



NSAI
Standards

Irish Standard Recommendation
S.R. CEN/TS 16986:2016&AC:2017

Electronic fee collection - Interoperable application profiles for information exchange between Service Provision and Toll Charging

S.R. CEN/TS 16986:2016&AC:2017

Incorporating amendments/corrigenda/National Annexes issued since publication:

CEN/TS 16986:2016/AC:2017

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

CEN/TS 16986:2016

Published:

2016-10-12

This document was published under the authority of the NSAI and comes into effect on:

2017-04-30

ICS number:

35.240.60

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

S.R. CEN/TS 16986:2016&AC:2017 is the adopted Irish version of the European Document CEN/TS 16986:2016, Electronic fee collection - Interoperable application profiles for information exchange between Service Provision and Toll Charging

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This page is intentionally left blank

EUROPEAN STANDARD

CEN/TS 16986:2016/AC

NORME EUROPÉENNE

March 2017

EUROPÄISCHE NORM

Mars 2017

März 2017

ICS 35.240.60

English version
Version Française
Deutsche Fassung

Electronic Fee Collection - Interoperable application profiles for information exchange between Service Provision and Toll Charging

Perception de télépéage - Profil d'application interopérabilité pour échange d'informations entre la prestation de service et la perception du péage

Elektronische Gebührenerhebung - Interoperable Anwendungsprofile für den Informationsaustausch zwischen den Dienste-Versorgern und Mauterhebern

This corrigendum becomes effective on 29 March 2017 for incorporation in the official English version of the EN.

Ce corrigendum prendra effet le 29 mars 2017 pour incorporation dans la version anglaise officielle de la EN.

Die Berichtigung tritt am 29. März 2017 zur Einarbeitung in die offizielle Englische Fassung der EN in Kraft.



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

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

© 2017 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.
Tous droits d'exploitation sous quelque forme et de quelque manière que ce soit réservés dans le monde entier aux membres nationaux du CEN.
Alle Rechte der Verwertung, gleich in welcher Form und in welchem Verfahren, sind weltweit den nationalen Mitgliedern von CEN vorbehalten.

Ref. No.: CEN/TS 16986:2016/AC:2017 E

CEN/TS 16986:2016/AC:2017 (E)

1 Correction to 5.4.4.3.1

In 5.4.4.3.1, first paragraph, third line:

Replace

“previousApdul”

With

“inResponseToApdul”.

2 Correction to 6.6.2.1, Table 23

In 6.6.2.1, Table 23, row “efcContextMark”:

Delete the following sentence:

“The efcContextMark is already known through the APCI.”

3 Correction to 6.8.2.1, Figure 12

In 6.8.2.1, Figure 12, upper box entitled “PaymentClaimADU”

Replace

“- typeOfFee : TypeOfPayments {OPTIONAL}”

with

“- typeOfFee : TypeOfFee {OPTIONAL}”

4 Correction to Annex A, Tables A.18 and A.19

In A.9.4.3, Tables A.18 and A.19

Replace (for all the references in the tables)

“6.4.2.2”

with

“6.6.2.1”

5 Corrections to Annex A, Table A.42

In Annex A, Table A.42, column "Status":

Row "tollContext"

Replace

"m"

with

"c.42.1"

Row "tollEventId"

Replace

"m"

with

"c.42.2"

Row "tollEventTime"

Replace

"m"

with

"c.42.2"

Row "modeOfOperation"

Replace

"m"

with

"c.42.2"

Add at the end of Table A.42:

"c.42.1: IF (domainType = dsrClosedContext) THEN x ELSE m"

"c.42.2: IF (tollPath = internalPathId) THEN x ELSE m"

This page is intentionally left blank

TECHNICAL SPECIFICATION

CEN/TS 16986

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

October 2016

ICS 35.240.60

English Version

Electronic Fee Collection - Interoperable application profiles for information exchange between Service Provision and Toll Charging

Perception de télépéage - Profil d'application
interopérabilité pour échange d'informations entre la
prestation de service et la perception du péage

Elektronische Gebührenerhebung - Interoperable
Anwendungsprofile für den Informationsaustausch
zwischen den Dienste-Versorgern und Mauterhebern

This Technical Specification (CEN/TS) was approved by CEN on 13 July 2016 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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

This document consolidates EN 16986:2016 and the corrigendum EN 16986:2016/AC:2017.



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

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

Contents	Page
European foreword	6
Introduction	7
1 Scope	8
2 Normative references	8
3 Terms and definitions	9
4 Abbreviations	13
5 Conformance	14
5.1 General.....	14
5.2 Base standard.....	14
5.3 Main contents of an 12855-IAP	14
5.4 Conformance requirements	15
5.4.1 General requirements	15
5.4.2 Transaction requirements.....	15
5.4.3 Data requirements.....	16
5.4.4 Transaction requirements.....	17
5.5 Conformation notification	20
5.6 Interoperability	21
6 Requirements on common transactions	21
6.1 General.....	21
6.2 InfoExchange.....	21
6.2.1 InfoExchangeContent.....	21
6.2.2 InfoExchangeAuthenticator	23
6.3 AckADU	23
6.3.1 General.....	23
6.3.2 Syntax and semantics.....	23
6.4 USERDETAILS - Exchange Enforcement Data - Retrieve and Provide User Details.....	26
6.4.1 Transaction sequence, triggers and timings	26
6.4.2 Syntax and semantics.....	28
6.5 LISTOFUSERS - List of Users	30
6.5.1 Transaction sequence, triggers and timings	30
6.5.2 Syntax and semantics.....	31
6.6 EXCEPTIONLIST - Managing Exception Lists	32
6.6.1 Transaction sequence, triggers and timings	32
6.6.2 Syntax and semantics.....	33
6.7 TRUSTOBJECTS - Exchange trust objects	37
6.7.1 APDU transfer mechanisms.....	37
6.7.2 Transaction sequence, triggers and timings	37
6.7.3 Syntax and semantics.....	38
6.8 PAYMENTCLAIM - Payment Claim.....	40
6.8.1 Transaction sequence, triggers and timings	40
6.8.2 Syntax and semantics.....	42
7 DSRC profile specific transactions	44
7.1 DSRC.CONTRACTISSUERLIST – ContractIssuerList.....	44
7.1.1 Transaction sequence, triggers and timings	44
7.1.2 Syntax and semantics - ContractIssuerListADU	45

7.2	DSRC.EFCCONTEXTDATA - Provide and Request EFC Context Data	45
7.2.1	Transaction sequence, triggers and timings.....	45
7.2.2	Syntax and semantics - EfcContextDataADU	47
7.3	DSRC.BILLINGDETAILS - Report billing details.....	48
7.3.1	Transaction sequence, triggers and timings.....	48
7.3.2	Syntax and semantics	50
7.4	DSRC.REPORTABNORMALOBE.....	62
7.4.1	Transaction sequence, triggers and timings.....	62
7.4.2	Syntax and semantics - ReportAbnormalOBEADU	64
8	GNSS profile specific transactions	64
8.1	GNSS.TOLLDECLARATIONS - Report toll declarations.....	64
8.1.1	Transaction sequence, triggers and timings.....	64
8.1.2	Syntax and semantics - TollDeclarationADU	66
8.2	Report billing details.....	73
8.2.1	General	73
8.2.2	GNSS.BILLINGDETAILS.TSP - Transaction sequence, triggers and timings	73
8.2.3	GNSS.BILLINGDETAILS.TC - Transaction sequence, triggers and timing.....	75
8.2.4	Syntax and semantics of GNSS.BILLINGDETAILS.TSP and GNSS.BILLINGDETAILS.TC - BillingDetailsADU	76
8.3	GNSS.PAYMENTANNOUNCEMENT	80
8.3.1	Transaction sequence, triggers and timings.....	80
8.3.2	Syntax and semantics - PaymentAnnouncementADU	81
9	APDU Transfer mechanisms	83
9.1	ASN.1 encoding	83
9.2	Generic transfer mechanisms	83
9.3	Alternative transfer mechanisms for transaction type TRUSTOBJECTS	83
Annex A (normative)	ICS Proforma	84
A.1	Guidance for completing the PICS proforma	84
A.1.1	Purposes and structure	84
A.1.2	Abbreviations and conventions.....	84
A.1.3	Instructions for completing the PICS proforma.....	86
A.2	Identification of the implementation	86
A.2.1	General	86
A.2.2	Date of the statement	86
A.2.3	Implementation Under Test (IUT) identification.....	86
A.2.4	System Under Test (SUT) identification	86
A.2.5	Product supplier	87
A.2.6	Applicant (if different from product supplier)	87
A.2.7	PICS contact person	87
A.3	Identification of the protocol	88
A.4	Global statement of conformance.....	88
A.5	Roles	88
A.6	Profiles.....	88
A.7	InfoExchange	89

CEN/TS 16986:2016 (E)

A.7.1	InfoExchange protocol procedures.....	89
A.7.2	InfoExchange parameters	89
A.8	Common AckADU support.....	90
A.8.1	AckADU fields	90
A.9	Common Transactions support.....	90
A.9.1	General.....	90
A.9.2	USERDETAILS support.....	91
A.9.3	LISTOFUSERS support	92
A.9.4	EXCEPTIONLIST support.....	94
A.9.5	TRUSTOBJECTS support.....	96
A.9.6	PAYMENTCLAIM support.....	97
A.10	DSRC Specific Transactions Support	99
A.10.1	Prerequisites	99
A.10.2	DSRC transactions support	99
A.10.3	DSRC.CONTRACTISSUERLIST support	99
A.10.4	DSRC.EFCCONTEXTDATA support.....	100
A.10.5	DSRC.BILLINGDETAILS support	102
A.10.6	DSRC.REPORTABNORMALLOBE support	108
A.11	GNSS Specific Transactions Support.....	109
A.11.1	General.....	109
A.11.2	Common GNSS.BILLINGDETAILS support.....	110
A.11.3	GNSS.BILLINGDETAILS.TSP support.....	113
A.11.4	GNSS.BILLINGDETAILS.TC support	114
A.11.5	GNSS.TOLLDECLARATION support	115
A.11.6	GNSS.PAYMENTANNOUNCEMENT support.....	118
A.12	Transfer mechanisms	119
Annex B (normative)	Interoperability Statement Proforma	120
B.1	Guidance for completing the Interoperability Statement proforma.....	120
B.2	Interoperability Statement for transaction support.....	120
B.3	Interoperability Statement for the USERDETAILS transaction type.....	121
B.4	Interoperability Statement for the LISTOFUSERS transaction type	121
B.5	Interoperability Statement for the EXCEPTIONLIST transaction type	122
B.6	Interoperability Statement for the TRUSTOBJECTS transaction type	123
B.7	Interoperability Statement for the PAYMENTCLAIM transaction type	124
B.8	Interoperability Statement for the DSRC.CONTRACTISSUERLIST transaction type	124
B.9	Interoperability Statement for the DSRC.EFCCONTEXTDATA transaction type.....	124
B.10	Interoperability Statement for the DSRC.BILLINGDETAILS transaction type	125

B.11	Interoperability Statement for the DSRC.REPORTABNORMALLOBE transaction type.....	125
B.12	Interoperability Statement for the GNSS.TOLLDECLARATIONS transaction type.....	125
B.13	Interoperability Statement for the GNSS.BILLINGDETAILS.TSP transaction type	126
B.14	Interoperability Statement for the GNSS.BILLINGDETAILS.TC transaction type.....	126
B.15	Interoperability Statement for the GNSS.PAYMENTANNOUNCEMENT transaction type.	127
	Annex C (normative) Web service definition (WSDL)	128
	Annex D (informative) Use of this Technical Specification for the EETS	129
D.1	General	129
D.2	Overall relationship between European standardization and the EETS	129
D.3	European standardization work supporting the EETS	129
D.4	Correspondence between this Technical Specification and the EETS	130
	Annex E (informative) How to read UML class diagrams in this Technical Specification	131
E.1	General	131
E.2	Relation of ASN.1 code and UML class diagrams	131
E.3	Relation of UML class diagrams for the base standard and the profile.....	133
	Bibliography	135

CEN/TS 16986:2016 (E)

European foreword

This document (CEN/TS 16986:2016) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, 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 shall not be held responsible for identifying any or all such patent rights.

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

This document includes the corrigendum CEN/TS 16986:2016/AC:2017 which corrects the first paragraph of 5.4.4.3.1, Table 23, Figure 12, Table A.18, Table A.19 and Table A.42.

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

Introduction

The Standard on information exchange between service provision and toll charging (i.e. EN ISO 12855:2015) is a so-called toolbox standard. That means that it provides a large number of options that can be used to support various needs of toll chargers and toll service providers. As such, it provides useful but not sufficient support to ensure technical interoperability.

The aim of this Technical Specification is to produce a profile specification that provides technical interoperability to support the EFC information exchange between toll service providers (TSPs) and toll chargers (TCs):

- based on DSRC;
- based on GNSS/CN – autonomous systems.

This Technical Specification covers the definition of interoperable application profiles (IAP) applicable for the use of EN ISO 12855:2015. These profiles define a specific coherent set of transactions, triggers, conditions, data elements, transfer mechanisms and supporting functions for an interoperable exchange of data between the central equipment of TCs and TSPs (in Europe).

This IAP defines profiles using the concept of “International Standardised Profiles (ISP)”, as defined in ISO/IEC TR 10000-1. The ISP-concept is specifically suited for defining interoperability specifications where a set of base standards can be used in different ways. This is exactly the case for EN ISO 12855:2015, where the base standard allows for different choices that are not interoperable.

The principles of the ISP-concept can be summarized as follows:

- an ISP will make references only to base standards or other ISPs;
- the profile will restrict the choice of base standard options to the extent necessary to maximize the probability of interoperability (e.g. chosen classes, conforming subsets, options and parameter values of base standards);
- the ISP will not copy content of the base standards (in order to avoid consistency problems with the base standards);
- the profile will not specify any requirements that would contradict or cause non-conformance to the base standards;
- the profile may contain conformance requirements that are more specific and limited in scope than those of the base standards;
- conformance to a profile implies by definition conformance to a set of base standards, whereas conformance to that set of base standards does not necessarily imply conformance to the profile.

This Technical Specification is consistent with and is intended to provide support for the technical specification of the EETS laid down in the European Directive 2004/52/EC and in the subsequent European Commission Decision 2009/750/EC.

A suite of test specifications is currently being developed to support assessment of an implementation for compliance with this Technical Specification.

CEN/TS 16986:2016 (E)

1 Scope

This Technical Specification defines an application interface definition by selecting suitable options from the base standard EN ISO 12855:2015. Furthermore, it defines transfer mechanisms and supporting functions to ensure the interoperability between TCs and TSPs.

This Technical Specification covers:

- exchange of information between the central equipment associated with the two roles service provision and toll charging, e.g.:
 - charging related data (exception lists, toll declarations, billing details, payment claims);
 - administrative data (trust objects, EFC context data, contact details for enforcement, etc.);
 - confirmation data.
- transfer mechanisms and supporting functions;
- semantics of data elements;
- implementation conformance statement proforma (Annex A), as a basis for assessment of conformity to this Technical Specification;
- an Interoperability statement proforma (Annex B), as a basis for assessment of transactional interoperability of two technical implementations;
- a web service definition (Annex C) for the use of web services as communication technology.

The implementation of the underlying back office systems and their business processes is not covered. Therefore, outside of the scope is in particular:

- details on how to achieve security using the authenticator data elements of the base standards;
- how to operate compliance checking and the enforcement process;
- commercial aspects;
- definition of non-functional features such as performance indicators like accuracy, availability and reporting requirements.

This Technical Specification further provides an assessment of support of the EETS (Annex D) and an explanation how to read the unified modelling language (UML) diagrams (Annex E) that are used in this document.

2 Normative references

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

EN ISO 12855:2015, *Electronic fee collection — Information exchange between service provision and toll charging*

IETF RC 959, *File Transfer Protocol [Oct 1985]*

IETF RFC 4217, *Securing FTP with TLS [Oct 2015]*

WSDL 1.1, *Web Services Description Language (WSDL) 1.1*¹⁾

1) <http://www.w3.org/TR/2001/NOTE-wsdl-20010315> [15.03.2001]

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-