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Information technology — Extensible biometric data interchange formats —

Part 4: Finger image data

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Foreword

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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 39794 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

Biometric data interchange formats enable the interoperability of different biometric systems. The first generation of biometric data interchange formats has been published between 2005 and 2007 in the first edition of the ISO/IEC 19794 series. From 2011 onwards, the second generation of biometric data interchange formats was published in the second edition of the established parts and the first edition of some new parts of the ISO/IEC 19794 series. In the second generation of biometric data interchange formats, new useful data elements such as data elements related to biometric sample quality have been added, the header data structures were harmonized across all parts of the ISO/IEC 19794 series, and XML encoding has been added in addition to the binary encoding.

In anticipation of the future need for additional data elements and to avoid future compatibility issues, ISO/IEC JTC 1/SC 37 has developed the ISO/IEC 39794 series as a third generation of biometric data interchange formats, defining extensible biometric data interchange formats capable of including future extensions in a defined way. Extensible specifications in ASN.1 (Abstract Syntax Notation One) and the distinguished encoding rules of ASN.1 form the basis for encoding biometric data in binary tag-length-value formats. XML schema definitions form the basis for encoding biometric data in XML (eXtensible Markup Language).

This third generation of finger image data interchange formats complements ISO/IEC 19794-4 (both the 2005 and 2011 editions). The first generation of biometric data interchange formats, which has been adopted, e.g. by ICAO for the biometric data stored in machine readable travel documents, is expected to be retained in the standards catalogue as long as needed.

This document is intended for those applications requiring the exchange of raw or processed fingerprint and other friction ridge images (for example, palm images) that may not necessarily be limited in the amount of resources available for data storage or transmitting time. It can be used for the exchange of scanned fingerprints containing detailed image pixel information.

Use of the captured or processed image allows interoperability among biometric systems relying on minutiae-based, pattern-based or other algorithms. Thus, data from the captured finger image offers the developer more freedom in choosing or combining comparison algorithms. For example, an enrolment image may be stored on a contactless chip located on an identification document. This will allow future verification of the holder of the document with systems that rely on either minutiae-based or pattern-based algorithms. Establishment of an image-based representation of fingerprint information will not rely on pre-established definitions of minutiae, patterns or other types. It will provide implementers with the flexibility to accommodate images captured from dissimilar devices, varying image sizes, spatial sampling rates and different greyscale depths. Use of the finger image will allow each vendor to implement their own algorithms to determine whether two fingerprint records are from the same finger.

This document supports both binary and XML encoding, to support a spectrum of user requirements. With XML, this document meets the requirements of modern IT architectures. With binary encoding this document is also able to be used in bandwidth or storage constrained environments.

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Information technology — Extensible biometric data interchange formats —

Part 4:
Finger image data

1 Scope

This document specifies:

— generic extensible data interchange formats for the representation of friction ridge image data: a tagged binary data format based on an extensible specification in ASN.1 and a textual data format based on an XML schema definition that are both capable of holding the same information;

— examples of data record contents;

— application specific requirements, recommendations, and best practices in data acquisition; and

— conformance test assertions and conformance test procedures applicable to this document.

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 8824-1, *Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation — Part 1*

ISO/IEC 8825-1, *Information technology — ASN.1 encoding rules — Part 1: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER), and Distinguished Encoding Rules (DER)*

ISO/IEC 14495-1, *Information technology — Lossless and near-lossless compression of continuous-tone still images: Baseline*

ISO/IEC 15444 (all parts), *Information technology — JPEG 2000 image coding system*

ISO/IEC 15948, *Information technology — Computer graphics and image processing — Portable Network Graphics (PNG): Functional specification*

ISO/IEC 39794-1, *Information technology — Extensible biometric data interchange formats — Part 1: Framework*

W3C Recommendation, *XML Schema Part 1: Structures* (Second Edition), 28 October 2004

W3C Recommendation, *XML Schema Part 2: Datatypes* (Second Edition), 28 October 2004