TECHNICAL REPORT

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Information technology — Interpretation of accreditation requirements in ISO/IEC Guide 25 — Accreditation of Information Technology and Telecommunications testing laboratories for software and protocol testing services

Technologies de l'information — Interprétation des exigences d'accréditation dans le Guide ISO/CEI 25 — Accréditation des laboratoires d'essais pour les technologies de l'information et les télécommunications pour logiciels et services de contrôle de protocole

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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 main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

— type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

— type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

— type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/IEC TR 13233, which is a Technical Report of type 3, was prepared by Technical Committee ISO/IEC JTC 1, *Information technology*.

Introduction

The general requirements for accreditation of laboratories are specified in ISO/IEC Guide 25. The requirements are designed to apply to all types of objective testing and therefore need to be interpreted in respect of the type of testing concerned and the techniques involved.

This document is a Technical Report Type 3, which provides the interpretation of the requirements for testing laboratories operating in the Information Technology and Telecommunications (IT&T) field. It clarifies the criteria an accreditation body should adopt when assessing the technical competence of IT&T testing laboratories to provide the relevant testing services. The adoption of a common international interpretation will ensure that the accreditation services are consistent and harmonised on a world-wide basis. Additionally, it will increase the confidence in the services provided by accredited testing laboratories and facilitate the process of mutual recognition and international harmonisation. Thus, the widest possible acceptance of this interpretation is being sought.

The body of this Technical Report is divided into two columns: the left column giving the relevant requirements from ISO/IEC Guide 25, the interpretation of those to be used in assessments, and relevant definitions, ordered according to the relevant clauses of ISO/IEC Guide 25; and the right column giving associated guidance and examples to help readers to understand how to apply the interpretations in specific subject areas (e.g. OSI testing, product data exchange testing or compiler testing).

The interpretive text uses the same clause numbering as ISO/IEC Guide 25. Each clause contains a summary of the ISO/IEC Guide 25 subclauses, indicating whether interpretive text is provided or whether the subclause is referenced in the interpretive text. References to interpretive text subclauses are also provided as appropriate. This summary is followed by any interpretive text required, each subclause of which is designated by the clause number followed by a capital letter, assigned in alphabetical order (e.g. the interpretive text for clause 4 may be found in subclauses 4.A and 4.B, etc.).

A glossary of terms is provided in Annex A, giving the definitions of terms as used in this Technical Report, where possible based upon definitions given in International Standards, ISO/IEC Guides or other similar documents. A bibliography is provided in Annex B.

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Information technology - Interpretation of accreditation requirements in ISO/IEC Guide 25 - Accreditation of Information Technology and Telecommunications testing laboratories for software and protocol testing services

0 Scope of this Technical Report

0.1 This Technical Report provides guidance for assessors and testing laboratories on the specific interpretation of the accreditation requirements applicable to testing (including validation of means of testing and test tools) in the field of Information Technology and Telecommunications (IT&T), specifically in relation to software and protocol testing services. This Technical Report does not apply to the accreditation of inspection, certification and quality assurance assessment activities.

0.2 However, ISO/IEC Guide 25 and any other applicable ISO/IEC Guides take precedence over the interpretation given in this Technical Report.

0.3 This Technical Report covers the use by accredited testing laboratories of services for the validation of means of testing (MOT) and test tools, and also applies to the possibility of accreditation of MOT and test tool validation services, because such a validation service is just a specialised form of software testing service.

NOTE - In many areas of IT&T, it may be impractical to require the use of accredited MOT and test tool validation services, both economically and given the state of the art in the particular area. It is important to recognise that the mere existence of an applicable accredited validation service does not mean that relevant accredited testing laboratories should be required to use it, as other suitable forms of MOT and test tool validation may exist. Other factors outside the scope of this Technical Report will determine if and when use of accredited MOT and test tool validation services might become a requirement.

0.4 The aim is that it should be generally applicable across the whole software and protocol testing area, whenever accreditation to ISO/IEC Guide 25 applies. However, it does not cover all the requirements of ISO/IEC Guide 25. Laboratories are reminded that, in order to obtain and maintain accreditation, they shall fully comply with ISO/IEC Guide 25. This Technical Report interprets the ISO/IEC Guide 25 requirements in this field; it does not in any way replace them. Furthermore, there may be other interpretations of ISO/IEC Guide 25 which are sector independent, maybe focusing on just one aspect of accreditation, in which case such generally applicable interpretations continue to apply, and are not replaced by this interpretation.

0.5 This interpretation applies to conformance testing and other types of objective testing of software. Specific guidance is provided for OSI, telecommunications protocols, product data exchange (as defined by ISO TC184), graphics, POSIX and compilers. The testing of physical properties of hardware is outside the scope of this interpretation, but may be covered elsewhere. Evaluation of systems and products, as in IT&T Security and Software Quality evaluation (ISO/IEC 9126), is also not included in the scope of this interpretation. Safety-critical software and general application software testing are also not included in this edition.

0.6 Specific text is given in this interpretation for conformance testing. However, the general interpretations given in this Technical Report are applicable to all types of objective testing, including measuring some objective aspects of performance (e.g. as in compiler testing for some programming

languages) and types of testing that are particular to a single area within the IT&T field. Analysis by the test operator in order to produce the final result for a test case, in accordance with procedures that lead to objective results, is included in this interpretation.

NOTES

1 Normally, each individual test case in a test suite (set of test cases) will be designed to yield a test verdict, that is a statement of pass, fail or inconclusive.

2 Conformance testing involves testing the implementation against the conformance requirements specified in one or more standards (or other normative specifications). The standards against which implementations are tested for conformance will often be International Standards, although they may be ITU-T Recommendations, regional or national standards, or even a manufacturer's specification when the manufacturer is seeking independent confirmation that the implementation conforms.

3 The test cases to be used in conformance testing may also be standardized, but (in the fields of software and protocol testing) are usually distinct from the standards which specify the requirements to which implementations are supposed to conform.

4 Each test verdict should be made with respect to the purpose of the test case and the requirements of the relevant standard(s). Optionally, a particular test suite may specify various classes of *pass*, *fail* or *inconclusive* test verdict (e.g. fail class 1: severe non-conformance; fail class 2: invalid behaviour but satisfied the test purpose), but this does not alter the general points about test verdicts.

Requirements in ISO/IEC Guide 25, IT&T Interpretations and Definitions	Guidance and Examples

1 Scope

No IT&T specific interpretation is required for clause 1 of ISO/IEC Guide 25.

See clause 0 for the scope of this Technical Report. Note that this Technical Report applies to testing laboratories but not to calibration laboratories. The relevant laboratories, however, include validation laboratories that offer validation services for means of testing and/or test tools to be used by testing laboratories; in this case, the item to be validated is to be regarded as a system or implementation under test.

2 References

No IT&T specific interpretation is required for the references of ISO/IEC Guide 25.

The following standards contain provisions which, through reference in this text, constitute provisions of this Technical Report. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Technical Report are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC Guide 25: 1990, *General requirements for the competence of calibration and testing laboratories.*

ISO 9000-3: 1991, *Quality management and quality assurance standards - Part 3: Guidelines for the application of ISO 9001 to the development, supply and maintenance of software.*

These are the only normative references required by this interpretation. Informative references used in this Technical Report are given in Annex B.

3 Definitions

No IT&T specific interpretation is required for the definitions of ISO/IEC Guide 25. However, ISO/IEC Guide 25 subclause 3.7 is referenced in 10.A.1 and subclause 3.15 is referenced in 4.B.