



SLOVENSKI STANDARD
oSIST prEN ISO 12855:2010
01-januar-2010

Elektronsko pobiranje pristojbin - Izmenjava informacij med izvedbo storitve in cestninjenjem vozil (ISO/DIS 12855:2009)

Electronic fee collection - Information exchange between service provision and toll charging (ISO/DIS 12855:2009)

Informationsaustausch zwischen Dienstleistern und Gebühereneinzugsunternehmen (ISO/DIS 12855:2009)

Perception du télépéage - Échange d'information entre prestation de service et chargement d'outil (ISO/DIS 12855:2009)

Ta slovenski standard je istoveten z: prEN ISO 12855

ICS:

03.220.20	Cestni transport	Road transport
35.240.60	Uporabniške rešitve IT v transportu in trgovini	IT applications in transport and trade

oSIST prEN ISO 12855:2010

en

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN ISO 12855

October 2009

ICS 03.220.20; 35.240.60

English Version

Electronic fee collection - Information exchange between service provision and toll charging (ISO/DIS 12855:2009)

Perception du télépéage - Échange d'information entre prestation de service et chargement d'outil (ISO/DIS 12855:2009)

Informationsaustausch zwischen Dienstleistern und Gebührenerinzugsunternehmen (ISO/DIS 12855:2009)

This draft European Standard is submitted to CEN members for parallel enquiry. It has been drawn up by the Technical Committee CEN/TC 278.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

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

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....3

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 12855:2012

<https://standards.iteh.ai/catalog/standards/sist/506dddc9-12b6-48a4-8cc8-fca7fb3b13a7/sist-en-iso-12855-2012>

Foreword

This document (prEN ISO 12855:2009) has been prepared by Technical Committee CEN/TC 278 "Road transport and traffic telematics", the secretariat of which is held by NEN, in collaboration with Technical Committee ISO/TC 204 "Intelligent transport systems".

This document is currently submitted to the parallel Enquiry.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 12855:2012](https://standards.iteh.ai/catalog/standards/sist/506dddc9-12b6-48a4-8cc8-fca7fb3b13a7/sist-en-iso-12855-2012)

<https://standards.iteh.ai/catalog/standards/sist/506dddc9-12b6-48a4-8cc8-fca7fb3b13a7/sist-en-iso-12855-2012>



DRAFT INTERNATIONAL STANDARD ISO/DIS 12855

ISO/TC 204

Secretariat: ANSI

Voting begins on:
2009-10-29

Voting terminates on:
2010-03-29

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Electronic fee collection — Information exchange between service provision and toll charging

Perception du télépéage — Échange d'information entre prestation de service et chargement d'outil

ICS 03.220.20; 35.240.60

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/CEN PARALLEL PROCESSING

This draft has been developed within the European Committee for Standardization (CEN), and processed under the **CEN-lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five-month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

In accordance with the provisions of Council Resolution 15/1993 this document is circulated in the English language only.

Conformément aux dispositions de la Résolution du Conseil 15/1993, ce document est distribué en version anglaise seulement.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

Pour accélérer la distribution, le présent document est distribué tel qu'il est parvenu du secrétariat du comité. Le travail de rédaction et de composition de texte sera effectué au Secrétariat central de l'ISO au stade de publication.

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

ISO/DIS 12855

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW

(standards.iteh.ai)

[SIST EN ISO 12855:2012](https://standards.iteh.ai/catalog/standards/sist/506dddc9-12b6-48a4-8cc8-fca7fb3b13a7/sist-en-iso-12855-2012)

<https://standards.iteh.ai/catalog/standards/sist/506dddc9-12b6-48a4-8cc8-fca7fb3b13a7/sist-en-iso-12855-2012>

Copyright notice

This ISO document is a Draft International Standard and is copyright-protected by ISO. Except as permitted under the applicable laws of the user's country, neither this ISO draft nor any extract from it may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, photocopying, recording or otherwise, without prior written permission being secured.

Requests for permission to reproduce should be addressed to either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Reproduction may be subject to royalty payments or a licensing agreement.

Violators may be prosecuted.

Contents

Page

Foreword	v
Introduction.....	v
1 Scope.....	1
2 Normative References.....	2
3 Terms and definitions	3
3.1 Definitions in the present standard	3
3.2 Definitions from other Standards	5
4 Symbols and abbreviations.....	9
4.1 Abbreviations.....	9
4.2 Symbols.....	10
5 Architecture	11
5.1 Main roles in the Toll Charging environment	11
5.2 Functionalities of the interfaces	12
5.2.1 General	12
5.2.2 Exchange Trust Objects	12
5.2.3 Originate and distribute EFC context data	14
5.2.4 Manage Exception list.....	16
5.2.5 Report Billing details.....	18
5.2.6 Claim payment for service usage	25
5.2.7 Exchange Enforcement data	27
5.2.8 Exchange Quality assurance parameters	30
6 Computational specification	32
6.1 Overview.....	32
6.2 Interfaces.....	32
6.2.1 General	32
6.2.2 Identification of data elements.....	33
6.3 Messages	34
6.3.1 General	34
6.3.2 Data unit header	34
6.3.3 Data unit body.....	35
6.4 Exchange Trust Objects	35
6.4.1 General	35
6.4.2 Request Update	36
6.4.3 Request new Trust Objects	37
6.4.4 Trust Objects	37
6.4.5 Acknowledge/Dispute Trust Objects.....	37
6.5 Originate and distribute EFC context data	38
6.5.1 General	38
6.5.2 Request Update	39
6.5.3 EFC context data	39
6.5.4 Acknowledge/Dispute context data.....	41
6.6 Billing negotiations	41
6.6.1 General	41
6.6.2 Report abnormal OBE.....	44
6.6.3 Acknowledge/Dispute Report of abnormal OBE.....	44
6.6.4 Send Exception list	45
6.6.5 Acknowledge/Dispute Exception list.....	45
6.6.6 Report Billing details.....	46
6.6.7 Acknowledge/Dispute Billing details.....	46

ISO/DIS 12855

6.6.8	Payment claim.....	47
6.6.9	Acknowledge/Dispute payment claim	48
6.6.10	Fiscal Objects.....	48
6.6.11	Fiscal Objects Response	49
6.7	Enforcement cooperation	49
6.7.1	General.....	49
6.7.2	Broadcast TSP ID request.....	51
6.7.3	TSP ID response	51
6.7.4	Request Additionally User Parameters	52
6.7.5	Additionally User Parameter response	53
6.7.6	Request PG for inferred object.....	53
6.7.7	Response PG for inferred object.....	53
6.7.8	Report CCC Event.....	54
6.7.9	CCC Event response	54
6.8	Report Quality assurance parameters.....	54
6.8.1	General.....	54
6.8.2	Report QA parameters	55
6.8.3	Acknowledge/Dispute QA parameters	55
7	Transfer mechanisms and supporting functions	56
7.1	Transfer mechanisms.....	56
7.2	Supporting functions	56
7.2.1	Communication Services.....	56
7.2.2	Message Authenticators	56
Annex A (normative) EFC data type specifications.....		58
Annex B (informative) How to use road network data attributes coded in GDF format		71
B.1	General.....	71
B.2	A short compendium on GDF coded road maps.....	71
B.3	The EFC layer as add-on to standard GDF coded road map data	72
Annex C (informative) How to implement TrustObjects.....		74
C.1	Possible implementation of the TrustObjectCode attribute.....	74
C.2	Send Trust Object Example	77
C.3	Example for securing messages by an alternative container method using #PKCS7	82
Annex D (informative) Example enforcement process applying standardised message exchanges		89
D.1	General.....	89
D.2	Process Phases	89
D.2.1	Phase I: Perform compliance check and identify Toll Service Provider.....	89
D.2.2	Phase II: Request missing Billing details from a Toll Service Provider.....	90
D.2.3	Phase III: Build inferred Billing details	91
D.2.4	Phase IV: Request Payment guarantee	92
D.2.5	Phase V: Request Service User address details	92
Annex E (informative) Scope of related standards for tolling		94
Bibliography.....		96

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

EN ISO 12855 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*, and by Technical Committee CEN/TC 278, *Road transport and traffic telematics* in collaboration.

iteh STANDARD PREVIEW
(standards.iteh.ai)

Introduction

[SIST EN ISO 12855:2012](https://standards.iteh.ai/catalog/standards/sist/506dddc9-12b6-48a4-8cc8-)

<https://standards.iteh.ai/catalog/standards/sist/506dddc9-12b6-48a4-8cc8->

The widespread use of tolling also requires provisions for users of vehicles that are roaming through many different toll domains. Users should be offered a single contract for driving a vehicle through various toll domains. Where those vehicles require a form of onboard equipment (OBE) this should interoperable with the toll systems in the various toll domains. In Europe, for example, this need has been officially recognised and legislation on interoperability has already been adopted (see Directive 2004/52). There is both a commercial and economic justification in respect to the OBE and the toll systems for standards enabling interoperability.

The system architecture defined in prEN ISO 17573 is the basis for all standards that relate to tolling systems in the EFC domain. From this system architecture standard, other standards have consistently reused:

- a common definition of terms and concepts and basic system functionalities and structure
- a common terminology
- identified interfaces that are or need to be defined

prEN ISO 17573 uses the ISO/IEC 10746-3 Open Distributed Processing (ODP) standard for the description of the architecture.

The ODP standard gives a vocabulary and modelling tools to see the architecture of a system from different perspectives (the viewpoints), in order to cover, e.g., hardware components as well as network protocols or interfaces or roles and general policies of the system itself. This is accomplished using different sets of concepts and terminologies, each one of those is expressed as a viewpoint language.

The present standard identifies and specifies the interactions between two classes of roles defined in prEN ISO 17573, which are the roles related to the Provision of Toll service and the roles related to Charging of the Toll. To identify these interfaces, the present standard uses the Enterprise description of the Toll

ISO/DIS 12855

environment, and the interactions defined between the named classes of roles, as defined in prEN ISO 17573. This allows for a complete specification of the data that is transferred between those identified entities. In addition to that, a number of computational interfaces are identified, where interactions in terms of sequences of messages are defined.

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN ISO 12855:2012

<https://standards.iteh.ai/catalog/standards/sist/506dddc9-12b6-48a4-8cc8-fca7fb3b13a7/sist-en-iso-12855-2012>

Electronic fee collection — Information exchange between service provision and toll charging

1 Scope

The scope for the present standard covers:

- EFC systems for vehicle related transport services, e.g. road user charging, parking and access control. The standard does not cover Electronic Fare Collection systems for Public Transport. It should be noted that an EFC system may include any electronic fee collection system, e.g. also systems automatically reading licence plate numbers of vehicles passing a charging point.
- Exchange of information between Service Provision and Toll Charging between the Back End systems of EFC systems, e.g.
- Charging Data
- Administrative Data
- Confirmation Data
- Transfer mechanisms and supporting functions
- Information objects, data syntax and semantics
- Examples of data interchanges

The Standard shall support any EFC Service and EFC Application independent of the technology used for fee collection.

The present standard is defined as a toolbox standard of transactions and messages which may be used for the assigned purpose. The actual definition of mandatory and optional elements in a real implementation must be defined elsewhere. The present standard does also not define communication sequences communication stacks and timings.

Any communication between Toll Charger and/or Toll Service Provider with any other involved party is outside the scope of the present standard. Also any communication between elements of the Toll Charger and the Toll Service Provider which is not part of the back office communication is outside of the scope of this standard.

The scope of this present standard is illustrated in the following figure.

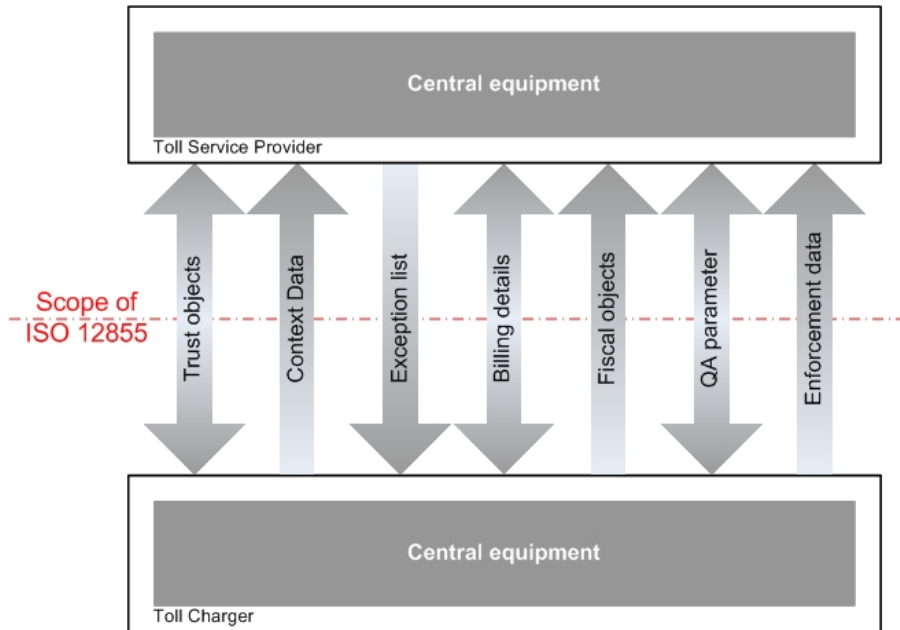


Figure 1: Scope of ISO 12855

2 Normative References

The present standard 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 the present standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

- CEN ISO/TS 12813, *Electronic fee collection - Compliance check communication for autonomous systems* (Under development)
- prEN ISO 17573, *Electronic fee collection – System architecture for vehicle related tolling*
- EN ISO 14906, *Road transport and traffic telematics – Electronic fee collection – Application interface definition for dedicated short range communication (ISO 14906:2004)*
- CEN ISO/TS 17575, *Electronic fee collection – Application interface definition for autonomous systems*
- ISO/IEC 7498-1, *Information Technology - Open systems interconnection reference model - Basic reference model - Part 1: The basic model*
- ISO/IEC 10731, *Information technology - Open systems interconnection - Basic Reference Model: Conventions for the definition of OSI services*
- ISO/IEC 8824-1:2000, *Information Technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation*
- EN ISO 14825:2004, *Intelligent transport systems – Geographic Data Files (GDF) – Overall data specification (GDF 4.0)*

3 Terms and definitions

3.1 Definitions in the present standard

3.1.1 Customer (of a Toll Service Provider)

A person or legal entity that uses the service of a Toll Service Provider.

NOTE Depending on the local situation the customer may be the owner, lessor, lessee, keeper, (fleet) operator, holder of the vehicle's registration certificate, driver of the vehicle, or any other third person.

3.1.2

Driver

A person who drives a vehicle.

NOTE The driver is assumed to operate (use / serve) the OBE (e.g. the setting of the number of axles).

3.1.3

EFC domain

An area or part of a road network where a toll regime is applied

3.1.4

EFC Object

A distinguished part of a toll domain for which one or more tariff schema applies.

NOTE A tolled object may be e.g. an area, all public roads within an area, a bridge, a zone, or a stretch of a road (network).

3.1.5

EFC regime

The set of rules, including enforcement rules, governing the collection of toll in a toll domain.

3.1.6

Electronic fee collection (EFC)

Toll charging by electronic means via a wireless interface.

NOTE The actual payment (collection of the fee) may take place outside the toll system.

3.1.7

Enforcement

The process of compelling observance of a law, regulation, etc.

NOTE In this context: the process of compelling observance of a toll regime.

3.1.8

Interoperability

The ability of systems to provide services to and accept services from other systems and to use the services so exchanged to enable them to operate effectively together.

NOTE For tolling interoperability aims at enabling a vehicle to drive through various toll domains while having only one OBE operating under one contract with a Toll Service Provider.

3.1.9

Onboard equipment (OBE)

Equipment fitted within or on the outside of a vehicle and used for toll purposes.

NOTE The OBE does not need to include payment means.