



A SURVEY OF CARD STANDARDS



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1. Introduction

Cards which serve as information carriers and means of identification have become an integral part of modern everyday life. It is hard to imagine an alternative to the hundreds of millions of cards used in the banking and health sectors, or to the millions of electronic passports already in circulation.

Almost as diversified as the fields of application of identification cards is their architecture. From physical dimensions to substrate consistency and type of storage medium, the requirements placed on the cards differ depending on their application.

This document gives an overview of existing standards dealing with identification cards and illustrates the interrelationship among these standards.

2. The benefits of standards

The following principles apply not only for nearly all small and medium-sized enterprises, but also for large companies:

Standardization:

- enhances the level of awareness of new technologies which have been developed and safeguarded by a large number of experts;
- increases incentive and the willingness to invest in the development of suitable products, setting the course for the establishment of high technologies on global markets;
- raises market expectations through associated publications, thereby preparing potential clients;
- avoids misguided technological developments, thanks to the high level of awareness among experts, and prevents individual companies from reaching market deadlock;
- provides globally active companies with important criteria enabling them to accurately assess potential partnerships with suppliers and to ensure compatibility and quality for their customers;
- increases product safety, thereby enhancing consumer confidence and reducing product liability risks;
- often is a “knock-out criterion” for major customers purchasing large volumes, as official standards provide them with a means for giving their investors a sufficient guarantee for second- and multiple-source suppliers;
- offers immense opportunities for gaining contact with competitors or potential customers through participation in standards committees;
- indirectly helps in advertising und lobbying, for it can be claimed that a company who invests in standardization:
 - > is “in”;
 - > is active at the forefront of development and production;
 - > does not monopolize markets through exclusivity;
 - > is internationally oriented, providing products suitable to the international market.

Thus, wherever a monopolistic approach is neither possible nor economically advantageous, the use of standards and standardization is essential for internationally relevant products that can be used for many applications and where the aim is to achieve large sales volumes.



3. Types of standard, standards development and participation in standardization

The body responsible for standardizing cards and personal identification within DIN is Working Committee **NIA-01-17** "Cards and personal identification" of the Information Technology and Selected IT Applications Standards Committee (NIA) (<http://www.nia.din.de>). The Working Committee's main task is the standardization of cards and personal identification, and in some cases card readers, in terms of inter-industry application, with a focus on safety, authenticity and data portability.

This document also lists standards prepared by **ISO/IEC JTC 1/SC 37** "Biometrics" where they are applied in connection with identification cards. Standards prepared by **ISO/TC 215** and **CEN/TC 251** (both named "Health Informatics") are also dealt with here.

Currently, the key activity of NIA-01-17 is participation in international standardization in the following fields:

- physical characteristics of identification cards
- test methods for identification cards
- machine-readable travel documents and
- exchange protocols for chip cards with contacts and contactless chip cards.

NIA-01-17 is the German "mirror" committee of the international committee **ISO/IEC JTC 1/SC 17** "Cards and Personal Identification" and the European committee **CEN/TC 224** "Machine readable cards, related device interfaces and operations".

The standards prepared by SC 17 are basic standards for specific applications and are generally accepted by the entire card industry.

At present, SC 17 is comprised of the following working groups:

- WG 1:** Physical characteristics and test methods for identification cards,
- WG 3:** Machine readable travel documents,
- WG 4:** Integrated circuit cards with contacts,
- WG 5:** Registration management group,
- WG 7:** Financial transaction cards (dormant),
- WG 8:** Integrated circuit cards without contacts,
- WG 9:** Optical memory cards and devices,
- WG 10:** Motor vehicle driver licence and related documents,
- WG 11:** Application of biometrics to cards and personal identification.

All activities of NIA-01-17 are oriented towards the working programme of SC 17 and CEN/TC 224.

Its various subcommittees mirror the respective working groups of SC 17 (and CEN/TC 224, in one case). NIA-01-17-01 "Test methods for identification cards" corresponds to WG 1 of SC 17; NIA-01-17-03 "Machine readable travel documents" corresponds to WG 3 of SC 17 (with NIA-01-17-03 also dealing with the standardization of the (international) driving licence actually covered by WG 10); NIA 01-17-04 "Exchange protocols for chip

cards” corresponds to WG 4 of SC 17, and NIA-01-17-08 “Contactless chip cards” corresponds to WG 8 of SC 17. NIA-01-17-11 “Transport applications” is the mirror committee to CEN/TC 224/WG 11 “Interoperable transport applications”. There are no independent national mirror committees to SC 17/WGs 5, 9, 10 and 11. While NIA-01-17-04 covers the activities of WGs 5 and 11, NIA-01-17 is responsible for WG 9.

Although the projects of SC 17 mainly deal with the preparation of standards for identification cards having a microchip, standards projects for cards with magnetic stripes continue to be an important element of the work of SC 17, in which NIA-17, and particularly NIA-01-17-01, actively participates.

On the European level, NIA-01-17 takes part in standards projects of CEN/TC 224.

Currently the focus is on work on the “European Citizen Card” (CEN/TC 224/WG 15) and the “Application Interface for smart cards used as Secure Signature Creation Devices” (CEN/TC 224/WG 16).

The chairpersons of **ISO/IEC JTC 1/SC 17/WG 8**, CEN/TC 224/WG 11, CEN/TC 224/WG 16 and CEN/TC 224/WG 17 are all delegated by Germany.

Participation

At present (2009), NIA-01-17 has 28 staff members. Ten members work for NIA-01-17-0, while NIA-01-17-03 has 25 members, NIA-01-17-04 has 27, NIA-01-17-08 has 19 and NIA-01-17-11 has seven staff members.

Committee	Staff members	Chairman	Deputy chairman
NIA-01-17	31	Michael Hegenbarth (Bundesdruckerei GmbH)	Dr. Gisela Meister (Giesecke und Devrient GmbH)
NIA-01-17-01	10	Dr. Martin Winkler (Infineon Technologies AG)	N.N.
NIA-01-17-03	26	Hartmut Hemme (Bundesdruckerei GmbH)	Dr. Andreas Wolf (Cross Match Technologies)
NIA-01-17-04	23	Dr. Gisela Meister (Giesecke und Devrient GmbH)	Dr. Alfred Fiedler (gematik)
NIA-01-17-08	15	Renke Bienert (NXP)	Klaus Finkenzeller (Giesecke und Devrient GmbH)
NIA-01-17-11 (dormant)	7	Klaus Philipp (T.C.L.)	

As shown above, numerous committees from all over the world are involved in the development of standards on cards and personal identification.

The standards listed and described in this guideline have been developed by different committees according to various procedures. As a rule, the committee in charge can be identified on the basis of the sequence of characters at the beginning of the standard number:



■ ISO/IEC STANDARDS

The majority of the standards listed here are International Standards which have been developed, with the participation of Germany, in SC 17, a subcommittee of Joint Committee JTC 1 of the international standardization organizations ISO and IEC. These standards have been developed by consensus and confirmed by a public enquiry. They can be identified by the characters ISO/IEC followed by the number of the standard (example: ISO/IEC 11693).

■ EN STANDARDS

Standards beginning with “EN” are European Standards developed by one of the European standardization organizations CEN, CENELEC or ETSI, likewise by consensus and followed by a public enquiry.

International, European and national standards are reviewed at intervals of not more than five years, and revised where necessary. The date of publication indicates the date of the last revision. When applying such standards it is useful to search for the latest edition in an up-to-date database, such as the web shop of DIN's publishing house, Beuth Verlag, at www.beuth.de, where the standards can also be ordered online.

The standards in this guideline are organized along the lines of the SC 17 working groups, as follows:

1. Physical Characteristics and Test Methods
2. Machine Readable Travel Documents
3. Integrated Circuit Cards with Contacts
4. Issuer Identification Numbers (IINs)/Application Provider Identifiers (RIDs)
5. Financial Transaction Cards
6. Contactless Integrated Circuit(s) cards
7. Optical Memory Cards
8. Motor Vehicle Drivers Licence and Related Documents
9. Biometrics
10. Personal identification, electronic signature and cards and their related systems and operations
11. Health informatics
12. Transport applications
13. Man-machine interface

4. Physical Characteristics and Test Methods

4.1 ISO/IEC 7810

Title: Identification cards – Physical characteristics

■ CONTENT AND SCOPE

This International Standard specifies the physical characteristics of identification cards including card materials, construction, characteristics, and dimensions for four sizes of cards. This International Standard specifies the requirements for cards used for identification. It takes into consideration both human and machine aspects and states minimum requirements.

It is the purpose of this standard to provide criteria to which cards shall perform. No consideration is given within to the amount of use, if any, experienced by the card prior to test. Failure to conform to specified criteria should be negotiated between the involved parties.

■ STATUS

In 2010, a new release of ISO/IEC 7810 is expected. It is expected to include the amendment plus other characteristics from other International Standards which might need transfer to this standard as they are no longer specific to one individual card technology.

■ NOTES

Thin flexible cards are not within the scope of this International Standard. Thin flexible cards are addressed by the ISO/IEC 15457 series.

■ PRESENT RELEASES

ISO/IEC 7810: 1985, 1995, 2003, AMD 1:2009

4.2 ISO/IEC 7811

Title: Identification cards – Recording technique

■ CONTENT AND SCOPE

ISO/IEC 7811 is a multipart International Standard and describes the characteristics for identification cards as defined in the definitions clause and the use of such cards for international interchange.

The first part of this International Standard specifies requirements for embossed characters on identification cards. The embossed characters are intended for transfer of data either by use of imprinters or by visual or machine reading.

Parts two, six and seven of this International Standard specify requirements for low coercivity magnetic stripes and high coercivity magnetic stripes (in each case including any protective overlay) on identification cards, the encoding technique and coded character sets.

All take into consideration both human and machine aspects and state minimum requirements.

It is the purpose of this series of standards to provide criteria to which cards shall perform. No consideration is given within these standards to the amount of use, if any, experienced by the card prior to test. Failure to conform to specified criteria should be negotiated between the involved parties.

This standard consists of 6 parts:

- Part 1: Embossing
- Part 2: Magnetic stripe-low coercivity
- Part 6: Magnetic stripe-high coercivity
- Part 7: Magnetic stripe-high coercivity high density
- Part 8: Magnetic stripe – Coercivity of 51, 7 kA/m (650 Oe)
- Part 9: Tactile identifier mark

■ STATUS

ISO SC 17 WG 1 decided to omit the next revision of ISO/IEC 7811-7 and to withdraw this standard at the due date for the revision after the next revision, as it is expected that this part will no longer be in use then.

■ NOTES

ISO SC 17 WG 1 has decided not to change ISO/IEC 7811-2:2001 except the contact address for the provider of reference material (as PTB is no longer in charge).

ISO/IEC 7811-3, ISO/IEC 7811-4, and ISO/IEC 7811-5 withdrawn.



The scope of ISO/IEC 7811-3 is now covered by ISO/IEC 7811-1.

ISO/IEC 7811-4 was withdrawn in 2006.

The scope of ISO/IEC 7811-4 is now covered by ISO/IEC 7811-2 and ISO/IEC 7811-6.

ISO/IEC 7811-5 was withdrawn in 2006.

The scope of ISO/IEC 7811-5 is now covered by ISO/IEC 7811-2 and ISO/IEC 7811-6.

■ PRESENT RELEASES

ISO/IEC 7811-1: 1985, 1995, 2002

ISO/IEC 7811-2: 1985, 1995, 2001

ISO/IEC 7811-6: 1996, 2001, 2008

ISO/IEC 7811-7: 2004

ISO/IEC 7811-8: 2008

ISO/IEC 7811-9: 2008

4.3 ISO/IEC 10373

Title: Identification cards – Test methods

■ CONTENT AND SCOPE

ISO/IEC 10373 defines test methods for characteristics of identification cards according to the definitions given in ISO/IEC 7810, ISO/IEC 7811, ISO/IEC 7813 and ISO/IEC 7816. Each test method is cross-referenced to one or more base standards, which may be ISO/IEC 7810 or one or more of the supplementary standards that define the information storage technologies employed in identification cards applications.

The first part of ISO/IEC 10373 defines test methods which are common to more than one card technology. Other parts of ISO/IEC 10373 define technology-specific test methods.

Originally the standard series ISO/IEC 10373 had been intended to encompass all the test methods related to identification cards. However, for some standards, which are also covered by this summary report, it was decided by SC17 to associate a test method standard to specifically that base standard, which is mostly referenced to. Therefore, there are further test methods standards, which are a part of the related base standard, with equal main standard number like the base standard.

This standard consists of 6 parts:

- Part 1: General characteristics
- Part 2: Cards with magnetic stripes
- Part 3: Integrated circuit(s) cards with contacts and related interface devices
- Part 5: Optical memory cards
- Part 6: Proximity cards
- Part 7: Vicinity cards

■ STATUS

A draft amendment to part 1 is in status WD which will basically consist of parts of 10373-3 which are no longer specific for cards with contacts only. ISO/IEC 10373-3 is being under revision and will be re-issued by the end of 2009.

So is ISO/IEC 10373-6, which is under revision in CD status. The new release is expected for 2010. That revised version will cover the Amendments 1 to 5, related to the 2001-version of 10373-6.

In order to publish the RFID interface related test methods for ePassports (compliant to ISO/IEC 7501) as early as possible, it was decided to process an Amendment 7 to ISO/IEC 10373-6:2001, although the revision of 10373-6 is running simultaneously. That Amendment 7 is in FPDAM status and will be published by the end of 2009. As its first release, its content is equal to the Parts 2 and 4 of the ICAO Technical Reports on test methods, see 6.1. After a migration period, defined by ICAO TAG MRTD and SC17, ISO/IEC 10373-6/Amendment 7 will totally replace those two ICAO Technical Reports and then be further maintained and improved by SC17.

■ NOTES

The work on ISO/IEC 10373-4 was suspended in 2001.

■ PRESENT RELEASES

ISO/IEC 10373-1: 1998, 2006

ISO/IEC 10373-2: 1998, 2006

ISO/IEC 10373-3: 2001

ISO/IEC 10373-5: 1998, 2006

ISO/IEC 10373-6: 2001, AMD 2:2003, AMD 3:2006, AMD 4:2006, AMD 5:2007

ISO/IEC 10373-7: 2001

4.4 ISO/IEC 15457

Title: Identification cards – Thin flexible cards

■ CONTENT AND SCOPE

ISO/IEC 15457 specifies the physical characteristics, magnetic stripe and encoding characteristics of thin flexible cards at two points in the card life cycle:

1. at the point of loading into the card issuing equipment;
2. at the point of issue to the public.

It takes into consideration both human aspects and states the minimum requirements. The principal card sizes are identified and the characteristics and dimensions are specified. Guidance concerning the storage and use of cards under various environmental conditions is given.

This standard specifies the test methods and procedures required to carry out measurements of the magnetic stripe and encoding characteristics of thin flexible cards.

This standard consists of 3 parts:

- Part 1: Physical characteristics
- Part 2: Magnetic recording techniques
- Part 3: Test methods

■ PRESENT RELEASES

- ISO/IEC 15457-1: 2001, 2008
- ISO/IEC 15457-2: 2001, 2008
- ISO/IEC 15457-3: 2002, 2008

4.5 ISO/IEC 24789

Title: Identification cards – Card Service Life

■ CONTENT AND SCOPE

This standard consists of 2 parts:

- Part 1: Application profiles and criteria
- Part 2: Methods of evaluation

Part 1 of ISO/IEC 24789 defines procedures for the accelerated aging of identification cards and related documents including functional elements integrated in the cards – and procedures to specify classification schemes related to the degree of their resistance to these aging procedures. Mission profiles (application profiles) for several applications (e.g. health care, national ID) are given as well as a calculation

method to choose the correct tests and conditions from part 2 or other existing standards.

Part 2 of ISO/IEC 24789 comprises methods of evaluation for the Card Service Life properties of Identification Cards that are not already defined in some other ISO/IEC standard. It does not contain requirements for card properties, only requirements for the set-up and conduct of tests and the reporting of results.

■ STATUS

ISO/IEC 24789 -1/2 are expected to be released in November 2010.

A CD version of both parts has been initiated for ballot in 2008.

■ PRESENT RELEASES

- ISO/IEC 24789-1: not yet released
- ISO/IEC 24789-2: not yet released

4.6 EN 1375

Title: Identification card systems – Intersector integrated circuit(s) card additional formats – ID-000 card size and physical characteristics

■ CONTENT AND SCOPE

This European Standard defines an ICC format in addition to the already standardized ID-1 format. ID-000 format may be derived from ID-1 format as shown in the Annex B of EN 1375. This Standard specifies physical characteristics as well as dimensions, locations and assignment of the contact of cards with integrated circuit(s) plus the related test methods.

■ STATUS

EN 1375 is currently under review.

■ PRESENT RELEASES

- EN 1375: 2002



5. Machine Readable Travel Documents

5.1 ISO/IEC 7501

Title: Identification cards – Machine readable travel documents

■ CONTENT AND SCOPE

This International Standard specifies the form of and provides guidance on the construction of machine readable passports and visas, in particular in relation to the sections of the document containing details of the holder in a form which is both visual and machine readable.

Furthermore, this International Standard specifies generic formats and minimum data elements for visual inspection and machine reading of official travel documents in the ID-1 and ID-2 card formats containing a single form of machine readable data (optical character recognition, OCR).

This standard consists of 3 parts:

- Part 1: Machine readable passports
- Part 2: Machine readable visas
- Part 3: Official travel documents

■ STATUS

The 2007 release of Part 1: Machine Readable Passports, contains a substantial modernization of the standard. In particular, this sixth edition incorporates the new globally interoperable standard for biometric identification of the holder and for the storage of the associated data on a contactless integrated circuit.

■ NOTES

A new release of Part 3: Official travel documents was published in October 2008 which also incorporates the new globally interoperable standard for biometric identification of the holder and for the storage of the associated data on a contactless integrated circuit.

Four Technical Reports (TRs) regarding the Test Methodology for MRTDs have been published on the ICAO public website (<http://mrttd.icao.int/component/>) in 2007. The TRs are currently going through the balloting process to become international ISO Standards but this process has not been finalized yet.

The following TRs are available:

ICAO Technical Report “Durability of machine readable passports” Version 3.2, 2006-08-30

ICAO Technical Report “RF protocol and application test standard for e-passport – part 2 tests for air interface, initialisation, anticollision and transport protocol”, Version 1.02, 2007-02-20

ICAO Technical Report “RF protocol and application test standard for e-passport – part 3 tests for application protocol and logical data structure”, Version 1.01, 2007-02-20

ICAO Technical Report “RF protocol and application test standard for e-passport – part 4 e-passport reader tests for air interface, initialisation, anticollision and transport protocol”, Version 1.01, 2007-02-20

The Part 2 and Part 4 of the TR series “RF protocol and application test standard for e-passport” had been integrated into ISO/IEC 10373-6:2001/AMD7 – Identification cards – Test methods – Part 6: Proximity cards – Amendment 7: Test methods for ePassports and has achieved the FDIS status in July 2009. It will then be integrated into ISO/IEC 10373-6, being under revision until about early 2010.

■ PRESENT RELEASES

- ISO/IEC 7501-1: 1991, 1993, 1997, 2005, 2008
- ISO/IEC 7501-2: 1995, 1997
- ISO/IEC 7501-3: 1997, 2005

6. Integrated Circuit Cards with Contacts

6.1 ISO/IEC 7816

Title: Identification cards – Integrated circuit cards

■ CONTENT AND SCOPE

This standard consists of 14 parts:

- Part 1: Cards with contacts – Physical characteristics
- Part 2: Cards with contacts – Dimensions and location of the contact
- Part 3: Cards with contacts – Electrical interface and transmission protocols
- Part 4: Organization, security and commands for interchange
- Part 5: Registration of application providers
- Part 6: Interindustry data elements for interchange
- Part 7: Commands for Structured Card Query Language (SCQL)
- Part 8: Commands for security operations
- Part 9: Commands for card management
- Part 10: Cards with contacts – Electrical interface for synchronous cards
- Part 11: Personal verification through biometric methods
- Part 12: Cards with contacts – USB electrical interface and operating procedures
- Part 13: Commands for application management in multi-application environment
- Part 15: Cryptographic information application

Part 1 of ISO/IEC 7816 specifies the physical characteristics of integrated circuit(s) cards with contacts. It applies to identification cards of the ID-1 card type which may include embossing and/or a magnetic stripe as specified in ISO/IEC 7811, parts 1 to 6. This part of ISO/IEC 7816 applies to cards which have a physical interface with electrical contacts.

It does not, however, define the nature, number and position of the integrated circuits in the cards.

Part 2 of ISO/IEC 7816 specifies the dimensions, locations and assignment for each of the contacts on integrated circuit cards of an ID-1 card type.

Part 3 of ISO/IEC 7816 specifies the power and signal structures, and information exchange between an integrated circuit(s) card and an interface device such as a terminal.

It also covers signal rates, voltage levels, current values, parity convention, operating procedure, transmission mechanisms and communication with the card. It does not cover information and instruction content, such as identification of issuers and users, services and limits, security features, journaling and instruction definitions.

Part 4 of ISO/IEC 7816 specifies:

- the content of the messages, commands and responses, transmitted by the interface device to the card and conversely,
- the structure and content of the historical bytes sent by the card during the answer to reset,
- the structure of files and data, as seen at the interface when processing interindustry commands for interchange,
- access methods to files and data in the card,
- a security architecture defining access rights to files and data in the card,
- methods for secure messaging,
- access methods to the algorithms processed by the card. It does not describe these algorithms.

It does not cover the internal implementation within the card and/or the outside world.

It allows further standardization of additional interindustry commands and security architectures.

Part 5 of ISO/IEC 7816 specifies a numbering system for application identifiers and a registration procedure for application provider identifiers.

The numbering system described in this standard provides a means for an application and related services offered by a provider to identify if a given card contains the components required by its application and related services.



An application identifier (AID) is used to address an application in the card.

This part of ISO/IEC 7816 specifies the coding of application identifiers together with means and mechanisms for addressing application parts in cards.

This part of ISO/IEC 7816 establishes the authorities and procedures to ensure and optimize the reliability of the corresponding registration.

Part 6 of ISO/IEC 7816 specifies directly or by reference the Data Elements (DE), including composite DEs, used in interindustry interchange, based on integrated circuit cards (ICCs).

It identifies the following characteristics of each DE:

- Identifier;
- Name;
- Description and ISO reference;
- Format and coding (if not available in other ISO standards or parts of ISO/IEC 7816).

The layout of each DE is described as seen at the interface between the interface device (IFD) and the ICC. This part of ISO/IEC 7816 defines the means of retrieval of the DEs in the card (historical bytes, reset, command(s) to perform and commands defined in this international standard).

This part of ISO/IEC 7816 provides the definition of DEs without consideration of any restrictions on the usage of the DEs.

Part 7 of the standard specifies the concept of a SCQL database (SCQL = Structured Card Query Language based on SQL, see ISO/IEC 9075) and the related interindustry enhanced commands.

Part 8 of ISO/IEC 7816 specifies:

- security protocols for use in cards;
- secure messaging extensions;
- the mapping of the security mechanisms onto the card's security functions/services, including a description of the in-card security mechanisms;
- data elements for security support;
- the use of algorithms implemented on the card (though the algorithms themselves are not described in detail);
- the use of certificates;
- security related commands.

This part of ISO/IEC 7816 does not cover the internal

implementation within the card and/or the outside world.

The choice and conditions of use of cryptographic mechanisms may affect card exportability. The evaluation of the suitability of algorithms and protocols is outside the scope of this part of ISO/IEC 7816.

Part 9 of ISO/IEC 7816 specifies:

- a description and coding of the life cycle of cards and related objects;
- a description and coding of security attributes of card related objects;
- functions and syntax of additional interindustry commands;
- data elements associated with these commands;
- a mechanism for initiating card-originated messages.

This part of ISO/IEC 7816 does not cover the internal implementation within the card and/or the outside world.

Part 10 of ISO/IEC 7816 specifies the power, signal structures, and the structure for the answer to reset between an integrated circuit(s) card with synchronous transmission and an interface device such as a terminal.

The specifications in ISO/IEC 7816-3 apply where appropriate, unless otherwise stated here.

It also covers signal rates, operating conditions, and communication with the integrated circuit(s) card.

This part of ISO/IEC 7816 specifies two types of synchronous cards: type 1 and type 2.

Part 11 of ISO/IEC 7816 specifies security related interindustry commands to be used for personal verification with biometric methods in integrated circuit(s) cards. It also defines data elements to be used with biometric methods.

Identification of persons using biometric methods is outside the scope of this standard.

Part 12 of ISO/IEC 7816 specifies the operating conditions of an integrated circuit card that provides a USB interface.

Part 13 of ISO/IEC 7816 specifies the multi-application environment for the card and the commands

required for Application management. This part of ISO/IEC 7816 covers the entire Application life cycle in a multi-application card, including pre-issuance (before the card has been issued to the cardholder) and post-issuance (after the card has been issued to the cardholder or after the card has expired). It does not cover the internal implementation within the card and / or the outside world.

Part 15 of ISO/IEC 7816 specifies an application in a card. This application contains information on cryptographic functionality. This part of ISO/IEC 7816 defines a common syntax and format for the cryptographic information and mechanisms to share this information whenever appropriate.

This International Standard does not cover the internal implementation within the card and/or the outside world. It shall not be mandatory for implementations complying with this International Standard to support all options described.

■ STATUS

ISO/IEC 7816-4 is currently under review.
ISO/IEC 7816-11 is currently under review.
ISO/IEC 7816-15 is currently under review.

■ PRESENT RELEASES

ISO/IEC 7816-1: 1987, 1998, AMD1:2003
ISO/IEC 7816-2: 1988, 1999, AMD1:2004
ISO/IEC 7816-3: 1989, AMD1:1992, AMD2:1994,
1997, AMD1:2002, 2006
ISO/IEC 7816-4: 1995, AMD1:1997, 2005
ISO/IEC 7816-5: 1994, AMD1:1996, 2004
ISO/IEC 7816-6: 1996, 2004, AMD1:2006
ISO/IEC 7816-7: 1999
ISO/IEC 7816-8: 1999, 2004
ISO/IEC 7816-9: 2000, 2004
ISO/IEC 7816-10: 1999
ISO/IEC 7816-11: 2004
ISO/IEC 7816-12: 2005
ISO/IEC 7816-13: 2007
ISO/IEC 7816-15: 2004

6.2 ISO/IEC 20060

Title: Open Terminal Architecture (OTA) specification – Virtual machine specification

■ CONTENT AND SCOPE

This document is one of several documents containing the Implementation Specification of Europay's Open Terminal Architecture. Other volumes in this series specify the Forth and C language programming interfaces, as well as the EMV application library and the Terminal Kernel Test Program.

The overall architecture of the Open Terminal Architecture is described in Appendix F, "System Architecture," and is based on a Virtual Machine (VM) that can be programmed using high-level languages such as Forth or C. For compactness and efficiency a tokenised form has been developed for delivering compiled programs to terminals of all CPU types. This International Standard describes a set of functions to be implemented in terminals in terms of instructions for a Virtual Machine. With these functions the application programmer is able to generate application software that is compact, portable and certifiable on all OTA terminals.

■ STATUS

ISO/IEC FDIS 20060 is presently under ballot.

■ PRESENT RELEASES

ISO/IEC 20060: 2001

6.3 ISO/IEC 24727

Title: Open Identification cards – Integrated circuit cards-Programming interfaces

■ CONTENT AND SCOPE

ISO/IEC 24727 specifies the overarching architecture, a capabilities discovery mechanism and national security of cards accessed by contact, close coupling or radio frequency. This standard defines the generic card edge which is presented as four groups of interface functionality:

- command-response pairs for interoperability;
- card-application capability description.

ISO/IEC 24727 provides a high-level interface to an application making use of information storage and processing operations on an ICC by being the application interface of the OSI Reference Model.



This standard consists of 6 parts:

- Part 1: Architecture
- Part 2: Generic card edge
- Part 3: Application Interface
- Part 4: API administration
- Part 5: Testing
- Part 6: Registration authority procedures for the authentication protocols for interoperability

■ **STATUS**

ISO/IEC 24727-5 is presently at CD stage.
ISO/IEC 24727-6 is presently at FCD stage.

■ **PRESENT RELEASES**

ISO/IEC 24727-1: 2007
ISO/IEC 24727-2: 2007
ISO/IEC 24727-3: 2008
ISO/IEC 24727-4: 2009

6.4 EN 1362

Title: Identification card systems – Device interface characteristics – Classes of device interfaces

■ **CONTENT AND SCOPE**

This European Standard specifies mandatory and optional interfaces between devices and machine readable cards, as well as other interfaces only to the extent that they are related to the processing of the machine readable card. It specifies the characteristics of each particular interface, and provides the means, through the use of bitmap coding, of readily identifying the capabilities of devices in order to ensure the compatibility between specific devices and cards. As far as technical specifications are concerned, it refers to other existing standards.

■ **PRESENT RELEASES**

EN 1362: 1997

7. Issuer Identification Numbers (IINs)/Application Provider Identifiers (RIDs)

7.1 ISO/IEC 7812

Title: Identification cards – Identification of issuers

■ **CONTENT AND SCOPE**

This International Standard specifies a numbering system for the identification of issuers of identification cards used in international and/or inter-industry interchange and it describes the application and registration procedures for such numbers.

This standard consists of 2 parts:

- Part 1: Numbering system
- Part 2: Application and registration procedures

Part 1 of ISO/IEC 7812 specifies a numbering system for the identification of issuers of cards that require an issuer identification number (IIN) to operate in international, interindustry and/or intra-industry interchange

Part 2 of ISO/IEC 7812 specifies the application and registration procedures for Issuer Identification Numbers (IIN) issued in accordance with ISO/IEC 7812-1.

■ **NOTES**

For national numbering system DIN 33889 apply.

■ **PRESENT RELEASES**

ISO/IEC 7812-1: 1993, 2000, 2006
ISO/IEC 7812-2: 1993, 2000

8. Financial Transaction Cards

8.1 ISO/IEC 7813

Title: Identification cards – Financial transaction cards

■ CONTENT AND SCOPE

This International Standard specifies the physical characteristics, data structure and data content of ID-1 type cards used in financial transactions. It takes into consideration both human and machine aspects and states minimum requirements of conformity. It references layout, recording techniques, numbering systems, registration procedures, but not security requirements.

■ PRESENT RELEASES

ISO/IEC 7813: 1987, 1990, 1995, AMD1:1996, 2001, 2006

8.2 EN 1546

Title: Identification card systems – Inter-sector electronic purse

■ CONTENT AND SCOPE

This standard consists of 4 parts:

- Part 1: Definitions, concepts and structures
- Part 2: Security architecture
- Part 3: Data elements and interchanges
- Part 4: Data objects

■ PRESENT RELEASES

EN 1546-1: 1999
 EN 1546-2: 1999
 EN 1546-3: 1999
 EN 1546-4: 1999

9. Contactless Integrated Circuit(s) cards

9.1 ISO/IEC 10536

Title: Identification cards – Contactless integrated circuit(s) cards – Close-coupled cards

■ CONTENT AND SCOPE

ISO/IEC 10536 specifies the physical characteristics of close-coupled cards (CICC). It applies to identification cards of the type ID-1 operating either in a slot or on the surface of a coupling device.

This standard specifies the dimensions, location, nature and assignment of each of the coupling areas to be provided for interfacing slot or surface card coupling devices (CCDs) with contactless integrated circuit(s) cards (CICCs) of the ID-1 card type.

ISO/IEC 10536 specifies the nature and characteristics of the fields to be provided for power and bidirectional communications between card coupling devices (CCDs) and contactless integrated circuit(s) cards (CICCs) of the ID-1 type in slot or surface operation.

This standard consists of 3 parts:

- Part 1: Physical characteristics.
- Part 2: Dimensions and location of coupling areas
- Part 3: Electronic signals and reset procedures

■ STATUS

As the application of the ISO/IEC 10536 series is minimal, SC17 has decided to put it in the "Stabilized Standard" status, which means that no more revision will be done in the future.

■ PRESENT RELEASES

ISO/IEC 10536-1: 1992, 2000
 ISO/IEC 10536-2: 1995
 ISO/IEC 10536-3: 1996



9.2 ISO/IEC 14443

Title: Identification cards – Contactless integrated circuit(s) cards – Proximity integrated circuit(s) cards

■ CONTENT AND SCOPE

ISO/IEC 14443 specifies the physical characteristics of proximity cards (PICC). It applies to identification cards of the card type ID-1 and of other form factors operating in proximity of a coupling device. This standard specifies the characteristics of the fields to be provided for power and bi-directional communication between proximity coupling devices (PCDs) and proximity cards (PICCs).

ISO/IEC 14443 describes:

- polling for proximity cards (PICCs) entering the field of a proximity coupling device (PCD),
- the byte format, the frames and timing used during the initial phase of communication between PCDs and PICCs,
- the initial Request and Answer to Request command content,
- methods to detect and communicate with one PICC among several PICCs (anticollision),
- other parameters required to initialize communications between a PICC and PCD,
- optional means to ease and speed up the selection of one PICC among several PICCs based on application criteria.

ISO/IEC 14443 specifies a half-duplex block transmission protocol featuring the special needs of a contactless environment and defines the activation and deactivation sequence of the protocol.

This standard consists of 4 parts:

- Part 1: Physical characteristics
- Part 2: Radio frequency interface
- Part 3: Initialization and anticollision
- Part 4: Transmission protocol

■ STATUS

ISO/IEC 14443-2 and 14443-3 are in revision, currently in FDIS status, and are expected to be re-issued end 2010.

■ PRESENT RELEASES

- ISO/IEC 14443-1: 2000, 2008
- ISO/IEC 14443-2: 2001, AMD1:2005
- ISO/IEC 14443-3: 2001, AMD1:2005, AMD3: 2006
- ISO/IEC 14443-4: 2001, AMD1:2006, 2008

9.3 ISO/IEC 15693

Title: Identification cards – Contactless integrated circuit(s) cards – Vicinity cards

■ CONTENT AND SCOPE

ISO/IEC 15693 specifies the physical characteristics of vicinity cards (VICC). It applies to identification cards of the card type ID-1 operating in vicinity of a coupling device. This standard specifies the nature and characteristics of the fields to be provided for power and bidirectional communications between vicinity coupling devices (VCDs) and vicinity cards (VICCs).

ISO/IEC 15693 describes:

- protocol and commands,
- other parameters required to initialize communications between a VICC and a VCD,
- methods to detect and communicate with one card among several cards ("anticollision"),
- optional means to ease and speed up the selection of one among several cards based on application criteria.

This standard consists of 3 parts:

- Part 1: Physical characteristics
- Part 2: Air interface and initialization
- Part 3: Protocols

■ STATUS

Revision of ISO/IEC 15693-1 is presently at FCD status

■ PRESENT RELEASES

- ISO/IEC 15693-1: 2000
- ISO/IEC 15693-2: 2000, 2006
- ISO/IEC 15693-3: 2001, 2009

10. Optical Memory Cards

10.1 ISO/IEC 11693

Title: Identification cards – Optical memory cards

■ CONTENT AND SCOPE

This International Standard provides information necessary to store data on cards, to read data from cards, and for the physical, optical, and data interchangeability of optical memory cards in information processing systems.

It defines the general characteristics of optical memory cards including card materials, construction, characteristics, dimensions, and test environments which have been determined to be common to all types of optical memory cards regardless of recording method employed.

The intent of this International Standard is to provide necessary information for card manufacturers, card issuers and card users interested in interchanging digital information encoded on optical memory cards.

This International Standard can serve as a guide to companies who plan to develop equipment and systems using optical memory cards. The data content and use of the cards depend upon the applications developed by each industry group.

This standard consists of 2 parts:

- Part 1: General characteristics
- Part 2: Co-existence of optical memory with other machine readable technologies

■ STATUS

ISO/IEC 11693-1 is presently at CD status.

■ PRESENT RELEASES

ISO/IEC 11693: 1994, 2000, 2005
ISO/IEC 11693-2: 2009

10.2 ISO/IEC 11694

Title: Identification cards – Optical memory cards and devices – Linear recording method

■ CONTENT AND SCOPE

ISO/IEC 11694 defines the physical characteristics of optical memory cards using the linear recording method. It defines the dimensions and location of the accessible optical area of optical memory cards with ID-1 dimensions using the linear recording method and it defines the optical properties and characteristics of optical memory cards using the linear recording method.

This standard specifies the logical data structures for optical memory cards necessary to allow compatibility and interchange between systems using the linear recording method.

This standard consists of 6 parts:

- Part 1: Physical characteristics
- Part 2: Dimensions and location of the accessible optical area
- Part 3: Optical properties and characteristics
- Part 4: Logical data structures
- Part 5: Data format for information interchange for applications using ISO/IEC 11694-4, Annex B
- Part 6: Use of biometrics on an optical memory card

■ PRESENT RELEASES

ISO/IEC 11694-1: 1994, 2000, 2005
ISO/IEC 11694-2: 1995, 2000, 2005
ISO/IEC 11694-3: 1995, 2001
ISO/IEC 11694-4: 1996, 2001
ISO/IEC 11694-5: 2006
ISO/IEC 11694-6: 2006

10.3 ISO/IEC 11695

Title: Identification cards – Optical memory cards and devices – Holographic recording method

■ CONTENT AND SCOPE

ISO/IEC 11695 defines the physical characteristics of optical memory cards using the holographic recording method. It defines the dimensions and location of the accessible optical area of optical memory cards with ID-1 dimensions using the holographic recording method and it defines the optical properties and characteristics of optical memory cards using the holographic recording method.



This standard consists of 4 parts:

- Part 1: Physical characteristics
- Part 2: Dimensions and location of the accessible optical area
- Part 3: Optical properties and characteristics
- Part 4: Logical data structures

■ **STATUS**

ISO/IEC 11695-4 is presently at FCD status.

■ **NOTES**

Parts 1, 2 and 3 are in process

■ **PRESENT RELEASES**

- ISO/IEC 11695-1: 2007
- ISO/IEC 11695-2: 2007
- ISO/IEC 11695-3: 2007

11. Motor Vehicle Drivers Licence and Related Documents

11.1 ISO/IEC 18013

Title: Identification cards – Motor Vehicle Licence

■ **CONTENT AND SCOPE**

This International Standard establishes guidelines for the design format and data content of an ISO compliant driving licence (IDL) in regard to both visual human-readable features and ISO machine-readable technologies. It creates a common basis for international use and mutual recognition of the IDL without impeding individual national/community/regional motor vehicle authorities in taking care of their specific needs.

This standard consists of 3 parts:

- Part 1: Physical characteristics and Basic Data Set
- Part 2: Machine readable technologies
- Part 3: Biometrics, Image Processing and Cryptography

Part 1 describes the basic terms for this standard including physical characteristics, basis data element set, visual layout and physical security features. **Part 2** describes the technologies that may be used for this standard, including the logical data structure and data mapping for each technology. **Part 3** describes the electronic security features that may be incorporated under this standard, including mechanism for controlling access to data, verifying the original of an IDL and confirming data integrity.

■ **STATUS**

Review of Part 1 started in summer 2008.

■ **PRESENT RELEASES**

- ISO/IEC 18013-1: 2005
- ISO/IEC 18013-2: 2008
- ISO/IEC 18013-3: 2009

12. Biometrics

12.1 ISO/IEC 19784

Title: Information technology – Biometric application programming interface

■ CONTENT AND SCOPE

This standard provides a defined interface that allows a software application to communicate with (utilize the services of) one or more biometric technologies. It includes a high-level generic biometric authentication model suited to a broad range of biometrically enabled applications and to most forms of biometric technology. An architectural model is described which enables components of a biometric system to be provided by different vendors, and to interwork through fully-defined Application Programming Interfaces (APIs), corresponding Service Provider Interfaces (SPIs), and associated data structures. The BioAPI specification covers the basic biometric functions of enrolment, verification, and identification and includes a database interface to allow an application to manage the storage of biometric records. Conformance requirements are identified and informative annexes, including sample code, are provided. This standard specifies a biometric data structure which is compatible with ISO/IEC 19785 and 19794.

This standard consists of 3 parts:

- Part 1: BioAPI specification
- Part 2: Biometric archive function provider interface
- Part 4: BioAPI Sensor Function Provider Interface

■ STATUS

Part 4 is at CD status.

■ NOTES

Part 1 is currently amended with Amd2 Framework Free BioAPI and Amd3 Support for the interchange of certificates and security assertions and other security aspects.

Part 3 BioAPILite has been replaced by ISO/IEC 29164, which is presently at CD status.

■ PRESENT RELEASES

ISO/IEC 19784-1: 2006, Amd. 1: 2007
ISO/IEC 19784-2: 2007

12.2 ISO/IEC 19785

Title: Information technology – Common Biometric Exchange Formats Framework

■ CONTENT AND SCOPE

This standard defines a basic structure for standardized biometric information records (BIRs) that consists of three parts, the standard biometric header (SBH), the biometric data block (BDB), and the security block (SB). CBEFF also defines several data elements and their standardized abstract values that can be used in SBHs and SBs (CBEFF treats the BDB as opaque data). CBEFF also establishes mechanisms by which organizations, called “patrons” by CBEFF, can specify and publish BIR format specifications, which are in turn called “-patron formats.” CBEFF enables patrons to develop BIR specifications that are fully standardized and interoperable, yet are specifically adapted to the requirements of a particular application environment. CBEFF defines rules for BIRs that contain only one BDB (simple BIR) and that contain at least one BDB (complex BIR). CBEFF defines mandatory data elements that identify the format of a BDB and its security attributes (encryption and integrity). All the other CBEFF-defined data elements and abstract values are optional. CBEFF enables patrons to define additional data elements and abstract values as required by the application environment.

This standard consists of 4 parts:

- Part 1: Data element specification
- Part 2: Registration Authority Procedures
- Part 3: Patron Format Specifications
- Part 4: Security Block Format Specifications

■ STATUS

ISO/IEC 19785-4 is presently at FDIS stage.

■ PRESENT RELEASES

ISO/IEC 19785-1: 2006
ISO/IEC 19785-2: 2006
ISO/IEC 19785-3: 2007



12.3 ISO/IEC 19794

Title: Information technology – Biometric data interchange formats

■ CONTENT AND SCOPE

This standard describes the general aspects and requirements for defining biometric data interchange formats. The notation and transfer formats provide platform independence and separation of transfer syntax from content definition. This standard defines what is commonly applied for biometric data formats, i.e. the standardization of the common content, meaning, and representation of biometric data formats of biometric types considered in the specific parts of the multipart standard.

The individual parts of this multipart standard specify for various biometric modalities a data record interchange format for storing, recording, and transmitting the information from one or more biometric characteristics as image or feature data within an ISO/IEC 19785-1 CBEFF data structure. This can be used for the exchange and comparison of biometric reference data. It defines the content, format, and units of measurement for the exchange of biometric reference data that may be used in the verification or identification process of a subject. The information consists of a variety of mandatory and optional items, including scanning parameters, compressed or uncompressed images and vendor-specific information. This information is intended for interchange among organizations that rely on automated devices and systems for identification or verification purposes. Information compiled and formatted in accordance with this part of the ISO/IEC 19794 standard can be recorded on machine-readable media or may be transmitted by data communication facilities.

This standard consists of 13 parts:

- 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

■ STATUS

Parts 11,13 and 14 are at WD stage.

■ NOTES

The revision process has been started for Part 1, 2, 3, 4, 5, 6, 8

Conformance testing standards are under development in SC37 WG3

Part 11 has been cancelled by ISO in 2007. The project is now restarted.

■ PRESENT RELEASES

- ISO/IEC 19794-1: 2006
- ISO/IEC 19794-2: 2005
- ISO/IEC 19794-3: 2006
- ISO/IEC 19794-4: 2005
- ISO/IEC 19794-5: 2005
- ISO/IEC 19794-6: 2005
- ISO/IEC 19794-7: 2007
- ISO/IEC 19794-8: 2006
- ISO/IEC 19794-9: 2007
- ISO/IEC 19794-10: 2007

12.4 ISO/IEC 19795

Title: Information technology – Biometric performance testing and reporting

■ CONTENT AND SCOPE

This standard is concerned with the evaluation of biometric systems in terms of error rates and throughput rates. Metrics for the various error rates in biometric enrolment, verification and identification are unambiguously specified. Recommendations and requirements are given for the conduct of performance evaluations through the steps of planning the evaluation; collection of enrolment, verification or identification transaction data; analysis of error rates; and the reporting and presentation of results. The principles presented are generic to the range of biometric modalities, applications, and test purposes, and to both offline and online testing methodologies. These principles help avoid bias due to inappropriate data collection or analytic procedures; give better estimates of field performance for the expended effort; and clarify the limits of applicability of the test results.

This standard consists of 6 parts:

- Part 1: Principles and framework
- Part 2: Testing methodologies for technology and scenario evaluation
- Part 3: Modality-specific testing
- Part 4: Interoperability performance testing
- Part 5: Performance of biometric access control systems
- Part 6: Testing methodologies for operational evaluation

■ STATUS

Part 5 has been cancelled by ISO in 2007. The project is now restarted.
Part 6 is currently in process.

■ NOTES

ISO/IEC 19795-3 was released as Technical Report

■ PRESENT RELEASES

ISO/IEC 19795-1: 2006
ISO/IEC 19795-2: 2007
ISO/IEC TR 19795-3: 2007
ISO/IEC 19795-4: 2008

13. Personal identification, electronic signature and cards and their related systems and operations

13.1 EN 14890

Title: Application interface for smart cards used as secured signature creation devices

■ CONTENT AND SCOPE

This European Standard defines the functional and security requirements for smart cards with signature function and thus provides robust support for the creation of a European legal framework for smart cards intended to be used as Secure Signature Creating Device (SSCD). EN 14890-1 defines the basic requirements for an SSCD that fulfils the generic IAS-services (Identification, Authentication and Digital Signature). EN 14890-2 specifies additional requirements for an SSCD that fulfils the generic IAS-services (Identification, Authentication and Digital Signature).

This standard consists of 2 parts:

- Part 1: Basic requirements
- Part 2: Additional services

■ NOTES

Both parts are also published as DIN EN 14890 (in German).

■ PRESENT RELEASES

EN 14890-1: 2009
EN 14890-2: 2009

13.2 CEN/TS 15480

Title: Identification card systems – European Citizen Card

■ CONTENT AND SCOPE

This Technical Specification is one of a set of documents describing the specifications for the European Citizen Card (ECC), a smart card issued under the



authority of a government institution which carries credentials in order to provide all or part of the following services:

- verify the identity;
- act as an Inter-European Union travel document;
- facilitate logical access to e-Government or local administration services.

This Technical Specification specifies the physical, electrical and transport protocol characteristics of an ECC.

This Technical Specification consists of 2 parts:

- Part 1: Physical, electrical and transport protocol characteristics
- Part 2: Physical, electrical and transport protocol characteristics

Part 1 contains card service life calculations and tests in an informative annex which are related to ISO/IEC CD 24789-1 and -2. CEN/ TS 15480-1 relates to National ID cards in the EU only, whereas the scope for ISO/IEC 24789-1 and ISO/IEC 24789-2 is for all card applications.

■ **NOTES**

Parts 1 and 2 are also published as DIN CEN/TS 15480 (in English).

Parts 3 and 4 are in process.

■ **PRESENT RELEASES**

CEN/TS 15480-1: 2007
CEN/TS 15480-2: 2007

and communication related characteristics such as protocol, header and trailer information, and transmission control are outside the scope of this CEN Report.

■ **PRESENT RELEASES**

CR 1750: 1999

13.3 CR 1750

Title: Identification card systems – Inter-sector messages between devices and hosts – Acceptor to acquirer messages

■ **CONTENT AND SCOPE**

This CEN Report specifies a common interface for the exchange of messages between card acceptors and acquirers or their agents. It defines the message structure, format and content, data elements, and values for data elements. It is based upon the same principle as EN 28583 (ISO 8583) and is intended to be used when EN 28583 is not appropriate. Where possible, data representation

14. Health informatics

14.1 ISO 20301

Title: Health informatics – Health cards – General characteristics

■ CONTENT AND SCOPE

This international standard describes general characteristics of machine readable cards of ID-1 type used in the field of healthcare. It regulates the visual information written on the healthcare data card.

■ NOTES

ID-1 type cards are defined in ISO 7810.

The test methods of cards addressed by this standard are defined in ISO 10373.

■ PRESENT RELEASES

EN ISO 20301: 2006

14.2 ISO 20302

Title: Health informatics – Health cards – Numbering system and registration procedure for issuer identifiers

■ CONTENT AND SCOPE

ISO 20302 describes a numbering system and registration procedure for issue identifiers of machine readable cards of ID-1 type used in the field of healthcare. It focuses on cards that are issued for healthcare services provided in a service area that crosses the national borders of two or more countries/areas.

■ NOTES

ID-1 type cards are defined in ISO 7810.

The test methods of cards addressed by this standard are defined in ISO 10373.

■ PRESENT RELEASES

EN ISO 20302: 2006

14.3 EN ISO 21549

Title: Health informatics – Patient healthcard data

■ CONTENT AND SCOPE

This International Standard defines data structures held on patient healthcards compliant with the physical dimensions of ID-1 cards as defined by ISO/IEC 7810.

This standard consists of 8 parts:

- Part 1: General structure
- Part 2: Common objects
- Part 3: Limited clinical data
- Part 4: Extended clinical data
- Part 5: Identification data
- Part 6: Administrative data
- Part 7: Medication data
- Part 8: Links

■ STATUS

Part 8 is still under development.

■ PRESENT RELEASES

- EN ISO 21549-1: 2004
- EN ISO 21549-2: 2004
- EN ISO 21549-3: 2004
- EN ISO 21549-4: 2006
- EN ISO 21549-5: 2008
- EN ISO 21549-6: 2008
- EN ISO 21549-7: 2007

14.4 EN 1387

Title: Machine readable cards – Health care applications – Cards: General characteristics

■ CONTENT AND SCOPE

This European Standard is one of a series of standards describing the characteristics of machine readable cards in the health care sector and the use of such cards for European interchange. It specifies the physical characteristics of cards and the recording techniques, but not the security requirements.

■ NOTES

This standard should be replaced by EN ISO 20301. Also published as DIN EN 1387:1996.

■ PRESENT RELEASES

EN 1387: 1996



14.5 EN 1867

Title: Machine readable cards – Health care applications – Numbering system and registration procedure for issuer identifiers

■ CONTENT AND SCOPE

This European Standard specifies the application and registration procedures for numbers assigned to issuers of cards used for health care, health care coverage or health care entitlement, that comply with EN 1387

■ NOTES

This standard should be replaced by EN ISO 20302. Also published as DIN EN 1867:1997

■ PRESENT RELEASES

EN 1867: 1997

order to allow interoperability between applications on European level for HP-cards, the following aspects are taken into account: non-ambiguous international identification of healthcare professionals, identification of the profession(s) and the specialisation(s) of the HPC, identification of the situations in which the HPC is allowed to work, codification of data objects needed for interoperability, cryptographic procedures (algorithms, modes of use, used data elements).

■ PRESENT RELEASES

CR 13644: 2000

14.6 CR 13643

Title: Machine readable cards – Healthcare applications – Logical data structures and concepts for different card technologies for use by patients in health applications

■ CONTENT AND SCOPE

This CEN/CENELEC Report specifies the logical data storage format for data in machine readable cards to be used by patients in health applications. The data structures and the methodology are described in plain text and ASN.1 notation. This Report is not applicable to bar coded data on machine readable cards.

■ PRESENT RELEASES

CR 13643: 2000

14.7 CR 13644

Title: Machine readable cards – Healthcare applications – Logical organisation of data on healthcare professional cards

■ CONTENT AND SCOPE

This CEN/CENELEC Report specifies the logical organisation of data of healthcare professional cards implemented on integrated circuit(s) cards only. In

15. Transport applications

15.1 ENV 14062

Title: Identification card systems – Surface transport applications; Electronic fee collection

■ CONTENT AND SCOPE

This European Pre-standard specifies directly or by reference the physical characteristics, electronic signals and transmission protocols for integrated circuit(s) cards (ICCs) carrying the EFC application and related requirements for On-Board-Units (OBUs) used in Electronic Fee Collection systems based on Dedicated Short Range Communication and Global System for Mobile Communication, with the target to provide basic interoperability between an ICC and an OBU independently of the respective manufacturers and operators. This European Pre-standard specifies directly or by reference the message requirements for integrated circuit(s) cards (ICCs) carrying the EFC application and related requirements for On-Board-Units (OBUs) used in Electronic Fee Collection systems based on Dedicated Short Range Communication and Global System for Mobile Communication, with the target to provide basic interoperability between an ICC and an OBU independently of the respective manufacturers and operators. It takes into consideration both environmental and system related aspects and states minimum requirements of conformity.

The requirements imposed by this Pre-standard apply to:

- the IC card itself, denoted by the abbreviation ICC;
- the in-vehicle card interface device, denoted by the abbreviation OBU; or
- the combination of both. This Pre-standard does not directly set requirements on any other card interface device (IFD) besides the OBU e.g. stationary devices.

This standard consists of 2 parts:

- Part 1: Physical characteristics, electronic signals and transmission protocols
- Part 2: Message requirements

■ STATUS:

Under revision

■ NOTES

Also published as DIN V ENV 14062:2001.

■ PRESENT RELEASES

- ENV 14062-1: 2001
- ENV 14062-2: 2001

15.2 EN 1545

Title: Identification card systems – Surface transport applications

■ CONTENT AND SCOPE

This standard consists of 2 parts:

- Part 1: Elementary data types, general code lists and general data elements
- Part 2: Transport and travel payment related data elements and code lists

Part 1 of this European standard specifies data formats, data elements, and data types for general use within surface transport applications (STAs) using IC cards. The abstract syntax notation (ASN.1) has been used in the definition of data types (i.e. ASN.1 types) in this Standard. The ASN.1 basic encoding rules (BER) include significant redundancy in order to make transferred data fully self defining, which may result in data sets too large for identification cards with restricted data storage capacity. Therefore this standard allows the use of alternative encoding rules such as the ones based upon the ASN.1 packed encoding rules (PER) (see chapter 9). The mechanism for how to establish the application context, including the decision of which encoding rules to use, is outside the scope of this Standard. Tagging of the data elements is left to the application.

Part 2 of this Standard contains definitions of data formats, data elements and code lists for use in the creation of surface transport related data sets which may reside on a transport card. ASN.1 has been used in the definition of data types in this standard. A part of the sector specific codes are based on ASN.1 directly, all sector specific data elements have to be defined on the basis of EN 1545-1. The definition of data sets being used in STAs is left to the application standards themselves. This standard provides the toolbox of data elements and types as



basis for the creation of those data sets being used in STAs. This toolbox doesn't ensure for interoperability. It is left to the application builders to provide for interoperability.

■ NOTES

Also published as DIN EN 1545:2006.

■ PRESENT RELEASES

EN 1545-1: 2005

EN 1545-2: 2005

15.3 EN 15320

Title: Identification card systems – Surface transport applications – Interoperable Public Transport Application Framework

■ CONTENT AND SCOPE

This standard describes a technology neutral environment for an Interoperable Public Transport Application within the confines of the definition of Identification Card Systems. This standard further describes the minimum requirements for an interoperable transport application that may exist on a machine readable card. It describes data sets and formats at the logical level. The interface supports many machine readable card varieties that conform to a contact less interface compatible with ISO/IEC 14443 series. This document applies also to other customer media such as key fobs, subject to the customer media being able to interface with card acceptance devices supporting this standard where interoperability is required. The standard defines the structure of a transport application primarily for ticketing for implementation on a machine readable card that makes use of the data elements defined in EN 1545. This standard describes an environment which aims to achieve the following objectives:

- provide a basis for offering machine readable interoperable tickets across the public transport network in Europe,
- “seamless” journey for the passenger allowing them travel with all participating operators, possibly in different networks and countries.

In addition this standard enables different types of relationships to exist between machine readable

cards and card holders, for example anonymous, personal, and corporate use. Cards may be either transport-only or multi-application. This standard specifies those components of the application necessary to support an interoperable environment (e.g. accessing IOPTA, sizing and enumeration of data, security and access considerations).

■ NOTES

Also published as DIN EN 15320:2008.

■ PRESENT RELEASES

EN 15320: 2007

16. Man-machine interface

16.1 EN 726

Title: Identification card systems – Telecommunications – integrated circuit(s) cards and terminals

■ CONTENT AND SCOPE

This European Standard defines the general concepts including the system overview, the involved entities and the five different phases in the lifetime of a card and a card system. It specifies the use of IC cards for telecommunication use. It describes a general security approach. This European Standard specifies the application-independent card characteristics of multi-application IC-cards and plug-in modules for telecommunication applications in order to ensure interoperability for telecommunication cards with various systems and terminals. It specifies the application independent card related characteristics of card terminals. This European Standard specifies payment methods for telecommunication applications, using IC cards. These payment methods are not necessarily linked to the applications which use them, and they can be used by more than one application. The document gives guidance on the interface between the IC card and the external world. It considers an open system in which the payment methods will be used. A closed system is a special case of the open system. The document defines following telecommunication features: abbreviated dialling, last number dialling (stored within the card), fixed number dialling. This European Standard specifies: The minimum requirements for a Security Module (SM); the general card related functions embedded and cryptographic processing described in annex A for the case where the SM is an ICC should be supported if the SM is not an ICC or the configuration of the system, e.g. where the SM handles more than one terminal/user card.

This standard consists of 7 parts:

- Part 1: Systems overview
- Part 2: Security framework
- Part 3: Application independent card requirements
- Part 4: Application independent card related terminal requirements
- Part 5: Payment methods
- Part 6: Telecommunication features
- Part 7: Security module

■ NOTES

Also published as DIN EN 726.

■ PRESENT RELEASES

- EN 726-1: 1994
- EN 726-2: 1995
- EN 726-3: 1994
- EN 726-4: 1994
- EN 726-5: 1999
- EN 726-6: 1995
- EN 726-7: 1999

16.2 EN 1038

Title: Identification card systems – Telecommunication applications – Integrated circuit(s) card payphone

■ CONTENT AND SCOPE

This European Standard specifies the application dependent, IC card related characteristics for a payphone application. It defines the operating procedures and the minimal cardphone requirements for the card related part of the payphone application. This European standard does not define the application independent characteristics.

■ NOTES

Application independent characteristics are defined and described in EN 726-3 and EN 726-4.

Also published as DIN EN 1038:1995.

■ PRESENT RELEASES

- EN 1038: 1995

16.3 EN 1332

Title: Identification card systems – Man-machine interface

■ CONTENT AND SCOPE

This European Standard defines design principles for card based services interaction with user interface that are applicable to any sector (e.g. banking, telecommunication, mass transport, parking, logical access control, physical access control). It also provides recommendations for the operational procedures to be followed when users interact with card



operated device. It specifies the form, dimensions and location of an edge indentation for a single standard tactile identifier, when applied to ID-1 card. This edge indentation will appear at the option of the card issuer. This European Standard specifies the arrangement, the number and location of numeric and command keys.

Machine readable cards facilitate the provision of services across Europe. This European Standard addresses the need of all users, including people with special needs. It defines the data objects to be stored within an integrated circuit(s) card and to be exchanged. This European Standard addresses the needs of users who have difficulties reading non-embossed information on plastic cards. This Standard specifies the design principles necessary for embossed symbols to be incorporated into machine readable cards.

This standard consists of 5 parts:

- Part 1: Design principles for the user interface
- Part 2: Dimensions and location of a tactile identifier for ID-1 cards
- Part 3: Key pads
- Part 4: Coding of user requirements for people with special needs
- Part 5: Raised tactile symbols for differentiation of application on ID-1 cards

■ **NOTES**

DIN EN 1332-1 will be published in early 2010. Parts 2 to 6 are also available as DIN EN respectively DIN CEN/TS.

■ **PRESENT RELEASES**

- EN 1332-1: 2000, 2009
- EN 1332-2: 1998
- EN 1332-3: 2000, 2008
- EN 1332-4: 2007
- EN 1332-5: 2006

16.4 CEN/TS 15291

Title: Identification card system – Guidance on design for accessible card-activated devices

■ **CONTENT AND SCOPE**

This Technical Specification provides guidance for the design and location of card-activated devices

and the immediate environment, to facilitate access for the widest possible range of users (all/most members of the community), subject to conditions of adequate privacy and security.

■ **PRESENT RELEASES**

CEN/TS 15291: 2006

Annex A

Table 1 – Size of cards and documents**Table 2 – SC17 standards****Table 3 – SC17 test methods**

Annex A Table 1 – Size of cards and documents

Standard	Thickness Nominal mm	Nominal size, length x width (dimensions in mm)						
		25 x 15	66 x 30	85,6 x 53,98	105 x 74	120 x 80	125 x 88	187 x 83 203 x 83
ISO/IEC 7810	0,76	ID-000	na	ID-1	ID-2	na	ID-3	na
ISO/IEC 7501	0,25 to 1,25	na	na	TD-1	TD-2	MRV-A	TD-3	na
ISO/IEC 15457	0,25	na	TFC-0	TFC-1	TFC-2	na	TFC-3	TFC-5



Annex A Table 2 – SC17 standards

Base Standard (ISO/IEC)	Title	WG	Basic characteristics defined by	Test methods	Document sizes
7501-1	Identification cards – Machine readable travel documents – Part 1: Machine readable passport	WG 3	ICAO 9303-1	NA	TD-1, TD-2, TD-3
7501-2	Identification cards – Machine readable travel documents – Part 2: Machine readable visas	WG 3	ICAO 9303-2	NA	MRV-A, TD2
7501-3	Identification cards – Machine readable travel documents – Part 3: Official travel documents	WG 3	ICAO 9303-3	NA	
7810	Identification cards – Physical characteristics	WG 1	NA	10373-1	ID-000, ID-1/000, ID-1, ID-2, ID-3
7811-1	Identification cards – Recording technique – Part 1: Embossing	WG 1	7810	10373-1	ID-1
7811-2	Identification cards – Recording technique – Part 2: Magnetic stripe-low coercivity	WG 1	7810	10373-1, 10373-2	ID-1
7811-6	Identification cards – Recording technique – Part 6: Magnetic stripe-high coercivity	WG 1	7810	10373-1, 10373-2	ID-1
7811-7	Identification cards – Recording technique – Part 7: Magnetic stripe-high coercivity high density	WG 1	7810	10373-1, 10373-2	ID-1, ID-2, ID-3
7812-1	Identification cards – Identification of issuers – Part 1: Numbering system	WG 5			
7812-2	Identification cards – Identification of issuers – Part 2: Application and registration procedures	WG 5			
7813	Financial transaction cards	WG 7	7810		ID-1
7816-1	Identification cards – Integrated circuit cards – Part 1: Cards with contacts – Physical characteristics	WG 4	7810	10373-1, 10373-3	
7816-2	Identification cards – Integrated circuit cards – Part 2: Cards with contacts – Dimensions and location of the contacts	WG 4		10373-1, 10373-3	
7816-3	Identification cards – Integrated circuit cards – Part 3: Cards with contacts – Electrical interface and transmission protocols	WG 4		10373-3	

Annex A

Base Standard (ISO/IEC)	Title	WG	Basic characteristics defined by	Test methods	Document sizes
7816-4	Identification cards – Integrated circuit cards – Part 4: Organization, security and commands for interchange	WG 4		10373-3	
7816-5	Identification cards – Integrated circuit cards – Part 5: Registration of application providers	WG 4		10373-3	
7816-6	Identification cards – Integrated circuit cards – Part 6: Interindustry data elements for interchange	WG 4		10373-3	
7816-7	Identification cards – Integrated circuit cards – Part 7: Commands for Structured Card Query Language (SCQL)	WG 4		10373-3	
7816-8	Identification cards – Integrated circuit cards – Part 8: Commands for security operations	WG 4		10373-3	
7816-9	Identification cards – Integrated circuit cards – Part 9: Commands for card management	WG 4		10373-3	
7816-10	Identification cards – Integrated circuit cards – Part 10: Cards with contacts – Electrical interface for synchronous cards	WG 4		10373-3	
7816-11	Identification cards – Integrated circuit cards – Part 11: Personal verification through biometric methods	WG 4		10373-3	
7816-12	Identification cards – Integrated circuit cards – Part 12: Cards with contacts – USB electrical interface and operating procedures	WG 4		10373-3	
7816-13	Identification cards – Integrated circuit cards – Part 13: Commands for application management in multi-application environment	WG 4		10373-3	
7816-14	Does not exist	WG 4		10373-3	
7816-15	Identification cards – Integrated circuit cards – Part 15: Cryptographic information application	WG 4		10373-3	
10536-1	Identification cards – Contactless integrated circuit(s) cards – Part 1: Physical characteristics.	WG 8	7810	10373-3	
10536-2	Identification cards – Contactless integrated circuit(s) cards – Part 2: Dimensions and location of coupling areas	WG 8		10373-3	
10536-3	Identification cards – Contactless integrated circuit(s) cards – Part 3: Electronic signals and reset procedures	WG 8		10373-3	



Annex A Table 2 – SC17 standards

Base Standard (ISO/IEC)	Title	WG	Basic characteristics defined by	Test methods	Document sizes
11693	Identification cards – Optical memory cards.	WG 9		10373-5	
11694-1	Identification cards – Optical memory cards and devices – Linear recording method – Part 1: Physical characteristics.	WG 9		10373-5	
11694-2	Identification cards – Optical memory cards and devices – Linear recording method – Part 2: Dimensions and location of the accessible optical area.	WG 9		10373-5	
11694-3	Identification cards – Optical memory cards and devices – Linear recording method – Part 3: Optical properties and characteristics.	WG 9		10373-5	
11694-4	Identification cards – Optical memory cards and devices – Linear recording method – Part 4: Logical data structures.	WG 9		10373-5	
14443-1	Identification cards – Contactless integrated circuit(s) cards – Proximity integrated circuit(s) cards – Part 1: Physical characteristics	WG 8	7810	10373-6	
14443-2	Identification cards – Contactless integrated circuit(s) cards – Proximity integrated circuit(s) cards – Part 2: Radio frequency interface	WG 8		10373-6	
14443-3	Identification cards – Contactless integrated circuit(s) cards – Proximity integrated circuit(s) cards – Part 3: Initialization and anticollision	WG 8		10373-6	
14443-4	Identification cards – Contactless integrated circuit(s) cards – Proximity integrated circuit(s) cards – Part 4: Transmission protocol	WG 8		10373-6	
15457-1	Identification cards – Thin flexible cards – Part 1: Physical characteristics	WG 1	NA	15457-3	TFC-0, TFC-1, TFC-2, TFC-3, TFC-5
15457-2	Identification cards – Thin flexible cards – Part 2: Magnetic recording techniques	WG 1	15457-1 7811-2 7811-6	15457-3	TFC-0, TFC-1, TFC-5

Annex A

Base Standard (ISO/IEC)	Title	WG	Basic characteristics defined by	Test methods	Document sizes
15693-1	Identification cards – Contactless integrated circuit(s) cards – Vicinity cards – Part 1: Physical characteristics	WG 8	7810	10373-7	
15693-2	Identification cards – Contactless integrated circuit(s) cards – Vicinity cards – Part 2: Air interface and initialization	WG 8		10373-7	
15693-3	Identification cards – Contactless integrated circuit(s) cards – Vicinity cards – Part 3: Protocols	WG 8		10373-7	
18013-1	Identification cards – Motor Vehicle Licence – Part 1: Physical characteristics and Basic Data Set	WG 10	7810	10373-1	ID-1
18013-2	Identification cards – Motor Vehicle Licence – Part 2: Machine readable technologies	WG 10	7811-1 7811-2 7811-6	10373-2	
18013-3	Identification cards – Motor Vehicle Licence – Part 3: Biometrics, Image Processing and Cryptography	WG 10			
20060	Information technology – Open terminal architecture (OTA) specification – Virtual machine specification	WG 4		NA	
24727-1	Identification cards – Integrated circuit cards – Programming interfaces – Part 1: Architecture	WG 4			ID-1
24727-2	Identification cards – Integrated circuit cards – Programming interfaces – Part 2: Generic card edge	WG 4		UD	
24727-3	Identification cards – Integrated circuit cards – Programming interfaces – Part 3: Application Interface	WG 4		UD	
24727-4	Identification cards – Integrated circuit cards – Programming interfaces – Part 3: API administration	WG 4		UD	



Annex A Table 3 – SC17 test methods

Base Standard (ISO/IEC)	Title	WG	
10373-1	Identification cards – Test methods – Part 1: General characteristics	WG 1	
10373-2	Identification cards – Test methods – Part 2: Cards with magnetic stripes	WG 1	
10373-3	Identification cards – Test methods – Part 3: Integrated circuit(s) cards with contacts and related interface devices	WG 4	
10373-5	Identification cards – Test methods – Part 5: Optical memory cards	WG 1	
10373-6	Identification cards – Test methods – Part 6: Proximity cards	WG 8	
10373-7	Identification cards – Test methods – Part 7: Vicinity cards	WG 8	

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