SLOVENSKI STANDARD
SIST-TS CEN/TS 16157-8:2020

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Inteligentni transportni sistemi - Specifikacije za izmenjavo podatkov DATEX II pri upravljanju prometa in informiranju - 8. del: Publikacije in razširitve za upravljanje prometa, namenjene mestnemu okolju

Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 8: Traffic management publications and extensions dedicated to the urban environment

Intelligente Verkehrssysteme - DATEX II Datenaustauschspezifikationen für Verkehrsmanagement und Verkehrsinformationen - Teil 8: Verkehrsmanagement-Publikationen und Erweiterungen für das städtische Umfeld

Systèmes de transport intelligents - DATEX II Spécification des échanges de données pour la gestion du trafic et l'information routières - Partie 8: Publications et extensions pour la gestion du trafic dédiées à l'environnement urbain

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ICS:

35.240.60	Uporabniške rešitve IT v prometu	IT applications in transport

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English Version

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Ref. No. CEN/TS 16157-8:2020 E

Contents

Page

European foreword

This document (CEN/TS 16157-8:2020) 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.

As a user of this document, attention is drawn to the resources of www.datex2.eu. This website contains related software tools and software resources that aid the implementation of EN 16157 DATEX II.

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

This document 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 that interoperability, reduction of risk, reduction of the cost base and promotion of open marketplace objectives are achieved that will lead to many social, economic and community benefits as a result of more informed travellers, network managers and transport operators.

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 cofounding through the Euro-Regional projects, and well as support for Programme Support Action activities.

DATEX II is referenced within European regulations:

— EU Commission Delegated Regulation, (EU) 2015/962 of 18 December 2014 regarding the provision of EU-wide real-time traffic information services,

— EU Commission Delegated Regulation, (EU) 2013/885 of 15 May 2013 regarding the provision of information services for safe and secure parking places for trucks and commercial vehicles,

— EU Commission Delegated Regulation, (EU) 2013/886 of 15 May 2013 regarding data and procedures for the provision, where possible, of road safety-related minimum universal traffic information free of charge to users,

— EU Commission Delegated Regulation, (EU) 1926/2017 of 31 May 2017 regarding the provision of EU-wide multimodal travel information services.

This document includes the framework, context and specification for exchanges, the modelling approach, data content, data structure and relationships.

This document supports a methodology that is extensible.

This document, which is Part 8 for the CEN 16157 series, provides:

— extensions to existing DATEX II publications, to better support use within an urban context. The extensions are specified as Level B Extensions to the DATEX II model.

— a specification for the publication of rerouting information to enhance the corresponding existing DATEX II structure

— a specification for the publication of traffic management plans extending the existing DATEX II core model to better support application to the urban environment.

The specification for the publication of traffic management plans draws on work undertaken within the DATEX II Programme Support Action tasks, supported by the European Commission, and other related project work undertaken on these topics.

The present document was developed by project team PT1709 funded by the European Commission under grant agreement SA/CEN/GROW/EFTA/546/2016-10 'Urban ITS - Traffic Management Data Models and interfaces' (M/546 [2]).

1 Scope

This document constitutes a Part of the CEN 16157 DATEX II series of standards and technical specifications. This series specifies and defines component facets supporting the exchange and shared use of data and information in the field of traffic and travel. The component facets include the framework and context for exchanges, the modelling approach, the data content, the data structure and relationships and the communications specification.

Part 8, this document, specifies additional data model structures that are applicable for traffic management applications in the urban environment. This Part addresses data concepts to support the exchange of traffic management plans, rerouting, extensions of the existing DATEX II core model to better support application to the urban environment.

It establishes specifications for data exchange between any two instances of the following actors:

— Traffic Information Centres (TICs),

— Traffic Control Centres (TCCs),

— Service Providers (SPs).

Use of this document may be applicable for use by other actors.

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 16157-2:2018, *Intelligent transport systems — DATEX II data exchange specifications for traffic management and information — Part 2: Location Referencing*

EN 16157-3:2018, *Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 3: Situation Publication*

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

ISO/IEC 19505-1:2012, *Information technology — Object Management Group Unified Modeling Language (OMG UML) — Part 1: Infrastructure*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16157-1:2018, EN 16157-2:2018, EN 16157-3:2018 and EN 16157-7:2018 and the following apply.

ISO and IEC maintain terminological 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
traffic management plan
coordinated set of actions implemented by a number of actors such as traffic control centres, service providers, police, authorities, or road managers aiming to minimise or prevent traffic disruption and ensure efficient operation of the road network

3.2
scenario
an overall situation on the road network that leads road operators to initiate and run a traffic management plan

3.3
strategy
principles that underpin a set of traffic measures or actions in order to obtain the general objectives of the traffic management policy

EXAMPLE limit through traffic in an area; to favour a transport mode or a preferred route.

3.4
measure
specific set of actions to fulfil a specific goal, in a given scenario, which leads to a specific network operational configuration

EXAMPLE closures with alternative itinerary, restriction for HGV, access control etc.

Note 1 to entry: It can be an isolated action, a set of actions on the same site (road section) or a set of spatially spread actions that are executed jointly. This also includes general IT actions such as information delivery on specific delivery channels. When the solution (= measure) is not predefined one can define a procedure to elaborate this solution.

3.5
action
single operator action which is part of a traffic management plan measure, which is normally an "OperatorAction"-implementation of specific messages on variable message signs, by information delivery via other dissemination channels, etc

Note 1 to entry: It may be preventive, curative or planned, e.g.: to deliver information to road users; to spread salt on a road in case of danger of black ice; to clear a road section of obstacles.

3.6
service request
information which is exchanged among actors for workflow coordination in activating and implementing traffic management plans, such as an agreement on proposed strategies or measures, agreed measures / strategies implementation, termination and cancellation request of agreed measures and strategies

4 Symbols and abbreviations

GUID	Globally Unique identifier
IT	Information technology
ITS	Intelligent Transport Systems
PIM	Platform Independent Model
TMP	Traffic Management Plan
UML	Unified Modelling Language
VMS	Variable Message Sign

5 Conformance

This document specifies the following namespace sub-models:

— “UrbanExtensions” within Clause 7

— “ReroutingManagementEnhanced” within Clause 8

— “TrafficManagementPlan” within Clause 9

All the sub-models take use of the “Level B” extension mechanism as defined in EN 16157-1:2018. Specification elements that relate to location information are specified in EN 16157-2:2018; common specification elements are specified in 16157-7:2018.

Conformance with this Part shall require platform independent models from which platform specific models are generated to comply with the UML modelling rules defined in EN 16157-1:2018 and with the following requirements of this sub-model which are expressed in this part:

— 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 is as described in ISO/IEC 19505. An explanation of the UML notation used in this document is provided in EN 16157 Part 1:2018.

7 «D2Namespace» UrbanExtensions

7.1 Overview

This clause specifies an additional namespace "UrbanExtensions" which provides several extensions to different elements of the DATEX II data model defined in EN 16157 parts 2, 3 and 7 focussed on the urban aspects of the data model. These extensions shall follow the Level-B modelling rules defined in EN 16157-1:2018.

Figure 1 illustrates the "UrbanExtensions" namespace and its classes. This namespace shall be located inside the "Extension" namespace defined in EN 16157-7:2018.

Figure 1 — The "UrbanExtensions" namespace

The «D2Namespace» UrbanExtensions shall have the namespace-prefix "ubx".

7.2 ClassifiedDelay Class

The "ClassifiedDelay" class (see Figure 2) may provide an alternative to the "Delay" class specified in EN 16157-3:2018. In contrast to this class, the "ClassifiedDelay" class shall have unbounded multiplicity and an aggregation to the "VehicleCharacteristics" class to specify delays classified for specific types of vehicles.

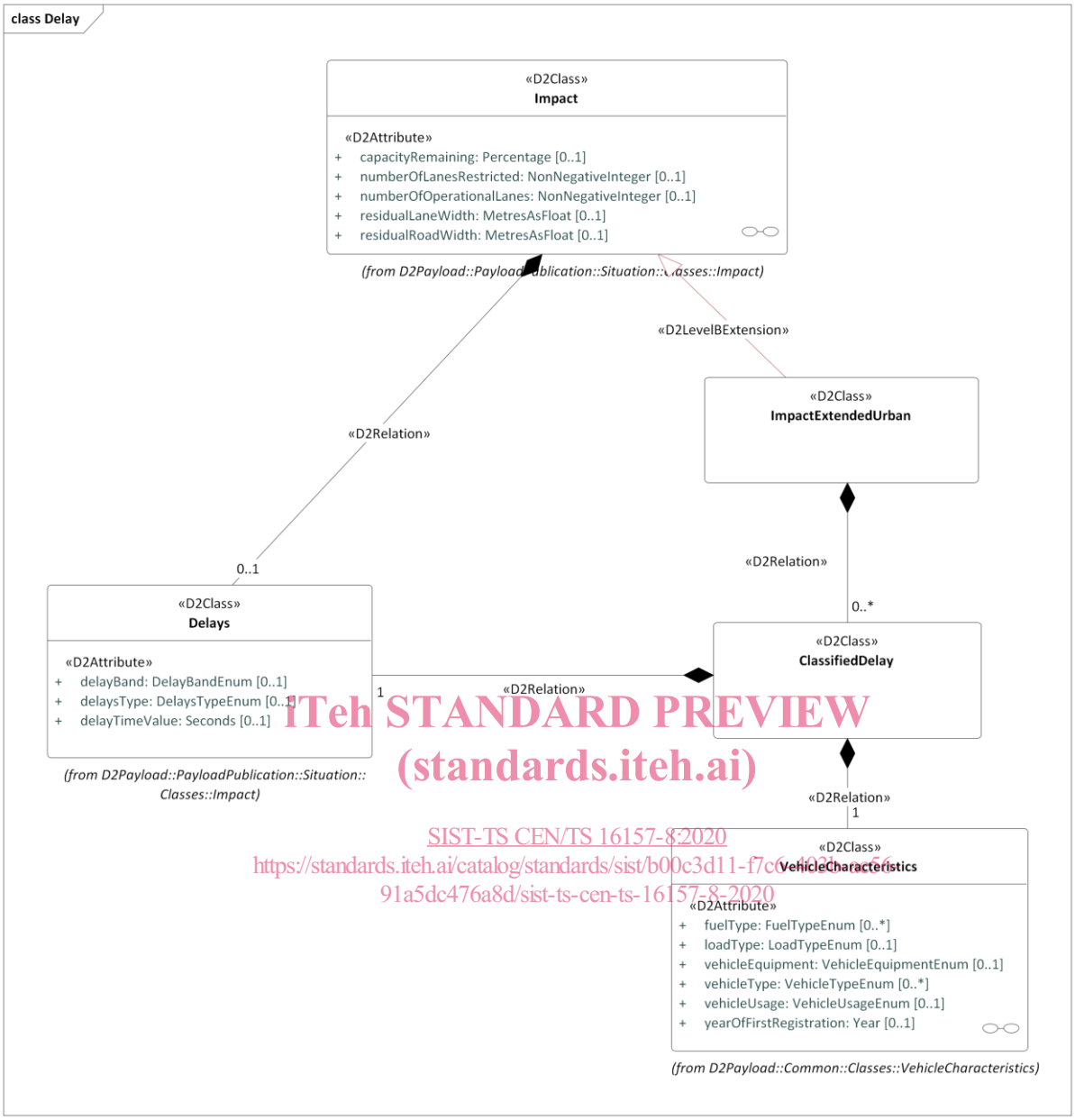

Figure 2 — Extension to Delay

7.3 EquipmentOrSystemType Class

The “EquipmentOrSystemTypeEnum” enumeration defined in EN 16157-3:2018 shall be extended by the enumeration on access control systems, parking sensors and traffic sensors (see Figure 3).

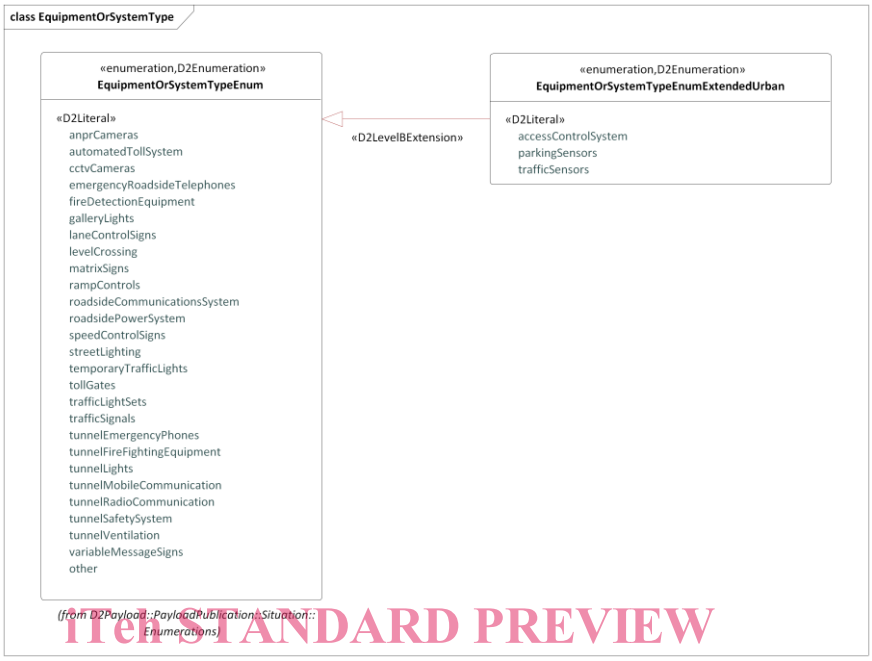

Figure 3 — Extension to equipment or system type

7.4 GeneralInstructionsToRoadUsers Class

The "GeneralInstructionsToRoadUsersTypeEnum" enumeration defined in EN 16157-3:2018 shall be extended by two further enumerations with instructions for cyclists and pedestrians (see Figure 4).

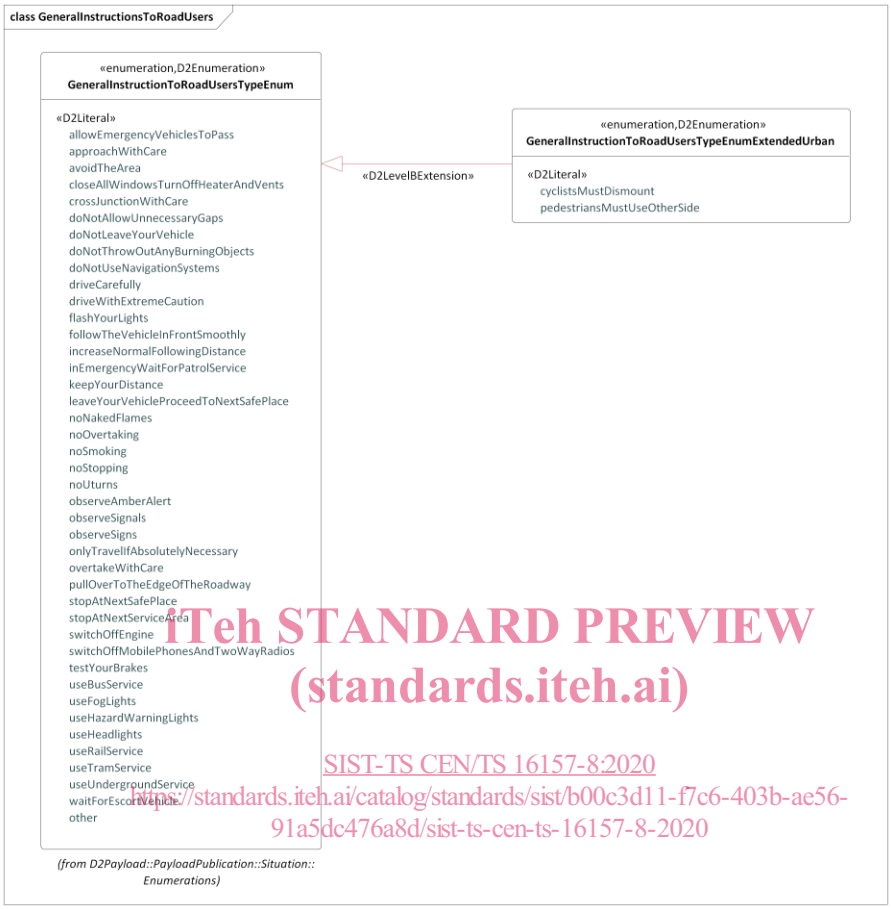

Figure 4 — Extension to General instructions to road users

7.5 GeneralNetworkManagementType Class

The "GeneralNetworkManagementTypeEnum" enumeration defined in EN 16157-3:2018 shall be extended by three further enumerations literals for general management concerning restricted areas and tolling (see Figure 5).

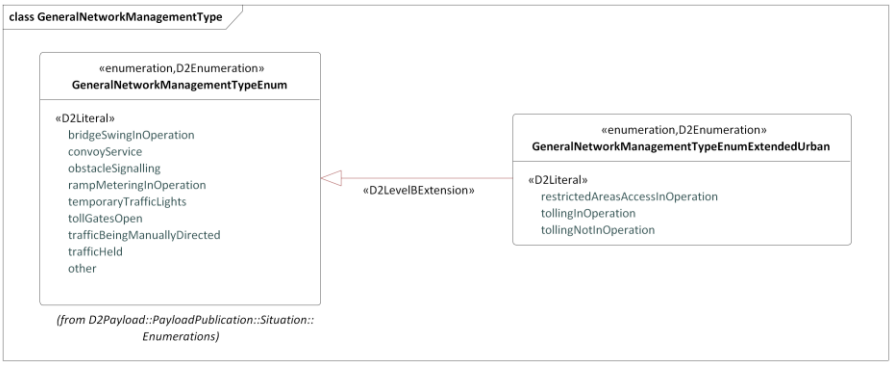

Figure 5 — Extension to general network management

7.6 InfrastructureDamageType Class

The “InfrastructureDamageTypeEnum” enumeration defined in EN 16157-3:2018 shall be extended by a literal specifying a collapsed road surface (see Figure 6).

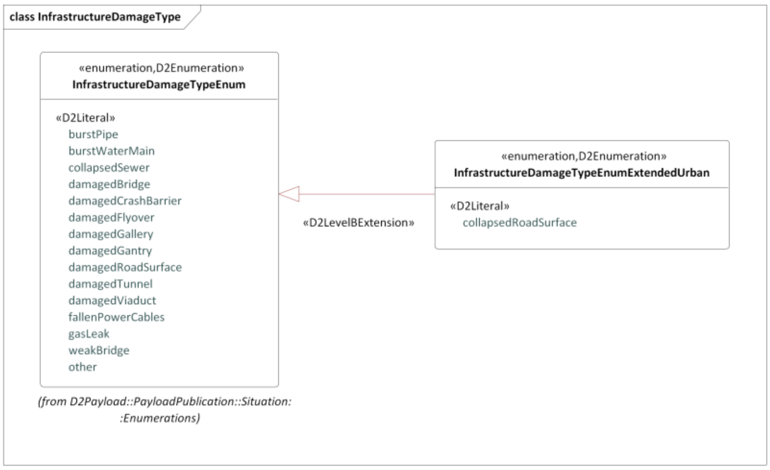

Figure 6 — Extension to infrastructure damage

7.7 InfrastructureDescriptor Class

The “InfrastructureDescriptorEnum” enumeration defined in EN 16157-2:2018 shall be extended by several literals specifying certain urban types of underpasses, bridges and crossings (see Figure 7).

Figure 7 — Extension to infrastructure descriptor