SLOVENSKI STANDARD
SIST-TS CEN ISO/TS 16403-1:2012

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Elektronsko pobiranje pristojbin - Ugotavljanje skladnosti opreme s tehnično specifikacijo ISO/TS 17575-4 - 1. del: Zgradba preskuševalnega niza in namen preskušanja (ISO 16403-1:2012)

Electronic fee collection - Evaluation of equipment for conformity to ISO/TS 17575-4 - Part 1: Test suite structure and test purposes (ISO 16403-1:2012)

Elektronische Gebührenerhebung - Konformitätsevaluierung von Einrichtungen nach CEN ISO/TS 17575-4 - Teil 1: Prüfreihen Struktur und Prüfabsichten (ISO 16403-1:2012)

Perception du télépéage - Évaluation de conformité de l'équipement à l'ISO/TS 17575-4 - Partie 1: Structure de la suite d'essais et objectif d'essai (ISO 16403-1:2012)

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TECHNICAL SPECIFICATION

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CEN ISO/TS 16403-1

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English Version

Electronic fee collection - Evaluation of equipment for conformity to ISO/TS 17575-4 - Part 1: Test suite structure and test purposes (ISO 16403-1:2012)

Perception du télépéage - Évaluation de conformité de l'équipement à l'ISO/TS 17575-4 - Partie 1: Structure de la suite d'essais et objectif d'essai (ISO 16403-1:2012)

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This Technical Specification (CEN/TS) was approved by CEN on 30 January 2012 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.

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CEN ISO/TS 16403-1:2012 (E)

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Foreword

This document (CEN ISO/TS 16403-1:2012) 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".

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.

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TECHNICAL SPECIFICATION

ISO/TS 16403-1

Electronic fee collection — Evaluation of equipment for conformity to ISO/TS 17575-4 —

Part 1:
Test suite structure and test purposes

Perception du télépéage — Évaluation de conformité de l'équipement à l'ISO/TS 17575-4 —

Partie 1: Structure de la suite d'essais et objectif d'essai

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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.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of document:

— an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;

— an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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/TS 16403-1 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*, in collaboration with Technical Committee CEN/TC 278, *Road transport and traffic telematics*.

ISO/TS 16403 consists of the following parts, under the general title *Electronic fee collection — Evaluation of equipment for conformity to ISO/TS 17575-4*:

— *Part 1: Test suite structure and test purposes*

— *Part 2: Abstract test suite*

Introduction

This part of ISO/TS 16403 is part of a set of standards that supports interoperability of autonomous EFC-systems, which includes ISO/TS 17575 that defines the EFC context data, their charge reports and their use of communication infrastructure.

Within the suite of EFC standards this conformance evaluation procedure defines the process and tests for conformity evaluation of Front End and Back End that comply with the requirements in ISO/TS 17575-4.

This part of ISO/TS 16403 is intended to

— assess Front End and Back End capabilities,

— assess Front End and Back End behaviour,

— serve as a guide for Front End and Back End conformance evaluation and type approval,

— achieve comparability between the results of the corresponding tests applied in different places at different times, and

— facilitate communications between parties.

This part of ISO/TS 16403 is based on ISO/TS 17575-4.

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TECHNICAL SPECIFICATION   **ISO/TS 16403-1:2012(E)**

Electronic fee collection — Evaluation of equipment for conformity to ISO/TS 17575-4 —

Part 1:
Test suite structure and test purposes

1 Scope

This part of ISO/TS 16403 specifies the test suite structure (TSS) and test purposes (TP) to evaluate the conformity of Front End and Back End to ISO/TS 17575-4.

The objective of the present document is to provide a basis for conformance tests for the Front End and the Back End in Electronic Fee Collection based on autonomous on-board equipment (OBE) to enable interoperability between different equipment supplied by different manufacturers.

Autonomous OBE operate without relying on dedicated road-side infrastructure by employing wide-area technologies such as Global Navigation Satellite Systems (GNSS) and Cellular Communications Networks (CN). These EFC systems are referred to by a variety of names. Besides the terms autonomous systems and GNSS/CN systems, also the terms GPS/GSM systems, and wide-area charging systems are in use.

Autonomous systems use satellite positioning, often combined with additional sensor technologies such as gyroscopes, odometers, and accelerometers, to localise the vehicle and to find its position on a map containing the charged geographic objects, such as charged roads or charged areas. From the charged objects, the vehicle characteristics, the time of day and other data that are relevant for describing road use, the tariff and ultimately the road usage fee is determined.

Test Purposes applicable for the Back End focus on the output produced by the Back End, i.e. Roaming Rules data element. Test Purposes related to Front End focus on the main scenarios defined in ISO/TS 17575-4 6.2.4. To verify the Front End behaviour it is needed to observe Charge Reports which are defined in ISO/TS 17575-1.

The dependencies between Context Data (defined in ISO/TS 17575-3), Charge Report (defined in ISO/TS 17575-1) and Roaming (defined in ISO/TS 17575-4) to support a particular pricing scheme scenario are outside of the scope of this part of ISO/TS 16403.

As ISO/TS 17575-4 does not specify any invalid behaviour of Front End and Back End, BI test purposes are not applicable for any Test Purpose group.

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 14906, *Electronic fee collection — Application interface definition for dedicated short-range communication*

ISO 17573, *Electronic fee collection — Systems architecture for vehicle-related tolling*

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

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

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 17573, ISO/TS 17575-1 and the following apply.

3.1
contract
expression of an agreement between two or more parties concerning the use of the road infrastructure

NOTE   A contract specifies obligations, permissions and prohibitions for the objects involved.

[ISO 14906:2011, definition 3.7]

3.2
service provider
operator that accepts the user's payment means and in return provides a road-use service to the user

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NOTE   Taken from ISO 14906:2004.

3.3
toll charger
legal entity charging toll for vehicles in a toll domain

[ISO/TS 17574:2009, definition 3.27]

4 Abbreviations

For the purposes of this document, the following abbreviations apply, unless otherwise specified.

ADU	Application Data Unit
ASN.1	Abstract Syntax Notation One
ATS	Abstract Test Suite
BI	Invalid Behaviour
BV	Valid Behaviour
CCC	Compliance Check Communication
CN	Cellular Network
DUT	Device Under Tests
EFC	Electronic Fee Collection
GNSS	Global Navigation Satellite Systems
HMI	Human Machine Interface

ID   Identifier

OBE   On-Board Equipment

PCTR   Protocol Conformance Test Report

PICS   Protocol Implementation Conformance Statements

TP   Test Purposes

TSS   Test Suite Structure

VAT   Value Added Tax

5 Test Suite Structure (TSS)

5.1 Structure

Table 1 — Test Suite Structures shows the Test Suite Structure (TSS).

Table 1 — Test Suite Structures

Group	Type of DUT	Behaviour
General	Front End	Valid Behaviour
		Invalid Behaviour not applicable
	Back End	Valid Behaviour
		Invalid Behaviour not applicable
Combined Charge Report	Front End	Valid Behaviour
		Invalid Behaviour not applicable
Relevant EFC Contexts	Front End	Valid Behaviour
		Invalid Behaviour not applicable
Data Elements	Back End	Valid Behaviour
		Invalid Behaviour not applicable

5.2 Reference to conformance test specifications

This document takes into account already defined test purposes for conformance to the base standards by referencing them, so that:

a) For test purposes that are **identical** to those defined in this specification or the base standards conformance test cases direct reference is reported. For reader's convenience, the title or a verbal description of the referenced test purpose is given, together with the reference.