Standard Glossary of Terms used in Software Testing

Version 3.1

All Terms

International Software Testing Qualifications Board

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abuse case

See Also: use case

A use case in which some actors with malicious intent are causing harm to the system or to other actors.

acceptance criteria

Ref: IEEE 610

The exit criteria that a component or system must satisfy in order to be accepted by a user, customer, or other authorized entity.

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.

accessibility testing

Ref: Gerrard

Testing to determine the ease by which users with disabilities can use a component or system.

account harvesting

The process of obtaining lists of email addresses for use in bulk email messages.

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.

accuracy testing

See Also: accuracy

Testing to determine the accuracy of a software product.

acting (IDEAL)

See Also: IDEAL

The phase within the IDEAL model where the improvements are developed, put into practice, and deployed across the organization. The acting phase consists of the activities: create solution, pilot/test solution, refine solution and implement solution.

actor

User or any other person or system that interacts with the test object in a specific way.

actual result

Synonyms: actual outcome

The behavior produced/observed when a component or system is tested.

ad hoc testing

Testing carried out informally. No formal test preparation takes place, no recognized test design technique is used, there are no expectations for results and arbitrariness guides the test execution activity.

adaptability

Ref: ISO 9126   **See Also:** portability

The capability of the software product to be adapted for different specified environments without applying actions or means other than those provided for this purpose for the software considered.

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.

Agile testing

See Also: test-driven development

Testing practice for a project using Agile software development methodologies, incorporating techniques and methods, such as extreme programming (XP), treating development as the customer of testing and emphasizing the test-first design paradigm.

alpha testing

Simulated or actual operational testing by potential users/customers or an independent test team at the developers' site, but outside the development organization. Alpha testing is often employed for commercial off-the-shelf software as a form of internal acceptance testing.

analytical test strategy

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

analytical testing

Testing based on a systematic analysis of e.g., product risks or requirements.

analyzability

Ref: ISO 9126   **See Also:** maintainability

The capability of the software product to be diagnosed for deficiencies or causes of failures in the software, or for the parts to be modified to be identified.

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anomaly

Ref: IEEE 1044   **See Also:** defect, error, fault, failure, incident, problem

Any condition that deviates from expectation based on requirements specifications, design documents, user documents, standards, etc., or from someone's perception or experience. Anomalies may be found during, but not limited to, reviewing, testing, analysis, compilation, or use of software products or applicable documentation

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anti-malware

Software that is used to detect and inhibit malware. See also malware.

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anti-pattern

Repeated action, process, structure or reusable solution that initially appears to be beneficial and is commonly used but is ineffective and/or counterproductive in practice.

API

Acronym for Application Programming Interface.

API testing

Testing performed by submitting commands to the software under test using programming interfaces of the application directly.

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assessment report

See Also: process assessment

A document summarizing the assessment results, e.g., conclusions, recommendations and findings.

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assessor

A person who conducts an assessment. Any member of an assessment team.

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atomic condition

A condition that cannot be decomposed, i.e., a condition that does not contain two or more single conditions joined by a logical operator (AND, OR, XOR).

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attack vector

A path or means by which an attacker can gain access to a system for malicious purposes.

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attack-based testing

See Also: fault attack

An experience-based testing technique that uses software attacks to induce failures, particularly security related failures.

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attacker

See Also: hacker

A person or process that attempts to access data, functions or other restricted areas of the system without authorization, potentially with malicious intent.

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attractiveness

Ref: ISO 9126   **See Also:** usability

The capability of the software product to be attractive to the user.

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audit

Ref: IEEE 1028

An independent evaluation of software products or processes to ascertain compliance to standards, guidelines, specifications, and/or procedures based on objective criteria, including documents that specify: the form or content of the products to be produced, the process by which the products shall be produced, and how compliance to standards or guidelines shall be measured.

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audit trail

Ref: After TMap

A path by which the original input to a process (e.g., data) can be traced back through the process, taking the process output as a starting point. This facilitates defect analysis and allows a process audit to be carried out.

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authentication

See Also: authorization

A procedure determining whether a person or a process is, in fact, who or what it is declared to be.

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authorization

See Also: authentication

Permission given to a user or process to access resources.

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automated testware

Testware used in automated testing, such as tool scripts.

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automation code defect density

See Also: defect density

Defect density of a component of the test automation code.

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.

balanced scorecard

See Also: corporate dashboard, scorecard

A strategic tool for measuring whether the operational activities of a company are aligned with its objectives in terms of business vision and strategy.

baseline

Ref: After IEEE 610

A specification or software product that has been formally reviewed or agreed upon, that thereafter serves as the basis for further development, and that can be changed only through a formal change control process.

basic block

A sequence of one or more consecutive executable statements containing no branches. Note: A node in a control flow graph represents a basic block.

basis test set

A set of test cases derived from the internal structure of a component or specification to ensure that 100% of a specified coverage criterion will be achieved.

behavior

The response of a component or system to a set of input values and preconditions.

benchmark test

Ref: After IEEE 610

(1) A standard against which measurements or comparisons can be made. (2) A test that is used to compare components or systems to each other or to a standard as in (1).

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.

beta testing

Synonyms: field testing

Operational testing by potential and/or existing users/customers at an external site not otherwise involved with the developers, to determine whether or not a component or system satisfies the user/customer needs and fits within the business processes. Beta testing is often employed as a form of external acceptance testing for commercial off-the-shelf software in order to acquire feedback from the market.

big-bang testing

Ref: After IEEE 610   **See Also:** integration testing

An integration testing approach in which software elements, hardware elements, or both are combined all at once into a component or an overall system, rather than in stages.

black-box test design technique

Synonyms: black-box technique , specification-based technique , specification-based test design technique

Procedure to derive and/or select test cases based on an analysis of the specification, either functional or non-functional, of a component or system without reference to its internal structure.

black-box testing

Synonyms: specification-based testing

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

blocked test case

A test case that cannot be executed because the preconditions for its execution are not fulfilled.

botnet

A network of compromised computers, called bots or robots, which is controlled by a third party and used to transmit malware or spam, or to launch attacks.

bottom-up testing

See Also: integration testing

An incremental approach to integration testing where the lowest level components are tested first, and then used to facilitate the testing of higher level components. This process is repeated until the component at the top of the hierarchy is tested.

boundary value

An input value or output value which is on the edge of an equivalence partition or at the smallest incremental distance on either side of an edge, for example the minimum or maximum value of a range.

boundary value analysis

See Also: boundary value

A black-box test design technique in which test cases are designed based on boundary values.

boundary value coverage

The percentage of boundary values that have been exercised by a test suite.

branch

A basic block that can be selected for execution based on a program construct in which one of two or more alternative program paths is available, e.g., case, jump, go to, if-then-else.

branch coverage

The percentage of branches that have been exercised by a test suite. 100% branch coverage implies both 100% decision coverage and 100% statement coverage.

branch testing

A white-box test design technique in which test cases are designed to execute branches.

buffer

Ref: IEEE 610

A device or storage area used to store data temporarily for differences in rates of data flow, time or occurrence of events, or amounts of data that can be handled by the devices or processes involved in the transfer or use of the data.

buffer overflow

See Also: buffer

A memory access failure due to the attempt by a process to store data beyond the boundaries of a fixed length buffer, resulting in overwriting of adjacent memory areas or the raising of an overflow exception.

build verification test (BVT)

See Also: regression testing, smoke test

A set of automated tests which validates the integrity of each new build and verifies its key/core functionality, stability and testability. It is an industry practice when a high frequency of build releases occurs (e.g., Agile projects) and it is run on every new build before the build is released for further testing.

burndown chart

A publicly displayed chart that depicts the outstanding effort versus time in an iteration. It shows the status and trend of completing the tasks of the iteration. The X-axis typically represents days in the sprint, while the Y-axis is the remaining effort (usually either in ideal engineering hours or story points).

business process-based testing

An approach to testing in which test cases are designed based on descriptions and/or knowledge of business processes.

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call graph

An abstract representation of calling relationships between subroutines in a program.

Capability Maturity Model Integration (CMMI)

Ref: CMMI

A framework that describes the key elements of an effective product development and maintenance process. The Capability Maturity Model Integration covers best-practices for planning, engineering and managing product development and maintenance.

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capture/playback

A test automation approach, where inputs to the test object are recorded during manual testing in order to generate automated test scripts that could be executed later (i.e. replayed).

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capture/playback tool

Synonyms: capture/replay tool , record/playback tool

A type of test execution tool where inputs are recorded during manual testing in order to generate automated test scripts that can be executed later (i.e. replayed). These tools are often used to support automated regression testing.

CASE

Acronym for Computer Aided Software Engineering.

CAST

See Also: test automation

Acronym for Computer Aided Software Testing.

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causal analysis

Ref: CMMI

The analysis of defects to determine their root cause.

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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.

cause-effect graph

A graphical representation of inputs and/or stimuli (causes) with their associated outputs (effects), which can be used to design test cases.

cause-effect graphing

Ref: BS 7925/2

Synonyms: cause-effect analysis

A black-box test design technique in which test cases are designed from cause-effect graphs.

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.

changeability

Ref: ISO 9126   **See Also:** maintainability

The capability of the software product to enable specified modifications to be implemented.

checklist-based testing

An experience-based test design technique whereby the experienced tester uses a high-level list of items to be noted, checked, or remembered, or a set of rules or criteria against which a product has to be verified.

classification tree

See Also: classification tree method

A tree showing equivalence partitions hierarchically ordered, which is used to design test cases in the classification tree method.

classification tree method

Ref: Grochtmann   **See Also:** combinatorial testing

A black-box test design technique in which test cases, described by means of a classification tree, are designed to execute combinations of representatives of input and/or output domains.

CLI

Acronym for Command-Line Interface.

CLI testing

Testing performed by submitting commands to the software under test using a dedicated command-line interface.

co-existence

Ref: ISO 9126 **See Also:** portability

The capability of the software product to co-exist with other independent software in a common environment sharing common resources.

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.

codependent behavior

Excessive emotional or psychological dependence on another person, specifically in trying to change that person's current (undesirable) behavior while supporting them in continuing that behavior. For example, in software testing, complaining about late delivery to test and yet enjoying the necessary "heroism", working additional hours to make up time when delivery is running late, therefore reinforcing the lateness.

combinatorial testing

See Also: classification tree method, n-wise testing, pairwise testing, orthogonal array testing

A black-box test design technique in which test cases are designed to execute specific combinations of values of several parameters.

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.

compiler

Ref: IEEE 610

A software tool that translates programs expressed in a high-order language into their machine language equivalents.

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.

compliance

Ref: ISO 9126

The capability of the software product to adhere to standards, conventions or regulations in laws and similar prescriptions.

compliance testing

Synonyms: conformance testing , regulation testing , standards testing

Testing to determine the compliance of the component or system.

component

Synonyms: module , unit

A minimal software item that can be tested in isolation.

component integration testing

Synonyms: link testing

Testing performed to expose defects in the interfaces and interaction between integrated components.

component specification

A description of a component's function in terms of its output values for specified input values under specified conditions, and required non-functional behavior (e.g., resource-utilization).

component testing

Ref: After IEEE 610

Synonyms: module testing , program testing , unit testing

The testing of individual software components.

compound condition

Synonyms: multiple condition

Two or more single conditions joined by means of a logical operator (AND, OR or XOR), e.g., A>B AND C>1000.

computer forensics

The practice of determining how a security attack has succeeded and assessing the damage caused.

concurrency testing

Ref: After IEEE 610

Testing to determine how the occurrence of two or more activities within the same interval of time, achieved either by interleaving the activities or by simultaneous execution, is handled by the component or system.

condition

See Also: condition testing

Synonyms: branch condition

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

condition coverage

Synonyms: branch condition coverage

The percentage of condition outcomes that have been exercised by a test suite. 100% condition coverage requires each single condition in every decision statement to be tested as True and False.

condition outcome

The evaluation of a condition to True or False.

condition testing

A white-box test design technique in which test cases are designed to execute condition outcomes.

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.

configuration

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

configuration auditing

Ref: IEEE 610

The function to check on the contents of libraries of configuration items, e.g., for standards compliance.

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.

configuration control board (CCB)

Ref: IEEE 610

Synonyms: change control board

A group of people responsible for evaluating and approving or disapproving proposed changes to configuration items, and for ensuring implementation of approved changes.

configuration identification

Ref: IEEE 610

An element of configuration management, consisting of selecting the configuration items for a system and recording their functional and physical characteristics in technical documentation.

configuration item

Ref: IEEE 610

An aggregation of hardware, software or both, that is designated for configuration management and treated as a single entity in the configuration management process.

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.

configuration management tool

A tool that provides support for the identification and control of configuration items, their status over changes and versions, and the release of baselines consisting of configuration items.

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.

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.

consultative testing

Testing driven by the advice and guidance of appropriate experts from outside the test team (e.g., technology experts and/or business domain experts).

content-based model

Synonyms: content reference model

A process model providing a detailed description of good engineering practices, e.g., test practices.

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continuous representation

Ref: CMMI

A capability maturity model structure wherein capability levels provide a recommended order for approaching process improvement within specified process areas.

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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.

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control flow

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

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control flow analysis

A form of static analysis based on a representation of unique paths (sequences of events) in the execution through a component or system. Control flow analysis evaluates the integrity of control flow structures, looking for possible control flow anomalies such as closed loops or logically unreachable process steps.

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control flow graph

An abstract representation of all possible sequences of events (paths) in the execution through a component or system.

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control flow testing

See Also: decision testing, condition testing, path testing

An approach to structure-based testing in which test cases are designed to execute specific sequences of events. Various techniques exist for control flow testing, e.g., decision testing, condition testing, and path testing, that each have their specific approach and level of control flow coverage.

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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.

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conversion testing

Synonyms: migration testing

Testing of software used to convert data from existing systems for use in replacement systems.

corporate dashboard

See Also: balanced scorecard, dashboard

A dashboard-style representation of the status of corporate performance data.

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.

coverage analysis

Measurement of achieved coverage to a specified coverage item during test execution referring to predetermined criteria to determine whether additional testing is required and if so, which test cases are needed.

coverage item

An entity or property used as a basis for test coverage, e.g., equivalence partitions or code statements.

coverage tool

Synonyms: coverage measurement tool

A tool that provides objective measures of what structural elements, e.g., statements, branches have been exercised by a test suite.

critical success factor

An element necessary for an organization or project to achieve its mission. Critical success factors are the critical factors or activities required for ensuring the success.

Critical Testing Processes (CTP)

See Also: content-based model

A content-based model for test process improvement built around twelve critical processes. These include highly visible processes, by which peers and management judge competence and mission-critical processes in which performance affects the company's profits and reputation.

cross-site scripting (XSS)

Ref: NIST.IR.7298

A vulnerability that allows attackers to inject malicious code into an otherwise benign website.

custom software

Synonyms: bespoke software

Software developed specifically for a set of users or customers. The opposite is commercial off-the-shelf software.

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custom tool

A software tool developed specifically for a set of users or customers.

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cyclomatic complexity

Ref: After McCabe

Synonyms: cyclomatic number

The maximum number of linear, independent paths through a program. Cyclomatic complexity may be computed as L = N + 2P, where L = the number of edges/links in a graph, N = the number of nodes in a graph, P = the number of disconnected parts of the graph (e.g., a called graph or subroutine).

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daily build

A development activity whereby a complete system is compiled and linked every day (often overnight), so that a consistent system is available at any time including all latest changes.

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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.

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data definition

An executable statement where a variable is assigned a value.

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data flow

Ref: Beiser

An abstract representation of the sequence and possible changes of the state of data objects, where the state of an object is any of creation, usage, or destruction.

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data flow analysis

A form of static analysis based on the definition and usage of variables.

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data flow coverage

The percentage of definition-use pairs that have been exercised by a test suite.

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data flow testing

A white-box test design technique in which test cases are designed to execute definition-use pairs of variables.

data obfuscation

Data transformation that makes it difficult for a human to recognize the original data.

data privacy

The protection of personally identifiable information or otherwise sensitive information from undesired disclosure

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.

data-driven testing

Ref: Fewster and Graham   **See Also:** keyword-driven testing

A scripting technique that stores test input and expected results in a table or spreadsheet, so that a single control script can execute all of the tests in the table. Data-driven testing is often used to support the application of test execution tools such as capture/playback tools.

database integrity testing

Testing the methods and processes used to access and manage the data(base), to ensure access methods, processes and data rules function as expected and that during access to the database, data is not corrupted or unexpectedly deleted, updated or created.

dd-path

See Also: path

A path between two decisions of an algorithm, or two decision nodes of a corresponding graph, that includes no other decisions.

debugging

The process of finding, analyzing and removing the causes of failures in software.

debugging tool

Synonyms: debugger

A tool used by programmers to reproduce failures, investigate the state of programs and find the corresponding defect. Debuggers enable programmers to execute programs step by step, to halt a program at any program statement and to set and examine program variables.

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.

decision condition coverage

The percentage of all condition outcomes and decision outcomes that have been exercised by a test suite. 100% decision condition coverage implies both 100% condition coverage and 100% decision coverage.

decision condition testing

A white-box test design technique in which test cases are designed to execute condition outcomes and decision outcomes.

decision coverage

The percentage of decision outcomes that have been exercised by a test suite. 100% decision coverage implies both 100% branch coverage and 100% statement coverage.

decision outcome

The result of a decision (which therefore determines the branches to be taken).

decision table

Synonyms: cause-effect decision table

A table showing combinations of inputs and/or stimuli (causes) with their associated outputs and/or actions (effects), which can be used to design test cases.

decision table testing

Ref: Egler63   **See Also:** decision table

A black-box test design technique in which test cases are designed to execute the combinations of inputs and/or stimuli (causes) shown in a decision table.

decision testing

A white-box test design technique in which test cases are designed to execute decision outcomes.

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 density

Synonyms: fault density

The number of defects identified in a component or system divided by the size of the component or system (expressed in standard measurement terms, e.g., lines-of-code, number of classes or function points).

Defect Detection Percentage (DDP)

See Also: escaped defects

Synonyms: Fault Detection Percentage (FDP)

The number of defects found by a test level, divided by the number found by that test level and any other means afterwards.

defect management

Ref: After IEEE 1044

Synonyms: problem management

The process of recognizing, investigating, taking action and disposing of defects. It involves recording defects, classifying them and identifying the impact.

defect management committee

Synonyms: defect triage committee

A cross-functional team of stakeholders who manage reported defects from initial detection to ultimate resolution (defect removal, defect deferral, or report cancellation). In some cases, the same team as the configuration control board.

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 masking

Ref: After IEEE 610

Synonyms: fault masking

An occurrence in which one defect prevents the detection of another.

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.

defect taxonomy

Synonyms: bug taxonomy

A system of (hierarchical) categories designed to be a useful aid for reproducibly classifying defects.

defect type

Synonyms: defect category

An element in a taxonomy of defects. Defect taxonomies can be identified with respect to a variety of considerations, including, but not limited to: Phase or development activity in which the defect is created, e.g., a specification error or a coding error, Characterization of defects, e.g., an "off-by-one" defect, Incorrectness, e.g., an incorrect relational operator, a programming language syntax error, or an invalid assumption, Performance issues, e.g., excessive execution time, insufficient availability.

defect-based test design technique

See Also: defect taxonomy

Synonyms: defect-based technique

A procedure to derive and/or select test cases targeted at one or more defect types, with tests being developed from what is known about the specific defect type.

definition-use pair

The association of a definition of a variable with the subsequent use of that variable. Variable uses include computational (e.g., multiplication) or to direct the execution of a path (predicate use).

deliverable

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

demilitarized zone (DMZ)

See Also: network zone

A physical or logical subnetwork that contains and exposes an organization's external-facing services to an untrusted network, commonly the Internet.

Deming cycle

Ref: After Deming

An iterative four-step problem-solving process (plan-do-check-act) typically used in process improvement.

denial of service (DOS)

A security attack that is intended to overload the system with requests such that legitimate requests cannot be serviced.

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design-based testing

An approach to testing in which test cases are designed based on the architecture and/or detailed design of a component or system (e.g., tests of interfaces between components or systems).

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desk checking

See Also: static testing

Testing of software or a specification by manual simulation of its execution.

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development testing

Ref: After IEEE 610

Formal or informal testing conducted during the implementation of a component or system, usually in the development environment by developers.

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diagnosing (IDEAL)

See Also: IDEAL

The phase within the IDEAL model where it is determined where one is, relative to where one wants to be. The diagnosing phase consists of the activities to characterize current and desired states and develop recommendations.

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documentation testing

Testing the quality of the documentation, e.g., user guide or installation guide.

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domain

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

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domain analysis

See Also: boundary value analysis, equivalence partitioning

A black-box test design technique that is used to identify efficient and effective test cases when multiple variables can or should be tested together. It builds on and generalizes equivalence partitioning and boundary values analysis.

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driver

Ref: After TMap

Synonyms: test driver

A software component or test tool that replaces a component that takes care of the control and/or the calling of a component or system.

dynamic analysis

Ref: After IEEE 610

The process of evaluating behavior, e.g., memory performance, CPU usage, of a system or component during execution.

dynamic analysis tool

A tool that provides run-time information on the state of the software code. These tools are most commonly used to identify unassigned pointers, check pointer arithmetic and to monitor the allocation, use and de-allocation of memory and to flag memory leaks.

dynamic comparison

Comparison of actual and expected results, performed while the software is being executed, for example by a test execution tool.

dynamic testing

Testing that involves the execution of the software of a component or system.

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.

efficiency testing

Testing to determine the efficiency of a software product.

elementary comparison testing

Ref: TMap

A black-box test design technique in which test cases are designed to execute combinations of inputs using the concept of modified condition decision coverage.

embedded iterative model

A development lifecycle sub-model that applies an iterative approach to detailed design, coding and testing within an overall sequential model. In this case, the high-level design documents are prepared and approved fo the entire project but the actual detailed design, code development and testing are conducted in iterations.

emotional intelligence

The ability, capacity, and skill to identify, assess, and manage the emotions of one's self, of others, and of groups.

emulator

Ref: IEEE 610   **See Also:** simulator

A device, computer program, or system that accepts the same inputs and produces the same outputs as a give system.

encryption

The process of encoding information so that only authorized parties can retrieve the original information, usually by means of a specific decryption key or process.

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.

entry point

An executable statement or process step which defines a point at which a given process is intended to begin.

equivalence partition

Synonyms: equivalence class

A portion of an input or output domain for which the behavior of a component or system is assumed to be the same, based on the specification.

equivalence partition coverage

The percentage of equivalence partitions that have been exercised by a test suite.

equivalence partitioning

Synonyms: partition testing

A black-box test design technique in which test cases are designed to execute representatives from equivalence partitions. In principle, test cases are designed to cover each partition at least once.

equivalent manual test effort (EMTE)

Effort required for running tests manually.

error

Ref: After IEEE 610

Synonyms: mistake

A human action that produces an incorrect result.

---

error guessing

A test design technique where the experience of the tester is used to anticipate what defects might be present in the component or system under test as a result of errors made, and to design tests specifically to expose them.

---

error tolerance

Ref: After IEEE 610

The ability of a system or component to continue normal operation despite the presence of erroneous inputs.

---

escaped defect

See Also: Defect Detection Percentage

A defect that was not detected in a previous test level which is supposed to find such type of defects.

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establishing (IDEAL)

See Also: IDEAL

The phase within the IDEAL model where the specifics of how an organization will reach its destination are planned. The establishing phase consists of the activities set priorities, develop approach and plan actions.

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ethical hacker

A security tester using hacker techniques.

European Foundation for Quality Management excellence model (EFQM)

A non-prescriptive framework for an organization's quality management system, defined and owned by the European Foundation for Quality Management, based on five 'Enabling' criteria (covering what an organization does), and four 'Results' criteria (covering what an organization achieves).

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exception handling

Behavior of a component or system in response to erroneous input, from either a human user or from another component or system, or to an internal failure.

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executable statement

A statement which, when compiled, is translated into object code, and which will be executed procedurally when the program is running and may perform an action on data.

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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.

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exhaustive testing

Synonyms: complete testing

A test approach in which the test suite comprises all combinations of input values and preconditions.

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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.

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exit point

An executable statement or process step which defines a point at which a given process is intended to cease.

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expected result

Synonyms: expected outcome , predicted outcome

The behavior predicted by the specification, or another source, of the component or system under specified conditions.

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experience-based test design technique

Synonyms: experience-based technique

Procedure to derive and/or select test cases based on the tester's experience, knowledge and intuition.

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experience-based testing

Testing based on the tester's experience, knowledge and intuition.

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exploratory testing

Ref: After Bach

An informal test design technique where the tester actively controls the design of the tests as those tests are performed and uses information gained while testing to design new and better tests.

Extreme Programming (XP)

See Also: Agile software development

A software engineering methodology used within Agile software development whereby core practices are programming in pairs, doing extensive code review, unit testing of all code, and simplicity and clarity in code.

factory acceptance testing

See Also: alpha testing

Acceptance testing conducted at the site at which the product is developed and performed by employees of the supplier organization, to determine whether or not a component or system satisfies the requirements, normally including hardware as well as software.

fail

Synonyms: test fail

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

failover testing

See Also: recoverability testing

Testing by simulating failure modes or actually causing failures in a controlled environment. Following a failure, the failover mechanism is tested to ensure that data is not lost or corrupted and that any agreed service levels are maintained (e.g., function availability or response times).

failure

Ref: After Fenton

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

failure mode

Ref: IEEE 610

The physical or functional manifestation of a failure. For example, a system in failure mode may be characterized by slow operation, incorrect outputs, or complete termination of execution.

Failure Mode and Effect Analysis (FMEA)

See Also: Failure Mode, Effect and Criticality Analysis

Synonyms: Software Failure Mode and Effect Analysis

A systematic approach to risk identification and analysis of identifying possible modes of failure and attempting to prevent their occurrence.

Failure Mode, Effects, and Criticality Analysis (FMECA)

See Also: Failure Mode and Effect Analysis

Synonyms: software failure mode

An extension of FMEA, as in addition to the basic FMEA, it includes a criticality analysis, which is used to chart the probability of failure modes against the severity of their consequences. The result highlights failure modes with relatively high probability and severity of consequences, allowing remedial effort to be directed where it will produce the greatest value.

failure rate

Ref: IEEE 610

The ratio of the number of failures of a given category to a given unit of measure, e.g., failures per unit of time, failures per number of transactions, failures per number of computer runs.

false-negative result

Synonyms: false-pass result

A test result which fails to identify the presence of a defect that is actually present in the test object.

false-positive result

Synonyms: false-fail result

A test result in which a defect is reported although no such defect actually exists in the test object.

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.

fault injection

See Also: fault tolerance

The process of intentionally adding defects to a system for the purpose of finding out whether the system can detect, and possibly recover from, a defect. Fault injection is intended to mimic failures that might occur in the field.

fault seeding

Ref: After IEEE 610

Synonyms: bebugging , error seeding

The process of intentionally adding defects to those already in the component or system for the purpose of monitoring the rate of detection and removal, and estimating the number of remaining defects. Fault seeding is typically part of development (pre-release) testing and can be performed at any test level (component, integration, or system).

fault seeding tool

Synonyms: error seeding tool

A tool for seeding (i.e., intentionally inserting) faults in a component or system.

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fault tolerance

Ref: ISO 9126   **See Also:** reliability, robustness

The capability of the software product to maintain a specified level of performance in cases of software faults (defects) or of infringement of its specified interface.

Fault Tree Analysis (FTA)

Synonyms: Software Fault Tree Analysis

A technique used to analyze the causes of faults (defects). The technique visually models how logical relationships between failures, human errors, and external events can combine to cause specific faults to disclose.

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feasible path

A path for which a set of input values and preconditions exists which causes it to be executed.

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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).

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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.

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finite state machine

Ref: IEEE 610

A computational model consisting of a finite number of states and transitions between those states, possibly with accompanying actions.

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firewall

A component or set of components that controls incoming and outgoing network traffic based on predetermined security rules.

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formal review

A review characterized by documented procedures and requirements, e.g., inspection.

frozen test basis

See Also: baseline

A test basis document that can only be amended by a formal change control process.

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 integration

See Also: integration testing

An integration approach that combines the components or systems for the purpose of getting a basic functionality working early.

functional requirement

Ref: IEEE 610

A requirement that specifies a function that a component or system must perform.

functional test design technique

See Also: black-box test design technique

Procedure to derive and/or select test cases based on an analysis of the specification of the functionality of a component or system without reference to its internal structure.

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.

functionality testing

The process of testing to determine the functionality of a software product.

fuzz testing

Synonyms: fuzzing

A software testing technique used to discover security vulnerabilities by inputting massive amounts of random data, called fuzz, to the component or system.

generic test automation architecture

Representation of the layers, components, and interfaces of a test automation architecture, allowing for a structured and modular approach to implement test automation.

Goal Question Metric (GQM)

An approach to software measurement using a three-level model conceptual level (goal), operational level (question) and quantitative level (metric).

GUI

Acronym for Graphical User Interface.

GUI testing

Testing performed by interacting with the software under test via the graphical user interface.

hacker

See Also: attacker

A person or organization who is actively involved in security attacks, usually with malicious intent.

hardware-software integration testing

See Also: integration testing

Testing performed to expose defects in the interfaces and interaction between hardware and software components.

hashing

Transformation of a variable length string of characters into a usually shorter fixed-length value or key. Hashed values, or hashes, are commonly used in table or database lookups. Cryptographic hash functions are used to secure data.

hazard analysis

See Also: risk analysis

A technique used to characterize the elements of risk. The result of a hazard analysis will drive the methods used for development and testing of a system.

heuristic evaluation

A usability review technique that targets usability problems in the user interface or user interface design. With this technique, the reviewers examine the interface and judge its compliance with recognized usability principles (the "heuristics").

high-level test case

See Also: low-level test case

Synonyms: abstract test case , logical test case

A test case without concrete (implementation level) values for input data and expected results. Logical operators are used: instances of the actual values are not yet defined and/or available.

horizontal traceability

The tracing of requirements for a test level through the layers of test documentation (e.g., test plan, test design specification, test case specification and test procedure specification or test script).

hyperlink

A pointer within a web page that leads to other web pages.

hyperlink test tool

A tool used to check that no broken hyperlinks are present on a web site.

IDEAL

An organizational improvement model that serves as a roadmap for initiating, planning, and implementing improvement actions. The IDEAL model is named for the five phases it describes: initiating, diagnosing, establishing, acting, and learning.

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.

incident

Ref: After IEEE 1008

Synonyms: deviation , software test incident , test incident

Any event occurring that requires investigation.

incident logging

Recording the details of any incident that occurred, e.g., during testing.

incident management

Ref: After IEEE 1044

The process of recognizing, investigating, taking action and disposing of incidents. It involves logging incidents, classifying them and identifying the impact.

incident management tool

See Also: defect management tool

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

incident report

Ref: After IEEE 829

Synonyms: deviation report , software test incident report , test incident report

A document reporting on any event that occurred, e.g., during the testing, which requires investigation.

incremental development model

A development lifecycle where a project is broken into a series of increments, each of which delivers a portion of the functionality in the overall project requirements. The requirements are prioritized and delivered in priority order in the appropriate increment. In some (but not all) versions of this lifecycle model, each subproject follows a mini V-model with its own design, coding and testing phases.

incremental testing

Testing where components or systems are integrated and tested one or some at a time, until all the components or systems are integrated and tested.

independence of testing

Ref: After DO-178b

Separation of responsibilities, which encourages the accomplishment of objective testing.

indicator

Ref: ISO 14598

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

infeasible path

A path that cannot be exercised by any set of possible input values.

informal review

A review not based on a formal (documented) procedure.

information assurance

Ref: NIST.IR.7298

Measures that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. These measures include providing for restoration of information systems by incorporating protection, detection, and reaction capabilities.

information security

Ref: NIST.IR.7298

Synonyms: cybersecurity

The protection of information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction in order to provide confidentiality, integrity, and availability.

initiating (IDEAL)

See Also: IDEAL

The phase within the IDEAL model where the groundwork is laid for a successful improvement effort. The initiating phase consists of the activities: set context, build sponsorship and charter infrastructure.

input

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

input domain

See Also: domain

The set from which valid input values can be selected.

input value

See Also: input

An instance of an input.

insider threat

A security threat originating from within the organization, often by an authorized system user.

insourced testing

Testing performed by people who are co-located with the project team but are not fellow employees.

inspection

Ref: After IEEE 610, IEEE 1028   **See Also:** peer review

A type of peer review that relies on visual examination of documents to detect defects, e.g., violations of development standards and non-conformance to higher level documentation. The most formal review technique and therefore always based on a documented procedure.

installability

Ref: ISO 9126 .   **See Also:** portability

The capability of the software product to be installed in a specified environment.

installability testing

See Also: portability testing

Testing the installability of a software product.

installation guide

Supplied instructions on any suitable media, which guides the installer through the installation process. This may be a manual guide, step-by-step procedure, installation wizard, or any other similar process description.

installation wizard

Supplied software on any suitable media, which leads the installer through the installation process. It normally runs the installation process, provides feedback on installation results, and prompts for options.

instrumentation

The insertion of additional code into the program in order to collect information about program behavior during execution, e.g., for measuring code coverage.

instrumenter

Synonyms: program instrumenter

A software tool used to carry out instrumentation.

intake test

See Also: smoke test

Synonyms: pretest

A special instance of a smoke test to decide if the component or system is ready for detailed and further testing An intake test is typically carried out at the start of the test execution phase.

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.

interface testing

An integration test type that is concerned with testing the interfaces between components or systems.

interoperability

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

The capability of the software product to interact with one or more specified components or systems.

interoperability testing

See Also: functionality testing

Synonyms: compatibility testing

Testing to determine the interoperability of a software product.

intrusion detection system (IDS)

See Also: malware scanning

A system which monitors activities on the 7 layers of the OSI model from network to application level, to detect violations of the security policy.

invalid testing

See Also: error tolerance, negative testing

Testing using input values that should be rejected by the component or system.

isolation testing

Testing of individual components in isolation from surrounding components, with surrounding components being simulated by stubs and drivers, if needed.

iterative development model

A development lifecycle where a project is broken into a usually large number of iterations. An iteration is a complete development loop resulting in a release (internal or external) of an executable product, a subset of the final product under development, which grows from iteration to iteration to become the final product.

keyword-driven testing

See Also: data-driven testing

Synonyms: action word-driven testing

A scripting technique that uses data files to contain not only test data and expected results, but also keywords related to the application being tested. The keywords are interpreted by special supporting scripts that are called by the control script for the test.

LCSAJ

A Linear Code Sequence And Jump, consists of the following three items (conventionally identified by line numbers in a source code listing): the start of the linear sequence of executable statements, the end of the linear sequence, and the target line to which control flow is transferred at the end of the linear sequence.

LCSAJ coverage

The percentage of LCSAJs of a component that have been exercised by a test suite. 100% LCSAJ coverage implies 100% decision coverage.

LCSAJ testing

A white-box test design technique in which test cases are designed to execute LCSAJs.

lead assessor

The person who leads an assessment. In some cases, for instance CMMI and TMMi when formal assessments are conducted, the lead assessor must be accredited and formally trained.

learnability

Ref: ISO 9126   **See Also:** usability

The capability of the software product to enable the user to learn its application.

learning (IDEAL)

See Also: IDEAL

The phase within the IDEAL model where one learns from experiences and improves one's ability to adopt new processes and technologies in the future. The learning phase consists of the activities: analyze and validate, and propose future actions.

level of intrusion

The level to which a test object is modified by adjusting it for testability.

level test plan

See Also: test plan

A test plan that typically addresses one test level.

lifecycle model

Ref: CMMI   **See Also:** software lifecycle

A partitioning of the life of a product or project into phases.

linear scripting

A simple scripting technique without any control structure in the test scripts.

load profile

See Also: operational profile

A specification of the activity which a component or system being tested may experience in production. A load profile consists of a designated number of virtual users who process a defined set of transactions in a specified time period and according to a predefined operational profile.

load testing

See Also: performance testing, stress testing

A type of performance testing conducted to evaluate the behavior of a component or system with increasing load, e.g., numbers of parallel users and/or numbers of transactions, to determine what load can be handled by the component or system.

load testing tool

See Also: performance testing tool

A tool to support load testing whereby it can simulate increasing load, e.g., numbers of concurrent users and/or transactions within a specified time-period.

low-level test case

See Also: high-level test case

Synonyms: concrete test case

A test case with concrete (implementation level) values for input data and expected results. Logical operators from high-level test cases are replaced by actual values that correspond to the objectives of the logical operators.

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.

maintainability testing

Synonyms: serviceability testing

Testing to determine the maintainability of a software product.

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.

maintenance testing

Testing the changes to an operational system or the impact of a changed environment to an operational system.

malware

Software that is intended to harm a system or its components.

malware scanning

See Also: intrusion detection system

Static analysis aiming to detect and remove malicious code received at an interface.

man-in-the-middle attack

The interception, mimicking and/or altering and subsequent relaying of communications (e.g., credit card transactions) by a third party such that a user remains unaware of that third party's presence.

management review

Ref: After IEEE 610, IEEE 1028

A systematic evaluation of software acquisition, supply, development, operation, or maintenance process, performed by or on behalf of management that monitors progress, determines the status of plans and schedules, confirms requirements and their system allocation, or evaluates the effectiveness of management approaches to achieve fitness for purpose.

manufacturing-based quality

Ref: After Garvin   **See Also:** product-based quality, transcendent-based quality, user-based quality, value-based quality

A view of quality, whereby quality is measured by the degree to which a product or service conforms to its intended design and requirements. Quality arises from the process(es) used.

master test plan

See Also: test plan

A test plan that typically addresses multiple test levels.

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.

maturity level

Ref: TMMi

Degree of process improvement across a predefined set of process areas in which all goals in the set are attained.

maturity model

A structured collection of elements that describe certain aspects of maturity in an organization, and aid in the definition and understanding of an organization's processes. A maturity model often provides a common language, shared vision and framework for prioritizing improvement actions.

MBT model

Any model used in model-based testing.

mean time between failures (MTBF)

See Also: reliability growth model

The arithmetic mean (average) time between failures of a system. The MTBF is typically part of a reliability growth model that assumes the failed system is immediately repaired, as a part of a defect fixing process.

mean time to repair (MTTR)

The arithmetic mean (average) time a system will take to recover from any failure. This typically includes testing to insure that the defect has been resolved.

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.

measurement scale

Ref: ISO 14598

A scale that constrains the type of data analysis that can be performed on it.

memory leak

A memory access failure due to a defect in a program's dynamic store allocation logic that causes it to fail to release memory after it has finished using it, eventually causing the program and/or other concurrent processes to fail due to lack of memory.

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.

methodical testing

Testing based on a standard set of tests, e.g., a checklist, a quality standard, or a set of generalized test cases.

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.

mind map

A diagram used to represent words, ideas, tasks, or other items linked to and arranged around a central keyword or idea. Mind maps are used to generate, visualize, structure, and classify ideas, and as an aid in study, organization, problem solving, decision making, and writing.

model coverage

The degree, expressed as a percentage, to which model elements are planned to be or have been exercised by a test suite.

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.

modeling tool

Ref: Graham .

A tool that supports the creation, amendment and verification of models of the software or system.

moderator

Synonyms: inspection leader

The leader and main person responsible for an inspection or other review process.

modified condition / decision coverage (MC/DC)

Synonyms: condition determination coverage , modified multiple condition coverage

The percentage of all single condition outcomes that independently affect a decision outcome that have been exercised by a test case suite. 100% modified condition decision coverage implies 100% decision condition coverage.

modified condition / decision testing

Synonyms: condition determination testing , modified multiple condition testing

A white-box test design technique in which test cases are designed to execute single condition outcomes that independently affect a decision outcome.

monitoring tool

Ref: After IEEE 610.

A software tool or hardware device that runs concurrently with the component or system under test and supervises, records and/or analyses the behavior of the component or system.

monkey testing

Testing by means of a random selection from a large range of inputs and by randomly pushing buttons, ignorant of how the product is being used.

multiple condition coverage

Synonyms: branch condition combination coverage , condition combination coverage

The percentage of combinations of all single condition outcomes within one statement that have been exercised by a test suite. 100% multiple condition coverage implies 100% modified condition decision coverage.

multiple condition testing

Synonyms: branch condition combination testing , condition combination testing

A white-box test design technique in which test cases are designed to execute combinations of single condition outcomes (within one statement).

mutation analysis

A method to determine test suite thoroughness by measuring the extent to which a test suite can discriminate the program from slight variants (mutants) of the program.

mutation testing

Synonyms: back-to-back testing

Testing in which two or more variants of a component or system are executed with the same inputs, the outputs compared, and analyzed in cases of discrepancies.

Myers-Briggs Type Indicator (MBTI)

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

N-switch coverage

Ref: Chow

Synonyms: Chow's coverage metrics

The percentage of sequences of N+1 transitions that have been exercised by a test suite.

N-switch testing

Ref: Chow   **See Also:** state transition testing

A form of state transition testing in which test cases are designed to execute all valid sequences of N+1 transitions.

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n-wise testing

See Also: combinatorial testing, orthogonal array testing, pairwise testing

A black-box test design technique in which test cases are designed to execute all possible discrete combinations of any set of n input parameters.

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negative testing

Ref: After Beizer.

Synonyms: dirty testing

Tests aimed at showing that a component or system does not work. Negative testing is related to the tester's attitude rather than a specific test approach or test design technique, e.g., testing with invalid input values or exceptions.

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neighborhood integration testing

A form of integration testing where all of the nodes that connect to a given node are the basis for the integration testing.

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network zone

A sub-network with a defined level of trust. For example, the Internet or a public zone would be considered to be untrusted.

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non-conformity

Ref: ISO 9000

Non-fulfillment of a specified requirement.

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non-functional requirement

A requirement that does not relate to functionality, but to attributes such as reliability, efficiency, usability, maintainability and portability.

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non-functional test design technique

See Also: black-box test design technique

Procedure to derive and/or select test cases for non-functional testing based on an analysis of the specification of a component or system without reference to its internal structure.

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.

offline MBT

Model-based testing approach whereby test cases are generated into a repository for future execution.

online MBT

Synonyms: on-the-fly MBT

Model-based testing approach whereby test cases are generated and executed simultaneously.

open source tool

A software tool that is available to all potential users in source code form, usually via the internet. Its users are permitted, usually under license, to study, change, improve and, at times, to distribute the software.

operability

Ref: ISO 9126   **See Also:** usability

The capability of the software product to enable the user to operate and control it.

operational acceptance testing

See Also: operational testing

Synonyms: production acceptance testing

Operational testing in the acceptance test phase, typically performed in a (simulated) operational environment by operations and/or systems administration staff focusing on operational aspects, e.g., recoverability, resource-behavior, installability and technical compliance.

operational environment

Hardware and software products installed at users' or customers' sites where the component or system under test will be used. The software may include operating systems, database management systems, and other applications.

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.

operational profile testing

Ref: Musa

Statistical testing using a model of system operations (short duration tasks) and their probability of typical use.

operational profiling

See Also: operational profile

The process of developing and implementing an operational profile.

operational testing

Ref: IEEE 610

Testing conducted to evaluate a component or system in its operational environment.

orthogonal array

A 2-dimensional array constructed with special mathematical properties, such that choosing any two columns in the array provides every pair combination of each number in the array.

orthogonal array testing

See Also: combinatorial testing, n-wise testing, pairwise testing

A systematic way of testing all-pair combinations of variables using orthogonal arrays. It significantly reduces the number of all combinations of variables to test all pair combinations.

output

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

output domain

See Also: domain

The set from which valid output values can be selected.

output value

See Also: output

An instance of an output.

outsourced testing

Testing performed by people who are not co-located with the project team and are not fellow employees.

pair programming

A software development approach whereby lines of code (production and/or test) of a component are written by two programmers sitting at a single computer. This implicitly means ongoing real-time code reviews are performed.

pair testing

Two persons, e.g., two testers, a developer and a tester, or an end-user and a tester, working together to find defects. Typically, they share one computer and trade control of it while testing.

pairwise integration testing

A form of integration testing that targets pairs of components that work together, as shown in a call graph.

pairwise testing

See Also: combinatorial testing, n-wise testing, orthogonal array testing

A black-box test design technique in which test cases are designed to execute all possible discrete combinations of each pair of input parameters.

Pareto analysis

A statistical technique in decision making that is used for selection of a limited number of factors that produce significant overall effect. In terms of quality improvement, a large majority of problems (80%) are produced by a few key causes (20%).

pass

Synonyms: test pass

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

pass/fail criteria

Ref: IEEE 829

Decision rules used to determine whether a test item (function) or feature has passed or failed a test.

password cracking

Ref: after NIST.IR.7298

A security attack recovering secret passwords stored in a computer system or transmitted over a network.

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.

path coverage

The percentage of paths that have been exercised by a test suite. 100% path coverage implies 100% LCSAJ coverage.

path sensitizing

Choosing a set of input values to force the execution of a given path.

path testing

A white-box test design technique in which test cases are designed to execute paths.

peer review

A review of a software work product by colleagues of the producer of the product for the purpose of identifying defects and improvements. Examples are inspection, technical review and walkthrough.

penetration testing

A testing technique aiming to exploit security vulnerabilities (known or unknown) to gain unauthorized access.

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 indicator

Ref: CMMI

Synonyms: key performance indicator

A high-level metric of effectiveness and/or efficiency used to guide and control progressive development, e.g., lead-time slip for software development.

performance profiling

The task of analyzing, e.g., identifying performance bottlenecks based on generated metrics, and tuning the performance of a software component or system using tools.

performance testing

See Also: efficiency testing

Testing to determine the performance of a software product.

performance testing tool

A tool to support performance testing that usually has two main facilities: load generation and test transaction measurement. Load generation can simulate either multiple users or high volumes of input data. During execution, response time measurements are taken from selected transactions and these are logged. Performance testing tools normally provide reports based on test logs and graphs of load against response times.

pharming

A security attack intended to redirect a web site's traffic to a fraudulent web site without the user's knowledge or consent.

phase containment

The percentage of defects that are removed in the same phase of the software lifecycle in which they were introduced.

phase test plan

See Also: test plan

A test plan that typically addresses one test phase.

phishing

An attempt to acquire personal or sensitive information by masquerading as a trustworthy entity in an electronic communication.

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.

pointer

Ref: IEEE 610

A data item that specifies the location of another data item. For example, a data item that specifies the address of the next employee record to be processed.

portability

Ref: ISO 9126

The ease with which the software product can be transferred from one hardware or software environment to another.

portability testing

Synonyms: configuration testing

Testing to determine the portability of a software product.

post-execution comparison

Comparison of actual and expected results, performed after the software has finished running.

postcondition

Environmental and state conditions that must be fulfilled after the execution of a test or test procedure.

precondition

Environmental and state conditions that must be fulfilled before the component or system can be executed with a particular test or test procedure.

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.

priority

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

PRISMA

A systematic approach to risk-based testing that employs product risk identification and analysis to create a product risk matrix based on likelihood and impact. Term is derived from Product RISk MAnagement.

probe effect

The effect on the component or system by the measurement instrument when the component or system is being measured, e.g., by a performance testing tool or monitor. For example performance may be slightly worse when performance testing tools are being used.

procedure testing

Testing aimed at ensuring that the component or system can operate in conjunction with new or existing users' business procedures or operational procedures.

process

Ref: ISO 12207

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

process assessment

Ref: after ISO 15504

A disciplined evaluation of an organization's software processes against a reference model.

process cycle test

Ref: TMap   **See Also:** procedure testing

A black-box test design technique in which test cases are designed to execute business procedures and processes.

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.

process model

A framework wherein processes of the same nature are classified into a overall model, e.g., a test improvement model.

process reference model

A process model providing a generic body of best practices and how to improve a process in a prescribed step-by-step manner.

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.

process-compliant testing

See Also: standard-compliant testing

Testing that follows a set of defined processes, e.g., defined by an external party such as a standards committee.

process-driven scripting

A scripting technique where scripts are structured into scenarios which represent use cases of the software under test. The scripts can be parameterized with test data.

product risk

See Also: risk

A risk directly related to the test object.

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product-based quality

Ref: After Garvin **See Also:** manufacturing-based quality, quality attribute, transcendent-based quality, user-based quality, value-based quality

A view of quality, wherein quality is based on a well-defined set of quality attributes. These attributes must be measured in an objective and quantitative way. Differences in the quality of products of the same type can be traced back to the way the specific quality attributes have been implemented.

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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 retrospective

A structured way to capture lessons learned and to create specific action plans for improving on the next projec or next project phase.

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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.

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pseudo-random

A series which appears to be random but is in fact generated according to some prearranged sequence.

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qualification

Ref: ISO 9000

The process of demonstrating the ability to fulfill specified requirements. Note the term "qualified" is used to designate the corresponding status.

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quality

Ref: After IEEE 610

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

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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 function deployment (QFD)

Ref: Akao

A method to transform user demands into design quality, to deploy the functions forming quality, and to deploy methods for achieving the design quality into subsystems and component parts, and ultimately to specific elements of the manufacturing process.

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.

random testing

A black-box test design technique where test cases are selected, possibly using a pseudo-random generation algorithm, to match an operational profile. This technique can be used for testing non-functional attributes such as reliability and performance.

Rational Unified Process (RUP)

A proprietary adaptable iterative software development process framework consisting of four project lifecycle phases: inception, elaboration, construction and transition.

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.

reconnaissance

Synonyms: footprinting

The exploration of a target area aiming to gain information that can be useful for an attack.

recoverability

Ref: ISO 9126   **See Also:** reliability

The capability of the software product to re-establish a specified level of performance and recover the data directly affected in case of failure.

recoverability testing

See Also: reliability testing

Synonyms: recovery testing

Testing to determine the recoverability of a software product.

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.

regression-averse testing

Testing using various techniques to manage the risk of regression, e.g., by designing re-usable testware and by extensive automation of testing at one or more test 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.

reliability growth model

A model that shows the growth in reliability over time during continuous testing of a component or system as a result of the removal of defects that result in reliability failures.

reliability testing

Testing to determine the reliability of a software product.

replaceability

Ref: ISO 9126   **See Also:** portability

The capability of the software product to be used in place of another specified software product for the same purpose in the same environment.

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 management tool

A tool that supports the recording of requirements, requirements attributes (e.g., priority, knowledge responsible) and annotation, and facilitates traceability through layers of requirements and requirements change management. Some requirements management tools also provide facilities for static analysis, such as consistency checking and violations to pre-defined requirements rules.

requirements phase

Ref: IEEE 610

The period of time in the software lifecycle during which the requirements for a software product are defined and documented.

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.

resource utilization

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

Synonyms: storage

The capability of the software product to use appropriate amounts and types of resources, for example the amounts of main and secondary memory used by the program and the sizes of required temporary or overflow files, when the software performs its function under stated conditions.

resource utilization testing

See Also: efficiency testing

Synonyms: storage testing

The process of testing to determine the resource-utilization of a software product.

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.

resumption criteria

The criteria used to restart all or a portion of the testing activities that were suspended previously.

resumption requirements

Ref: After IEEE 829

The defined set of testing activities that must be repeated when testing is re-started after a suspension.

retrospective meeting

Synonyms: post-project meeting

A meeting at the end of a project during which the project team members evaluate the project and learn lessons that can be applied to the next project.

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.

review plan

A document describing the approach, resources and schedule of intended review activities. It identifies, amongst others: documents and code to be reviewed, review types to be used, participants, as well as entry and exit criteria to be applied in case of formal reviews, and the rationale for their choice. It is a record of the review planning process.

review tool

A tool that provides support to the review process. Typical features include review planning and tracking support, communication support, collaborative reviews and a repository for collecting and reporting of metrics.

reviewer

Synonyms: checker , inspector

The person involved in the review that identifies and describes anomalies in the product or project under review. Reviewers can be chosen to represent different viewpoints and roles in the review process.

risk

A factor that could result in future negative consequences.

risk analysis

The process of assessing identified project or product risks to determine their level of risk, typically by estimating their impact and probability of occurrence (likelihood).

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 leve 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 impact

Synonyms: impact

The damage that will be caused if the risk becomes an actual outcome or event.

risk level

Synonyms: risk exposure

The importance of a risk as defined by its characteristics impact and likelihood. The level of risk can be used to determine the intensity of testing to be performed. A risk level can be expressed either qualitatively (e.g., high, medium, low) or quantitatively.

risk likelihood

Synonyms: likelihood

The estimated probability that a risk will become an actual outcome or event.

risk management

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

risk mitigation

Synonyms: risk control

The process through which decisions are reached and protective measures are implemented for reducing risks to, or maintaining risks within, specified levels.

risk type

Synonyms: risk category

A set of risks grouped by one or more common factors such as a quality attribute, cause, location, or potential effect of risk. A specific set of product risk types is related to the type of testing that can mitigate (control) that risk type. For example, the risk of user interactions being misunderstood can be mitigated by usability testing.

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.

robustness

Ref: IEEE 610   **See Also:** error-tolerance, fault-tolerance

The degree to which a component or system can function correctly in the presence of invalid inputs or stressful environmental conditions.

robustness testing

Testing to determine the robustness of the software product.

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.

root cause analysis

An analysis technique aimed at identifying the root causes of defects. By directing corrective measures at root causes, it is hoped that the likelihood of defect recurrence will be minimized.

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.

safety

Ref: ISO 9126

The capability of the software product to achieve acceptable levels of risk of harm to people, business, software, property or the environment in a specified context of use.

safety critical system

A system whose failure or malfunction may result in death or serious injury to people, or loss or severe damage to equipment, or environmental harm.

safety testing

Testing to determine the safety of a software product.

salting

See Also: hashing

A cryptographic technique that adds random data (salt) to the user data prior to hashing.

scalability

Ref: After Gerrard

The capability of the software product to be upgraded to accommodate increased loads.

scalability testing

Testing to determine the scalability of the software product.

scorecard

See Also: balanced scorecard, dashboard

A representation of summarized performance measurements representing progress towards the implementation of long-term goals. A scorecard provides static measurements of performance over or at the end of a defined interval.

scribe

Synonyms: recorder

The person who records each defect mentioned and any suggestions for process improvement during a review meeting, on a logging form. The scribe should ensure that the logging form is readable and understandable.

script kiddie

See Also: hacker

A person who executes security attacks that have been created by other hackers rather than creating own ones.

scripted testing

Test execution carried out by following a previously documented sequence of tests.

scripting language

A programming language in which executable test scripts are written, used by a test execution tool (e.g., a capture/playback tool).

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 attack

Ref: after NIST.IR.7298

An attempt to gain unauthorized access to a system or component, resources, information, or an attempt to compromise system integrity.

security audit

An audit evaluating an organization's security processes and infrastructure.

security policy

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

security procedure

A set of steps required to implement the security policy and the steps to be taken in response to a security incident.

security testing

See Also: functionality testing

Testing to determine the security of the software product.

security testing tool

A tool that provides support for testing security characteristics and vulnerabilities.

security tool

A tool that supports operational security.

security vulnerability

A weakness in the system that could allow for a successful security attack.

session-based test management

A method for measuring and managing session-based testing, e.g., exploratory testing.

session-based testing

An approach to testing in which test activities are planned as uninterrupted sessions of test design and execution, often used in conjunction with exploratory testing.

severity

Ref: After IEEE 610

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

short-circuiting

A programming language/interpreter technique for evaluating compound conditions in which a condition on one side of a logical operator may not be evaluated if the condition on the other side is sufficient to determine the final outcome.

simulation

Ref: ISO 2382/1

The representation of selected behavioral characteristics of one physical or abstract system by another system.

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simulator

Ref: After IEEE 610, DO178b   **See Also:** emulator

A device, computer program or system used during testing, which behaves or operates like a given system when provided with a set of controlled inputs.

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site acceptance testing

Acceptance testing by users/customers at their site, to determine whether or not a component or system satisfies the user/customer needs and fits within the business processes, normally including hardware as well as software.

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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.

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social engineering

Ref: NIST.IR.7298

An attempt to trick someone into revealing information (e.g., a password) that can be used to attack systems or networks.

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software

Ref: IEEE 610

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

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software integrity level

The degree to which software complies or must comply with a set of stakeholder-selected software and/or software-based system characteristics (e.g., software complexity, risk assessment, safety level, security level, desired performance, reliability or cost) which are defined to reflect the importance of the software to its stakeholders.

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software lifecycle

The period of time that begins when a software product is conceived and ends when the software is no longer available for use. The software lifecycle typically includes a concept phase, requirements phase, design phase, implementation phase, test phase, installation and checkout phase, operation and maintenance phase, and sometimes, retirement phase. Note these phases may overlap or be performed iteratively.

software process improvement (SPI)

Ref: After CMMI

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

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.

Software Usability Measurement Inventory (SUMI)

Ref: Kirakowski93

A questionnaire-based usability test technique for measuring software quality from the end user's point of view.

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 whether these provisions have been satisfied.

specified input

An input for which the specification predicts a result.

SQL injection

A security attack inserting malicious SQL statements into an entry field for execution.

stability

Ref: ISO 9126   **See Also:** maintainability

The capability of the software product to avoid unexpected effects from modifications in the software.

staged representation

See Also: CMMI

A model structure wherein attaining the goals of a set of process areas establishes a maturity level; each level builds a foundation for subsequent levels.

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).

standard-compliant testing

See Also: process-compliant testing

Testing that complies to a set of requirements defined by a standard, e.g., an industry testing standard or a standard for testing safety-critical systems.

state diagram

Ref: IEEE 610

A diagram that depicts the states that a component or system can assume, and shows the events or circumstances that cause and/or result from a change from one state to another.

state table

A grid showing the resulting transitions for each state combined with each possible event, showing both valid and invalid transitions.

state transition

A transition between two states of a component or system.

state transition testing

See Also: N-switch testing

Synonyms: finite state testing

A black-box test design technique in which test cases are designed to execute valid and invalid state transitions.

statement

Synonyms: source statement

An entity in a programming language, which is typically the smallest indivisible unit of execution.

statement coverage

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

statement testing

A white-box test design technique in which test cases are designed to execute statements.

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.

static analyzer

Synonyms: analyzer , static analysis tool

A tool that carries out static analysis.

static code analysis

Analysis of source code carried out without execution of that software.

static testing

Testing of a software development artifact, e.g., requirements, design or code, without execution of these artifacts, e.g., reviews or static analysis.

statistical testing

See Also: operational profile testing

A test design technique in which a model of the statistical distribution of the input is used to construct representative test cases.

status accounting

Ref: IEEE 610

An element of configuration management consisting of the recording and reporting of information needed to manage a configuration effectively. This information includes a listing of the approved configuration identification, the status of proposed changes to the configuration, and the implementation status of the approved changes.

stress testing

Ref: After IEEE 610   **See Also:** performance testing, load testing

A type of performance testing conducted to evaluate a system or component at or beyond the limits of its anticipated or specified workloads, or with reduced availability of resources such as access to memory or servers.

stress testing tool

A tool that supports stress testing.

structural coverage

Coverage measures based on the internal structure of a component or system.

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structured scripting

A scripting technique that builds and utilizes a library of reusable (parts of) scripts.

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stub

Ref: After IEEE 610

A skeletal or special-purpose implementation of a software component, used to develop or test a component that calls or is otherwise dependent on it. It replaces a called component.

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subpath

A sequence of executable statements within a component.

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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.

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suitability testing

Testing to determine the suitability of a software product.

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suspension criteria

Ref: After IEEE 829

The criteria used to (temporarily) stop all or a portion of the testing activities on the test items.

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syntax testing

A black-box test design technique in which test cases are designed based upon the definition of the input domain and/or output domain.

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system

Ref: IEEE 610

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

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system hardening

The step-by-step process of reducing the security vulnerabilities of a system by applying a security policy and different layers of protection.

system integration testing

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

system of systems

Multiple heterogeneous, distributed systems that are embedded in networks at multiple levels and in multiple interconnected domains, addressing large-scale inter-disciplinary common problems and purposes, usually without a common management structure.

system testing

Ref: Hetzel

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

system under test (SUT)

See test object.

Systematic Test and Evaluation Process (STEP)

See Also: content-based model

A structured testing methodology, also used as a content-based model for improving the testing process. Systematic Test and Evaluation Process (STEP) does not require that improvements occur in a specific order.

technical review

Ref: Gilb and Graham, IEEE 1028   **See Also:** peer review

A peer group discussion activity that focuses on achieving consensus on the technical approach to be taken.

test

Ref: IEEE 829

A set of one or more test cases.

test adaptation layer

The layer in a test automation architecture which provides the necessary code to adapt test scripts on an abstract level to the various components, configuration or interfaces of the SUT.

test analysis

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

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.

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.

test automation

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

test automation architecture

An instantiation of the generic test automation architecture to define the architecture of a test automation solution, i.e., its layers, components, services and interfaces.

test automation engineer

A person who is responsible for the design, implementation and maintenance of a test automation architecture as well as the technical evolution of the resulting test automation solution.

test automation framework

A tool that provides an environment for test automation. It usually includes a test harness and test libraries.

test automation manager

A person who is responsible for the planning and supervision of the development and evolution of a test automation solution.

test automation solution

A realization/implementation of a test automation architecture, i.e., a combination of components implementing a specific test automation assignment. The components may include commercial off-the-shelf test tools, test automation frameworks, as well as test hardware.

test automation strategy

A high-level plan to achieve long-term objectives of test automation under given boundary conditions.

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.

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.

test case explosion

The disproportionate growth of the number of test cases with growing size of the test basis, when using a certain test design technique. Test case explosion may also happen when applying the test design technique systematically for the first time.

test case result

The final verdict on the execution of a test and its outcomes, such as pass, fail, or error. The result of error is used for situations where it is not clear whether the problem is in the test object.

test case specification

Ref: After IEEE 829   **See Also:** test specification

A document specifying a set of test cases (objective, inputs, test actions, expected results, and execution preconditions) for a test item.

test charter

See Also: exploratory testing

Synonyms: charter

A statement of test objectives, and possibly test ideas about how to test. Test charters are used in exploratory testing.

test closure

See Also: test process

During the test closure phase of a test process data is collected from completed activities to consolidate experience, testware, facts and numbers. The test closure phase consists of finalizing and archiving the testware and evaluating the test process, including preparation of a test evaluation report.

test comparator

Synonyms: comparator

A test tool to perform automated test comparison of actual results with expected results.

test comparison

The process of identifying differences between the actual results produced by the component or system under test and the expected results for a test. Test comparison can be performed during test execution (dynamic comparison) or after test execution.

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 cycle

Execution of the test process against a single identifiable release of the test object.

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 data management

The process of analyzing test data requirements, designing test data structures, creating and maintaining test data.

test data preparation tool

Synonyms: test generator

A type of test tool that enables data to be selected from existing databases or created, generated, manipulated and edited for use in testing.

test definition layer

The layer in a generic test automation architecture which supports test implementation by supporting the definition of test suites and/or test cases, e.g., by offering templates or guidelines.

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

See Also: test design specification

The process of transforming general test objectives into tangible test conditions and test cases.

test design specification

Ref: After IEEE 829   **See Also:** test specification

A document specifying the test conditions (coverage items) for a test item, the detailed test approach and identifying the associated high-level test cases.

test design technique

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

Procedure used to derive and/or select test cases.

test design tool

A tool that supports the test design activity by generating test inputs from a specification that may be held in a CASE tool repository, e.g., requirements management tool, from specified test conditions held in the tool itself, or from code.

test director

See Also: test manager

A senior manager who manages test managers.

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 evaluation report

A document produced at the end of the test process summarizing all testing activities and results. It also contains an evaluation of the test process and lessons learned.

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 execution layer

The layer in a generic test automation architecture which supports the execution of test suites and/or test cases.

test execution phase

Ref: IEEE 610

The period of time in a software development lifecycle during which the components of a software product are executed, and the software product is evaluated to determine whether or not requirements have been satisfied.

test execution schedule

A scheme for the execution of test procedures. Note: The test procedures are included in the test execution schedule in their context and in the order in which they are to be executed.

test execution technique

The method used to perform the actual test execution, either manual or automated.

test execution tool

A type of test tool that is able to execute other software using an automated test script, e.g., capture/playback.

test generation layer

The layer in a generic test automation architecture which supports manual or automated design of test suites and/or test cases.

test harness

A test environment comprised of stubs and drivers needed to execute a test.

test hook

A customized software interface that enables automated testing of a test object.

test implementation

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

test improvement plan

Ref: After CMMI

A plan for achieving organizational test process improvement objectives based on a thorough understanding of the current strengths and weaknesses of the organization's test processes and test process assets.

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test infrastructure

The organizational artifacts needed to perform testing, consisting of test environments, test tools, office environment and procedures.

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test input

The data received from an external source by the test object during test execution. The external source can be hardware, software or human.

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test item

See Also: test object

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

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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.

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test log

Ref: IEEE 829

Synonyms: test record , test run log

A chronological record of relevant details about the execution of tests.

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test logging

Synonyms: test recording

The process of recording information about tests executed into a test log.

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test management

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

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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 Maturity Model integration (TMMi)

A five-level staged framework for test process improvement, related to the Capability Maturity Model Integration (CMMI), that describes the key elements of an effective test process.

test mission

See Also: test policy

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

test model

A model describing testware that is used for testing a component or a system under test.

test monitoring

See Also: test management

A test management task that deals with the activities related to periodically checking the status of a test project. Reports are prepared that compare the actuals to that which was planned.

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 performance indicator

A high-level metric of effectiveness and/or efficiency used to guide and control progressive test development, e.g., Defect Detection Percentage (DDP).

test phase

Ref: After Gerrard

A distinct set of test activities collected into a manageable phase of a project, e.g., the execution activities of a test level.

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 planning

The activity of establishing or updating a test plan.

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 procedure specification

Ref: After IEEE 829   **See Also:** test specification

Synonyms: test procedure , test scenario

A document specifying a sequence of actions for the execution of a test. Also known as test script or manual test script.

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 process group (TPG)

Ref: After CMMI

A collection of (test) specialists who facilitate the definition, maintenance, and improvement of the test processes used by an organization.

test process improvement

Ref: After CMMI

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

test process improvement manifesto

Ref: Veenendaal08

A statement that echoes the Agile manifesto, and defines values for improving the testing process. The values are: flexibility over detailed processes, best practices over templates, deployment orientation over process orientation, peer reviews over quality assurance (departments), business driven over model-driven.

test process improver

A person implementing improvements in the test process based on a test improvement plan.

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 reporting

See Also: test process

Collecting and analyzing data from testing activities and subsequently consolidating the data in a report to inform stakeholders.

test reproducibility

An attribute of a test indicating whether the same results are produced each time the test is executed.

test run

Execution of a test on a specific version of the test object.

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 script

Commonly used to refer to a test procedure specification, especially an automated one.

test selection criteria

The criteria used to guide the generation of test cases or to select test cases in order to limit the size of a test.

test session

See Also: exploratory testing

An uninterrupted period of time spent in executing tests. In exploratory testing, each test session is focused on a charter, but testers can also explore new opportunities or issues during a session. The tester creates and executes on the fly and records their progress.

test specification

A document that consists of a test design specification, test case specification and/or test procedure specification.

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 suite

Synonyms: test case suite , test set

A set of several test cases for a component or system under test, where the post condition of one test is often used as the precondition for the next one.

test summary report

Ref: After IEEE 829

Synonyms: test report

A document summarizing testing activities and results. It also contains an evaluation of the corresponding test items against exit criteria.

test target

A set of exit criteria.

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 type

Ref: After TMap

A group of test activities aimed at testing a component or system focused on a specific test objective, i.e. functional test, usability test, regression test etc. A test type may take place on one or more test levels or test phases.

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.

testability

Ref: ISO 9126   **See Also:** maintainability

The capability of the software product to enable modified software to be tested.

testability review

Ref: After TMap

A detailed check of the test basis to determine whether the test basis is at an adequate quality level to act as an input document for the test process.

testable requirement

Ref: After IEEE 610

A requirements that is stated in terms that permit establishment of test designs (and subsequently test cases) and execution of tests to determine whether the requirement has been met.

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.

testware

Ref: After Fewster and Graham

Artifacts produced during the test process required to plan, design, and execute tests, such as documentation, scripts, inputs, expected results, set-up and clear-up procedures, files, databases, environment, and any additional software or utilities used in testing.

thread testing

An approach to component integration testing where the progressive integration of components follows the implementation of subsets of the requirements, as opposed to the integration of components by levels of a hierarchy.

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three-point estimation

A test estimation method using estimated values for the "best case", "worst case", and "most likely case" of the matter being estimated, to define the degree of certainty associated with the resultant estimate.

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top-down testing

See Also: integration testing

An incremental approach to integration testing where the component at the top of the component hierarchy is tested first, with lower level components being simulated by stubs. Tested components are then used to test lower level components. The process is repeated until the lowest level components have been tested.

Total Quality Management (TQM)

Ref: After ISO 8402

An organization-wide management approach centered on quality, based on the participation of all members of the organization and aiming at long-term success through customer satisfaction, and benefits to all members of the organization and to society. Total Quality Management consists of planning, organizing, directing, control, and assurance.

TPI Next

A continuous business-driven framework for test process improvement that describes the key elements of an effective and efficient test process.

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traceability

See Also: horizontal traceability, vertical traceability

The ability to identify related items in documentation and software, such as requirements with associated tests.

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traceability matrix

A two-dimensional table, which correlates two entities (e.g., requirements and test cases). The table allows tracing back and forth the links of one entity to the other, thus enabling the determination of coverage achieved and the assessment of impact of proposed changes.

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transactional analysis

The analysis of transactions between people and within people's minds; a transaction is defined as a stimulus plus a response. Transactions take place between people and between the ego states (personality segments) within one person's mind.

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transcendent-based quality

Ref: After Garvin   **See Also:** manufacturing-based quality, product-based quality, user-based quality, value-based quality

A view of quality, wherein quality cannot be precisely defined, but we know it when we see it, or are aware of its absence when it is missing. Quality depends on the perception and affective feelings of an individual or group of individuals toward a product.

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understandability

Ref: ISO 9126   **See Also:** usability

The capability of the software product to enable the user to understand whether the software is suitable, and how it can be used for particular tasks and conditions of use.

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unit test framework

Ref: Graham

A tool that provides an environment for unit or component testing in which a component can be tested in isolation or with suitable stubs and drivers. It also provides other support for the developer, such as debugging capabilities.

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unreachable code

Synonyms: dead code

Code that cannot be reached and therefore is impossible to execute.

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usability

Ref: ISO 9126

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

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usability testing

Ref: After ISO 9126

Testing to determine the extent to which the software product is understood, easy to learn, easy to operate and attractive to the users under specified conditions.

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use case

A sequence of transactions in a dialogue between an actor and a component or system with a tangible result, where an actor can be a user or anything that can exchange information with the system.

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use case testing

Synonyms: scenario testing , user scenario testing

A black-box test design technique in which test cases are designed to execute scenarios of use cases.

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user acceptance testing

See Also: acceptance testing

Acceptance testing carried out by future users in a (simulated) operational environment focusing on user requirements and needs.

user story

See Also: Agile software development, requirement

A high-level user or business requirement commonly used in Agile software development, typically consisting of one sentence in the everyday or business language capturing what functionality a user needs and the reason behind this, any non-functional criteria, and also includes acceptance criteria.

user story testing

See Also: user story

A black-box test design technique in which test cases are designed based on user stories to verify their correct implementation.

user test

A test whereby real-life users are involved to evaluate the usability of a component or system.

user-based quality

Ref: after Garvin   **See Also:** manufacturing-based quality, product-based quality, transcendent-based quality, value-based quality

A view of quality, wherein quality is the capacity to satisfy needs, wants and desires of the user(s). A product or service that does not fulfill user needs is unlikely to find any users. This is a context dependent, contingent approach to quality since different business characteristics require different qualities of a product.

V-model

A framework to describe the software development lifecycle activities from requirements specification to maintenance. The V-model illustrates how testing activities can be integrated into each phase of the software development lifecycle.

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.

value-based quality

Ref: After Garvin   **See Also:** manufacturing-based quality, product-based quality, transcendent-based quality, user-based quality

A view of quality wherein quality is defined by price. A quality product or service is one that provides desired performance at an acceptable cost. Quality is determined by means of a decision process with stakeholders on trade-offs between time, effort and cost aspects.

variable

An element of storage in a computer that is accessible by a software program by referring to it by a name.

verification

Ref: ISO 9000

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

vertical traceability

The tracing of requirements through the layers of development documentation to components.

volume testing

See Also: resource-utilization testing

Testing where the system is subjected to large volumes of data.

vulnerability scanner

A static analyzer that is used to detect particular security vulnerabilities in the code.

walkthrough

Ref: Freedman and Weinberg, IEEE 1028   **See Also:** peer review

Synonyms: structured walkthrough

A step-by-step presentation by the author of a document in order to gather information and to establish a common understanding of its content.

Website Analysis and Measurement Inventory (WAMMI)

A questionnaire-based usability test technique for measuring web site software quality from the end user's point of view.

white-box test design technique

Synonyms: structural test design technique , structure-based test design technique , structure-based technique , white-box technique

Procedure to derive and/or select test cases based on an analysis of the internal structure of a component or system.

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.

Wideband Delphi

An expert-based test estimation technique that aims at making an accurate estimation using the collective wisdom of the team members.

wild pointer

See Also: pointer

A pointer that references a location that is out of scope for that pointer or that does not exist.

work breakdown structure (WBS)

Ref: CMMI

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