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Software and systems engineering — Software testing —

Part 3: Test documentation

Ingénierie du logiciel et des systèmes — Essais du logiciel —

Partie 3: Documentation des essais

Reference number
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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO/IEC documents should be noted. This document was drafted in accordance with the rules given in the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

IEEE Standards documents are developed within the IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Association (IEEE-SA) Standards Board. The IEEE develops its standards through a consensus development process, approved by the American National Standards Institute, which brings together volunteers representing varied viewpoints and interests to achieve the final product. Volunteers are not necessarily members of the Institute and serve without compensation. While the IEEE administers the process and establishes rules to promote fairness in the consensus development process, the IEEE does not independently evaluate, test, or verify the accuracy of any of the information contained in its standards.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see https://patents.iec.ch).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

ISO/IEC/IEEE 29119-3 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*, in cooperation with the Systems and Software Engineering Standards Committee of the IEEE Computer Society, under the Partner Standards Development Organization cooperation agreement between ISO and IEEE.

This second edition cancels and replaces the first edition (ISO/IEC/IEEE 29119-3:2013), which has been technically revised.

The main changes compared to the previous edition are as follows:

— the concept of test conditions has been replaced by test models, as feedback on the previous edition of this document highlighted a problem with users' understanding of 'test conditions' and their use for deriving test cases.

A list of all parts in the ISO/IEC/IEEE 29119 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

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Introduction

The purpose of ISO/IEC/IEEE 29119 (all parts) is to define an internationally-agreed set of standards for software testing that can be used by any organization when performing any form of software testing.

ISO/IEC/IEEE 29119-1 introduces software testing concepts. This document uses the concepts of ISO/IEC/IEEE 29119-1.

ISO/IEC/IEEE 29119-2 comprises test process descriptions that define the software testing processes at the organisational level, test management level and dynamic test levels. It supports dynamic testing, functional and non-functional testing, manual and automated testing and scripted and unscripted testing, and can be utilized within any lifecycle model, including agile and traditional methodologies. Supporting diagrams describing the processes are also provided.

ISO/IEC/IEEE 29119-4 defines software test design techniques, which can be used within any lifecycle and for any product.

ISO/IEC/IEEE 29119-5 addresses the use of keyword-driven testing.

This document defines templates and provides examples of test documentation that are produced during the test process. An overview of the test documentation is provided in Figure 1. The templates are arranged within clauses reflecting the overall test process description structure in ISO/IEC/IEEE 29119-2, i.e. by the test process in which they are being produced. Annex A contains a list of all the information items identified in Clauses 6, 7 and 8 with the corresponding level of conformance (shall/should/may) from ISO/IEC/IEEE 29119-2. Annex B contains an overview of the examples. Annexes C to R contain examples of the application of the templates. Annex S provides mappings to existing standards. Annex T explains why the concept of test conditions has been replaced by test models in this document. A Bibliography is provided at the end of the document.

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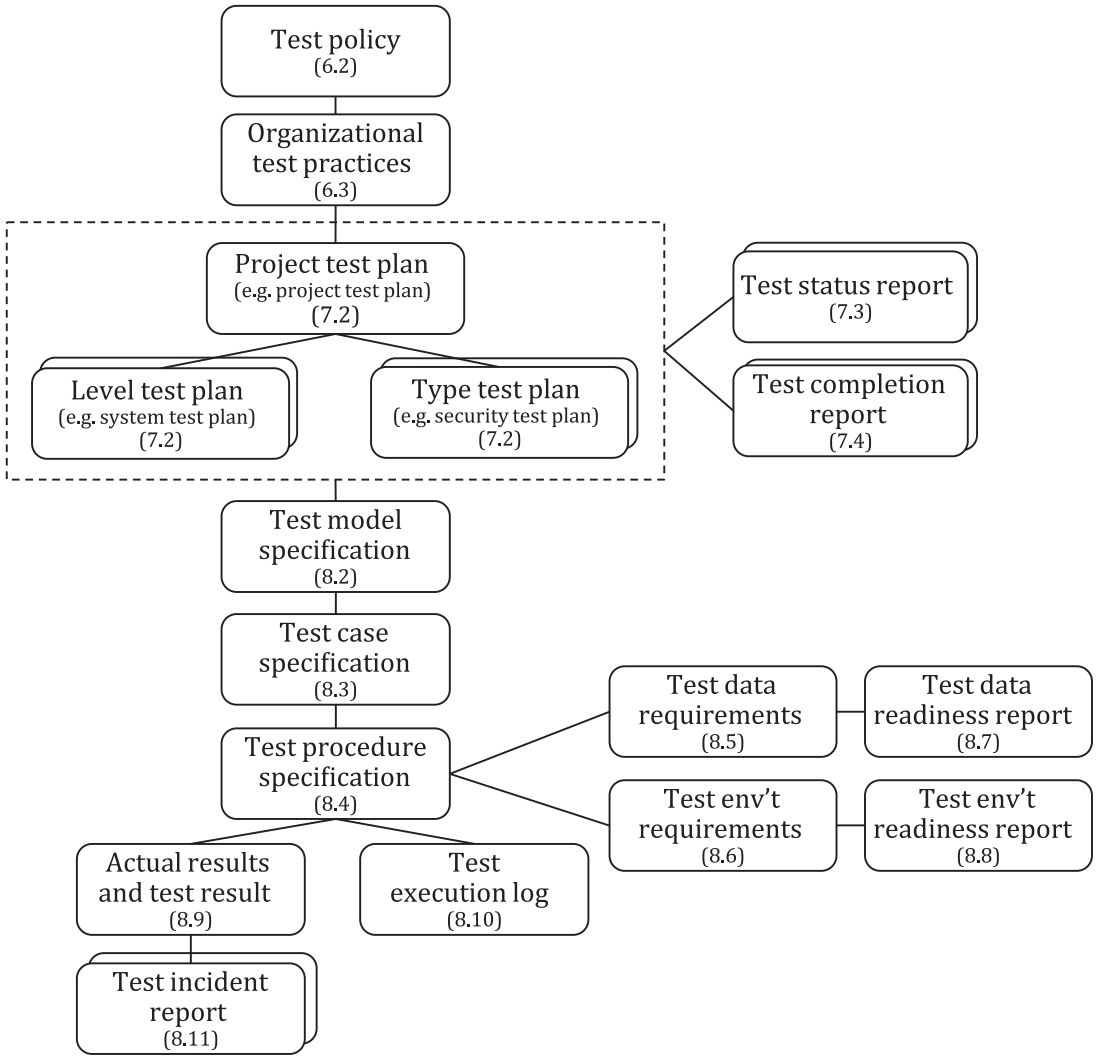


Figure 1 — Overview of test documentation

The test documentation described in this document can be on paper or in electronic form (e.g. records in test tools, spreadsheets, mind maps, white board photos).

The nomenclature of test documentation within this document (e.g. document names, section headings) and the contents of each document can be tailored to suit the unique needs of an organization, under the tailoring clause (see Clause 4).

This document uses the traditional concept of organizations and projects, but some organizations, especially those using an agile approach, do not organize their development in terms of projects; instead they run product development based on more long-lasting product teams. Users of this document can substitute the term 'product' for 'project', where appropriate.

ISO/IEC/IEEE 29119 (all parts) aims to provide stakeholders with the ability to manage and perform software testing in any organization. This document can be adopted under any lifecycle methodology including traditional (e.g. waterfall, iterative), agile or DevOps.

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Software and systems engineering — Software testing —

Part 3: Test documentation

1 Scope

This document specifies software test documentation templates that can be used for any organization, project or testing activity. It describes the test documentation that is an output of the processes specified in ISO/IEC/IEEE 29119-2.

This document is applicable to testing in all software development lifecycle models. This document is intended for, but not limited to, testers, test managers, developers, and project managers, particularly those responsible for governing, managing, and implementing software testing.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO, IEC and IEEE maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

— IEEE Standards Dictionary Online: available at https://ieeexplore.ieee.org/xpls/dictionary.jsp

NOTE For additional terms and definitions in the field of systems and software engineering, see ISO/IEC/IEEE 24765, which is published periodically as a "snapshot" of the SEVOCAB (Systems and software Engineering Vocabulary) database and is publicly accessible at https://www.computer.org/sevocab.

3.1
actual results
set of behaviours or conditions of a test item, or set of conditions of associated data or the test environment, observed as a result of test execution

EXAMPLE Output to screen, outputs to hardware, changes to data, reports, and communication messages sent.

3.2
expected results
observable predicted behaviour of the test item under specified conditions based on its specification or another source

3.3
incident
anomalous or unexpected event, set of events, condition, or situation at any time during the life cycle of a project, product, service, or system

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3.4
incident report
documentation of the occurrence, nature, and status of an *incident* (3.3)

Note 1 to entry: Incident reports are also known as anomaly reports, bug reports, defect reports, error reports, issues, problem reports and trouble reports, amongst other terms.

3.5
organizational test practices
documentation that expresses the recommended approaches or methods for the testing to be performed within an organization, providing detail on how the testing is to be performed

Note 1 to entry: The organizational test practices is aligned with the *test policy* (3.20).

Note 2 to entry: An organization can have more than one organizational test practices document to cover markedly different contexts, such one for mobile apps and one for safety-critical systems.

Note 3 to entry: The organizational test practices can incorporate the context of the test policy where no separate test policy is available.

3.6
organizational test specification
documentation that provides information about testing for an organization, i.e. information that is not project specific

EXAMPLE The most common examples of organizational test specifications are the *test policy* (3.20) and *organizational test practices* (3.5).

3.7
test basis
information used as the basis for designing and implementing test cases

Note 1 to entry: The test basis can take the form of documentation, such as a requirements specification, design specification, or module specification, but can also be an undocumented understanding of the required behaviour.

3.8
test case specification
documentation of a set of one or more test cases

3.9
test completion report
test summary report
report that provides a summary of the testing that was performed

3.10
test data readiness report
documentation describing the status of each test data requirement

3.11
test environment item
element of a test environment that can be considered separately from other parts of the test environment

EXAMPLE Hardware, software, interfaces, peripherals, tools.

3.12
test environment readiness report
documentation that describes the status of each test environment requirement

Note 1 to entry: This can list the status of each of the *test environment requirements* (3.13).

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3.13
test environment requirements
documentation of the necessary properties of the test environment

Note 1 to entry: All or parts of the test environment requirements can reference where the information can be found, e.g. in the appropriate *organizational test practices* (3.5) document, *test plan* (3.19) and/or *test specification* (3.23).

3.14
test execution log
record of the execution of one or more test procedures

3.15
test incident
event occurring during the execution of a test that requires investigation

3.16
test model
representation of the test item, which allows the testing to be focused on particular characteristics or qualities

EXAMPLE Requirements statements, equivalence partitions, state transition diagram, use case description, decision table, input syntax, source code, control flow graph, parameters and values, classification tree, natural language.

Note 1 to entry: The test model and the required test coverage are used to identify test coverage items.

Note 2 to entry: A separate test model can be required for each different type of required test coverage included in the test completion criteria.

Note 3 to entry: A test model can include one or more test conditions.

Note 4 to entry: Test models are commonly used to support test design (e.g. they are used to support the test design in ISO/IEC/IEEE 29119-4, and they are used in model-based testing). Other types of models exist to support other aspects of testing, such as test environment models, test maturity models and test architecture models.

3.17
test model specification
documentation specifying the *test model* (3.16)

3.18
test organization
management structure responsible for testing within an organization

Note 1 to entry: The test organization is typically technically, managerially and financially independent from the development organization.

3.19
test plan
detailed description of test objectives to be achieved and the means and schedule for achieving them, organized to coordinate testing activities for some test item or set of test items

Note 1 to entry: A project can have more than one test plan, for example there can be a project test plan (also known as a master test plan) that encompasses all testing activities on the project; further detail of particular test activities can be defined in one or more test level / test type plans (e.g. a system test plan or a performance test plan).

Note 2 to entry: A test plan is typically a written document, although other formats can be possible as defined locally within an organization or project.

Note 3 to entry: Test plans can also be written for non-project activities, for example a maintenance test plan.

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3.20
test policy
organizational test policy
executive-level documentation that describes the purpose, goals, principles and scope of testing within an organization

Note 1 to entry: The test policy defines what testing is performed and what it is expected to achieve but does not detail how testing is to be performed.

Note 2 to entry: The test policy can provide a framework for establishing, reviewing and continually improving the organization's testing.

3.21
test procedure specification
test script
documentation specifying one or more test procedures

3.22
test result
indication of whether or not a specific test case has passed or failed, i.e. if the *actual results* (3.1) corresponds to the *expected results* (3.2) or if deviations were observed

3.23
test specification
complete documentation of the test design, test cases and test procedures for a specific test item

Note 1 to entry: A test specification can be detailed in one document, in a set of documents, or in other ways, for example in a mixture of documents and database entries.

3.24
test status report
report that provides information about the status of the testing that is being performed in a specified reporting period

3.25
test strategy
part of the *test plan* (3.19) that describes the approach to testing for a specific project, test level or test type

Note 1 to entry: The test strategy usually describes some or all of the following; the test levels and test types to be implemented; the retesting and regression testing to be employed; the test design techniques and corresponding test completion criteria to be used; test data; test environment and testing tool requirements; and expectations for test deliverables.

3.26
test traceability matrix
verification cross reference matrix
requirements test matrix
requirements verification table
document, spreadsheet, or other tool used to identify related items in documentation and software, such as requirements with associated tests

Note 1 to entry: Different test traceability matrices can have different information, formats, and levels of detail.

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