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Information technology — Common Biometric Exchange Formats Framework —

Part 2: Biometric registration authority

Technologies de l'information — Cadre de formats d'échange biométriques communs —
Partie 2: L'autorité d'enregistrement biométriquee

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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.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see http://patents.iec.ch).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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*.

This second edition cancels and replaces the first edition (ISO/IEC 19785-2:2006), which has been technically revised. It also incorporates the Amendment ISO/IEC 19785-2:2006/Amd1:2010 and the Technical Corrigendum ISO/IEC 19785-2:2006/Cor:2013.

The main changes compared to the previous edition are as follows:

— Biometric Registration Authority procedural requirements and recommendations were removed from the standard and published on the ISO/IEC JTC 1/SC 37 website to comply with JTC 1 Supplement, JF.3.3.

— The registration identifier scheme was revised to correct issues with a valid representation of the ASN.1 object identifier component.

— Support was added for additional biometric object types, including presentation attack detection (PAD).

— Other minor technical and editorial changes were made to correct technical requirements and to improve readability and organization.

A list of all parts in the ISO/IEC 19785 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.

Introduction

Biometric-based authentication systems and applications are expected to support multiple biometric devices, multiple biometric data formats and multiple algorithms for feature extraction, comparison, quality determination, presentation attack detection (PAD), and compression, possibly each from a different vendor. The Common Biometric Exchange Formats Framework (CBEFF) promotes interoperability of biometric-based application programmes and systems developed by different vendors by facilitating biometric data interchange. This document supports such exchanges by providing unambiguous identification of biometric organizations, formats and products, with separate registration of identifiers for components of products that are biometric products, including specialized products like capture devices, feature extraction algorithms, comparison algorithms, quality algorithms, PAD mechanisms, or compression algorithms.

The Biometric Registration Authority (BRA) is the entity that facilitates globally unambiguous identification of biometric objects and biometric organizations by maintaining and publishing a registry of unique ASN.1 object identifiers. This document describes the universal identification scheme that allows assignment of unique and unambiguous identifiers, and avoids changes in identifiers over time. A general description of the BRA responsibilities and registration services is also included.

The publication of the registers promotes compatibility in interchange of biometric data and improves interoperability of biometric systems. Registration provides an identifier, but registration should not be regarded as a standardization procedure. Nevertheless, as a matter apart from registration, the registered object may, but need not, be the subject of an international, national, or other standard.

Information technology — Common Biometric Exchange Formats Framework —

Part 2:
Biometric registration authority

1 Scope

This document describes the identification scheme used by the Biometric Registration Authority (BRA) in preparing, maintaining, and publishing registers of identifiers for biometric organizations and biometric objects, and provides a description of BRA responsibilities and services. Procedural requirements and recommendations are not within the scope of this document and are maintained separately on the ISO/IEC JTC 1/SC 37 website[1)].

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 19785-1, *Information technology — Common Biometric Exchange Formats Framework — Part 1: Data element specification*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 2382-37 and ISO/IEC 19785-1 and the following apply.

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

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

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

3.1
applicant
organization requesting registration as a CBEFF biometric organization, or a registered CBEFF biometric organization requesting registration of a biometric object

3.2
open standard
standard that is subject to vetting procedures that ensure that it is technically correct and accurate and has wide-spread approval

3.3
register
record of assigned identifiers for CBEFF biometric organizations and biometric objects

1) ISO/IEC JTC 1/SC 37 website: https://committee.iso.org/home/jtc1sc37. BRA procedural information: https://committee.iso.org/files/live/sites/jtc1sc37/files/ABOUT/Procedural_Information_BRA.pdf

4 Abbreviated terms

For the purposes of this document, the abbreviated terms given in ISO/IEC 19785-1 and the following apply.

ASN.1 Abstract Syntax Notation One

BDB biometric data block

BIR biometric information record

BRA biometric registration authority

CBEFF common biometric exchange formats framework

PAD presentation attack detection

SB security block

5 General

5.1 Identifiers for biometric organizations and biometric objects

5.1.1 Biometric organization identifiers

Biometric organization identifiers shall be expressible as 16-bit positive integers (see 5.2.4). The value zero (0000 hex) and the values in sequence beginning from 61440 (F000 hex) to 65535 (FFFF hex) are reserved and are not valid biometric organization identifiers.

5.1.2 Biometric object identifiers

For a given biometric organization, biometric objects of the same type shall have unique identifiers. As with biometric organization identifiers, biometric object identifiers shall be expressible as 16-bit positive integers.

5.2 ASN.1 object identifier components

5.2.1 ASN.1 object identifier components are assigned to:

a) organizations: any organization concerned with the specification of biometric formats or with biometric products that either directly, or through the data that they produce, claim conformance to or can be used in conjunction with any international standard that uses registered biometric organization identifiers;

b) biometric objects: objects of various biometric categories and subcategories (see subclauses 5.2.7 through 5.2.11), including BIR formats, BDB formats, SB formats, and biometric products. Subcategories of specialized biometric products are defined for: capture device, feature extraction algorithm, comparison algorithm, quality algorithm, compression algorithm and PAD mechanism.

5.2.2 ASN.1 object identifiers are a form of worldwide unambiguous identification based on a hierarchical tree structure and independent hierarchical registration authorities. The ASN.1 object identifier tree has a root arc, arcs beneath that root arc, arcs beneath each of those arcs, and so on, to any depth. Arcs are identified by non-negative integer values (zero or greater) that provide unambiguous identification of an arc within the superior arc. Arcs can also be given names, but these are auxiliary to the numerical values and are not required. Names shall consist of an arbitrary number (one or more) of letters, digits, and hyphens. The first character shall be a lowercase letter. The last character shall not be

a hyphen. A hyphen shall not be immediately followed by another hyphen. An object is identified by the sequence of arc values (numerical, or for early arcs, arc names) from the root to the object.

NOTE For a comprehensive description of the ASN.1 object identifier tree, see ISO/IEC 8824-1.

5.2.3 It is possible in representations of an object identifier to imply (by the context of that representation) identification of part of the path from the root to a node in the object identifier tree. In the extreme case, only a single object identifier component from that implied node need be represented. When context of the object identifier arc is not obvious, the full object identifier value should be given.

EXAMPLE ISO/IEC 19785-1 and the ISO/IEC 19784 series use a 16-bit field to provide the identification of an object identifier arc beneath an arc that is implied by the context.

5.2.4 Components of ASN.1 object identifiers are non-negative integer values (zero or greater) of unlimited magnitude. However, object identifier values used for registration purposes shall be restricted to positive integers, with a minimum value of 1 and a maximum value of 65535. This approach allows the use of zero to encode the abstract value NO VALUE AVAILABLE in CBEFF patron formats and supports standards which restrict the ASN.1 object identifiers components to 16-bit positive integers.

5.2.5 Successful registration as a biometric organization provides that biometric organization with a CBEFF biometric organization identifier. This is a 16-bit binary value (that can be interpreted as a positive integer) for an ASN.1 object identifier arc under

```
{iso(1) registration-authority(1) cbeff(19785) biometric-organization(0)
}
```


The allocated object identifier value is unambiguous worldwide, but the CBEFF biometric organization identifier can also be used alone in contexts where the preceding arcs are implied.

5.2.6 A biometric organization that is a recognized standards development organization (standards body, working group, or industry consortium) and is a producer of open standards as defined in ISO/IEC 19785-1 is a CBEFF patron. Any biometric organization may register BDB formats (see 5.2.8), SB formats (see 5.2.9), and biometric products (see 5.2.10 and 5.2.11), but only a CBEFF patron can register a BIR format, or a CBEFF patron format (see 5.2.7).

5.2.7 Successful registration of a BIR format by a CBEFF patron records that the BIR format is identified by an arc with a 16-bit BIR format identifier (provided by the CBEFF patron) and also called a CBEFF patron format identifier, under the arc

```
{iso(1) registration-authority(1) cbeff(19785) biometric-organization(0)
<organization id > patron-format(1)}
```

and enables publication of a reference to the specification of that BIR format (CBEFF patron format). The <organization id> is either the decimal value of the 16-bit CBEFF patron identifier of the definer of the CBEFF patron format or is an arc identifier followed by the decimal value in parentheses. The allocated object identifier value is unambiguous worldwide, but the BIR format identifier can also be used alone in contexts where the preceding arcs are implied.

EXAMPLE The <organization id> for patron formats defined by ISO/IEC JTC 1/SC 37 is jtc1-sc37(257), and the arc is 1.1.19785.0.257.1

5.2.8 Successful registration of a BDB format by a biometric organization records that the BDB format is identified by an arc with a 16-bit BDB format identifier (provided by the CBEFF biometric organization) under the arc

```
{iso(1) registration-authority(1) cbeff(19785) biometric-organization(0)
<organization id> bdbs(0)}
```

and enables publication of a reference to the specification of that BDB format. The <organization id> is either the decimal value of the sixteen-bit CBEFF biometric organization identifier of the definer of the