SLOVENSKI STANDARD
SIST-TS CEN/TS 16157-12:2022

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Inteligentni transportni sistemi - Specifikacije za izmenjavo podatkov DATEX II pri upravljanju prometa in informiranju - 12. del: Publikacije v zvezi z objekti

Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 12: Facility related publications

Intelligente Verkehrssysteme - Datex II Datenaustauschspezifikationen für Verkehrsmanagement und Verkehrsinformationen - Teil 12: Publikationen im Zusammenhang mit Einrichtungen

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35.240.60	Uporabniške rešitve IT v prometu	IT applications in transport

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TECHNICAL SPECIFICATION

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CEN/TS 16157-12

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English Version

Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 12: Facility related publications

Intelligente Verkehrssysteme - Datex II Datenaustauschspezifikationen für Verkehrsmanagement und Verkehrsinformationen - Teil 12: Publikationen im Zusammenhang mit Einrichtungen

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

European foreword

This document (CEN/TS 16157-12:2022) 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.

EN 16157 series consists of several parts under the general title “Intelligent transport systems — DATEX II data exchange specifications for traffic management and information”. Other parts may be developed in the future.

For users of this document, attention is drawn to the resources of www.datex2.eu. This web site contains related software tools and software resources that aid the implementation of EN 16157 DATEX II.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports essential requirements of EU Directive(s).

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.

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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. Standardisation 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 standardisation of DATEX II, there is a real basis for common exchange between the actors of the traffic and travel information sector.

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

This document supports a methodology that is extensible.

The 12th part of the CEN/TS 16157 - EN 16157 series (this document) deals with information on facilities. It defines a new DATEX II namespace “Facilities” and sub-models on the following facility related topics:

— Dimensions;

— Equipment or service facilities;

— Operating hours;

— Organisations;

— Rates.

These sub-models can be directly accessed and used by namespaces defined in other parts of the DATEX standard series by specialising the Facility or the FacilityStatus class, as for example, by the energy infrastructure publication or the parking publications. By providing a couple of Publications within this new Part 12 (for example, "OperatingHoursPublication"), it is also possible to specify and publish stand-alone information on the above-mentioned topics and just reference this data elsewhere.

In normative Annex A, the data dictionary for the «D2Namespace» Facilities is specified.

In normative Annex C, the referenced XML schema for the «D2Namespace» Facilities is specified.

The European Committee for Standardisation (CEN) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning procedures, methods and/or formats given in this document.

CEN takes no position concerning the evidence, validity and scope of patent rights.

1 Scope

This document 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, data content, data structure and relationships.

This document is applicable to:

— Traffic and travel information which is of relevance to road networks (non-urban and urban) ;

— Public transport information that is of direct relevance to the use of a road network (e.g. road link via train or ferry service) ;

— Traffic and travel information in the case of Cooperative intelligent transport systems (C-ITS).

This document 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 other actors.

This document series covers, at least, the following types of informational content:

— Road traffic event information – planned and unplanned occurrences both on the road network and in the surrounding environment;

— Operator initiated actions;

— Road traffic measurement data, status data, and travel time data;

— Travel information relevant to road users, including weather and environmental information;

— Road traffic management information and instructions relating to use of the road network.

This Part of CEN/TS 16157 specifies the informational structures, relationships, association ends, attributes and associated data types required for publishing information about facilities within the DATEX II framework. This is specified as a DATEX II "Facilities" namespace, which is part of the DATEX II platform independent model, but this Part excludes those elements that are specified in EN 16157-2 (Location referencing) and EN 16157-7 (Common data elements).

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

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

EN 16157-7, *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, EN 16157-2, EN 16157-7 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 http://www.electropedia.org/

3.1
facility
any kind of site, building, structure, including also service- or supplemental facilities and equipment

4 Symbols and abbreviations

ETRS89	European Terrestrial Reference System 1989
EU	European Union
GUID	Globally Unique Identifier
HTML	Hyper text mark-up language
IP	Internet Protocol
PDF	Portable document format created by Adobe
UML	Unified Modeling Language
URL	Uniform Resource Locator

5 Conformance

The DATEX II platform independent data model of which the Facilities Publications models are a part, corresponds to the Level A model as defined in EN 16157-1.

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 and with the following requirements of the models which are expressed in this part.

6 UML notation

The UML notation used in these Technical Specifications shall be as described in ISO/IEC 19505-1:2012 and in compliance with the methodology specified in EN 16157-1.

7 «D2Namespace» Facilities

7.1 Overview

This namespace shall define a facility class structure with properties that are related to all kind of facilities, for example, parking sites or energy stations.

For some of the elements it shall be possible to specify a separate publication. By this construct, it will be possible to predefine sets and to reference them later.

The following elements are included in this namespace:

— «D2Package» Facility – An abstract facility class structure that utilises the elements of the hereafter following packages;

— «D2Package» Dimension – Dimensions of facilities;

— «D2Package» OrganisationPublication – Organisation data with contact information;

— «D2Package» RatesPublication – A generic structure for tariffs and payment;

— «D2Package» SupplementalFacility – Equipment and service facilities supplemental to some origin facility, offering all facility properties theirself;

— «D2Package» OperatingHoursPublication – Operating hours of facilities.

The namespace includes further data types, data values and enumerations that are integral part of the above model parts.

The prefix of the namespace shall be "fac".

Some of the packages and individual classes used within the “Facilities” namespace reside in the namespaces “Common” and "Location" defined in EN 16157-7 and EN 16157-2.

The classes, attributes, data types and enumerations that are specific to the namespace "Facilities" are defined in the normative Annex A.

The classes, attributes, data types and enumerations that are specific to two additional extensions specified in clause 8 are defined in the normative Annex B.

The XML schema corresponding to this namespace is provided in the normative Annex C.

7.2 «D2Package» Facilities

7.2.1 Overview

The "Facility" and "FacilityObject" class shall form an abstract class structure that utilises the elements of the hereafter following clauses. Classes from other namespaces may specialise the Facility class to inherit the features of a facility described in this document – see Figure 1.

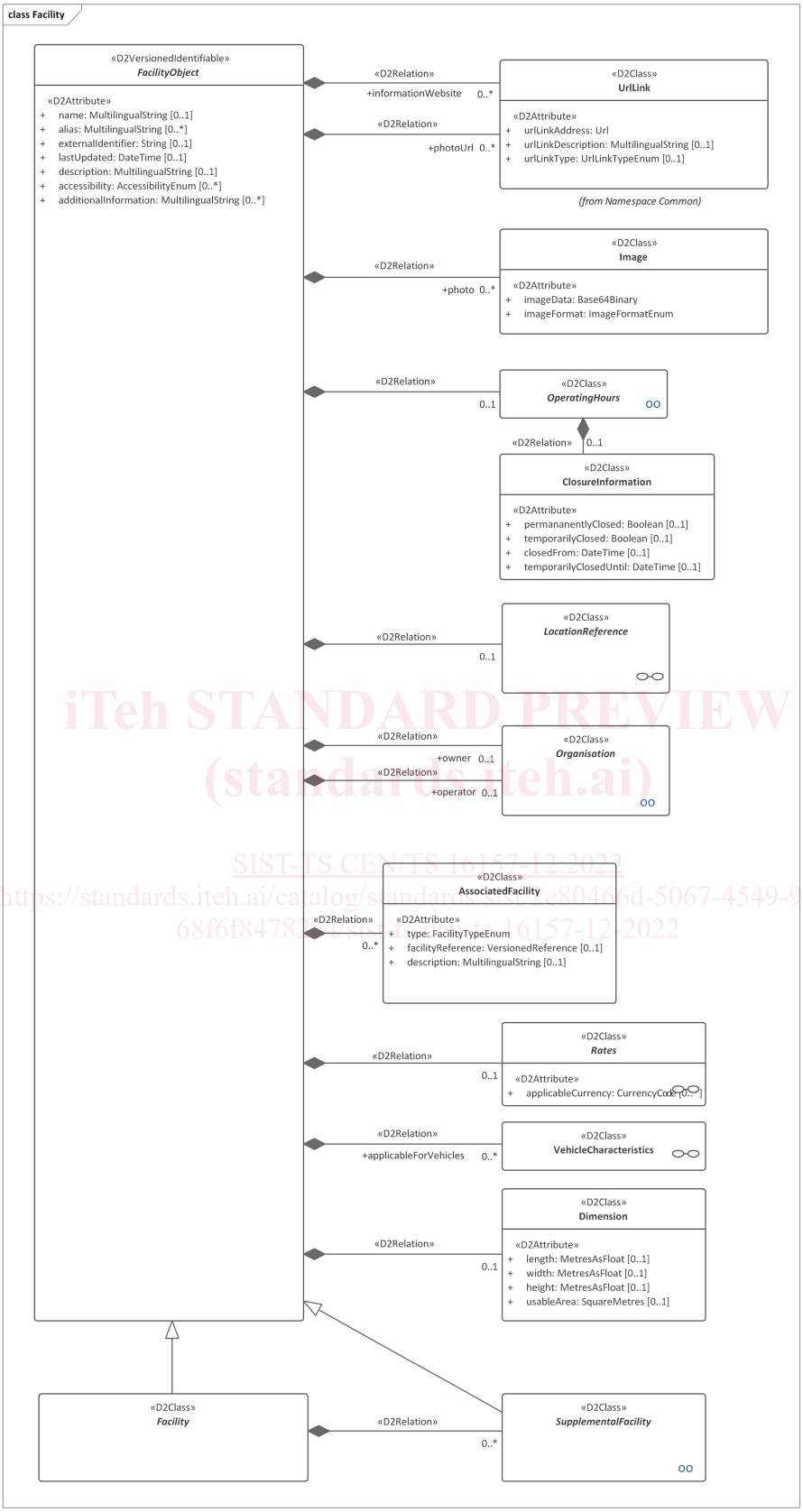

Figure 1 — The facility class structure

Example: An EnergyInfrastructureSite from Namespace EnergyInfrastructure (specified in CEN/TS 16157-10) is a specialisation of a Facility, and thus information on its location, operating hours, specific images and more can be specified.

The distinction between FacilityObject and Facility (which is a specialisation of FacilityObject) shall avoid recursion by the means of a SupplementalFacility, which is a specialisation of a FacilityObject itself.

The "FacilityStatus" and "FacilityObjectStatus" class shall form an abstract class structure in the same sense described above, focussing on dynamic status information for a facility – see Figure 2.

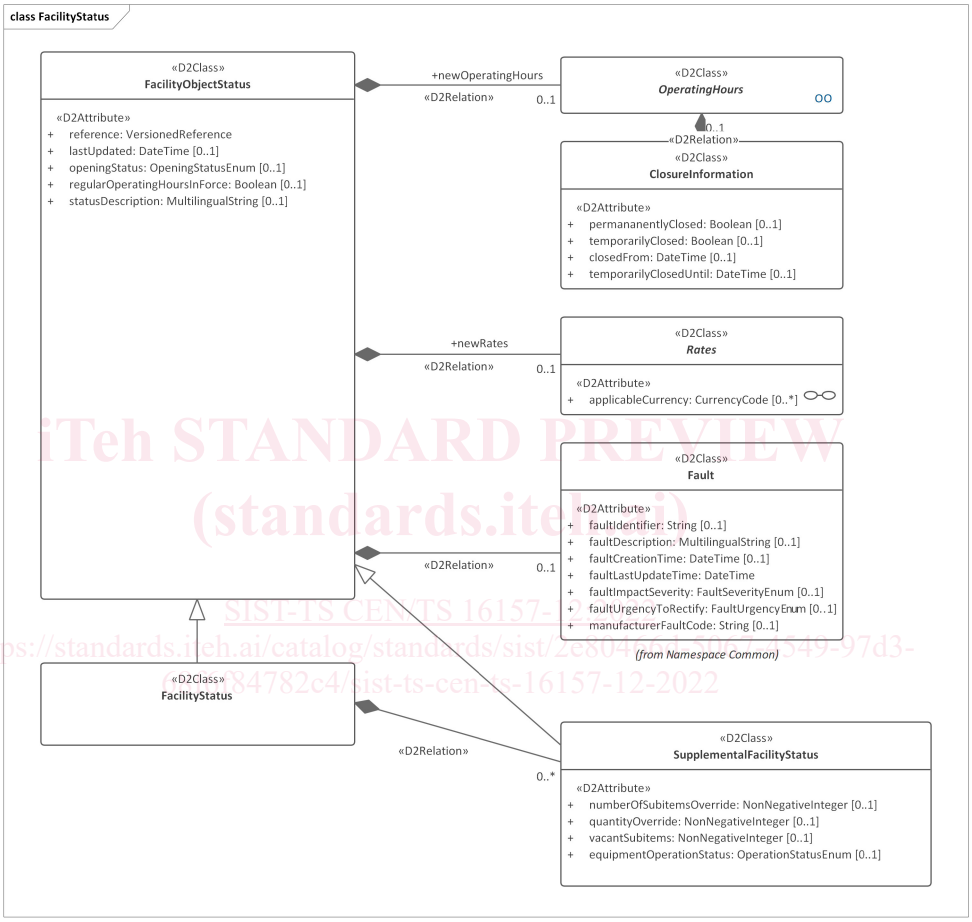

Figure 2 — The facility status class structure

Example: The class EnergyInfrastructureSiteStatus from Namespace EnergyInfrastructure (specified in CEN/TS 16157-10) is a specialisation of FacilityStatus, and thus status information on updated operating hours, faults and more can be specified.

The distinction between FacilityObjectStatus and FacilityStatus (which is a specialisation of FacilityObjectStatus) shall avoid recursion by the means of a SupplementalFacilityStatus, which is a specialisation of FacilityObjectStatus itself.

The class FacilityObject shall be of type «D2VersionedIdentifiable». Thus, each facility may be referenced by id and version. In class FacilityObjectStatus, the mandatory attribute reference of type VersionedReference shall form the link between static and the dynamic part of the facility model.

NOTE All further classes depicted in Figure 1 and Figure 2 that are not denoted in 7.2.2 will be described in the later clauses.

7.2.2 Semantics

7.2.2.1 «D2Class» Facility and «D2VersionedIdentifiable» FacilityObject

By the Facility class and its inheritance of the FacilityObject class, a facility may be described with the following features:

— Basic information: A name, alias, external identifier, timestamp of last update, a description, information on accessibility and some additional information;

— URLs of information websites and photos;

— Photos (in binary format);

— Operating hours (including closure information), see 7.7;

— Location reference, as specified in EN 16157-2;

— Owner and operator information, using the Organisation structure, see 7.4;

— Associated facility: A reference to another facility or a short indication of it;

— Rates: Tariffs and payment information, see 7.5;

— Applicable vehicles, as specified by VehicleCharacteristics in EN 16157-7;

— Dimension, i.e. basic information on height, width, length or usable area;

— Supplemental facility: Some associated service facility or equipment, being itself characterised as a facility, see 7.6.

7.2.2.2 «D2Class» FacilityStatus and «D2Class» FacilityObjectStatus

By the FacilityStatus class and its inheritance of the FacilityObjectStatus class, a facility status may be described with the following features:

— Basic status information: The reference to the static facility object, timestamp of last update, the opening status, a status description;

— Operating hours (will replace formerly defined operating hours);

— Rates (will replace formerly defined rates);

— A fault;

— Supplemental facility status. As this is a facility itself, each supplemental facility can be addressed and referenced by the versioned-identifiable mechanism of the FacilityObject.

7.3 «D2Package» Dimension

7.3.1 Overview

The “Dimension” class (see Figure 1) shall support provision of dimension information for a facility or object.

7.3.2 Semantics

7.3.2.1 «D2Class» Dimension

Each instance of the “Dimension” class may be used to define dimensions (length, width, height, usable area) of some facility or object, including length, width, height and the usable area.

7.4 «D2Package» OrganisationPublication

7.4.1 Overview

The “OrganisationPublication” package shall support the specification of organisation related information such as organisation unit and contact information. The information may be specified directly or by reference (see Figure 3).

By using the «D2Class» "OrganisationPublication", it shall be possible to define tables of organisation information in advance and reference them later (see Figure 4).