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Information Technology — Biometrics — Guide on designing accessible and inclusive biometric systems

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

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

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ISBN 978 0 580 90154 6

ICS 13.180; 35.040

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This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 May 2015.

Amendments issued since publication

Date	Text affected

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TECHNICAL REPORT

ISO/IEC TR 29194

First edition
2015-05-15

Information Technology — Biometrics — Guide on designing accessible and inclusive biometric systems

Technologies de l'information — Biométrie — Guide sur la conception des systèmes biométriques accessibles et inclusifs

Reference number
ISO/IEC TR 29194:2015(E)

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Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
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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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword — Supplementary information.

The committee responsible for this document is ISO/IEC JTC 1, *Information Technology*, Subcommittee SC 37, *Biometrics*.

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Introduction

This Technical Report provides support for the further development of ISO/IEC biometrics international standards in the context of cross-jurisdictional and societal applications of biometrics, including standardization of both existing and future technologies.

ISO/IEC/TR 24714-1:2008 lays down the principle that inclusive designs of biometric systems are ones that as many subjects within the target population as is reasonably possible can use the systems effectively and with minimum discomfort. This Technical Report offers guidance in the dialogue between writers of system specifications for biometric systems and the developers of biometric systems, in reaching a common understanding of the target population and agreement of what is reasonably possible. This Technical Report aims to aid the procurement process of biometric systems, provide a means of acceptance of inclusive design, and ultimately improve accessibility of biometric systems.

Central to a common understanding of target populations is an agreed taxonomy. This Technical Report establishes taxonomy based upon a person's inability to perform a function. This enables a writer of a system specification for a biometric system to specify those categories that must be handled by the primary biometric system and those categories that would be required to use the exception handling process. Conversely the taxonomy enables biometric system suppliers to specify which parts of the population they have accommodated for in their designs.

Agreed quantification of the target population and how accessibility and inclusivity is to be achieved enables acceptance testing to be devised.

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Information Technology — Biometrics — Guide on designing accessible and inclusive biometric systems

1 Scope

Procurements of biometric systems often stipulate requirements for the systems to be inclusive and make provision for exception handling.

This Technical Report provides guidance for biometric system design and procurement to handle the range of accessibility and usability issues. This report will build upon the generic guidance in ISO/IEC/TR 24714-1, *Information technology — Biometrics — Jurisdictional and societal considerations for commercial applications – Part 1: General guidance*.

The biometric modalities addressed in this technical report include those described in the ISO/IEC 19794, (All parts), *Information Technology — Biometric data interchange formats:*

— Finger

— Face

— Iris

— Signature

— Vascular

— Hand-geometry

— Voice

2 Accessible and inclusive design taxonomy

The taxonomy used by this Technical Report reflects that described in ISO/IEC/TR 29138-1.This Technical Report provides examples of good practice for particular biometric modalities against the taxonomy, resulting in guidelines for inclusive design for the widest range of the population. The Technical Report can also help in selecting suitable biometric modality solutions when designing solutions with a particular population from the taxonomy descriptions.

There is a basic principle of designing biometric systems in a way that they can be used effectively and with minimum discomfort by the whole target population. There is also the need of reaching a common understanding of the target population and an agreement of what is reasonably possible. This brings the requirement of designing biometric systems following the best possible guidance to create systems that are accessible. Accessibility problems of biometrics systems are not limited to disabled people. Other groups may be affected due to occupational constraints, medical procedures and religious/cultural issues.

A person may not be aware of any issues of them using a biometric system until at the point of use.

Biometric systems are not familiar to all, and even then may not be regularly used. Therefore inclusive design must be based upon a lack of familiarity.

Considering all these scenarios, the following taxonomy can be considered. Each of the categories and subcategories in this taxonomy will be detailed in subsequent clauses of this Technical Report.

— (Inability to) Perceive visual information

  — People who are unable to perceive any visual information.

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