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Machine readable cards - Healthcare applications - Logical organisation of data on healthcare professional cards

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Foreword

This document has been prepared by CEN /TC 224, "Machine readable cards, related device interfaces and operations".

This CEN Report is published to provide availability of the work undertaken by CEN/TC 224 during the years 1992-1997 which was aiming to produce a European standard entitled "Machine readable cards – Healthcare applications – Logical data structures and concepts for different card technologies for use by patients in health applications". CEN/TC 224 has decided to close its own work towards completing this standards work being convinced that the work effort should be concentrated and will be better continued in ISO/TC 251 "Health informatics".

The scope of the work presented herein was intended to provide solutions for IC-cards only. However, many of the data structures have a generic approach facilitating the integration of card applications with various health related applications using databases and network communication in addition to the information stored on cards. However, the security functions crucial for implementation of health professional cards were not addressed in this work. After the completion of the work presented here, several standards initiatives have addressed such security requirements and should be taken into account in providing a stable standard for such applications. One available result is the European prestandard ENV 13729 "Health informatics – Secure user identification for healthcare strong authentication using microprocessor cards". Other important developments are the European Electronic Signature Standardization initiative and the ISO/IECJTC 1/SC 17 work on ISO/IEC 18027 "Identification cards – Cryptographic token information application".

The work of CEN/TC 224 started in parallel with CEN/TC 251, to a large extent with the same experts. CEN/TC 251 received a mandate from EU and EFTA and developed the ENV 12018 entitled "Medical informatics – Identification, administrative, and common clinical data structure for Intermittently Connected Devices used in healthcare (including machine readable cards)" which was adopted in 1997. This standard is currently undergoing a major revision in preparation for being transferred to a European Standard.

This CEN Report is partly based on ENV 12018 and contains parts of this standard. The reason for including those initially was that as it had not been finalized, it could not safely be referenced.

This CEN Report is proposed to ISO/TC 215 and it is expected that the basic ideas and many details will be able to provide the basis for one or very likely several International Standards on this topic.

It is important to understand that the specification provided in this CEN Report although expressed as normative requirements, is not a European Standard.

Introduction

This CEN Report defines the logical data storage format for data in machine readable cards to be used by persons, healthcare professionals and other workers, in health applications.

Data objects have been defined within ENV 12018:1997 that, with respect to fitness of purpose, had simular attributes and thence fitted a common data storage such as encompassed by a dedicated file (DF) as described within a smart card.

This strategy has a number of advantages, the most important being that the "master file" containing the data objects with all their sub components can be transmitted and thence stored as a single super object within media lacking processing capability. However for media with processing capabilities such objects can be subdivided into different logical files as described above and re-assembled on transmission.

Because of the technological limitations of some types of media it is necessary that some data transformation take place when transferring data between some different types of technologies. However, as the interface devices to these technologies are dissimilar the software interface will always be aware of the technology with which it is interfacing and therefore able to perform these transformations. This approach to logical data storage can enable the storage of all types of information theoretically on any type of device and does away with the redundancy produced by the common core approach. In the case of some media (in particular ISO compatible magnetic stripe media) it is expected that the interface will carry out transformation of the data when transferring it between different card technologies (to cope with differential encoding rules and the application of ASN.1 context specific tags).

This CEN report contains 3 parts :

— first part : Logical data-set of HP-cards (clause 6), this logical data set is an abstract and adaptation for healthcare professionals of ENV 12018:1997 ; some modifications have been made in order to be compliant with ISO/IEC 7816 and some additional fields have been added which are specific to healthcare professionals ;

— second part : HP-cards memory lay-out (clauses 7 to 9), : description of the storage of the logical data-set in the card's memory ;

— third part : HP-cards visual aspects (clause 10), it takes into account EN 1387:1996.

NOTE   For the sake of completeness, cards for healthcare workers (non healthcare professionals working in healthcare sites) are also covered by this document.

These cards allow access to healthcare applications with adapted privileges.

1 Scope

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

In 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).

This CEN Report is applicable to healthcare professionals and non healthcare professionals working in healthcare sites (healthcare workers).

2 Normative references

This CEN Report incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this CEN Report only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 1387:1996, *Machine readable cards – Health care applications – Cards : General characteristics.*

EN 1867:1997, *Machine readable cards – Health care applications – Numbering system and registration procedure for issuer identifiers.*

EN ISO 3166-1:1997, *Codes for the representation of names of countries and their subdivisions – Part 1 : Country codes (ISO 3166-1:1997).*

EN ISO/IEC 7816-4:1996, *Information technology, Identification cards – Integrated circuit(s) cards with contacts – Part 4 : Interindustry commands for interchange (ISO/IEC 7816-4:1995).*

EN ISO/IEC 7816-5:1995, *Identification cards – Integrated circuit(s) cards with contacts – Part 5 : Numbering system and registration procedure for application identifiers (ISO/IEC 7816-5:1994).*

EN ISO/IEC 7816-6:1997, *Identification cards – Integrated circuit(s) cards with contacts – Part 6 : Interindustry data elements (ISO/IEC 7816-6:1996).*

ENV 12018:1997, *Identification, administrative, and common clinical data structure for Intermittently Connected Devices used in healthcare (including machine readable cards).*

ISO 639:1988, *Code for the representation of names of languages.*

ISO 639-2:1998, *Code for the representation of names of languages – Part 2 Alpha-3 code.*

ISO 8859-1:1987, *Information processing – 8-bit single-byte coded graphic character sets – Part 1 : Latin alphabet No.1.*

ISO/IEC 7816 (all parts), *Identification cards – Integrated circuit(s) cards with contacts.*

ISO/IEC 7816-3:1997, *Information technology, Identification cards – Integrated circuit(s) cards with contacts – Part 3 Electronic signals and transmission protocols.*