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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

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword ..... **v**

Introduction ..... **vi**

1 Scope **1**

2 Accessible and inclusive design taxonomy **1**

3 Generic problems and recommendations **2**
3.1 Generic problems 2
3.2 Recommendations 2
3.3 Sources for addition guidance on accessibility 3

4 (Inability to) Perceive visual information **3**
4.1 Examples of Problems 3
4.1.1 People who are unable to perceive any visual information 3
4.1.2 People who have difficulty in perceiving visual information 3
4.2 Modality independent guidance 3
4.3 Additional modality specific recommendations 4
4.3.1 Finger 4
4.3.2 Face 4
4.3.3 Iris 4
4.3.4 Signature 4
4.3.5 Vascular and Hand Geometry 4
4.3.6 Voice 5

5 (Inability to) Perceive auditory information **5**
5.1 Examples of Problems 5
5.1.1 People who are unable to perceive any auditory information 5
5.1.2 People who have difficulty in perceiving auditory information 5
5.2 Modality independent recommendations 5
5.3 Additional modality specific recommendations 6
5.3.1 Iris 6
5.3.2 Signature 6
5.3.3 Voice 6

6 (Inability to) Perform motor actions **6**
6.1 Examples of Problems 6
6.1.1 People who are unable to walk unaided 6
6.1.2 People who are unable to stand 6
6.1.3 People who are unable to pitch, or yaw, or rotate head, or keep stationary 6
6.1.4 People who are unable to raise and/or rotate arms/hands 6
6.1.5 People who are unable to present physical attribute within the specified field of the sensor 7
6.2 Modality independent recommendations 7
6.3 Additional modality specific recommendations 7
6.3.1 Finger 7
6.3.2 Signature, Vascular and Hand Geometry 7

7 (Inability to) Present physiological attribute **8**
7.1 Examples of Problems 8
7.1.1 Introduction 8
7.1.2 Modality independent problems 8
7.1.3 Related to hand(s) 8
7.1.4 Related to finger(s) and/or palm(s) 8
7.1.5 Related to face 8
7.1.6 Related to eye(s) 8
7.1.7 Related to voice 8
7.2 Modality independent recommendations 8
7.3 Additional modality specific recommendations 9

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7.3.1 Signature 9

8 (Inability to) Understand and apply the instructions 9
8.1 Examples of Problems 9
8.1.1 People with cognitive or learning difficulties 9
8.1.2 Where interaction and/or responses from system are counter to intuition or familiarity 9
8.2 Modality independent recommendations 9
8.3 Additional modality specific recommendations 10
8.3.1 Signature 10

9 (Inability to) Follow guidance due to cultural discrepancies 10
9.1 Examples of Problems 10
9.1.1 People with language differences 10
9.2 Modality independent recommendations 10
9.3 Additional modality specific recommendations 10
9.3.1 Finger and Hand Geometry 10
9.3.2 Face and Iris 10
9.3.3 Signature 11
9.3.4 Voice 11

Annex A (informative) **Description of impairments 12**

Bibliography 17

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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 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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