing , structure-based testing

Testing based on an analysis of the internal structure of the component or system.

work breakdown structure (WBS)

Ref: CMMI

An arrangement of work elements and their relationship to each other and to the end product.