



BSI Standards Publication

Information security, cybersecurity and privacy protection — General principles, requirements and guidance for security evaluation of biometric systems

National foreword

This British Standard is the UK implementation of ISO/IEC 19792:2025. It supersedes BS ISO/IEC 19792:2009, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee IST/33/3, Security Evaluation, Testing and Specification.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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**Information security, cybersecurity
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biometric systems**

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Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
3.1 General biometric terms	1
3.2 Biometric systems	3
3.3 Biometric processes	4
3.4 Recognition performance	5
3.5 Presentation attack detection	6
4 Abbreviated terms	7
5 Overview of security evaluation of biometric systems	7
5.1 Biometric systems and their vulnerabilities	7
5.2 Approach of security evaluation of biometric systems	8
6 Threat and vulnerability analysis	9
6.1 Overview	9
6.2 Threats and vulnerabilities for considerations	10
6.2.1 Overview	10
6.2.2 Performance limitations	11
6.2.3 Hostile environment	12
6.2.4 Insufficient controls of the enrolment process	12
6.2.5 Difficulty of concealing biometric characteristics	13
6.2.6 Leakage and alteration of biometric data	13
6.2.7 Synthesized wolf biometric samples	13
6.2.8 PAI of biometric characteristics	14
6.2.9 Similarity due to blood relationship	14
6.2.10 Special biometric characteristics	14
6.2.11 Modification of biometric characteristics	15
6.2.12 Further considerations	15
7 Evaluation of biometric recognition performance and related vulnerabilities	15
7.1 Overview	15
7.2 Concept – testing security-relevant error rates	15
7.3 Independent testing	16
7.4 Consideration of impact of error rates	17
8 Evaluation of biometric vulnerabilities	17
8.1 Overview	17
8.2 Vulnerability assessment for presentation attacks and other potential threats	18
8.2.1 Application note	18
8.2.2 Performance limitations	18
8.2.3 Hostile environment	18
8.2.4 Procedural vulnerabilities around the enrolment process	19
8.2.5 Difficulty of concealing biometric characteristics	19
8.2.6 Leakage and alteration of biometric data	19
8.2.7 Synthesized wolf biometric samples	20
8.2.8 PAI of biometric characteristics	20
8.2.9 Similarity due to blood relationship	21
8.2.10 Special biometric characteristics	22
8.2.11 Modification of biometric characteristics	22
8.2.12 Further considerations	22
9 Privacy	23
9.1 Overview	23

ISO/IEC 19792:2025(en)

9.2	Data protection	23
9.3	Account deactivation of biometric reference data.....	24
9.4	De-enrolment.....	24
Bibliography		25

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 27, *Information security, cybersecurity and privacy protection*.

This second edition cancels and replaces the first edition (ISO/IEC 19792:2009), which has been technically revised.

The main changes are as follows:

- the structure has been harmonized with general security evaluation methodology;
- the title has been changed from “Security evaluation of biometrics” to “General principles, requirements and guidance for security evaluation of biometric systems”, to align with the ISO/IEC 19989 series, the ISO/IEC 15408 series and the ISO/IEC 18045.

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 does not aim to define any concrete methodology for the security evaluation of biometric systems but instead focuses on the principal requirements. As such, the requirements in this document are independent of any evaluation or certification scheme. If the requirements of this document are intended to be used in such a scheme, it will be necessary to adapt and incorporate them into the scheme before use.

This document defines various areas that are important to consider during a security evaluation of a biometric system. These areas are represented by the following clauses:

- [Clause 5](#) explains the outline of security evaluation of biometric systems;
- [Clause 6](#) overviews the threats and vulnerabilities to biometric systems that should be considered for the evaluation;
- [Clause 7](#) describes the evaluation of biometric specific vulnerabilities related to recognition performance;
- [Clause 8](#) deals with the evaluation of biometric specific vulnerabilities related to presentation attack detection;
- [Clause 9](#) overviews the evaluation of privacy.

This document is relevant to both evaluator and developer communities. It shows how a security evaluation of a biometric system is performed. It serves to inform developers of the requirements for biometric security evaluations to help them prepare for security evaluations.

Although this document is independent of any specific evaluation scheme, it serves as a framework for developing concrete evaluation and testing methodologies that integrate the requirements for biometric evaluations into existing evaluation and certification schemes.

This document refers to and utilizes other biometric standards, notably those for biometric performance testing and reporting from ISO/IEC 19795-1, and the evaluation of presentation attack detection from the ISO/IEC 30107 series. These standards have been applied as necessary for the specific requirements of biometric security evaluation.

This document can also be used by organizations such as developers and procurers of biometric systems or devices to set proper security requirements for biometric systems or devices.

This document focuses mostly on the cases of complete biometric systems for verification or identification scenarios. However, the evaluation principles can be used entirely or partly for other cases such as: subsystems (e.g. presentation attack detection component, comparison component), other biometric scenarios (e.g. enrolment, duplicate enrolment check, white listing, black listing, quality assessment) or other biometrics-related processing aspects (e.g. emotional estimation, age estimation).

This document can be seen as an introduction to the ISO/IEC 19989 series, which covers the security evaluation of biometric products based on the ISO/IEC 15048 series. In addition, this document provides general guidance to design and execute security evaluation methodologies of biometric systems that are not aimed for evaluation conformant to ISO/IEC 15408 series.

This document does not address the vulnerabilities that are common to IT systems in general. For example, unprotected biometric data, biometric references, or comparison decisions, with which an attacker can tamper in order to impersonate someone else, are such vulnerabilities and are subject to evaluation under a general methodology, not specific to biometrics, such as the one specified in ISO/IEC 15408-1. However, general vulnerabilities associated with the information handled by the biometric system can employ system specific countermeasures which are addressed in [Clauses 6](#) and [8](#).

Information security, cybersecurity and privacy protection — General principles, requirements and guidance for security evaluation of biometric systems

1 Scope

This document specifies general principles, requirements and guidance for a security evaluation of a biometric system.

This document provides an overview of the main biometric-specific aspects, i.e. recognition performance, presentation attack detection and privacy, and specifies principles to consider for the security evaluation of a biometric system.

This document does not address the non-biometric aspects which can form part of the overall security evaluation of a system using biometric technology (e.g. requirements on databases or communication channels).

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 and IEC 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/>

3.1 General biometric terms

3.1.1

assurance

grounds for confidence that a target of evaluation meets the security functional requirements

[SOURCE: ISO/IEC 15408-1:2022, 3.6]

3.1.2

attacker

person seeking to exploit potential vulnerabilities of a biometric system

3.1.3

authentication

provision of assurance that a claimed characteristic of an entity is correct

[SOURCE: ISO/IEC 27000:2018, 3.5]

3.1.4

biometric

of or having to do with biometrics

Note 1 to entry: The use of biometric as a noun, to mean for example, *biometric characteristic* (3.2.1), is deprecated.

EXAMPLE 1 Incorrect usage #1: ICAO resolved that face is the biometric most suited to the practicalities of travel documents.

EXAMPLE 2 Correct usage #1: ICAO resolved that face recognition is the biometric mode most suited to the practicalities of travel documents.

EXAMPLE 3 Incorrect usage #2: The biometric recorded in my passport is a facial image.

EXAMPLE 4 Correct usage #2: The biometric characteristic recorded in my passport is a facial image.

Note 2 to entry: Since the late 19th century the terms biometrics and biometry have been used with the general meaning of counting, measuring and statistical analysis of any kind of data in the biological sciences including the relevant medical sciences.

[SOURCE: ISO/IEC 2382-37:2022, 37.01.01]

3.1.5

biometric recognition

biometrics

automated recognition of individuals based on their biological and behavioural characteristics

Note 1 to entry: In the field of biometrics (as defined in this document), "Individual" is restricted in scope to refer only to humans.

Note 2 to entry: The general meaning of biometrics encompasses counting, measuring and statistical analysis of any kind of data in the biological sciences including the relevant medical sciences.

Note 3 to entry: Biometric recognition encompasses biometric verification and biometric identification.

Note 4 to entry: Automated recognition implies that a machine-based system is used for the recognition either for the full process or assisted by a human being.

Note 5 to entry: Behavioural and biological characteristics cannot be completely separated which is why the definition uses "and" instead of "and/or". For example, a fingerprint image results from the biological characteristics of the finger ridge patterns and the behavioural act of presenting the finger.

Note 6 to entry: Use of "authentication" as a synonym for "biometric verification or biometric identification" is deprecated; the term biometric recognition is preferred.

[SOURCE: ISO/IEC 2382-37:2022, 37.01.03]

3.1.6

developer

organization responsible for the development of the target of evaluation

Note 1 to entry: According to ISO/IEC 15408-1:2022, 3.90, a target of evaluation is defined as a set of software, firmware and/or hardware possibly accompanied by guidance, which is the subject of an evaluation.

[SOURCE: ISO/IEC 15408-1:2022, 3.33, modified — Note 1 to entry has been added.]

3.1.7

evaluation

assessment of a target of evaluation against defined criteria

[SOURCE: ISO/IEC 15408-1:2022, 3.37, modified — "PP-Configuration, protection profile (PP), a security target (ST), or" has been removed.]

3.1.8

evaluator

individual assigned to perform evaluations in accordance with a given evaluation standard and associated evaluation methodology

Note 1 to entry: An example of evaluation standards is the ISO/IEC 15408 series with the associated evaluation methodology given in ISO/IEC 18045.

[SOURCE: ISO/IEC 19896-1:2018, 3.5]

3.1.9

user

person interacting with a biometric system

Note 1 to entry: The term “user” sometimes means “biometric data subject”.

3.2 Biometric systems

3.2.1

biometric characteristic

biological and behavioural characteristic of an individual from which distinguishing, repeatable *biometric features* ([3.2.4](#)) can be extracted for the purpose of biometric recognition

EXAMPLE Examples of biometric characteristics are Galton ridge structure, face topography, facial skin texture, hand topography, finger topography, iris structure, vein structure of the hand, ridge structure of the palm, retinal pattern, handwritten signature dynamics, etc.

[SOURCE: ISO/IEC 2382-37:2022, 37.01.02]

3.2.2

biometric data

biometric sample or aggregation of biometric samples at any stage of processing

EXAMPLE *Biometric reference* ([3.2.5](#)), biometric probe, *biometric feature* ([3.2.4](#)) or biometric property.

Note 1 to entry: Biometric data need not be attributable to a specific individual, e.g. Universal Background Models.

[SOURCE: ISO/IEC 2382-37:2022, 37.03.06]

3.2.3

biometric data subject

individual whose individualized biometric data is within the biometric system

Note 1 to entry: The intent of the word “individualized” is to distinguish biometric data subjects from those whose aggregated data was used in the creation of the biometric recognition algorithm. Examples of individuals contributing biometric data who are not biometric data subjects include those who contributed to a Universal Background Model in speaker recognition systems, or who contributed to the creation of an eigenface basis set in a facial recognition system.

[SOURCE: ISO/IEC 2382-37:2022, 37.07.05]

3.2.4

biometric feature

numbers or labels extracted from *biometric samples* ([3.2.6](#)) and used for comparison

Note 1 to entry: The set of numbers or labels are the output of a completed biometric feature extraction.

Note 2 to entry: The use of this term should be consistent with its use by the pattern recognition and mathematics communities.

Note 3 to entry: A biometric feature set can also be considered a processed biometric sample.

Note 4 to entry: Biometric features may be extracted from an intermediate biometric sample.