



BSI Standards Publication

**Personal identification — Biometrics —
Overview of biometric verification
systems implemented across Europe**

National foreword

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The UK participation in its preparation was entrusted to Technical Committee IST/44, Biometrics.

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Published by BSI Standards Limited 2024

ISBN 978 0 55 26075 7

ICS 35.240.15

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This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 January 2024.

Amendments/corrigenda issued since publication

Date	Text affected
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TECHNICAL REPORT

CEN/TR 18030

RAPPORT TECHNIQUE

TECHNISCHER REPORT

December 2023

ICS 35.240.15

English Version

Personal identification - Biometrics - Overview of biometric verification systems implemented across Europe

Persönliche Identifikation - Verwendung biometrischer
Verifikationsdaten in allen EU-Ländern und Szenarien

This Technical Report was approved by CEN on 24 December 2023. It has been drawn up by the Technical Committee CEN/TC 224.

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European foreword

This document (CEN/TR 18030:2023) has been prepared by Technical Committee CEN/TC 224 “Personal identification and related personal devices with secure element, systems, operations and privacy in a multi sectorial environment”, the secretariat of which is held by AFNOR.

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Introduction

From the beginning of the century, the use of biometrics in real applications has been more and more extended to other environments different than forensic analysis. With this focus, thorough studies about normalized mechanisms to harmonize the use of biometrics have been made. Many relevant institutions, public and private, have collaborated to obtain standards, technical reports, etc. towards best practices of biometrics.

From the point of view of organizations at the international, European and national level, a first organizational process has been developed. Other organizations have used and adapted current standards to produce their own normative related with the use of biometrics (i.e. ICAO, Frontex, Europa, etc).

Biometrics networks where lots of nodes collaborate to obtain the distributed biometrics storage and matching have been implemented in the public (Eurodac, Interpol, etc) and private scenarios.

It is well known the huge number of challenges that have to be faced when a biometric solution is being deployed, in particular when trying to cover a high level of interoperability. One example of these challenges is the difficulty that system integrators (and service providers) have to face when choosing which capture device will they use, as they can only rely on the figures provided by the manufacturer, which sometimes are incomplete. Another example is the rigourness in applying quality requirements to biometric references and probes in different applications or even countries.

A perfect example of this challenge is border control, where the system has to be able to manage ePassports from all around the world, as well as subjects of all kinds. Even with the high number of international standards available nowadays, plus some additional requirements (e.g. those issued by FRONTEX), a huge variety of cases have to be handled including differences in how the information is stored in the ePassports, the acquisition scenario and requirements, or even the acceptance thresholds.

The aim of this technical report is to analyse the current state of art in biometrics standardization, its use, and the identification of gaps between all the relevant standards used in environments applying the European laws and normative to the applications.

The detected gaps are identified in order to promote the modification of the current standards on biometrics or/and the generation of new standards in Europe.

1 Scope

This document provides an overview of the current deployment of biometric systems within Europe. It addresses the challenges that are being faced, in order to detect the current needs for improving the specifications for the implementation and deployment of biometric systems. This document considers all kind of deployments, from border control to ad hoc services. As most of the deployed systems are based on the use of fingerprints or face recognition, this document will focus on these two biometric modalities, from the system integrator and interoperability points of view.

Identity documents, in terms of production, structure, interoperability, etc., are out of the scope of this document. The document is focused on the performance at system level.

The current European legislative initiatives around this topic (e.g. Entry/Exit System, framework for interoperability between EU information systems, etc.) need a robust framework study about the availability of standard technologies to improve interoperability in biometric products around the European Union.

By showing these needs, a set of recommendations for future standardization works is provided.

From a methodological perspective, the report gathers information of different entities with this classification:

- Capture/enrolment of biometrics including the quality assurance and the generation of feature or biometric models from the images.
- Best practices and guidelines to use biometrics in Europe.
- Data Quality environment using biometrics in European networks.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 17054, *Biometrics multilingual vocabulary based upon the English version of ISO/IEC 2382-37:2012*

ISO/IEC 2382-37, *Information technology — Vocabulary — Part 37: Biometrics*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 2382-37 and EN 17054 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/>