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KONTEKST

Electronic fee collection - Application interface
definition for autonomous systems - Part 3: Context
data (ISO 17575-3:2016)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 17575-3:2016 sisaldab Euroopa standardi EN ISO 17575-3:2016 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 17575-3:2016 consists of the English text of the European standard EN ISO 17575-3:2016.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
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English Version

**Electronic fee collection - Application interface definition
for autonomous systems - Part 3: Context data (ISO 17575-
3:2016)**

Perception du télépéage - Définition de l'interface
d'application pour les systèmes autonomes - Partie 3:
Données du contexte (ISO 17575-3:2016)

Elektronische Gebührenerhebung - Definition der
Anwendungsschnittstelle für autonome Systeme - Teil
3: Kontextdaten (ISO 17575-3:2016)

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European foreword

This document (EN ISO 17575-3:2016) has been prepared by Technical Committee ISO/TC 204 “Intelligent transport systems” in collaboration with Technical Committee CEN/TC 278 “Intelligent transport systems” the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2016, and conflicting national standards shall be withdrawn at the latest by August 2016.

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 document supersedes CEN ISO/TS 17575-3:2011.

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

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Endorsement notice

The text of ISO 17575-3:2016 has been approved by CEN as EN ISO 17575-3:2016 without any modification.

Contents

Page

Foreword	iv
Introduction	vi
1 Scope	1
2 Normative references	2
3 Terms and definitions	2
4 Abbreviated terms	4
5 General concept and overview	5
6 Procedural requirements and encoding rules	7
6.1 General	7
6.2 Communication services	7
6.3 Version and validity handling	7
6.3.1 Protocol versioning	7
6.3.2 Context data versioning	7
6.4 Encoding rules	8
6.5 Acknowledgement and behaviour on errors	8
7 Application data units	8
7.1 General	8
7.2 Message authentication (data type Iso17575-3-InformationContent)	9
7.3 Application data unit structure (data type Iso17575-3Adu)	9
7.4 Application data unit header (data type ISO 17575-3AduHeader)	10
7.5 Application data unit body (data type ISO 17575-3AduBody)	11
8 EFC Attributes	11
8.1 General	11
8.2 Rules with respect to support of context data	12
8.3 Attributes and data sets	12
8.4 EFC attributes authentication	12
8.5 EFC attributes data catalogue	13
8.5.1 General	13
8.5.2 Requirements with regards to context overview	14
8.5.3 Requirements with regards to tariff information	17
8.5.4 Requirements with regards to context layout	35
8.5.5 Requirements with regards to reporting rules	45
Annex A (normative) Data type specifications	59
Annex B (normative) Protocol implementation conformance statement (PICS) proforma	60
Annex C (informative) Hierarchical data structure illustration	98
Annex D (informative) How to use context data to define the properties of an EFC regime	103
Annex E (informative) Guidelines on the use of standardised digital maps in GDF format in the description of section based toll context layouts	108
Annex F (informative) Examples using EFC context data for scheme definitions	111
Annex G (informative) Use of this part of ISO 17575 for the EETS	116
Bibliography	118

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 204, *Intelligent transport systems*.

This edition of ISO 17575-3 cancels and replaces ISO/TS 17575-3:2011, which has been technically revised. The following changes have been made:

- conversion from a Technical Specification to an International Standard;
- amendments to reflect changes to the underlying base standards, especially ISO 14906;
- major changes regarding
 - integration of functionalities for the support of complex toll domains that consist of more than one partition from ISO/TS 17575-2:2010,
 - changes in the security scheme details,
 - introduction of protocol version identification,
 - harmonization of the identification of toll contexts amongst the parts of ISO 17575,
 - improvement of the possibility to use rounding rules,
 - enabling the use of a second alternative currency in tariffs,
 - adaptation of the charge reporting configuration to changes in ISO 17575-1:2016,
 - enabling the use of toll context partitions which may be present in one single toll context,
 - support of optional geographic data files (GDF) based description of toll liable networks (embracing such data definitions from ISO 12855:2012,
 - revised terms and definitions ([Clause 3](#)), and
 - editorial and formal corrections as well as changes to improve readability.

ISO 17575 consists of the following parts, under the general title *Electronic fee collection — Application interface definition for autonomous systems*:

- *Part 1: Charging*
- *Part 2: Communication and connection to the lower layers*
- *Part 3: Context data*

In this edition of the ISO 17575-series the contents of ISO/TS 17575-4:2011 were incorporated into ISO 17575-3:2016. ISO/TS 17575-4:2011 will be withdrawn once ISO 17575-3 has been published.

Introduction

0.1 Autonomous systems

ISO 17575 is a series of standards defining the information exchange between the Front End and the Back End in electronic fee collection (EFC) based on autonomous on-board equipment (OBE). EFC systems automatically collect charging data for the use of road infrastructure including motorway tolls, zone-based fees in urban areas, tolls for special infrastructure such as bridges and tunnels, distance-based charging, and parking fees.

Further introductory explanations of autonomous systems in EFC and, in particular, the considerations with respect to business and technical architecture that form the base for interfaces within such system and their interoperable specification are provided in ISO 17575-1:2016.

0.2 Location of the specification interface

In order to abstract from, and become independent of, these architectural implementation choices, the primary scope of ISO 17575 is the data exchange between Front End and Back End (see the corresponding vertical line in [Figure 1](#)). For every toll scheme, the Back End will send context data, i.e. a description of the toll scheme in terms of charged objects, charging rules and, if required, the tariff scheme to the Front End, and will receive usage data from the Front End.

It has to be noted also that the distribution of tasks and responsibilities between service provider and toll charger will vary individually. Depending on the local legal situation, toll chargers will require “thinner” or “thicker” data, and might or might not leave certain data processing tasks to service providers. Hence, the data definitions in ISO 17575 may be useful on several interfaces.

ISO 17575 also provides for basic media-independent communication services that may be used for communication between Front End and Back End, which might be line-based or an air-link, and can also be used for the air-link between OBE and central communication server.

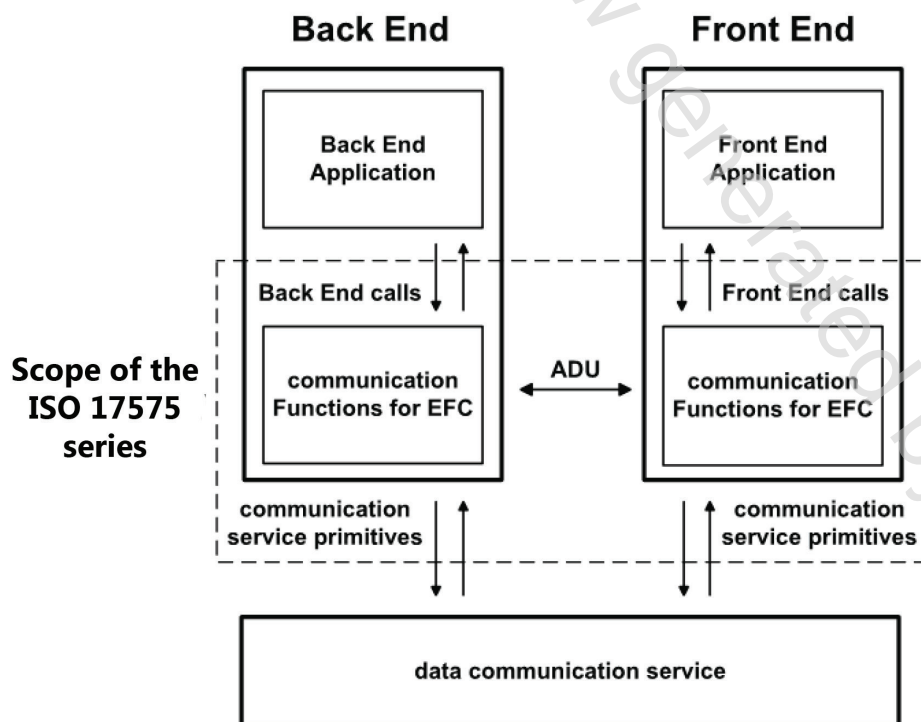


Figure 1 — Scope of ISO 17575

0.3 The parts of ISO 17575

Part 1: Charging, defines the attributes for the transfer of usage data from the Front End to the Back End. The contents of charge reports might vary between toll regimes, hence, attributes for all requirements are offered, ranging from attributes for raw localization data, for map-matched geographic objects and for completely priced toll transactions. A toll regime comprises a set of rules for charging, including the charged network, the charging principles, the liable vehicles and a definition of the required contents of the charge report.

Part 2: Communication and connection to lower layers, defines basic communication services for data transfer over the OBE air-link or between Front End and Back End. The data defined in ISO 17575-1 and ISO 17575-3 can, but need not be, exchanged using the communication stack as defined in ISO 17575-2.

Part 3: Context data, defines the data to be used for a description of individual charging systems in terms of charged geographical objects and charging and reporting rules. For every toll charger's system, attributes as defined in ISO 17575-3 are used to transfer data to the Front End in order to instruct it on which data to collect and report.

0.4 Application needs covered by ISO 17575

The ISO 17575-series of standards

- is compliant with the architecture defined in ISO 17573:2010,
- supports charges for use of road sections (including bridges, tunnels, passes, etc.), passage of cordons (entry/exit), and use of infrastructure within an area (distance, time),
- supports fee collection based on units of distance or duration, and based on occurrence of events,
- supports modulation of fees by vehicle category, road category, time of usage and contract type (e.g. exempt vehicles, special tariff vehicles, etc.),
- supports limiting of fees by a defined maximum per period of usage,
- supports fees with different legal status (e.g. public tax, private toll),
- supports differing requirements of different toll chargers, especially in terms of
 - geographic domain and context descriptions,
 - contents and frequency of charge reports,
 - feedback to the driver (e.g. green or red light), and
 - provision of additional detailed data on request, e.g. for settling of disputes,
- supports overlapping geographic toll domains,
- supports adaptations to changes in
 - tolled infrastructure,
 - tariffs, and
 - participating toll schemes, and
- supports the provision of trust guarantees by the service provider to the toll charger for the data originated from the Front End.

Electronic fee collection — Application interface definition for autonomous systems —

Part 3: Context data

1 Scope

This part of ISO 17575 defines the content, semantics and format of the data exchange between a Front End (OBE plus optional proxy) and the corresponding Back End in autonomous toll systems. It defines the data elements used to specify and describe the toll context details. Context data are transmitted from the Back End to the Front End to configure it for the charging processes of the associated toll context.

In ISO 17575, context data is the description of the properties of a single instance of an electronic fee collection (EFC) context. This single instance of an EFC context operates according to one of the basic tolling principles such as

- road section charging,
- area charging (according to travelled distance or duration of time), and
- cordon charging.

EFC context data comprise a set of rules for charging, including the description of the charged network, the charging principles, the liable vehicles and a definition of the required contents of the charge report. This set of rules is defined individually for each EFC context according to local needs.

The following data and associated procedures are defined in this part of ISO 17575:

- data providing toll context overview information;
- data providing tariff information (including definitions of required tariff determinants such as vehicle parameters, time classe, etc.);
- data providing context layout information;
- data providing reporting rules information.

This part of ISO 17575 also provides the required definitions and data specifications to be applied when one single toll context is split into more than one toll context partitions. This is applicable to cases where one EFC scheme and the rules applied cannot be described with a single set of context data.

[Annex A](#) provides the data type specification using ASN.1 notation.

The protocol implementation conformity statements (PICS) proforma are provided in [Annex B](#).

[Annex C](#) provides a graphical presentation of the structure of the toll context data.

[Annexes D, E and F](#) contain further information and descriptions, which may support the understanding and the implementation of the rules specified in this part of ISO 17575.

[Annex G](#) provides information how this part of ISO 17575 can be used in a European Electronic Toll Service (EETS) environment, with reference to EU Decision 2009/750.

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.

ISO 612, *Road vehicles — Dimensions of motor vehicles and towed vehicles — Terms and definitions*

ISO 1176, *Road vehicles — Masses — Vocabulary and codes*

ISO 4217, *Codes for the representation of currencies and funds*

ISO/IEC 8824-1:2008, *Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation — Part 1*

ISO/IEC 8825-2:2008, *Information technology — ASN.1 encoding rules: Specification of Packed Encoding Rules (PER) — Part 2*

ISO 12813:2015, *Electronic fee collection — Compliance check communication for autonomous systems*

ISO 14906:2011/Amd1:2015, *Electronic fee collection — Application interface definition for dedicated short-range communication*

ISO 17575-1:2016, *Electronic fee collection — Application interface definition for autonomous systems — Part 1: Charging*

EN 15509:2014, *Electronic fee collection — Interoperability application profile for DSRC*

NIMA TR8350.2, Third Edition — Amendment 1, January 2000, Department of Defense — *World Geodetic System 1984, Its Definition and Relationships With Local Geodetic Systems, issued by National Imagery and Mapping Agency (NIMA)*, US Department of Defense

3 Terms and definitions

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

- 3.1**
area charging
charging based on road usage within a given area
[SOURCE: ISO 17575-1:2016, 3.1]
- 3.2**
attribute
addressable package of data consisting of a single data element or structured sequences of data elements
[SOURCE: ISO 17575-1:2016, 3.2]
- 3.3**
authenticator
data, possibly encrypted, that is used for authentication
[SOURCE: EN 15509:2014, 3.3]
- 3.4**
Back End
part of a back office system interfacing to one or more *Front Ends* ([3.11](#))
[SOURCE: ISO 17575-1:2016, 3.4]