SLOVENSKI STANDARD
SIST-TS CEN/TS 16157-11:2022

01-julij-2022

Inteligentni transportni sistemi - Specifikacije za izmenjavo podatkov DATEX II pri upravljanju prometa in informiranju - 11. del: Objava strojno interpretiranih prometnih predpisov

Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 11: Publication of machine interpretable traffic regulations

Intelligente Verkehrssysteme - DATEX II-Datenaustauschspezifikationen für Verkehrsmanagement und Verkehrsinformationen - Teil 11: Publikationen zur Verwaltung von elektronischen Verkehrsvorschriften (METR)

Systèmes de transport intelligents - Spécifications Datex II d'échange de données pour la gestion du trafic et l'information routière - Partie 11 : Publication (électronique) des arrêtés de circulation

Ta slovenski standard je istoveten z: **CEN/TS 16157-11:2022**

ICS:

35.240.60	Uporabniške rešitve IT v prometu	IT applications in transport

SIST-TS CEN/TS 16157-11:2022 **en,fr,de**

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 16157-11

March 2022

ICS 35.240.60

English Version

Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 11: Publication of machine interpretable traffic regulations

Systèmes de transport intelligents - Spécifications Datex II d'échange de données pour la gestion du trafic et l'information routière - Partie 11 : Publication (électronique) des arrêtés de circulation

Intelligente Verkehrssysteme - DATEX II-Datenaustauschspezifikationen für Verkehrsmanagement und Verkehrsinformationen - Teil 11: Publikationen von maschineninterpretierbaren Verkehrsregeln

This Technical Specification (CEN/TS) was approved by CEN on 24 January 2022 for provisional application.

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European foreword

This document (CEN/TS 16157-11:2022) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

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.

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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 announce this Technical Specification: 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, Turkey and the United Kingdom.

Introduction

The EN/TS 16157 series defines a common set of data exchange specifications to support the vision of a seamless interoperable exchange of traffic and travel information across boundaries, including national, urban, interurban, road administrations, infrastructure providers and service providers. Standardization in this context is a vital constituent to ensure interoperability, reduction of risk, reduction of the cost base, promotion of open marketplaces and many social, economic and community benefits to be gained from more informed travellers, network managers and transport operators.

Delivering European Transport Policy in line with the White Paper issued by the European Commission requires co-ordination of traffic management and development of seamless pan European services. With the aim to support sustainable mobility in Europe, the European Commission has been supporting the development of information exchange mainly between the actors of the road traffic management domain for a number of years. In the road sector, DATEX II has been long in fruition, with the European Commission being fundamental to its development through an initial contract and subsequent co-funding through the Euro-Regional projects. With this standardization of DATEX II, there is a real basis for common exchange between the actors of the traffic and travel information sector.

EN/TS 16157 includes the framework and context for the modelling approach, data content, data structure and relationships.

It supports a methodology that is extensible.

This document deals with the publication sub-model within the DATEX II model that supports the exchange of traffic regulation information. This publication is intended to support the exchange of information from road traffic authorities issuing traffic regulation orders and organisations implementing these orders to other organisations providing ITS services or onward information exchange.

1 Scope

This document specifies a publication sub-model within the DATEX II model that supports the publication of electronic traffic regulations.

This publication is intended to support the exchange of informational content from road traffic authorities issuing traffic regulation orders and organisations implementing these orders to other organisations providing ITS services or onward information exchange.

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 16157-1:2018, *Intelligent transport systems — DATEX II data exchange specifications for traffic management and information — Part 1: Context and framework*

EN 16157-2:2019, *Intelligent transport systems — DATEX II data exchange specifications for traffic management and information — Part 2: Location referencing*

EN 16157-7:2018, *Intelligent transport systems — DATEX II data exchange specifications for traffic management and information — Part 7: Common data elements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16157-1, EN 16157-7, EN 16157-2, and the following apply.

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

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

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

3.1
traffic regulation
legal agreement or order that restricts or prohibits the use of the highway network

3.2
traffic regulation order
legally recognised document or publication issued to enact a specific traffic regulation or regulations by a competent authority

3.3
issuing authority
competent authority that issued the traffic regulation order

3.4
ad hoc traffic regulation
traffic regulations implemented by road operators without formal order due to urgent safety requirements

3.5
planned dynamic traffic regulation
traffic regulation, often dynamically changeable, implemented by means of an automated or controllable technical system

4 Symbols and abbreviations

UML Unified Modeling Language

XML eXtensible Markup Language

5 Conformance

This document specifies a DATEX II traffic regulation publication, except for the elements that relate to location information which are specified in EN 16157-2 and the common elements (i.e. shared between several publications) which are defined in EN 16157-7.

The DATEX II platform independent data model, of which this publication sub-model is a part, corresponds to the level A model as defined in EN 16157-1.

Conformance with this document shall require platform independent models from which platform specific models are generated to comply with the UML modelling rules defined in EN 16157-1 and with the following requirements of the sub-models which are expressed in this document:

— comply with all stipulated minimum and maximum multiplicity requirements for UML elements and relationships,

— comply with all definitions, types, and ordering,

— employ optional elements as specified,

— comply with all expressed constraints.

It should be noted that conformance of a publication service with all the structural requirements stated above does not necessarily ensure that the informational content of that service will be semantically comprehensible.

6 UML notation

The UML notation used in this document shall be as described in ISO/IEC 19505-1 [1].

NOTE Some introductory guides to UML 2 are provided in the Bibliography of EN 16157-1:2018.

7 The "TrafficRegulation" namespace

This namespace gathers packages and classes related to traffic regulations. Figure 1 represents the different packages and classes belonging to the "TrafficRegulation" namespace, which uses the namespace prefix "tro".

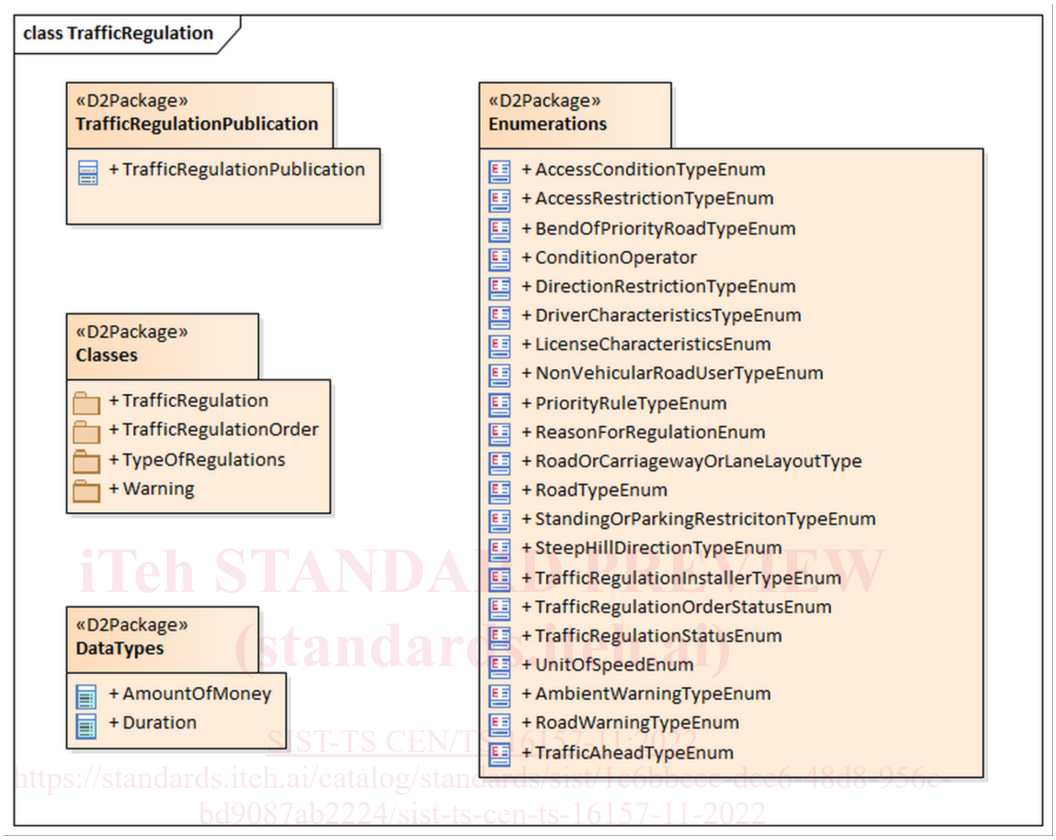

Figure 1 — The "TrafficRegulation" model

The "TrafficRegulation" namespace shall include the following four packages:

— TrafficRegulationPublication,

— Classes,

— DataTypes,

— Enumerations.

The classes, attributes, data types and enumerations that are specific to this document are defined in Annex A.

The XML schema corresponding to this document is provided in Annex B.

8 The traffic regulation publication model

8.1 Overview of the traffic regulation publication model

The traffic regulation publication model comprises one top-level package, "TrafficRegulationPublication" containing the "TrafficRegulationPublication" class, which is a specialisation of the "PayloadPublication" class and hence forms the top of the hierarchy of the traffic regulation publication sub-model. The "TrafficRegulationPublication" is composed of four different classes specifying different ways of publishing traffic regulations, located in the "TrafficRegulationOrder" package. The "TrafficRegulation" package contains all information on traffic regulations specified by a type of regulation, defined in the "TypeOfRegulation" package, and conditions for the applicability of the regulation.

8.2 The "TrafficRegulationPublication" package

8.2.1 Overview of the "TrafficRegulationPublication" package

The "TrafficRegulationPublication" package shall comprise a sub-model for defining traffic regulations. The following Figure 2 represents the sub-model including the relationship between classes.

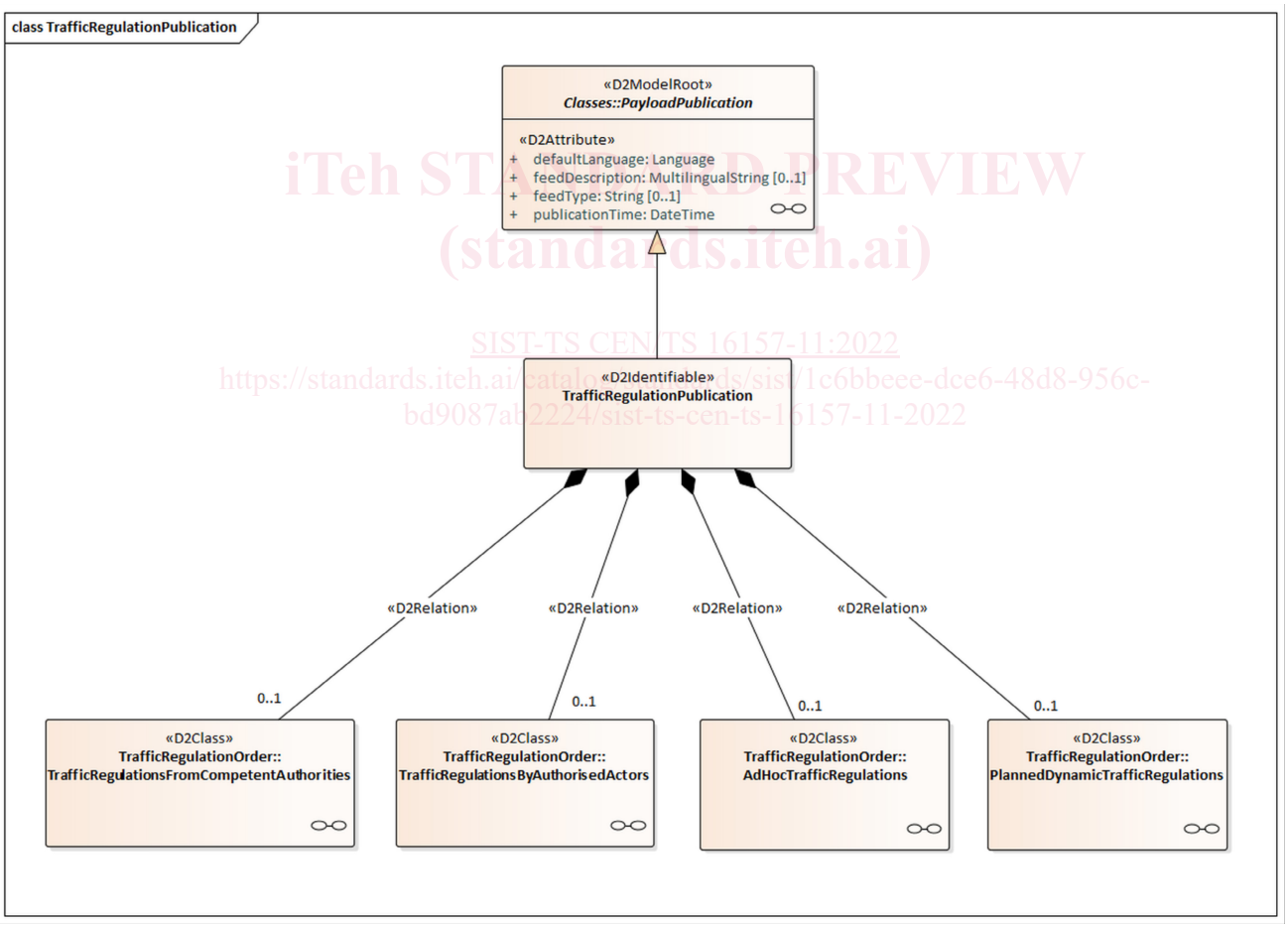

Figure 2 — The "TrafficRegulationPublication" package class model

8.2.2 Semantics of the "TrafficRegulationPublication" package

8.2.2.1 "TrafficRegulationPublication" class

The "TrafficRegulationPublication" class is a specific instantiable case of the "PayloadPublication" class.

Each "TrafficRegulationPublication" class instance may be composed of one of the following classes:

— TrafficRegulationsFromCompetentAuthorities,

— TrafficRegulationsByAuthorisedActors,

— AdHocTrafficRegulations,

— PlannedDynamicTrafficRegulations.

The "TrafficRegulationPublication" class is the base class for containing the published traffic regulations.

9 The "Classes" package

9.1 Introduction

This package contains all the packages and classes used by the traffic regulation publication model defined in this document.

9.2 The "TrafficRegulation" package

9.2.1 Overview of the "TrafficRegulation" package

This package describes data relating to the publication of traffic regulation information. Each traffic regulation is defined by a type of regulation (e.g. an overtaking ban or a speed limit) and conditions for the applicability of the regulation. The structure of the condition model is based on the condition model defined in CEN/TS 17268:2018 [5].

It is represented including the relationships between classes in Figure 3.

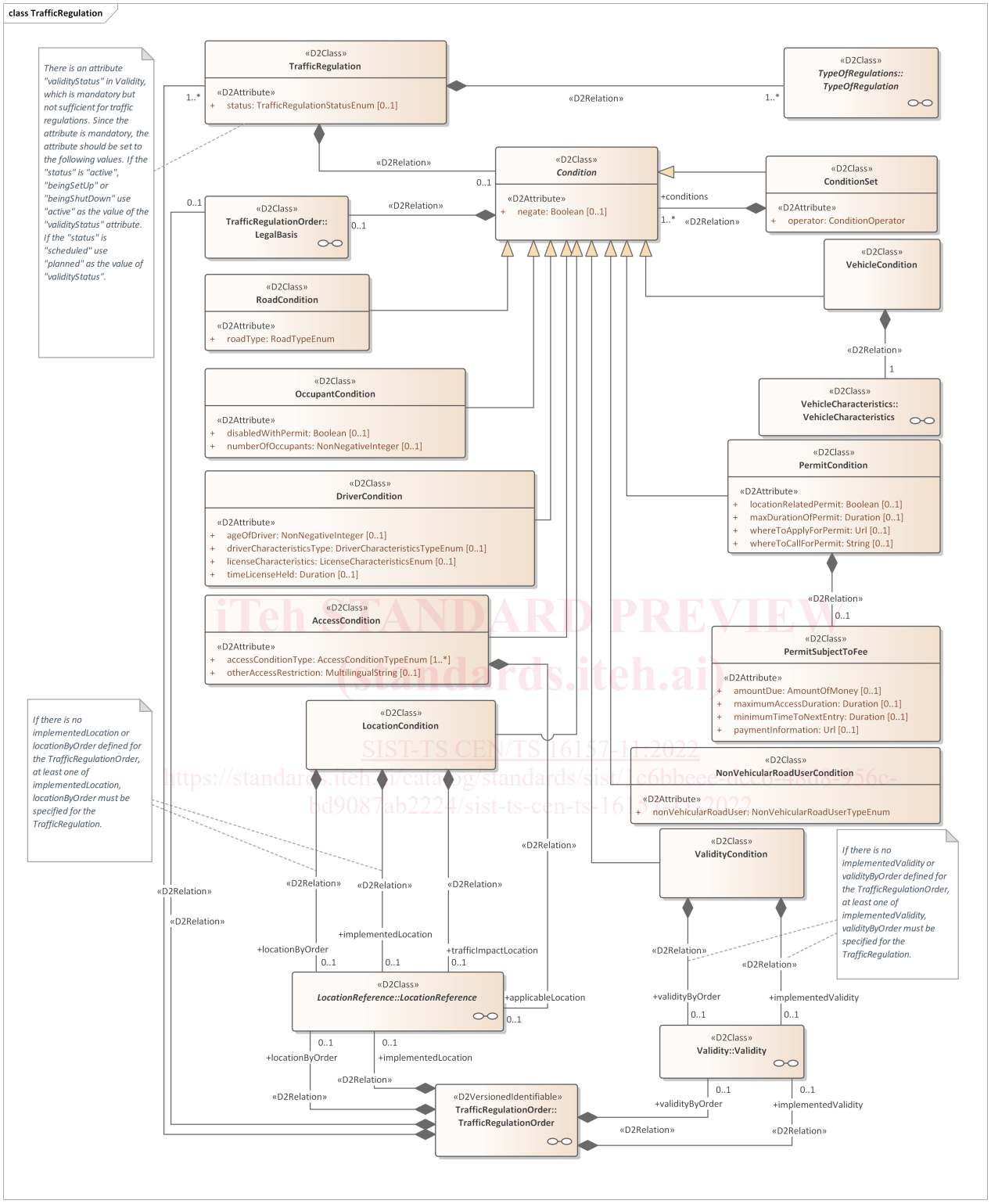

Figure 3 — The "TrafficRegulation" package class model

9.2.2 Semantics of the "TrafficRegulation" package

9.2.2.1 "TrafficRegulation" class

The "TrafficRegulation" class describes any kinds of traffic regulations, defined by the type of regulation via the "TypeOfRegulation" class (see 9.4.2.1) and conditions for applicability via the "Condition" class.

The implementation status of the traffic regulation may be described by the "status" attribute.

9.2.2.2 "Condition" class

The abstract "Condition" class describes conditions for the applicability of traffic regulations. It shall be specialised in one of the possible types given below:

— RoadCondition,

— OccupantCondition,

— DriverCondition,

— AccessCondition,

— LocationCondition,

— ValidityCondition,

— NonVehicleRoadUserCondition,

— PermitCondition,

— VehicleCondition,

— ConditionSet.

A specialisation of the "Condition" class may have an optional legal basis defined by the "LegalBasis" class, which belongs to the "TrafficRegulationOrder" package (see 9.3).

9.2.2.3 "ConditionSet" class

The "ConditionSet" class specified a set of conditions. The "operator" attribute shall be used to specify the operator to be applied between the conditions. It is composed of one or more "conditions" specified by the "Condition" class.

9.2.2.4 "RoadCondition" class

The "RoadCondition" class describes different types of roads (e.g. motorway, express road).

9.2.2.5 "OccupantCondition" class

The "OccupantCondition" class describes conditions for occupants of a vehicle (e.g. number of occupants, disability).

9.2.2.6 "DriverCondition" class

The "DriverCondition" class describes conditions for the driver of a vehicle (e.g. disability, information on the driver's license, age of driver).