Austrian Traffic Signs Profile

Version 2.0

A.1 Introduction

ASFINAG provides DATEX II traffic data of Austrian motorways and highways for service providers to be distributed to vehicles.

This document describes the Austrian Traffic Signs Profile. ASFINAG delivers the traffic signs feed through two different APIs. One contains information related to the locations of the traffic signs, and the other contains the actual content of the traffic signs. The feed with location information is called as “TraffficSignsStatic” and the feed with the traffic signs content is called as “TrafficSignsDynamic”.

To know where the traffic sign is located and what information the traffic sign provides both feeds needs to be processed.

A.1.1 TrafficSignsStatic

The TrafficSignsStatic feed contains location information of all traffic signs. The corresponding traffic sign content information like speed limits, restrictions, etc., are provided in the TrafficSignsDynamic feed.

The TrafficSignsStatic feed uses DATEX II VmsTablePublication as the data structure. **Figure 1** provides an overview about the data structure of the TrafficSignsStatic and **Figure 2** provides an example for it in XML.

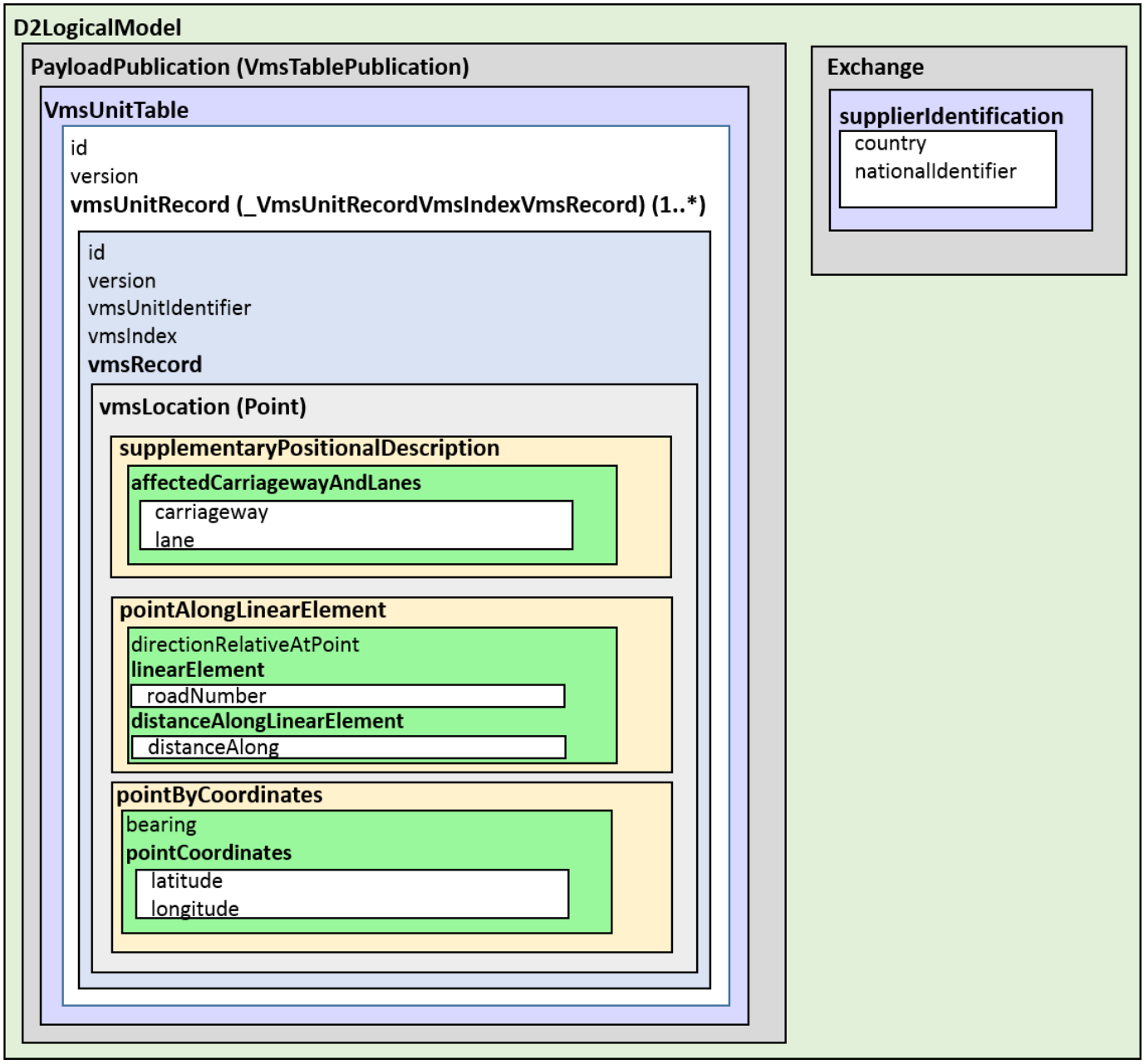

Figure 1: Data structure for TrafficSignsStatic

```xml
<?xml version="1.0" encoding="utf-8"?>
<d2LogicalModel modelBaseVersion="2" xmlns="http://datex2.eu/schema/2/2_0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <exchange>
    <supplierIdentification>
      <country>at</country>
      <nationalIdentifier>ASFINAG</nationalIdentifier>
    </supplierIdentification>
  </exchange>
  <payloadPublication xsi:type="VmsTablePublication" lang="de-at">
    <publicationTime>2018-03-23T11:00:00+01:00</publicationTime>
    <publicationCreator>
      <country>at</country>
      <nationalIdentifier>ASFINAG</nationalIdentifier>
    </publicationCreator>
    <headerInformation>
      <confidentiality>noRestriction</confidentiality>
      <informationStatus>real</informationStatus>
    </headerInformation>
    <vmsUnitTable id="WVZ_TLS_ASFINAG" version="1">
      <vmsUnitRecord id="AQ_A12_1_014,852~C14" version="1">
        <vmsUnitIdentifier>http://maps.asfinag.at/cache/wvz?image==B501200148P001</vmsUnitIdentifier>
        <vmsRecord vmsIndex="2018396">
          <vmsRecord>
            <vmsLocation xsi:type="Point">
              <supplementaryPositionalDescription>
                <affectedCarriagewayAndLanes>
                  <carriageway>mainCarriageway</carriageway>
                  <lane>lane1</lane>
                  <affectedCarriagewayAndLanesExtension>
                    <extendedAffectedCarriagewayAndLanes>
                      <additionalCarriagewayDetails>
                        <originalNumberOfLanes>2</originalNumberOfLanes>
                      </additionalCarriagewayDetails>
                    </extendedAffectedCarriagewayAndLanes>
                  </affectedCarriagewayAndLanesExtension>
                </affectedCarriagewayAndLanes>
              </supplementaryPositionalDescription>
              <pointAlongLinearElement>
                <pointByCoordinates>
                  <bearing>200</bearing>
                  <pointCoordinates>
                    <latitude>47.5115929</latitude>
                    <longitude>12.0636015</longitude>
                  </pointCoordinates>
                </pointByCoordinates>
              </vmsLocation>
            </vmsRecord>
          </vmsRecord>
          <vmsUnitRecordExtension>
            <extendedVmsUnitRecord>
              <additionalVmsUnitRecordDetails>
                <canDisplaySpeedSign>true</canDisplaySpeedSign>
                <category>vms</category>
              </additionalVmsUnitRecordDetails>
            </extendedVmsUnitRecord>
          </vmsUnitRecordExtension>
        </vmsUnitRecord>
      </vmsUnitTable>
    </payloadPublication>
</d2LogicalModel>
```

Figure 2: An example for TrafficSignsStatic

A.1.2 TrafficSignsDynamic

The TrafficSignsDynamic feed contains actual content information (speed limits, restrictions, etc.,) of all traffic signs. The corresponding traffic sign location information is provided in the TrafficSignsStatic feed.

The TrafficSignsDynamic feed uses DATEX II VmsPublication as the data structure. **Figure 3** provides an overview about the data structure of the TrafficSignsDynamic and **Figure 4** provides an example for it in XML. Due to the complexity of the data structure of VmsPublication some of the elements are not shown in **Figure 3**, however the missing elements are covered in the example shown in **Figure 4**.

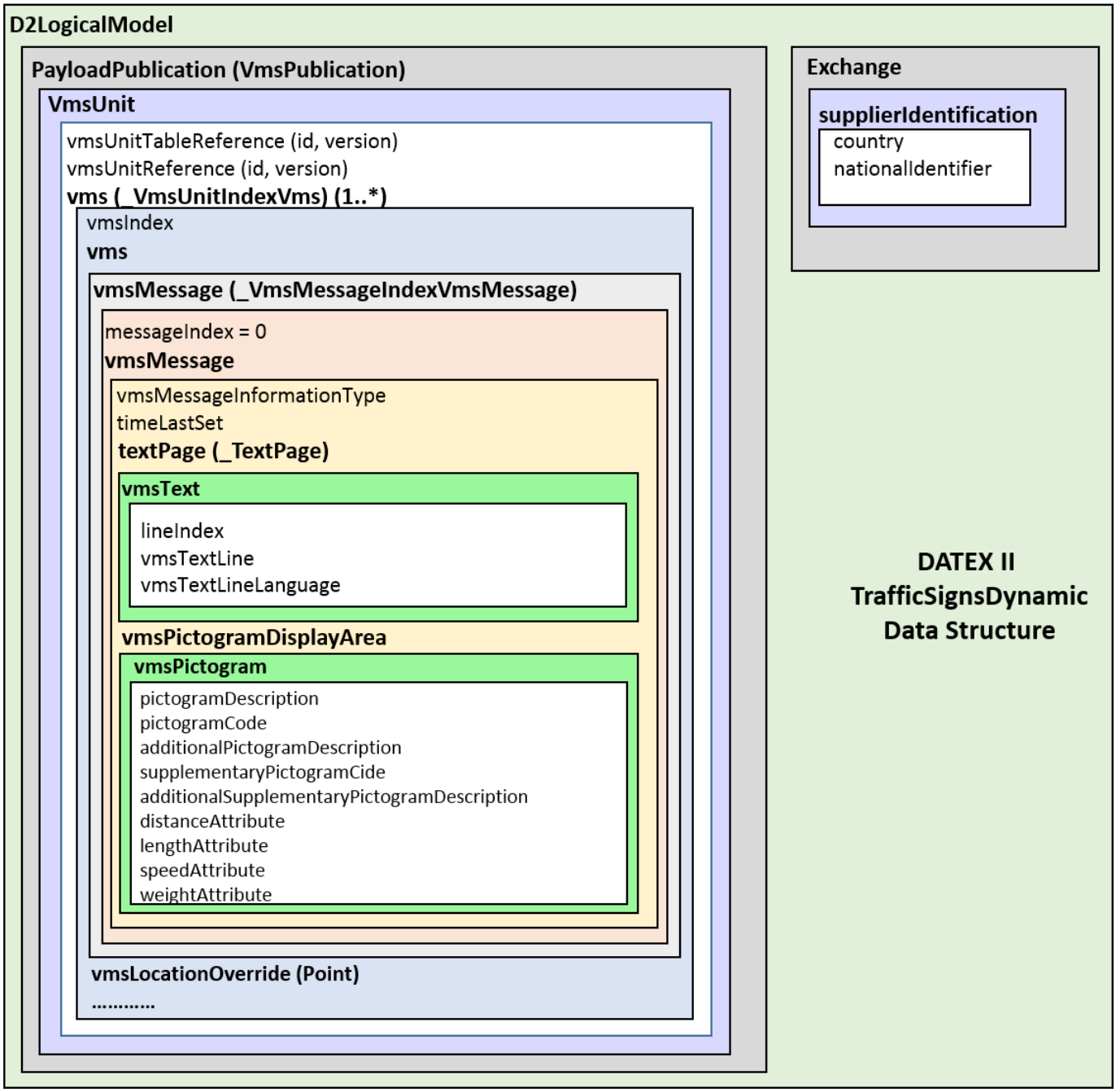

Figure 3: Data structure for TrafficSignsDynamic

```xml
<?xml version="1.0" encoding="utf-8"?>
<d2LogicalModel modelBaseVersion="2" xmlns="http://datex2.eu/schema/2/2_0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <exchange>
    <supplierIdentification>
      <country>at</country>
      <nationalIdentifier>ASFINAG</nationalIdentifier>
    </supplierIdentification>
  </exchange>
  <payloadPublication xsi:type="VmsPublication" lang="de-at">
    <publicationTime>2018-03-23T11:00:00+01:00</publicationTime>
    <publicationCreator>
      <country>at</country>
      <nationalIdentifier>ASFINAG</nationalIdentifier>
    </publicationCreator>
    <headerInformation>
      <confidentiality>noRestriction</confidentiality>
      <informationStatus>real</informationStatus>
    </headerInformation>
    <vmsUnit>
      <vmsUnitTableReference id="WVZ_TLS_ASFINAG" version="1" targetClass="VmsUnitTable" />
      <vmsUnitReference id="AQ_A12_1_014,852~C14" version="1" targetClass="VmsUnitRecord"/>
      <vms vmsIndex="2018396">
        <vms>
          <vmsWorking>true</vmsWorking>
          <vmsMessage messageIndex="0">
            <vmsMessage>
              <vmsMessageInformationType>trafficManagement</vmsMessageInformationType>
              <timeLastSet>2018-03-20T23:00:31+01:00</timeLastSet>
              <vmsPictogramDisplayArea pictogramDisplayAreaIndex="0">
                <vmsPictogramDisplayArea>
                  <vmsPictogram pictogramSequencingIndex="0">
                    <vmsPictogram>
                      <pictogramDescription>maximumSpeedLimitedToTheFigureIndicated</pictogramDescription>
                      <pictogramCode>28</pictogramCode>
                      <pictogramUrl>http://maps.asfinag.at/cache/wvz?image==B501200148P001.P01_28</pictogramUrl>
                      <presenceOfRedTriangle>false</presenceOfRedTriangle>
                      <speedAttribute>100</speedAttribute>
                    </vmsPictogram>
                  </vmsPictogram>
                </vmsPictogramDisplayArea>
              </vmsPictogramDisplayArea>
            </vmsMessage>
          </vmsMessage>
          <vmsLocationOverride xsi:type="Point">
            <supplementaryPositionalDescription>
            <pointAlongLinearElement>
            <pointByCoordinates>
              <bearing>200</bearing>
              <pointCoordinates>
                <latitude>47.5115929</latitude>
                <longitude>12.0636015</longitude>
              </pointCoordinates>
            </pointByCoordinates>
          </vmsLocationOverride>
        </vms>
      </vms>
    </vmsUnit>
  </payloadPublication>
</d2LogicalModel>
```

Figure 4: An example for TrafficSignsDynamic

A.1.3 Lanes

To understand traffic signs it is important to understand how lanes are numbered at ASFINAG. Lanes are numbered in either direction starting with the right most driveable lane on the main carriageway as “lane1”. Then the number is increased to the left. In Datex2 this information is provided by ASFINAG with the “affectedCarriagewayAndLanes”. In this element the “carriageway” is set to mainCarriageway and the “lane” is set to e.g. lane1. Note that more than one lane can be specified in the affectedCarriagewayAndLanes.

If a hard shoulder (for break downs) or an acceleration/ a deceleration lane (because of a ramp) is present this is not “Lane1” as these lanes are not accounted to the main carriageway.

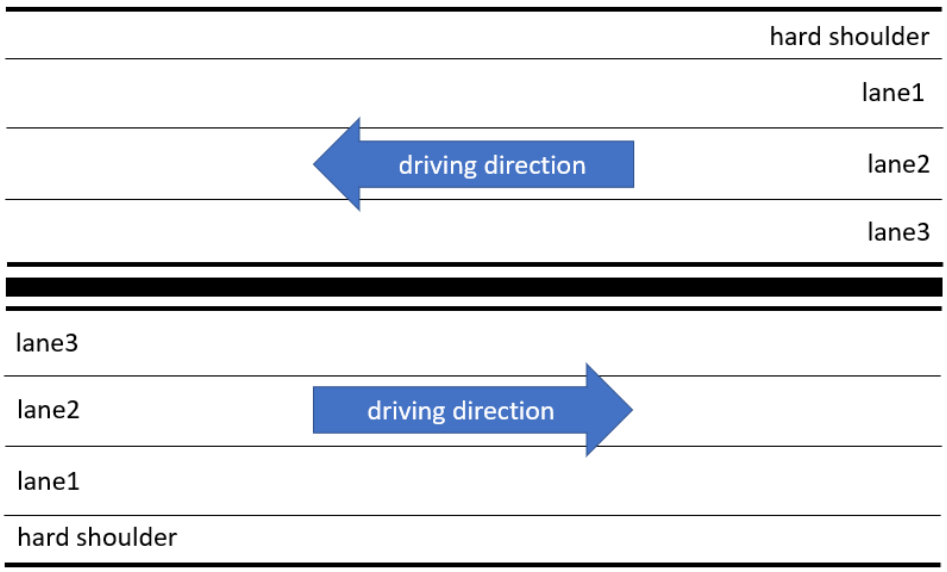

Figure 5: Lane numbering

Ramps can have one to many lanes and they follow the same logic. The right most driveable lane of the ramp is specified as “lane1”. In Datex2 this information is provided by ASFINAG also with the “affectedCarriagewayAndLanes” element. However, the “carriageway” in this case is set to rightHandFeederRoad and the “lane” is set to e.g. lane1.

A.2 Traffic Sign Categories at ASFINAG

At ASFINAG the traffic signs are categorized into:

- Electronic road signs
  - Variable message signs (VMS)
  - Variable text panels (VTP)
  - Variable direction signs (VDS)
- Metal signs

A.2.1 Variable Message Signs (VMS)

The cross-section signs mounted centrally overhead consist of centre-lane (or centre of the lane) mounted VMS signs with an additional information sign below and intermediate VMS, also with an additional sign below. The centre-lane mounted VMS are called “A” signs and the additional or supplementary information signs below them are called as

“AC” signs. The same way, the intermediate VMS are called as “B” signs and the additional or supplementary information signs below them are called as “BC” signs[1].

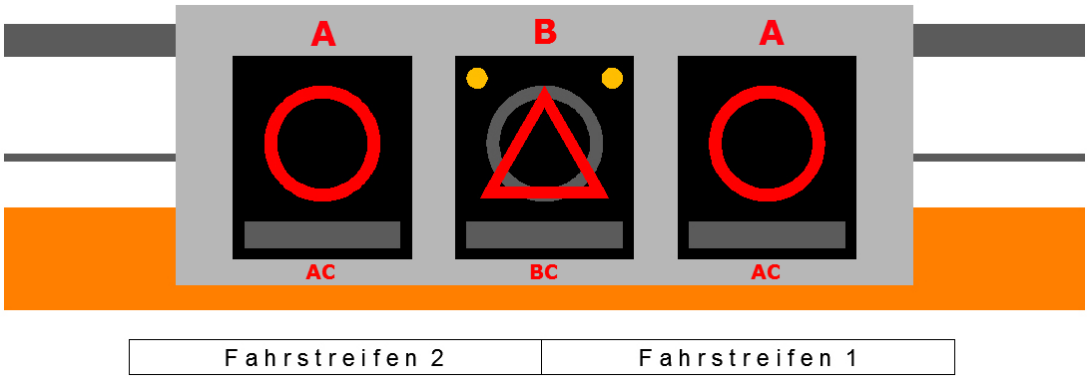

Figure 5: Variable Message Sign (VMS) covering two lanes[1]

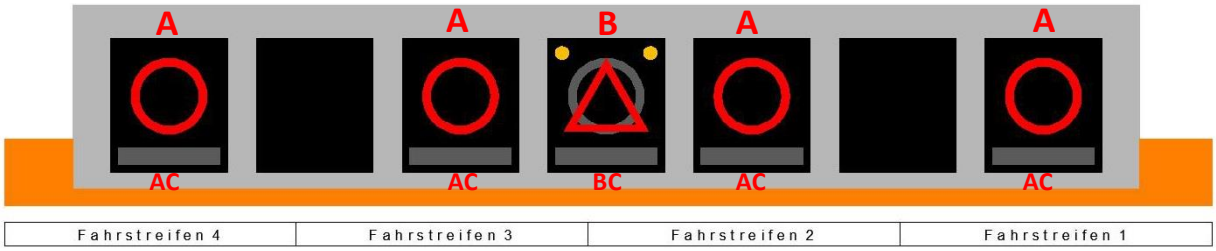

Figure 6: Variable Message Sign (VMS) covering four lanes[1]

Figures 5 and **6** gives an overview about the VMS. The text “Fahrstreifen” means “Lane” (e.g., Lane1, Lane2…).

In DATEX II a typical VMS would look like as shown in **Figure 7** (In the DATEX II examples only relevant XML structure is provided):

[1] Eco-AT_SWP2.1_InVehicleInformation_v03.60 (http://www.eco-at.info/Specification_request.html)

```
<vmsUnit>
  <vmsUnitTableReference id="WVZ_TLS_ASFINAG" version="1" targetClass="VmsUnitTable" />
  <vmsUnitReference id="AQ_A12_1_014,852~C14" version="1" targetClass="VmsUnitRecord"/>
 <vms vmsIndex="2018396">
    <vms>
      <vmsWorking>true</vmsWorking>
      <vmsMessage messageIndex="0">
        <vmsMessage>
          <vmsMessageInformationType>trafficManagement</vmsMessageInformationType>
          <timeLastSet>2018-03-20T23:00:31+01:00</timeLastSet>
          <vmsPictogramDisplayArea pictogramDisplayAreaIndex="0">
            <vmsPictogramDisplayArea>
              <vmsPictogram pictogramSequencingIndex="0">
                <vmsPictogram>
                  <pictogramDescription>maximumSpeedLimitedToTheFigureIndicated</pictogramDescription>
                  <pictogramCode>28</pictogramCode>
                  <pictogramUrl>http://maps.asfinag.at/cache/wvz?image==B501200148P001.P01_28</pictogramUrl>
                  <presenceOfRedTriangle>false</presenceOfRedTriangle>
                  <speedAttribute>100</speedAttribute>
                </vmsPictogram>
              </vmsPictogram>
            </vmsPictogramDisplayArea>
          </vmsPictogramDisplayArea>
        </vmsMessage>
      </vmsMessage>
      <vmsLocationOverride xsi:type="Point">
    </vms>
  </vms>
  <vms vmsIndex="2018397">
    <vms>
      <vmsWorking>true</vmsWorking>
      <vmsMessage messageIndex="0">
        <vmsMessage>
          <vmsMessageInformationType>trafficManagement</vmsMessageInformationType>
          <timeLastSet>2018-03-20T23:00:31+01:00</timeLastSet>
          <vmsPictogramDisplayArea pictogramDisplayAreaIndex="0">
            <vmsPictogramDisplayArea>
              <vmsPictogram pictogramSequencingIndex="0">
                <vmsPictogram>
                  <pictogramDescription>maximumSpeedLimitedToTheFigureIndicated</pictogramDescription>
                  <pictogramCode>28</pictogramCode>
                  <pictogramUrl>http://maps.asfinag.at/cache/wvz?image==B501200148P001.P02_28</pictogramUrl>
                  <presenceOfRedTriangle>false</presenceOfRedTriangle>
                  <speedAttribute>100</speedAttribute>
                </vmsPictogram>
              </vmsPictogram>
            </vmsPictogramDisplayArea>
          </vmsPictogramDisplayArea>
        </vmsMessage>
      </vmsMessage>
      <vmsLocationOverride xsi:type="Point">
    </vms>
  </vms>
```

```
<vms vmsIndex="2018400">
  <vms>
    <vmsWorking>true</vmsWorking>
    <vmsMessage messageIndex="0">
      <vmsMessage>
        <vmsMessageInformationType>instructionOrMessage</vmsMessageInformationType>
        <timeLastSet>2018-03-20T23:00:31+01:00</timeLastSet>
        <vmsPictogramDisplayArea pictogramDisplayAreaIndex="0">
          <vmsPictogramDisplayArea>
            <vmsPictogram pictogramSequencingIndex="0">
              <vmsPictogram>
                <pictogramDescription>overtakingByGoodsVehiclesProhibited</pictogramDescription>
                <pictogramCode>32</pictogramCode>
                <pictogramUrl>http://maps.asfinag.at/cache/wvz?image==B501200148P001.P05_0</pictogramUrl>
                <presenceOfRedTriangle>false</presenceOfRedTriangle>
                <weightAttribute>7.5</weightAttribute>
              </vmsPictogram>
            </vmsPictogram>
          </vmsPictogramDisplayArea>
        </vmsPictogramDisplayArea>
      </vmsMessage>
    </vmsMessage>
  </vms>
</vms>
</vmsUnit>
```

Figure 7: A sample VMS in DATEX II

Additional elements such as "*supplementaryPanel*", "*lengthAttributes*", "*distanceAttribute*", etc. are provided based on the available information. For example a VMS which displays "*snow chains compulsory*" in the primary pictogram display, and "*applies to goods vehicles*" in the supplementary or additional pictogram display is encoded in DATEX II as shown in **Figure 8**.

```
<vmsUnit>
  <vmsUnitTableReference id="WVZ_TLS_ASFINAG" version="1" targetClass="VmsUnitTable" />
  <vmsUnitReference id="AQ_A12_1_014,852~C14" version="1" targetClass="VmsUnitRecord"/>
  <vms vmsIndex="2018401">
    <vms>
      <vmsWorking>true</vmsWorking>
      <vmsMessage messageIndex="0">
        <vmsMessage>
          <vmsMessageInformationType>instructionOrMessage</vmsMessageInformationType>
          <timeLastSet>2018-03-20T23:00:31+01:00</timeLastSet>
          <vmsPictogramDisplayArea pictogramDisplayAreaIndex="0">
            <vmsPictogramDisplayArea>
              <vmsPictogram pictogramSequencingIndex="0">
                <vmsPictogram>
                  <pictogramDescription>snowChainsCompulsory</pictogramDescription>
                  <pictogramCode>208</pictogramCode>
                  <presenceOfRedTriangle>false</presenceOfRedTriangle>
                  <vmsSupplementaryPanel>
                    <vmsSupplementaryPictogram>
                      <supplementaryPictogramDescription>restrictedToGoodsVehicles</supplementaryPictogramDescription>
                      <supplementaryPictogramCode>104</supplementaryPictogramCode>
                    </vmsSupplementaryPictogram>
                  </vmsSupplementaryPanel>
                </vmsPictogram>
              </vmsPictogram>
            </vmsPictogramDisplayArea>
          </vmsPictogramDisplayArea>
        </vmsMessage>
      </vmsMessage>
    </vms>
  </vms>
</vmsUnit>
```

Figure 8: A sample VMS with supplementary pictogram in DATEX II

Geographic validity of speed signs: Geographically a speed sign is valid from the point where it is shown up to until the next VMS gantry or metal sign in driving direction[1]. Unless specified, the speed limit displayed on one lane is applicable to all the lanes. **Figures 9a** and **9b** illustrates the difference between general speed limits (that apply to all the lanes) and lane specific speed limits. You can notice that an arrow sign is displayed just below the speed limit for lane specific speed limits (**Figure 9b**).

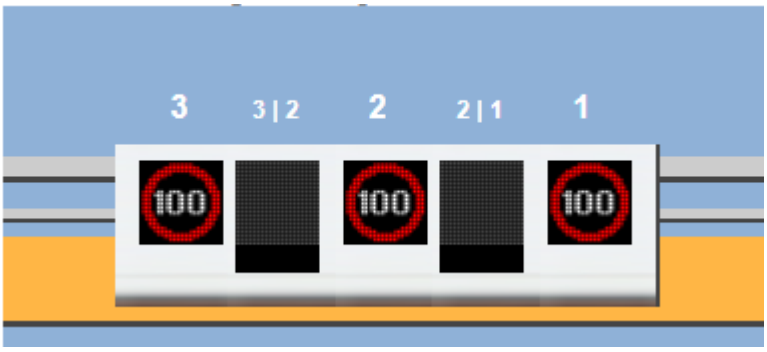

Figure 9a: VMS with speed limits applying to all lanes

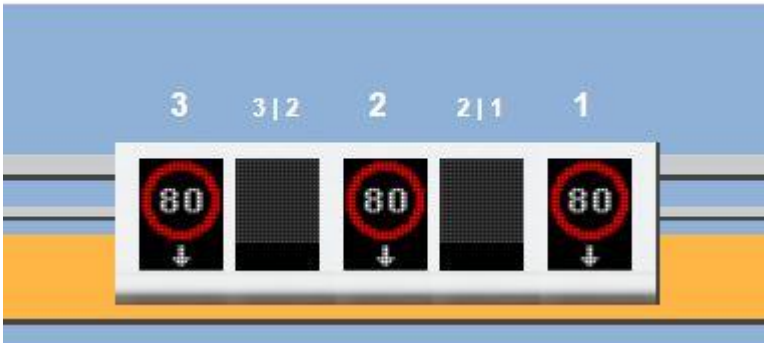

Figure 9b: VMS with lanes specific speed limits

The same scenario in DATEX II messages is illustrated in **Figure 10**. **Figure 10a** shows an example for speed signs that apply to all the lanes, whereas **Figure 10b** shows an example for lane specific speed signs. The examples are from the TrafficSignsDynamic feed. For the speed signs, the location information is provided again in the TrafficSignsDynamic in order to specify the lanes to which the speed limits are applicable. The default case is shown in **Figure 10a**, where the speed limit applies to all the lanes. **Figure 10b** shows the other case where the speed limit applies to only specific lanes, for example “lane1”. To specify the lane information in TrafficSignsDynamic we use DATEX II “*vmsLocationOverride*”.

To sum it up, the location information from the TrafficSignsStatic feed describes the physical location of the signs (Answering the questions: Where is the sign mounted? Above which lanes or beside the road?). In the TrafficSignsDynamic feed for **speed signs,** the Datex II “vmsLocationOverride” element provides information about lanes that are affected by the speed sign. In most cases the speed limit will apply to all the lanes. (Answering the question: Which speed sign is valid for which lane(s)?)

```
<vmsUnit>
  <vmsUnitTableReference id="WVZ_TLS_ASFINAG" version="1" targetClass="VmsUnitTable" />
  <vmsUnitReference id="AQ_A12_1_014,852~C14" version="1" targetClass="VmsUnitRecord"/>
  <vms vmsIndex="2018396">
    <vms>
      <vmsWorking>true</vmsWorking>
      <vmsMessage messageIndex="0">
        <vmsMessage>
          <vmsMessageInformationType>trafficManagement</vmsMessageInformationType>
          <timeLastSet>2018-03-20T23:00:31+01:00</timeLastSet>
          <vmsPictogramDisplayArea pictogramDisplayAreaIndex="0">
            <vmsPictogramDisplayArea>
              <vmsPictogram pictogramSequencingIndex="0">
                <vmsPictogram>
                  <pictogramDescription>maximumSpeedLimitedToTheFigureIndicated</pictogramDescription>
                  <pictogramCode>28</pictogramCode>
                  <pictogramUrl>http://maps.asfinag.at/cache/wvz?image==B501200148P001.P01_28</pictogramUrl>
                  <presenceOfRedTriangle>false</presenceOfRedTriangle>
                  <speedAttribute>100</speedAttribute>
                </vmsPictogram>
              </vmsPictogram>
            </vmsPictogramDisplayArea>
          </vmsPictogramDisplayArea>
        </vmsMessage>
      </vmsMessage>
      <vmsLocationOverride xsi:type="Point">
        <supplementaryPositionalDescription>
          <affectedCarriagewayAndLanes>
            <carriageway>mainCarriageway</carriageway>
            <lane>allLanesCompleteCarriageway</lane>
            <affectedCarriagewayAndLanesExtension>
              <extendedAffectedCarriagewayAndLanes>
                <additionalCarriagewayDetails>
                  <originalNumberOfLanes>2</originalNumberOfLanes>
                </additionalCarriagewayDetails>
              </extendedAffectedCarriagewayAndLanes>
            </affectedCarriagewayAndLanesExtension>
          </affectedCarriagewayAndLanes>
        </supplementaryPositionalDescription>
        <pointAlongLinearElement>
          <directionRelativeAtPoint>aligned</directionRelativeAtPoint>
          <linearElement>
            <roadNumber>A12</roadNumber>
          </linearElement>
          <distanceAlongLinearElement xsi:type="DistanceFromLinearElementStart">
            <distanceAlong>14852</distanceAlong>
          </distanceAlongLinearElement>
        </pointAlongLinearElement>
        <pointByCoordinates>
          <bearing>200</bearing>
          <pointCoordinates>
            <latitude>47.5115929</latitude>
            <longitude>12.0636015</longitude>
          </pointCoordinates>
        </pointByCoordinates>
      </vmsLocationOverride>
    </vms>
  </vms>
</vmsUnit>
```

Figure 10a: An example DATEX II message with speed limit applying to all lanes

```
<vmsUnit>
  <vmsUnitTableReference id="WVZ_TLS_ASFINAG" version="1" targetClass="VmsUnitTable" />
  <vmsUnitReference id="AQ_A23_1_001,148~C14" version="1" targetClass="VmsUnitRecord"/>
  <vms vmsIndex="2038796">
    <vms>
      <vmsWorking>true</vmsWorking>
      <vmsMessage messageIndex="0">
        <vmsMessage>
          <vmsMessageInformationType>trafficManagement</vmsMessageInformationType>
          <timeLastSet>2018-03-20T23:00:31+01:00</timeLastSet>
          <vmsPictogramDisplayArea pictogramDisplayAreaIndex="0">
            <vmsPictogramDisplayArea>
              <vmsPictogram pictogramSequencingIndex="0">
                <vmsPictogram>
                  <pictogramDescription>maximumSpeedLimitedToTheFigureIndicated</pictogramDescription>
                  <pictogramCode>24</pictogramCode>
                  <presenceOfRedTriangle>false</presenceOfRedTriangle>
                  <speedAttribute>60</speedAttribute>
                </vmsPictogram>
              </vmsPictogram>
            </vmsPictogramDisplayArea>
          </vmsPictogramDisplayArea>
        </vmsMessage>
      </vmsMessage>
      <vmsLocationOverride xsi:type="Point">
        <supplementaryPositionalDescription>
          <affectedCarriagewayAndLanes>
            <carriageway>mainCarriageway</carriageway>
            <lane>lane1</lane>
            <affectedCarriagewayAndLanesExtension>
              <extendedAffectedCarriagewayAndLanes>
                <additionalCarriagewayDetails>
                  <originalNumberOfLanes>2</originalNumberOfLanes>
                </additionalCarriagewayDetails>
              </extendedAffectedCarriagewayAndLanes>
            </affectedCarriagewayAndLanesExtension>
          </affectedCarriagewayAndLanes>
        </supplementaryPositionalDescription>
        <pointAlongLinearElement>
          <directionRelativeAtPoint>aligned</directionRelativeAtPoint>
          <linearElement>
            <roadNumber>A23</roadNumber>
          </linearElement>
          <distanceAlongLinearElement xsi:type="DistanceFromLinearElementStart">
            <distanceAlong>1148</distanceAlong>
          </distanceAlongLinearElement>
        </pointAlongLinearElement>
        <pointByCoordinates>
          <bearing>131</bearing>
          <pointCoordinates>
            <latitude>48.1541023</latitude>
            <longitude>16.3325119</longitude>
          </pointCoordinates>
        </pointByCoordinates>
      </vmsLocationOverride>
    </vms>
  </vms>
</vmsUnit>
```

Figure 10b: An example DATEX II message with speed limit applying to lane 1

A.2.2 Variable Text Panels (VTP)

Variable Text Panels are changeable signs on which information about particular events are presented in the form of free text, accompanied by at least one pictogram. Typically it consists of three lines of text and one VMS to display a road sign or a pictogram[1]. See **Figures 11** and **12** to get an overview about VTPs.

Figure 11: Variable Text Panel (VTP)[1]

Figure 12: VTP example (Text in German)[1]

Figure 13 shows a sample DATEX II message with a VTP showing 3 lines of text and a pictogram.

```
<vmsUnit>
  <vmsUnitTableReference id="WVZ_TLS_ASFINAG" version="1" targetClass="VmsUnitTable" />
  <vmsUnitReference id="WTA_A21_1_060,830~C14" version="1" targetClass="VmsUnitRecord" />
  <vms vmsIndex="2021309">
    <vms>
      <vmsWorking>true</vmsWorking>
      <vmsMessage messageIndex="0">
        <vmsMessage>
          <vmsMessageInformationType>situationWarning</vmsMessageInformationType>
          <timeLastSet>2018-03-23T02:28:26+01:00</timeLastSet>
          <textPage pageNumber="0">
            <vmsText>
              <vmsTextLine lineIndex="0">
                <vmsTextLine>
                  <vmsTextLine>A21 winterliche</vmsTextLine>
                  <vmsTextLineLanguage>de-at</vmsTextLineLanguage>
                </vmsTextLine>
              </vmsTextLine>
              <vmsTextLine lineIndex="1">
                <vmsTextLine>
                  <vmsTextLine>Fahrverhältnisse</vmsTextLine>
                  <vmsTextLineLanguage>de-at</vmsTextLineLanguage>
                </vmsTextLine>
              </vmsTextLine>
              <vmsTextLine lineIndex="2">
                <vmsTextLine>
                  <vmsTextLine>angepasst fahren</vmsTextLine>
                  <vmsTextLineLanguage>de-at</vmsTextLineLanguage>
                </vmsTextLine>
              </vmsTextLine>
            </vmsText>
          </textPage>
          <vmsPictogramDisplayArea pictogramDisplayAreaIndex="0">
            <vmsPictogramDisplayArea>
              <vmsPictogram pictogramSequencingIndex="0">
                <vmsPictogram>
                  <pictogramDescription>slipperyRoad</pictogramDescription>
                  <pictogramCode>203</pictogramCode>
                  <presenceOfRedTriangle>false</presenceOfRedTriangle>
                </vmsPictogram>
              </vmsPictogram>
            </vmsPictogramDisplayArea>
          </vmsPictogramDisplayArea>
        </vmsMessage>
      </vmsMessage>
    </vms>
  </vms>
</vmsUnit>
```

Figure 13: An example DATEX II message for VTP (Text in German)

A.2.3 Variable Directional Signs (VDS)

Variable Directional Signs (VDS) are signs that can display pre-defined scenarios on otherwise conventional road sign plates by rotation of three or four prism bars. The movement of the prism is controlled by a motor[1]. **Figure 14** gives an overview about the VDS and **Figure 15** shows a sample DATEX II message for VDS.

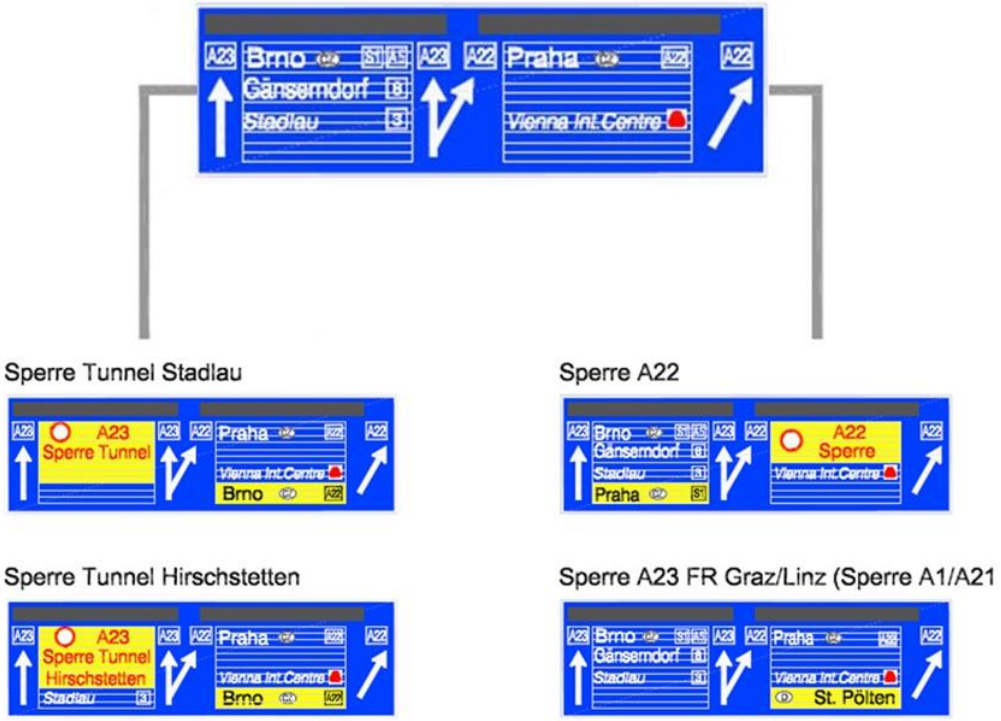

Figure 14: Variable Direction Signs (VDS)[1]

```
<vmsUnit>
  <vmsUnitTableReference id="WVZ_TLS_ASFINAG" version="1" targetClass="VmsUnitTable" />
  <vmsUnitReference id="WWW_A09_1_130,853~C14" version="1" targetClass="VmsUnitRecord" />
  <vms vmsIndex="2040194">
    <vms>
      <vmsWorking>true</vmsWorking>
      <vmsMessage messageIndex="0">
        <vmsMessage>
          <vmsMessageInformationType>instructionOrMessage</vmsMessageInformationType>
          <timeLastSet>2018-03-23T02:28:29+01:00</timeLastSet>
          <vmsPictogramDisplayArea pictogramDisplayAreaIndex="0">
            <vmsPictogramDisplayArea>
              <vmsPictogram pictogramSequencingIndex="0">
                <vmsPictogram>
                  <pictogramCode>241</pictogramCode>
                  <pictogramUrl>http://maps.asfinag.at/cache/wvz?image=WWW_A09_1_568_241</pictogramUrl>
                  <presenceOfRedTriangle>false</presenceOfRedTriangle>
                  <vmsSupplementaryPanel>
                    <vmsSupplementaryText>
                      <vmsTextLine>Grundstellung</vmsTextLine>
                    </vmsSupplementaryText>
                  </vmsSupplementaryPanel>
                </vmsPictogram>
              </vmsPictogram>
            </vmsPictogramDisplayArea>
          </vmsPictogramDisplayArea>
        </vmsMessage>
      </vmsMessage>
    </vms>
  </vms>
</vmsUnit>
```

Figure 15: An example DATEX II message for VDS

A.2.4 Metal Signs

Metal Signs are actual sign plates placed on the side of the road[1]. **Figure 16** shows metal signs with a speed restriction of 60 KMPH over 1.7km.

Figure 16: Metal Signs

The data structure of the metal sign is same as that of a VMS. **Figure 17** shows a sample DATEX II message for a metal sign.

```
<vmsUnit>
  <vmsUnitTableReference id="WVZ_TLS_ASFINAG" version="1" targetClass="VmsUnitTable" />
  <vmsUnitReference id="2337_Metalsign" version="1" targetClass="VmsUnitRecord" />
  <vms vmsIndex="2337">
    <vms>
      <vmsWorking>true</vmsWorking>
      <vmsMessage messageIndex="0">
        <vmsMessage>
          <vmsMessageInformationType>trafficManagement</vmsMessageInformationType>
          <timeLastSet>2018-03-23T06:01:13+01:00</timeLastSet>
          <vmsPictogramDisplayArea pictogramDisplayAreaIndex="0">
            <vmsPictogramDisplayArea>
              <vmsPictogram pictogramSequencingIndex="0">
                <vmsPictogram>
                  <pictogramDescription>maximumSpeedLimitedToTheFigureIndicated</pictogramDescription>
                  <pictogramCode>26</pictogramCode>
                  <presenceOfRedTriangle>false</presenceOfRedTriangle>
                  <speedAttribute>80</speedAttribute>
                  <vmsSupplementaryPanel>
                    <vmsSupplementaryText>
                      <vmsTextLine>KFZ über 7.5t v. 22-5h</vmsTextLine>
                      <vmsTextLineLanguage>de-at</vmsTextLineLanguage>
                    </vmsSupplementaryText>
                  </vmsSupplementaryPanel>
                </vmsPictogram>
              </vmsPictogram>
            </vmsPictogramDisplayArea>
          </vmsPictogramDisplayArea>
        </vmsMessage>
      </vmsMessage>
      <vmsLocationOverride xsi:type="Point">
        <supplementaryPositionalDescription>
          <affectedCarriagewayAndLanes>
            <carriageway>mainCarriageway</carriageway>
            <lane>allLanesCompleteCarriageway</lane>
            <affectedCarriagewayAndLanesExtension>
              <extendedAffectedCarriagewayAndLanes>
                <additionalCarriagewayDetails>
                  <originalNumberOfLanes>2</originalNumberOfLanes>
                </additionalCarriagewayDetails>
              </extendedAffectedCarriagewayAndLanes>
            </affectedCarriagewayAndLanesExtension>
          </affectedCarriagewayAndLanes>
        </supplementaryPositionalDescription>
        <pointAlongLinearElement>
          <directionRelativeAtPoint>aligned</directionRelativeAtPoint>
          <linearElement>
            <roadNumber>A04</roadNumber>
          </linearElement>
          <distanceAlongLinearElement xsi:type="DistanceFromLinearElementStart">
            <distanceAlong>51937</distanceAlong>
          </distanceAlongLinearElement>
        </pointAlongLinearElement>
        <pointByCoordinates>
          <bearing>120</bearing>
          <pointCoordinates>
            <latitude>47.9446831</latitude>
            <longitude>16.9390812</longitude>
          </pointCoordinates>
        </pointByCoordinates>
      </vmsLocationOverride>
```

Figure 17: An example DATEX II message for Metal Signs

A.3 Traffic Signs extensions

The Level B extensions for Austrian Traffic Signs Profile are summarised in this section.

Using the core traffic signs model of DATEX II (VmsPublication & VmsUnitPublication) it is not possible to provide the overall lanes of the carriage way above which a traffic sign is mounted. Therefore, the DATEX II class "AffectedCarriagewayAndLanes" which is part of the "NetworkLocation" (NetworkLocation/SupplementaryPositionalDescription/AffectedCarriagewayAndLanes) is extended.

In addition, we have also extended the "VmsUnitRecord" class to specify the category of the traffic signs gantry (Chapter A.2 Traffic sign categories), and also to specify whether or not a traffic sign gantry is capable to display the "max allowed speed limit". Using these attributes, clients can not only filter the signs based on the category, but they can also select the speed signs exclusively.

A.3.1 AffectedCarriagewayAndLanes extension

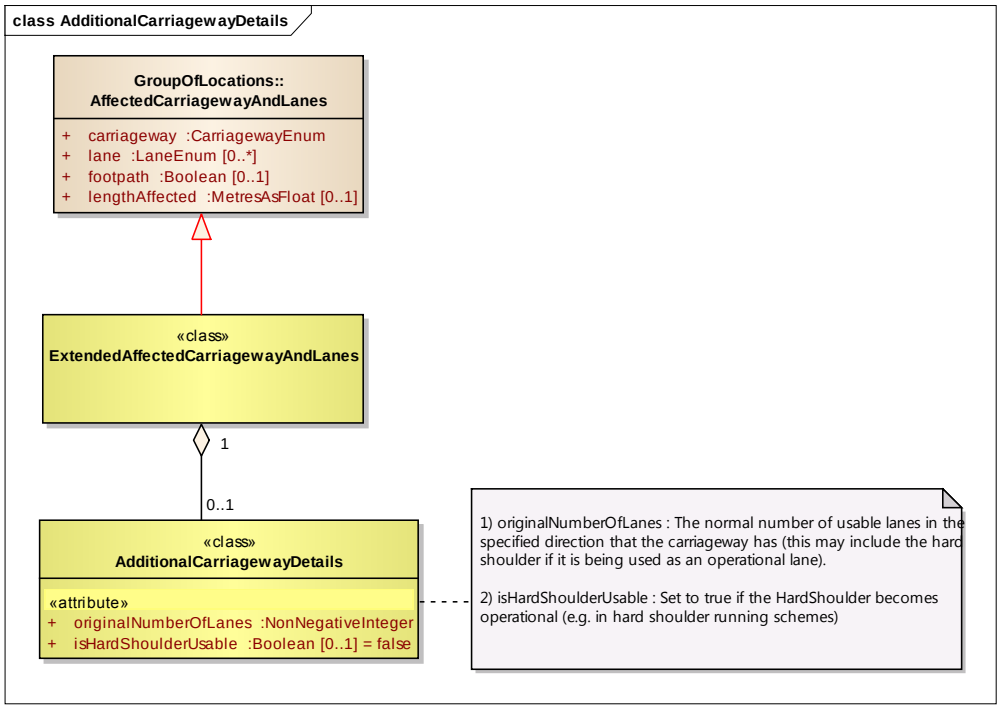

Figure 18: AffectedCarriagewayAndLanes extension

The class "AdditionalCarriagewayDetails" is added to the "AffectedCarriagewayAndLanes" extension. It contains the following elements:

1. orginalNumberOfLanes :- The normal number of usable lanes in the specified direction that the carriageway has (this may include the hard shoulder if it is being used as an operation lane)
2. isHardShoulderUsable :- Specifies whether or not the hard shoulder is used as an operation lane. This is reserved for the future use. At the moment this is not specified in the feed.

Below you can also see an example for this extension

```
<ns:vmsRecord vmsIndex="2025410">
  <ns:vmsRecord>
    <ns:vmsLocation d2p1:type="ns:Point">
      <ns:supplementaryPositionalDescription>
        <ns:affectedCarriagewayAndLanes>
          <ns:carriageway>mainCarriageway</ns:carriageway>
          <ns:lane>lane2</ns:lane>
          <ns:lane>lane3</ns:lane>
          <ns:affectedCarriagewayAndLanesExtension>
            <ns:extendedAffectedCarriagewayAndLanes>
              <ns:additionalCarriagewayDetails>
                <ns:originalNumberOfLanes>2</ns:originalNumberOfLanes>
              </ns:additionalCarriagewayDetails>
            </ns:extendedAffectedCarriagewayAndLanes>
          </ns:affectedCarriagewayAndLanesExtension>
        </ns:affectedCarriagewayAndLanes>
```

Figure 19: AffectedCarriagewayAndLanes extension example

A.3.2 VmsUnitRecord extension

The class “AdditionalVmsDetails” (role additionalVmsUnitRecordDetails) is added to the “VmsUnitRecord”. It contains the following elements:

1. canDisplaySpeedSign :- Indicates whether or not a VmsUnit (or VmsGantry) is capable of displaying a speed limit sign.
2. category :- Category of the VmsUnit (Chapter A2.2). This is of type “VmsCategoryEnum”. The enum has the following literals:
    a. vms :- Variable Message Sign
    b. vtp :- Variable Text Panel
    c. vds :- Variable Directional Sign
    d. metalSign :- Conventional sign plates placed on the side of the road
    e. other :- Other than those specified in the enumeration. Those which cannot be categorized.

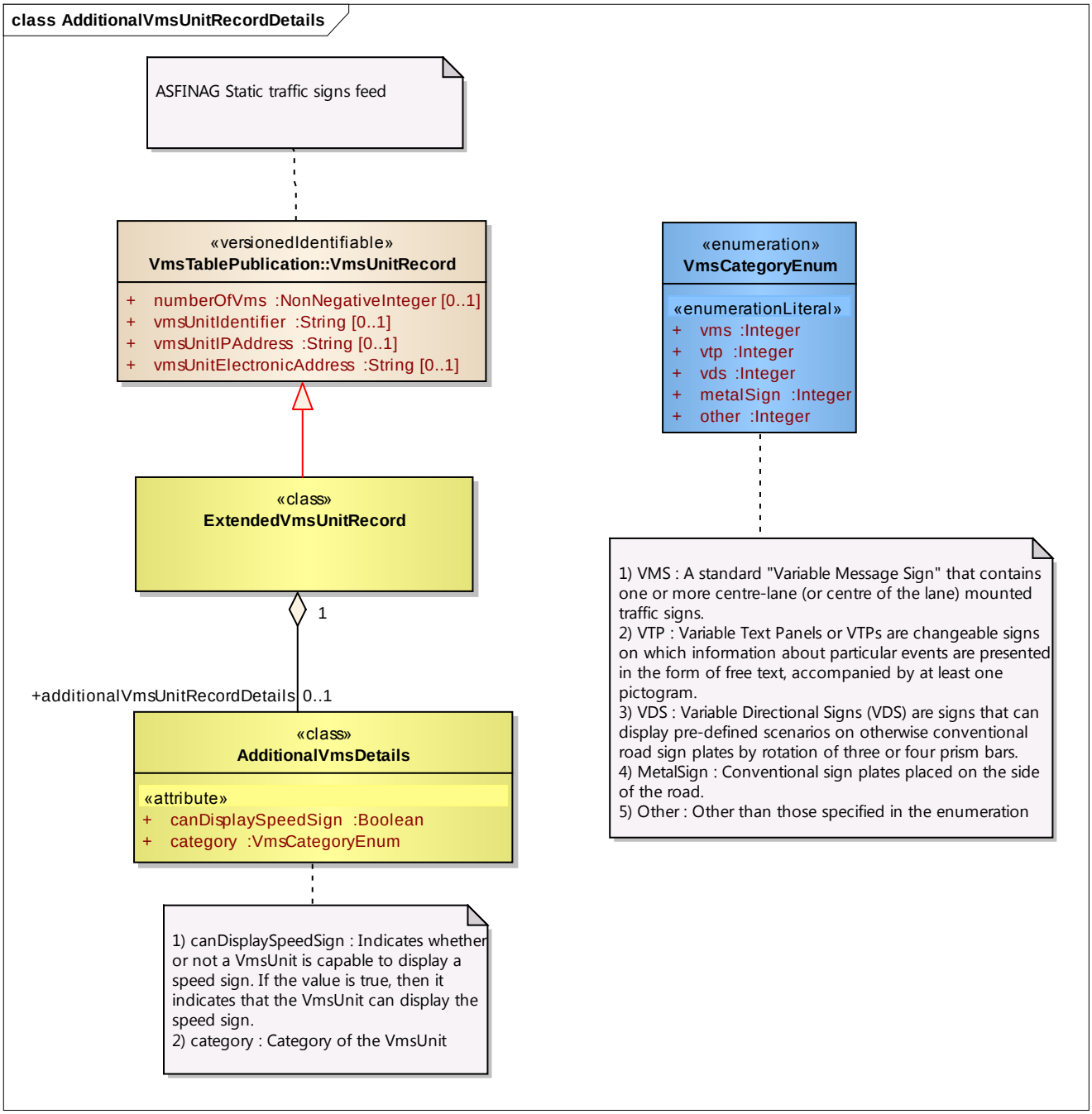

Figure 20: VmsUnitRecord extension

Below you can also see an example for this extension

```
<ns:vmsUnitRecord id="AQ_A10_1_021,370~C14" version="1">
  <ns:vmsUnitIdentifier>http://maps.asfinag.at/cache/wvz?image=AQ_A10_1_116~C14</ns:vmsUnitIdentifier>
  <ns:vmsRecord vmsIndex="2023436">
  <ns:vmsRecord vmsIndex="2023440">
  <ns:vmsRecord vmsIndex="2023438">
  <ns:vmsUnitRecordExtension>
    <ns:extendedVmsUnitRecord>
      <ns:additionalVmsUnitRecordDetails>
        <ns:canDisplaySpeedSign>true</ns:canDisplaySpeedSign>
        <ns:category>vms</ns:category>
      </ns:additionalVmsUnitRecordDetails>
    </ns:extendedVmsUnitRecord>
  </ns:vmsUnitRecordExtension>
</ns:vmsUnitRecord>
```

Figure 21: VmsUnitRecord extension example

A.4 Traffic Signs Catalogue for ASFINAG VMS/VTP

The traffic signs catalogue for ASFINAG VMS/VTP is based on the current specification in planning manuals for the ASFINAG traffic control system ("*PlaPB 800.551.2000 Technische Spezifikation*")[2]. The sign catalogue contains a list of pictogram codes which are converted to "*pictogramDescription*" and "*supplementaryPictogramDescription*" of *vmsPictogram* class in DATEX II. If an appropriate definition for a code is not found, then a textual definition of that code is added in "*addtionalPictogramDescription / additionalSupplementaryPictogramDescription*" fields.

The below table gives few examples of the pictogram codes to DATEX II conversion. The complete list is found in "**ASFINAG_PictogramCodes_ToDATEXII.xlsx**".

Pictogram Code	Pictogram Description	additionalPictogramDescription	speed Attribute [kmph]	weight Attribute [tons]	length Attribute [metres]	distance Attribute [metres]	height Attribute [metres]	supplementary Pictogram Description	additionalSupplementary PictogramDescription
24	maximumSpeedLimitedToTheFigureIndicated		60						
26	maximumSpeedLimitedToTheFigureIndicated		80						
28	maximumSpeedLimitedToTheFigureIndicated		100						
31	overtakingProhibited								
32	overtakingByGoodsVehiclesProhibited			3.5					
44	endOfSpeedLimit		60						
46	endOfSpeedLimit		80						
48	endOfSpeedLimit		100						
53		allRestrictionsEnded							
212		wrongWayDriver							
102				7.5				restrictedToGoodsVehicles	
229									blackIce
82						1000		distanceToTheBeginningofTheApplicationZone	

[2] *http://www.asfinag.net/Home/DownloadPdf?filename=get_file~uuid%3D306d67cf-75ed-49b8-8df7-3614e5572230%26groupId%3D10141.pdf*

92					1000			lengthOfTheApplicationZone	
216		heightRestrictionInOperation					4		

A.5 Data Dictionary for "AustrianTrafficSignsProfile"

In this chapter all data elements that are provided by the ASFINAG Content interface are marked in green colour. Other elements, attributes, enumeration and enumeration literals are left open for future use

A.5.1 "AdditionalCarriagewayDetails" package

A.5.1.1 "AdditionalCarriagewayDetails" package classes

Class name	Designation	Definition	Stereotype	Abstract
AdditionalCarriagewayDetails	Additional carriageway details	Additional details of the carriageway		no
ExtendedAffectedCarriagewayAndLanes	Extended affected carriageway and lanes	Extension for AffectedCarriagewayAndLanes		no

Table 1— Classes of the "AdditionalCarriagewayDetails" package

A.5.1.2 "AdditionalCarriagewayDetails" package association roles

There are no defined association roles in the "AdditionalCarriagewayDetails" package.

A.5.1.3 "AdditionalCarriagewayDetails" package attributes

Class name	Attribute name	Designation	Definition	Multiplicity	Type
AdditionalCarriagewayDetails	isHardShoulderUsable	Is hard shoulder usable	Set to true if the HardShoulder becomes operational (e.g. in hard shoulder running schemes)	0..1	Boolean
	originalNumberOfLanes	Original number of lanes	The normal number of usable lanes in the specified direction that the carriageway has (this may include the hard shoulder if it is being used as an operational lane).	1..1	NonNegativeInteger

Table 2— Attributes of the "AdditionalCarriagewayDetails" package

A.5.2 "AdditionalVmsUnitRecordDetails" package

A.5.2.1 "AdditionalVmsUnitRecordDetails" package classes

Class name	Designation	Definition	Stereotype	Abstract
AdditionalVmsDetails	Additional VMS details	Additional details related to a Vms. This can be part of both VmsUnitRecord (static feed) and VmsUnit (dynamic feed)		no
ExtendedVmsUnitRecord	Extended VMS unit record	Extension for VmsUnitRecord		no

Table 3— Classes of the "AdditionalVmsUnitRecordDetails" package

A.5.2.2 "AdditionalVmsUnitRecordDetails" package association roles

Class name	Role name	Designation	Definition	Multiplicity	Target
ExtendedVmsUnitRecord	additionalVmsUnitRecordDetails	Additional VMS unit record details	Additional details related to a VmsUnitRecord	0..1	AdditionalVmsDetails

Table 4— Associations of the "AdditionalVmsUnitRecordDetails" package

A.5.2.3 "AdditionalVmsUnitRecordDetails" package attributes

Class name	Attribute name	Designation	Definition	Multiplicity	Type
AdditionalVmsDetails	canDisplaySpeedSign	Can display speed sign	Indicates whether or not a VmsUnit is capable to display a speed sign. If the value is true, then it indicates that the VmsUnit can display the speed sign.	1..1	Boolean
	category	Category	Category of the VmsUnit	1..1	VmsCategoryEnum

Table 5— Attributes of the "AdditionalVmsUnitRecordDetails" package

A.5.3 "Exchange" package

A.5.3.1 "Exchange" package classes

Class name	Designation	Definition	Stereotype	Abstract
Exchange	Exchange	Details associated with the management of the exchange between the supplier and the client.		no

Table 6— Classes of the "Exchange" package

A.5.3.2 "Exchange" package association roles

Class name	Role name	Designation	Definition	Multiplicity	Target
Exchange	supplierIdentification	Supplier identification		1..1	InternationalIdentifier

Table 7— Associations of the "Exchange" package

A.5.3.3 "Exchange" package attributes

There are no attributes in the Exchange package.

Class name	Attribute name	Designation	Definition	Multiplicity	Type

Table 8— Attributes of the "Exchange" package

A.5.4 "Fault" package

A.5.4.1 "Fault" package classes

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

Table 9— Classes of the "Fault" package

A.5.4.2 "Fault" package association roles

There are no defined association roles in the "Fault" package.

A.5.4.3 "Fault" package attributes

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

Table 10— Attributes of the "Fault" package

A.5.5 "GroupOfLocations" package

A.5.5.1 "GroupOfLocations" package classes

Class name	Designation	Definition	Stereotype	Abstract
AffectedCarriagewayAndLanes	Affected carriageway and lanes	Supplementary positional information which details carriageway and lane locations. Several instances may exist where the element being described extends over more than one carriageway.		no
GroupOfLocations	Group of locations	One or more physically separate locations. Multiple locations may be related, as in an itinerary (or route), or may be unrelated. It is not for identifying the same physical location using different Location objects for different referencing systems.		yes
Location	Location	The specification of a location either on a network (as a point or a linear location) or as an area. This may be provided in one or more referencing systems.		yes
NetworkLocation	Network location	The specification of a location on a network (as a point or a linear location).		yes
PointCoordinates	Point coordinates	A pair of coordinates defining the geodetic position of a single point using the European Terrestrial Reference System 1989 (ETRS89).		no
SupplementaryPositionalDescription	Supplementary positional description	A collection of supplementary positional information which improves the precision of the location.		no

Table 11— Classes of the "GroupOfLocations" package

A.5.5.2 "GroupOfLocations" package association roles

There are no association roles in the GroupOfLocation package.

Class name	Role name	Designation	Definition	Multiplicity	Target

Table 12— Associations of the "GroupOfLocations" package

A.5.5.3 "GroupOfLocations" package attributes

Class name	Attribute name	Designation	Definition	Multiplicity	Type
AffectedCarriagewayAndLanes	carriageway	Carriageway	Indicates the section of carriageway to which the location relates.	1..1	CarriagewayEnum
	lane	Lane	Indicates the specific lane to which the location relates.	0..*	LaneEnum
PointCoordinates	latitude	Latitude	Latitude in decimal degrees using the European Terrestrial Reference System 1989 (ETRS89).	1..1	Float
	longitude	Longitude	Longitude in decimal degrees using the European Terrestrial Reference System 1989 (ETRS89).	1..1	Float

Table 13— Attributes of the "GroupOfLocations" package

A.5.6 "PayloadPublication" package

A.5.6.1 "PayloadPublication" package classes

Class name	Designation	Definition	Stereotype	Abstract
PayloadPublication	Payload publication	A payload publication of traffic related information or associated management information created at a specific point in time that can be exchanged via a DATEX II interface.		yes

Table 14— Classes of the "PayloadPublication" package

A.5.6.2 "PayloadPublication" package association roles

Class name	Role name	Designation	Definition	Multiplicity	Target
PayloadPublication	publicationCreator	Publication creator		1..1	InternationalIdentifier

Table 15— Associations of the "PayloadPublication" package

A.5.6.3 "PayloadPublication" package attributes

Class name	Attribute name	Designation	Definition	Multiplicity	Type
PayloadPublication	defaultLanguage	Default language	The default language used throughout the payload publication.	1..1	Language
	feedDescription	Feed description	A description of the information which is to be found in the publications originating from the particular feed (URL).	0..1	MultilingualString
	feedType	Feed type	A classification of the information which is to be found in the publications originating from the particular feed.	0..1	String
	publicationTime	Publication time	Date/time at which the payload publication was created.	1..1	DateTime

Table 16— Attributes of the "PayloadPublication" package

A.5.7 "Point" package

A.5.7.1 "Point" package classes

Class name	Designation	Definition	Stereotype	Abstract
Point	Point	A single geospatial point.		no
PointByCoordinates	Point by coordinates	A single point defined only by a coordinate set with an optional bearing direction.		no

Table 17— Classes of the "Point" package

A.5.7.2 "Point" package association roles

There are no defined association roles in the "Point" package.

A.5.7.3 "Point" package attributes

Class name	Attribute name	Designation	Definition	Multiplicity	Type
PointByCoordinates	bearing	Bearing	A bearing at the point measured in degrees (0 - 359). Unless otherwise specified the reference direction corresponding to 0 degrees is North.	0..1	NonNegativeInteger

Table 18— Attributes of the "Point" package

A.5.8 "PointAlongLinearElement" package

A.5.8.1 "PointAlongLinearElement" package classes

Class name	Designation	Definition	Stereotype	Abstract
DistanceAlongLinearElement	Distance along linear element	Distance of a point along a linear element either measured from the start node or a defined referent on that linear element, where the start node is relative to the element definition rather than the direction of traffic flow.		yes
DistanceFromLinearElementReferent	Distance from linear element referent	Distance of a point along a linear element measured from a "from referent" on the linear element, in the sense relative to the linear element definition rather than the direction of traffic flow or optionally towards a "towards referent".		no
DistanceFromLinearElementStart	Distance from linear element start	Distance of a point along a linear element measured from the start node of the linear element, where start node is relative to the element definition rather than the direction of traffic flow.		no
LinearElement	Linear element	A linear element along a single linear object, consistent with ISO 19148 definitions.		no
PointAlongLinearElement	Point along linear element	A point on a linear element where the linear element is either a part of or the whole of a linear object (i.e. a road), consistent with ISO 19148 definitions.		no
Referent	Referent	A referent on a linear object that has a known location such as a node, a reference marker (e.g. a markerpost), an intersection etc.		no

Table 19— Classes of the "PointAlongLinearElement" package

A.5.8.2 "PointAlongLinearElement" package association roles

Class name	Role name	Designation	Definition	Multiplicity	Target
DistanceFromLinearElementReferent	fromReferent	From referent	A known location along the linear element from which the distanceAlong is measured, termed the "fromReferent" in ISO 19148.	1..1	Referent
	towardsReferent	Towards referent	A known location along the linear element towards which the distanceAlong is measured, termed the "towardsReferent" in ISO 19148.	0..1	Referent

Table 20— Associations of the "PointAlongLinearElement" package

A.5.8.3 "PointAlongLinearElement" package attributes

Class name	Attribute name	Designation	Definition	Multiplicity	Type
DistanceFromLinearElementReferent	distanceAlong	Distance along	A measure of distance along a linear element.	1..1	MetresAsFloat
DistanceFromLinearElementStart	distanceAlong	Distance along	A measure of distance along a linear element.	1..1	MetresAsFloat
LinearElement	roadName	Road name	Name of the road of which the linear element forms a part.	0..1	MultilingualString
	roadNumber	Road number	Identifier/number of the road of which the linear element forms a part.	0..1	String
PointAlongLinearElement	directionBoundAtPoint	Direction bound at point	The direction of traffic flow at the specified point in terms of general destination direction.	0..1	DirectionEnum
	directionRelativeAtPoint	Direction relative at point	The direction of traffic flow at the specified point relative to the direction in which the linear element is defined.	0..1	LinearReferencingDirectionEnum
Referent	referentDescription	Referent description	Description of the referent.	0..1	MultilingualString
	referentIdentifier	Referent identifier	The identifier of the referent, unique on the specified linear element (i.e. road or part of).	1..1	String
	referentName	Referent name	The name of the referent, e.g. a junction or intersection name.	0..1	String
	referentType	Referent type	The type of the referent.	1..1	ReferentTypeEnum

Table 61— Attributes of the "PointAlongLinearElement" package

A.5.9 "VmsMessage" package

A.5.9.1 "VmsMessage" package classes

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

Table 22— Classes of the "VmsMessage" package

A.5.9.2 "VmsMessage" package association roles

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

Table 23— Associations of the "VmsMessage" package

A.5.9.3 "VmsMessage" package attributes

Class name	Attribute name	Designation	Definition	Multiplicity	Type
VmsMessage	messageSetBy	Message set by	The organisation or authority which set the message currently being displayed.	0..1	MultilingualString
	setBySystem	Set by system	Indicates whether the message has been set automatically by a system. True = automatically set.	0..1	Boolean
	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
	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
	pictogramUrl	Pictogram url	Reference to a URL from where an image of the displayed pictogram can be be obtained.	0..1	Url

Class name	Attribute name	Designation	Definition	Multiplicity	Type
	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
	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
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 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
	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

Table 24— Attributes of the "VmsMessage" package

A.5.10 "VmsPublication" package

A.5.10.1 "VmsPublication" package classes

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

Table 25— Classes of the "VmsPublication" package

A.5.10.2 "VmsPublication" package association roles

There are no defined association roles in the "VmsPublication" package.

A.5.10.3 "VmsPublication" package attributes

There are no defined attributes in the "VmsPublication" package.

A.5.11 "VmsRelated" package

A.5.11.1 "VmsRelated" package classes

Class name	Designation	Definition	Stereotype	Abstract
VmsPictogramDisplay Characteristics	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

Table 26— Classes of the "VmsRelated" package

A.5.11.2 "VmsRelated" package association roles

There are no defined association roles in the "VmsRelated" package.

A.5.11.3 "VmsRelated" package attributes

There are no defined attributes in “VmsRelated” package.

Class name	Attribute name	Designation	Definition	Multiplicity	Type

Table 27— Attributes of the "VmsRelated" package

A.5.12 "VmsTablePublication" package

A.5.12.1 "VmsTablePublication" package classes

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

Table 28— Classes of the "VmsTablePublication" package

A.5.12.2 "VmsTablePublication" package association roles

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

Table 29— Associations of the "VmsTablePublication" package

A.5.12.3 "VmsTablePublication" package attributes

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
	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
VmsUnitRecord	numberOfVms	Number of VMS	Number of variable message signs contolled by the unit.	0..1	NonNegativeInteger
	vmsUnitIdentifier	VMS unit identifier	Identification of a VMS unit used by the supplier or consumer systems.	0..1	String
VmsUnitTable	vmsUnitTableIdentification	VMS unit table identification	An alphanumeric identification for the VMS Unit table, possibly human readable.	0..1	String

Table 30— Attributes of the "VmsTablePublication" package

A.5.13 "VmsUnit" package

A.5.13.1 "VmsUnit" package classes

Class name	Designation	Definition	Stereotype	Abstract
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
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

Table 31— Classes of the "VmsUnit" package

A.5.13.2 "VmsUnit" package association roles

Class name	Role name	Designation	Definition	Multiplicity	Target
Vms	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

Table 32— Associations of the "VmsUnit" package

A.5.13.3 "VmsUnit" package attributes

Class name	Attribute name	Designation	Definition	Multiplicity	Type
Vms	vmsWorking	VMS working	Indicates whether the VMS is usable. Note it may still be usable with minor faults.	1..1	Boolean
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

Table 33— Attributes of the "VmsUnit" package

A.6 Data Dictionary of <<datatypes>> for "AustrianTrafficSignsProfile"

This clause contains the definitions of all data types which are used in the "AustrianTrafficSignsProfile".

A.6.1 The <<datatype>> "AlertCLocationCode"

A positive integer number (between 1 and 63,487) which uniquely identifies a pre-defined Alert C location defined within an Alert-C table.

A.6.2 The <<datatype>> "KilometresPerHour"

A measure of speed defined in kilometres per hour.

A.6.3 The <<datatype>> "MetresAsFloat"

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

A.6.4 The <<datatype>> "MetresAsNonNegativeInteger"

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

A.6.5 The <<datatype>> "Percentage"

A measure of percentage.

A.6.6 The <<datatype>> "Seconds"

Seconds.

A.6.7 The <<datatype>> "Tonnes"

A measure of weight defined in metric tonnes.

A.7 Data Dictionary of <<enumerations>> for "AustrianTrafficSignsProfile"

This clause contains the definitions of all enumerations which are used in the "AustrianTrafficSignsProfile".

A.7.1 The <<enumeration>> "CarriagewayEnum"

List of descriptors identifying specific carriageway details.

Enumerated value name	Designation	Definition
connectingCarriageway	Connecting carriageway	On the connecting carriageway.
entrySlipRoad	Entry slip road	On the entry slip road.
exitSlipRoad	Exit slip road	On the exit slip road.
flyover	Flyover	On the flyover, i.e. the section of road passing over another.
leftHandFeederRoad	Left hand feeder road	On the left hand feeder road.
leftHandParallelCarriageway	Left hand parallel carriageway	On the left hand parallel carriageway.
mainCarriageway	Main carriageway	On the main carriageway.
oppositeCarriageway	Opposite carriageway	On the opposite carriageway.
parallelCarriageway	Parallel carriageway	On the adjacent parallel carriageway.
rightHandFeederRoad	Right hand feeder road	On the right hand feeder road.
rightHandParallelCarriageway	Right hand parallel carriageway	On the right hand parallel carriageway.
roundabout	Roundabout	On the roundabout.
serviceRoad	Service road	On the adjacent service road.
slipRoads	Slip roads	On the slip roads.
underpass	Underpass	On the underpass, i.e. the section of road passing under another.

Table 34— Values contained in the enumeration "CarriagewayEnum"

A.7.2 The <<enumeration>> "DirectionEnum"

List of directions of travel.

Enumerated value name	Designation	Definition
allDirections	All directions	All directions (where more than two are applicable) at this point on the road network.
anticlockwise	Anticlockwise	Anti-clockwise.
bothWays	Both ways	Both directions that are applicable at this point on the road network.
clockwise	Clockwise	Clockwise.
eastBound	East bound	East bound general direction.
inboundTowardsTown	Inbound towards town	Heading towards town centre direction of travel.
innerRing	Inner ring	Inner ring direction.
northBound	North bound	North bound general direction.
northEastBound	North east bound	North east bound general direction.
northWestBound	North west bound	North west bound general direction.
opposite	Opposite	Opposite direction to the normal direction of flow at this point on the road network.
other	Other	Other than as defined in this enumeration.
outboundFromTown	Outbound from town	Heading out of or away from the town centre direction of travel.
outerRing	Outer ring	Outer ring direction.
southBound	South bound	South bound general direction.
southEastBound	South east bound	South east bound general direction.
southWestBound	South west bound	South west bound general direction.
unknown	Unknown	Direction is unknown.
westBound	West bound	West bound general direction.

Table 35— Values contained in the enumeration "DirectionEnum"

A.7.3 The <<enumeration>> "FaultSeverityEnum"

Classification of the severity of faults.

Enumerated value name	Designation	Definition
high	High	The fault is of high severity which will render the equipment unusable or any data generated by the equipment to be of no value.
low	Low	The fault is of low severity and has only limited impact on the usability of the equipment or the value of the data generated by the equipment.
medium	Medium	The fault is of medium severity which will significantly limit the usability of the equipment or devalue the usefulness of the data generated by the equipment.
unknown	Unknown	The fault is of unknown severity and hence its effect on the usability of the equipment or the usefulness of the data generated by the equipment can not be assessed.

Table 36— Values contained in the enumeration "FaultSeverityEnum"

A.7.4 The <<enumeration>> "LaneEnum"

List of descriptors identifying specific lanes.

Enumerated value name	Designation	Definition
allLanesCompleteCarriageway	All lanes complete carriageway	In all lanes of the carriageway.
busLane	Bus lane	In the bus lane.
busStop	Bus stop	In the bus stop lane.
carPoolLane	Car pool lane	In the carpool lane.
centralReservation	Central reservation	On the central median separating the two directional carriageways of the highway.
crawlerLane	Crawler lane	In the crawler lane.
emergencyLane	Emergency lane	In the emergency lane.
escapeLane	Escape lane	In the escape lane.
expressLane	Express lane	In the express lane.
hardShoulder	Hard shoulder	On the hard shoulder.
heavyVehicleLane	Heavy vehicle lane	In the heavy vehicle lane.
lane1	Lane1	In the first lane numbered from nearest the hard shoulder to central median.
lane2	Lane2	In the second lane numbered from nearest the hard shoulder to central median.
lane3	Lane3	In the third lane numbered from nearest the hard shoulder to central median.
lane4	Lane4	In the fourth lane numbered from nearest the hard shoulder to central median.
lane5	Lane5	In the fifth lane numbered from nearest the hard shoulder to central median.
lane6	Lane6	In the sixth lane numbered from nearest the hard shoulder to central median.
lane7	Lane7	In the seventh lane numbered from nearest the hard shoulder to central median.
lane8	Lane8	In the eighth lane numbered from nearest the hard shoulder to central median.
lane9	Lane9	In the ninth lane numbered from nearest the hard shoulder to central median.
layBy	Lay by	In a lay-by.

Enumerated value name	Designation	Definition
leftHandTurningLane	Left hand turning lane	In the left hand turning lane.
leftLane	Left lane	In the left lane.
localTrafficLane	Local traffic lane	In the local traffic lane.
middleLane	Middle lane	In the middle lane.
opposingLanes	Opposing lanes	In the opposing lanes.
overtakingLane	Overtaking lane	In the overtaking lane.
rightHandTurningLane	Right hand turning lane	In the right hand turning lane.
rightLane	Right lane	In the right lane.
rushHourLane	Rush hour lane	In the lane dedicated for use during the rush (peak) hour.
setDownArea	Set down area	In the area/lane reserved for passenger pick-up or set-down.
slowVehicleLane	Slow vehicle lane	In the slow vehicle lane.
throughTrafficLane	Through traffic lane	In the through traffic lane.
tidalFlowLane	Tidal flow lane	In the lane dedicated for use as a tidal flow lane.
turningLane	Turning lane	In the turning lane.
verge	Verge	On the verge.

Table 37— Values contained in the enumeration "LaneEnum"

A.7.5 The <<enumeration>> "LinearReferencingDirectionEnum"

Directions of traffic flow relative to the direction in which the linear element is defined.

Enumerated value name	Designation	Definition
aligned	Aligned	Indicates that the direction of traffic flow affected by the situation or related to the traffic data is in the same sense as the direction in which the linear element is defined.
both	Both	Indicates that both directions of traffic flow are affected by the situation or relate to the traffic data.
opposite	Opposite	Indicates that the direction of traffic flow affected by the situation or related to the traffic data is in the opposite sense to the direction in which the linear element is defined.
unknown	Unknown	Indicates that the direction of traffic flow affected by the situation or related to the traffic data is unknown.

Table 38— Values contained in the enumeration "LinearReferencingDirectionEnum"

A.7.6 The <<enumeration>> "PhysicalMountingEnum"

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

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.

Table 39— Values contained in the enumeration "PhysicalMountingEnum"

A.7.7 The <<enumeration>> "ReferentTypeEnum"

A set of types of known points along a linear object such as a road.

Enumerated value name	Designation	Definition
boundary	Boundary	A boundary between two jurisdictional or administrative areas. These may be legal boundaries such as between counties or countries, maintenance responsibility boundaries or control boundaries.
intersection	Intersection	A crossing of two or more roads where the precise point of intersection is defined according to specific business rules.
landmark	Landmark	A visible identifiable physical landmark either alongside or close to the linear object.
referenceMarker	Reference marker	A marker which is usually but not necessarily physical that is one of a sequence which are spaced out along the linear object (road) to provide a location reference. The spacing of markers is not necessarily even.
roadNode	Road node	A topological node defined on a road network. Such nodes may delineate the segmentation of the road network according to defined business rules or may constitute a purely topological representation of a road network.

Table 40— Values contained in the enumeration "ReferentTypeEnum"

A.7.8 The <<enumeration>> "VmsCategoryEnum"

Category of the Vms

Enumerated value name	Designation	Definition
metalSign	Metal sign	Conventional sign plates placed on the side of the road.
other	Other	Other than those specified in the enumeration
vds	Vds	Variable Directional Signs (VDS) are signs that can display pre-defined scenarios on otherwise conventional road sign plates by rotation of three or four prism bars.
vms	Vms	A standard "Variable Message Sign" that contains one or more centre-lane (or centre of the lane) mounted traffic signs.
vtp	Vtp	Variable Text Panels or VTPs are changeable signs on which information about particular events are presented in the form of free text, accompanied by at least one pictogram.

Table 7— Values contained in the enumeration "VmsCategoryEnum"

A.7.9 The <<enumeration>> "VmsDatexPictogramEnum"

Types of main pictograms.

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.
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.

Enumerated value name	Designation	Definition
exitClosed	Exit closed	Exit closed.
fallingRocks	Falling rocks	Danger of rock fall or landslide.
fastenChildrensSeatBelts	Fasten childrens 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.
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.

Enumerated value name	Designation	Definition
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.
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.
maximumSpeedLimitedToTheFigureIndicated	Maximum speed limited to the figure indicated	Mandatory maximum speed limit, displayed as speed limit indside a red circle.
narrowLanesAead	Narrow lanes aead	Narrow lanes ahead.
noEntry	No entry	No entry.

Enumerated value name	Designation	Definition
noEntryForAnyPowerDrivenVehicleDrawingATrailer	No entry for any power driven vehicle drawing a trailer	No entry for any power driven vehicle drawing a trailer
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.
roadClosedAhead	Road closed ahead	Road closed ahead.
roadworks	Roadworks	Roadworks.

Enumerated value name	Designation	Definition
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.

Table 42— Values contained in the enumeration "VmsDatexPictogramEnum"

A.7.10 The <<enumeration>> "VmsDatexSupplementalPictogramEnum"

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

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	Restricetd 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 wieght 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.

Table 43— Values contained in the enumeration "VmsDatexSupplementalPictogramEnum"

A.7.11 The <<enumeration>> "VmsFaultEnum"

Types of variable message sign faults.

Enumerated value name	Designation	Definition
communicationsFailure	Communications failure	Comunications failure affecting VMS.
incorrectMessageDisplayed	Incorrect message displayed	Incorrect message is being displayed.
incorrectPictogramDisplayed	Incorrect pictogram displayed	Incorrect pictogram is being displayed.
other	Other	Other than as defined in this enumeration.
outOfService	Out of service	Not currently in service (e.g. intentionally disconnected or switched off during roadworks).
powerFailure	Power failure	Power to VMS has failed.
unableToClearDown	Unable to clear down	Unable to clear down information displayed on VMS.
unknown	Unknown	Unknown VMS fault.

Table 44— Values contained in the enumeration "VmsFaultEnum"

A.7.12 The <<enumeration>> "VmsMessageInformationTypeEnum"

Types of information displayable on a VMS.

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.

Table 45— Values contained in the enumeration "VmsMessageInformationTypeEnum"

A.7.13 The <<enumeration>> "VmsTypeEnum"

Type of variable message sign.

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.

Table 46— Values contained in the enumeration "VmsTypeEnum"

A.8 Annex

Like mentioned in Chapter A.3 some of the pictogram codes in ASFINAG sign catalogue could not be mapped to either the “pictogramDescription” or “supplementaryPictogramDescription” of the vmsPictogram element. Therefore, for such codes a textual description is added in the “additionalPictogramDescription” and/or “additionalSupplementaryPictogramDescription” elements. The below table describes these pictogram codes:

pictogramCode	additionalPictogramDescription	additionalSupplementaryPictogramDescription
3	snowOrIceSleekness	
53	allRestrictionsEnded	
62		trafficCongestion
63		dangerOfTrafficCongestion
64		fog
65		wetRoadSurface
66		accident
67		limitedVisibility
71	ozone	
72	noiseProtection	
105		restrictedToPassengerCars
106	dangerOfTrafficCongestion	
107	redTrafficLight	
108	amberTrafficLight	
109	greenTrafficLight	
110	redAndAmberTrafficLights	
201		laneSpecificInformation
212	wrongWayDriver	
213	railCargoCarrier	
215	truckParkingArea	
216	heightRestrictionInOperation	
224	turnOffEngine	
225		noEntryForVehiclesExceedingXTonnesLadenMass
226		keepASafeDistance
227		wrongWayDriver
228		dangerOfBlackIce
229		blackIce
230		pollutionOrSmogAlert
231		tollInspection
232		oilSlick
233		brokenDownVehicle
234		crossWind
235		tunnelClosed
236		diversionAHead
237		winterServiceVehicleInAction
238		truckTrafficJams
239		roadClosed
240		pollutionOrSmogAlert