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Software engineering — Capabilities of software testing tools

Ingénierie du logiciel — Capacités des outils d'essai de logiciel

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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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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 document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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).

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

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, SC 7, *Software and systems engineering*.

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Introduction

This International Standard defines the framework to which capabilities of software testing tools are allocated in order to identify the capabilities of products being used by any project for software testing. To develop high-quality software with reasonable time and budget, the use of software testing tools is required. The increase in the size and complexity of software is complemented by an increase in the difficulty and complexity of software testing. This created a larger demand for the support of tools in order to test software effectively and efficiently.

Testing tools are highly diverse due to their contexts of use. Testing itself varies by objective, such as functional testing or nonfunctional testing, and granularity, such as unit testing or system testing. Testing tool vendors vary by providing tools with a different function or combination of functions. And despite vendor provided explanations for the type of testing support functions, there is little common understanding of these functions. In this environment, it is difficult to utilize a testing tool that is suitable for a project without common understanding of tool functions, proper acquisition of the needed tools, and efficient training.

The framework defined by this International Standard consists of objectives of testing, granularity of software to be tested and capabilities. In Clause 4, an object model for software testing tools as basis for the framework is defined. In Clause 5, three of the categories in that software testing model (Dynamic Test Execution, Code Analysis, and Test Management) are specified. In Clause 6, quality characteristics, granularity, and other aspects of characteristics are defined and in Clause 7, tool capabilities are mapped onto those categories and characteristics.

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Software engineering — Capabilities of software testing tools

1 Scope

This International Standard defines the framework to which capabilities of software testing tools are allocated in order to identify the capabilities of products being used by any project for software testing. Software testing processes are identified in ISO/IEC/IEEE 29119-2 and software verification processes are identified in ISO/IEC 12207. This International Standard is fully harmonized with these existing standards in terms of software testing processes.

This International Standard focuses on the following areas that the existing ISO/IEC standards do not deal with the following:

— categorization of software test entities and software testing tools (Clauses 4 and 5);

— characterization of each software testing tool category (Clauses 5 and 6);

— mapping of software testing tool capabilities and characteristics (Clauses 6 and 7).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 25010, *Systems and software engineering — Systems and software Quality Requirements and Evaluation (SQuaRE) — System and software quality models*

3 Terms and definitions

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

3.1
quality record report
report which is generated through dynamic test execution and code analysis to record test results and other output

Note 1 to entry: Including Test Result, Static Code Analysis Report, Test Incident Report, and Metrics.

3.2
test target version
specific version of test target which is used for one-time execution of Dynamic Test Execution or Code Analysis

3.3
testing tool
specific or generic tool which is used for test execution and test management such as test results recording, test results display, test results interpretation, generation of test data, generation of test procedure, generation of test scripts, test modelling, etc.

3.4
package
namespace for the grouped elements

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