

English Version

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

Systèmes de transport intelligents - Spécifications DATEX
II d'échange de données pour la gestion du trafic et
l'information routière - Partie 1: Contexte et cadre général

Intelligente Transportsysteme - DATEX II Datenaustausch
Spezifikationen für Verkehrsmanagement und
Informationen - Teil 1: Kontext und Rahmenstruktur

This Technical Specification (CEN/TS) was approved by CEN on 10 April 2011 for provisional application.

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Foreword

This document (CEN/TS 16157-1:2011) has been prepared by Technical Committee CEN/TC 278 “Road transport and traffic telematics”, 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 [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes ENV 13106:2000, ENV 13777:2000.

As a user of the standard, 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 CEN/TS 16157 DATEX II.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

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

This Technical Specification supports a methodology that is extensible.

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.

This document (i.e. CEN/TS 16157-1) is targeted towards all stakeholders that want to understand the modelling methodology applied throughout the DATEX II specifications. While this is potentially a wide range of readers, the document addresses specifically those users that intend to extend the DATEX II data model and therefore need to understand – and comply with – the modelling principles, the use of the “Unified Modeling Language” (UML) and other conventions for DATEX II modelling. The subject matter may be difficult to address without some basic background about the historical evolution and main design decisions taken. Users unfamiliar with this background may find a brief summary in Annex A. Users not (yet) familiar with the UML find a brief introduction in the informative Annex B.

Further to the UML modelling, this Technical Specification also defines the mapping of this model to the “eXtensible Markup Language” (XML), used for formatting data in DATEX II data exchanges. XML is the most widely used method nowadays of formatting data for business-to-business data exchange (i.e. centre-to-centre) over the Internet.

1 Scope

This Technical Specification (CEN/TS 16157-1) specifies and defines component facets required to support 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, communications specification.

This Technical Specification 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).

This Technical Specification 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 Technical Specification may be applicable for use by other actors.

This Technical Specification 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 information and advice relating to use of the road network.

This part of CEN/TS 16157 specifies the DATEX II framework of all parts of this Technical Specification, the context of use and the modelling approach taken and used throughout these Technical Specifications. This approach is described using formal methods and provides the mandatory reference framework for all other parts.

2 Conformance

This document provides requirements for UML models (as of ISO/IEC 19501:2005) that claim conformance with the DATEX II Technical Specifications. UML models claiming this conformance shall comply with the provisions of the normative clauses and annex of this part. Conformance with metadata constructs is subject to multiplicity requirements stated explicitly in the model or is implicitly defined in provisions of this Technical Specification. Metadata constructs with minimum multiplicity of 1 or more shall be present in any data claiming conformance. Metadata constructs with minimum multiplicity of 0 may be present or may be missing without violating conformance.

3 Normative references

The following referenced documents are indispensable for the application 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.

ISO 639-2:1998, *Codes for the representation of names of languages — Part 2: Alpha-3 code*

ISO 3166-1:2006, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes*

ISO/IEC 14977:1996, *Information technology — Syntactic metalanguage — Extended BNF*

ISO/IEC 19501:2005, *Information technology — Open Distributed Processing — Unified Modeling Language (UML) Version 1.4.2*

ISO/IEC 19503:2005, *Information technology — XML Metadata Interchange (XMI)*

4 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

4.1 Terms and definitions adapted from ISO/IEC 19501:2005

NOTE Definitions have been adapted to meet the particular use of UML within this specification.

4.1.1

association

semantic relationship between classes

4.1.2

association end

endpoint of an association, which connects the association to a class

4.1.3

aggregation

association where the target class is an aggregate; therefore the source class is a part. This characteristic is expressed in UML with an attribute named “aggregation” on the target side Association End being set to “aggregate”

4.1.4

attribute

named slot within a class that describes a range of values that instances of the class may hold

4.1.5

class

description of a set of objects that share the same attributes, relationships, and semantics

4.1.6

composition

association where the target class is a composite; therefore the source class is a part that is strongly owned by the composite and may not be part of any other composite. This characteristic is expressed in UML with an attribute named “aggregation” on the target side Association End being set to “composite”