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Information technology — Common Biometric Exchange Formats Framework —

Part 3:
Patron format specifications

AMENDMENT 1: Support for Additional Data Elements

Technologies de l'information — Cadre de formats d'échange biométriques communs —

Partie 3: Spécifications de format d'usager

AMENDEMENT 1: Support pour éléments de données additionnels

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Foreword

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The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

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Amendment 1 to ISO/IEC 19785-3:2007 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 37, *Biometrics*.

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Information technology — Common Biometric Exchange Formats Framework —

Part 3:
Patron format specifications

AMENDMENT 1: Support for Additional Data Elements

Page vii, Introduction, list item g)

Replace the text with the following (where changes to existing text are highlighted with a grey background):

g) CBEFF data elements [see c) above] that support, within the SBH, the unique identifiers assigned by the Biometric RA for biometric organizations, BDB formats, biometric products, capture devices, feature extraction algorithms, comparison algorithms, quality algorithms, compression algorithms, patron formats, and SB formats.

and insert the following new paragraph after the list:

Patron formats can be specified in other standards documents and registered in the CBEFF Registration Authority (see ISO/IEC 19785-2), for example there is a registered patron format specified in ISO/IEC 19784-1. For a complete list of registered patron formats consult the CBEFF Registration Authority web site.

Page 2, immediately after 4.1 i) (biometric product owner)

Insert the following new terms, relabelling the existing terms j) to x) as y) to mm) [where z) is followed by aa), bb), etc.]:

j) capture device

k) capture device identifier

l) capture device owner

m) feature extraction algorithm

n) feature extraction algorithm identifier

o) feature extraction algorithm owner

p) comparison algorithm

q) comparison algorithm identifier

r) comparison algorithm owner

s) quality algorithm

t) quality algorithm identifier

u) quality algorithm owner

   v)   compression algorithm

   w) compression algorithm identifier

   x) compression algorithm owner

Page 18, 10.4

Change "(0004 Hex)" to "(0005 Hex)".

Page 32, 12.4

Change "(06 Hex)" to "(0006 Hex)".

Page 32, 12.9.1

Replace the subclause with the following (where changes to existing text are highlighted with a grey background):

12.9.1   This patron format supports all the mandatory and optional data elements specified in ISO/IEC 19785-1 except the following ones: capture device owner and identifier, feature extraction algorithm owner and identifier, comparison algorithm owner and identifier, quality algorithm owner and identifier, and compression algorithm owner and identifier. It can support either a simple BIR or a complex BIR structure where each intermediate node or leaf of the structure is itself a BIR (called a "child BIR") and can be represented in any patron format.

Page 42, 12.13.2

Change the second cell in the table heading from "Mandatory/optional/absent" to "Mandatory/optional".

Page 44, 13.9.1

Replace the subclause with the following (where changes to existing text are highlighted with a grey background):

13.9.1   This patron format is based on W3C XML 1.0. It supports all the mandatory and optional data elements specified in ISO/IEC 19785-1 except the following ones: capture device owner and identifier, feature extraction algorithm owner and identifier, comparison algorithm owner and identifier, quality algorithm owner and identifier, and compression algorithm owner and identifier. It can support either a simple BIR or a complex BIR structure where each intermediate node or leaf of the structure is itself a BIR (called a "child BIR").

Page 58, 13.21.2

Change the second cell in the table heading from "Mandatory/optional/absent" to "Mandatory/optional".

Page 68, after Clause 13

Insert the following two new clauses.

14 Patron format specification: complex patron format (with additional data elements)

14.1 Patron

ISO/IEC JTC 1/SC 37

14.2 Patron identifier

257 (0101Hex). This has been allocated by the Registration Authority for ISO/IEC 19785-2.

14.3 Patron format name

ISO/IEC JTC 1/SC 37 complex patron format (with additional data elements).

14.4 Patron format identifier

10 (000A Hex). This has been registered in accordance with ISO/IEC 19785-2.

14.5 ASN.1 object identifier for this patron format

{iso registration-authority cbeff(19785) biometric-organization(0) jtc1-sc37(257) patron-format(1) full-complex(10)}

or, in XML value notation,

1.1.19785.0.257.1.10

14.6 Domain of use

This clause provides a definition of a patron format that may be of general utility to applications that need to carry one or more BIRs (of either the same or different patron formats) in a single complex BIR structure, with explicit identification of the patron format(s) being used.

This patron format is identical to that specified in clause 12 except for the addition of ten new data elements (capture device owner and identifier, feature extraction algorithm owner and identifier, comparison algorithm owner and identifier, quality algorithm owner and identifier, and compression algorithm owner and identifier) and a "fieldPresence" field that is one byte longer.

14.7 Version identifier

This patron format specification has a version identifier of 1.

14.8 CBEFF version

This specification conforms to CBEFF version (major 2, minor 0).

14.9 General

14.9.1 This patron format supports all the mandatory and optional data elements specified in ISO/IEC 19785-1. It can support either a simple BIR or a complex BIR structure where each intermediate node or leaf of the structure is itself a BIR (called a "child BIR") and can be represented in any patron format.

14.9.2   The patron format of each child BIR is explicitly identified in its parent by a pair: patron format owner / patron format type, and can be either this patron format (in which case the child BIR may itself have children), or a different patron format (in which case the child BIR is considered a leaf of this patron format although it may be a complex BIR in its own regard).

14.9.3   Most fields in this patron format are optional. The presence of each optional field is encoded as a single bit of a 32-bit field ("fieldPresence") at the beginning of the format, which has one bit for each optional field defined in the patron format. The bit value '1' in a given position of that field means that the corresponding field is present in the BIR instance.

14.9.4   All character strings and octet strings are preceded by a length prefix, which can be one, two, or four octets long, as specified for each field.

14.9.5   All integer values, including lengths, are encoded in big-endian order.

14.9.6   Dates and date intervals are encoded as character strings in a way conforming to ISO 8601.

14.9.7   An instance of a BIR or child BIR contains either a BDB or one or more BIR children, but never contains both.

14.10 Specification

An instance of a BIR shall contain the fields specified below, in exactly the same order and with no gaps between the fields.

CBEFF data element name	Field name	Length and optionality[a]	Abstract values and Encodings[b]
The following fields shall occur at most once			
CBEFF_patron_header_version	patronHeaderVersion	1, mandatory	1
CBEFF_version	cbeffVersion	1, mandatory	Major '2' and Minor '0': X'20' (32)
not a standard CBEFF data element	fieldPresence	4, mandatory	A 32-bit field containing one bit for each optional field in the patron format. The bit value '1' means that the corresponding field is present in the BIR instance. Bit position (1=most significant, 32=least significant) and corresponding optional field: 1 bdbFormat Owner & Type 2 bdbEncryption 3 bdbBiometricType 4 bdbBiometricSubtype 5 bdbChallengeResponse 6 bdbCreationDate 7 bdbIndex 8 bdbProcessedLevel 9 bdbProduct Owner & Type 10 bdbCaptureDevice Owner & Type 11 bdbFeatureExtAlg Owner & Type 12 bdbComparisonAlg Owner & Type 13 bdbQualityAlg Owner & Type 14 bdbCompressionAlg Owner & Type 15 bdbPurpose 16 bdbQuality 17 bdbValidityPeriod

CBEFF data element name	Field name	Length and optionality[a]	Abstract values and Encodings[b]
			18 birCreationDate 19 birCreator 20 birIndex 21 birPayload 22 birValidityPeriod 23 sbFormat Owner & Type 24 bdb 25 sb 26..32 not used (shall be '0')
CBEFF_BDB_format_owner	bdbFormatOwner	2, mandatory if a BDB is present, optional if a BDB is not present.	0..65535
CBEFF_BDB_format_type	bdbFormatType	2, mandatory if a BDB is present, optional if a BDB is not present.	0..65535
CBEFF_BDB_encryption_options	bdbEncryption	1; mandatory if a BDB is present, otherwise required to be absent.	NO ENCRYPTION: 0 ENCRYPTION: 1
CBEFF_BIR_integrity_options	birIntegrity	1, mandatory	NO INTEGRITY: 0 INTEGRITY: 1
CBEFF_BDB_biometric_type	bdbBiometricType	3	*This encoding is a 3 octet bitmap. NO VALUE AVAILABLE is encoded as all 0 bits. If MULTIPLE BIOMETRIC TYPES is set, other bits may also be set to enumerate the types contained in the BDB.* NO VALUE AVAILABLE: X'00 00 00' MULTIPLE BIOMETRIC TYPES: X'00 00 01' FACE: X'00 00 02' VOICE: X'00 00 04' FINGER: X'00 00 08' IRIS: X'00 00 10' RETINA: X'00 00 20' HAND GEOMETRY: X'00 00 40' SIGNATURE OR SIGN: X'00 00 80' KEYSTROKE: X'00 01 00' LIP MOVEMENT: X'00 02 00' GAIT: X'00 10 00' VEIN: X'00 20 00' DNA: X'00 40 00' EAR: X'00 80 00' FOOT: X'01 00 00' SCENT: X'02 00 00'
CBEFF_BDB_biometric_subtype	bdbBiometricSubtype	1	*This encoding is a 1 octet bitmap.* *Combinations of abstract values are permitted (by ORing the encodings for those values) when the abstract value encoded in CBEFF_BDB_biometric_type represents a biometric technology that*

CBEFF data element name	Field name	Length and optionality[a]	Abstract values and Encodings[b]
			can create a BDB where multiple subtypes are supported. NO VALUE AVAILABLE: b'0000 0000' LEFT: b'0000 0001' RIGHT: b'0000 0010' LEFT THUMB: b'0000 0101' LEFT POINTER FINGER: b'0000 1001' LEFT MIDDLE FINGER: b'0001 0001' LEFT RING FINGER: b'0010 0001' LEFT LITTLE FINGER: b'0100 0001' RIGHT THUMB: b'0000 0110' RIGHT POINTER FINGER: b'0000 1010' RIGHT MIDDLE FINGER: b'0001 0010' RIGHT RING FINGER: b'0010 0010' RIGHT LITTLE FINGER: b'0100 0010' LEFT PALM: b'1000 0101' LEFT BACK OF HAND: b'1000 1001' LEFT WRIST: b'1001 0001' RIGHT PALM: b'1000 0110' RIGHT BACK OF HAND: b'1000 1010' RIGHT WRIST: b'1001 0010'
CBEFF_BDB_challenge_response	bdbChallengeResponse	2 + 0..65535	Variable-length octet string, preceded by a 16-bit integer field containing the length (octets).
CBEFF_BDB_creation_date	bdbCreationDate	1 + 8..15	Variable-length ASCII character string, preceded by an 8-bit integer field containing the length (characters). The string shall represent a date (or date and a time of the day)[c].
CBEFF_BDB_index	bdbIndex	2 + 0..65535	Variable-length octet string, preceded by a 16-bit integer field containing the length (octets). Shall not appear in any BIR in which numChildren is not x'00'.
CBEFF_BDB_processed_level	bdbProcessedLevel	1	RAW: 1 INTERMEDIATE: 2 PROCESSED: 3
CBEFF_BDB_product_owner	bdbProductOwner	2	1..65535
CBEFF_BDB_product_type	bdbProductType	2	1..65535
CBEFF_BDB_capture_device_owner	bdbCaptureDeviceOwner	2	1..65535
CBEFF_BDB_capture_device_type	bdbCaptureDeviceType	2	1..65535
CBEFF_BDB_feature_extraction_algorithm_owner	bdbFeatureExtAlgOwner	2	1..65535
CBEFF_BDB_feature_extraction_algorithm_type	bdbFeatureExtAlgType	2	1..65535
CBEFF_BDB_comparison_algorithm_owner	bdbComparisonAlgOwner	2	1..65535
CBEFF_BDB_comparison_algorithm_type	bdbComparisonAlgType	2	1..65535
CBEFF_BDB_quality_algorithm_owner	bdbQualityAlgOwner	2	1..65535

CBEFF data element name	Field name	Length and optionality[a]	Abstract values and Encodings[b]
CBEFF_BDB_quality_algorithm _type	bdbQualityAlgType	2	1..65535
CBEFF_BDB_compression_ algorithm_owner	bdbCompressionAlgOwner	2	1..65535
CBEFF_BDB_compression_ algorithm_type	bdbCompressionAlgType	2	1..65535

CBEFF_BDB_purpose	bdbPurpose	1	VERIFY: 1
			IDENTIFY: 2
			ENROLL: 3
			ENROLL FOR
			  VERIFICATION ONLY: 4
			ENROLL FOR
			  IDENTIFICATION ONLY: 5
			AUDIT: 6

CBEFF_BDB_quality	bdbQuality	1	QUALITY NOT SUPPORTED
			  BY BDB CREATOR: 255
			
			QUALITY SUPPORTED BY
			  BDB CREATOR BUT
			  NOT SET: 254
			
			INTEGER VALUE: 0 – 100

CBEFF_BDB_validity_period	bdbValidityPeriod	1 + 17..31	Variable-length ASCII character string, preceded by an 8-bit integer field containing the length (characters). The string shall represent an interval of two dates (or date and time of the day)[d].
CBEFF_BIR_creation_date	birCreationDate	1 + 8..15	Variable-length ASCII character string, preceded by an 8-bit integer field containing the length (characters). The string shall represent a date (or date and a time of the day)[c].
CBEFF_BIR_creator	birCreator	2 + 0..65535	Variable-length ISO/IEC 10646 character string, encoded in UTF-8, and preceded by a 16-bit integer field containing the length of the UTF-8 encoding (octets).
CBEFF_BIR_index	birIndex	2 + 0..65535	Variable-length octet string, preceded by a 16-bit integer field containing the length (octets). Shall not inherit its value from any other level BIR.
CBEFF_BIR_payload	birPayload	2 + 0..65535	Variable-length octet string, preceded by a 16-bit integer field containing the length (octets). Shall not inherit its value from any other level BIR.
CBEFF_BIR_validity_period	birValidityPeriod	1 + 17..31	Variable-length ASCII character string, preceded by an 8-bit integer field containing the length (characters). The string shall represent an interval of two dates (or date and time of the day)[d].
CBEFF_SB_format_owner	sbFormatOwner	2	1..65535
CBEFF_SB_format_type	sbFormatType	2	1..65535

CBEFF data element name	Field name	Length and optionality[a]	Abstract values and Encodings[b]
BDB	bdb	4 + 0..4294967295	Variable-length octet string, preceded by a 32-bit integer field containing the length (octets). If this field is present in a BIR instance (as indicated in bit 24 of the field *fieldPresence*), then no child BIRs shall be included (*numChildren* shall have the value 0). Otherwise, at least one child BIR shall be included (*numChildren* shall have a value greater than 0). NOTE - The content and encoding of the BDB are not specified by CBEFF nor by this patron format specification.
CBEFF_subheader_count	numChildren	1, mandatory	0..255
The following 3 fields shall occur as a group as many times as specified in the field numChildren (0..255)			
CBEFF_BIR_patron_format_ owner	childBirPatronFormatOwner	2, mandatory if no BDB is present, other-wise required to be absent.	1..65535
CBEFF_BIR_patron_format_ type	childBirPatronFormatType	2, mandatory if no BDB is present, other-wise required to be absent.	1..65535
not a standard CBEFF data element	childBir	4 + 0..4294967295, mandatory if no BDB is present, otherwise required to be absent.	Variable-length octet string, preceded by a 32-bit integer field containing the length (octets)[e].
The following field shall occur at most once			
SB	sb	4 + 0..4294967295	Variable-length octet string, preceded by a 32-bit integer field containing the length (octets).

a) The date shall be represented in the ISO 8601 basic format YYYYMMDDTHHMMSS, where the last 2, the last 4, or the last 7 characters may be omitted.

Examples: 20050103, 20050106T11, 20050106T1230, and 20050106T145504.

b) Each date shall be represented in the ISO 8601 basic format YYYYMMDDTHHMMSS, where the last 2, the last 4, or the last 7 characters may be omitted. The two dates shall be separated by a SOLIDUS ("/") character, and shall have the same number of digits.

Examples: 20050103/20060103, 20050106T11/20050306T11, and 20050106T113300/20050306T113259.

c) A BIR consists of either: 1) an SBH, BDB, optional SB, and numChildren value of zero, or 2) an SBH, no BDB, and numChildren value greater than zero.

14.11 Illustrative examples

Table 14.1 — "Simple" BIR (one BDB)

Field Name	Length	Abstract Value	Encoding
patronHeaderVersion	1	1	x'01'
cbeffVersion	1	Major 2, Minor 0	x'20'
fieldPresence	3	bdbFormatOwner and Type bdbEncryption bdbBiometricType bdbQuality bdb	x'E0 20 00 20'
bdbFormatOwner	2	ISO/IEC JTC 1/SC 37	257, x'01 01'
bdbFormatType	2	Face image	x'00 08'
bdbEncryption	1	NO ENCRYPTION	x'00'
birIntegrity	1	NO INTEGRITY	x'00'
bdbBiometricType	3	FACE-IMAGE	x'40 00 00'
bdbQuality	1	75/100	x'4B'
Bdb	4 + 4096	octet string	x'00 00 10 00' + 4096 octets
numChildren	1	zero	x'00'

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Table 14.2 — Complex BIR fields and abstract values corresponding to Figure 2 in ISO/IEC 19785-1

1. patronHeaderVersion = 1 *(beginning of the root header BIR)*
2. cbeffVersion = 2:0
3. fieldPresence = sbFormatOwner/Type
4. birIntegrity = INTEGRITY *(integrity is applied to the entire complex BIR via the SB on line 90)*
5. sbFormatOwner = *a security vendor*
6. sbFormatType = *that vendor's security block format* *(see the final SB on line 90)*
7. numChildren = 2
8. childBirPatronFormatOwner = SC 37
9. childBirPatronFormatType = 8 *(this format)*
10. ► *(denotes the beginning of the next BIR)*
11. patronHeaderVersion = 1
12. cbeffVersion = 2:0
13. fieldPresence = bdbBiometricType
14. birIntegrity = NO INTEGRITY
15. bdbBiometricType = FINGER *(the next 3 BIRs inherit this value)*
16. numChildren = 3
17. childBirPatronFormatOwner = SC 37
18. childBirPatronFormatType = 8 *(this format)*
19. ►
20. patronHeaderVersion = 1
21. cbeffVersion = 2:0
22. fieldPresence = bdbFormatOwner/Type; bdbEncryption; bdbBiometricSubtype; bdb
23. bdbFormatOwner = SC 37