

# SLOVENSKI STANDARD oSIST prEN ISO 12855:2013

01-november-2013

# Elektronsko pobiranje pristojbin - Izmenjava informacij med ponudnikom in operatorjem cestninjenja (ISO/DIS 12855:2013)

Electronic fee collection - Information exchange between service provision and toll charging (ISO/DIS 12855:2013)

Elektronische Gebührenerhebung - Informationsaustausch zwischen Dienstleistern und Gebühreneinzugsunternehmen (ISO/DIS 12855:2013)

Perception du télépéage - Échange d'informations entre la prestation de service et la perception du péage (ISO/DIS 12855:2013)

## Ta slovenski standard je istoveten z: prEN ISO 12855

https://standards.iteh.ai/catalog/standards/sist/0f0b596e-11f2-40f1-9a8e-2af02268973a/sist-en-iso-12855-2016

## <u>ICS:</u>

03.220.20 Cestni transport 35.240.60 Uporabniške rešitve IT v transportu in trgovini

Road transport IT applications in transport and trade

oSIST prEN ISO 12855:2013

en,fr,de

oSIST prEN ISO 12855:2013

# iTeh Standards (https://standards.iteh.ai) Document Preview

SIST EN ISO 12855:2016

# DRAFT INTERNATIONAL STANDARD ISO/DIS 12855

ISO/TC 204

Voting begins on: **2013-08-29** 

Secretariat: ANSI

Voting terminates on: 2014-01-29

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

Perception du télépéage — Échange d'informations entre la prestation de service et la perception du péage

[Revision of first edition (ISO 12855:2012) and ISO 12855:2012/Cor 1:2013]

ICS: 03.220.20;35.240.60

# iTeh Standards (https://standards.iteh.ai) Document Preview

SIST EN ISO 12855:2016

https://standards.iteh.ai/catalog/standards/sist/0f0b596e-11f2-40f1-9a8e-2af02268973a/sist-en-iso-12855-2016

## **ISO/CEN PARALLEL PROCESSING**

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO 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.

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.



Reference number ISO/DIS 12855:2013(E)

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 12855:2013(E)

# iTeh Standards (https://standards.iteh.ai) Document Preview

SIST EN ISO 12855:2016

https://standards.iteh.ai/catalog/standards/sist/0f0b596e-11f2-40f1-9a8e-2af02268973a/sist-en-iso-12855-2016

## **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.

### **Copyright notice**

This ISO document is a working draft or committee draft and is copyright-protected by ISO. While the reproduction of working drafts or committee drafts in any form for use by participants in the ISO standards development process is permitted without prior permission from ISO, neither this document nor any extract from it may be reproduced, stored or transmitted in any form for any other purpose without prior written permission from ISO.

Requests for permission to reproduce this document for the purpose of selling it should be addressed as shown below or to ISO's member body in the country of the requester:

[Indicate the full address, telephone number, fax number, telex number, and electronic mail address, as appropriate, of the Copyright Manager of the ISO member body responsible for the secretariat of the TC or SC within the framework of which the working document has been prepared.]

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

Violators may be prosecuted.

# iTeh Standards (https://standards.iteh.ai) Document Preview

SIST EN ISO 12855:2016

### oSIST prEN ISO 12855:2013

### ISO/WD 12855.2

# Contents

Forewordv	
Introduction vi	
1	Scope1
2	Normative references
3	Terms and definitions3
4	Symbols and abbreviated terms7
5	Architectural concept
6	Computational specification
7	Transfer mechanisms and supporting functions 41
Annex	A (normative) Data type specifications
Annex	B (normative) Implementation Conformance Statement
Annex	C (informative) How to use road network data attributes coded in GDF format
Annex	D (informative) Example enforcement process applying standardized message exchanges 78
Annex	E (informative) Data flow in a toll domain
	F (informative) Dealing with rounding differences
Bibliog	raphy

### SIST EN ISO 12855:2016

# 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.

ISO 12855 was prepared by Technical Committee ISO/TC 204, Intelligent Transport Systems, Subcommittee SC,.

This second edition cancels and replaces the first edition (ISO 12855:2012), clause(s) 5 and 6, figures 1 and 2 and annexes A, B, E, F of which have been technically revised.

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.

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

# Introduction

The widespread use of tolling also requires provisions for users of vehicles that are circulating 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 on-board equipment (OBE) this should be interoperable with the toll systems in the various toll domains. In Europe, for example, this need has been officially recognized and legislation on interoperability has already been adopted (see Directive 2004/52/EC and Decision 2009/750/EC). 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 ISO 17573:2010 is the basis for all standards that relate to tolling systems in the toll domain. From this system architecture standard, other standards have consistently reused

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

ISO 17573:2010 uses ISO/IEC 10746-3 for the description of the architecture.

The following Figure 1 shows the scope of the group of electronic fee collection (EFC) related standards based upon the architecture standard.

# (https://standards.iteh.ai) Document Preview

#### SIST EN ISO 12855:2016



#### Figure 1 — Scope of EFC related standards

A given transport service for a given vehicle is fully identified by one or several toll declarations, made available to the Toll Charger. Toll declarations have to be made available according to the rules of the toll regime of the toll domain.

The amount due for a given transport service used by a vehicle liable to toll is concluded by the Toll Charger (TC) with the use of toll declarations (as described above) and calculation is made according to the rules of the toll regime (formula, tariff tables, specific situations rules, traffic conditions, etc.). That means, the Toll Charger has the authority to decide on the amount due, even if he decides to assign the Toll Service Provider the task to calculate the amount due..

The information above, associated with a given transport service, is named billing details; for a given transport service, the billing details are referring to one or several toll declarations.

Depending on the toll regime, billing details are elaborated with information collected by the Toll Charger and/or the relevant Toll Service Provider (TSP); they are concluded by the Toll Charger.

The Toll Charger elaborates and makes the payment claims (or toll payment claims) available to each Toll Service Provider, according to the bilateral agreements it has with each Toll Service Provider, referring to billing details. These payment claims include an amount due taking into account any specific commercial conditions applicable to a vehicle, a fleet of vehicles or a given Toll Service Provider.

This International Standard identifies and specifies the set of messages exchanged between two actors in the roles of Toll Service Provider and Toll Charger as defined in ISO 17573:2010. To specify these interfaces, this International Standard uses the enterprise description of the toll environment, and the interactions defined

between the named classes of roles, as defined in ISO 17573:2010. 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 Standards (https://standards.iteh.ai) Document Preview

SIST EN ISO 12855:2016

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

#### 1 Scope

This International Standard specifies

- the interfaces between electronic fee collection (EFC) systems for vehicle related transport services, e.g. road user charging, parking and access control; it does not cover interfaces for EFC systems for public transport; an EFC system can include any EFC system, e.g. also systems automatically reading licence plate numbers of vehicles passing a toll point;
- an exchange of information between the central equipment of the two roles of service provision and toll charging, e.g.
  - charging related data (toll declarations, billing details),
  - administrative data, and
  - confirmation data: //standards.ite
- transfer mechanisms and supporting functions;
- information objects, data syntax and semantics;

https://s\_\_\_\_dexamples of data interchanges (see Annexes C, D and E).

This International Standard supports any toll service and any technology used for charging.

It is defined as a toolbox standard of transactions and messages which can be used for the assigned purpose. The detailed definitions of mandatory and optional elements in a real implementation are defined elsewhere. It does not define all communication sequences, communication stacks and timings.

The scope of this International Standard is illustrated in Figure 2. The data types and associated coding related to the data elements described in Clause 6 are defined in Annex A, using the abstract syntax notation one (ASN.1) according to ISO/IEC 8824-1.



#### Figure 2 — Scope of this International Standard

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

The processes regarding the payments and exchanges of fiscal, commercial or legal accounting documents are outside the scope of this International Standard.

The definitions of service communication channels, protocols and service primitive to actually transfer the messages are outside the scope of this International Standard.

https://standards.iteh.ai/catalog/standards/sist/0f0b596e-11f2-40f1-9a8e-2af02268973a/sist-en-iso-12855-2016

### 2 Normative references

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

ISO 17573:2010, Electronic fee collection — System architecture for vehicle-related tolling

ISO 14816:2005, Road transport and traffic telematics -- Automatic vehicle and equipment identification -- Numbering and data structure

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

ISO/TS 17575-1:2010, Electronic fee collection — Application interface definition for autonomous systems — Part 1: Charging

ISO/TS 17575-3:2011, Electronic fee collection — Application interface definition for autonomous systems — Part 3: Context data

ISO/TS 17575-4:2011, Electronic fee collection — Application interface definition for autonomous systems — Part 4: Roaming

ISO/IEC 9646-7, Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 7: Implementation Conformance Statements

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

ISO/IEC 8825-4, Information technology — ASN.1 encoding rules: XML Encoding Rules (XER)

ISO 639-1, Codes for the representation of names of languages — Part 1: Alpha-2 code

### 3 Terms and definitions

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

#### 3.1

#### billing detail

for a given transport service, all necessary data required to determine and/or verify the amount due for the service user

NOTE 1 If the data is accepted by both the Toll Charger and the Toll Service Provider then it is called a concluded billing detail which can be used to issue a payment claim.

NOTE 2 For a given transport service, the billing detail is referring to one or several valid toll declaration(s). A valid billing detail has to fulfil formal requirements, including security requirements, agreed between the Toll Service Provider and the Toll Charger.

#### 3.2

#### charge report

data structure transmitted from the front end to the Back End to report road usage data and supplementary related information

NOTE In 2009/750/EC charge report is referred to as "toll declaration".

<u>SIST EN ISO 12855:2016</u>

://s3.3dards.iteh.ai/catalog/standards/sist/0f0b596e-11f2-40f1-9a8e-2af02268973a/sist-en-iso-12855-2016 charging data

toll relevant data produced by the on-board equipment and sent to the Toll Service Provider's back-office systems

#### 3.4

#### computational specification

decomposition of a system into objects performing individual functions and interacting at well defined interfaces

#### 3.5

#### context data

information defined by the responsible Toll Charger necessary to establish the toll due for circulating a vehicle on a particular toll domain and to conclude the toll transaction

[ISO 17573:2010, definition 3.1]

#### 3.6

#### customer

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

[ISO 17573:2010, definition 3.2]

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

### ISO/WD 12855.2

#### 3.7

driver

person who drives a vehicle

[ISO 17573:2010, definition 3.3]

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

#### 3.8

### electronic fee collection

EFC

toll charging by electronic means via a wireless interface

NOTE 1 Adapted from ISO 17573:2010, definition 3.4.

NOTE 2 The actual payment (collection of the fee) may take place outside the toll system.

#### 3.9

#### enforcement

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

[ISO 17573:2010, definition 3.5]

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

#### 3.10

#### interface

# **iTeh Standards**

abstraction of the behaviour of an object that consists of a subset of the interactions of that object together with a set of constraints on when they may occur

[ISO/IEC 10746-2]

**Document Preview** 

#### 3.11

#### interoperability

### SIST EN ISO 12855:2016

ability of systems to provide services to, and accept services from, other systems and to use the services so 5-2016 exchanged to enable them to operate effectively together

[ISO 17573:2010, definition 3.7]

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

#### 3.12

# on-board equipment OBE

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

[ISO 17573:2010, definition 3.9]

NOTE The OBE does not need to include payment means.

#### 3.13

#### one(s) liable for toll

person(s) or legal entities liable to pay toll under the operation of a toll regime

[ISO 17573:2010, definition 3.10]

NOTE A toll regime can designate more than one person to be (jointly and severally) liable for paying the toll.