



SLOVENSKI STANDARD

SIST EN 12896-5:2026

01-oktober-2026

Nadomešča:
SIST EN 12896-5:2019

Javni prevoz - Referenčni podatkovni model - 5. del: Upravljanje voznin

Public transport - Reference data model - Part 5: Fare management

Öffentlicher Verkehr - Referenzdatenmodell - Teil 5: Fahrgeldmanagement

Transports publics - Modèle de données de référence - Partie 5 : gestion tarifaire

Ta slovenski standard je istoveten z: EN 12896-5:2026

get full document from standards.iteh.ai

ICS:

35.240.60	Uporabniške rešitve IT v prometu	IT applications in transport
-----------	----------------------------------	------------------------------

SIST EN 12896-5:2026

en,fr,de

Sample Document

get full document from standards.iteh.ai

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12896-5

July 2026

ICS 35.240.60

Supersedes EN 12896-5:2019

English Version

**Public transport - Reference data model - Part 5: Fare
management**

Transports publics - Modèle de données de référence -
Partie 5 : gestion tarifaire

Öffentlicher Verkehr - Referenzdatenmodell - Teil 5:
Fahrgeldmanagement

This European Standard was approved by CEN on 15 April 2026.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists 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-CENELEC Management Centre has the same status as the official versions.

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

get full document from standards.iteh.ai



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2026 CEN All rights of exploitation in any form and by any means reserved
worldwide for CEN national Members.

Ref. No. EN 12896-5:2026 E

Contents

Page

European foreword.....	5
1 Scope.....	7
2 Normative references.....	8
3 Terms, definitions, Symbols and Abbreviations.....	8
3.1 Terms and definitions.....	8
3.2 Symbols and Abbreviations.....	14
4 General information.....	14
5 Public Transport Fare Management Domain.....	15
5.1 Scope & Overview.....	15
5.1.1 Functional Domains of a Fare Model.....	15
5.1.2 Variety and Complexity of Fare Systems.....	16
5.1.3 Impact of Control and Validation Technologies.....	17
5.1.4 Ticketing Paradigms: Account Based Ticketing & Media Centric Ticketing.....	17
5.1.5 Interoperability.....	18
5.1.6 Abstract Modelling.....	18
5.1.7 Modelling Approach - Access Rights.....	18
5.1.8 Possible Simplifications for Implementations.....	20
5.1.9 Further Evolution of Fare Systems.....	20
5.1.10 Use of Fare Data in Passenger Information services.....	21
5.2 Fundamental Concepts.....	21
5.2.1 Access Rights.....	21
5.2.2 Access Rights Specification.....	21
5.2.3 Fare Products.....	22
5.2.4 Sales Offer Packages.....	22
5.2.5 Overview on Access Rights Levels, Parameter Types and Associated Concepts.....	22
5.2.6 Customers and Contracts.....	24
5.2.7 Travel Documents, Customers, Contracts and Sales Offer Packages.....	24
5.2.8 Distribution and Fulfilment.....	25
5.2.9 Sales Transactions.....	26
5.2.10 Prices.....	27
5.2.11 Consumption Control.....	28
5.2.12 Sales and Validation Entries.....	29
5.2.13 Revenue protection measures.....	30
5.2.14 Roles.....	30
5.2.15 Specification, Sales and Validation data sets.....	31
5.3 Use Cases for the Fare Model.....	34
5.3.1 General.....	34
5.3.2 Business context.....	34
5.3.3 Actors and use case types.....	38
5.3.4 Use Cases.....	40
6 Conceptual Model for Fares.....	42
6.1 Organisation of the Conceptual Model.....	42
6.2 Extensions to the Network Model for fares.....	43
6.2.1 General.....	43
6.2.2 Fare Zone – Conceptual Model.....	43
6.3 Fare Structure.....	49

6.3.1	General	49
6.3.2	Fare Structure Model & Sub-models	49
6.3.3	Common Fare Structure	51
6.3.4	Geographical Fare Structure	52
6.3.5	Time Fare Structure	56
6.3.6	Quality Fare Structure	57
6.3.7	Fare Structure Element	59
6.3.8	Validable & Controllable Elements Validable Element	66
6.4	Access Right Assignment	70
6.4.1	Principles	70
6.4.2	Fare Product	95
6.5	Fare Pricing	106
6.5.1	Principles	106
6.5.2	Fare Calculation Parameters	106
6.5.3	Fare Price	107
6.5.4	Price Derivation	110
6.5.5	Price Groups	111
6.5.6	Fare Table	112
6.6	Sales Description	116
6.6.1	Sales Offer Package	116
6.6.2	Sales Offer Entitlements	118
6.6.3	Fare Sales Distribution	119
6.6.4	Type of Travel Document	120
6.6.5	Medium Access Device and Medium Application Instance	122
6.6.6	Example - Sales Descriptions	123
6.7	Customers and Sales Transactions	126
6.7.1	General	126
6.7.2	Sales Transaction – Model & Sub-models	126
6.7.3	Fare Contracts	127
6.7.4	Retail Consortiums	132
6.7.5	Sale Transactions	134
6.7.6	Fare Contract Events	140
6.8	Fare Roles	153
6.8.1	Fare Management Roles	153
6.8.2	Fare Technology Roles	154
6.8.3	Fare Transport Customer Roles	155
6.8.4	Fare Product Roles specific to Fare Management	156
6.8.5	Service Organisation Roles that are relevant for Fare Management	157
6.8.6	Administrative organisation roles that are specific for Fare Management	158
6.8.7	Technology provider roles that are involved in Fare Management	159
6.8.8	Summary of Fare Roles	161
6.9	Control and Validation	163
6.9.1	Control Means	163
6.9.2	Elementary Controls	164
6.9.3	Validation	165
6.9.4	Validation and Control Events	170
6.9.5	Access Right Control Roles	176
6.9.6	Summary of Events & Entries	177
6.9.7	Other Output	179
6.10	Additional Topics	180
6.10.1	Fare Version	180
6.10.2	Information on Fares	180
6.10.3	Modularisation & Package dependencies	181
6.10.4	Explicit Frames	182

EN 12896-5:2026 (E)

6.10.5 Fare Frame.....	182
6.10.6 Fare Price Frame	183
6.10.7 Sales Transaction Frame	184
Annex A (normative) Data dictionary.....	186
Annex B (informative) Data Model Evolution	286
Annex C (informative) Significant technical changes between this document and the previous edition.....	289
Bibliography.....	290

Sample Document

get full document from standards.iteh.ai

European foreword

This document (EN 12896-5:2026) has been prepared by 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 January 2027, and conflicting national standards shall be withdrawn at the latest by January 2027.

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 supersedes EN 12896-5:2019.

This document is part of the European standard EN 12896, known as “Transmodel”. This European standard is a series of documents that comprises of the following ones:

- EN 12896-1 Public transport - Reference data model - Part 1: Common concepts,
- EN 12896-2 Public transport - Reference data model - Part 2: Public transport network,
- EN 12896-3 Public transport - Reference data model - Part 3: Timing information and vehicle scheduling,
- EN 12896-4 Public transport - Reference data model - Part 4: Operations monitoring and control,
- EN 12896-5 Public transport - Reference data model - Part 5: Fare management,
- EN 12896-6 Public transport - Reference Data model - Part 6: Passenger information,
- EN 12896-7 Public transport - Reference data model - Part 7: Driver management,
- EN 12896-8 Public transport - Reference data model - Part 8: Management information and statistics,
- EN 12896-10 Public transport – Reference data model – Part 10: Alternative modes.

Together these documents create Transmodel version 6.2 and thus replace Transmodel V6.0.

In addition to the nine normative Parts of this European Standard, a Technical Report (Public Transport – Reference Data Model – Informative Documentation) was published in 2016 under the reference CEN/TR 12896-9. It provides additional information to help those implementing projects involving the use of Transmodel. It is intended that this Technical Report will be extended and republished as soon as all the normative parts are revised.

The split into several documents is intended to ease the task of users interested in particular functional domains. It corresponds to the modularisation of Transmodel into functionally related parts, each made up of distinct UML packages and subpackages that describe a particular aspect of public transport. The NeTEx UML model follows the same modularisation, allowing a direct mapping from the conceptual model to the implementation

Annex C provides details of the significant technical changes between this document and EN 12896-5:2019.

EN 12896-5:2026 (E)

For information on the conventions, methodology and notations for conceptual modelling, for a clear overview to help understand the core principles, structure and purpose of Transmodel, and for information on the Functional domains and Modes of operation, refer to EN 12896-1.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Sample Document

get full document from standards.iteh.ai

1 Scope

This document entitled “Public transport – Reference data model – Part 5: Fare Management” is composed of the following data packages:

- Fare Structure;
- Access Right Assignment;
- Fare Pricing;
- Sales Description;
- Sales Transaction;
- Fare Roles;
- Validation and Control;
- Explicit Frames for Fares.

This document itself is composed of the following parts:

- Main document representing the data model for the concepts shared by the different domains covered by Transmodel (normative);
- Annex A, containing the data dictionary and attribute tables, i.e., the list of all the concepts presented in the main document together with the definitions (normative);
- Annex B, presenting the model evolution (informative).
- Annex C, providing details of the significant technical changes between this document and EN 12896-5:2019 (informative)

EN 12896-5:2026 (E)

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 12896-1, *Public transport – Reference data model – Part 1: Common concepts*

3 Terms, definitions, Symbols and Abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12896-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

NOTE The following terms specific to the fares domain are used. Terms which are also data entity names are defined in the data dictionary in Annex A and are mostly not repeated here.

3.1.1

access right

right to consume a Public Transport service or other service provided along with the transport

3.1.2

account based ticketing

fare collection paradigm which manages ticket issuing and validation through individual customer accounts held online and controlled by means of a token used on paper or electronic materialisations of a travel document

3.1.3

activation

triggering of the use of access rights and initiation of consumption

3.1.4

absolute price

price that is stated as a fixed currency amount regardless of whether it is a base price or notionally derived from another base price according to some pricing rule.

3.1.5

anonymous customer

CUSTOMER whose identity is not visible from their TRAVEL DOCUMENT, but who may be nevertheless be a registered customer using an anonymous token, in contrast to an impersonal customer, of whom the service operator has no individual knowledge

3.1.6**automated fare collection system**

fare collection system capable of automatically determining which products the customer must purchase according to the travel he consumes

3.1.7**base price**

price that is provided as a fixed absolute amount and from which other prices may be derived

3.1.8**blacklist**

revenue protection mechanism taking the form of a security list identifying travel documents, media, etc. for which the validity has been cancelled temporarily (denial) or permanently (refusal) and which will be used to block access to services for customers bearing documents associated with items on the list

3.1.9**booking**

placing of a reservation to use a specific transport service, but not necessarily entailing a purchase of a ticket

3.1.10**cancellation**

marking of a TRAVEL DOCUMENT as having been used

3.1.11**capping**

setting of an upper limit on the price of the consumption of access rights within a certain period

3.1.12**card centric**

form of media centric ticketing where the media is a smart card

3.1.3**classical ticketing**

non-electronic fare management and ticketing using paper and passive media travel documents, usually for a single operator and for simple products such as single tips, return trips or period passes.

3.1.14**consumption**

using up of access right by a transport customer as a result of travel

3.1.15**control**

checking of a passenger's entitlement to consume access rights, involving identification of the traveller and/or the travel rights

3.1.16**credentials**

data or other mechanisms used to authenticate an actor to a system as a legitimate participant

EN 12896-5:2026 (E)**3.1.17****derived price**

price that can be computed from another base price using pricing parameters and a pricing rule

3.1.18**distributor**

party who sells products on behalf of other product owners

3.1.19**dynamic price**

price that is fetched at run time from a pricing engine as opposed to a static or derived price

3.1.20**easement**

change to the normal access rights given to passengers because of a disruption to the network

3.1.21**embargo date**

date before which information about a price or product is not to be released to the public

3.1.22**entry**

record of an interaction with the system performed by an agent such as a CUSTOMER or ORGANISATION

3.1.23**event**

any event, occurring on an OPERATING DAY and recorded in the system as some form of LOG ENTRY, having some consequences on entities

3.1.23**fare**

<customer perspective> amount that a customer has to pay for a journey or for acquiring a specific fare product

3.1.24**fare set**

particular version of all aspects of the fare structure, i.e., of the rules and associated parameter values, also called a 'tariff'

3.1.25**fare structure**

set of parameters that determine the basic tariffs

3.1.26**fare token**

materialisation of a travel document, i.e. ticket, as an anonymous physical object, such as a coin-like object that is captured at validation and subsequently reused, or an ephemeral paper representation that is cancelled

3.1.27**flat fare**

fare that does not increase in proportion to distance or other measure of consumption (and so typically cannot be derived by calculation)

3.1.28**fulfilment**

delivery of a TRAVEL DOCUMENT to the customer once it has been ordered or purchased

3.1.29**graduated fare**

type of progressive fare that increases in proportion to consumption, where the increase is based in a distance increment

3.1.30**identity token**

secure, machine-readable instantiation in media of an identity

3.1.31**impersonal customer**

CUSTOMER whose identity is not known in any way to the operator, for example the purchaser of a paper metro ticket

3.1.32**Interlining trip**

customer trip made using a single medium and/or fare product that starts in one PT network and ends in another, in contrast to a local trip or a roaming trip

3.1.33**interoperable fare management system**

fare system which is interoperable with other fare systems, possessing all the functions involved in the fare management process such as management of application, products, security and certification, registration, and identification to enable customers to travel with participating service operators using a single portable electronic medium

3.1.34**inventory controlled product**

FARE PRODUCT whose supply is constrained by the service provider, such that only a set quota of capacity is available on a given journey

3.1.35**local trip**

trip made entirely within the home network of a fare product

3.1.36**local use fare product**

fare product which can only be used on the operator's own network, in contrast to a roaming product

EN 12896-5:2026 (E)**3.1.37****marking**

stamping or defacing a travel document to indicate that it has been activated and its rights consumed or partially consumed

3.1.38**media**

physical support containing a machine readable/writable data/processor application, such as transport industry smartcards, payment industry contactless cards, public sector issued cards, mobile phones or paper (for barcodes), new formats such as watches and key fobs, plus NFC mobile

3.1.39**media centric ticketing**

ticketing paradigm under which the product sold is held entirely on some form of local media and any validation and charging is done immediately against the card's contents

3.1.40**pay as you go**

type of reusable fare product giving the right to travel where the user is charged for access rights at the point of consumption or sometime after completing consumption

3.1.41**post-paid ticketing**

type of fare management according to which the user is charged at some time after using the transport service

3.1.42**prepaid ticketing**

type of fare management according to which the user is charged for either a fare product (ticket) or a deposit prior to riding

3.1.43**price**

value of fare or tariff

3.1.44**progressive fare**

fare that increases in proportion to consumption of space and/or time

3.1.45**registration**

enrolment of a customer as a user of a fare system

3.1.46**retailer**

actor who sells products directly to the end customer (as opposed to a distributor)

3.1.47**roaming fare product**

fare product that is issued by one operator but valid on the network of another operator (in contrast to a local product)

3.1.48**roaming trip**

customer trip using a single medium and/or fare product from one operator made entirely inside another operator's PT network, in contrast to a local trip or an interlining

3.1.49**static price**

price that is precomputed and explicitly distributed, as opposed to a derived or dynamic price.

3.1.50**status of consumption**

status indicating whether a given access right included in a customer purchase has been activated, consumed, etc.

3.1.51**tap**

industry term for the record of a customer's interaction with the system that may be collected for interoperable fare management including, in particular, any sort of VALIDATION ENTRY returned with specific data from validation devices to the back office in an Account Based System

3.1.52**tap in / out**

process of using a mobile device or EMV card to interact with a NFC wireless validation device to check in or out (or at a waypoint) of a fare control system.

3.1.53**usage-based product**

FARE PRODUCT where the calculation of price is made after travel according to the amount of travel consumed

3.1.54**validation**

verification that an access right is valid, has been or is being consumed, and that this consumption is allowed, achieved by checking the validity of the passenger's travel rights and comparing them to the parameters collected by the previous inspections and/or inspection context

3.1.55**waypoint**

intermediate point along a route that a user making a trip may tap in at in order to prove that they followed a particular routing