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Ref. No. CEN/TS 17413:2020 E

Contents

Page

European foreword 3

Introduction 4

1 Scope 5

2 Normative references 5

3 Terms and definitions 5

4 Symbols and abbreviations 9

5 Functional description of the alternative modes 9
5.1 Introduction 9
5.2 Categorization of modes of transport 9
5.3 Links to Mobility as a service 13
5.4 Functions and aspects related to the alternative modes 14
5.5 Cycling 19
5.6 Car sharing 20
5.7 Carpooling 23

6 Data requirements 30
6.1 General 30
6.2 Data model 30

Annex A (normative) **Data dictionary** 80

Annex B (informative) **Use cases** 96

Annex C (normative) **Additional Common Concepts — Extension to EN 12896-1:2016, Public Transport Reference Data Model — Part 1: Common Concepts — Methodologies and Conventions** 101

Annex D (informative) **Additional Information on Carpooling** 121

Bibliography 123

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European foreword

This document (CEN/TS 17413:2020) has been prepared by Technical Committee CEN/TC 278 "Intelligent transport systems", the secretariat of which is held by NEN.

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Introduction

Services already present in the urban environment such as multimodal information and traffic management and control are already well understood. Standard reference data models and data exchange formats for the use of these services, in particular data sets describing the public transport offer, are already standardized and available. However, a previous study has identified that there is a need for reference data models to accommodate emerging modes of transport to allow seamless transitions for the traveller between all available modes. Examples of these new modes are car and cycle sharing, car-pooling, and intelligent parking (Park & Ride).

The Commission Delegated Regulation (EU) 2017/1926 requires that Member States facilitate the easy exchange and reuse of data for the provision of comprehensive travel information services. Transport authorities, transport operators, infrastructure managers or transport on demand service providers as appropriate should make the static data, corresponding metadata and information on the quality of the data accessible to users through a national or common access point.

This document defines a reference data model, in order to allow integration of these modes into urban multimodal services (e.g. trip planning systems).

This document considers in first place static data, but some aspects of real-time (dynamic) information are taken into account in order to enable efficient traveller information and includes: cycle sharing; car sharing; carpooling and cars with a driver (taxi).

To form this document, information has been gathered from outreach to stakeholders, Transmodel (EN 12896 series), and documents in the Bibliography.

CEN/TS 17413 is a project under the European Standardization body CEN/TC 278 - Intelligent Transport Systems Working Group 17 (Urban ITS). Its title is Models and definitions for new modes. The project team members have worked within Intelligent Transport Systems for many years as developers, implementers and standardizers.

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1 Scope

This document defines new modes in a reference data model, in order to allow integration of these modes into urban multimodal travel services (e.g. trip planning systems).

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 and definitions

For the purposes of this document, the following terms and definitions 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 https://www.iso.org/obp

3.1 General terms and definitions:

3.1.1
attribute
property of an entity

3.1.2
conceptual data model
description of a real-world domain in terms of entities, relationships and attributes in an implementation independent manner in order to provide a structure on which the rest of the development of an application system can be based

3.1.3
conceptual level
conceptual data model, in the context of data modelling

3.1.4
database
collection of data

Note 1 to entry: Often used in the sense of the physical implementation of a data model.

3.1.5
data domain
data structure 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

3.1.6
data model
description of a real-world domain in terms of data and relationships

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3.1.7
entity
object (data) that has its own existence (as opposed to an attribute)

3.1.8
fare management
activities related to the collection of money from passengers

3.1.9
function
activity

3.1.10
functional area
arbitrarily defined set of activities used to define the objectives and limits of the data model

3.1.11
interoperability
ability of (sub)systems to interact with other (sub)systems according to a set of predefined rules (interface)

3.1.12
logical data model
data design that takes into account the type of database to be used but which does not consider means of utilization of space or access

3.1.13
logical level
logical data model, in the context of data modelling

3.1.14
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

3.2 Domain specific terms and definitions:

3.2.1
access mode
characterization of the traveller movement (e.g. walking, cycling, etc.) enabling the traveller to reach public transport or to carry out a whole trip

3.2.2
alternative mode
publicly advertised mode of operation different from the conventional mode of operation, in particular vehicle sharing, vehicle rental and vehicle pooling

3.2.3
car pooling
vehicle pooling applied to cars, consisting in sharing a privately owned car for a trip between a defined driver who is already engaged in the trip and at least another traveller

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3.2.4
car rental
vehicle rental applied to cars, consisting in making car(s) available at specified agencies with the constraint to bring them back at specified agencies

3.2.5
car sharing
vehicle sharing applied to cars, consisting of the short-term use of a vehicle for a specific journey or time where the car might be taken from and parked at different places in an urban area

3.2.6
conventional mode
legacy mode of operation which is provided as a scheduled and/or flexible publicly advertised transport offer relying on a set of features:

— drivers are employees;

— the fleet is owned by an operator or an authority;

— the network topology is defined well in advance and is based on lines and journey patterns

Note 1 to entry: The distinction between alternative and conventional mode of operation relies on the fact that one or more of the conditions as above may not be fulfilled. Moreover, the difference is in the mode of operation rather than the way the traveller is served.

3.2.7
cycle rental
vehicle rental applied to cycles, consisting in making cycle(s) available at specified agencies with the constraint to bring them back at specified agencies

3.2.8
cycle sharing
vehicle sharing applied to cycles consisting of short-term cycle rental where the cycle can be taken from and parked at different places in the urban area

3.2.9
flexible transport mode
passenger transport operation linked to a fixed network/schedule but offering flexibility, in order for instance, to optimize the service or to satisfy passenger demand

3.2.10
operational service
activities performed by actors in charge of operation of a service

3.2.11
park and ride
activity allowing travellers to transfer between personal/alternative mode and conventional mode

3.2.12
park and ride facility
location dedicated to travellers allowing them a modal transfer, in particular to leave/pick up their personal vehicles before/after a trip on public transport