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Software and systems engineering — Software testing —

Part 13: Using the ISO/IEC/IEEE 29119 series in the testing of biometric systems



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Contents

Page

Foreword.....	v
Introduction.....	vi
1 Scope.....	1
2 Normative references.....	1
3 Terms, definitions and abbreviated terms.....	1
3.1 Terms and definitions.....	1
3.2 Abbreviated terms.....	7
4 Introduction to biometrics.....	9
4.1 Biometrics overview.....	9
4.2 Standardization and biometrics.....	9
4.2.1 Introduction to standardization of biometrics.....	9
4.2.2 ISO/IEC JTC 1/SC 37 (biometrics).....	9
4.2.3 ISO/IEC JTC 1/SC 37/WG 5 (biometrics and testing).....	10
5 Introduction to software testing.....	10
5.1 Software testing in context.....	10
5.2 Static and dynamic testing.....	10
5.3 Systematic software testing.....	10
5.4 Purpose of testing.....	11
5.5 Standardization and software testing.....	11
5.5.1 Testing standards prior to the ISO/IEC/IEEE 29119 series.....	11
5.5.2 The ISO/IEC/IEEE 29119 series.....	11
5.5.3 ISO/IEC JTC 1/SC 7/WG 26 (software testing).....	12
5.6 Risk-based testing.....	12
5.6.1 Risk-based testing at the core of software testing.....	12
5.6.2 Risk categories.....	13
6 Software testing of biometric systems and subsystems.....	13
6.1 Traditional evaluation of biometric systems.....	13
6.1.1 General.....	13
6.1.2 Evaluation levels for biometric systems.....	13
6.1.3 Performance measures for biometric systems.....	17
6.2 Scope of testing for biometric systems.....	18
6.2.1 General.....	18
6.2.2 Biometric enrolment and recognition.....	18
6.2.3 Biometric components and supporting components.....	18
6.2.4 Biometric subsystem as part of a larger system.....	18
6.2.5 Static and dynamic testing of the biometric system.....	19
6.2.6 Testing all quality characteristics or limited to biometric performance.....	19
6.3 Documentation for testing biometric systems.....	19
6.4 Standards for testing biometric systems.....	19
Annex A (informative) Brief introduction to biometric systems.....	20
Annex B (informative) Standards related to the testing of biometric systems.....	26
Annex C (informative) Generic risks in biometric systems.....	32
Annex D (informative) Test documentation mappings for biometric systems.....	77
Annex E (informative) Mapping from ISO/IEC 19795-1 to the ISO/IEC/IEEE 29119 series.....	97
Annex F (informative) Mapping from ISO/IEC 19795-2 to the ISO/IEC/IEEE 29119 series.....	150
Annex G (informative) Mapping from ISO/IEC 19795-4 to the ISO/IEC/IEEE 29119 series.....	194
Annex H (informative) Mapping from ISO/IEC 19795-6 to the ISO/IEC/IEEE 29119 series.....	226
Annex I (informative) Mapping from ISO/IEC 19795-7 to the ISO/IEC/IEEE 29119 series.....	236

Annex J (informative) Mapping from ISO/IEC TS 19795-9 to the ISO/IEC/IEEE 29119 series	247
Annex K (informative) Mapping from ISO/IEC 29109-1 to the ISO/IEC/IEEE 29119 series.....	261
Bibliography.....	272

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 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 or www.iec.ch/members_experts/refdocs).

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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.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

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.

Introduction

This document provides an overview of the topics of biometric systems and software testing and their standardization. It describes how to apply the ISO/IEC/IEEE 29119 series of software testing standards to the testing of both pure biometric systems and more extensive systems that include biometric subsystems.

It includes information on the creation of a risk-based test strategy that addresses the full range of quality characteristics for a system (i.e. not restricted or focused solely on those quality characteristics covered by biometric technical performance testing).

This document includes mappings between the documentation requirements of:

- ISO/IEC 19795-1
- ISO/IEC 19795-2
- ISO/IEC 19795-6

and the software test documentation defined by ISO/IEC/IEEE 29119-3.

It provides mappings between the ISO/IEC/IEEE 29119 series and the following standards defining the testing of biometric systems:

- ISO/IEC 19795-1
- ISO/IEC 19795-2
- ISO/IEC 19795-4
- ISO/IEC 19795-6
- ISO/IEC 19795-7
- ISO/IEC TS 19795-9
- ISO/IEC 29109-1

The standards covering the evaluation and testing of biometric systems (e.g. the ISO/IEC 19795 series) are written from the perspective of an expert in biometric systems, are focused on technical biometric performance testing (i.e. error rates and throughput rates) based on dynamic testing and do not explicitly use a risk-based approach to the testing, as required by the ISO/IEC/IEEE 29119 series of software testing standards.

This document has been created to provide support to software testers who are inexperienced in testing biometric systems. It lists the most relevant biometric standards for software testers of biometric systems. It provides information on performing systematic software testing (static and dynamic) of biometric systems using a risk-based approach in conformance with the ISO/IEC/IEEE 29119 series of software testing standards. The mappings also show how conformance with the most popular biometric testing standards maps to the requirements of the ISO/IEC/IEEE 29119 series. This document also provides useful information for biometrics experts, who want to test a complete biometric system using a risk-based approach in conformance with the ISO/IEC/IEEE 29119 series of software testing standards.

As a Technical Report, this document contains data of a different kind from that normally published as an International Standard or Technical Specification, such as data on the “state of the art”.

Software and systems engineering — Software testing —

Part 13:

Using the ISO/IEC/IEEE 29119 series in the testing of biometric systems

1 Scope

This document:

- gives information for software testers for the systematic, risk-based testing of biometric systems and larger systems which include biometric subsystems;
- establishes the importance of both biometric standards and software testing standards and provides overviews of both areas and their standardization;
- specifies the most important biometric standards for software testers of biometric systems;
- provides information for software testers who wish to conform to both the relevant biometrics standards and the ISO/IEC/IEEE 29119 series of software testing standards by providing mappings between the two sets of standards;
- is not limited to the testing of the technical performance of biometric systems in terms of error rates and throughput rates, but instead covers the testing of the full range of relevant quality characteristics, such as reliability, availability, maintainability, security, conformance, usability, human factors, and privacy regulation compliance;
- gives information on applying a risk-based testing approach to the testing of biometric systems that covers the full range of product and project risks;
- provides testers with an example set of product and project risks associated with biometric systems along with suggestions on how these risks can be treated as part of a risk-based approach to the testing;
- includes mappings between the documentation requirements of ISO/IEC 19795-1, ISO/IEC 19795-2 and ISO/IEC 19795-6 and the software test documentation defined by ISO/IEC/IEEE 29119-3.

2 Normative references

There are no normative references in this document.