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Javni prevoz - Referenčni podatkovni model - 6. del: Informiranje potnikov

Public transport - Reference data model - Part 6: Passenger information

Öffentlicher Verkehr - Referenzdatenmodell - Teil 6: Information an Reisende

Transports publics - Modèle de données de référence - Partie 6 : Information des usagers

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English Version

Public transport - Reference data model - Part 6: Passenger information

Transports publics - Modèle de données de référence - Partie 6 : Information des usagers

Öffentlicher Verkehr - Referenzdatenmodell - Teil 6: Information an Reisende

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

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 12896-6:2026) 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of an identical text or by endorsement, at the latest by January 2027 and conflicting national standards shall be withdrawn at the latest by January 2027.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 12896-6:2019.

Annex C provides details of the significant technical changes between this document and EN 12896-6:2019.

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

— 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.

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 organizations 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.

1 Scope

The document incorporates the following main data packages:

— Trip Description;

— Passenger Information Queries.

It is composed of the following parts:

— main document representing the data model for the concepts shared by the different fare 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 12896-6:2019 (informative).

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 12896-1:2016, *Public transport — Reference data model — Part 1: Common concepts*

3 Terms, definitions 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 terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp/

— IEC Electropedia: available at http://www.electropedia.org/

3.1.1
API
application programming interface, usually used to exchange public transportation data between passenger information services

3.1.2
attribute
property of an entity

3.1.3
conceptual data model
description of a real-world domain in terms of entities, relationships and attributes, in an implementation independent manner, which should provide a structure on which the rest of the development of an application system can be based

3.1.4
conceptual level
conceptual data model in the context of data modelling

3.1.5
database
collection of data; often used in the sense of the physical implementation of a data model

3.1.6
data domain
data structure (in this document, a part of the reference data model for public transport) made up of data related to each other, through the fact that there is a functional area or group of functions using this data set as a whole

3.1.7
data model
description of a real-world domain in terms of data and relationships

3.1.8
entity
object (data) that has its own existence (as opposed to an attribute)

3.1.9
fare management
all activities related to the collection of money from passengers

3.1.10
function
activity or, in this document, sub-activity of a functional area

3.1.11
functional area
arbitrarily defined set of activities used, in this document, to define the objectives and limits of the data model

3.1.12
geographical data files
GDF
standard defining the contents and format of geographical data files, used for the description, classification and encoding of road networks and road environment features

3.1.13
GDF database
database containing geographical information on the road network in a particular application area, possibly including information on the location of public transport points, links and services (routes)

3.1.14
interoperability
ability of (sub)systems to interact with other (sub)systems according to a set of predefined rules (interface)

3.1.15
logical data model
data design that takes into account the type of database to be used, but does not consider means of utilization of space or access

3.1.16
logical denormalized model
relational data model that is not fully normalized, i.e. does not completely follow the normalization rules and thus may be redundant

3.1.17
logical level
logical data model in the context of data modelling

3.1.18
management information
all activities allowing the company management to collect the information necessary to meet problem-solving needs

3.1.19
object-oriented data model
data structure expressed according to principles that allow for a direct implementation as an object-oriented database, where information is represented in form of objects, i.e. respecting the principle of encapsulation meaning in particular that each data is accessed or modified through operations (methods) belonging to it

3.1.20
operations monitoring and control
real-time control
all activities related to the transportation process, i.e. real-time functions related to the driving and transportation of passengers according to given instructions, including the monitoring of the driving process and its control in case of deviations, as well as all activities that support the driving process (traffic light priority, track switching, bay selection, advance/delay advice, etc.)

Note 1 to entry: Such functions are often assisted by computer-aided tools, known as Automated Vehicle Monitoring (AVM).

3.1.21
planned and actual services
public transportation services are planned in advance, but can be changed before or during the actual service is in operation

3.1.22
passenger information
all activities related to informing the users either about the planned or about the actual transportation services

3.1.23
personnel disposition
all activities related to the mid-term and short-term management of drivers

3.1.24
relational data model
type of logical data model giving the information as series of tables (relations) and attributes

3.1.25
tactical planning
scheduling
all activities related to the tactical planning of transportation, split into vehicle scheduling, driver scheduling, rostering

Note 1 to entry: The following terms specific to the passenger information domain are used. Terms which are also data entity names are defined in the data dictionary in Annex A and are not repeated here.

3.1.26
distributed journey planner
trip planner that computes its results by delegating planning to other systems for those parts of the trip covering specific areas or modes

3.1.27
exchange point
agreed handover point for linking distributed journey planning systems

3.1.28
observer
someone who looks at Passenger Information

3.1.29
repeated trip
same trip made over the same route multiple times, for example to commute to work or school

3.1.30
single journey
planned movement of a vehicle from a start point to an end point in a journey on a specified route

3.1.31
single trip
trip that goes direct from an origin to a destination without breaks in the journey

3.1.32
text to speech
automatic generation of speech from a textual representation

3.1.33
trip repair
activity of looking for travel advice regarding a specific trip in order to recover from a disruption to services

3.1.34
travel
sequence of passenger trips

3.1.35
ride
passenger performing a trip while riding any public transport vehicle

3.1.36
connection
passenger movement while transferring from one to another public transport service

3.1.37
monitoring
recording of a public transport operational data, usually in real-time, for operational statistics and better passenger experience

3.1.38
wait time
time duration a vehicle waits for passengers at a stop point

3.1.39
run time
travel duration between two stop points

3.1.40
interchange time
time for a passenger to transfer between two public transport services

3.1.41
call
real-time notice for a passenger that individual vehicle is arriving or departing a stop point

3.2 Abbreviations

ABT	Account Based Ticketing
API	Application Program Interface
AVM	Automated Vehicle Monitoring
DJP	Distributed Journey Planner
FQ	Fare Query
GIS	Geographic Information System
GTFS	General (sometimes “Google”) Transit Feed Specification
IFM	Interoperable Fare Management
FM	Fare Management
IFOPT	Identification of Fixed Objects in Public Transport
ISO	International Organization for Standardization
IT	Information Technology
NeTEx	Network and Timetable Exchange
NFC	Near Field Communication
OADJP	Open API for Distributed Journey Planner
PI	Passenger Information
PT	Public Transport
QR	Query Request
TD	Trip Description

TTS	Text to Speech
SIRI	Service Interface for Real-time Information
UML	Unified Modelling Language
URL	Universal Resource Locator
WGS	World Geodetic Standard

4 General information

The following standards are based on the Transmodel conceptual data model for public transport domain to provide a harmonized, interoperable, and consistent approach for public transport data, service interfaces, and journey planning across Europe:

— EN 15531 series [10] to [16] – Service interfaces for real-time public transport operations.

— CEN/TS 16614 series (NeTEx) [17] to [22] – Network and timetable data exchange, including passenger information and accessibility.

— CEN/TS 17118 [23] – Open API for distributed journey planning.

5 Passenger information domain

5.1 General overview

The passenger information part of Transmodel describes the data which are presented to passengers by applications that can interact with passengers. This covers both data on the planned and actual services, but also data resulting from the operations monitoring and control processes which may result in service modifications.

Classically, passenger information was published as printed timetables or shown on electromechanical boards in stations. Earlier generations of electronic displays were typically available only in stations using localized systems.

Modern passenger information systems are generally provided through service interfaces that access online data and may be used anywhere with internet enabled devices such as mobile phones.

Applications providing data to passengers typically use an optimized API to fetch the data from a back-end system. The standard does not aim to define an actual API for such services, but rather to provide a mapping that shows how the data elements of the reference model relate to the different possible types of passenger information service.

Two other European Standards provide concrete API's:

— SIRI (*Server Interface for Real Time Information* - EN 15531-1, EN 15531-2, EN 15531-3, CEN/TS 15531-4 and CEN/TS 15531-5), which provides real-time status information; and

— OADJP (*Open API for Distributed Journey Planning* - CEN/TS 17118) describes stop place finding, trip planning, schedule, and related APIs, and thus enables linking of distributed journey planning services.

All of the following are relevant for delivering passenger information:

— passenger information facilities and their utilization for passenger queries;

— detailed descriptions of all the conceptual components of a passenger *trip*, as possibly needed by an interactive passenger information system when answering a PI REQUEST;

— basic definitions of run times and wait times needed to calculate trip duration;

— planned, predicted, and actual passing times of journeys at individual stops;

— service modifications decided by the schedulers or the control staff, resulting in changes of the vehicle journeys and blocks, compared to the original plan;

— fare structures, fare products and prices along with distribution and fulfilment options;

— vehicle types, deck plans and seating layouts for vehicles.

Most types of passenger information make use of many underlying elements from the topological network definition, such as the lines and journeys which form the service offer, the definition of run and wait times, and other fundamental definitions. Geographical information may possibly be provided in some cases if corresponding application systems are available, for example, to show the route of a bus. Specific types of passenger queries may be related to fares, where the relevant information elements are included in the fare collection sub-model of the reference data model.

Thus, the information basis for passenger information systems is widely spread over the whole reference data model, and the genuine passenger information data model covers only those elements which cannot be derived from, and are not explicitly included in, other parts of the model. It is also useful to indicate how such data may be assembled into specific services corresponding to commonly made passenger queries.

5.2 Passenger information

5.2.1 Provision of information

5.2.1.1 General

In early generations of information systems used for public transport, the passenger information functions were often designed as sub-functions of other systems. For instance, printed timetables were simply an end product of the scheduling process, dynamic displays at stop points were incorporated in monitoring and control systems, etc. Today, data likely to be used for passenger information functions are typically stored into specific databases, independent of the operation and control systems. The required data are then made available to information applications interfaced with such databases, which make appropriate requests to collect the data. This approach gives the necessary scalability and security needed to support mass consumer applications without compromising the operation of the transport network.

It is therefore necessary to distinguish the data handled by passenger information functions from the management of the operation and control systems and the distribution of information to in-station and onboard devices. Besides all the data forming the basis for passenger information (e.g. network description, planned schedules, monitored passing times, etc.), some data structures are necessary to organize the distribution of this information. The present part describes important concepts referring to the ways of delivering such information to the customers.

5.2.1.2 Passenger information types

Information for passengers can be communicated to the passengers using a large variety of equipment and media, such as:

— printed material such as leaflets at stops, information booklets, etc.;

— passive terminals, such as displays at stop points or onboard vehicles, delivering information on planned or actual service, e.g. information on the arrival or departure times;

— interactive terminals, delivering information on request regarding planned or actual service, such as internet terminals, personal mobile devices, an information desk terminal operated by the staff, etc.

Data for the last two will be obtained from servers that aggregate and distribute data.

In spite of this variety of equipment, media and techniques, some common data features exist to describe the characteristics of the provided information. For instance, the location of a display (e.g. at a stop point) or the list of routes about which information is provided does not depend on the type of equipment that is used to present the information.

5.2.1.3 Passenger information equipment

This subsection summarizes the delivery elements for in-station displays, found in EN 12896-2.

Delivery of passenger information through any form of device is described by the entity PASSENGER INFORMATION EQUIPMENT, a generic class of information device, which can be classified by the entity TYPE OF PASSENGER INFORMATION EQUIPMENT according to the common functional capabilities. It may be passive (for example a printed timetable), active (for example a display), or interactive (for example a kiosk terminal supporting trip planning).

PASSENGER INFORMATION EQUIPMENT may be located at a POINT in the network. Such a POINT will often be at a STOP POINT. The STOP PLACE model can be used to specify the exact locations of displays within a stop or interchange.

PASSENGER INFORMATION EQUIPMENT may also be located at a place that is not on the PT network (e.g. at a central place in the city, in a shopping centre, or an office lobby); here, the SITE model can be used to locate displays outside of stations.

Onboard terminals (e.g. dynamic displays) may also be described as PASSENGER INFORMATION EQUIPMENT, located using an ACTUAL VEHICLE EQUIPMENT.

At-stop and onboard systems will show a subset of data relevant to the transport available at their location. A DISPLAY ASSIGNMENT to a LOGICAL DISPLAY associated with the PASSENGER INFORMATION EQUIPMENT is used to indicate which specific services (e.g. LINES, or services following a specific JOURNEY PATTERN) should be included. See Figure 1.

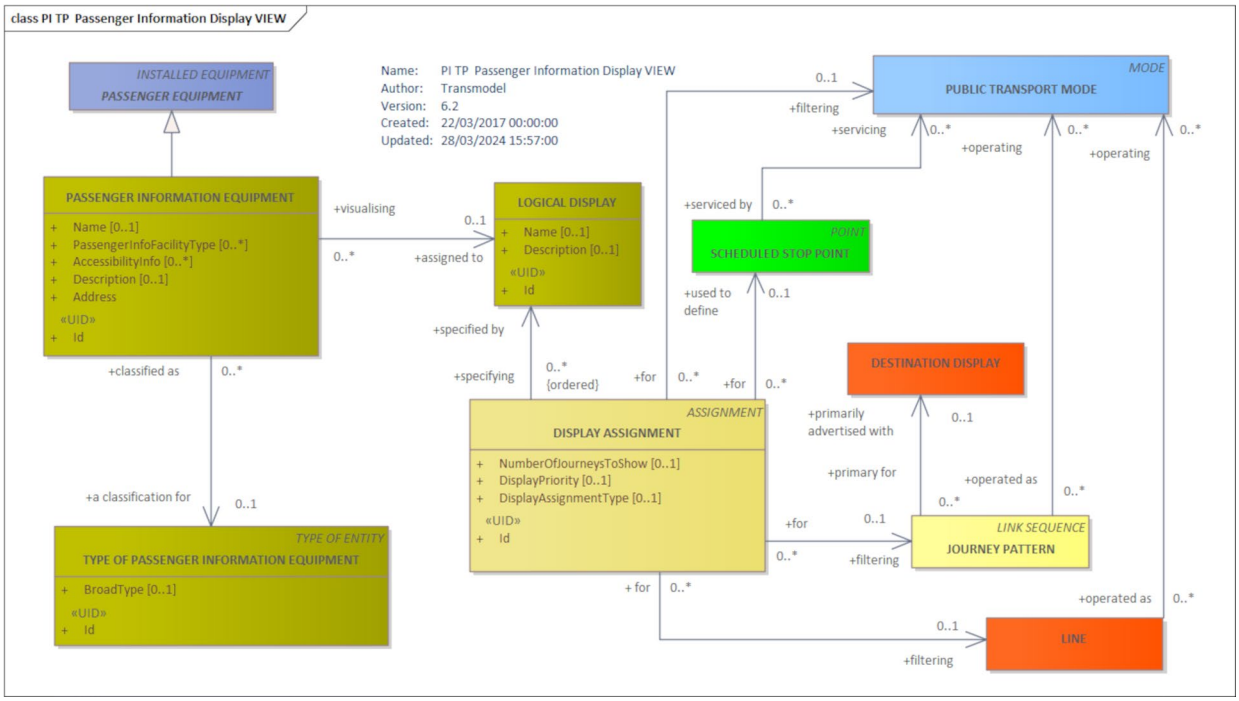

Figure 1 — Passenger Information Display

5.2.1.4 Internet based information services

Data may also be distributed to customers on their own devices using web and mobile applications, either directly or via an intermediary. These may be specifically orientated to PT transport or may include PT data among other data. The selection of relevant types of data can be regarded as a passenger information query composed of a pair of PI REQUEST and PI DELIVERY.

5.2.1.5 Transactions and queries

Operators that provide information for interactive services will often log the parameters of transactions made against their services. For instance, the time and the duration of a request and response may be stored along with the locations sought, allowing statistical analysis, and in some cases also for invoicing.

In interactive systems the results of one query may be used to obtain input for another; for example, having found a possible trip a customer may then enquire as to the available fares. The entity PI REQUEST describes any elementary request, being part of a PI DELIVERY. See Figure 2.