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Information technology — Device interface to support ISO/IEC 18000-3

National foreword

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Technologies de l'information - Interface de prise en charge d'ISO/CEI 18000-3 pour les appareils

Informationstechnik - Geräteschnittstelle zur Unterstützung von ISO/IEC 18000-3 Mode 3 tags

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Foreword

This document (CEN/TR 16669:2014) has been prepared by Technical Committee CEN/TC 225 “AIDC technologies”, the secretariat of which is held by NEN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This Technical Report is one of a series of related deliverables, which comprise mandate 436 Phase 2. The other deliverables are:

— EN 16570, *Information technology — Notification of RFID — The information sign and additional information to be provided by operators of RFID application systems*

— EN 16571, *Information technology — RFID privacy impact assessment process*

— EN 16656, *Information technology - Radio frequency identification for item management - RFID Emblem (*ISO/IEC 29160:2012*, modified)*

— CEN/TR 16684, *Information technology — Notification of RFID — Additional information to be provided by operators*

— CEN/TS 16685, *Information technology — Notification of RFID — The information sign to be displayed in areas where RFID interrogators are deployed*

— CEN/TR 16670, *Information technology — RFID threat and vulnerability analysis*

— CEN/TR 16671, *Information technology — Authorisation of mobile phones when used as RFID interrogators*

— CEN/TR 16672, *Information technology — Privacy capability features of current RFID technologies*

— CEN/TR 16673, *Information technology — RFID privacy impact assessment analysis for specific sectors*

— CEN/TR 16674, *Information technology — Analysis of privacy impact assessment methodologies relevant to RFID*

Introduction

In response to the growing deployment of RFID systems in Europe, the European Commission published in 2007 the Communication COM(2007) 96 'RFID in Europe: steps towards a policy framework'. This Communication proposed steps which needed to be taken to reduce barriers to adoption of RFID whilst respecting the basic legal framework safeguarding fundamental values such as health, environment, data protection, privacy and security.

In December 2008, the European Commission addressed Mandate M/436 to CEN, CENELEC and ETSI in the field of ICT as applied to RFID systems. The Mandate M/436 was accepted by the ESOs in the first months of 2009. The Mandate addresses the data protection, privacy and information aspects of RFID, and is being executed in two phases. Phase 1, completed in May 2011, identified the work needed to produce a complete framework of future RFID standards. The Phase 1 results are contained in the ETSI Technical Report TR 187 020, which was published in May 2011.

Phase 2 is concerned with the execution of the standardisation work programme identified in the first phase. This Technical Report is related to the development of a Technical Specification to define the device interface to support ISO/IEC 18000-3 Mode 3 tags.

The proposed Technical Specification on a device interface was intended to support two high frequency air interface protocols; ISO/IEC 18000-3 mode 1 that has been established and used for 15 years and ISO/IEC 18000-3 mode 3 that is just emerging. The assumption was that ISO/IEC 18000-3 mode 3 would offer greater security and that the protection of the privacy would be better served by it. The proposed device interface is intended as a serious attempt to bring greater control to this highly used air interface protocol. In addition, by developing a device interface that supports both air interface protocols, there is the potential to assist in the migration from the older, and (suggested) less secure, technology to a newer and (assumed) more robust technology. Robustness, in this case, is not only of benefit to the operator of the system but also to end users who come into daily contact with the technologies.

In the exploration phase to start with the preparations for the Technical Specification the project team encountered a challenge to translate the specifics of the required device interface features into practical specifications. First it was not clear why ISO/IEC 18000-3 mode 3 would offer greater security to protect the privacy of the consumers. Second it was not obvious to which "application" the reader should connect and how the proposed device interface would contribute to improving the privacy protection of the consumer. Therefore the project team decided to consult the industry to get their feedback on the proposed standard for a device interface.

The device interface is aimed at supporting ISO/IEC 18000-3 technology. The Library industry is by far the largest market for the ISO/IEC 18000-3 tags. Therefore this Technical Report will focus on the value that the proposed device could offer to improve the protection of the privacy of the consumer of the European Library Industry.

This Technical Report describes the project team's approach to resolve the challenges. Clause 6 described the evaluation of the privacy protection level of 18000-3 Mode 3. Clause 7 describes the feedback of the industry on the need for the device interface. Clause 8 describes the feedback of the industry on features of the device interface as listed in the scope. Clause 9 points to some potential threats caused by some of the memory content in library RFID tags. Annex A contains the list of industry representatives who have contributed to the creation of this report. Clause 5 draws the conclusions.

1 Scope

The scope of this Technical Report is to assess the need to develop a Technical Specification to define an interface that provides RFID system control components with low-level access to RFID interrogators for the purpose of optimising RFID data access and control operations.

2 Normative references

Not applicable.

3 Terms and definitions

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

3.1
air interface
complete communication link between an Interrogator and a Tag including the physical layer, collision-arbitration algorithm, command and response structure, and data-coding methodology

3.2
contactless
pertaining to the achievement of signal exchange with and supplying power to the card without the use of galvanic elements (i.e., the absence of an ohmic path from the external interfacing equipment to the integrated circuit(s) contained within the card)

3.3
interrogator (also known as reader)
a transmitter/receiver that reads the contents of RFID tags in the vicinity

3.4
RFID tag
an electronic identification device that is made up of a chip and antenna

4 Symbols and Abbreviations

AFI	Application family identifier
CRC-5	5 bit Cyclic redundancy check
CRC-16	16 bit Cyclic redundancy check (calculated on power-up)
CRC-16c	16 bit Cyclic redundancy check (calculated in transmission)
CW	Continuous Wave
ERC	European Radiocommunications Committee
ETSI	European Telecommunications Specifications Institute
HF	High frequency
LMS	Library Management System
PC	Protocol Control
RF	Radio frequency
SRD	Short Range Devices