
Uporabniški vmesnik za pametne kartice, ki se uporabljajo kot naprave za izdelovanje varnega podpisa - 1. del: Osnovne storitve

Application Interface for smart cards used as Secure Signature Creation Devices - Part 1: Basic services

Anwendungsschnittstelle für Chip-Karten, die zur Erzeugung qualifizierter elektronischer Signaturen verwendet werden Teil 1: Allgemeine Dienste

Interface applicative des cartes à puces utilisées comme dispositifs de création de signature numérique sécurisés - Partie 1: Services de base

<https://standards.iteh.ai/catalog/standards/sist/85c262b5-733c-40b2-b088-5e2d8c069a03/sist-en-419212-1-2015>

Ta slovenski standard je istoveten z: EN 419212-1:2014

ICS:

35.240.15	Identifikacijske kartice in sorodne naprave	Identification cards and related devices
-----------	---	--

SIST EN 419212-1:2015

en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 419212-1:2015

<https://standards.iteh.ai/catalog/standards/sist/85c262b5-733c-40b2-b088-5e2d8c069a03/sist-en-419212-1-2015>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 419212-1

December 2014

ICS 35.240.15

Supersedes EN 14890-1:2008

English Version

**Application Interface for smart cards used as Secure Signature
Creation Devices - Part 1: Basic services**

Interface applicative des cartes à puces utilisées comme
dispositifs de création de signature numérique sécurisés -
Partie 1 : Services de base

Anwendungsschnittstelle für Chip-Karten, die zur
Erzeugung qualifizierter elektronischer Signaturen
verwendet werden - Teil 1: Allgemeine Dienste

This European Standard was approved by CEN on 27 September 2014.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

[SIST EN 419212-1:2015](https://standards.iteh.ai/catalog/standards/sist/85c262b5-733c-40b2-b088-5e2d8c069a03/sist-en-419212-1-2015)

<https://standards.iteh.ai/catalog/standards/sist/85c262b5-733c-40b2-b088-5e2d8c069a03/sist-en-419212-1-2015>



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	7
Introduction	9
1 Scope	10
2 Normative references	10
3 Terms and definitions	11
4 Symbols and abbreviations	15
5 Signature application	18
5.1 Application Flow	18
5.2 Trusted environment versus untrusted environment	22
5.3 Selection of E-SIGN application	22
5.3.1 General.....	22
5.3.2 Exceptions for Secure Messaging	23
5.4 Selection of cryptographic information application	23
5.5 Concurrent usage of signature applications	24
5.5.1 General.....	24
5.5.2 Methods of channel selection	24
5.5.3 Security issues on multiple channels	24
5.6 Security environment selection	24
5.7 Key selection.....	25
5.8 Security Services	25
6 User verification.....	26
6.1 General.....	26
6.2 Knowledge based user verification	26
6.2.1 General.....	26
6.2.2 Explicit user verification	27
6.2.3 Password based mechanisms.....	28
6.2.4 Presentation formats	28
6.2.5 Retry and Usage counters	28
6.2.6 Password Change.....	29
6.2.7 Reset of RC and setting a new password	29
6.3 Biometric user verification	30
6.3.1 General.....	30
6.3.2 Retrieval of the Biometric Information Template	31
6.3.3 Performing the biometric user verification	32
6.3.4 Reset of RC.....	34
7 Digital Signature Service	34
7.1 General.....	34
7.2 Signature generation algorithms	35
7.3 Activation of digital signature service.....	35
7.4 General aspects	36
7.5 Signature Generation	37
7.5.1 General.....	37
7.5.2 No hashing in Card	37
7.5.3 Partial hashing	38
7.5.4 All hashing in ICC	39
7.6 Selection of different keys, algorithms and input formats	40
7.6.1 General.....	40
7.6.2 Restore an existing SE.....	41
7.6.3 Setting the Hash Template (HT) of a current Security Environment (SE).....	42
7.6.4 Modify the Digital Signature Template (DST) of a current Security Environment (SE)	42
7.7 Read certificates and certificate related information	43

7.7.1	General	43
7.7.2	Read certificate related CIOs.....	43
7.7.3	Read signer's certificate from ICC	44
7.7.4	Retrieval of the signer's certificate from a directory service.....	44
8	Device authentication	45
8.1	General	45
8.2	Asymmetric Authentication introduction.....	46
8.3	Certification authorities and certificates.....	46
8.3.1	Certificate chains.....	46
8.3.2	Usage of link certificates	47
8.4	Authentication environments.....	48
8.4.1	General	48
8.4.2	SCA in trusted environment.....	48
8.4.3	SCA in untrusted environment	48
8.4.4	Specification of the environment.....	49
8.4.5	Display message mechanism	49
8.4.6	Additional authentication environments.....	49
8.5	Key transport and key agreement mechanisms	49
8.6	Key transport protocol based on RSA	50
8.6.1	General	50
8.6.2	Authentication Steps.....	52
8.6.3	Session Key creation	62
8.7	Device authentication with privacy protection.....	63
8.7.1	General	63
8.7.2	Authentication steps	63
8.8	Privacy constrained Modular EAC (mEAC) protocol with non-traceability feature.....	82
8.8.1	General	82
8.8.2	Example for traceability case.....	83
8.8.3	Notation	83
8.8.4	Authentication steps	84
8.8.5	Unlinkability Mechanism with individual private keys	99
8.9	Symmetric authentication scheme	108
8.9.1	General	108
8.9.2	Authentication steps	108
8.9.3	Session Key creation	112
8.10	Compute Session keys from key seed $K_{IFD/ICC}$	113
8.10.1	General	113
8.10.2	Generation of key data.....	113
8.10.3	Partitioning of the key data	113
8.10.4	Algorithm and method specific definition for key derivation	113
8.10.5	Key derivation from passwords.....	116
8.11	Compute send sequence counter SSC	118
8.12	Post-authentication phase.....	118
8.13	Ending the secure session	119
8.13.1	General	119
8.13.2	Example for ending a secure session	119
8.13.3	Rules for ending a secure session	119
8.14	Reading the Display Message.....	119
8.15	Updating the Display Message	122
9	Password-based authentication protocols.....	123
9.1	General	123
9.2	Notation	123
9.3	Authentication steps	124
9.3.1	General	124
9.3.2	Step 1 — Reading the protocol relevant public parameters	125
9.3.3	Step 2 — Set PBM parameters and generate blinding point.....	127
9.3.4	Step 3 — Get encrypted nonce	128
9.3.5	Step 4.1 — Map nonce and compute generator point for generic mapping	129
9.3.6	Step 4.2 — Map nonce and compute generator point for integrated mapping.....	130
9.3.7	Step 5 — Generate session keys	133

EN 419212-1:2014 (E)

9.3.8	Step 6 — Explicit key authentication	134
10	Secure Messaging	135
10.1	General.....	135
10.2	CLA byte	135
10.3	TLV coding of command and response message	135
10.4	Treatment of SM-Errors.....	136
10.5	Padding for checksum calculation	136
10.6	Send sequence counter (SSC)	136
10.7	Message structure of Secure Messaging APDUs.....	136
10.7.1	Cryptograms.....	136
10.7.2	Cryptographic Checksums	139
10.7.3	Final command APDU construction	143
10.8	Response APDU protection	143
10.9	Use of TDES and AES	150
10.9.1	TDES/AES encryption/decryption	150
10.9.2	CBC mode.....	151
10.9.3	Retail MAC with TDES	151
10.9.4	EMAC with AES.....	152
10.9.5	CMAC with AES.....	154
11	Key Generation	155
11.1	General.....	155
11.2	Key generation and export using PrK.ICC.AUT	155
11.3	Key generation and export with SM	155
11.4	Write certificates	156
12	Key identifiers and parameters	156
12.1	General.....	156
12.2	Key identifiers (KID).....	156
12.2.1	General.....	156
12.2.2	Secret and private keys.....	156
12.3	Public Key parameters	156
12.3.1	General.....	156
12.3.2	RSA public key parameters	157
12.4	Diffie-Hellman key exchange parameters	157
12.5	Authentication tokens in the protocols mEACv2 and PCA.....	157
12.5.1	General.....	157
12.5.2	TDES	157
12.5.3	AES.....	157
12.5.4	Ephemeral Public Key Data Object	157
12.6	The compression function Comp()	158
12.7	DSA with ELC public key parameters.....	158
12.7.1	General.....	158
12.7.2	The plain format of a digital signature	159
12.7.3	The uncompressed encoding.....	159
12.8	ELC key exchange public parameters	160
13	Data structures.....	160
13.1	CRTs.....	160
13.1.1	CRT AT for the selection of internal private authentication keys.....	160
13.1.2	CRT AT for selection of internal authentication keys	161
13.1.3	CRT for selection of IFD's PuK.CA _{IFD} .CS_AUT	161
13.1.4	CRT for selection of IFD's PuK.IFD.AUT	162
13.1.5	CRT AT for selection of the public DH / ECDH key parameters.....	162
13.1.6	CRT AT for selection of the PBM key parameters.....	162
13.1.7	GENERAL AUTHENTICATE DH key parameters used by the Privacy Protocol.....	163
13.1.8	CRT AT for selection of ICC's private authentication key	163
13.1.9	CRT for selection of IFD's PuK.IFD.AUT	164
13.1.10	CRT for selection of PrK.ICC.KA.....	164
13.2	Key transport device authentication protocol	164
13.2.1	EXTERNAL AUTHENTICATE	165
13.2.2	INTERNAL AUTHENTICATE.....	166

13.3	Privacy device authentication protocol	166
13.3.1	EXTERNAL AUTHENTICATE (DH case)	167
13.3.2	EXTERNAL AUTHENTICATE (ECDH case)	168
13.3.3	INTERNAL AUTHENTICATE (DH case).....	169
13.3.4	INTERNAL AUTHENTICATE (ECDH case).....	170
14	AlgIDs, Hash- and DSI Formats	171
14.1	Algorithm Identifiers and OIDs	171
14.2	Hash Input-Formats.....	172
14.2.1	PSO:HASH without command chaining.....	172
14.2.2	PSO:HASH with command Chaining.....	173
14.3	Formats of the Digital Signature Input (DSI).....	173
14.3.1	DSI according to ISO/IEC 14888-2 (scheme 2).....	174
14.3.2	DSI according to PKCS #1 V 1.5	175
14.3.3	Digest Info for SHA-X.....	176
14.3.4	DSI according to PKCS #1 V 2.x	178
14.3.5	DSA with DH key parameters	179
14.3.6	Elliptic Curve Digital Signature Algorithm - ECDSA.....	179
15	CV_Certificates and Key Management.....	180
15.1	Level of trust in a certificate	180
15.2	Key Management	180
15.3	Certificate types.....	181
15.3.1	Card Verifiable Certificates.....	181
15.3.2	Signature-Certificates	181
15.3.3	Authentication Certificates.....	181
15.4	Use of the public key extracted from a CV-certificate	181
15.5	Validity of the key extracted from a CV-certificate	182
15.6	CVC structure	183
15.6.1	Non-self-descriptive certificates.....	183
15.6.2	Self-descriptive certificates.....	183
15.7	Certificate Content	184
15.7.1	CPI-Certificate Profile Identifier.....	184
15.7.2	CAR-Certification Authority Reference DO.....	185
15.7.3	CHR-Certificate Holder Reference DO.....	186
15.7.4	CHA-Certificate Holder Authorization Data Object (CHA-DO)	187
15.7.5	Role identifier specifications.....	189
15.7.6	CHAT-Certificate Holder Authorization Template (CHAT).....	192
15.7.7	OID — Object identifier	192
15.7.8	CEDT — Certificate Effective Date Template.....	192
15.7.9	CXDT — Certificate Expiration date Template	192
15.8	Certificate signature	193
15.8.1	Non self-descriptive certificates	193
15.8.2	Self-descriptive certificates.....	194
15.9	Coding of the certificate content	194
15.9.1	Non self-descriptive certificates	194
15.9.2	Self-descriptive certificates.....	195
15.9.3	Self-descriptive certificates for elliptic curve cryptography.....	195
15.10	Steps of CVC verification.....	199
15.10.1	First round: CVC verification from a Root PuK.....	200
15.10.2	Subsequent round(s)	201
15.11	Commands to handle the CVC	201
15.12	C_CV.IFD.AUT (non self-descriptive)	201
15.13	C_CV.CA.CS-AUT (non self-descriptive).....	203
15.14	C.ICC.AUT.....	204
15.15	Self-descriptive CV Certificate (Example).....	204
15.15.1	Public Key	205
15.15.2	Certificate Holder Authorization Template	205
15.15.3	Certificate Extension.....	205
15.15.4	ECDSA Signature	206
16	Files.....	207

EN 419212-1:2014 (E)

16.1	File structure	207
16.2	File IDs	208
16.3	EF.DIR	208
16.4	EF.SN.ICC	208
16.5	EF.DH	209
16.6	EF.ELC	209
16.7	EF.C.ICC.AUT	210
16.8	EF.C.CA _{ICC} .CS-AUT	211
16.9	EF.C_X509.CH.DS	211
16.10	EF.C_X509.CA.CS (DF.ESIGN).....	212
16.11	EF.DM.....	212
17	Cryptographic Information Application	213
17.1	ESIGN cryptographic information layout example.....	214
17.1.1	EF.CIAInfo.....	215
17.1.2	EF.AOD	216
17.1.3	EF.PrKD	219
17.1.4	EF.PuKD.....	221
17.1.5	EF.CD	222
17.1.6	EF.DCOD	223
Annex A (normative)	Algorithm Identifiers — Coding and specification.....	226
Annex B (informative)	Device authentication Protocol Properties	234
Annex C (informative)	Personalization scenarios	236
Annex D (informative)	OID values	238
D.1	OIDs for certificate signatures	238
D.2	OIDs for key transport protocol	239
D.3	OIDs for device authentication with privacy	239
D.4	OIDs for password based mechanisms	240
D.5	OIDs for mEAC protocol	241
D.5.1	OIDs for Chip Device Authentication.....	241
D.5.2	OIDs for Terminal Device Authentication.....	241
D.6	OIDs for privacy protocols.....	242
D.6.1	OIDs for Restricted Identification.....	242
D.6.2	OIDs for Restricted Identification.....	243
D.7	OIDs for mEAC based eServices.....	243
D.7.1	OIDs for Terminal Device Authentication in mEAC-based eServices	243
D.8	OIDs for the PCA mechanism.....	244
Annex E (informative)	Build scheme for object identifiers defined by EN 14890	245
Bibliography		247

Foreword

This document (EN 419212-1:2014) has been prepared by Technical Committee CEN/TC 224 "Personal identification, electronic signature and cards and their related systems and operations", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2015 and conflicting national standards shall be withdrawn at the latest by June 2015.

This document supersedes EN 14890-1:2008.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

EN 419212, *Application Interface for smart cards used as Secure Signature Creation Devices*, consists of two parts:

- *Part 1: Basic services*; [the present document] which describes the specifications for IAS based services on smart cards to be used in compliance to the requirements of Article 5.1 of the Electronic Signature Directive; and
- *Part 2: Additional services* which describes other services that may be used in conjunction with all, some or none of the services described in Part 1.

This standard supports services in the context of Identification, Authentication and Electronic Signature (IAS) services, as well as other services.

In this Part 1 of EN 419212, the standard allows support of implementations of the European legal framework for electronic signatures, defining the functional and security features for a smart card intended to be used as a Secure Signature Creation Device according to the Terms of the European Directive on Electronic Signature 1999/93/EC. A card compliant to the standard will be able to produce a "Qualified electronic signature" that fulfils the requirements of Article 5.1 of the Electronic Signature Directive and therefore can be considered equivalent to a hand-written signature.

EN 419212-2 specifies mechanisms to support other services like generic identification, authentication, confidentiality and signature verification services.

EN 419212 defines a set of services that will enable the development of interoperable cards issued by any card industry sector. The standard describes an application interface and behavior of the SSCD, i.e. it should be possible to implement it on native and interpreter based cards.

Compared with the 2008 versions of EN 14890, the following broad change has been made:

The scope of the standard was enhanced through new mechanisms in the field of password based mechanisms and privacy.

Regarding EN 419212-1, the most significant technical changes that have been made are the following ones:

- new algorithms added to device authentication protocols (e.g. AES, ELC);
- added AES to secure messaging;
- introduced password based mechanisms (PACEv2);
- updating references to their latest releases;

EN 419212-1:2014 (E)

- algorithm Identifier coding;
- recommendation for making best use of device authentication protocols.

Regarding EN 419212-2, the most significant technical changes that have been made are the following ones:

- a) added privacy services including:
 - 1) anonymity and pseudonymity services;
 - 2) auxiliary data transmission e.g. for Age verification;
 - 3) e-Services with trusted third party;
 - 4) e-Services with 2-parties.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

iTeh STANDARD PREVIEW **(standards.iteh.ai)**

SIST EN 419212-1:2015

<https://standards.iteh.ai/catalog/standards/sist/85c262b5-733c-40b2-b088-5e2d8c069a03/sist-en-419212-1-2015>

Introduction

The European Committee for Standardization (CEN)] draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning the mapping function given in 9.3.6 "Step 4.2 — Map nonce and compute generator point for integrated mapping".

The patent relates to "Sagem, MorphoMapping Patents FR09-54043 and FR09-54053, 2009".

CEN takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured CEN that he/she is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with CEN. Information may be obtained from:

Morpho

11, boulevard Galliéni

92445 Issy-les-Moulineaux Cedex - France

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified above. CEN shall not be held responsible for identifying any or all such patent rights."

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 419212-1:2015

<https://standards.iteh.ai/catalog/standards/sist/85c262b5-733c-40b2-b088-5e2d8c069a03/sist-en-419212-1-2015>

EN 419212-1:2014 (E)

1 Scope

This European Standard specifies mechanisms for smart cards to be used as secure signature creation devices covering:

- signature creation;
- user verification;
- password based authentication;
- device authentication;
- establishment of a secure channel.

The specified mechanisms are suitable for other purposes like services in the context of IAS.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 419212-2:2014, *Application Interface for smart cards used as Secure Signature Creation Devices — Part 2: Additional services*

ISO 3166 (all parts), *Codes for the representation of names of countries and their subdivisions*

ISO 11568-2, *Financial services — Key management (retail) — Part 2: Symmetric ciphers, their key management and life cycle*

ISO/IEC 7816-3, *Identification cards — Integrated circuit cards — Part 3: Cards with contacts -- Electrical interface and transmission protocols*

ISO/IEC 7816-4:2013, *Identification cards — Integrated circuit cards — Part 4: Organization, security and commands for interchange*

ISO/IEC 7816-6, *Identification cards — Integrated circuit cards — Part 6: Interindustry data elements for interchange*

ISO/IEC 7816-8:2004, *Identification cards — Integrated circuit cards — Part 8: Commands for security operations*

ISO/IEC 7816-11:2004, *Identification cards — Integrated circuit cards — Part 11: Personal verification through biometric methods*

ISO/IEC 7816-15:2004, *Identification cards — Integrated circuit cards — Part 15: Cryptographic information application*

ISO/IEC 8859 (all parts), *Information technology — 8-bit single-byte coded graphic character sets*

ISO/IEC 9796 (all parts), *Information technology — Security techniques — Digital signature schemes giving message recovery*

ISO/IEC 9797-1, *Information technology — Security techniques — Message Authentication Codes (MACs) — Part 1: Mechanisms using a block cipher*

ISO/IEC 14888-2, *Information technology — Security techniques — Digital signatures with appendix — Part 2, Integer factorization based mechanisms*

ISO/IEC 14888-3, *Information technology — Security techniques — Digital signatures with appendix — Part 3: Discrete logarithm based mechanisms*

ISO/IEC 19794-2, *Information technology — Biometric data interchange formats — Part 2: Finger minutiae data*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE These definitions are in compliance with those given in the revision of ISO/IEC 7816-4.

3.1

anonymity

assurance that a user may use a resource or service without disclosing their user identity

3.2

anonymization

process that removes the association between an identifying data set and a data subject

3.3

anonymized data

data that was once linked to an individual but can now no longer be related to them

3.4

anonymous data

data that cannot be linked to a specific individual

3.5

answer-to-Reset file

elementary file which indicates operating characteristics of the card

3.6

a priori trusted

operating environment which by definition can be trusted without further device authentication

EXAMPLE An example of this is the use within a company, where any available access point is connected to a trusted network.

3.7

authentication

verification that an entity is the claimed one [56]

3.8

command-response pair

set of two messages: a command followed by a response

3.9

confidentiality protection

prevention of information disclosure to unauthorized individuals, entities or systems [56]

3.10

data unit

smallest set of bits which can be unambiguously referenced

3.11

data element

item of information seen at the interface for which are defined a name, a description of logical content, a format and a coding

EN 419212-1:2014 (E)**3.12****data object**

information seen at the interface which consists of a tag, a length and a value (i.e. a data element)

Note 1 to entry: In this specification, data objects are referred to as BER-TLV data objects. Refer to ISO/IEC 7816-4:2013, 6.2 and E.1.

3.13**dedicated file**

file containing file control information and, optionally, memory available for allocation. It may be the parent of EFs and/or DFs

3.14**device authentication**

process of validating the credentials of a device.

3.15**DF name**

string of bytes which uniquely identifies a dedicated file in the card

3.16**elementary file**

set of data units or records which share the same file identifier. It cannot be the parent of another file

3.17**file control parameters**

logical, structural and security attributes of a file

3.18**file identifier**

2-bytes binary value used to address a file

[SIST EN 419212-1:2015](https://standards.iteh.ai/catalog/standards/sist/85c262b5-733c-40b2-b088-5e2d8c069a03/sist-en-419212-1-2015)

<https://standards.iteh.ai/catalog/standards/sist/85c262b5-733c-40b2-b088-5e2d8c069a03/sist-en-419212-1-2015>

3.19**forward secrecy**

security property of a protocol that guarantees that the disclosure of long-term private key does not enable an opponent to compromise the secrecy property of the executions of the protocol made in the past, for example, by re-computing previously derived keys

3.20**identification**

unique association of a set of descriptive parameters to an individuum within a given context

3.21**integrity protection**

mechanism ensuring that data cannot be modified undetectably

3.22**master file**

mandatory unique dedicated file representing the root of the file structure

3.23**message**

string of bytes transmitted by the interface device to the card or vice-versa, excluding transmission-oriented characters as defined in ISO/IEC 7816-3

3.24**mutual authentication**

authentication where both parties (ICC and IFD) are authenticated to each other

3.25**non-traceability**

refer to traceless authentication

3.26**parent file**

dedicated file immediately preceding a given file within the hierarchy

3.27**password**

data which may be required by the application to be presented to the card by its user and which, in the context of this specification, is a string of numbers and/or ASCII characters

3.28**path**

concatenation of file identifiers without delimitation.

Note 1 to entry: If the path starts with the identifier of the master file, it is an absolute path.

3.29**privacy**

claim of individuals, groups, or institutions to determine for themselves when, how, and to what extent information about them is communicated to others [43]

3.30**private key**

secret part of an asymmetric key pair e.g. signature creation data as specified in the EU directive for electronic signatures

3.31**pseudonymisation**

particular type of anonymization that both removes the association with a data subject and adds an association between a particular set of characteristics relating to the data subject and one or more pseudonyms

3.32**pseudonymised data**

data that can only be linked to such a person if one has possession of a decoding "key"

3.33**pseudonymity**

assurance that a user may use a resource or service without disclosing its user identity, but can still be accountable for its use

3.34**public key**

public part of an asymmetric key pair

3.35**record**

string of bytes which can be handled as a whole by the card and referenced by a record number

3.36**record number**

sequential number assigned to each record which uniquely identifies the record within its elementary file

3.37**retry counter**

counter being used to count the number of erroneous usages of a related (security) object