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## Information technology — Biometric recognition of subjects in motion in access-related systems

*Technologies de l'information — Reconnaissance biométrique de sujets en mouvement dans les systèmes d'accès*

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~~Case postale 56 • CP 401 • Ch. de Blandonnet 8~~

~~CH-1214 Vernier, Geneva-20~~

~~Tel. Phone: + 41 22 749 01 11~~

~~Fax + 41 22 749 09 47~~

~~E-mail: [copyright@iso.org](mailto:copyright@iso.org)~~

~~Web [www.iso.org](http://www.iso.org)~~

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## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for a worldwide standardization. National federation of national standards bodies that are members of ISO or IEC participate in the development member bodies). The work of preparing International Standards is normally carried out through ISO 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 member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. 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, collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 ISO 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](http://www.iso.org/directives) or [www.iec.ch/members\\_experts/refdocs](http://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 the following URL [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html). In the IEC, see [www.iec.ch/understanding-standards](http://www.iec.ch/understanding-standards).

The committee responsible for this document is was prepared by Joint Technical Committee ISO/IEC JTC 1, Information technology, Subcommittee SC 37, Biometrics.

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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](http://www.iso.org/members.html) and [www.iec.ch/national-committees](http://www.iec.ch/national-committees).

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## Introduction

The purpose of this document is to provide guidance on the use of in-motion biometric recognition technologies in access-related systems, where the previous enrolment and management of the identity of individuals needing access is required.

To satisfy increasing security demands, biometric recognition technologies are used in access-related systems to provide a more robust approach to identity authentication, and to mitigate security risks. However, this can come at a cost of increased processing times and lead to delays in user identification or verification.

Biometric identification and verification should be comprehensive and flexible for effective use in an access-related environment. Solutions should reduce user burden, be easy to manage, cost effective, maintain the security requirements, and provide permission-based access and global interoperability as necessary. Biometric systems should effectively allow authorized users' access, incorporate mechanical and behavioural mechanisms to refer unenrolled persons to human personnel and alert facilities to unauthorized users attempting to gain access. Systems should also provide a seamless, accurate and non-invasive user experience.

Considerable improvements in the performance of in-motion biometric recognition, have resulted in applications that enable automated, convenient and non-intrusive face, iris or fingerprint recognition across a range of scenarios including border control, passenger flow facilitation, access control and work place time and attendance. This provides a positive and non-intrusive user experience, as the user does not need to carry anything or stop and stand still to be recognized and does not need to touch anything.

There are several considerations that are unique to in-motion biometric solutions for design of contactless biometric recognition systems. Design considerations include:

- ~~selection~~**Selection** and placement of biometric data capturing devices (e.g. cameras);
- ~~control~~**Control** of the flow of individuals requiring access to ensure that only those that are authorized gain access;
- ~~proximity~~**Proximity** of capture devices to individuals seeking access for the contactless in-motion capture of the needed information. The proximity of the biometric capture devices can depend on the employed biometric modalities;
- ~~management~~**Management** of exceptions;
- ~~mutual~~**Mutual** placement of capture devices and equipment dedicated to physical access-control (e.g. door, barrier, turnstile, ...).

A number of use cases involving in-motion biometrics address different scenarios including:

- where access is on the basis of the prior enrolment of all individuals well in advance of interacting with the biometric system (identification);
- where access is on the basis of credentials presented just prior to interacting with the biometric system (verification) (e.g. ~~Bluetooth/Wi-Fi/wireless technology~~, RFID token or a vehicle number plate or any other token available without any interruption to ~~the~~ person's flow of movement).

These scenarios present different challenges to in-motion verification and identification processes.

Critical to the success of biometrics-based secure access is implementation of state-of-the-art data protection technology and procedures (see ~~ISO/IEC 20889-1~~ on ~~Privacy~~**privacy** enhancing data de-identification techniques, ~~in accordance with~~**according to** the privacy principles established in ISO/IEC 29100-3, taking into account legal, common practice, business, industry and privacy considerations).



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An important factor in in-motion biometric recognition is its ability to sense/detect presentation attacks per ISO/IEC 30107-3 [5] (Testing and reporting). [5]

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# Information ~~Technology~~ **technology** — Biometric recognition of subjects in motion in access-related systems

## 1 Scope

This document establishes requirements for development of biometric solutions for verification and identification processes for secure access without physical contact with any device at any time. The solution acquires the biometric characteristics that are captured while the data subjects are in motion to verify or identify the individuals requiring access, and thus controlling access using contactless biometrics.

## 2 Normative references

The following documents, ~~are referred to in whole the text in such a way that some or in part, are normatively referenced in all of their content constitutes requirements of 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-2382-37, *Information ~~Technology~~ **technology** — Vocabulary — Part 37: Biometrics*

ISO/IEC-19795-1, *Information technology — Biometric performance testing and reporting — Part 1: Principles and framework*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 2382-37, ISO/IEC 19795-1 and the following apply.

ISO and IEC maintain ~~terminological~~ **terminology** databases for use in standardization at the following addresses:

— IEC Electropedia: available at <http://www.electropedia.org/>

— ISO Online browsing platform: available at <http://www.iso.org/obp> <https://www.iso.org/obp>

— IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1 in-motion identification

identification for which a person in motion can be identified without physical contact with any device at any time

### 3.2 non in-motion identification

identification for which a person needs to stop to be identified

### 3.3 in-motion verification

verification for which a person in motion can be verified without physical contact with any device at any time

### 3.4 recognition area

area where biometric characteristics are captured and biometric recognition can be performed