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Information technology — Biometric data interchange formats —

Part 14: DNA data

*Technologies de l'information — Formats d'échange de données
biométriques —*

Partie 14: Données ADN

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

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.

ISO/IEC 19794-14 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information Technology*, Subcommittee SC 37, *Biometrics*.

ISO/IEC 19794 consists of the following parts, under the general title *Information technology — Biometric data interchange formats*:

- *Part 1: Framework*
- *Part 2: Finger minutiae data*
- *Part 3: Finger pattern spectral data*
- *Part 4: Finger image data*
- *Part 5: Face image data*
- *Part 6: Iris image data*
- *Part 7: Signature/sign time series data*
- *Part 8: Finger pattern skeletal data*
- *Part 9: Vascular image data*
- *Part 10: Hand geometry silhouette data*
- *Part 11: Signature/Sign processed dynamic data*
- *Part 13: Voice data*
- *Part 14: DNA data*

Introduction

In the last 20 years, forensic molecular genetics has evolved from a rapidly developing field with changing technologies into a highly recognized and generally accepted forensic science.

Forensic genetics using deoxyribonucleic acid (DNA) profiling comprises a number of important applications. Examples are the investigation of biological stains to obtain evidence for the presence of an alleged perpetrator at a crime scene by comparing the genetic profiles from crime scene samples of human origin, to those available at DNA databases administrated by legal enforcement agencies. These also include the identification of unknown corpses in the context of both natural death and of crime, immigration, paternity testing, and disaster victim identification.

The purpose of this document is to define a standard for the exchange of human DNA identification data. The standard defines DNA attributes and a data record format for the exchange of DNA data. It includes a sample record and conformance criteria.

This data interchange format standard is based on DNA data from forensic DNA typing techniques that are standardized and most commonly used, namely STR profiling and other DNA typing techniques that are standardized by scientific bodies for the purpose of discriminating between individuals.

Note that the purpose of this data interchange format is to enable the exchange of DNA data from different systems, not to impose any constraints on the specific DNA typing system/technique to be used.

Where existing DNA data exchange formats have been referenced in the preparation of this document these formats are listed as references.

Standard profiling systems exploit the non-coding regions of DNA that are referred to “junk DNA”. The coding regions are deliberately avoided in order to maintain the privacy and civil rights of the donor. However, national data protection and privacy legislation may impose special security safeguards, such as – but not limited to – encryption of data transfers and/or storage.

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Information technology — Biometric data interchange formats —

Part 14: DNA data

1 Scope

This part of ISO/IEC 19794 specifies a data interchange format for the exchange of DNA data for person identification or verification technologies that utilize human DNA.

It will provide the ability for DNA profile data to be exchanged and used for comparison (subject to privacy regulations) with DNA profile data produced by any other system that is based on a compatible DNA profiling technique and where the data format conforms to this part of ISO/IEC 19794.

This part of ISO/IEC 19794 is intended to cover current forensic DNA profiling or typing techniques that are based on short tandem repeats (STRs), including STRs on the Y chromosome (Y-STRs), as well as mitochondrial DNA.

A single DNA data record for a subject may require data resulting from more than one of these different DNA techniques. This part of ISO/IEC 19794 enables data for multiple DNA techniques to be presented in a single record for a given subject.

This data format has been prepared in light of ongoing efforts to reduce human involvement in the processing (enrolment and comparison) of DNA. In anticipation of the data format requirements for automated DNA techniques this part of ISO/IEC 19794 will describe a format for both processed and raw (electrophoretic) DNA data. Extensible Mark-up Language (XML) encoding of the data is used to specify DNA data interchange. A normative XML Schema Definition (XSD) specification is provided in Annex B.

This part of ISO/IEC 19794 is not intended for any other purposes than exchange of DNA for biometric verification and identification of individuals, in particular does not exchange medical and other health-related information.

2 Conformance

Applications claiming conformance with this part of ISO/IEC 19794 shall be capable of presenting DNA biometric data as defined by this standard. Minimum conformance shall require the ability to transmit (exchange) and extract interoperable DNA biometric information.

3 Normative references

The following referenced documents are indispensable for the application 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 19794-1:2011, *Information technology — Biometric data interchange formats — Part 1: Framework*

ISO/IEC 19794-1:2011/Amd.2, *Framework for XML encoding*