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Part 9: Testing on mobile devices

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Foreword

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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).

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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.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 37, *Biometrics*.

A list of all parts in the ISO/IEC 19795 series can be found on the ISO website.

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.

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Introduction

The development of a mass-market in connected mobile devices, e.g. smartphones and tablets, has allowed users the convenience of accessing remotely a variety of services which previously needed face-to-face interactions or to have physical access to the service provider's infrastructure.

For some services, convenience should nevertheless remain secondary to the security needs. These services include for example remote payment on commercial websites, banking transactions or certified signing of official documents. To allow these trustful interactions, the need of reliable user authentication is of paramount importance.

One way to certify the user's identity is to implement biometric authentication ability in the device.

It is then important to properly evaluate the accuracy of biometric authentication to ensure that security is strong enough to allow mobile sensible transactions.

Several biometric modalities are widely utilized in consumer-focused mobile devices. Evaluation of biometric performance for all of these modalities should be consistent and follow the same guidelines, methodologies and requirements. Nevertheless, some modality specific considerations should also be addressed when conducting an evaluation. This document provides a general framework usable for all modalities as well as dedicated recommendations when needed.

ISO/IEC 19795-1 describes three types of biometric performance evaluations: technology, scenario and operational evaluations. ISO/IEC TR 30125[1] recommends scenario evaluation as the most proper type of evaluation for testing biometric performance on mobile devices.

A scenario evaluation is an "end-to-end" biometrics evaluation in which the full system is tested with a careful control of the surrounding conditions. However, when applying this type of evaluation to biometric systems working on mobile devices, testing and reporting methods should consider the particularities and constraints of these use cases.

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Information technology — Biometric performance testing and reporting —

Part 9: Testing on mobile devices

1 Scope

This document provides guidance for performance testing of biometrics when this technology is used on mobile devices with local biometric authentication to improve authentication assurance.

This document aims to:

— Provide guidance for affordable and cost-efficient testing and reporting methods for performance assessment at a full system level of biometric systems embedded in mobile devices with offline evaluation of false accept rate (FAR) claims.

— Define modality-specific considerations of these methods.

This document is applicable to:

— verification use cases related to secure transactions.

This document is not applicable to:

— privacy aspects;

— secure authentication from mobile device to server;

— testing and reporting for presentation attack detection (PAD) mechanisms in mobile devices;

— performance testing of biometric sub-systems such as acquisition sub-system or comparison sub-system;

— continuous authentication.

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.

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

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

ISO/IEC 19795-2, *Information technology — Biometric performance testing and reporting — Part 2: Testing methodologies for technology and scenario evaluation*

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.

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ISO and IEC maintain terminological 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

3.1
mobile device
small, compact, handheld, lightweight computing device, typically having a display screen with digitizer input and/or a miniature keyboard

EXAMPLE Laptops, tablet PCs, wearable ICT devices, smartphones, USB gadgets.

3.2
authentication assurance
confidence in the authentication process

3.3
gender
classification as male, female or some other category based on social, cultural or behavioural factors

Note 1 to entry: This is determined through self-declaration or self-presentation and may change over time.

Note 2 to entry: Depending on jurisdiction recognition, this may or may not require assessment by a third party.

3.4
time limit
longest time before a biometric system returns a decision on accept or reject, success or failure to enrol, success or failure to acquire a biometric sample

Note 1 to entry: All decisions returned after time limit are discarded.

Note 2 to entry: Time limit set to 0 means no time limit. All metrics evaluated are reported with the longest time needed by the biometric system to return decisions.

4 General considerations for biometrics on mobile devices

4.1 Biometric authentication process

Currently there are two types of local authentications that can be executed by mobile devices:

— explicit authentication in which the user is aware that a biometric authentication is going to happen and presents voluntarily his/her biometric characteristic to the capture device;

— passive authentication in which the user is authenticated without active effort by the user.

NOTE This document does not cover biometric systems where the user is continuously authenticated by the system in the background.

Therefore, the definition of testing methods and protocols should consider both types of authentications. In particular, the test plan should consider the following aspects:

— what constitutes the biometric capture process;

— how the user should interact with the mobile device during this process;

— which are the policies to manage failure to acquire (FTA) failures.

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