PD ISO/IEC TR 30117:2021



BSI Standards Publication

Information technology — Standards and applications for the integration of biometrics and integrated circuit cards (ICCs)

bsi.

National foreword

This Published Document is the UK implementation of ISO/IEC TR 30117:2021.

The UK participation in its preparation was entrusted to Technical Committee IST/17, Cards and security devices for personal identification.

A list of organizations represented on this committee can be obtained on request to its committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

This publication is not to be regarded as a British Standard.

© The British Standards Institution 2021
Published by BSI Standards Limited 2021

ISBN 978 0 539 05546 7

ICS 35.240.15

Compliance with a Published Document cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 30 September 2021.

Amendments/corrigenda issued since publication

Date	Text affected

PD ISO/IEC TR 30117:2021

TECHNICAL REPORT

ISO/IEC TR 30117

Second edition
2021-08-27

Information technology — Standards and applications for the integration of biometrics and integrated circuit cards (ICCs)

Technologies de l'information — Normes et applications pour l'intégration des données biométriques et cartes à circuits intégrés

Reference number
ISO/IEC TR 30117:2021(E)

© ISO/IEC 2021



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2021, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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 ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Symbols and abbreviated terms ... **1**
5 Relationships between biometrics and ICCs ... **3**
5.1 Architectures for the joint use of biometrics and ICCs ... 3
5.2 Considerations to be addressed when designing the application ... 3
6 Data formats ... **6**
6.1 General ... 6
6.2 Single modality plain biometric data formats ... 6
6.3 Encapsulation of multiple modalities and/or security mechanisms ... 8
6.4 ICC-specific definitions on biometric data formats ... 9
7 Privacy and security ... **9**
8 Outside-ICC application development ... **11**
8.1 General overview ... 11
8.2 Local applications ... 11
8.3 Client-server implementations ... 11
9 Use cases profiles ... **12**
10 Technology evaluation ... **13**
11 Implementing solutions merging the use of ICCs and biometrics ... **14**
11.1 Spanish national ID card (DNIe) ... 14
11.1.1 General ... 14
11.1.2 Biometric services provided ... 15
11.1.3 Biometric modalities and data formats ... 15
11.1.4 Security mechanisms and operations ... 16
11.1.5 Evaluations and results ... 16
11.2 ePassport ... 16
11.2.1 General ... 16
11.2.2 Biometric services provided ... 17
11.2.3 Biometric modality and data formats ... 18
11.2.4 Security mechanisms and operations ... 18
Bibliography ... **20**

© ISO/IEC 2021 – All rights reserved

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).

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

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 www.iso.org/iso/foreword.html.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 17, *Cards and security devices for personal identification*.

This second edition cancels and replaces the first edition (ISO/IEC TR 30117:2014) which has been technically revised.

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

— Addition and update of references to the related projects in all relevant standardization bodies.

— Addition to the Scope, to include not only on-card biometric comparison, but all other interactions of biometrics and integrated circuit cards (ICCs).

— Addition of the example of the ePassport, which is a widely-deployed application using off-card biometric comparison.

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 and www.iec.ch/national-committees.

© ISO/IEC 2021 – All rights reserved

Introduction

There are a large number of applications where the need for implementing jointly integrated circuit cards (ICC) and biometrics can arise. In those cases, system designers and integrators need to be aware of the range of international standards and technical reports that are applicable. All of these potential reference documents have been developed by different standardization bodies and committees. ISO/IEC JTC1 (Joint Technical Committee) subcommittees develop standards in the following areas:

ICCs:

ISO/IEC JTC 1 SC 17 (*Information technology — Cards and security devices for personal identification*)

Security aspects:

ISO/IEC JTC 1 SC 27 (*Information technology — Information security, cybersecurity and privacy protection*)

Biometrics:

ISO/IEC JTC 1 SC 37 (*Information technology — Biometrics*)

Other regional or sectoral standardization bodies are also applicable.

In this context, the system designer and developer have a large number of documents at their disposal, but with little information about which of them is really applicable. There are no general rules, as depending on the application, different alternatives are available.

This document provides information on the published documents and relates them to the kind of application to be developed. When referring to different applications, these will be classified attending to the verification needs of the application, not to the final sector where the application is to be deployed.

This document provides information on the published documents and relates them to the kind of application to be developed.

Interactions among standards cover different implementation levels, from data formats to be used to the application profiles, including application programming interfaces (APIs) and security mechanisms.

This document places special emphasis on providing recommendations and policies needed by developers to integrate the use of both biometrics and ICCs in applications.

The structure of this document is as follows:

— Clause 5 provides a first overview to the different decisions that have to be taken when developing an application that can involve the use of ICCs and biometrics.

— Clauses 6 to 10 provide an overview to the different International Standards and Technical Reports that can be applicable to the application to be developed.

— Clause 11 provides examples of implementations that can be used by application designers and developers as guidelines.

All ISO/IEC documents mentioned in this document are listed in the Bibliography at the end of this document.

NOTE Future editions of this document will add more information about Biometric System-on-Card technology and the use of the PBO command.

© ISO/IEC 2021 – All rights reserved

Information technology — Standards and applications for the integration of biometrics and integrated circuit cards (ICCs)

1 Scope

This document summarizes how some of the main international standards and recommendations approach personal identification and its related information security, with regard to the integration of biometrics and integrated circuit cards (ICCs). It also provides examples of how biometrics and ICCs are integrated in applications.

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*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO/IEC 2382-37 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 https://www.electropedia.org/

NOTE ISO/IEC 2382-37 is freely available at https://standards.iso.org/ittf/PubliclyAvailableStandards/index.html

3.1
biometric template
set of stored biometric features comparable directly to probe biometric features

Note 1 to entry: In the ISO/IEC 7816 series, the term "template" has a completely different meaning, being in that case the “value field of a constructed data object”, regardless to whether the data object relates to biometrics or not.

4 Symbols and abbreviated terms

APDU	Application Protocol Data Unit
API	Application Programming Interface
ASN.1	Abstract Syntax Notation One
BAC	Basic Access Control
BDB	Biometric Data Block (as defined in the ISO/IEC 19785 series)

© ISO/IEC 2021 – All rights reserved