Austrian Traffic Signs Profile
Version 4.0

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 need 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 example for it in XML.

```xml
<payload xmlns:ns="http://datex2.eu/schema/3/D2Payload/" xmlns:q1="http://levelC/schema/3/vms" dlpl:type="q1:VmsTablePublication" lang="de-at"
    modelBaseVersion="3" xmlns:dlpl="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://levelC/schema/3/d2Payload">
  <publicationTime xmlns="http://levelC/schema/3/common">2023-02-07T10:47:12+01:00</publicationTime>
  <publicationCreator xmlns="http://levelC/schema/3/common">
    <country>at</country>
    <nationalIdentifier>ASFINAG</nationalIdentifier>
  </publicationCreator>
  <q1:headerInformation>
    <confidentiality xmlns="http://levelC/schema/3/common">noRestriction</confidentiality>
    <informationStatus xmlns="http://levelC/schema/3/common">real</informationStatus>
  </q1:headerInformation>
  <q1:vmsControllerTable id="WVZ_TLS_ASFINAG" version="4.0">
    <q1:vmsController id="289_Metalsign" version="4.0">
      <q1:vms vmsIndex="289">
        <q1:vms>
          <q1:vmsLocation xmlns:q2="http://levelC/schema/3/locationReferencing" dlpl:type="q2:PointLocation">
            <q2:coordinatesForDisplay>
              <q2:latitude>47.71662</q2:latitude>
              <q2:longitude>16.1330452</q2:longitude>
            </q2:coordinatesForDisplay>
            <q2:supplementaryPositionalDescription>
              <q2:carriageway>
                <q2:carriageway>mainCarriageway</q2:carriageway>
                <q2:originalNumberOfLanes>3</q2:originalNumberOfLanes>
                <q2:lane>
                  <q2:laneUsage>allLanesCompleteCarriageway</q2:laneUsage>
                </q2:lane>
                <q2:_carriagewayExtension>
                  <q2:extendedCarriageway>
                    <additionalCarriagewayDetails xmlns="http://levelC/schema/3/austriaProfile" />
                  </q2:extendedCarriageway>
                </q2:_carriagewayExtension>
              </q2:carriageway>
            </q2:supplementaryPositionalDescription>
            <q2:pointByCoordinates>
              <q2:bearing>210</q2:bearing>
              <q2:pointCoordinates>
                <q2:latitude>47.71662</q2:latitude>
                <q2:longitude>16.1330452</q2:longitude>
              </q2:pointCoordinates>
            </q2:pointByCoordinates>
          </q1:vmsLocation>
        </q1:vms>
      </q1:vms>
      <q1:_vmsControllerExtension>
        <q1:extendedVmsController>
          <additionalVmsControllerDetails xmlns="http://levelC/schema/3/austriaProfile">
            <canDisplaySpeedSign>false</canDisplaySpeedSign>
            <category>metalSign</category>
          </additionalVmsControllerDetails>
        </q1:extendedVmsController>
      </q1:_vmsControllerExtension>
    </q1:vmsController>
  </q1:vmsControllerTable>
```

Figure 1: An example for TrafficSignsStatic (metal sign)

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 2** provides an example for it in XML.

```xml
<payload xmlns:ns="http://datex2.eu/schema/3/D2Payload/" xmlns:ql="http://levelC/schema/3/vms" dlpl:type="q1:VmsPublication" lang="de-at"
    modelBaseVersion="3" xmlns:dlpl="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://levelC/schema/3/d2Payload">
  <publicationTime xmlns="http://levelC/schema/3/common">2023-02-07T10:47:12+01:00</publicationTime>
  <publicationCreator xmlns="http://levelC/schema/3/common">
    <country>at</country>
    <nationalIdentifier>ASFINAG</nationalIdentifier>
  </publicationCreator>
  <ql:headerInformation>
    <confidentiality xmlns="http://levelC/schema/3/common">noRestriction</confidentiality>
    <informationStatus xmlns="http://levelC/schema/3/common">real</informationStatus>
  </ql:headerInformation>
  <ql:vmsControllerStatus>
    <ql:vmsControllerTableReference id="WVZ_TLS_ASFINAG" version="4.0" targetClass="vms:VmsControllerTable" />
    <ql:vmsControllerReference id="289_Metalsign" version="4.0" targetClass="vms:VmsController" />
    <ql:vmsStatus vmsIndex="289">
      <ql:vmsStatus>
        <ql:workingStatus>working</ql:workingStatus>
        <ql:vmsMessage messageIndex="0">
          <ql:vmsMessage>
            <ql:messageInformationType>trafficManagement</ql:messageInformationType>
            <ql:timeLastSet>2018-02-02T11:57:32+01:00</ql:timeLastSet>
            <ql:displayAreaSettings displayAreaIndex="0">
              <ql:displayAreaSettings dlpl:type="q1:PictogramDisplay">
                <ql:pictogram dlpl:type="q1:RegularPictogram">
                  <ql:customPictogramCode>32</ql:customPictogramCode>
                  <ql:_pictogramExtension>
                    <ql:extendedPictogram>
                      <additionalPictogramDetails xmlns="http://levelC/schema/3/austriaProfile">
                        <weight>3.5</weight>
                      </additionalPictogramDetails>
                    </ql:extendedPictogram>
                  </ql:_pictogramExtension>
                  <ql:pictogramDescription _extendedValue="overtakingByGoodsVehiclesProhibited">other</ql:pictogramDescription>
                </ql:pictogram>
              </ql:displayAreaSettings>
            </ql:displayAreaSettings>
          </ql:vmsMessage>
        </ql:vmsMessage>
      </ql:vmsStatus>
    </ql:vmsStatus>
  </ql:vmsControllerStatus>
```

Figure 2: An example for TrafficSignsDynamic (metal sign)

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 SupplementaryPositionalDescription::Carriageway. In this element the "carriageway" is set to mainCarriageway and the "lane" is set to e.g. hardShoulder. Note that more than one lane can be specified.

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.
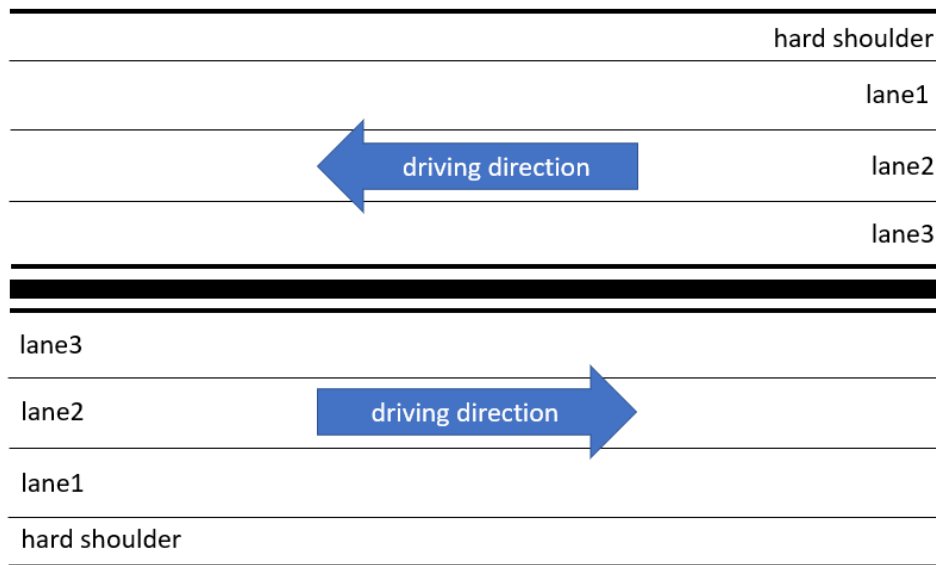

Figure 3: Lane numbering

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 "lanes" element. However, the "carriageway" in this case is set to slipRoads 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
  - o Variable message signs (VMS)
  - o Variable text panels (VTP)
  - o 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].
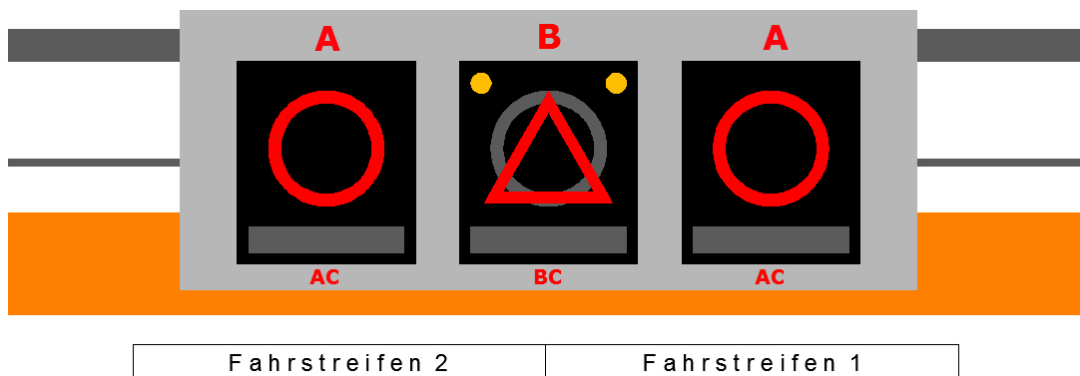
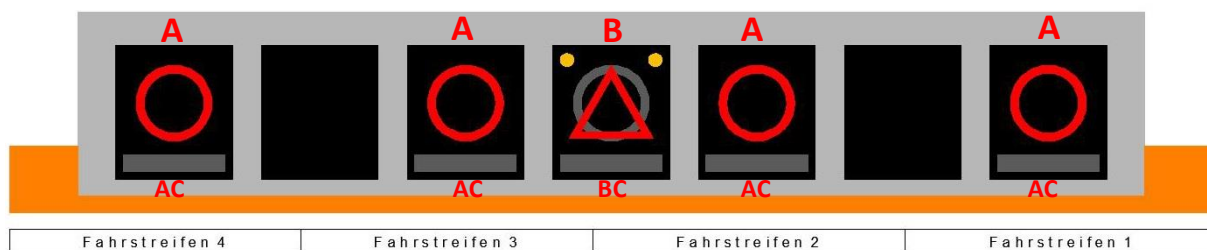

Figure 4: Variable Message Sign (VMS) covering two lanes[1]

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

Figures 4 and **5** 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 6** (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)

```xml
<ql:vmsControllerStatus>
  <ql:vmsControllerTableReference id="WVZ_TLS_ASFINAG" version="4.0" targetClass="vms:VmsControllerTable" />
  <ql:vmsControllerReference id="AQ_A12_1_014,849_Q" version="4.0" targetClass="vms:VmsController" />
  <ql:vmsStatus vmsIndex="397581083">
    <ql:vmsStatus>
      <ql:workingStatus>working</ql:workingStatus>
      <ql:vmsMessage messageIndex="0">
        <ql:vmsMessage>
          <ql:messageInformationType>situationWarning</ql:messageInformationType>
          <ql:timeLastSet>2023-02-04T04:33:44+01:00</ql:timeLastSet>
          <ql:displayAreaSettings displayAreaIndex="0">
            <ql:displayAreaSettings dlpl:type="q1:PictogramDisplay">
              <ql:pictogramDisplayUrl>https://maps.asfinag.at/cache/wvz?image=_B501200148P001.P05_8</ql:pictogramDisplayUrl>
              <ql:pictogram dlpl:type="q1:RegularPictogram">
                <ql:customPictogramCode>8</ql:customPictogramCode>
                <ql:pictogramDescription _extendedValue="roadworks">other</ql:pictogramDescription>
              </ql:pictogram>
            </ql:displayAreaSettings>
          </ql:displayAreaSettings>
        </ql:vmsMessage>
      </ql:vmsMessage>
    </ql:vmsStatus>
  </ql:vmsStatus>
  <ql:vmsStatus vmsIndex="397581136">
  <ql:vmsStatus vmsIndex="397581122">
    <ql:vmsStatus>
      <ql:workingStatus>working</ql:workingStatus>
      <ql:vmsMessage messageIndex="0">
        <ql:vmsMessage>
          <ql:messageInformationType>trafficManagement</ql:messageInformationType>
          <ql:timeLastSet>2023-02-01T17:03:10+01:00</ql:timeLastSet>
          <ql:displayAreaSettings displayAreaIndex="0">
            <ql:displayAreaSettings dlpl:type="q1:PictogramDisplay">
              <ql:pictogramDisplayUrl>https://maps.asfinag.at/cache/wvz?image=_B501200148P001.P02_26</ql:pictogramDisplayUrl>
              <ql:pictogram dlpl:type="q1:RegularPictogram">
                <ql:customPictogramCode>26</ql:customPictogramCode>
                <ql:_pictogramExtension>
                  <ql:extendedPictogram>
                    <additionalPictogramDetails xmlns="http://levelC/schema/3/austriaProfile">
                      <speed>80</speed>
                    </additionalPictogramDetails>
                  </ql:extendedPictogram>
                </ql:_pictogramExtension>
                <ql:pictogramDescription _extendedValue="maximumSpeedLimitedToTheFigureIndicated">other</ql:pictogramDescription>
              </ql:pictogram>
            </ql:displayAreaSettings>
          </ql:displayAreaSettings>
        </ql:vmsMessage>
      </ql:vmsMessage>
    </ql:vmsStatus>
  </ql:vmsStatus>
</ql:vmsControllerStatus>
<ql:vmsControllerStatus>
```

Figure 6: A sample VMS in DATEX II

Additional elements such as "*supplementaryPanel*", "*length*", "*speed*", "*distance*", "*weight*", etc. are provided based on the available information. For example, a VMS which displays "*overtaking by goods vehicles prohibited*" in the primary pictogram display, and "*restricted to goods vehicles*" in the supplementary or additional pictogram display is encoded in DATEX II as shown in **Figure 7**.

```
<ql:vmsControllerStatus>
  <ql:vmsControllerTableReference id="WVZ_TLS_ASFINAG" version="4.0" targetClass="vms:VmsControllerTable" />
  <ql:vmsControllerReference id="AQ_A12_1_000,899_Q" version="4.0" targetClass="vms:VmsController" />
  <ql:vmsStatus vmsIndex="2106560550">
    <ql:vmsStatus>
      <ql:workingStatus>working</ql:workingStatus>
      <ql:vmsMessage messageIndex="0">
        <ql:vmsMessage>
          <ql:messageInformationType>trafficManagement</ql:messageInformationType>
          <ql:timeLastSet>2023-02-11T08:42:14+01:00</ql:timeLastSet>
          <ql:displayAreaSettings displayAreaIndex="0">
            <ql:displayAreaSettings dlpl:type="q1:PictogramDisplay">
              <ql:pictogramDisplayUrl>https://maps.asfinag.at/cache/wvz?image=AQ_A12_1_006_IS.B_32</ql:pictogramDisplayUrl>
              <ql:pictogram dlpl:type="q1:RegularPictogram">
                <ql:customPictogramCode>32</ql:customPictogramCode>
                <ql:_pictogramExtension>
                  <ql:extendedPictogram>
                    <additionalPictogramDetails xmlns="http://levelC/schema/3/austriaProfile">
                      <weight>7.5</weight>
                    </additionalPictogramDetails>
                  </ql:extendedPictogram>
                </ql:_pictogramExtension>
                <ql:pictogramDescription _extendedValue="overtakingByGoodsVehiclesProhibited">other</ql:pictogramDescription>
              </ql:pictogram>
              <ql:supplementaryInformationDisplay dlpl:type="q1:SupplementaryPictogram">
                <ql:pictogramDescription>restrictedToGoodsVehicles</ql:pictogramDescription>
                <ql:pictogramCode>102</ql:pictogramCode>
                <ql:pictogramUrl>https://maps.asfinag.at/cache/wvz?image=AQ_A12_1_006_IS.C_102</ql:pictogramUrl>
              </ql:supplementaryInformationDisplay>
            </ql:displayAreaSettings>
          </ql:displayAreaSettings>
        </ql:vmsMessage>
      </ql:vmsMessage>
    </ql:vmsStatus>
  </ql:vmsStatus>
</ql:vmsControllerStatus>
```

Figure 7: 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 8a** and **8b** 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 8b**).
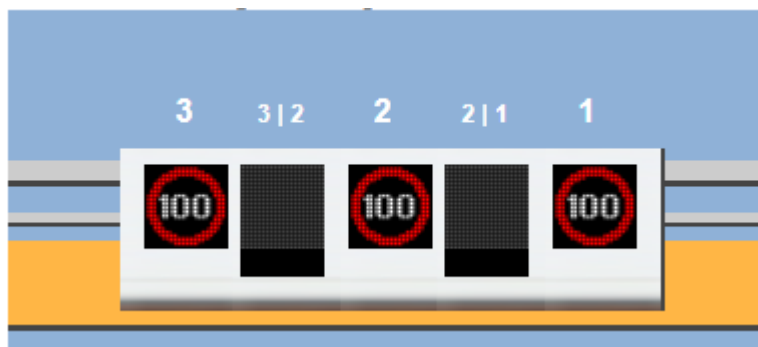

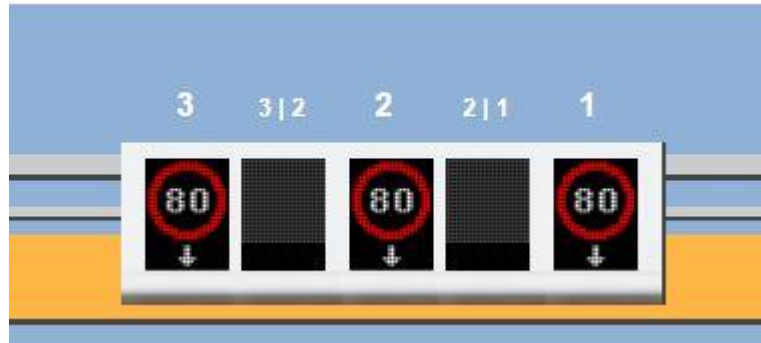*Figure 8a: VMS with speed limits applying to all lanes*

Figure 8b: VMS with lanes specific speed limits

The same scenario in DATEX II messages is illustrated in **Figure 9**. **Figure 9a** shows an example for speed signs that apply to all the lanes, whereas **Figure 9b** 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 9a**, where the speed limit applies to all the lanes. **Figure 9b** (currently unavailable) 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*". For Datex II 3.X we do currently not support specifying individual lanes.

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)?)

```xml
<ql:vmsStatus vmsIndex="104450264">
  <ql:vmsStatus>
    <ql:workingStatus>working</ql:workingStatus>
    <ql:vmsMessage messageIndex="0">
      <ql:vmsMessage>
        <ql:messageInformationType>trafficManagement</ql:messageInformationType>
        <ql:timeLastSet>2023-02-02T08:38:30+01:00</ql:timeLastSet>
        <ql:displayAreaSettings displayAreaIndex="0">
          <ql:displayAreaSettings dlpl:type="q1:PictogramDisplay">
            <ql:pictogramDisplayUrl>https://maps.asfinag.at/cache/wvz?image=_B501300323P001.P04_24</ql:pictogramDisplayUrl>
            <ql:pictogram dlpl:type="q1:RegularPictogram">
              <ql:customPictogramCode>24</ql:customPictogramCode>
              <ql:_pictogramExtension>
                <ql:extendedPictogram>
                  <additionalPictogramDetails xmlns="http://levelC/schema/3/austriaProfile">
                    <speed>60</speed>
                  </additionalPictogramDetails>
                </ql:extendedPictogram>
              </ql:_pictogramExtension>
              <ql:pictogramDescription _extendedValue="maximumSpeedLimitedToTheFigureIndicated">other</ql:pictogramDescription>
            </ql:pictogram>
          </ql:displayAreaSettings>
        </ql:displayAreaSettings>
      </ql:vmsMessage>
    </ql:vmsMessage>
    <ql:vmsLocationOverride xmlns:q6="http://levelC/schema/3/locationReferencing" dlpl:type="q6:PointLocation">
      <q6:coordinatesForDisplay>
        <q6:latitude>47.0196266</q6:latitude>
        <q6:longitude>11.5044222</q6:longitude>
      </q6:coordinatesForDisplay>
      <q6:supplementaryPositionalDescription>
        <q6:carriageway>
          <q6:carriageway>mainCarriageway</q6:carriageway>
          <q6:originalNumberOfLanes>3</q6:originalNumberOfLanes>
          <q6:_carriagewayExtension>
            <q6:extendedCarriageway>
              <additionalCarriagewayDetails xmlns="http://levelC/schema/3/austriaProfile" />
            </q6:extendedCarriageway>
          </q6:_carriagewayExtension>
        </q6:carriageway>
      </q6:supplementaryPositionalDescription>
      <q6:pointByCoordinates>
        <q6:bearing>136</q6:bearing>
        <q6:pointCoordinates>
          <q6:latitude>47.0196266</q6:latitude>
          <q6:longitude>11.5044222</q6:longitude>
        </q6:pointCoordinates>
      </q6:pointByCoordinates>
    </ql:vmsLocationOverride>
  </ql:vmsStatus>
</ql:vmsStatus>
```

Figure 9a: An example DATEX II message with speed limit applying to all lanes

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 10** and **11** to get an overview about VTPs.

Figure 10: Variable Text Panel (VTP)[1]

Figure 11: VTP example (Text in German)[1]

Figure 12 shows a sample DATEX II message with a VTP showing 3 lines of text and a pictogram.

```xml
<ql:vmsControllerStatus>
  <ql:vmsControllerTableReference id="WVZ_TLS_ASFINAG" version="4.0" targetClass="vms:VmsControllerTable" />
  <ql:vmsControllerReference id="WTA_A12_2_081,787_Q" version="4.0" targetClass="vms:VmsController" />
  <ql:vmsStatus vmsIndex="464748370">
    <ql:vmsStatus>
      <ql:workingStatus>working</ql:workingStatus>
      <ql:vmsMessage messageIndex="0">
        <ql:vmsMessage>
          <ql:messageInformationType>situationWarning</ql:messageInformationType>
          <ql:timeLastSet>2023-02-13T04:00:08+01:00</ql:timeLastSet>
          <ql:displayAreaSettings displayAreaIndex="0">
            <ql:displayAreaSettings dlpl:type="q1:PictogramDisplay">
              <ql:pictogramDisplayUrl>https://maps.asfinag.at/cache/wvz?image=_B501200818P001.P01_1</ql:pictogramDisplayUrl>
              <ql:pictogram dlpl:type="q1:RegularPictogram">
                <ql:customPictogramCode>1</ql:customPictogramCode>
                <ql:pictogramDescription _extendedValue="otherDangers">other</ql:pictogramDescription>
              </ql:pictogram>
            </ql:displayAreaSettings>
          </ql:displayAreaSettings>
          <ql:displayAreaSettings displayAreaIndex="1">
            <ql:displayAreaSettings dlpl:type="q1:TextDisplay">
              <ql:textLine lineIndex="0">
                <ql:textLine>
                  <ql:textLine>1LKW-Fahrverbot 7,5t</ql:textLine>
                </ql:textLine>
              </ql:textLine>
              <ql:textLine lineIndex="1">
                <ql:textLine>
                  <ql:textLine>118.02 ab 07.00 h</ql:textLine>
                </ql:textLine>
              </ql:textLine>
              <ql:textLine lineIndex="2">
                <ql:textLine>
                  <ql:textLine>1IT + DE Transit</ql:textLine>
                </ql:textLine>
              </ql:textLine>
            </ql:displayAreaSettings>
          </ql:displayAreaSettings>
        </ql:vmsMessage>
      </ql:vmsMessage>
    </ql:vmsStatus>
  </ql:vmsStatus>
</ql:vmsControllerStatus>
```

Figure 12: 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 13** gives an overview of the VDS and **Figure 14** shows a sample DATEX II entry for VDS in the static file. VDS are not included in the dynamic file.
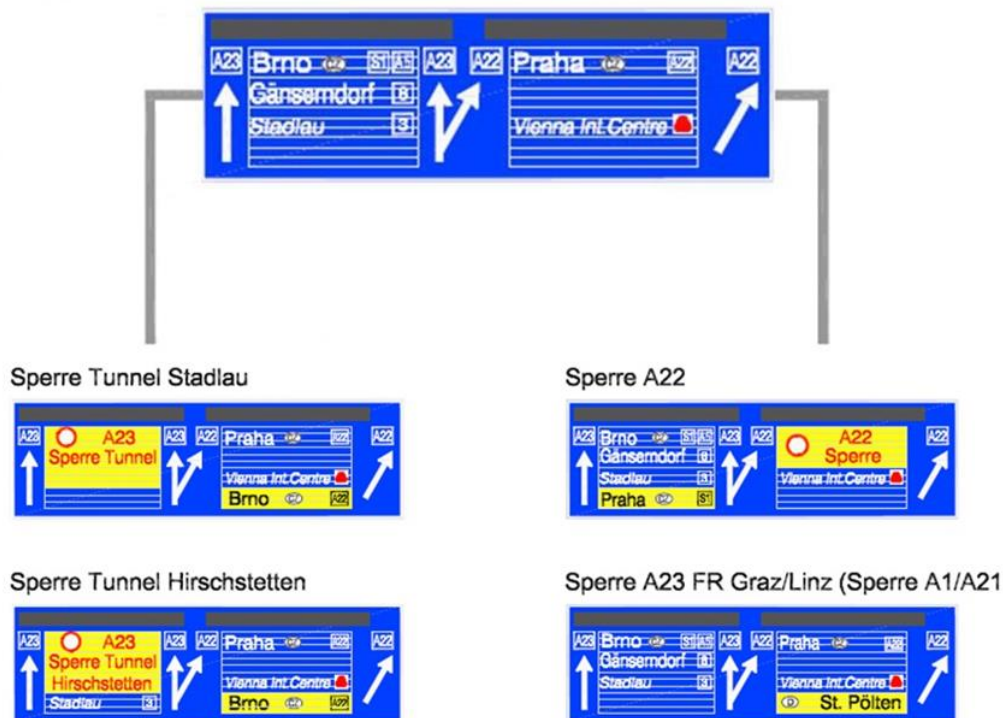

Figure 13: Variable Direction Signs (VDS)[1]

```
<ql:vmsController id="WWW_A02_1_055,880~C14" version="4.0">
  <ql:vms vmsIndex="2027147">
    <ql:vms>
      <ql:vmsLocation xmlns:q5092="http://levelC/schema/3/locationReferencing" dlpl:type="q5092:PointLocation">
        <q5092:coordinatesForDisplay>
          <q5092:latitude>47.72133</q5092:latitude>
          <q5092:longitude>16.13894</q5092:longitude>
        </q5092:coordinatesForDisplay>
        <q5092:supplementaryPositionalDescription>
          <q5092:carriageway>
            <q5092:carriageway>mainCarriageway</q5092:carriageway>
            <q5092:originalNumberOfLanes>3</q5092:originalNumberOfLanes>
            <q5092:_carriagewayExtension>
              <q5092:extendedCarriageway>
                <additionalCarriagewayDetails xmlns="http://levelC/schema/3/austriaProfile" />
              </q5092:extendedCarriageway>
            </q5092:_carriagewayExtension>
          </q5092:carriageway>
        </q5092:supplementaryPositionalDescription>
        <q5092:pointByCoordinates>
          <q5092:bearing>226</q5092:bearing>
          <q5092:pointCoordinates>
            <q5092:latitude>47.72133</q5092:latitude>
            <q5092:longitude>16.13894</q5092:longitude>
          </q5092:pointCoordinates>
        </q5092:pointByCoordinates>
      </ql:vmsLocation>
    </ql:vms>
  </ql:vms>
  <ql:_vmsControllerExtension>
    <ql:extendedVmsController>
      <additionalVmsControllerDetails xmlns="http://levelC/schema/3/austriaProfile">
        <canDisplaySpeedSign>false</canDisplaySpeedSign>
        <category>vds</category>
      </additionalVmsControllerDetails>
    </ql:extendedVmsController>
  </ql:_vmsControllerExtension>
</ql:vmsController>
```

Figure 14: An example DATEX II entry for VDS

A.2.4 Metal Signs

Metal Signs are actual sign plates placed on the side of the road[1]. **Figure 15** shows metal signs with a speed restriction of 60 KMPH over 1.7km.

Figure 15: Metal Signs

The data structure of the metal sign is same as that of a VMS. **Figure 16** shows a sample DATEX II message for a metal sign.

```xml
<ql:vmsControllerStatus>
  <ql:vmsControllerTableReference id="WVZ_TLS_ASFINAG" version="4.0" targetClass="vms:VmsControllerTable" />
  <ql:vmsControllerReference id="2337_Metalsign" version="4.0" targetClass="vms:VmsController" />
  <ql:vmsStatus vmsIndex="2337">
    <ql:vmsStatus>
      <ql:workingStatus>working</ql:workingStatus>
      <ql:vmsMessage messageIndex="0">
        <ql:vmsMessage>
          <ql:messageInformationType>trafficManagement</ql:messageInformationType>
          <ql:timeLastSet>2018-02-02T11:57:32+01:00</ql:timeLastSet>
          <ql:displayAreaSettings displayAreaIndex="0">
            <ql:displayAreaSettings dlpl:type="q1:PictogramDisplay">
              <ql:pictogram dlpl:type="q1:RegularPictogram">
                <ql:customPictogramCode>26</ql:customPictogramCode>
                <ql:_pictogramExtension>
                  <ql:extendedPictogram>
                    <additionalPictogramDetails xmlns="http://levelC/schema/3/austriaProfile">
                      <speed>80</speed>
                    </additionalPictogramDetails>
                  </ql:extendedPictogram>
                </ql:_pictogramExtension>
                <ql:pictogramDescription _extendedValue="maximumSpeedLimitedToTheFigureIndicated">other</ql:pictogramDescription>
              </ql:pictogram>
            </ql:displayAreaSettings>
          </ql:displayAreaSettings>
          <ql:displayAreaSettings displayAreaIndex="1">
            <ql:displayAreaSettings dlpl:type="q1:SupplementaryText">
              <ql:textLine>
                <ql:textLine>KFZ über 7.5t v. 22-5h</ql:textLine>
              </ql:textLine>
            </ql:displayAreaSettings>
          </ql:displayAreaSettings>
        </ql:vmsMessage>
      </ql:vmsMessage>
    </ql:vmsStatus>
  </ql:vmsStatus>
</ql:vmsControllerStatus>
```

Figure 16: 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 & VmsTablePublication) 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 "Carriageway" which is part of the "SupplementaryPositionalDescription" is extended.

In addition, we have also extended the "VmsController" 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 of displaying 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.
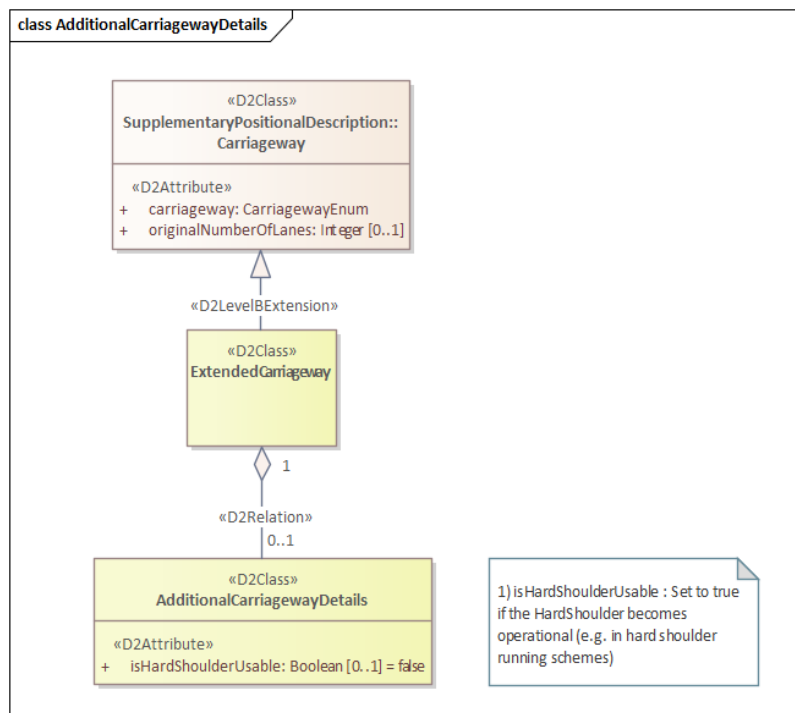
A.3.1 Carriageway extension

Figure 17: Carriageway extension

The class "AdditionalCarriagewayDetails" is added to the "Carriageway" extension. It contains the following element:

1. isHardShoulderUsable:- Specifies whether the hard shoulder is used as an operation lane. This is reserved for the future use. At the moment, it is not specified in the feed.

A.3.2 VmsController extension

The class "AdditionalVmsDetails" is added to the "VmsController". It contains the following elements:

1. canDisplaySpeedSign: - Indicates whether or not a VmsController 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
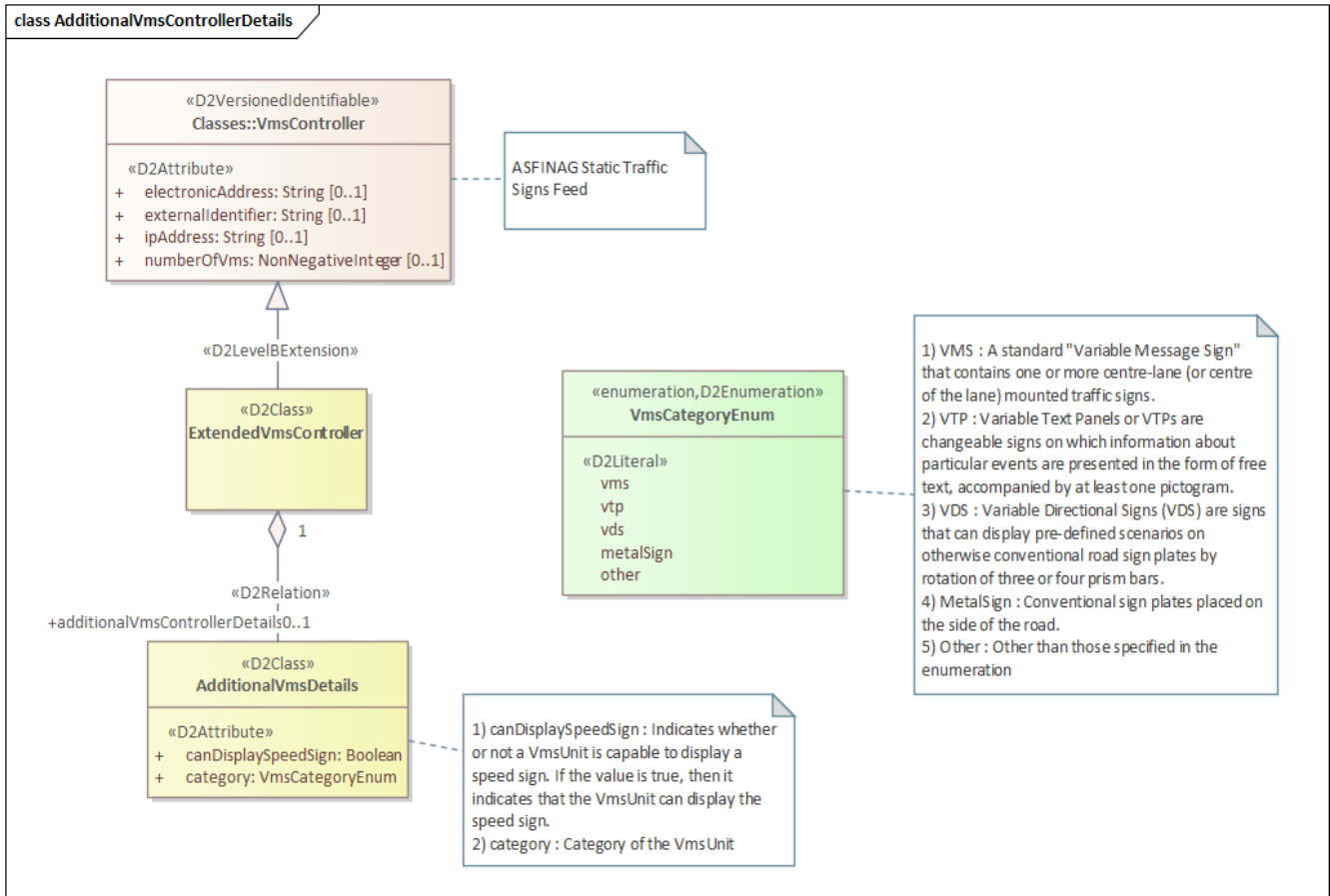e. other: - Other than those specified in the enumeration. Those which cannot be categorized.

Figure 18: VmsController extension

Below you can see three examples for this extension

```xml
<ql:vmsController id="AQ_S01_1_008,250_Q" version="4.0">
  <ql:vms vmsIndex="1299745733">
  <ql:vms vmsIndex="1299745698">
  <ql:vms vmsIndex="1299745712">
  <ql:_vmsControllerExtension>
    <ql:extendedVmsController>
      <additionalVmsControllerDetails xmlns="http://levelC/schema/3/austriaProfile">
        <canDisplaySpeedSign>true</canDisplaySpeedSign>
        <category>vms</category>
      </additionalVmsControllerDetails>
    </ql:extendedVmsController>
  </ql:_vmsControllerExtension>
</ql:vmsController>
<ql:vmsController id="1067_Metalsign" version="4.0">
  <ql:vms vmsIndex="1067">
  <ql:_vmsControllerExtension>
    <ql:extendedVmsController>
      <additionalVmsControllerDetails xmlns="http://levelC/schema/3/austriaProfile">
        <canDisplaySpeedSign>false</canDisplaySpeedSign>
        <category>metalSign</category>
      </additionalVmsControllerDetails>
    </ql:extendedVmsController>
  </ql:_vmsControllerExtension>
</ql:vmsController>
<ql:vmsController id="2096_Metalsign" version="4.0">
  <ql:vms vmsIndex="2096">
  <ql:_vmsControllerExtension>
    <ql:extendedVmsController>
      <additionalVmsControllerDetails xmlns="http://levelC/schema/3/austriaProfile">
        <canDisplaySpeedSign>true</canDisplaySpeedSign>
        <category>metalSign</category>
      </additionalVmsControllerDetails>
    </ql:extendedVmsController>
  </ql:_vmsControllerExtension>
</ql:vmsController>
```

Figure 19: VmsController 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	maximumSpeedLimited ToTheFigureIndicated		60						
26	maximumSpeedLimited ToTheFigureIndicated		80						
28	maximumSpeedLimited ToTheFigureIndicated		100						
31	overtakingProhibited								
32	overtakingByGoodsVehiclesProhibited			3.5					
44	endOfSpeedLimit		60						
46	endOfSpeedLimit		80						
48	endOfSpeedLimit		100						
53		allRestrictions Ended							
212		wrongWayDriver							
102				7.5				restrictedToGoodsVehicles	
229									blackIce

---

[2] *https://asfinag.net/media/1445/8005512000-technische-spezifikation-v200.pdf*

82						1000		distanceToTheBeginningofTheApplicationZone	
92					1000			lengthOfTheApplicationZone	
216		heightRestrictionInOperation					4		

A.5 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