PD CEN/TS 16157-4:2014

BSI Standards Publication

Intelligent transport systems — DATEX II data exchange specifications for traffic management and information

Part 4: Variable Message Sign (VMS) Publications

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee EPL/278, Intelligent transport systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

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ISBN 978 0 580 83808 8

ICS 35.240.60

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 May 2014.

Amendments issued since publication

Date	Text affected

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 16157-4

April 2014

ICS 35.240.60

English Version

Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 4: Variable Message Sign (VMS) Publications

Systèmes de transport intelligents - Spécifications Datex II d'échange de données pour la gestion du trafic et l'information routière - Partie 4 : Publication de VMS

Intelligente Transportsysteme - DATEX II Datenaustausch Spezifikationen für Verkehrsmanagement und Informationen - Teil 4: Variable Verkehrszeichen (VMS) Veröffentlichungen

This Technical Specification (CEN/TS) was approved by CEN on 27 January 2014 for provisional application.

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CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents Pages

Foreword

This document (CEN/TS 16157-4:2014) 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 [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

CEN/TS 16157-4:2014 consists of the following parts, under the general title “Intelligent transport systems — DATEX II data exchange specifications for traffic management and information”:

— Part 1: Context and framework

— Part 2: Location referencing

— Part 3: Situation publication

— Part 4: VMS publication

— Part 5: Measured and Elaborated Data Publications

The following parts are under preparation:

— Traffic view publication

— Communication specifications

Other parts may be developed in the future.

As a user of the standard, attention is drawn to the resources of www.datex2.eu < http://www.datex2.eu/>. This website contains related software tools and software resources that aid the implementation of the CEN/TS 16157 series 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey 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. 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.

Delivering European Transport Policy in line with the White Paper issued by the European Commission requires co-ordination of traffic management and the 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.

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

This Technical Specification supports a methodology that is extensible.

The fourth part of this Technical Specification deals with the publication of variable message sign (VMS) information. It specifies the structures and definitions of information that may be exchanged to convey details of the messages displayed on variable message signs, and the current configuration/characteristics and status of the variable message signs that are currently deployed on the road network.

The European Committee for Standardization (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 Technical Specification (CEN/TS 16157-4:2014) 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.

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 includes the following types of information 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 the CEN/TS 16157 series specifies the informational structures, relationships, roles, attributes and associated data types required for publishing variable message sign information within the Datex II framework. This is specified in two parts, a DATEX II VMS Publication sub-model and a VMS Table Publication sub-model.

The VMS Publication supports the exchange of the graphic and textual content of one or several VMS plus any status information on device configuration that aid the comprehension of the informational content. This content is potentially subject to rapid change. The VMS Table Publication supports the occasional exchange of tables containing generally static reference information about deployed VMS which enable subsequent efficient references to be made to pre-defined static information relating to those VMS. These publications are not intended to support the control or configuration of VMS equipment. Each is part of the DATEX II platform independent model.

1.1 Conformance

The platform independent sub-models defined by this Part specify a DATEX II VMS Publication and a DATEX II VMS Table Publication except for those elements that relate to location information which are specified in

CEN/TS 16157-2. The DATEX II platform independent data model of which these two publication sub-models are a part, corresponds to the Level A model as defined in CEN/TS 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 CEN/TS 16157-1 and with the following requirements of the sub-models 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.

2 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.

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

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

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

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

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in CEN/TS 16157-1 and in the following list shall apply.

4.1
legend
a sequence of text characters and/or symbols that is displayed on a variable message sign

4.2
location
identifiable geographic place

[EN ISO 19112:2005]

Note 1 to entry: It is either on a road network (as a point or a linear location) or as an area. This may be provided in one or more referencing systems.

4.3
pictogram
a representation of a graphic symbol displayed on a variable message sign by means of a (usually multi colour capable) matrix or LED display panel

4.4
supplementary panel
an additional display panel, either physically separate or integrated with the main display panel which may display information or regulatory instructions which are supplemental to the associated pictogram, comprising either an additional line of text or a pictogram or both

4.5
variable message sign
VMSA sign/display panel used for the purpose of displaying one or more messages (comprising any combination of textual, symbol or pictogram information) that may be changed or switched on or off as required

4.6
variable message sign unit
a roadside unit which may control one or more variable message signs on a single gantry/mounting or on closely associated separate gantries/mountings

4 Symbols and abbreviated terms

For the purposes of this document, the abbreviation of terms given in CEN/TS 16157-1 and in the following list shall apply.

HTML	Hyper Text Mark-up Language
IP	Internet Protocol
RSS	Really Simple Syndication
NOTE	Comprises a Web feed format used to publish frequently updated sources of information.
UML	Unified Modelling Language
URL	Uniform Resource Locator
VMS	Variable Message Sign

5 UML notation

The UML notation used in these Technical Specifications shall be as described in ISO/IEC 19501. A short summary explaining the notation used in this Technical Specification is provided in Annex A of CEN/TS 16157-1.

6 The VMS Publication model

6.1 Overview of the VMS Publication model

The VMS Publication model shall comprise a top level package, “VmsPublication” and some sub-packages from the “ReusableClasses” package. The “VmsPublication” top level package shall be one of a number which shall be immediately subordinate to the “PayloadPublication” package and hence shall form the top of the hierarchy in the VMS Publication sub-model.

The “VmsPublication” package shall make use of a subordinate “VmsUnit” package and a “VmsMessage” package that together shall model the details of what is currently displayed on and the status of variable

message signs. The “VmsUnit” and “VmsMessage” packages shall reside in the “VmsRelated” package which is within the “ReusableClasses” package because they are also used in the “SituationPublication” package.

Each “VmsPublication” instance shall contain details of a number of individual deployed VMS units, each of which may control one or more VMSs.

Some of the individual classes used within the “VmsPublication” package, principally those for modelling the characteristics of a VMS, also reside in the “VmsRelated” package which is within the “ReusableClasses” package as they are also used in the “VmsTablePublication” package”.

6.2 The Fault Package

6.2.1 Overview of the “VmsPublication” Package

The “Fault Package” is introduced to manage reusable classes to provide information related to fault for equipment and devices. Classes related to Vms are Fault VmsFault and VmsUnitFault.

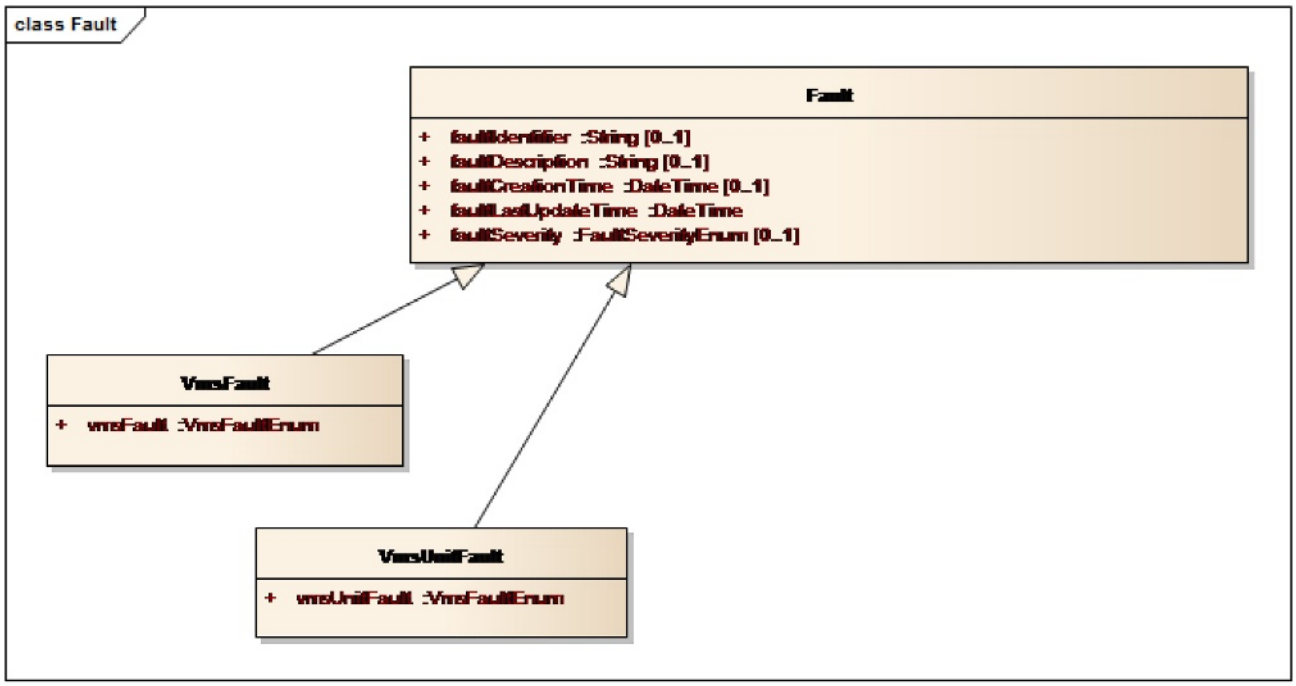

Figure 1 — The “Fault” package class model

6.2.2 Semantics of the “Fault” Package

6.2.2.1 “Fault” Class

Fault Class is defined in Fault package and is used to supply information about a fault relating to a specific piece of equipment or process. It provides information about fault start time, fault identification and description and severity. Fault may vary and update time is used to provide the period since the fault is unmodified. Fault Class is specialized for VMS Unit and VMS.

Attribute “faultCreationTime” may be used to provide the time the fault has been reported or recorded

Attribute “faultDescription may be used to provide a natural language description of the fault

Attribute “faultIdentifier may be used to provide a unique identifier of the fault

Attribute "faultLastUpdateTime may be used to provide the time the fault has been reported or recorded as updated

Attribute "faultSeverity" may be used to provide the severity of the fault

6.2.2.2 "VmsUnitFault" Class

VmsUnitFault class is used to provide information of faults related to VMSUnit

Attribute "VmsFault**"** shall be used to provide the detail of the fault

6.2.2.3 "VmsFault" Class

VmsUnitFault class is used to provide information of faults related to VMS

Attribute "VmsFault**"** shall be used to provide the detail of the fault

6.3 The "VmsPublication" Package

6.3.1 Overview of the "VmsPublication" Package

The "VmsPublication" package shall be immediately subordinate to the "PayloadPublication" package and shall comprise the sub-model for defining a publication which identifies the visual and textual content displayed on individual VMSs and the status and settings of those VMSs, where each VMS is controlled by an associated VMS unit (see Figure 2). The information shall be published in sets where each set relates to a particular VMS unit which may control one or more VMSs.

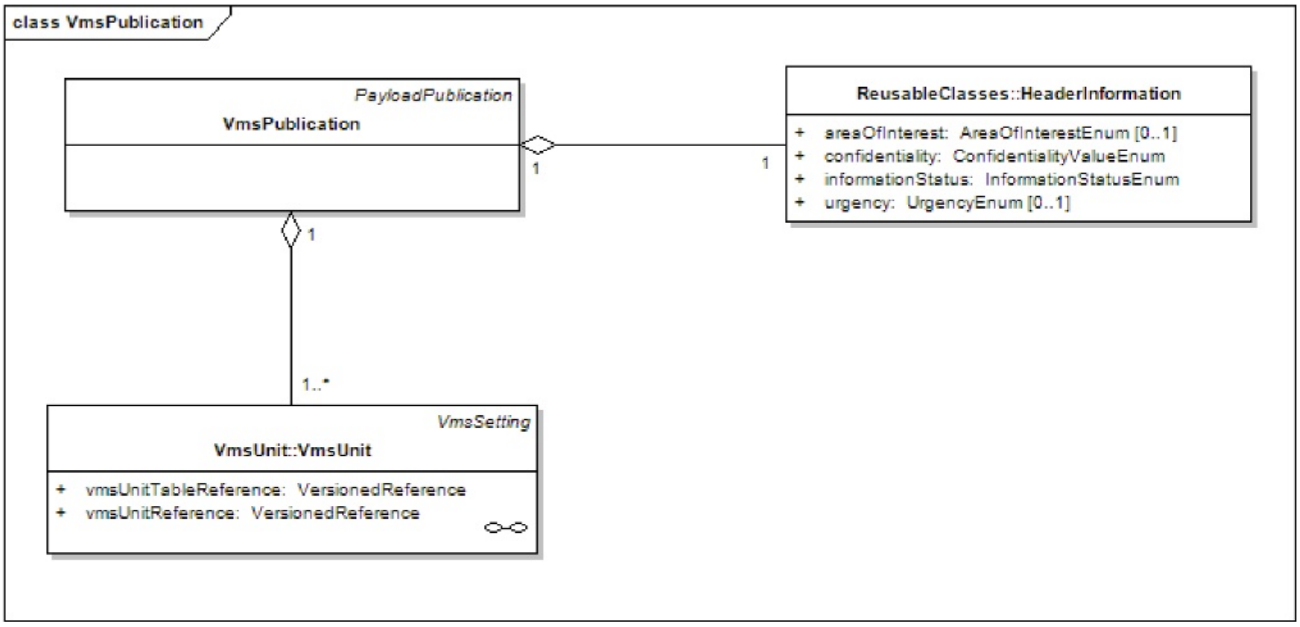

Figure 2 — The "VmsPublication" package class model

6.3.2 Semantics of the "VmsPublication" Package

6.3.2.1 "VmsPublication" package semantics - general

The "VmsPublication" class shall be a specific realizable case of a "PayloadPublication". Each "VmsPublication" may contain any number of separate sets of information, each relating to a set of VMSs which shall be controlled by the same VMS unit.

The information relating to each VMS in the “VmsPublication shall specify the message/s that have actually been set on the VMS at a specified time[1].

6.3.2.2 “VmsPublication” Class

The “VmsPublication” class shall be the base class for containing the published VMS information.

6.3.2.3 “HeaderInformation” Class

Each instance of a “VmsPublication” shall have associated metadata contained in an instance of the “HeaderInformation” class which shall allow the supplier of the publication to specify how the recipient of the “VmsPublication” should treat the information contained in it. For “HeaderInformation” class refer to CEN/TS 16157-3.

6.4 The “VmsUnit” Package

6.4.1 Overview of the “VmsUnit” Package

The package, “VmsUnit”, shall comprise a sub-model for defining information about the settings, status, and characteristics of VMS units and their component VMSs which are deployed on the road network (see Figure 3 — The “VmsUnit” package class model).

Each VMS unit[2] controls one or more VMSs, where a VMS may display one message or a sequence of messages each comprising a combination of textual, symbol or pictogram information.

A VMS can display only one message at a time where each individual message shall comprise zero or one text component and zero or more pictograms components (see Clause 6.5).

1) The information in the “VmsPublication” should relate to the current state of VMSs deployed on the road, and not to any state information at the control centre, such as “pending” or “queued” or to any prioritized lists of messages which may be displayed at some point in the future.

2) Variable Message Sign (VMS) units are mostly static installations but some may be mobile changing their locations from time to time. Matrix signs used by some countries are classed in DATEX II as a simple type of VMS with limited display capabilities.

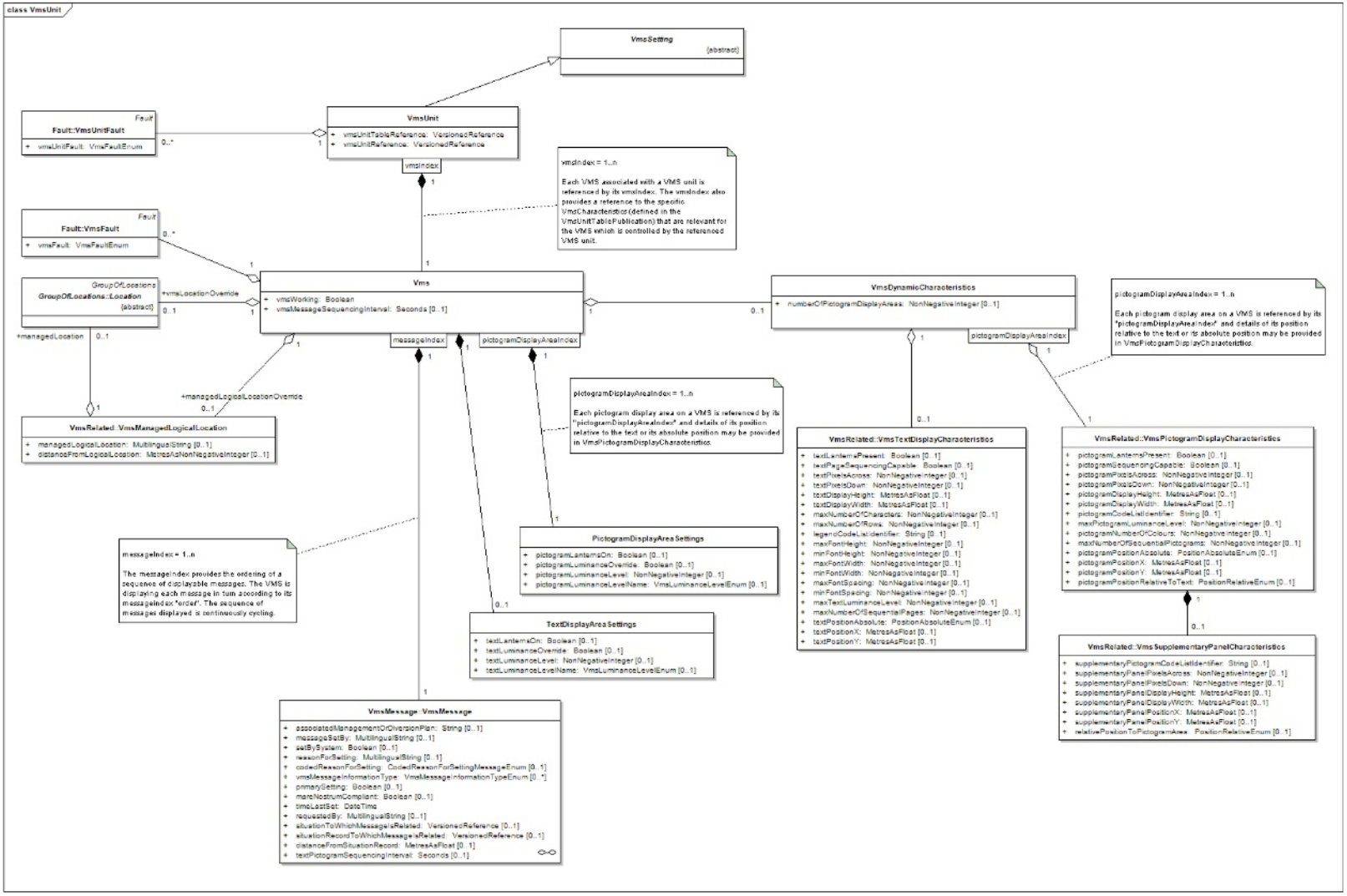

Figure 3 — The "VmsUnit" package class model

6.4.2 Semantics of the "VmsUnit" Package

6.4.2.1 "VmsUnit" package semantics - general

The "VmsUnit" package shall comprise a "VmsUnit" class which has one or more indexed components where each component shall model the details of an individual VMS that is controlled by the VMS unit.

The static characteristics of each VMS shall be identified by using an indexed reference into a specified record in a "VmsUnitTable" published in a "VmsTablePublication" (see Clause 7). Alternatively where a VMS's characteristics are more dynamic these may be given directly in this publication which, if provided, shall override any static characteristics defined in the referenced record in the "VmsUnitTable". The "VmsUnit" class shall be a specialization of the "VmsSetting" class which may be used in a Situation Publication to provide details of VMSs which are set as a direct result of the situation that is defined in the "SituationPublication" (see CEN/TS 16157-3, 7.23).

6.4.2.2 "VmsUnit" Class

An instance of the "VmsUnit" class shall represent a single VMS control unit at the roadside which may control one or more VMS. It shall be possible to associate fault information with each "VmsUnit" class instance via the "VmsFault" class.

Each VMS controlled by a VMS unit is referenced by its "vmsIndex" qualifier. The "vmsIndex" qualifier provides an index into the specific "VmsRecord" within the relevant "VmsUnitRecord" (see VmsTablePublication in Clause 7) from where the static VMS characteristics that are relevant for the VMS can be obtained. These VmsUnitRecords are contained in a referenced VmsUnitTable that is published in a VmsTablePublication.

— **Attribute "vmsUnitTableReference"** shall be used to provide a reference to an instance of a "VmsUnitTable" that is published in a "VmsTablePublication" which contains a set of VMS unit records where each record holds details of the characteristics and configuration data relating to a VMS unit and its controlled VMSs. This reference shall point to the relevant table which holds the record containing the details for this VMS unit.

— **Attribute "vmsUnitReference"** shall be used to provide a reference to an instance of a "VmsUnitRecord" within the referenced "VmsUnitTable" that is published in a "VmsTablePublication". The "VmsUnitRecord" shall contain the relevant characteristics and configuration details relating to this VMS unit and its controlled VMSs.

6.4.2.3 "VmsUnitFault" Class

An instance of the "VmsUnitFault" class shall allow a supplier of information via a DATEX II interface to provide fault information relating to a variable message sign control unit. More than one type of fault may exist at the same time. Each instance of a "VmsUnitFault" inherits fault details from the "Fault" class which, at a minimum, shall contain the time that the fault information was last updated.

6.4.2.4 "Vms" Class

An instance of the "Vms" class shall represent a single VMS and shall allow a supplier of information via a DATEX II interface to define what textual legend and pictograms are being displayed, its dynamic characteristics/configuration and any current fault status of the VMS.

A VMS may be set to display a sequence of messages in a defined order where each message comprises a combination of text pages and pictograms. In this case the "messageIndex" qualifier shall be used to distinguish the individual messages and their order of display.

Each VMS has a location which will normally be defined in the referenced record of a specific “VmsUnitTable”. Note that it is the location of the individual VMSs which is to be provided, not the location of the VMS unit which controls them.

Where the location of a VMS is dynamic or has changed recently, the current location shall be provided as an aggregation (“vmsLocationOverride”) to the “Vms” class instance which shall override any location given in a referenced “VmsUnitTable”. Similarly any location which a VMS is used to manage such as a car park or a road junction, that has changed recently, can be provided via the “managedLogicalLocationOverride” aggregation, again which shall override any managed location given in the relevant “VmsUnitTable” entry.

6.4.2.5 “VmsFault” Class

An instance of the “VmsFault” class shall allow a supplier to provide fault information relating to a VMS. More than one type of fault may exist at the same time. Each instance of a “VmsFault” class inherits fault details from the “Fault” class which, at a minimum, shall contain the time that the fault information was last updated.

6.4.2.6 “VmsDynamicCharacteristics” Class

An instance of the “VmsDynamicCharacteristics” class shall allow a supplier to associate dynamic characteristics with a VMS which shall override any characteristics given in the referenced record of the “VmsUnitTable”. The characteristics for each pictogram display area on the VMS shall be referenced by the area’s “pictogramDisplayAreaIndex” qualifier which provides a **notional** indication of the importance of the pictogram display area (“1” indicating the highest “importance”) as perceived by the supplier of the information. Note. “Importance” in the previous sentence refers to conventional semantic logic associated to interpretation and comprehension of information related to pictograms and text messages, e.g. in case of 2 pictos associated to a diaply text area, the 2 pictos can be at same side of VMS or one at left and the other at right side of the display text area, the highest relevance for occidental writing is the one on the left to the display text area, the other is the less relevant, normally is used to display complementary information such as cause or additional information.

6.4.2.7 “VmsTextDisplayCharacteristics” Class

An instance of the “VmsTextDisplayCharacteristics” class shall allow a supplier to identify the text display area characteristics currently being used on the VMS which, if provided, shall override those defined in the referenced record of the “VmsUnitTable”.

The characteristics for the text display area optionally include area dimensions (in pixels and metric measurements), font sizes, number of characters and rows, details of text area positioning on the VMS panel and the maximum luminance level.

— **Attribute “textPageSequencingCapable”** may be used to provide an indication of whether the VMS is capable of displaying a number of text pages which are automatically displayed in a defined sequence and at a defined rate.

— **Attribute “legendCodeListIdentifier”** may be used to identify what list of legends or texts are being used by the VMS. Usually specific deployments of VMS across a road network or part of a network will use defined sets of legend or text which are specified by the road authority/operator and are consistent with the display capabilities of the particular VMS. This attribute allows the identity of this list to be promulgated.

6.4.2.8 “VmsPictogramDisplayCharacteristics” Class

An instance of the “VmsPictogramDisplayCharacteristics” class shall allow a supplier to identify the pictogram display characteristics currently being used on the VMS within a particular display area which, if provided, shall override those defined in the referenced record of the “VmsUnitTable”.

The characteristics for the pictogram display area include area dimensions (in pixels and metric measurements), details of the positioning of the area on the VMS panel and the maximum luminance level.

— **Attribute "pictogramSequencingCapable"** may be used to provide an indication of whether the VMS is capable of displaying a number of separate pictograms in the particular pictogram display area which are automatically displayed in a defined sequence and at a defined rate.

— **Attribute "pictogramCodeListIdentifier"** may be used to identify what list of pictograms is being used by the VMS. Usually specific deployments of VMS across a road network or part of a network will use defined sets of pictograms which are specified by the road authority/operator and are consistent with the display capabilities of the particular VMS. This attribute allows the identity of this list to be promulgated.

6.4.2.9 "VmsSupplementaryPanelCharacteristics" Class

Each pictogram display area may have associated with it a maximum of one supplementary panel for displaying additional information or regulatory instructions that qualify what is being displayed in the particular pictogram display area. Supplementary panels are managed as part of the pictogram display area that they support.

An instance of the "VmsSupplementaryPanelCharacteristics" class shall allow a supplier to identify supplementary panel display characteristics currently being used on the VMS which, if provided, shall override those defined in the referenced record of the "VmsUnitTable".

The characteristics for the supplementary panel include area dimensions (in pixels and metric measurements) and details of area positioning on the VMS panel.

6.4.2.10 "TextDisplayAreaSettings" Class

An instance of the "TextDisplayAreaSettings" class shall allow a supplier to identify the current settings applicable to the distinct text display area. These are settings such as luminance level and whether lanterns are on which are normally independent of the text message currently being displayed.

6.4.2.11 "PictogramDisplayAreaSettings" Class

An instance of the "PictogramDisplayAreaSettings" class which is referenced by its "pictogramDisplayAreaIndex" qualifier shall allow a supplier to identify the current settings applicable to a distinct pictogram display area. These are settings such as luminance level and whether lanterns are on which are normally independent of the pictogram currently being displayed in that area.

6.5 The "VmsMessage" Package

6.5.1 Overview of the "VmsMessage" Package

The package, "VmsMessage", shall comprise a sub-model for defining information about individual messages displayed on a VMS. Individual messages displayed at a given time are modelled as comprising zero or one text component and zero or more pictograms components where each component is displayed in a specific display area on a VMS.

Each text component shall comprise one or more text pages, multiple text pages being sequenced. Each pictogram component shall comprise one or more sequenced pictograms each with possible additional supplementary information or regulatory instructions that qualify the displayed pictogram. Multiple text pages and pictograms shall be sequenced in a specified order and at a specified interval.

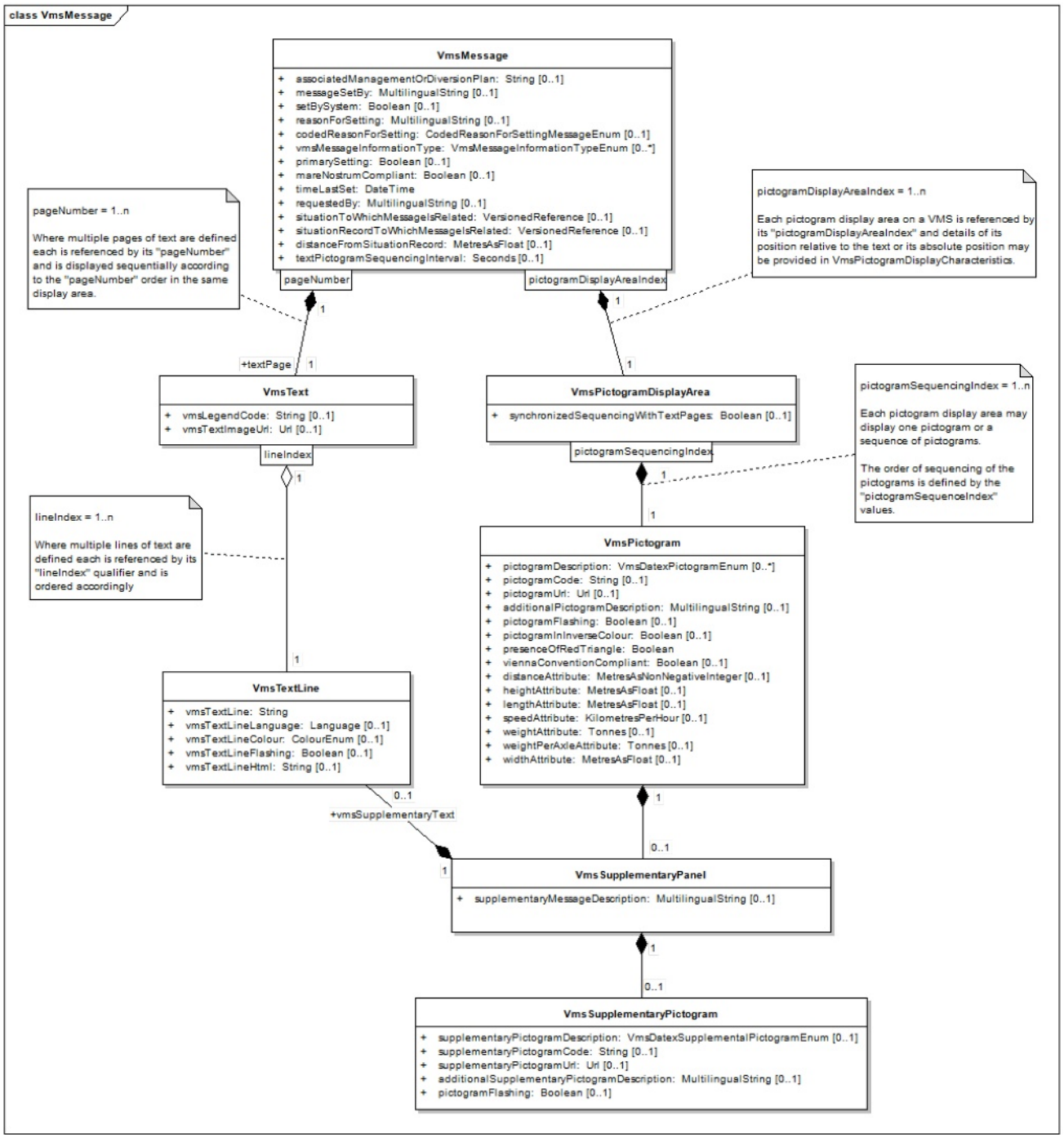

Figure 4 — The "VmsMessage" package class model

6.5.2 Semantics of the "VmsMessage" Package

6.5.2.1 "VmsMessage" package semantics - general

The "VmsMessage" package shall comprise a "VmsMessage" class which has a number of indexed components which either model pages of text displayed in a single text display area or a number of pictograms and supplementary information displayed in one or more pictogram including a possible supplementary display area on the VMS.

Where multiple text pages are specified for display in the text display area the order in which they are displayed is identified by the “pageNumber” qualifier order.

For each pictogram display area used by a VMS message a sequence of separate pictograms may be specified as being displayed in that area. A pictogram display area which is specified as displaying a sequence of pictograms may be specified as having the pictograms sequenced in synchronism with the set of sequenced text pages (see Clause 6.5.2.5).

6.5.2.2 “VmsMessage” Class

An instance of the “VmsMessage” class which is referenced by its “messageIndex” qualifier shall allow a supplier of information via a DATEX II interface to identify the details of the message currently being displayed on the VMS’s text display area, the various pictogram display areas and the supplementary panel display areas which may exist to support the pictogram display areas.

The “messageIndex” qualifier on the association with the “Vms” class shall indicate the order of display of the messages if there are multiple messages specified, the sequence continuously cycling. If there is only one message being displayed the “messageIndex” shall have a value of “1”.

6.5.2.3 “VmsText” Class

An instance of the “VmsText” class shall allow a supplier of information via a DATEX II interface to identify what text is displayed in the text display area and what it looks like on the VMS.

— **Attribute “vmsLegendCode”** shall identify the code of the legend/text from the legend code list referenced in the “VmsTextDisplayCharacteristics” class (see Clause 6.4.2.7). Typically this will use the individual road authority’s/operator’s coding scheme for the different text messages. It does not give any indication of the line breaks in the displayed text. Line break detail is specified by providing an indexed sequence of instances of the “VmsTextLine” class which gives the actual text strings for each line.

The “pageNumber” qualifier shall be used to indicate the order of sequencing of the pages of text, the value of “1” indicating the first page of text. Sequencing, if used, shall be assumed to continuously cycle through the ordered pages of text at a constant rate (the sequencing interval can be specified in the “VmsMessage” class).

6.5.2.4 “VmsTextLine” Class

An instance of the “VmsTextLine” class shall allow a supplier to identify what text is displayed on a single line in the text display area, or in the supplementary panel area. It also allows the language and the colour of the text line to be specified, and whether it is flashing or has any special formatting applied to it. Each line of text can potentially be in a different language which supports the use of multilingual displays.

The “lineIndex” qualifier shall be used to indicate the order of the lines of text, the value of “1” indicating the top or first line of the text.

6.5.2.5 “VmsPictogramDisplayArea” Class

An instance of the “VmsPictogramDisplayArea” class shall allow a supplier to associate a pictogram or sequence of pictograms that are being displayed with a specific pictogram display area on the VMS.

— **Attribute “synchronizedSequencingWithTextPages”** shall be used to indicate that the sequence of pictograms defined for display on this pictogram display area is sequenced in synchronism with the sequence of text pages on the text display area. If there is a mismatch in the number of text pages and pictograms, the sequences shall be assumed to resynchronize at the start of each sequence.

The “pictogramDisplayAreaIndex” qualifier shall be used to indicate which pictogram display area is being referenced, the value of “1” notionally indicating the most important pictogram display area. (for the meaning of importance refer to Note on 6.3.2.6)

6.5.2.6 "VmsPictogram" Class

An instance of the "VmsPictogram" class shall allow a supplier to identify the pictogram which is currently displayed or which is in a sequence of pictograms that are currently being displayed in the specified pictogram display area on the VMS.

— **Attribute "viennaConventionCompliant"** shall be used to indicate that the pictogram is consistent with one defined in the Vienna Convention on road signs and signals as modified by "UNECE Consolidated Resolution on Road Signs and Signals".

The "pictogramSequencingIndex" qualifier shall be used to indicate the order of sequencing of the pictograms, the value of "1" indicating the first pictogram in the sequence. Sequencing, if used, shall be assumed to continuously cycle through the ordered sequence of pictograms at a constant rate (the sequencing interval can be specified in the "VmsMessage" class).

6.5.2.7 "VmsSupplementaryPanel" Class

An instance of the "VmsSupplementaryPanel" class shall allow a supplier to identify what is displayed on the panel which is supplementary to a pictogram display area (normally below it). A supplementary panel may display one line of text and/or a single supplementary pictogram. A textual description of what is displayed in the supplementary panel may be provided in this class.

6.5.2.8 "VmsSupplementaryPictogram" Class

An instance of the "VmsSupplementaryPictogram" class shall allow a supplier to identify what pictogram is displayed on the supplementary panel. This will normally be one from a limited set.

7 The VMS Table Publication model

7.1 Overview of the VMS Table Publication model

The VMS Table Publication model shall comprise a top level package, "VmsTablePublication" which utilizes some classes from the "ReusableClasses" package. This package is one of a number which are immediately subordinate to the "PayloadPublication" package and hence forms the top of the hierarchy in the VMS Table Publication sub-model.

The "VmsTablePublication" package shall model the normally static characteristics of VMS units and their controlled VMSs.

Each "VmsTablePublication" instance shall contain one or more instances of a "VmsUnitTable", each table containing a number of "VmsUnitRecords" which relate to deployed VMS units. Each "VmsUnitRecord" shall contain one or more "VmsRecords" each of which relates to a specific VMS that is controlled by the VMS unit.

Although the characteristics of VMSs and VMS units modelled in this publication are normally static, sometimes these characteristics change over a period of time. For instance changes do occur in the location of VMSs when they are of a mobile type or in the number of lines of text if the sign supports variable font sizes. In these cases, some of the characteristics defined in this publication may be overridden by more up-to-date information promulgated in a "VmsPublication". VMS characteristics information provided in a "VmsPublication" shall always override any characteristics information provided in the records of a "VmsTablePublication".

7.2 The "VmsTablePublication" Package

7.2.1 Overview of the "VmsTablePublication" Package

The "VmsTablePublication" package shall be immediately subordinate to the "PayloadPublication" package and shall comprise a sub-model for defining publishable VMS unit tables which comprise records containing

normally static information relating to deployed VMS units and their controlled VMSs (see Figure 5). Each publication may contain one or more tables, allowing logical partitioning of VMS static information as deemed most appropriate for recipients of VMS information by the supplier (e.g. by road designation or other geographic criteria or by type of VMS equipment etc.).

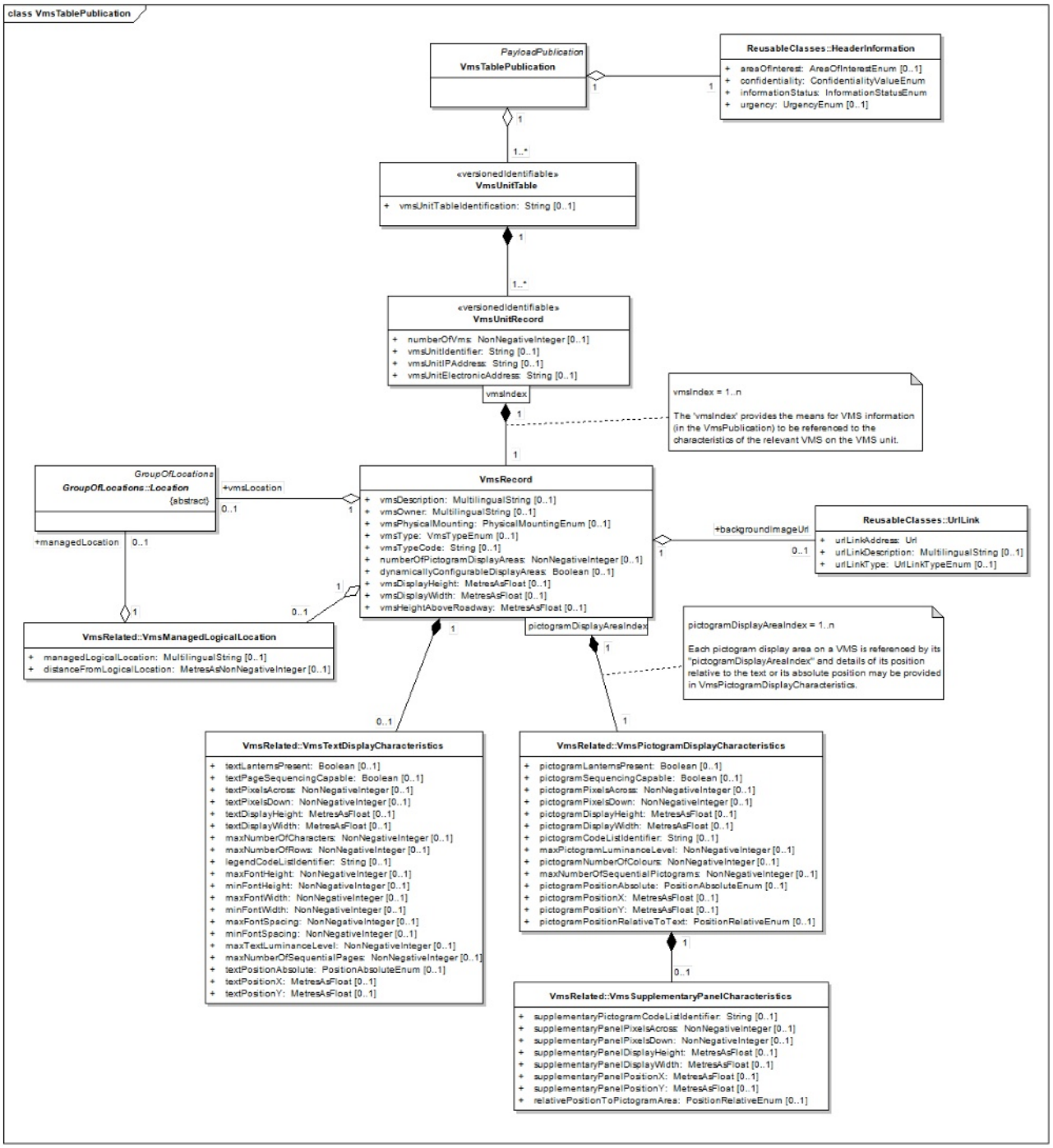

Figure 5 — The "VmsTablePublication" package class model

7.2.2 Semantics of the "VmsTablePublication" Package

7.2.2.1 "VmsTablePublication" package semantics - general

The "VmsTablePublication" class shall be a specific realizable case of a "PayloadPublication". Each "VmsTablePublication" may contain any number of separate VMS Unit Tables.

The information in the "VmsTablePublication" shall relate to the VMS units and their controlled VMSs currently deployed on the road, and shall contain the normally static characteristics of those devices at a specified point in time. However, the characteristics of any VMS given in the "VmsTablePublication" shall be overridden by any corresponding characteristics that are given in a "VmsPublication" for the same VMS.

7.2.2.2 "VmsTablePublication" Class

The "VmsTablePublication" class shall be the base class for containing the published VMS unit tables.

7.2.2.3 "HeaderInformation" Class

Each instance of a "VmsTablePublication" shall have associated metadata contained in an instance of the "HeaderInformation" class which shall allow the supplier of the "VmsTablePublication" to specify how the recipient should treat the information contained in it. For "HeaderInformation" class refer to CEN/TS 16157-3.

7.2.2.4 "VmsUnitTable" Class

An identifiable versioned instance of the "VmsUnitTable" class shall contain any logical collection of "VmsUnitRecords". A supplier may choose to provide a textual identifier for a particular "VmsUnitTable" to clarify the logical collection of "VmsUnitRecords".

7.2.2.5 "VmsUnitRecord" Class

An identifiable versioned instance of the "VmsUnitRecord" class shall contain the characteristics information relating to a specific VMS unit. Each record shall have one or more indexed "VmsRecord" sub-records for containing the characteristics of the individual VMSs that are controlled by the VMS unit. The "vmsIndex" qualifier allows the specific VMS that is controlled by the VMS unit to be specified.

7.2.2.6 "VmsRecord" Class

An instance of the "VmsRecord" class shall allow a supplier to identify the normally static characteristics of a VMS. The location of the VMS may be specified via the aggregation "vmsLocation" and any location that is managed by the VMS such as a car park or junction may be specified via an aggregation with the "VmsManagedLogicalLocation" class.

If a VMS is of a type that has a "painted" background image upon which variable message information is placed, the aggregation "backgroundImageUrl" can be specified where a URL link can provide details of the background image.

7.2.2.7 "VmsTextDisplayCharacteristics" Class

An instance of the "VmsTextDisplayCharacteristics" class shall allow a supplier to identify the normally static characteristics relating to the textual display area of a VMS. See Clause 6.4.2.7 for further details of this class.

7.2.2.8 "VmsPictogramDisplayCharacteristics" Class

An instance of the "VmsPictogramDisplayCharacteristics" class shall allow a supplier to identify the normally static characteristics relating to a particular pictogram display area of a VMS. The "pictogramDisplayAreaIndex" qualifier shall be used to indicate which pictogram display area is being referenced. See Clause 6.4.2.8 for further details of this class.

7.2.2.9 “VmsSupplementaryPanelCharacteristics” Class

An instance of the “VmsSupplementaryPanelCharacteristics” class shall allow a supplier to identify the normally static characteristics relating to a supplementary display panel which is associated with a particular pictogram display area on a VMS. See Clause 6.4.2.9 for further details of this class.

Annex A
(normative)

Data Dictionary

A.1 Overview

This data dictionary identifies the definitions and characteristics of the different classes, attributes, association roles, data types and enumerations appearing in the data model defined in Clauses 6 and 7. The data dictionary is specified in three parts for each of the two publications, one for packages, one for < < datatypes > > and one for < < enumerations > > , each ordered alphabetically.

The generic data types which are used throughout all publications are defined in CEN/TS 16157-1 Annex E, Clause E5.

The first part of the data dictionary for each publication is partitioned into sub-clauses which relate to each of the UML model packages and each sub-clause defines the contained classes, their attributes and any roles defined for associations between the classes within that package.

The Data Dictionary tables use the following columns:

1) Column **Class name**: it provides the symbolic name (Upper Camel Case) given to the corresponding class.

2) Column **Role name**: it provides the symbolic name (Lower Camel Case) given to the corresponding role of an association.

3) Column **Attribute name**: it provides the symbolic name (Lower Camel Case) given to the corresponding attribute of a class.

4) Column **Enumerated value name**: It provides the symbolic name (Lower Camel Case) given to the corresponding enumerated value.

5) Column **Designation**: it provides the corresponding name in natural language of the corresponding class, attribute, role or enumeration value.

6) Column **Definition**: it provides a comprehensive definition detailing the class, attribute or role.

7) Column **Stereotype**: it provides a statement of the stereotype that is assigned to the class, if any - see CEN/TS 16157-1 Annex A Clause C3 for further details.

8) Column **Abstract**: it provides a statement as to whether the class is abstract (non realizable) or concrete (realizable).

9) Column **Multiplicity**: it provides a statement of the allowed multiplicity for the attribute or role.

10) Column **Target**: It provides the name of the class which is at the end of the association to which the role applies.

11) Column **Type**: it provides the name of the class used to define the data type relating to the attribute of the class.

A.2 Data Dictionary for “VMS Publication”

A.2.1 “Fault” package

A.2.1.1 “Fault” package classes

Table A.1 — Classes of the “Fault” package

Class name	Designation	Definition	Stereotype	Abstract
Fault	Fault	Information about a fault relating to a specific piece of equipment or process.		no
VmsFault	VMS fault	Details of the fault which is being reported for the specified variable message sign panel.		no
VmsUnitFault	VMS unit fault	Details of the fault which is being reported for the specified variable message sign control unit.		no

A.2.1.2 “Fault” package association roles

There are no defined association roles in the “Fault” package.

A.2.1.3 “Fault” package attributes

Table A.2— Attributes of the “Fault” package

Class name	Attribute name	Designation	Definition	Multiplicity	Type
Fault	faultCreationTime	Fault creation time	The date and time at which the fault was originally recorded/reported.	0..1	DateTime
	faultDescription	Fault description	Textual description of the fault.	0..1	String
	faultIdentifier	Fault identifier	Unique identifier of the fault.	0..1	String
	faultLastUpdateTime	Fault last update time	The date and time at which the fault information as specified in this instance was last updated.	1..1	DateTime
	faultSeverity	Fault severity	The severity of the fault in terms of how it affects the usability of the equipment or the reliability of the data generated by the equipment.	0..1	FaultSeverityEnum
VmsFault	vmsFault	VMS fault	The type of fault which is being reported for the specified variable message sign panel.	1..1	VmsFaultEnum
VmsUnitFault	vmsUnitFault	VMS unit fault	The type of fault which is being reported for the VMS unit.	1..1	VmsFaultEnum

A.2.2 “VmsMessage” package

A.2.2.1 “VmsMessage” package classes

Table A.3— Classes of the “VmsMessage” package

Class name	Designation	Definition	Stereotype	Abstract
VmsMessage	VMS message	A message displayed on a VMS which may comprise one or more sequentially displayed text pages and/or pictograms with supplementary details. When in a sequence of displayed messages sequencing of text pages and pictograms within a message are prohibited.		no
VmsPictogram	VMS pictogram	A main pictogram displayable on the VMS panel. Note a main pictogram may have an associated supplementary panel which may itself contain a further pictogram and line of text.		no
VmsPictogramDisplayArea	VMS pictogram display area	An area on a VMS used for the display of pictograms and associated supplemental information or instructions.		no
VmsSupplementaryPanel	VMS supplementary panel	A panel which may display information or a regulatory instruction which is supplemental to the associated pictogram, comprising either an additional line of text or a pictogram or both.		no
VmsSupplementaryPictogram	VMS supplementary pictogram	An additional pictogram that is displayed in the panel which is supplemental to the associated pictogram display.		no
VmsText	VMS text	A page of text (comprising one or more ordered lines) that are displayed simultaneously on the VMS. Where more than one page is defined these are sequentially displayed according to their “pageNumber”.		no
VmsTextLine	VMS text line	A single line of text on a text display area or supplementary panel.		no

A.2.2.2 "VmsMessage" package association roles

Table A.4— Associations of the "VmsMessage" package

Class name	Role name	Designation	Definition	Multiplicity	Target
VmsMessage	textPage	Text page		1..1	VmsText
VmsSupplementaryPanel	vmsSupplementaryText	VMS supplementary text	One line of text displayed in the panel which is supplemental to the pictogram display.	0..1	VmsTextLine

A.2.2.3 "VmsMessage" package attributes

Table A.5 — Attributes of the "VmsMessage" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type
VmsMessage	associatedManagementOrDiversionPlan	Associated management or diversion plan	The identification of the traffic management plan or diversion plan with which the message is associated.	0..1	String
	codedReasonForSetting	Coded reason for setting	The reason, in terms of a high level coded classification, why the sign has been set.	0..1	CodedReasonForSettingMessageEnum
	distanceFromSituationRecord	Distance from situation record	Distance of the VMS from the location of the related situation record/element. If the VMS is located within the extent of the situation record/element this should be set to zero.	0..1	MetresAsFloat
	mareNostrumCompliant	Mare nostrum compliant	Indication that the displayed message (text and pictogram) conforms with the formulation recommended by the Mare Nostrum project.	0..1	Boolean
	messageSetBy	Message set by	The organization or authority which set the message currently being displayed.	0..1	MultilingualString

Class name	Attribute name	Designation	Definition	Multiplicity	Type
	primarySetting	Primary setting	Identifies whether the message setting is primary (explicitly requested) or is secondary (derived according to an algorthm as the result of setting other signs). True = a primary setting.	0..1	Boolean
	reasonForSetting	Reason for setting	The reason why the sign has been set.	0..1	MultilingualString
	requestedBy	Requested by	The authority, organization or system which requested the setting of the message. This may be different from the authority or system which actually set the message on behalf of the requestor.	0..1	MultilingualString
	setBySystem	Set by system	Indicates whether the message has been set automatically by a system. True = automatically set.	0..1	Boolean
	situationRecordToWhichMessageIsRelated	Situation record to which message is related	A reference to the situation record/element within a managed situation to which the set message relates.	0..1	VersionedReference
	situationToWhichMessageIsRelated	Situation to which message is related	A reference to the managed situation to which the set message relates.	0..1	VersionedReference
	textPictogramSequencingInterval	Text pictogram sequencing interval	The time duration that each text page or pictogram within a message is displayed for before the VMS displays the next text page and/or pictogram in the message.	0..1	Seconds
	timeLastSet	Time last set	The date/time at which the sign was last set.	1..1	DateTime
	vmsMessageInformationType	VMS message information type	Type of information being displayed.	0..*	VmsMessageInformationTypeEnum
VmsPictogram	additionalPictogramDescription	Additional pictogram description	Additional description of the pictogram.	0..1	MultilingualString

Class name	Attribute name	Designation	Definition	Multiplicity	Type
	distanceAttribute	Distance attribute	Value of distance that is displayable as part of the pictogram (e.g. for keep minimum safe distance).	0..1	MetresAsNonNegativeInteger
	heightAttribute	Height attribute	Value of height that is displayable as part of the pictogram (e.g. for a vehicle height restriction).	0..1	MetresAsFloat
	lengthAttribute	Length attribute	Value of length that is displayable as part of the pictogram (e.g. for a vehicle length restriction).	0..1	MetresAsFloat
	pictogramCode	Pictogram code	The code of the pictogram from the pictogram code list referenced in the VmsPictogramDisplayCharacteristics for the VMS that is identified in the relevant VMS Unit table.	0..1	String
	pictogramDescription	Pictogram description	Description of the (main) displayed pictogram.	0..*	VmsDatexPictogramEnum
	pictogramFlashing	Pictogram flashing	Indication of whether the pictogram is flashing.	0..1	Boolean
	pictogramInInverseColour	Pictogram in inverse colour	The pictogram is displayed in inverse colour (i.e. the colours are the inverse of normal).	0..1	Boolean
	pictogramUrl	Pictogram url	Reference to a URL from where an image of the displayed pictogram can be obtained.	0..1	Url
	presenceOfRedTriangle	Presence of red triangle	Indication of the presence of a red triangle around the pictogram, often used to indicate imminence, typically within 2km, of signed danger.	1..1	Boolean
	speedAttribute	Speed attribute	Value of speed that is displayable as part of the pictogram (e.g. for a maximum speed limit).	0..1	KilometresPerHour

Class name	Attribute name	Designation	Definition	Multiplicity	Type
	viennaConventionCompliant	Vienna convention compliant	Indicates that the displayed pictogram conforms with the Vienna Convention defined pictogram list as modified by “UNECE Consolidated Resolution on Road Signs and Signals”.	0..1	Boolean
	weightAttribute	Weight attribute	Value of weight that is displayable as part of the pictogram (e.g. for a maximum weight restriction).	0..1	Tonnes
	weightPerAxleAttribute	Weight per axle attribute	Value of axle weight that is displayable as part of the pictogram (e.g. for a maximum axle weight restriction).	0..1	Tonnes
	widthAttribute	Width attribute	Value of width that is displayable as part of the pictogram (e.g. for a vehicle width restriction).	0..1	MetresAsFloat
VmsPictogramDisplayArea	synchronizedSequencingWithTextPages	Synchronized sequencing with text pages	Indicates whether the sequence of pictograms are sequenced synchronously with the text pages. If there is a mismatch in the number of sequenced text pages and sequenced pictograms, the sequences are assumed to resynchronize at the start of each sequence.	0..1	Boolean
VmsSupplementaryPanel	supplementaryMessageDescription	Supplementary message description	Free text description of the message that is displayed in the panel which is supplemental to the main pictogram display.	0..1	MultilingualString
VmsSupplementaryPictogram	additionalSupplementaryPictogramDescription	Additional supplementary pictogram description	Additional free text description of the supplementary pictogram.	0..1	MultilingualString
	pictogramFlashing	Pictogram flashing	Indication of whether the pictogram is flashing.	0..1	Boolean

Class name	Attribute name	Designation	Definition	Multiplicity	Type
	supplementaryPictogramCode	Supplementary pictogram code	The code of the supplementary pictogram from the supplementary pictogram code list referenced in the VmsSupplementaryPanelCharacteristics for the VMS that is identified in the relevant VMS Unit table.	0..1	String
	supplementaryPictogramDescription	Supplementary pictogram description	Description of the supplementary displayed pictogram.	0..1	VmsDatexSupplementalPictogramEnum
	supplementaryPictogramUrl	Supplementary pictogram url	Reference to a URL from where an image of the displayed supplementary pictogram can be obtained.	0..1	Url
VmsText	vmsLegendCode	VMS legend code	The code of the legend/text from the legend code list referenced in the VmsTextDisplayCharacteristics.	0..1	String
	vmsTextImageUrl	VMS text image url	Reference to a URL from where an image of the displayed legend text can be obtained.	0..1	Url
VmsTextLine	vmsTextLine	VMS text line	A free-text string that is displayed on a single line on the text display area.	1..1	String
	vmsTextLineColour	VMS text line colour	The colour of the displayed line of text.	0..1	ColourEnum
	vmsTextLineFlashing	VMS text line flashing	Indication of whether the displayed line of text is flashing.	0..1	Boolean
	vmsTextLineHtml	VMS text line html	The displayed line of text defined by an HTML string showing text formatting tags.	0..1	String
	vmsTextLineLanguage	VMS text line language	The language of the displayed line of text, specified by an ISO 639-2, 3-alpha code.	0..1	Language

A.2.3 “VmsPublication” package

A.2.3.1 “VmsPublication” package classes

Table A.6— Classes of the “VmsPublication” package

Class name	Designation	Definition	Stereotype	Abstract
VmsPublication	VMS publication	A publication containing the current status and settings of one or more VMS units, each unit controlling one or more individual variable message signs.		no

A.2.3.2 “VmsPublication” package association roles

There are no defined association roles in the “VmsPublication” package.

A.2.3.3 “VmsPublication” package attributes

There are no defined attributes in the “VmsPublication” package.

A.2.4 “VmsRelated” package

A.2.4.1 “VmsRelated” package classes

Table A.7— Classes of the “VmsRelated” package

Class name	Designation	Definition	Stereotype	Abstract
VmsManagedLogicalLocation	VMS managed logical location	The logical location (e.g. a car park, a section of road, a junction etc.) which a VMS contributes to the management of.		no
VmsPictogramDisplayCharacteristics	VMS pictogram display characteristics	Characteristics specific to the pictogram display area(s) on the VMS where pictogramDisplayAreaIndex indicates which pictogram area it relates to.		no
VmsSupplementaryPanelCharacteristics	VMS supplementary panel characteristics	Characteristics of a panel which may display details (sometimes regulatory in nature) that are supplemental to the main pictogram, comprising an additional line of text and/or a pictogram.		no
VmsTextDisplayCharacteristics	VMS text display characteristics	Characteristics specific to the textual display area on the VMS.		no

A.2.4.2 “VmsRelated” package association roles

Table A.8 — Associations of the “VmsRelated” package

Class name	Role name	Designation	Definition	Multiplicity	Target
VmsManagedLogicalLocation	managedLocation	Managed location	The location which is managed by the variable message sign, such as the location of a junction or a car park.	0..1	Location

A.2.4.3 “VmsRelated” package attributes

Table A.9— Attributes of the “VmsRelated” package

Class name	Attribute name	Designation	Definition	Multiplicity	Type
VmsManagedLogicalLocation	distanceFromLogicalLocation	Distance from logical location	Distance in metres of the VMS from the logical location which this sign contributes to the management of.	0..1	MetresAsNonNegativeInteger
	managedLogicalLocation	Managed logical location	Identification of the logical location (e.g. a car park, a section of road, a junction etc.) which this sign contributes to the management of.	0..1	MultilingualString
VmsPictogramDisplayCharacteristics	maxNumberOfSequentialPictograms	Max number of sequential pictograms	The maximum number of pictograms that can be sequenced through on the pictogram display area.	0..1	NonNegativeInteger
	maxPictogramLuminanceLevel	Max pictogram luminance level	Maximum integer luminance level that is available on the pictogram display area of the VMS.	0..1	NonNegativeInteger
	pictogramCodeListIdentifier	Pictogram code list identifier	Indicates which pictogram code list is referenced.	0..1	String
	pictogramDisplayHeight	Pictogram display height	The vertical height measured in metres of the specific pictogram display area.	0..1	MetresAsFloat
	pictogramDisplayWidth	Pictogram display width	The horizontal width measured in metres of the specific pictogram display area.	0..1	MetresAsFloat

Class name	Attribute name	Designation	Definition	Multiplicity	Type
	pictogramLanternsPresent	Pictogram lanterns present	Indicates whether the VMS is equipped with flashing lanterns associated with the pictogram display area.	0..1	Boolean
	pictogramNumberOfColours	Pictogram number of colours	The number of colours the pictogram display area is capable of rendering.	0..1	NonNegativeInteger
	pictogramPixelsAcross	Pictogram pixels across	Number of pixels horizontally across the pictogram display area of the VMS.	0..1	NonNegativeInteger
	pictogramPixelsDown	Pictogram pixels down	Number of pixels vertically down the pictogram display area of the VMS.	0..1	NonNegativeInteger
	pictogramPositionAbsolute	Pictogram position absolute	The position of the area in which the pictogram is displayed, i.e. at the left, right, top or bottom of the VMS display.	0..1	PositionAbsoluteEnum
	pictogramPositionRelativeToText	Pictogram position relative to text	The position of the area in which the pictogram is displayed relative to the textual area of the VMS (e.g. to the left, to the right ....).	0..1	PositionRelativeEnum
	pictogramPositionX	Pictogram position x	The X-coordinate (horizontal) position of the area in which the pictogram is displayed measured from the bottom left of the sign's overall display area to the bottom left of the specific pictogram display area.	0..1	MetresAsFloat
	pictogramPositionY	Pictogram position y	The Y-coordinate (vertical) position of the area in which the pictogram is displayed measured from the bottom left of the sign's overall display area to the bottom left of the specific pictogram display area.	0..1	MetresAsFloat
	pictogramSequencingCapable	Pictogram sequencing capable	Indicates whether the pictogram display area on the VMS is capable of sequencing through multiple pictograms. True = capable.	0..1	Boolean

Class name	Attribute name	Designation	Definition	Multiplicity	Type
VmsSupplementaryPanelCharacteristics	relativePositionToPictogramArea	Relative position to pictogram area	The position of the panel in which the supplementary details are displayed relative to the position of the pictogram display area which it is used to qualify (e.g. below).	0..1	PositionRelativeEnum
	supplementaryPanelDisplayHeight	Supplementary panel display height	The vertical height measured in metres of the supplementary panel display area.	0..1	MetresAsFloat
	supplementaryPanelDisplayWidth	Supplementary panel display width	The horizontal width measured in metres of the supplementary panel display area.	0..1	MetresAsFloat
	supplementaryPanelPixelsAcross	Supplementary panel pixels across	Number of pixels horizontally across the supplementary panel display area.	0..1	NonNegativeInteger
	supplementaryPanelPixelsDown	Supplementary panel pixels down	Number of pixels vertically down the supplementary panel display area.	0..1	NonNegativeInteger
	supplementaryPanelPositionX	Supplementary panel position x	The X-coordinate (horizontal) position of the supplementary panel measured from the bottom left of the sign's overall display area to the bottom left of the supplementary panel.	0..1	MetresAsFloat
	supplementaryPanelPositionY	Supplementary panel position y	The Y-coordinate (vertical) position of the supplementary panel measured from the bottom left of the sign's overall display area to the bottom left of the supplementary panel.	0..1	MetresAsFloat
	supplementaryPictogramCodeListIdentifier	Supplementary pictogram code list identifier	Indicates which supplementary pictogram code list is referenced.	0..1	String
VmsTextDisplayCharacteristics	legendCodeListIdentifier	Legend code list identifier	Indicates which legend/text code list is referenced. This may be specific to the VMS type defined by vmsTypeCode.	0..1	String
	maxFontHeight	Max font height	Maximum font height in pixels.	0..1	NonNegativeInteger

Class name	Attribute name	Designation	Definition	Multiplicity	Type
	maxFontSpacing	Max font spacing	Maximum font spacing in pixels.	0..1	NonNegativeInteger
	maxFontWidth	Max font width	Maximum font width in pixels.	0..1	NonNegativeInteger
	maxNumberOfCharacters	Max number of characters	Maximum number of displayable characters on a single line in the textual display area of the VMS.	0..1	NonNegativeInteger
	maxNumberOfRows	Max number of rows	Maximum number of rows of displayable characters in the textual display area of the VMS.	0..1	NonNegativeInteger
	maxNumberOfSequentialPages	Max number of sequential pages	Maximum number of text pages which the VMS is capable of scrolling through sequentially, (2 to n).	0..1	NonNegativeInteger
	maxTextLuminanceLevel	Max text luminance level	Maximum integer luminance level that is available on the textual display area of the VMS.	0..1	NonNegativeInteger
	minFontHeight	Min font height	Minimum font height in pixels.	0..1	NonNegativeInteger
	minFontSpacing	Min font spacing	Minimum font spacing in pixels.	0..1	NonNegativeInteger
	minFontWidth	Min font width	Minimum font width in pixels.	0..1	NonNegativeInteger
	textDisplayHeight	Text display height	The vertical height measured in metres of the specific text display area.	0..1	MetresAsFloat
	textDisplayWidth	Text display width	The horizontal width measured in metres of the specific text display area.	0..1	MetresAsFloat
	textLanternsPresent	Text lanterns present	Indicates whether the VMS is equipped with flashing lanterns associated with the textual display area.	0..1	Boolean

Class name	Attribute name	Designation	Definition	Multiplicity	Type
	textPageSequencingCapable	Text page sequencing capable	Indicates whether the text display on the VMS is capable of sequencing through multiple pages of text. True = capable.	0..1	Boolean
	textPixelsAcross	Text pixels across	Number of pixels horizontally across the textual display area of the VMS.	0..1	NonNegativeInteger
	textPixelsDown	Text pixels down	Number of pixels vertically down the textual display area of the VMS.	0..1	NonNegativeInteger
	textPositionAbsolute	Text position absolute	The position of the area in which the text is displayed, e.g. at the left, right, top or bottom of the VMS display.	0..1	PositionAbsoluteEnum
	textPositionX	Text position x	The X-coordinate (horizontal) position of the area in which the text is displayed measured from the bottom left of the sign's overall display area to the bottom left of the specific text display area.	0..1	MetresAsFloat
	textPositionY	Text position y	The Y-coordinate (vertical) position of the area in which the text is displayed measured from the bottom left of the sign's overall display area to the bottom left of the specific text display area.	0..1	MetresAsFloat

A.2.5 “VmsUnit” package

Table A.10— Classes of the “VmsUnit” package

“VmsUnit” package classes**Class name**	**Designation**	**Definition**	**Stereotype**	**Abstract**
PictogramDisplayAreaSettings	Pictogram display area settings	Settings specific to a distinct pictogram display area on the VMS (where pictogramIndex indicates which pictogram area it relates to if there is more than one pictogram display area on the VMS).		no
TextDisplayAreaSettings	Text display area settings	Settings specific to a distinct text display area on the VMS.		no
Vms	Vms	Provides the current status and settings of the VMS and the currently displayed information. Where a VMS is displaying a sequence or alternating set of messages these are ordered according to the messageIndex qualifier.		no
VmsDynamicCharacteristics	VMS dynamic characteristics	Provides the current characteristic settings for the VMS which can be dynamically configured and therefore which override any corresponding characteristics set for the VMS in the relevant VmsUnitPublication.		no
VmsSetting	VMS setting	Provides information on variable message signs and the information currently displayed.		yes
VmsUnit	VMS unit	Status of a VMS unit which may control one or more variable message signs on a single gantry or on different gantries.		no

A.2.5.1 "VmsUnit" package association roles

Table A.11— Associations of the "VmsUnit" package

Class name	Role name	Designation	Definition	Multiplicity	Target
Vms	managedLogicalLocationOverride	Managed logical location override	The current location that is being managed by the VMS which overrides any stated in the associated VMSTable entry. Typically it is used for giving the updated managed location of a mobile VMS which has recently been moved.	0..1	VmsManagedLogicalLocation
	vmsLocationOverride	VMS location override	The current point location of the VMS which overrides that stated in the associated VMSTable entry. Typically it is used for giving the updated location of a mobile VMS which has recently been moved.	0..1	Location

A.2.5.2 "VmsUnit" package attributes

Table A.12— Attributes of the "VmsUnit" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type
PictogramDisplayAreaSettings	pictogramLanternsOn	Pictogram lanterns on	Indicates if the lanterns are turned on or off for the pictogram display area.	0..1	Boolean
	pictogramLuminanceLevel	Pictogram luminance level	Luminance level, expressed as an integer, that is set for the pictogram display area of the VMS. This may be set automatically by the VMS or by the instation or operator.	0..1	NonNegativeInteger
	pictogramLuminanceLevelName	Pictogram luminance level name	Luminance level, expressed as a symbolic name, that is set for the pictogram display area of the VMS. This may be set automatically by the VMS or by the instation or operator.	0..1	VmsLuminanceLevelEnum
	pictogramLuminanceOverride	Pictogram luminance override	Indicates whether the automatic luminance level of the VMS for the pictogram display area is being overriden (i.e. by a level set by the instation or operator).	0..1	Boolean

Class name	Attribute name	Designation	Definition	Multiplicity	Type
TextDisplayAreaSettings	textLanternsOn	Text lanterns on	Indicates if the lanterns are turned on or off for the text display area.	0..1	Boolean
	textLuminanceLevel	Text luminance level	Luminance level, expressed as an integer, that is set for the text display area of the VMS. This may be set automatically by the VMS or by the instation or operator.	0..1	NonNegativeInteger
	textLuminanceLevelName	Text luminance level name	Luminance level, expressed as a symbolic name, that is set for the text display area of the VMS. This may be set automatically by the VMS or by the instation or operator.	0..1	VmsLuminanceLevelEnum
	textLuminanceOverride	Text luminance override	Indicates whether the automatic luminance level of the VMS for the text display area is being overriden (i.e. by a level set by the instation or operator).	0..1	Boolean
Vms	vmsMessageSequencingInterval	VMS message sequencing interval	The time duration that each message is displayed for before the VMS displays the next message in the sequence.	0..1	Seconds
	vmsWorking	VMS working	Indicates whether the VMS is usable. Note it may still be usable with minor faults.	1..1	Boolean
VmsDynamicCharacteristics	numberOfPictogramDisplayAreas	Number of pictogram display areas	Number of pictogram display areas which the VMS contains.	0..1	NonNegativeInteger
VmsUnit	vmsUnitReference	VMS unit reference	A reference to a versioned VMS unit record in a VMS Unit table which defines the characteristics of the VMS unit.	1..1	VersionedReference
	vmsUnitTableReference	VMS unit table reference	A reference to a versioned VMS Unit table.	1..1	VersionedReference

A.3 Data Dictionary of < < datatypes > > for “VMS Publication”

This clause contains the definitions of all data types which are used in the “VMS Publication”.

A.3.1 The < < datatype > > “KilometresPerHour”

For Definition refer to CEN/TS 16157-3

A.3.2 The < < datatype > > “MetresAsFloat”

For Definition refer to CEN/TS 16157-3.

A.3.3 The < < datatype > > “MetresAsNonNegativeInteger”

For Definition refer to CEN/TS 16157-3.

A.3.4 The < < datatype > > “Seconds”

For Definition refer to CEN/TS 16157-3.

A.3.5 The < < datatype > > “Tonnes”

For Definition refer to CEN/TS 16157-3.

A.4 Data Dictionary of < < enumerations > > for “VMS Publication”

This clause contains the definitions of all enumerations which are used in the “VMS Publication”.

A.4.1 The < < enumeration > > “CodedReasonForSettingMessageEnum”

Coded reasons why a message has been selected for display on the sign.

Table A.13— Values contained in the enumeration “CodedReasonForSettingMessageEnum”

Enumerated value name	Designation	Definition
campaign	Campaign	VMS is currently selected to display a campaign message.
default	Default	VMS is currently selected to display default information (e.g. time, date, temperature).
operatorCreated	Operator created	Message selected by operator as the result of an unmanaged event or situation.
situation	Situation	Message selected as the result of a situation occurring either on or off the road which may affect road users.
trafficManagement	Traffic management	Message selected as part of the implementation of a traffic management action. This may or may not be part of a specific traffic management or diversion plan.
travelTime	Travel time	VMS is currently selected to display travel times.

A.4.2 The < < enumeration > > “ColourEnum”

Colours.

Table A.14— Values contained in the enumeration “ColourEnum”

Enumerated value name	Designation	Definition
amber	Amber	The colour amber.
blue	Blue	The colour blue.
green	Green	The colour green.
red	Red	The colour red.
white	White	The colour white.
whiteYellow	White yellow	The colour white-yellow.

A.4.3 The < < enumeration > > “PositionAbsoluteEnum”

Absolute positions of an item within an allotted space.

Table A.15— Values contained in the enumeration “PositionAbsoluteEnum”

Enumerated value name	Designation	Definition
atBottom	At bottom	At the bottom of the allotted space.
atTop	At top	At the top of the allotted space.
onLeft	On left	On the left of the allotted space.
onRight	On right	On the right of the allotted space.

A.4.4 The < < enumeration > > “PositionRelativeEnum”

Relative positions of one item to another.

Table A.16— Values contained in the enumeration “PositionRelativeEnum”

Enumerated value name	Designation	Definition
above	Above	Positioned above relative item.
below	Below	Positioned below relative item.
toTheLeft	To the left	Positioned to the left of relative item.
toTheRight	To the right	Positioned to the right of relative item.

A.4.5 The < < enumeration > > “VmsDatexPictogramEnum”

Types of main pictograms.

Table A.17— Values contained in the enumeration “VmsDatexPictogramEnum”

Enumerated value name	Designation	Definition
accident	Accident	Accident.
advisorySpeed	Advisory speed	Advisory speed limit.
animalsOnRoad	Animals on road	Animal(s) on the road.
blankVoid	Blank void	Blank or void.
bridgeClosed	Bridge closed	Bridge closed.
bridgeSwingInOperation	Bridge swing in operation	Bridge swing in operation.
carParkFull	Car park full	Car park full.
carParkSpacesAvailable	Car park spaces available	Spaces available in car park.
carriagewayNarrows	Carriageway narrows	The carriageway narrows ahead.
carriagewayNarrowsOnTheLeft	Carriageway narrows on the left	The carriageway narrows ahead from the left.
carriagewayNarrowsOnTheRight	Carriageway narrows on the right	The carriageway narrows ahead from the right.
carriagewayReducedToOneLane	Carriageway reduced to one lane	Carriageway reduced to one lane.

Enumerated value name	Designation	Definition
carriagewayReducedToThreeLanes	Carriageway reduced to three lanes	Carriageway reduced to three lanes.
carriagewayReducedToTwoLanes	Carriageway reduced to two lanes	Carriageway reduced to two lanes.
chainsOrSnowTyresRecommended	Chains or snow tyres recommended	Chains or snow tyres are recommended.
compulsoryMinimumSpeed	Compulsory minimum speed	Mandatory minimum speed limit.
crossWind	Cross wind	Cross wind.
dangerOfFire	Danger of fire	Danger of fire.
drivingOfVehiclesLessThanXMetresApartProhibited	Driving of vehicles less than x metres apart prohibited	The driving of vehicles less than X metres apart is prohibited.
endOfAdvisorySpeed	End of advisory speed	End of advisory speed.
endOfCompulsoryMinimumSpeed	End of compulsory minimum speed	End of compulsory minimum speed limit.
endOfProhibitionOfOvertaking	End of prohibition of overtaking	End of prohibition of overtaking.
endOfProhibitionOfOvertakingForGoodsVehicles	End of prohibition of overtaking for goods vehicles	End of prohibition of overtaking for goods vehicles.
endOfSpeedLimit	End of speed limit	End of mandatory speed limit.
exitClosed	Exit closed	Exit closed.
fallingRocks	Falling rocks	Danger of rock fall or landslide.
fastenChildrensSeatBelts	Fasten children's seat belts	Fasten the seat belts of children.
fastenYourSeatBelt	Fasten your seat belt	Fasten your seat belt.
fire	Fire	Fire.
floodingOrFlashFloods	Flooding or flash floods	Flooding or flash floods.
fog	Fog	Fog.
footballMatch	Football match	Football match (current or anticipated disruption due to football match).
hardShoulderNotRunning	Hard shoulder not running	Hard shoulder running is in operation.
hardShoulderRunning	Hard shoulder running	Hard shoulder running is not in operation.

Enumerated value name	Designation	Definition
keepASafeDistance	Keep a safe distance	Keep a safe distance.
keepLeft	Keep left	Keep left.
keepRight	Keep right	Keep right.
lane1ClosedOf2	Lane1 closed of2	Lane 1 closed on a 2 lane carriageway. Lanes numbered from nearside (next to hard shoulder on motorway) to central median.
lane1ClosedOf3	Lane1 closed of3	Lane 1 closed on a 3 lane carriageway. Lanes numbered from nearside (next to hard shoulder on motorway) to central median.
lane1ClosedOf4	Lane1 closed of4	Lane 1 closed on a 4 lane carriageway. Lanes numbered from nearside (next to hard shoulder on motorway) to central median.
lane2ClosedOf2	Lane2 closed of2	Lane 2 closed on a 2 lane carriageway. Lanes numbered from nearside (next to hard shoulder on motorway) to central median.
lane3ClosedOf3	Lane3 closed of3	Lane 3 closed on a 3 lane carriageway. Lanes numbered from nearside (next to hard shoulder on motorway) to central median.
lane4ClosedOf4	Lane4 closed of4	Lane 4 closed on a 4 lane carriageway. Lanes numbered from nearside (next to hard shoulder on motorway) to central median.
laneClosed	Lane closed	Lane closed.
laneDeviationToLeft	Lane deviation to left	Lane deviates to the left.
laneDeviationToRight	Lane deviation to right	Lane deviates to the right.
laneOpen	Lane open	Lane open.
lanes1And2And3ClosedOf4	Lanes1 and2 and3 closed of4	Lanes 1, 2 and 3 closed on a 4 lane carriageway. Lanes numbered from nearside (next to hard shoulder on motorway) to central median.

Enumerated value name	Designation	Definition
lanes1And2ClosedOf3	Lanes1 and2 closed of3	Lanes 1 and 2 closed on a 3 lane carriageway. Lanes numbered from nearside (next to hard shoulder on motorway) to central median.
lanes1And2ClosedOf4	Lanes1 and2 closed of4	Lanes 1 and 2 closed on a 4 lane carriageway. Lanes numbered from nearside (next to hard shoulder on motorway) to central median.
lanes2And3And4ClosedOf4	Lanes2 and3 and4 closed of4	Lanes 2, 3 and 4 closed on a 4 lane carriageway. Lanes numbered from nearside (next to hard shoulder on motorway) to central median.
lanes2And3ClosedOf3	Lanes2 and3 closed of3	Lanes 2 and 3 closed on a 3 lane carriageway. Lanes numbered from nearside (next to hard shoulder on motorway) to central median.
lanes3And4ClosedOf4	Lanes3 and4 closed of4	Lanes 3 and 4 closed on a 4 lane carriageway. Lanes numbered from nearside (next to hard shoulder on motorway) to central median.
leftHandLaneClosed	Left hand lane closed	Left hand lane closed ahead.
lightSignals	Light signals	Traffic light signals ahead.
looseGravel	Loose gravel	Loose gravel.
maintenanceVehicleInAction	Maintenance vehicle in action	Maintenance vehicles in action.
maximumSpeedLimitedToTheFigure Indicated	Maximum speed limited to the figure indicated	Mandatory maximum speed limit, displayed as speed limit inside a red circle.
narrowLanesAead	Narrow lanes ahead	Narrow lanes ahead.
noEntry	No entry	No entry.
noEntryForAnyPowerDrivenVehicle DrawingATrailer	No entry for any power driven vehicle drawing a trailer	No entry for any power driven vehicle drawing a trailer

Enumerated value name	Designation	Definition
noEntryForAnyPowerDrivenVehicleDrawingATrailerOtherThanASemiTrailerOrASingleAxleTrailer	No entry for any power driven vehicle drawing a trailer other than a semi-trailer or a single axle trailer	No entry to any power driven vehicle drawing a trailer other than a semi-trailer or a single axle trailer. A semi-trailer is one designed to be coupled to a motor vehicle so that part of its weight and that of its load is borne by the motor vehicle.
noEntryForGoodsVehicles	No entry for goods vehicles	No entry for goods vehicles.
noEntryForVehiclesCarryingDangerousGoods	No entry for vehicles carrying dangerous goods	No entry for vehicles carrying dangerous goods.
noEntryForVehiclesExceedingXTonnesLadenMass	No entry for vehicles exceeding x tonnes laden mass	No entry for vehicles exceeding X tonnes laden mass.
noEntryForVehiclesHavingAMassExceedingXTonnesOnOneAxle	No entry for vehicles having a mass exceeding x tonnes on one axle	No entry for vehicles having a mass exceeding X tonnes on a single axle.
noEntryForVehiclesHavingAnOverallHeightExceedingXMetres	No entry for vehicles having an overall height exceeding x metres	No entry for vehicles having an overall height exceeding X metres.
noEntryForVehiclesHavingAnOverallLengthExceedingXMetres	No entry for vehicles having an overall length exceeding x metres	No entry for vehicles having an overall length exceeding X metres.
noEntryForVehiclesHavingAnOverallWidthExceedingXMetres	No entry for vehicles having an overall width exceeding x metres	No entry for vehicles having an overall width exceeding X metres.
other	Other	Other than as defined in this enumeration.
otherDangers	Other dangers	Danger ahead of an unspecified nature.
overtakingByGoodsVehiclesProhibited	Overtaking by goods vehicles prohibited	Overtaking prohibited for goods vehicles.
overtakingProhibited	Overtaking prohibited	Overtaking prohibited.
pollutionOrSmogAlert	Pollution or smog alert	Pollution or smog alert.
queue	Queue	Queue ahead.
rain	Rain	Rain.
rightHandLaneClosed	Right hand lane closed	Right hand lane closed ahead.

Enumerated value name	Designation	Definition
roadClosedAhead	Road closed ahead	Road closed ahead.
roadworks	Roadworks	Roadworks.
slipperyRoad	Slippery road	Slippery road.
smoke	Smoke	Smoke.
snow	Snow	Snow.
snowChainsCompulsory	Snow chains compulsory	The use of snow chains is compulsory.
snowPloughInAction	Snow plough in action	Snow plough(s) in action.
snowTyresCompulsory	Snow tyres compulsory	The use of snow tyres is compulsory.
speedCamerasInAction	Speed cameras in action	Speed cameras in action.
trafficCongestion	Traffic congestion	Traffic congestion and possible queues.
trafficDeviatedToOppositeCarriagewayAhead	Traffic deviated to opposite carriageway ahead	All traffic is diverted to the opposite carriageway ahead in a contraflow layout.
trafficPartiallyDeviatedToOppositeCarriagewayAhead	Traffic partially deviated to opposite carriageway ahead	Traffic is partially diverted to the opposite carriageway ahead in a contraflow layout.
tunnelClosed	Tunnel closed	Tunnel closed.
turnLeft	Turn left	Mandatory turn left.
turnRight	Turn right	Mandatory turn right.
twoWayTraffic	Two way traffic	Two way traffic (on a single carriageway).
unevenRoad	Uneven road	Uneven road surface.
vehicleFire	Vehicle fire	Vehicle fire.

A.4.6 The < < enumeration > > “VmsDatexSupplementalPictogramEnum”

Types of pictograms displayable in supplementary panels (normally below the main pictogram display which it qualifies).

Table A.18— Values contained in the enumeration "VmsDatexSupplementalPictogramEnum"

Enumerated value name	Designation	Definition
distanceToTheBeginningofTheApplicationZone	Distance to the beginningof the application zone	Distance to the beginning of the application zone.
exceptAnyPowerDrivenVehicleDrawingTrailer	Except any power driven vehicle drawing trailer	Except any power driven vehicle drawing a trailer.
exceptBus	Except bus	Except for buses.
exceptGoodsVehicles	Except goods vehicles	Except for goods vehicles.
exceptSemiTrailer	Except semi-trailer	Except for semi-trailers (i.e. any trailer designed to be coupled to a motor vehicle in such a way that part of its weight and that of its load is borne by the motor vehicle).
exceptVehiclesCarryingDangerousGoods	Except vehicles carrying dangerous goods	Except for vehicles carrying dangerous goods (i.e. for which special sign plating is prescribed).
inCaseOfIceOrSnow	In case of ice or snow	In case of ice or snow.
lengthOfTheApplicationZone	Length of the application zone	Length of the applicable zone.
maintenanceVehicles	Maintenance vehicles	Maintenance vehicles.
other	Other	Other than as defined in this enumeration.
restricetdToBus	Restricted to bus	Restricted to buses.
restrictedToAnyPowerDrivenVehicleDrawingTrailer	Restricted to any power driven vehicle drawing trailer	Restricted to any power driven vehicle drawing a trailer.
restrictedToGoodsVehicles	Restricted to goods vehicles	Restricted to goods vehicles.
restrictedToSemiTrailer	Restricted to semi-trailer	Restricted to semi-trailers (i.e. any trailer designed to be coupled to a motor vehicle in such a way that part of its weight and that of its load is borne by the motor vehicle).
restrictedToVehiclesCarryingDangerousGoods	Restricted to vehicles carrying dangerous goods	Restricted to vehicles carrying dangerous goods (i.e. for which special sign plating is prescribed).
snowPloughs	Snow ploughs	Snow ploughs.

A.4.7 The < < enumeration > > “VmsLuminanceLevelEnum”

Levels of luminance applicable to VMS.

Table A.19— Values contained in the enumeration “VmsLuminanceLevelEnum”

Enumerated value name	Designation	Definition
broadDaylight	Broad daylight	Luminance is set at level defined for normal broad day light conditions.
foggyDay	Foggy day	Luminance is set at level defined for foggy day time conditions.
foggyNight	Foggy night	Luminance is set at level defined for foggy night time conditions.
night	Night	Luminance is set at level defined for night time.
overcast	Overcast	Luminance is set at level defined for overcast or dull day time conditions.
sunInEyes	Sun in eyes	Luminance is set at level defined for conditions where drivers will have sun in their eyes.
sunOnBack	Sun on back	Luminance is set at level defined for conditions where drivers will have sun behind them.
switchedOff	Switched off	Luminance level is zero as light source is switched off.
testing	Testing	Luminance is set at testing level.

A.4.8 The < < enumeration > > “VmsMessageInformationTypeEnum”

Types of information displayable on a VMS.

Table A.20— Values contained in the enumeration “VmsMessageInformationTypeEnum”

Enumerated value name	Designation	Definition
campaignMessage	Campaign message	Campaign type information which is non time specific that may request certain actions (e.g. “do not drink and drive”) or which is intended to influence drivers' behaviour.
dateTime	Date time	Current date and/or time information.
futureInformation	Future information	Information which may inform road users about future situations which potentially may cause congestion or influence future travel plans (e.g. future roadworks, closures, sporting events, public concerts, suspension of train or ferry services).
instructionOrMessage	Instruction or message	Instructions or messages to road users which are relevant at the current time, (e.g. “do not throw out any burning objects” or an Amber alert message).
situationWarning	Situation warning	Information warning of a current situation likely to affect traffic on the road ahead.
temperature	Temperature	Temperature information.
trafficManagement	Traffic management	Information comprising traffic management instructions.
travelTime	Travel time	Travel time information.

A.5 Data Dictionary for “VMS Table Publication”

A.5.1 “VmsRelated” package

A.5.1.1 “VmsRelated” package classes

Table A.21— Classes of the “VmsRelated” package

Class name	Designation	Definition	Stereotype	Abstract
VmsManagedLogicalLocation	VMS managed logical location	The logical location (e.g. a car park, a section of road, a junction etc.) which a VMS contributes to the management of.		no
VmsPictogramDisplayCharacteristics	VMS pictogram display characteristics	Characteristics specific to the pictogram display area(s) on the VMS where pictogramDisplayAreaIndex indicates which pictogram area it relates to.		no
VmsSupplementaryPanelCharacteristics	VMS supplementary panel characteristics	Characteristics of a panel which may display details (sometimes regulatory in nature) that are supplemental to the main pictogram, comprising an additional line of text and/or a pictogram.		no
VmsTextDisplayCharacteristics	VMS text display characteristics	Characteristics specific to the textual display area on the VMS.		no

A.5.1.2 “VmsRelated” package association roles

Table A.22— Associations of the “VmsRelated” package

Class name	Role name	Designation	Definition	Multiplicity	Target
VmsManagedLogicalLocation	managedLocation	Managed location	The location which is managed by the variable message sign, such as the location of a junction or a car park.	0..1	Location

A.5.1.3 “VmsRelated” package attributes

Table A.23— Attributes of the “VmsRelated” package

Class name	Attribute name	Designation	Definition	Multiplicity	Type
VmsManagedLogicalLocation	distanceFromLogicalLocation	Distance from logical location	Distance in metres of the VMS from the logical location which this sign contributes to the management of.	0..1	MetresAsNonNegativeInteger
	managedLogicalLocation	Managed logical location	Identification of the logical location (e.g. a car park, a section of road, a junction etc.) which this sign contributes to the management of.	0..1	MultilingualString
VmsPictogramDisplayCharacteristics	maxNumberOfSequentialPictograms	Max number of sequential pictograms	The maximum number of pictograms that can be sequenced through on the pictogram display area.	0..1	NonNegativeInteger
	maxPictogramLuminanceLevel	Max pictogram luminance level	Maximum integer luminance level that is available on the pictogram display area of the VMS.	0..1	NonNegativeInteger
	pictogramCodeListIdentifier	Pictogram code list identifier	Indicates which pictogram code list is referenced.	0..1	String
	pictogramDisplayHeight	Pictogram display height	The vertical height measured in metres of the specific pictogram display area.	0..1	MetresAsFloat
	pictogramDisplayWidth	Pictogram display width	The horizontal width measured in metres of the specific pictogram display area.	0..1	MetresAsFloat
	pictogramLanternsPresent	Pictogram lanterns present	Indicates whether the VMS is equipped with flashing lanterns associated with the pictogram display area.	0..1	Boolean
	pictogramNumberOfColours	Pictogram number of colours	The number of colours the pictogram display area is capable of rendering.	0..1	NonNegativeInteger
	pictogramPixelsAcross	Pictogram pixels across	Number of pixels horizontally across the pictogram display area of the VMS.	0..1	NonNegativeInteger
	pictogramPixelsDown	Pictogram pixels down	Number of pixels vertically down the pictogram display area of the VMS.	0..1	NonNegativeInteger

Class name	Attribute name	Designation	Definition	Multiplicity	Type
	pictogramPositionAbsolute	Pictogram position absolute	The position of the area in which the pictogram is displayed, i.e. at the left, right, top or bottom of the VMS display.	0..1	PositionAbsoluteEnum
	pictogramPositionRelativeToText	Pictogram position relative to text	The position of the area in which the pictogram is displayed relative to the textual area of the VMS (e.g. to the left, to the right ....).	0..1	PositionRelativeEnum
	pictogramPositionX	Pictogram position x	The X-coordinate (horizontal) position of the area in which the pictogram is displayed measured from the bottom left of the sign's overall display area to the bottom left of the specific pictogram display area.	0..1	MetresAsFloat
	pictogramPositionY	Pictogram position y	The Y-coordinate (vertical) position of the area in which the pictogram is displayed measured from the bottom left of the sign's overall display area to the bottom left of the specific pictogram display area.	0..1	MetresAsFloat
	pictogramSequencingCapable	Pictogram sequencing capable	Indicates whether the pictogram display area on the VMS is capable of sequencing through multiple pictograms. True = capable.	0..1	Boolean
VmsSupplementaryPanelCharacteristics	relativePositionToPictogramArea	Relative position to pictogram area	The position of the panel in which the supplementary details are displayed relative to the position of the pictogram display area which it is used to qualify (e.g. below).	0..1	PositionRelativeEnum
	supplementaryPanelDisplayHeight	Supplementary panel display height	The vertical height measured in metres of the supplementary panel display area.	0..1	MetresAsFloat
	supplementaryPanelDisplayWidth	Supplementary panel display width	The horizontal width measured in metres of the supplementary panel display area.	0..1	MetresAsFloat
	supplementaryPanelPixelsAcross	Supplementary panel pixels across	Number of pixels horizontally across the supplementary panel display area.	0..1	NonNegativeInteger

Class name	Attribute name	Designation	Definition	Multiplicity	Type
	supplementaryPanelPixelsDown	Supplementary panel pixels down	Number of pixels vertically down the supplementary panel display area.	0..1	NonNegativeInteger
	supplementaryPanelPositionX	Supplementary panel position x	The X-coordinate (horizontal) position of the supplementary panel measured from the bottom left of the sign's overall display area to the bottom left of the supplementary panel.	0..1	MetresAsFloat
	supplementaryPanelPositionY	Supplementary panel position y	The Y-coordinate (vertical) position of the supplementary panel measured from the bottom left of the sign's overall display area to the bottom left of the supplementary panel.	0..1	MetresAsFloat
	supplementaryPictogramCodeListIdentifier	Supplementary pictogram code list identifier	Indicates which supplementary pictogram code list is referenced.	0..1	String
VmsTextDisplayCharacteristics	legendCodeListIdentifier	Legend code list identifier	Indicates which legend/text code list is referenced. This may be specific to the VMS type defined by vmsTypeCode.	0..1	String
	maxFontHeight	Max font height	Maximum font height in pixels.	0..1	NonNegativeInteger
	maxFontSpacing	Max font spacing	Maximum font spacing in pixels.	0..1	NonNegativeInteger
	maxFontWidth	Max font width	Maximum font width in pixels.	0..1	NonNegativeInteger
	maxNumberOfCharacters	Max number of characters	Maximum number of displayable characters on a single line in the textual display area of the VMS.	0..1	NonNegativeInteger
	maxNumberOfRows	Max number of rows	Maximum number of rows of displayable characters in the textual display area of the VMS.	0..1	NonNegativeInteger

Class name	Attribute name	Designation	Definition	Multiplicity	Type
	maxNumberOfSequentialPages	Max number of sequential pages	Maximum number of text pages which the VMS is capable of scrolling through sequentially, (2 to n).	0..1	NonNegativeInteger
	maxTextLuminanceLevel	Max text luminance level	Maximum integer luminance level that is available on the textual display area of the VMS.	0..1	NonNegativeInteger
	minFontHeight	Min font height	Minimum font height in pixels.	0..1	NonNegativeInteger
	minFontSpacing	Min font spacing	Minimum font spacing in pixels.	0..1	NonNegativeInteger
	minFontWidth	Min font width	Minimum font width in pixels.	0..1	NonNegativeInteger
	textDisplayHeight	Text display height	The vertical height measured in metres of the specific text display area.	0..1	MetresAsFloat
	textDisplayWidth	Text display width	The horizontal width measured in metres of the specific text display area.	0..1	MetresAsFloat
	textLanternsPresent	Text lanterns present	Indicates whether the VMS is equipped with flashing lanterns associated with the textual display area.	0..1	Boolean
	textPageSequencingCapable	Text page sequencing capable	Indicates whether the text display on the VMS is capable of sequencing through multiple pages of text. True = capable.	0..1	Boolean
	textPixelsAcross	Text pixels across	Number of pixels horizontally across the textual display area of the VMS.	0..1	NonNegativeInteger
	textPixelsDown	Text pixels down	Number of pixels vertically down the textual display area of the VMS.	0..1	NonNegativeInteger
	textPositionAbsolute	Text position absolute	The position of the area in which the text is displayed, e.g. at the left, right, top or bottom of the VMS display.	0..1	PositionAbsoluteEnum

Class name	Attribute name	Designation	Definition	Multiplicity	Type
	textPositionX	Text position x	The X-coordinate (horizontal) position of the area in which the text is displayed measured from the bottom left of the sign's overall display area to the bottom left of the specific text display area.	0..1	MetresAsFloat
	textPositionY	Text position y	The Y-coordinate (vertical) position of the area in which the text is displayed measured from the bottom left of the sign's overall display area to the bottom left of the specific text display area.	0..1	MetresAsFloat

A.5.2 "VmsTablePublication" package

A.5.2.1 "VmsTablePublication" package classes

Table A.24— Classes of the "VmsTablePublication" package

Class name	Designation	Definition	Stereotype	Abstract
VmsRecord	VMS record	A sub-record in the VMS Unit table defining the characteristics of a single variable message sign that is controlled by a specific VMS unit. Locations are on or adjacent to the road network but may be updated over time if relating to a mobile VMS unit.		no
VmsTablePublication	VMS table publication	A publication containing one or more VMS Unit Tables each comprising a set of records which hold details of VMS units.		no
VmsUnitRecord	VMS unit record	A versioned single VMS unit entry/record in the VMS Unit table that defines the characteristics of the VMS unit.	versionedIdentifiable	no
VmsUnitTable	VMS unit table	A versioned VMS Unit Table comprising a number of data records, each record defining the characteristics of a specific deployed variable message sign unit.	versionedIdentifiable	no

A.5.2.2 “VmsTablePublication” package association roles

Table A.25— Associations of the “VmsTablePublication” package

Class name	Role name	Designation	Definition	Multiplicity	Target
VmsRecord	backgroundImageUrl	Background image url	A URL reference from where an image of the “painted” static background on the VMS can be obtained.	0..1	UrlLink
	vmsLocation	VMS location	The point location of the variable message sign. For mobile VMS which are regularly moved this need not be provided. Instead the VMS location should be provided in the VmsPublication along with current settings.	0..1	Location

A.5.2.3 “VmsTablePublication” package attributes

Table A.26— Attributes of the “VmsTablePublication” package

Class name	Attribute name	Designation	Definition	Multiplicity	Type
VmsRecord	dynamicallyConfigurableDisplayAreas	Dynamically configurable display areas	Identifies (when True) that the VMS has a display area that may be dynamically configured to display different combinations of text and pictogram areas. The current configuration will normally be given with each published current VMS setting.	0..1	Boolean
	numberOfPictogramDisplayAreas	Number of pictogram display areas	Number of pictogram display areas which the VMS contains.	0..1	NonNegativeInteger
	vmsDescription	VMS description	The description of the VMS (possibly giving a description of its location or its normal use).	0..1	MultilingualString
	vmsDisplayHeight	VMS display height	Height in metres of the sign's overall display area.	0..1	MetresAsFloat
	vmsDisplayWidth	VMS display width	Width in metres of the sign's overall display area.	0..1	MetresAsFloat

Class name	Attribute name	Designation	Definition	Multiplicity	Type
	vmsHeightAboveRoadway	VMS height above roadway	Height in metres of the mounted sign above the roadway, measured to the bottom of the display area.	0..1	MetresAsFloat
	vmsOwner	VMS owner	Owner (authority or organization) of the VMS. This may not necessarily be the same as the authority or organization which is currently controlling the VMS.	0..1	MultilingualString
	vmsPhysicalMounting	VMS physical mounting	Description of how the VMS is physically mounted or deployed on the road.	0..1	PhysicalMountingEnum
	vmsType	VMS type	Broad classification of the type of variable message sign.	0..1	VmsTypeEnum
	vmsTypeCode	VMS type code	Specification of the type of VMS defined by a code, normally country or even manufacturer specific (e.g. MS4).	0..1	String
VmsUnitRecord	numberOfVms	Number of VMS	Number of variable message signs contolled by the unit.	0..1	NonNegativeInteger
	vmsUnitElectronicAddress	VMS unit electronic address	Electronic address of the VMS unit (if not IP addressable).	0..1	String
	vmsUnitIdentifier	VMS unit identifier	Identification of a VMS unit used by the supplier or consumer systems.	0..1	String
	vmsUnitIPAddress	VMS unit i p address	IP network address of the VMS unit.	0..1	String
VmsUnitTable	vmsUnitTableIdentification	VMS unit table identification	An alphanumeric identification for the VMS Unit table, possibly human readable.	0..1	String

A.6 Data Dictionary of < < datatypes > > for “VMS Table Publication”

This clause contains the definitions of all data types which are used in the “VMS Table Publication”.

A.6.1 The < < datatype > > “MetresAsFloat”

A measure of distance defined in metres in a floating point format.

A.6.2 The < < datatype > > “MetresAsNonNegativeInteger”

A measure of distance defined in metres in a non-negative integer format.

A.7 Data Dictionary of < < enumerations > > for “VMS Table Publication”

This clause contains the definitions of all enumerations which are used in the “VMS Table Publication”.

A.7.1 The < < enumeration > > “PhysicalMountingEnum”

The ways in which equipment such as VMS are mounted or deployed on the road.

Table A.27— Values contained in the enumeration “PhysicalMountingEnum”

Enumerated value name	Designation	Definition
centralReservationMounted	Central reservation mounted	Equipment mounted in the central reservation.
gantryMounted	Gantry mounted	Equipment mounted on an overhead gantry across the roadway.
overheadBridgeMounted	Overhead bridge mounted	Equipment mounted overhead on a bridge structure.
roadsideCantileverMounted	Roadside cantilever mounted	Equipment mounted on a cantilever from the roadside.
roadsideMounted	Roadside mounted	Equipment mounted at the roadside.
trailerMounted	Trailer mounted	Equipment mounted on a movable trailer.
tunnelEntranceMounted	Tunnel entrance mounted	Equipment mounted on the entrance to a tunnel.
vehicleMounted	Vehicle mounted	Equipment mounted on a vehicle.

A.7.2 The < < enumeration > > “PositionAbsoluteEnum”

Absolute positions of an item within an allotted space.

Table A.28— Values contained in the enumeration “PositionAbsoluteEnum”

Enumerated value name	Designation	Definition
atBottom	At bottom	At the bottom of the allotted space.
atTop	At top	At the top of the allotted space.
onLeft	On left	On the left of the allotted space.
onRight	On right	On the right of the allotted space.

A.7.3 The < < enumeration > > “PositionRelativeEnum”

Relative positions of one item to another.

Table A.29— Values contained in the enumeration “PositionRelativeEnum”

Enumerated value name	Designation	Definition
above	Above	Positioned above relative item.
below	Below	Positioned below relative item.
toTheLeft	To the left	Positioned to the left of relative item.
toTheRight	To the right	Positioned to the right of relative item.

A.7.4 The < < enumeration > > “VmsTypeEnum”

Type of variable message sign.

Table A.30— Values contained in the enumeration “VmsTypeEnum”

Enumerated value name	Designation	Definition
colourGraphic	Colour graphic	A colour graphic display.
continuousSign	Continuous sign	A sign implementing fixed messages which are selected by electromechanical means.
matrixSign	Matrix sign	Simple display made up of a fixed matrix of pixels (e.g. sets of LEDs or lights) capable of showing a limited set of aspects (or matrix images). The display area is regarded as a pictogram area in DATEX II.
monochromeGraphic	Monochrome graphic	A monochrome graphic display.
other	Other	Other than as defined in this enumeration.

Annex B
(normative)

Referenced XML Schema for “VmsPublication”

B.1 Overview

This Annex shall be used when using an XML encoding.

As specified in CEN/TS 16157-1 this schema may be extended by use of Extensions. Such extensions shall be done in a manner conformant to the requirements specified in CEN/TS 16157-1 — Clause 9 and Annex D.

Supplied data claiming conformance to this Part and specifically this Annex shall positively validate against the schema specified in this Annex including any permissible Extensions.

B.2 Schema

```
<?xml version=”1.0” encoding = ”utf-8” standalone = ”no”? >
<xs:schema xmlns:D2LogicalModel=”http://datex2.eu/schema/2/2_0” xmlns:xs = ”http://www.w3.org/2001/XMLSchema”
targetNamespace = ”http://datex2.eu/schema/2/2_0” elementFormDefault = ”qualified”
attributeFormDefault = ”unqualified” version = ”2.0” >
   <xs:complexType name=”_ExtensionType” >
      <xs:sequence>
         <xs:any namespace=”##any” processContents = ”lax” minOccurs = ”0” maxOccurs = ”unbounded”/ >
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name=”_TextPage” >
      <xs:sequence>
         <xs:element name=”vmsText” type = ”D2LogicalModel:VmsText”/ >
      </xs:sequence>
      <xs:attribute name=”pageNumber” type = ”xs:int” use = ”required”/ >
   </xs:complexType>
   <xs:complexType name=”_VmsDynamicCharacteristicsPictogramDisplayAreaIndexVmsPictogramDisplayCharacteristics” >
      <xs:sequence>
```

```
            <xs:element name="vmsPictogramDisplayCharacteristics"
type = "D2LogicalModel:VmsPictogramDisplayCharacteristics"/ >
         </xs:sequence>
         <xs:attribute name="pictogramDisplayAreaIndex" type = "xs:int" use = "required"/ >
      </xs:complexType>
      <xs:complexType name="_VmsMessageIndexVmsMessage" >
         <xs:sequence>
            <xs:element name="vmsMessage" type = "D2LogicalModel:VmsMessage"/ >
         </xs:sequence>
         <xs:attribute name="messageIndex" type = "xs:int" use = "required"/ >
      </xs:complexType>
      <xs:complexType name="_VmsMessagePictogramDisplayAreaIndexVmsPictogramDisplayArea" >
         <xs:sequence>
            <xs:element name="vmsPictogramDisplayArea" type = "D2LogicalModel:VmsPictogramDisplayArea"/ >
         </xs:sequence>
         <xs:attribute name="pictogramDisplayAreaIndex" type = "xs:int" use = "required"/ >
      </xs:complexType>
      <xs:complexType name="_VmsPictogramDisplayAreaIndexPictogramDisplayAreaSettings" >
         <xs:sequence>
            <xs:element name="pictogramDisplayAreaSettings" type = "D2LogicalModel:PictogramDisplayAreaSettings"/ >
         </xs:sequence>
         <xs:attribute name="pictogramDisplayAreaIndex" type = "xs:int" use = "required"/ >
      </xs:complexType>
      <xs:complexType name="_VmsPictogramDisplayAreaPictogramSequencingIndexVmsPictogram" >
         <xs:sequence>
            <xs:element name="vmsPictogram" type = "D2LogicalModel:VmsPictogram"/ >
         </xs:sequence>
         <xs:attribute name="pictogramSequencingIndex" type = "xs:int" use = "required"/ >
      </xs:complexType>
      <xs:complexType name="_VmsTextLineIndexVmsTextLine" >
         <xs:sequence>
            <xs:element name="vmsTextLine" type = "D2LogicalModel:VmsTextLine"/ >
         </xs:sequence>
         <xs:attribute name="lineIndex" type = "xs:int" use = "required"/ >
      </xs:complexType>
      <xs:complexType name="_VmsUnitRecordVersionedReference" >
         <xs:complexContent>
            <xs:extension base="D2LogicalModel:VersionedReference" >
```

```
            <xs:attribute name="targetClass" use = "required" fixed = "VmsUnitRecord"/ >
         </xs:extension>
      </xs:complexContent>
   </xs:complexType>
   <xs:complexType name="_VmsUnitTableVersionedReference" >
      <xs:complexContent>
         <xs:extension base="D2LogicalModel:VersionedReference" >
            <xs:attribute name="targetClass" use = "required" fixed = "VmsUnitTable"/ >
         </xs:extension>
      </xs:complexContent>
   </xs:complexType>
   <xs:complexType name="_VmsUnitVmsIndexVms" >
      <xs:sequence>
         <xs:element name="vms" type = "D2LogicalModel:Vms"/ >
      </xs:sequence>
      <xs:attribute name="vmsIndex" type = "xs:int" use = "required"/ >
   </xs:complexType>
   <xs:simpleType name="AreaOfInterestEnum" >
      <xs:restriction base="xs:string" >
         <xs:enumeration value="continentWide"/ >
         <xs:enumeration value="national"/ >
         <xs:enumeration value="neighbouringCountries"/ >
         <xs:enumeration value="notSpecified"/ >
         <xs:enumeration value="regional"/ >
      </xs:restriction>
   </xs:simpleType>
   <xs:simpleType name="Boolean" >
      <xs:restriction base="xs:boolean"/ >
   </xs:simpleType>
   <xs:simpleType name="CodedReasonForSettingMessageEnum" >
      <xs:restriction base="xs:string" >
         <xs:enumeration value="situation"/ >
         <xs:enumeration value="operatorCreated"/ >
         <xs:enumeration value="trafficManagement"/ >
         <xs:enumeration value="travelTime"/ >
         <xs:enumeration value="campaign"/ >
         <xs:enumeration value="default"/ >
      </xs:restriction>
```

```
    </xs:simpleType>
    <xs:simpleType name=”ColourEnum” >
       <xs:restriction base=”xs:string” >
          <xs:enumeration value=”amber”/ >
          <xs:enumeration value=”blue”/ >
          <xs:enumeration value=”green”/ >
          <xs:enumeration value=”red”/ >
          <xs:enumeration value=”white”/ >
          <xs:enumeration value=”whiteYellow”/ >
       </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name=”ConfidentialityValueEnum” >
       <xs:restriction base=”xs:string” >
          <xs:enumeration value=”internalUse”/ >
          <xs:enumeration value=”noRestriction”/ >
          <xs:enumeration value=”restrictedToAuthorities”/ >
          <xs:enumeration value=”restrictedToAuthoritiesAndTrafficOperators”/ >
          <xs:enumeration value=”restrictedToAuthoritiesTrafficOperatorsAndPublishers”/ >
          <xs:enumeration value=”restrictedToAuthoritiesTrafficOperatorsAndVms”/ >
       </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name=”DateTime” >
       <xs:restriction base=”xs:dateTime”/ >
    </xs:simpleType>
    <xs:complexType name=”ExternalReferencing” >
       <xs:sequence>
          <xs:element name=”externalLocationCode” type = ”D2LogicalModel:String”/ >
          <xs:element name=”externalReferencingSystem” type = ”D2LogicalModel:String”/ >
          <xs:element name=”externalReferencingExtension” type = ”D2LogicalModel:_ExtensionType”
minOccurs = ”0”/ >
       </xs:sequence>
    </xs:complexType>
    <xs:complexType name=”Fault” >
       <xs:sequence>
          <xs:element name=”faultExtension” type = ”D2LogicalModel:_ExtensionType” minOccurs = ”0”/ >
       </xs:sequence>
    </xs:complexType>
    <xs:simpleType name=”Float” >
```

```
      <xs:restriction base="xs:float"/ >
   </xs:simpleType>
   <xs:complexType name="GroupOfLocations" abstract = "true" >
      <xs:sequence>
         <xs:element name="groupOfLocationsExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name="HeaderInformation" >
      <xs:sequence>
         <xs:element name="areaOfInterest" type = "D2LogicalModel:AreaOfInterestEnum" minOccurs = "0"/ >
         <xs:element name="confidentiality" type = "D2LogicalModel:ConfidentialityValueEnum"/ >
         <xs:element name="informationStatus" type = "D2LogicalModel:InformationStatusEnum"/ >
         <xs:element name="urgency" type = "D2LogicalModel:UrgencyEnum" minOccurs = "0"/ >
         <xs:element name="headerInformationExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
      </xs:sequence>
   </xs:complexType>
   <xs:simpleType name="InformationStatusEnum" >
      <xs:restriction base="xs:string" >
         <xs:enumeration value="real"/ >
         <xs:enumeration value="securityExercise"/ >
         <xs:enumeration value="technicalExercise"/ >
         <xs:enumeration value="test"/ >
      </xs:restriction>
   </xs:simpleType>
   <xs:simpleType name="KilometresPerHour" >
      <xs:restriction base="D2LogicalModel:Float"/ >
   </xs:simpleType>
   <xs:simpleType name="Language" >
      <xs:restriction base="xs:language"/ >
   </xs:simpleType>
   <xs:complexType name="Location" abstract = "true" >
      <xs:complexContent>
         <xs:extension base="D2LogicalModel:GroupOfLocations" >
            <xs:sequence>
               <xs:element name="externalReferencing" type = "D2LogicalModel:ExternalReferencing" minOccurs = "0"
maxOccurs = "unbounded"/ >
               <xs:element name="locationForDisplay" type = "D2LogicalModel:PointCoordinates" minOccurs = "0"/ >
               <xs:element name="locationExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
```

```
            </xs:sequence>
         </xs:extension>
      </xs:complexContent>
   </xs:complexType>
   <xs:simpleType name=”MetresAsFloat” >
      <xs:restriction base=”D2LogicalModel:Float”/ >
   </xs:simpleType>
   <xs:simpleType name=”MetresAsNonNegativeInteger” >
      <xs:restriction base=”D2LogicalModel:NonNegativeInteger”/ >
   </xs:simpleType>
   <xs:complexType name=”MultilingualString” >
      <xs:sequence>
         <xs:element name=”values” >
            <xs:complexType>
               <xs:sequence>
                  <xs:element name=”value” type = ”D2LogicalModel:MultilingualStringValue”
maxOccurs = ”unbounded”/ >
               </xs:sequence>
            </xs:complexType>
         </xs:element>
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name=”MultilingualStringValue” >
      <xs:simpleContent>
         <xs:extension base=”D2LogicalModel:MultilingualStringValueType” >
            <xs:attribute name=”lang” type = ”xs:language”/ >
         </xs:extension>
      </xs:simpleContent>
   </xs:complexType>
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      <xs:restriction base=”xs:string” >
         <xs:maxLength value=”1024”/ >
      </xs:restriction>
   </xs:simpleType>
   <xs:simpleType name=”NonNegativeInteger” >
      <xs:restriction base=”xs:nonNegativeInteger”/ >
   </xs:simpleType>
   <xs:complexType name=”PayloadPublication” abstract = ”true” >
```

```
      <xs:sequence>
         <xs:element name=”payloadPublicationExtension” type = ”D2LogicalModel:_ExtensionType”
minOccurs = ”0”/ >
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name=”PictogramDisplayAreaSettings” >
      <xs:sequence>
         <xs:element name=”pictogramLanternsOn” type = ”D2LogicalModel:Boolean” minOccurs = ”0”/ >
         <xs:element name=”pictogramLuminanceOverride” type = ”D2LogicalModel:Boolean” minOccurs = ”0”/ >
         <xs:element name=”pictogramLuminanceLevel” type = ”D2LogicalModel:NonNegativeInteger”
minOccurs = ”0”/ >
         <xs:element name=”pictogramLuminanceLevelName” type = ”D2LogicalModel:VmsLuminanceLevelEnum”
minOccurs = ”0”/ >
         <xs:element name=”pictogramDisplayAreaSettingsExtension” type = ”D2LogicalModel:_ExtensionType”
minOccurs = ”0”/ >
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name=”PointCoordinates” >
      <xs:sequence>
         <xs:element name=”latitude” type = ”D2LogicalModel:Float”/ >
         <xs:element name=”longitude” type = ”D2LogicalModel:Float”/ >
         <xs:element name=”pointCoordinatesExtension” type = ”D2LogicalModel:_ExtensionType” minOccurs = ”0”/ >
      </xs:sequence>
   </xs:complexType>
   <xs:simpleType name=”PositionAbsoluteEnum” >
      <xs:restriction base=”xs:string” >
         <xs:enumeration value=”onLeft”/ >
         <xs:enumeration value=”onRight”/ >
         <xs:enumeration value=”atTop”/ >
         <xs:enumeration value=”atBottom”/ >
      </xs:restriction>
   </xs:simpleType>
   <xs:simpleType name=”PositionRelativeEnum” >
      <xs:restriction base=”xs:string” >
         <xs:enumeration value=”above”/ >
         <xs:enumeration value=”below”/ >
         <xs:enumeration value=”toTheLeft”/ >
         <xs:enumeration value=”toTheRight”/ >
```

```
      </xs:restriction>
   </xs:simpleType>
   <xs:simpleType name="Seconds" >
      <xs:restriction base="D2LogicalModel:Float"/ >
   </xs:simpleType>
   <xs:simpleType name="String" >
      <xs:restriction base="xs:string" >
         <xs:maxLength value="1024"/ >
      </xs:restriction>
   </xs:simpleType>
   <xs:complexType name="TextDisplayAreaSettings" >
      <xs:sequence>
         <xs:element name="textLanternsOn" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
         <xs:element name="textLuminanceOverride" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
         <xs:element name="textLuminanceLevel" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
         <xs:element name="textLuminanceLevelName" type = "D2LogicalModel:VmsLuminanceLevelEnum"
minOccurs = "0"/ >
         <xs:element name="textDisplayAreaSettingsExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
      </xs:sequence>
   </xs:complexType>
   <xs:simpleType name="Tonnes" >
      <xs:restriction base="D2LogicalModel:Float"/ >
   </xs:simpleType>
   <xs:simpleType name="UrgencyEnum" >
      <xs:restriction base="xs:string" >
         <xs:enumeration value="extremelyUrgent"/ >
         <xs:enumeration value="urgent"/ >
         <xs:enumeration value="normalUrgency"/ >
      </xs:restriction>
   </xs:simpleType>
   <xs:simpleType name="Url" >
      <xs:restriction base="xs:anyURI"/ >
   </xs:simpleType>
   <xs:complexType name="VersionedReference" >
      <xs:attribute name="id" type = "xs:string" use = "required"/ >
      <xs:attribute name="version" type = "xs:string" use = "required"/ >
   </xs:complexType>
```

```
   <xs:complexType name="Vms" >
      <xs:sequence>
         <xs:element name="vmsWorking" type = "D2LogicalModel:Boolean"/ >
         <xs:element name="vmsMessageSequencingInterval" type = "D2LogicalModel:Seconds" minOccurs = "0"/ >
         <xs:element name="vmsMessage" type = "D2LogicalModel:_VmsMessageIndexVmsMessage" minOccurs = "0"
maxOccurs = "unbounded"/ >
         <xs:element name="textDisplayAreaSettings" type = "D2LogicalModel:TextDisplayAreaSettings"
minOccurs = "0"/ >
         <xs:element name="pictogramDisplayAreaSettings"
type = "D2LogicalModel:_VmsPictogramDisplayAreaIndexPictogramDisplayAreaSettings" minOccurs = "0"
maxOccurs = "unbounded"/ >
         <xs:element name="vmsLocationOverride" type = "D2LogicalModel:Location" minOccurs = "0"/ >
         <xs:element name="managedLogicalLocationOverride" type = "D2LogicalModel:VmsManagedLogicalLocation"
minOccurs = "0"/ >
         <xs:element name="vmsDynamicCharacteristics" type = "D2LogicalModel:VmsDynamicCharacteristics"
minOccurs = "0"/ >
         <xs:element name="vmsFault" type = "D2LogicalModel:VmsFault" minOccurs = "0" maxOccurs = "unbounded"/ >
         <xs:element name="vmsExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
      </xs:sequence>
   </xs:complexType>
   <xs:simpleType name="VmsDatexPictogramEnum" >
      <xs:restriction base="xs:string" >
         <xs:enumeration value="accident"/ >
         <xs:enumeration value="advisorySpeed"/ >
         <xs:enumeration value="animalsOnRoad"/ >
         <xs:enumeration value="blankVoid"/ >
         <xs:enumeration value="bridgeClosed"/ >
         <xs:enumeration value="bridgeSwingInOperation"/ >
         <xs:enumeration value="carParkFull"/ >
         <xs:enumeration value="carParkSpacesAvailable"/ >
         <xs:enumeration value="carriagewayNarrows"/ >
         <xs:enumeration value="carriagewayNarrowsOnTheLeft"/ >
         <xs:enumeration value="carriagewayNarrowsOnTheRight"/ >
         <xs:enumeration value="carriagewayReducedToOneLane"/ >
         <xs:enumeration value="carriagewayReducedToTwoLanes"/ >
         <xs:enumeration value="carriagewayReducedToThreeLanes"/ >
         <xs:enumeration value="chainsOrSnowTyresRecommended"/ >
         <xs:enumeration value="compulsoryMinimumSpeed"/ >
```

```
<xs:enumeration value=”crossWind”/ >
<xs:enumeration value=”dangerOfFire”/ >
<xs:enumeration value=”drivingOfVehiclesLessThanXMetresApartProhibited”/ >
<xs:enumeration value=”endOfAdvisorySpeed”/ >
<xs:enumeration value=”endOfCompulsoryMinimumSpeed”/ >
<xs:enumeration value=”endOfProhibitionOfOvertaking”/ >
<xs:enumeration value=”endOfProhibitionOfOvertakingForGoodsVehicles”/ >
<xs:enumeration value=”endOfSpeedLimit”/ >
<xs:enumeration value=”exitClosed”/ >
<xs:enumeration value=”fallingRocks”/ >
<xs:enumeration value=”fastenChildrensSeatBelts”/ >
<xs:enumeration value=”fastenYourSeatBelt”/ >
<xs:enumeration value=”fire”/ >
<xs:enumeration value=”floodingOrFlashFloods”/ >
<xs:enumeration value=”fog”/ >
<xs:enumeration value=”footballMatch”/ >
<xs:enumeration value=”hardShoulderNotRunning”/ >
<xs:enumeration value=”hardShoulderRunning”/ >
<xs:enumeration value=”keepASafeDistance”/ >
<xs:enumeration value=”keepLeft”/ >
<xs:enumeration value=”keepRight”/ >
<xs:enumeration value=”lane1ClosedOf2”/ >
<xs:enumeration value=”lane2ClosedOf2”/ >
<xs:enumeration value=”lane1ClosedOf3”/ >
<xs:enumeration value=”lane3ClosedOf3”/ >
<xs:enumeration value=”lanes1And2ClosedOf3”/ >
<xs:enumeration value=”lanes2And3ClosedOf3”/ >
<xs:enumeration value=”lane1ClosedOf4”/ >
<xs:enumeration value=”lane4ClosedOf4”/ >
<xs:enumeration value=”lanes1And2ClosedOf4”/ >
<xs:enumeration value=”lanes3And4ClosedOf4”/ >
<xs:enumeration value=”lanes1And2And3ClosedOf4”/ >
<xs:enumeration value=”lanes2And3And4ClosedOf4”/ >
<xs:enumeration value=”laneClosed”/ >
<xs:enumeration value=”laneDeviationToLeft”/ >
<xs:enumeration value=”laneDeviationToRight”/ >
<xs:enumeration value=”laneOpen”/ >
<xs:enumeration value=”leftHandLaneClosed”/ >
```

```
          <xs:enumeration value="lightSignals"/ >
          <xs:enumeration value="looseGravel"/ >
          <xs:enumeration value="maintenanceVehicleInAction"/ >
          <xs:enumeration value="maximumSpeedLimitedToTheFigureIndicated"/ >
          <xs:enumeration value="narrowLanesAead"/ >
          <xs:enumeration value="noEntry"/ >
          <xs:enumeration value="noEntryForAnyPowerDrivenVehicleDrawingATrailer"/ >
          <xs:enumeration
value="noEntryForAnyPowerDrivenVehicleDrawingATrailerOtherThanASemiTrailerOrASingleAxleTrailer"/ >
          <xs:enumeration value="noEntryForGoodsVehicles"/ >
          <xs:enumeration value="noEntryForVehiclesExceedingXTonnesLadenMass"/ >
          <xs:enumeration value="noEntryForVehiclesHavingAMassExceedingXTonnesOnOneAxle"/ >
          <xs:enumeration value="noEntryForVehiclesHavingAnOverallHeightExceedingXMetres"/ >
          <xs:enumeration value="noEntryForVehiclesHavingAnOverallLengthExceedingXMetres"/ >
          <xs:enumeration value="noEntryForVehiclesHavingAnOverallWidthExceedingXMetres"/ >
          <xs:enumeration value="noEntryForVehiclesCarryingDangerousGoods"/ >
          <xs:enumeration value="otherDangers"/ >
          <xs:enumeration value="overtakingByGoodsVehiclesProhibited"/ >
          <xs:enumeration value="overtakingProhibited"/ >
          <xs:enumeration value="pollutionOrSmogAlert"/ >
          <xs:enumeration value="queue"/ >
          <xs:enumeration value="rain"/ >
          <xs:enumeration value="rightHandLaneClosed"/ >
          <xs:enumeration value="roadClosedAhead"/ >
          <xs:enumeration value="roadworks"/ >
          <xs:enumeration value="slipperyRoad"/ >
          <xs:enumeration value="smoke"/ >
          <xs:enumeration value="snow"/ >
          <xs:enumeration value="snowChainsCompulsory"/ >
          <xs:enumeration value="snowTyresCompulsory"/ >
          <xs:enumeration value="snowPloughInAction"/ >
          <xs:enumeration value="speedCamerasInAction"/ >
          <xs:enumeration value="trafficCongestion"/ >
          <xs:enumeration value="trafficDeviatedToOppositeCarriagewayAhead"/ >
          <xs:enumeration value="trafficPartiallyDeviatedToOppositeCarriagewayAhead"/ >
          <xs:enumeration value="tunnelClosed"/ >
          <xs:enumeration value="turnLeft"/ >
          <xs:enumeration value="turnRight"/ >
```

```
            <xs:enumeration value="twoWayTraffic"/ >
            <xs:enumeration value="unevenRoad"/ >
            <xs:enumeration value="vehicleFire"/ >
            <xs:enumeration value="other"/ >
         </xs:restriction>
      </xs:simpleType>
      <xs:simpleType name="VmsDatexSupplementalPictogramEnum" >
         <xs:restriction base="xs:string" >
            <xs:enumeration value="distanceToTheBeginningofTheApplicationZone"/ >
            <xs:enumeration value="exceptAnyPowerDrivenVehicleDrawingTrailer"/ >
            <xs:enumeration value="exceptBus"/ >
            <xs:enumeration value="exceptGoodsVehicles"/ >
            <xs:enumeration value="exceptSemiTrailer"/ >
            <xs:enumeration value="exceptVehiclesCarryingDangerousGoods"/ >
            <xs:enumeration value="inCaseOfIceOrSnow"/ >
            <xs:enumeration value="lengthOfTheApplicationZone"/ >
            <xs:enumeration value="restrictedToAnyPowerDrivenVehicleDrawingTrailer"/ >
            <xs:enumeration value="restricetdToBus"/ >
            <xs:enumeration value="restrictedToGoodsVehicles"/ >
            <xs:enumeration value="restrictedToSemiTrailer"/ >
            <xs:enumeration value="restrictedToVehiclesCarryingDangerousGoods"/ >
            <xs:enumeration value="maintenanceVehicles"/ >
            <xs:enumeration value="snowPloughs"/ >
            <xs:enumeration value="other"/ >
         </xs:restriction>
      </xs:simpleType>
      <xs:complexType name="VmsDynamicCharacteristics" >
         <xs:sequence>
            <xs:element name="numberOfPictogramDisplayAreas" type = "D2LogicalModel:NonNegativeInteger"
minOccurs = "0"/ >
            <xs:element name="vmsTextDisplayCharacteristics" type = "D2LogicalModel:VmsTextDisplayCharacteristics"
minOccurs = "0"/ >
            <xs:element name="vmsPictogramDisplayCharacteristics"
type = "D2LogicalModel:_VmsDynamicCharacteristicsPictogramDisplayAreaIndexVmsPictogramDisplayCharacteristics"
minOccurs = "0" maxOccurs = "unbounded"/ >
            <xs:element name="vmsDynamicCharacteristicsExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
         </xs:sequence>
```

```
</xs:complexType>
<xs:complexType name="VmsFault" >
   <xs:complexContent>
      <xs:extension base="D2LogicalModel:Fault" >
         <xs:sequence>
            <xs:element name="vmsFault" type = "D2LogicalModel:VmsFaultEnum"/ >
            <xs:element name="vmsFaultExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
         </xs:sequence>
      </xs:extension>
   </xs:complexContent>
</xs:complexType>
<xs:simpleType name="VmsFaultEnum" >
   <xs:restriction base="xs:string" >
      <xs:enumeration value="communicationsFailure"/ >
      <xs:enumeration value="incorrectMessageDisplayed"/ >
      <xs:enumeration value="incorrectPictogramDisplayed"/ >
      <xs:enumeration value="outOfService"/ >
      <xs:enumeration value="powerFailure"/ >
      <xs:enumeration value="unableToClearDown"/ >
      <xs:enumeration value="unknown"/ >
      <xs:enumeration value="other"/ >
   </xs:restriction>
</xs:simpleType>
<xs:simpleType name="VmsLuminanceLevelEnum" >
   <xs:restriction base="xs:string" >
      <xs:enumeration value="switchedOff"/ >
      <xs:enumeration value="testing"/ >
      <xs:enumeration value="night"/ >
      <xs:enumeration value="overcast"/ >
      <xs:enumeration value="broadDaylight"/ >
      <xs:enumeration value="sunInEyes"/ >
      <xs:enumeration value="sunOnBack"/ >
      <xs:enumeration value="foggyDay"/ >
      <xs:enumeration value="foggyNight"/ >
   </xs:restriction>
</xs:simpleType>
<xs:complexType name="VmsManagedLogicalLocation" >
   <xs:sequence>
```

```
          <xs:element name="managedLogicalLocation" type = "D2LogicalModel:MultilingualString" minOccurs = "0"/ >
          <xs:element name="distanceFromLogicalLocation" type = "D2LogicalModel:MetresAsNonNegativeInteger"
minOccurs = "0"/ >
          <xs:element name="managedLocation" type = "D2LogicalModel:Location" minOccurs = "0"/ >
          <xs:element name="vmsManagedLogicalLocationExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
       </xs:sequence>
    </xs:complexType>
    <xs:complexType name="VmsMessage" >
       <xs:sequence>
          <xs:element name="associatedManagementOrDiversionPlan" type = "D2LogicalModel:String"
minOccurs = "0"/ >
          <xs:element name="messageSetBy" type = "D2LogicalModel:MultilingualString" minOccurs = "0"/ >
          <xs:element name="setBySystem" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
          <xs:element name="reasonForSetting" type = "D2LogicalModel:MultilingualString" minOccurs = "0"/ >
          <xs:element name="codedReasonForSetting" type = "D2LogicalModel:CodedReasonForSettingMessageEnum"
minOccurs = "0"/ >
          <xs:element name="vmsMessageInformationType" type = "D2LogicalModel:VmsMessageInformationTypeEnum"
minOccurs = "0" maxOccurs = "unbounded"/ >
          <xs:element name="primarySetting" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
          <xs:element name="mareNostrumCompliant" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
          <xs:element name="timeLastSet" type = "D2LogicalModel:DateTime"/ >
          <xs:element name="requestedBy" type = "D2LogicalModel:MultilingualString" minOccurs = "0"/ >
          <xs:element name="situationToWhichMessageIsRelated" type = "D2LogicalModel:VersionedReference"
minOccurs = "0"/ >
          <xs:element name="situationRecordToWhichMessageIsRelated" type = "D2LogicalModel:VersionedReference"
minOccurs = "0"/ >
          <xs:element name="distanceFromSituationRecord" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
          <xs:element name="textPictogramSequencingInterval" type = "D2LogicalModel:Seconds" minOccurs = "0"/ >
          <xs:element name="textPage" type = "D2LogicalModel:_TextPage" minOccurs = "0"
maxOccurs = "unbounded"/ >
          <xs:element name="vmsPictogramDisplayArea"
type = "D2LogicalModel:_VmsMessagePictogramDisplayAreaIndexVmsPictogramDisplayArea" minOccurs = "0"
maxOccurs = "unbounded"/ >
          <xs:element name="vmsMessageExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
       </xs:sequence>
    </xs:complexType>
    <xs:simpleType name="VmsMessageInformationTypeEnum" >
```

```
      <xs:restriction base="xs:string" >
         <xs:enumeration value="campaignMessage"/ >
         <xs:enumeration value="dateTime"/ >
         <xs:enumeration value="futureInformation"/ >
         <xs:enumeration value="instructionOrMessage"/ >
         <xs:enumeration value="situationWarning"/ >
         <xs:enumeration value="temperature"/ >
         <xs:enumeration value="trafficManagement"/ >
         <xs:enumeration value="travelTime"/ >
      </xs:restriction>
   </xs:simpleType>
   <xs:complexType name="VmsPictogram" >
      <xs:sequence>
         <xs:element name="pictogramDescription" type = "D2LogicalModel:VmsDatexPictogramEnum" minOccurs = "0"
maxOccurs = "unbounded"/ >
         <xs:element name="pictogramCode" type = "D2LogicalModel:String" minOccurs = "0"/ >
         <xs:element name="pictogramUrl" type = "D2LogicalModel:Url" minOccurs = "0"/ >
         <xs:element name="additionalPictogramDescription" type = "D2LogicalModel:MultilingualString"
minOccurs = "0"/ >
         <xs:element name="pictogramFlashing" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
         <xs:element name="pictogramInInverseColour" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
         <xs:element name="presenceOfRedTriangle" type = "D2LogicalModel:Boolean"/ >
         <xs:element name="viennaConventionCompliant" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
         <xs:element name="distanceAttribute" type = "D2LogicalModel:MetresAsNonNegativeInteger"
minOccurs = "0"/ >
         <xs:element name="heightAttribute" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
         <xs:element name="lengthAttribute" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
         <xs:element name="speedAttribute" type = "D2LogicalModel:KilometresPerHour" minOccurs = "0"/ >
         <xs:element name="weightAttribute" type = "D2LogicalModel:Tonnes" minOccurs = "0"/ >
         <xs:element name="weightPerAxleAttribute" type = "D2LogicalModel:Tonnes" minOccurs = "0"/ >
         <xs:element name="widthAttribute" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
         <xs:element name="vmsSupplementaryPanel" type = "D2LogicalModel:VmsSupplementaryPanel"
minOccurs = "0"/ >
         <xs:element name="vmsPictogramExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name="VmsPictogramDisplayArea" >
      <xs:sequence>
```

```
          <xs:element name="synchronizedSequencingWithTextPages" type = "D2LogicalModel:Boolean"
minOccurs = "0"/ >
          <xs:element name="vmsPictogram"
type = "D2LogicalModel:_VmsPictogramDisplayAreaPictogramSequencingIndexVmsPictogram" minOccurs = "0"
maxOccurs = "unbounded"/ >
          <xs:element name="vmsPictogramDisplayAreaExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
       </xs:sequence>
    </xs:complexType>
    <xs:complexType name="VmsPictogramDisplayCharacteristics" >
       <xs:sequence>
          <xs:element name="pictogramLanternsPresent" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
          <xs:element name="pictogramSequencingCapable" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
          <xs:element name="pictogramPixelsAcross" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
          <xs:element name="pictogramPixelsDown" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
          <xs:element name="pictogramDisplayHeight" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
          <xs:element name="pictogramDisplayWidth" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
          <xs:element name="pictogramCodeListIdentifier" type = "D2LogicalModel:String" minOccurs = "0"/ >
          <xs:element name="maxPictogramLuminanceLevel" type = "D2LogicalModel:NonNegativeInteger"
minOccurs = "0"/ >
          <xs:element name="pictogramNumberOfColours" type = "D2LogicalModel:NonNegativeInteger"
minOccurs = "0"/ >
          <xs:element name="maxNumberOfSequentialPictograms" type = "D2LogicalModel:NonNegativeInteger"
minOccurs = "0"/ >
          <xs:element name="pictogramPositionAbsolute" type = "D2LogicalModel:PositionAbsoluteEnum"
minOccurs = "0"/ >
          <xs:element name="pictogramPositionX" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
          <xs:element name="pictogramPositionY" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
          <xs:element name="pictogramPositionRelativeToText" type = "D2LogicalModel:PositionRelativeEnum"
minOccurs = "0"/ >
          <xs:element name="vmsSupplementaryPanelCharacteristics"
type = "D2LogicalModel:VmsSupplementaryPanelCharacteristics" minOccurs = "0"/ >
          <xs:element name="vmsPictogramDisplayCharacteristicsExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
       </xs:sequence>
    </xs:complexType>
    <xs:complexType name="VmsPublication" >
       <xs:complexContent>
```

```
          <xs:extension base="D2LogicalModel:PayloadPublication" >
             <xs:sequence>
                <xs:element name="headerInformation" type = "D2LogicalModel:HeaderInformation"/ >
                <xs:element name="vmsUnit" type = "D2LogicalModel:VmsUnit" maxOccurs = "unbounded"/ >
                <xs:element name="vmsPublicationExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
             </xs:sequence>
          </xs:extension>
       </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="VmsSetting" abstract = "true" >
       <xs:sequence>
          <xs:element name="vmsSettingExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
       </xs:sequence>
    </xs:complexType>
    <xs:complexType name="VmsSupplementaryPanel" >
       <xs:sequence>
          <xs:element name="supplementaryMessageDescription" type = "D2LogicalModel:MultilingualString"
minOccurs = "0"/ >
          <xs:element name="vmsSupplementaryPictogram" type = "D2LogicalModel:VmsSupplementaryPictogram"
minOccurs = "0"/ >
          <xs:element name="vmsSupplementaryText" type = "D2LogicalModel:VmsTextLine" minOccurs = "0"/ >
          <xs:element name="vmsSupplementaryPanelExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
       </xs:sequence>
    </xs:complexType>
    <xs:complexType name="VmsSupplementaryPanelCharacteristics" >
       <xs:sequence>
          <xs:element name="supplementaryPictogramCodeListIdentifier" type = "D2LogicalModel:String"
minOccurs = "0"/ >
          <xs:element name="supplementaryPanelPixelsAcross" type = "D2LogicalModel:NonNegativeInteger"
minOccurs = "0"/ >
          <xs:element name="supplementaryPanelPixelsDown" type = "D2LogicalModel:NonNegativeInteger"
minOccurs = "0"/ >
          <xs:element name="supplementaryPanelDisplayHeight" type = "D2LogicalModel:MetresAsFloat"
minOccurs = "0"/ >
          <xs:element name="supplementaryPanelDisplayWidth" type = "D2LogicalModel:MetresAsFloat"
minOccurs = "0"/ >
```

```
          <xs:element name="supplementaryPanelPositionX" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
          <xs:element name="supplementaryPanelPositionY" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
          <xs:element name="relativePositionToPictogramArea" type = "D2LogicalModel:PositionRelativeEnum"
minOccurs = "0"/ >
          <xs:element name="vmsSupplementaryPanelCharacteristicsExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
       </xs:sequence>
    </xs:complexType>
    <xs:complexType name="VmsSupplementaryPictogram" >
       <xs:sequence>
          <xs:element name="supplementaryPictogramDescription"
type = "D2LogicalModel:VmsDatexSupplementalPictogramEnum" minOccurs = "0"/ >
          <xs:element name="supplementaryPictogramCode" type = "D2LogicalModel:String" minOccurs = "0"/ >
          <xs:element name="supplementaryPictogramUrl" type = "D2LogicalModel:Url" minOccurs = "0"/ >
          <xs:element name="additionalSupplementaryPictogramDescription"
type = "D2LogicalModel:MultilingualString" minOccurs = "0"/ >
          <xs:element name="pictogramFlashing" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
          <xs:element name="vmsSupplementaryPictogramExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
       </xs:sequence>
    </xs:complexType>
    <xs:complexType name="VmsText" >
       <xs:sequence>
          <xs:element name="vmsLegendCode" type = "D2LogicalModel:String" minOccurs = "0"/ >
          <xs:element name="vmsTextImageUrl" type = "D2LogicalModel:Url" minOccurs = "0"/ >
          <xs:element name="vmsTextLine" type = "D2LogicalModel:_VmsTextLineIndexVmsTextLine" minOccurs = "0"
maxOccurs = "unbounded"/ >
          <xs:element name="vmsTextExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
       </xs:sequence>
    </xs:complexType>
    <xs:complexType name="VmsTextDisplayCharacteristics" >
       <xs:sequence>
          <xs:element name="textLanternsPresent" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
          <xs:element name="textPageSequencingCapable" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
          <xs:element name="textPixelsAcross" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
          <xs:element name="textPixelsDown" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
          <xs:element name="textDisplayHeight" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
          <xs:element name="textDisplayWidth" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
```

```
          <xs:element name="maxNumberOfCharacters" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
          <xs:element name="maxNumberOfRows" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
          <xs:element name="legendCodeListIdentifier" type = "D2LogicalModel:String" minOccurs = "0"/ >
          <xs:element name="maxFontHeight" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
          <xs:element name="minFontHeight" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
          <xs:element name="maxFontWidth" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
          <xs:element name="minFontWidth" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
          <xs:element name="maxFontSpacing" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
          <xs:element name="minFontSpacing" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
          <xs:element name="maxTextLuminanceLevel" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
          <xs:element name="maxNumberOfSequentialPages" type = "D2LogicalModel:NonNegativeInteger"
minOccurs = "0"/ >
          <xs:element name="textPositionAbsolute" type = "D2LogicalModel:PositionAbsoluteEnum" minOccurs = "0"/ >
          <xs:element name="textPositionX" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
          <xs:element name="textPositionY" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
          <xs:element name="vmsTextDisplayCharacteristicsExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
       </xs:sequence>
   </xs:complexType>
   <xs:complexType name="VmsTextLine" >
       <xs:sequence>
          <xs:element name="vmsTextLine" type = "D2LogicalModel:String"/ >
          <xs:element name="vmsTextLineLanguage" type = "D2LogicalModel:Language" minOccurs = "0"/ >
          <xs:element name="vmsTextLineColour" type = "D2LogicalModel:ColourEnum" minOccurs = "0"/ >
          <xs:element name="vmsTextLineFlashing" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
          <xs:element name="vmsTextLineHtml" type = "D2LogicalModel:String" minOccurs = "0"/ >
          <xs:element name="vmsTextLineExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
       </xs:sequence>
   </xs:complexType>
   <xs:complexType name="VmsUnit" >
       <xs:complexContent>
          <xs:extension base="D2LogicalModel:VmsSetting" >
             <xs:sequence>
                <xs:element name="vmsUnitTableReference"
type = "D2LogicalModel:_VmsUnitTableVersionedReference"/ >
                <xs:element name="vmsUnitReference" type = "D2LogicalModel:_VmsUnitRecordVersionedReference"/ >
                <xs:element name="vms" type = "D2LogicalModel:_VmsUnitVmsIndexVms" minOccurs = "0"
maxOccurs = "unbounded"/ >
```

```
                <xs:element name=”vmsUnitFault” type = ”D2LogicalModel:VmsUnitFault” minOccurs = ”0”
maxOccurs = ”unbounded”/ >
                <xs:element name=”vmsUnitExtension” type = ”D2LogicalModel:_ExtensionType” minOccurs = ”0”/ >
            </xs:sequence>
         </xs:extension>
      </xs:complexContent>
   </xs:complexType>
   <xs:complexType name=”VmsUnitFault” >
      <xs:complexContent>
         <xs:extension base=”D2LogicalModel:Fault” >
            <xs:sequence>
               <xs:element name=”vmsUnitFault” type = ”D2LogicalModel:VmsFaultEnum”/ >
               <xs:element name=”vmsUnitFaultExtension” type = ”D2LogicalModel:_ExtensionType”
minOccurs = ”0”/ >
            </xs:sequence>
         </xs:extension>
      </xs:complexContent>
   </xs:complexType>
</xs:schema>
```

Annex C
(normative)

Referenced XML Schema for “VmsTablePublication”

C.1 Overview

This Annex shall be used when using an XML encoding.

As specified in CEN/TS 16157-1 this schema may be extended by use of Extensions. Such extensions shall be done in a manner conformant to the requirements specified in CEN/TS 16157-1 — Clause 9 and Annex D.

Supplied data claiming conformance to this Part and specifically this Annex shall positively validate against the schema specified in this Annex including any permissible Extensions.

C.2 Schema

```
<?xml version=”1.0” encoding = ”utf-8” standalone = ”no”? >
<xs:schema xmlns:D2LogicalModel=”http://datex2.eu/schema/2/2_0” xmlns:xs = ”http://www.w3.org/2001/XMLSchema”
targetNamespace = ”http://datex2.eu/schema/2/2_0” elementFormDefault = ”qualified”
attributeFormDefault = ”unqualified” version = ”2.0” >
   <xs:complexType name=”_ExtensionType” >
      <xs:sequence>
         <xs:any namespace=”##any” processContents = ”lax” minOccurs = ”0” maxOccurs = ”unbounded”/ >
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name=”_VmsRecordPictogramDisplayAreaIndexVmsPictogramDisplayCharacteristics” >
      <xs:sequence>
         <xs:element name=”vmsPictogramDisplayCharacteristics”
type = ”D2LogicalModel:VmsPictogramDisplayCharacteristics”/ >
      </xs:sequence>
      <xs:attribute name=”pictogramDisplayAreaIndex” type = ”xs:int” use = ”required”/ >
   </xs:complexType>
   <xs:complexType name=”_VmsUnitRecordVmsIndexVmsRecord” >
```

```
      <xs:sequence>
         <xs:element name=”vmsRecord” type = ”D2LogicalModel:VmsRecord”/ >
      </xs:sequence>
      <xs:attribute name=”vmsIndex” type = ”xs:int” use = ”required”/ >
   </xs:complexType>
   <xs:simpleType name=”AreaOfInterestEnum” >
      <xs:restriction base=”xs:string” >
         <xs:enumeration value=”continentWide”/ >
         <xs:enumeration value=”national”/ >
         <xs:enumeration value=”neighbouringCountries”/ >
         <xs:enumeration value=”notSpecified”/ >
         <xs:enumeration value=”regional”/ >
      </xs:restriction>
   </xs:simpleType>
   <xs:simpleType name=”Boolean” >
      <xs:restriction base=”xs:boolean”/ >
   </xs:simpleType>
   <xs:simpleType name=”ConfidentialityValueEnum” >
      <xs:restriction base=”xs:string” >
         <xs:enumeration value=”internalUse”/ >
         <xs:enumeration value=”noRestriction”/ >
         <xs:enumeration value=”restrictedToAuthorities”/ >
         <xs:enumeration value=”restrictedToAuthoritiesAndTrafficOperators”/ >
         <xs:enumeration value=”restrictedToAuthoritiesTrafficOperatorsAndPublishers”/ >
         <xs:enumeration value=”restrictedToAuthoritiesTrafficOperatorsAndVms”/ >
      </xs:restriction>
   </xs:simpleType>
   <xs:complexType name=”ExternalReferencing” >
      <xs:sequence>
         <xs:element name=”externalLocationCode” type = ”D2LogicalModel:String”/ >
         <xs:element name=”externalReferencingSystem” type = ”D2LogicalModel:String”/ >
         <xs:element name=”externalReferencingExtension” type = ”D2LogicalModel:_ExtensionType”
minOccurs = ”0”/ >
      </xs:sequence>
   </xs:complexType>
   <xs:simpleType name=”Float” >
      <xs:restriction base=”xs:float”/ >
   </xs:simpleType>
```

```
   <xs:complexType name=”GroupOfLocations” abstract = ”true” >
      <xs:sequence>
         <xs:element name=”groupOfLocationsExtension” type = ”D2LogicalModel:_ExtensionType” minOccurs = ”0”/ >
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name=”HeaderInformation” >
      <xs:sequence>
         <xs:element name=”areaOfInterest” type = ”D2LogicalModel:AreaOfInterestEnum” minOccurs = ”0”/ >
         <xs:element name=”confidentiality” type = ”D2LogicalModel:ConfidentialityValueEnum”/ >
         <xs:element name=”informationStatus” type = ”D2LogicalModel:InformationStatusEnum”/ >
         <xs:element name=”urgency” type = ”D2LogicalModel:UrgencyEnum” minOccurs = ”0”/ >
         <xs:element name=”headerInformationExtension” type = ”D2LogicalModel:_ExtensionType” minOccurs = ”0”/ >
      </xs:sequence>
   </xs:complexType>
   <xs:simpleType name=”InformationStatusEnum” >
      <xs:restriction base=”xs:string” >
         <xs:enumeration value=”real”/ >
         <xs:enumeration value=”securityExercise”/ >
         <xs:enumeration value=”technicalExercise”/ >
         <xs:enumeration value=”test”/ >
      </xs:restriction>
   </xs:simpleType>
   <xs:complexType name=”Location” abstract = ”true” >
      <xs:complexContent>
         <xs:extension base=”D2LogicalModel:GroupOfLocations” >
            <xs:sequence>
               <xs:element name=”externalReferencing” type = ”D2LogicalModel:ExternalReferencing” minOccurs = ”0”
maxOccurs = ”unbounded”/ >
               <xs:element name=”locationForDisplay” type = ”D2LogicalModel:PointCoordinates” minOccurs = ”0”/ >
               <xs:element name=”locationExtension” type = ”D2LogicalModel:_ExtensionType” minOccurs = ”0”/ >
            </xs:sequence>
         </xs:extension>
      </xs:complexContent>
   </xs:complexType>
   <xs:simpleType name=”MetresAsFloat” >
      <xs:restriction base=”D2LogicalModel:Float”/ >
   </xs:simpleType>
   <xs:simpleType name=”MetresAsNonNegativeInteger” >
```

```
      <xs:restriction base="D2LogicalModel:NonNegativeInteger"/ >
   </xs:simpleType>
   <xs:complexType name="MultilingualString" >
      <xs:sequence>
         <xs:element name="values" >
            <xs:complexType>
               <xs:sequence>
                  <xs:element name="value" type = "D2LogicalModel:MultilingualStringValue"
maxOccurs = "unbounded"/ >
               </xs:sequence>
            </xs:complexType>
         </xs:element>
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name="MultilingualStringValue" >
      <xs:simpleContent>
         <xs:extension base="D2LogicalModel:MultilingualStringValueType" >
            <xs:attribute name="lang" type = "xs:language"/ >
         </xs:extension>
      </xs:simpleContent>
   </xs:complexType>
   <xs:simpleType name="MultilingualStringValueType" >
      <xs:restriction base="xs:string" >
         <xs:maxLength value="1024"/ >
      </xs:restriction>
   </xs:simpleType>
   <xs:simpleType name="NonNegativeInteger" >
      <xs:restriction base="xs:nonNegativeInteger"/ >
   </xs:simpleType>
   <xs:complexType name="PayloadPublication" abstract = "true" >
      <xs:sequence>
         <xs:element name="payloadPublicationExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
      </xs:sequence>
   </xs:complexType>
   <xs:simpleType name="PhysicalMountingEnum" >
      <xs:restriction base="xs:string" >
         <xs:enumeration value="centralReservationMounted"/ >
```

```
            <xs:enumeration value="gantryMounted"/ >
            <xs:enumeration value="overheadBridgeMounted"/ >
            <xs:enumeration value="roadsideCantileverMounted"/ >
            <xs:enumeration value="roadsideMounted"/ >
            <xs:enumeration value="trailerMounted"/ >
            <xs:enumeration value="tunnelEntranceMounted"/ >
            <xs:enumeration value="vehicleMounted"/ >
        </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="PointCoordinates" >
        <xs:sequence>
            <xs:element name="latitude" type = "D2LogicalModel:Float"/ >
            <xs:element name="longitude" type = "D2LogicalModel:Float"/ >
            <xs:element name="pointCoordinatesExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
        </xs:sequence>
    </xs:complexType>
    <xs:simpleType name="PositionAbsoluteEnum" >
        <xs:restriction base="xs:string" >
            <xs:enumeration value="onLeft"/ >
            <xs:enumeration value="onRight"/ >
            <xs:enumeration value="atTop"/ >
            <xs:enumeration value="atBottom"/ >
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="PositionRelativeEnum" >
        <xs:restriction base="xs:string" >
            <xs:enumeration value="above"/ >
            <xs:enumeration value="below"/ >
            <xs:enumeration value="toTheLeft"/ >
            <xs:enumeration value="toTheRight"/ >
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="String" >
        <xs:restriction base="xs:string" >
            <xs:maxLength value="1024"/ >
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="UrgencyEnum" >
```

```
      <xs:restriction base="xs:string" >
         <xs:enumeration value="extremelyUrgent"/ >
         <xs:enumeration value="urgent"/ >
         <xs:enumeration value="normalUrgency"/ >
      </xs:restriction>
   </xs:simpleType>
   <xs:simpleType name="Url" >
      <xs:restriction base="xs:anyURI"/ >
   </xs:simpleType>
   <xs:complexType name="UrlLink" >
      <xs:sequence>
         <xs:element name="urlLinkAddress" type = "D2LogicalModel:Url"/ >
         <xs:element name="urlLinkDescription" type = "D2LogicalModel:MultilingualString" minOccurs = "0"/ >
         <xs:element name="urlLinkType" type = "D2LogicalModel:UrlLinkTypeEnum" minOccurs = "0"/ >
         <xs:element name="urlLinkExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
      </xs:sequence>
   </xs:complexType>
   <xs:simpleType name="UrlLinkTypeEnum" >
      <xs:restriction base="xs:string" >
         <xs:enumeration value="documentPdf"/ >
         <xs:enumeration value="html"/ >
         <xs:enumeration value="image"/ >
         <xs:enumeration value="rss"/ >
         <xs:enumeration value="videoStream"/ >
         <xs:enumeration value="voiceStream"/ >
         <xs:enumeration value="other"/ >
      </xs:restriction>
   </xs:simpleType>
   <xs:complexType name="VmsManagedLogicalLocation" >
      <xs:sequence>
         <xs:element name="managedLogicalLocation" type = "D2LogicalModel:MultilingualString" minOccurs = "0"/ >
         <xs:element name="distanceFromLogicalLocation" type = "D2LogicalModel:MetresAsNonNegativeInteger"
minOccurs = "0"/ >
         <xs:element name="managedLocation" type = "D2LogicalModel:Location" minOccurs = "0"/ >
         <xs:element name="vmsManagedLogicalLocationExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
      </xs:sequence>
   </xs:complexType>
```

```
   <xs:complexType name="VmsPictogramDisplayCharacteristics" >
      <xs:sequence>
         <xs:element name="pictogramLanternsPresent" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
         <xs:element name="pictogramSequencingCapable" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
         <xs:element name="pictogramPixelsAcross" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
         <xs:element name="pictogramPixelsDown" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
         <xs:element name="pictogramDisplayHeight" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
         <xs:element name="pictogramDisplayWidth" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
         <xs:element name="pictogramCodeListIdentifier" type = "D2LogicalModel:String" minOccurs = "0"/ >
         <xs:element name="maxPictogramLuminanceLevel" type = "D2LogicalModel:NonNegativeInteger"
minOccurs = "0"/ >
         <xs:element name="pictogramNumberOfColours" type = "D2LogicalModel:NonNegativeInteger"
minOccurs = "0"/ >
         <xs:element name="maxNumberOfSequentialPictograms" type = "D2LogicalModel:NonNegativeInteger"
minOccurs = "0"/ >
         <xs:element name="pictogramPositionAbsolute" type = "D2LogicalModel:PositionAbsoluteEnum"
minOccurs = "0"/ >
         <xs:element name="pictogramPositionX" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
         <xs:element name="pictogramPositionY" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
         <xs:element name="pictogramPositionRelativeToText" type = "D2LogicalModel:PositionRelativeEnum"
minOccurs = "0"/ >
         <xs:element name="vmsSupplementaryPanelCharacteristics"
type = "D2LogicalModel:VmsSupplementaryPanelCharacteristics" minOccurs = "0"/ >
         <xs:element name="vmsPictogramDisplayCharacteristicsExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name="VmsRecord" >
      <xs:sequence>
         <xs:element name="vmsDescription" type = "D2LogicalModel:MultilingualString" minOccurs = "0"/ >
         <xs:element name="vmsOwner" type = "D2LogicalModel:MultilingualString" minOccurs = "0"/ >
         <xs:element name="vmsPhysicalMounting" type = "D2LogicalModel:PhysicalMountingEnum" minOccurs = "0"/ >
         <xs:element name="vmsType" type = "D2LogicalModel:VmsTypeEnum" minOccurs = "0"/ >
         <xs:element name="vmsTypeCode" type = "D2LogicalModel:String" minOccurs = "0"/ >
         <xs:element name="numberOfPictogramDisplayAreas" type = "D2LogicalModel:NonNegativeInteger"
minOccurs = "0"/ >
         <xs:element name="dynamicallyConfigurableDisplayAreas" type = "D2LogicalModel:Boolean"
minOccurs = "0"/ >
```

```
            <xs:element name="vmsDisplayHeight" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
            <xs:element name="vmsDisplayWidth" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
            <xs:element name="vmsHeightAboveRoadway" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
            <xs:element name="vmsTextDisplayCharacteristics" type = "D2LogicalModel:VmsTextDisplayCharacteristics"
minOccurs = "0"/ >
            <xs:element name="vmsPictogramDisplayCharacteristics"
type = "D2LogicalModel:_VmsRecordPictogramDisplayAreaIndexVmsPictogramDisplayCharacteristics" minOccurs = "0"
maxOccurs = "unbounded"/ >
            <xs:element name="vmsLocation" type = "D2LogicalModel:Location" minOccurs = "0"/ >
            <xs:element name="vmsManagedLogicalLocation" type = "D2LogicalModel:VmsManagedLogicalLocation"
minOccurs = "0"/ >
            <xs:element name="backgroundImageUrl" type = "D2LogicalModel:UrlLink" minOccurs = "0"/ >
            <xs:element name="vmsRecordExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
         </xs:sequence>
      </xs:complexType>
      <xs:complexType name="VmsSupplementaryPanelCharacteristics" >
         <xs:sequence>
            <xs:element name="supplementaryPictogramCodeListIdentifier" type = "D2LogicalModel:String"
minOccurs = "0"/ >
            <xs:element name="supplementaryPanelPixelsAcross" type = "D2LogicalModel:NonNegativeInteger"
minOccurs = "0"/ >
            <xs:element name="supplementaryPanelPixelsDown" type = "D2LogicalModel:NonNegativeInteger"
minOccurs = "0"/ >
            <xs:element name="supplementaryPanelDisplayHeight" type = "D2LogicalModel:MetresAsFloat"
minOccurs = "0"/ >
            <xs:element name="supplementaryPanelDisplayWidth" type = "D2LogicalModel:MetresAsFloat"
minOccurs = "0"/ >
            <xs:element name="supplementaryPanelPositionX" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
            <xs:element name="supplementaryPanelPositionY" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
            <xs:element name="relativePositionToPictogramArea" type = "D2LogicalModel:PositionRelativeEnum"
minOccurs = "0"/ >
            <xs:element name="vmsSupplementaryPanelCharacteristicsExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
         </xs:sequence>
      </xs:complexType>
      <xs:complexType name="VmsTablePublication" >
         <xs:complexContent>
            <xs:extension base="D2LogicalModel:PayloadPublication" >
```

```
            <xs:sequence>
               <xs:element name="headerInformation" type = "D2LogicalModel:HeaderInformation"/ >
               <xs:element name="vmsUnitTable" type = "D2LogicalModel:VmsUnitTable" maxOccurs = "unbounded"/ >
               <xs:element name="vmsTablePublicationExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
            </xs:sequence>
         </xs:extension>
      </xs:complexContent>
   </xs:complexType>
   <xs:complexType name="VmsTextDisplayCharacteristics" >
      <xs:sequence>
         <xs:element name="textLanternsPresent" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
         <xs:element name="textPageSequencingCapable" type = "D2LogicalModel:Boolean" minOccurs = "0"/ >
         <xs:element name="textPixelsAcross" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
         <xs:element name="textPixelsDown" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
         <xs:element name="textDisplayHeight" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
         <xs:element name="textDisplayWidth" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
         <xs:element name="maxNumberOfCharacters" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
         <xs:element name="maxNumberOfRows" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
         <xs:element name="legendCodeListIdentifier" type = "D2LogicalModel:String" minOccurs = "0"/ >
         <xs:element name="maxFontHeight" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
         <xs:element name="minFontHeight" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
         <xs:element name="maxFontWidth" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
         <xs:element name="minFontWidth" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
         <xs:element name="maxFontSpacing" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
         <xs:element name="minFontSpacing" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
         <xs:element name="maxTextLuminanceLevel" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
         <xs:element name="maxNumberOfSequentialPages" type = "D2LogicalModel:NonNegativeInteger"
minOccurs = "0"/ >
         <xs:element name="textPositionAbsolute" type = "D2LogicalModel:PositionAbsoluteEnum" minOccurs = "0"/ >
         <xs:element name="textPositionX" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
         <xs:element name="textPositionY" type = "D2LogicalModel:MetresAsFloat" minOccurs = "0"/ >
         <xs:element name="vmsTextDisplayCharacteristicsExtension" type = "D2LogicalModel:_ExtensionType"
minOccurs = "0"/ >
      </xs:sequence>
   </xs:complexType>
   <xs:simpleType name="VmsTypeEnum" >
      <xs:restriction base="xs:string" >
```

```
            <xs:enumeration value="colourGraphic"/ >
            <xs:enumeration value="continuousSign"/ >
            <xs:enumeration value="monochromeGraphic"/ >
            <xs:enumeration value="matrixSign"/ >
            <xs:enumeration value="other"/ >
         </xs:restriction>
      </xs:simpleType>
      <xs:complexType name="VmsUnitRecord" >
         <xs:sequence>
            <xs:element name="numberOfVms" type = "D2LogicalModel:NonNegativeInteger" minOccurs = "0"/ >
            <xs:element name="vmsUnitIdentifier" type = "D2LogicalModel:String" minOccurs = "0"/ >
            <xs:element name="vmsUnitIPAddress" type = "D2LogicalModel:String" minOccurs = "0"/ >
            <xs:element name="vmsUnitElectronicAddress" type = "D2LogicalModel:String" minOccurs = "0"/ >
            <xs:element name="vmsRecord" type = "D2LogicalModel:_VmsUnitRecordVmsIndexVmsRecord" minOccurs = "0"
maxOccurs = "unbounded"/ >
            <xs:element name="vmsUnitRecordExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
         </xs:sequence>
         <xs:attribute name="id" type = "xs:string" use = "required"/ >
         <xs:attribute name="version" type = "xs:string" use = "required"/ >
      </xs:complexType>
      <xs:complexType name="VmsUnitTable" >
         <xs:sequence>
            <xs:element name="vmsUnitTableIdentification" type = "D2LogicalModel:String" minOccurs = "0"/ >
            <xs:element name="vmsUnitRecord" type = "D2LogicalModel:VmsUnitRecord" maxOccurs = "unbounded"/ >
            <xs:element name="vmsUnitTableExtension" type = "D2LogicalModel:_ExtensionType" minOccurs = "0"/ >
         </xs:sequence>
         <xs:attribute name="id" type = "xs:string" use = "required"/ >
         <xs:attribute name="version" type = "xs:string" use = "required"/ >
      </xs:complexType>
</xs:schema>
```

Annex D
(informative)

Examples of VMS Publications and VMS Table Publications In XML

D.1 Example VmsPublication (text only)

```
<?xml version="1.0" encoding = "UTF-8"? >
<D2LogicalModel:d2LogicalModel modelBaseVersion="2" xmlns:D2LogicalModel = "http://datex2.eu/schema/2/2_0"
xmlns:xsi = "http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation = "http://datex2.eu/schema/2/2_0
..\..\Schema\DATEXIISchema_2_2_0.xsd" >
   <D2LogicalModel:exchange>
      <D2LogicalModel:supplierIdentification>
         <D2LogicalModel:country>se</D2LogicalModel:country>
         <D2LogicalModel:nationalIdentifier>STA</D2LogicalModel:nationalIdentifier>
      </D2LogicalModel:supplierIdentification>
   </D2LogicalModel:exchange>
   <D2LogicalModel:payloadPublication xsi:type="D2LogicalModel:VmsPublication" lang = "sv" >
      <D2LogicalModel:publicationTime>2011-03-28T18:45:00+02:00</D2LogicalModel:publicationTime>
      <D2LogicalModel:publicationCreator>
         <D2LogicalModel:country>se</D2LogicalModel:country>
         <D2LogicalModel:nationalIdentifier>STA</D2LogicalModel:nationalIdentifier>
      </D2LogicalModel:publicationCreator>
      <D2LogicalModel:headerInformation>
         <D2LogicalModel:confidentiality>noRestriction</D2LogicalModel:confidentiality>
         <D2LogicalModel:informationStatus>real</D2LogicalModel:informationStatus>
      </D2LogicalModel:headerInformation>
      <D2LogicalModel:vmsUnit>
         <D2LogicalModel:vmsUnitTableReference id="SE_STA_UnitTableReference_1" targetClass = "VmsUnitTable"
version = "1"/ >
         <D2LogicalModel:vmsUnitReference id="SE_STA_VMSUnit_123" targetClass = "VmsUnitRecord" version = "1"/ >
         <D2LogicalModel:vms vmsIndex="1" >
            <D2LogicalModel:vms>
               <D2LogicalModel:vmsWorking>true</D2LogicalModel:vmsWorking>
```

```
                <D2LogicalModel:vmsMessage messageIndex=”1” >
                   <D2LogicalModel:vmsMessage>
                      <D2LogicalModel:timeLastSet>2011-03-28T18:00:00+02:00</D2LogicalModel:timeLastSet>
                      <D2LogicalModel:textPage pageNumber=”1” >
                         <D2LogicalModel:vmsText>
                            <D2LogicalModel:vmsTextLine lineIndex=”1” >
                               <D2LogicalModel:vmsTextLine>
                                  <D2LogicalModel:vmsTextLine>Olycka om 1 km</D2LogicalModel:vmsTextLine>
                               </D2LogicalModel:vmsTextLine>
                            </D2LogicalModel:vmsTextLine>
                         </D2LogicalModel:vmsText>
                      </D2LogicalModel:textPage>
                   </D2LogicalModel:vmsMessage>
                </D2LogicalModel:vmsMessage>
             </D2LogicalModel:vms>
          </D2LogicalModel:vms>
       </D2LogicalModel:vmsUnit>
    </D2LogicalModel:payloadPublication>
</D2LogicalModel:d2LogicalModel>
```

D.2 Example VmsPublication (text and pictogram)

```
<?xml version=”1.0” encoding = ”UTF-8”? >
<D2LogicalModel:d2LogicalModel modelBaseVersion=”2” xmlns:D2LogicalModel = ”http://datex2.eu/schema/2/2_0”
xmlns:xsi = ”http://www.w3.org/2001/XMLSchema-instance” xsi:schemaLocation = ”http://datex2.eu/schema/2/2_0
..\..\Schema\DATEXIISchema_2_2_0.xsd” >
   <D2LogicalModel:exchange>
      <D2LogicalModel:supplierIdentification>
         <D2LogicalModel:country>se</D2LogicalModel:country>
         <D2LogicalModel:nationalIdentifier>STA</D2LogicalModel:nationalIdentifier>
      </D2LogicalModel:supplierIdentification>
   </D2LogicalModel:exchange>
   <D2LogicalModel:payloadPublication xsi:type=”D2LogicalModel:VmsPublication” lang = ”sv” >
      <D2LogicalModel:publicationTime>2011-03-28T18:45:00+02:00</D2LogicalModel:publicationTime>
      <D2LogicalModel:publicationCreator>
         <D2LogicalModel:country>se</D2LogicalModel:country>
         <D2LogicalModel:nationalIdentifier>STA</D2LogicalModel:nationalIdentifier>
      </D2LogicalModel:publicationCreator>
```

```
      <D2LogicalModel:headerInformation>
         <D2LogicalModel:confidentiality>noRestriction</D2LogicalModel:confidentiality>
         <D2LogicalModel:informationStatus>real</D2LogicalModel:informationStatus>
      </D2LogicalModel:headerInformation>
      <D2LogicalModel:vmsUnit>
         <D2LogicalModel:vmsUnitTableReference id=”SE_STA_UnitTableReference_1” targetClass = ”VmsUnitTable”
version = ”1”/ >
         <D2LogicalModel:vmsUnitReference id=”SE_STA_VMSUnit_124” targetClass = ”VmsUnitRecord” version = ”1”/ >
         <D2LogicalModel:vms vmsIndex=”1” >
            <D2LogicalModel:vms>
               <D2LogicalModel:vmsWorking>true</D2LogicalModel:vmsWorking>
               <D2LogicalModel:vmsMessage messageIndex=”1” >
                  <D2LogicalModel:vmsMessage>
                     <D2LogicalModel:timeLastSet>2011-03-28T18:00:00+02:00</D2LogicalModel:timeLastSet>
                     <D2LogicalModel:textPage pageNumber=”1” >
                        <D2LogicalModel:vmsText>
                           <D2LogicalModel:vmsTextLine lineIndex=”1” >
                              <D2LogicalModel:vmsTextLine>
                                 <D2LogicalModel:vmsTextLine>Olycka om 1 km</D2LogicalModel:vmsTextLine>
                              </D2LogicalModel:vmsTextLine>
                           </D2LogicalModel:vmsTextLine>
                        </D2LogicalModel:vmsText>
                     </D2LogicalModel:textPage>
                     <D2LogicalModel:vmsPictogramDisplayArea pictogramDisplayAreaIndex=”1” >
                        <D2LogicalModel:vmsPictogramDisplayArea>
                           <D2LogicalModel:vmsPictogram pictogramSequencingIndex=”1” >
                              <D2LogicalModel:vmsPictogram>

   <D2LogicalModel:pictogramDescription>accident</D2LogicalModel:pictogramDescription>
                                 <D2LogicalModel:pictogramCode>236</D2LogicalModel:pictogramCode>

   <D2LogicalModel:presenceOfRedTriangle>false</D2LogicalModel:presenceOfRedTriangle>
                                 <D2LogicalModel:vmsSupplementaryPanel>
                                    <D2LogicalModel:vmsSupplementaryPictogram>

   <D2LogicalModel:supplementaryPictogramCode>456</D2LogicalModel:supplementaryPictogramCode>

   <D2LogicalModel:pictogramFlashing>true</D2LogicalModel:pictogramFlashing>
```

```
                                        </D2LogicalModel:vmsSupplementaryPictogram>
                                    </D2LogicalModel:vmsSupplementaryPanel>
                                </D2LogicalModel:vmsPictogram>
                            </D2LogicalModel:vmsPictogram>
                        </D2LogicalModel:vmsPictogramDisplayArea>
                    </D2LogicalModel:vmsPictogramDisplayArea>
                </D2LogicalModel:vmsMessage>
            </D2LogicalModel:vmsMessage>
        </D2LogicalModel:vms>
    </D2LogicalModel:vms>
  </D2LogicalModel:vmsUnit>
 </D2LogicalModel:payloadPublication>
</D2LogicalModel:d2LogicalModel>
```

D.3 Example VmsPublication (text and sequencing pictograms)

```
<?xml version="1.0" encoding = "UTF-8"? >
<D2LogicalModel:d2LogicalModel modelBaseVersion="2" xmlns:D2LogicalModel = "http://datex2.eu/schema/2/2_0"
xmlns:xsi = "http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation = "http://datex2.eu/schema/2/2_0
..\..\Schema\DATEXIISchema_2_2_0.xsd" >
   <D2LogicalModel:exchange>
      <D2LogicalModel:supplierIdentification>
         <D2LogicalModel:country>se</D2LogicalModel:country>
         <D2LogicalModel:nationalIdentifier>STA</D2LogicalModel:nationalIdentifier>
      </D2LogicalModel:supplierIdentification>
   </D2LogicalModel:exchange>
   <D2LogicalModel:payloadPublication xsi:type="D2LogicalModel:VmsPublication" lang = "sv" >
      <D2LogicalModel:publicationTime>2011-03-28T18:45:00+02:00</D2LogicalModel:publicationTime>
      <D2LogicalModel:publicationCreator>
         <D2LogicalModel:country>se</D2LogicalModel:country>
         <D2LogicalModel:nationalIdentifier>STA</D2LogicalModel:nationalIdentifier>
      </D2LogicalModel:publicationCreator>
      <D2LogicalModel:headerInformation>
         <D2LogicalModel:confidentiality>noRestriction</D2LogicalModel:confidentiality>
         <D2LogicalModel:informationStatus>real</D2LogicalModel:informationStatus>
      </D2LogicalModel:headerInformation>
      <D2LogicalModel:vmsUnit>
```

```
          <D2LogicalModel:vmsUnitTableReference id=”SE_STA_UnitTableReference_1” targetClass = ”VmsUnitTable”
version = ”1”/ >
          <D2LogicalModel:vmsUnitReference id=”SE_STA_VMSUnit_125” targetClass = ”VmsUnitRecord” version = ”1”/ >
          <D2LogicalModel:vms vmsIndex=”1” >
             <D2LogicalModel:vms>
                <D2LogicalModel:vmsWorking>true</D2LogicalModel:vmsWorking>
                <D2LogicalModel:vmsMessage messageIndex=”1” >
                   <D2LogicalModel:vmsMessage>
                      <D2LogicalModel:timeLastSet>2011-03-28T18:00:00+02:00</D2LogicalModel:timeLastSet>

   <D2LogicalModel:textPictogramSequencingInterval>30</D2LogicalModel:textPictogramSequencingInterval>
                      <D2LogicalModel:textPage pageNumber=”1” >
                         <D2LogicalModel:vmsText>
                            <D2LogicalModel:vmsTextLine lineIndex=”1” >
                               <D2LogicalModel:vmsTextLine>
                                  <D2LogicalModel:vmsTextLine>Olycka om 1 km</D2LogicalModel:vmsTextLine>
                               </D2LogicalModel:vmsTextLine>
                            </D2LogicalModel:vmsTextLine>
                         </D2LogicalModel:vmsText>
                      </D2LogicalModel:textPage>
                      <D2LogicalModel:vmsPictogramDisplayArea pictogramDisplayAreaIndex=”1” >
                         <D2LogicalModel:vmsPictogramDisplayArea>
                            <D2LogicalModel:vmsPictogram pictogramSequencingIndex=”1” >
                               <D2LogicalModel:vmsPictogram>

   <D2LogicalModel:pictogramDescription>accident</D2LogicalModel:pictogramDescription>
                                  <D2LogicalModel:pictogramCode>236</D2LogicalModel:pictogramCode>

   <D2LogicalModel:presenceOfRedTriangle>false</D2LogicalModel:presenceOfRedTriangle>
                               </D2LogicalModel:vmsPictogram>
                            </D2LogicalModel:vmsPictogram>
                            <D2LogicalModel:vmsPictogram pictogramSequencingIndex=”2” >
                               <D2LogicalModel:vmsPictogram>

   <D2LogicalModel:pictogramDescription>queue</D2LogicalModel:pictogramDescription>
                                  <D2LogicalModel:pictogramCode>255</D2LogicalModel:pictogramCode>

   <D2LogicalModel:presenceOfRedTriangle>false</D2LogicalModel:presenceOfRedTriangle>
```

```
                                    </D2LogicalModel:vmsPictogram>
                                 </D2LogicalModel:vmsPictogram>
                              </D2LogicalModel:vmsPictogramDisplayArea>
                           </D2LogicalModel:vmsPictogramDisplayArea>
                        </D2LogicalModel:vmsMessage>
                     </D2LogicalModel:vmsMessage>
                  </D2LogicalModel:vms>
               </D2LogicalModel:vms>
            </D2LogicalModel:vmsUnit>
      </D2LogicalModel:payloadPublication>
</D2LogicalModel:d2LogicalModel>
```

D.4 Example VmsTablePublication

```
<?xml version="1.0" encoding = "UTF-8"? >
<D2LogicalModel:d2LogicalModel modelBaseVersion="2" xmlns:D2LogicalModel = "http://datex2.eu/schema/2/2_0"
xmlns:xsi = "http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation = "http://datex2.eu/schema/2/2_0
..\..\Schema\DATEXIISchema_2_2_0.xsd" >
   <D2LogicalModel:exchange>
      <D2LogicalModel:supplierIdentification>
         <D2LogicalModel:country>se</D2LogicalModel:country>
         <D2LogicalModel:nationalIdentifier>STA</D2LogicalModel:nationalIdentifier>
      </D2LogicalModel:supplierIdentification>
   </D2LogicalModel:exchange>
   <D2LogicalModel:payloadPublication xsi:type="D2LogicalModel:VmsTablePublication" lang = "sv" >
      <D2LogicalModel:publicationTime>2011-03-28T18:45:00+02:00</D2LogicalModel:publicationTime>
      <D2LogicalModel:publicationCreator>
         <D2LogicalModel:country>se</D2LogicalModel:country>
         <D2LogicalModel:nationalIdentifier>STA</D2LogicalModel:nationalIdentifier>
      </D2LogicalModel:publicationCreator>
      <D2LogicalModel:headerInformation>
         <D2LogicalModel:confidentiality>noRestriction</D2LogicalModel:confidentiality>
         <D2LogicalModel:informationStatus>real</D2LogicalModel:informationStatus>
      </D2LogicalModel:headerInformation>
   <D2LogicalModel:vmsUnitTable id="SE_STA_UnitTableReference_1" version = "1" >
   <D2LogicalModel:vmsUnitTableIdentification>Example of a
VMSTablePublication</D2LogicalModel:vmsUnitTableIdentification>
      <D2LogicalModel:vmsUnitRecord id="SE_STA_VMSUnit_1" version = "1" >
```

```
      <D2LogicalModel:numberOfVms>1</D2LogicalModel:numberOfVms>
      <D2LogicalModel:vmsUnitIPAddress>192.168.32.1</D2LogicalModel:vmsUnitIPAddress>
      <D2LogicalModel:vmsRecord vmsIndex=”1” >
         <D2LogicalModel:vmsRecord>
         <D2LogicalModel:vmsOwner>
            <D2LogicalModel:values>
               <D2LogicalModel:value lang=”sv” > Trafikverket < /D2LogicalModel:value >
            </D2LogicalModel:values>
         </D2LogicalModel:vmsOwner>
         <D2LogicalModel:vmsType>colourGraphic</D2LogicalModel:vmsType>

<D2LogicalModel:dynamicallyConfigurableDisplayAreas>false</D2LogicalModel:dynamicallyConfigurableDisplayAreas>
         <D2LogicalModel:vmsTextDisplayCharacteristics>
            <D2LogicalModel:textPageSequencingCapable>false</D2LogicalModel:textPageSequencingCapable>
            <D2LogicalModel:maxNumberOfCharacters>20</D2LogicalModel:maxNumberOfCharacters>
            <D2LogicalModel:maxNumberOfRows>2</D2LogicalModel:maxNumberOfRows>
         </D2LogicalModel:vmsTextDisplayCharacteristics>
         <D2LogicalModel:vmsLocation xsi:type=”D2LogicalModel:Point” >
         <D2LogicalModel:pointByCoordinates>
            <D2LogicalModel:pointCoordinates>
               <D2LogicalModel:latitude>59.917516</D2LogicalModel:latitude>
               <D2LogicalModel:longitude>10.809174</D2LogicalModel:longitude>
            </D2LogicalModel:pointCoordinates>
         </D2LogicalModel:pointByCoordinates>
         </D2LogicalModel:vmsLocation>
         </D2LogicalModel:vmsRecord>
      </D2LogicalModel:vmsRecord>
      </D2LogicalModel:vmsUnitRecord>
      <D2LogicalModel:vmsUnitRecord id=”SE_STA_VMSUnit_2” version = ”1” >
      <D2LogicalModel:numberOfVms>1</D2LogicalModel:numberOfVms>
      <D2LogicalModel:vmsUnitIPAddress>192.168.32.2</D2LogicalModel:vmsUnitIPAddress>
      <D2LogicalModel:vmsRecord vmsIndex=”1” >
         <D2LogicalModel:vmsRecord>
         <D2LogicalModel:vmsOwner>
            <D2LogicalModel:values>
               <D2LogicalModel:value lang=”sv” > Trafikverket < /D2LogicalModel:value >
            </D2LogicalModel:values>
         </D2LogicalModel:vmsOwner>
```

```
      <D2LogicalModel:vmsType>colourGraphic</D2LogicalModel:vmsType>

<D2LogicalModel:dynamicallyConfigurableDisplayAreas>false</D2LogicalModel:dynamicallyConfigurableDisplayAreas>
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         <D2LogicalModel:maxNumberOfCharacters>20</D2LogicalModel:maxNumberOfCharacters>
         <D2LogicalModel:maxNumberOfRows>2</D2LogicalModel:maxNumberOfRows>
      </D2LogicalModel:vmsTextDisplayCharacteristics>
      <D2LogicalModel:vmsPictogramDisplayCharacteristics pictogramDisplayAreaIndex="1" >
         <D2LogicalModel:vmsPictogramDisplayCharacteristics>
            <D2LogicalModel:pictogramPixelsAcross>1000</D2LogicalModel:pictogramPixelsAcross>
            <D2LogicalModel:pictogramPixelsDown>600</D2LogicalModel:pictogramPixelsDown>
            <D2LogicalModel:pictogramNumberOfColours>32</D2LogicalModel:pictogramNumberOfColours>
         </D2LogicalModel:vmsPictogramDisplayCharacteristics>
         </D2LogicalModel:vmsPictogramDisplayCharacteristics>
      <D2LogicalModel:vmsLocation xsi:type="D2LogicalModel:Point" >
      <D2LogicalModel:pointByCoordinates>
         <D2LogicalModel:pointCoordinates>
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         </D2LogicalModel:pointCoordinates>
      </D2LogicalModel:pointByCoordinates>
      </D2LogicalModel:vmsLocation>
   </D2LogicalModel:vmsRecord>
   </D2LogicalModel:vmsRecord>
   </D2LogicalModel:vmsUnitRecord>
   <D2LogicalModel:vmsUnitRecord id="SE_STA_VMSUnit_3" version = "1" >
   <D2LogicalModel:numberOfVms>1</D2LogicalModel:numberOfVms>
   <D2LogicalModel:vmsUnitIPAddress>192.168.32.3</D2LogicalModel:vmsUnitIPAddress>
   <D2LogicalModel:vmsRecord vmsIndex="1" >
      <D2LogicalModel:vmsRecord>
      <D2LogicalModel:vmsOwner>
         <D2LogicalModel:values>
            <D2LogicalModel:value lang="sv" > Trafikverket < /D2LogicalModel:value >
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      <D2LogicalModel:vmsType>colourGraphic</D2LogicalModel:vmsType>
```

```
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          <D2LogicalModel:maxNumberOfCharacters>20</D2LogicalModel:maxNumberOfCharacters>
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       </D2LogicalModel:vmsTextDisplayCharacteristics>
       <D2LogicalModel:vmsPictogramDisplayCharacteristics pictogramDisplayAreaIndex=”1” >
          <D2LogicalModel:vmsPictogramDisplayCharacteristics>
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             <D2LogicalModel:pictogramPixelsDown>600</D2LogicalModel:pictogramPixelsDown>
             <D2LogicalModel:pictogramNumberOfColours>32</D2LogicalModel:pictogramNumberOfColours>
             <D2LogicalModel:pictogramPositionX>1</D2LogicalModel:pictogramPositionX>
             <D2LogicalModel:pictogramPositionY>1.85</D2LogicalModel:pictogramPositionY>
          </D2LogicalModel:vmsPictogramDisplayCharacteristics>
       </D2LogicalModel:vmsPictogramDisplayCharacteristics>
       <D2LogicalModel:vmsPictogramDisplayCharacteristics pictogramDisplayAreaIndex=”2” >
          <D2LogicalModel:vmsPictogramDisplayCharacteristics>
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             <D2LogicalModel:pictogramPixelsDown>600</D2LogicalModel:pictogramPixelsDown>
             <D2LogicalModel:pictogramNumberOfColours>32</D2LogicalModel:pictogramNumberOfColours>
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             <D2LogicalModel:pictogramPositionY>0.5</D2LogicalModel:pictogramPositionY>
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          <D2LogicalModel:pointCoordinates>
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             <D2LogicalModel:longitude>10.303174</D2LogicalModel:longitude>
          </D2LogicalModel:pointCoordinates>
       </D2LogicalModel:pointByCoordinates>
       </D2LogicalModel:vmsLocation>
       </D2LogicalModel:vmsRecord>
    </D2LogicalModel:vmsRecord>
    </D2LogicalModel:vmsUnitRecord>
    <D2LogicalModel:vmsUnitRecord id=”SE_STA_VMSUnit_4” version = ”1” >
    <D2LogicalModel:numberOfVms>2</D2LogicalModel:numberOfVms>
```

```
   <D2LogicalModel:vmsUnitIPAddress>192.168.32.4</D2LogicalModel:vmsUnitIPAddress>
   <D2LogicalModel:vmsRecord vmsIndex=”1” >
      <D2LogicalModel:vmsRecord>
      <D2LogicalModel:vmsOwner>
         <D2LogicalModel:values>
            <D2LogicalModel:value lang=”sv” > Trafikverket < /D2LogicalModel:value >
         </D2LogicalModel:values>
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      <D2LogicalModel:vmsType>colourGraphic</D2LogicalModel:vmsType>

<D2LogicalModel:dynamicallyConfigurableDisplayAreas>false</D2LogicalModel:dynamicallyConfigurableDisplayAreas>
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         <D2LogicalModel:maxNumberOfCharacters>20</D2LogicalModel:maxNumberOfCharacters>
         <D2LogicalModel:maxNumberOfRows>2</D2LogicalModel:maxNumberOfRows>
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            <D2LogicalModel:pictogramPositionY>0.5</D2LogicalModel:pictogramPositionY>
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      </D2LogicalModel:pointByCoordinates>
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   </D2LogicalModel:vmsRecord>
<D2LogicalModel:vmsRecord vmsIndex=”2” >
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```

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            <D2LogicalModel:values>
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            </D2LogicalModel:values>
         </D2LogicalModel:vmsOwner>
         <D2LogicalModel:vmsType>colourGraphic</D2LogicalModel:vmsType>

   <D2LogicalModel:dynamicallyConfigurableDisplayAreas>false</D2LogicalModel:dynamicallyConfigurableDisplayAreas>
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               <D2LogicalModel:pictogramPositionY>0.5</D2LogicalModel:pictogramPositionY>
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         </D2LogicalModel:vmsPictogramDisplayCharacteristics>
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         <D2LogicalModel:pointByCoordinates>
            <D2LogicalModel:pointCoordinates>
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               <D2LogicalModel:longitude>10.303175</D2LogicalModel:longitude>
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         </D2LogicalModel:pointByCoordinates>
         </D2LogicalModel:vmsLocation>
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      </D2LogicalModel:vmsRecord>
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   </D2LogicalModel:vmsUnitTable>
   </D2LogicalModel:payloadPublication>
</D2LogicalModel:d2LogicalModel>
```

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