

DATEX II

New developments in DATEX II content – Traffic Regulation Publication

Day 4 – 21 April 2021

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6TH FORUM
WEBINAR SERIES

Why Traffic Regulations in DATEX II?

- Traffic Regulations are important for our trips – examples:
 - Navigation ('traditional ITS')
 - Dynamic Driving Task (CCAM)
- But Traffic Signs can be confusing
- Trying to machine-read pictures and understand their semantics is not a good interface design
- We need a machine-interpretable, digital representation!
- Some regulations are temporary or activated dynamically \Rightarrow they should be covered by DATEX II



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History Traffic Regulations in DATEX

- Traffic regulations have always been in DATEX as part of general information
- 1990ies – DATEX: TRAVIN

```
UNA:+.? '  
UNB+UNOC:3+MYINP+MYOUT+020117:1200+I0001'  
UNH+M0001+TRAVIN:14:97B:DX'  
BGM+1:1::S0001+E0001:1.2:3.1+1'  
DTM+MST:200201171200P02:303'  
DTM+INP:200201171200P02:303'  
DTM+STA:200201171200P02:303'  
DTM+EXP:200202141800P02:303'  
LOC+LOC+1006:3:HBC+1+N'  
NAD+MSE+MYINP'RFF+LTV:1.00'  
STS+DOB+RMT'  
STS+PHR+RWK'  
FTX+SUR+++DATEX Engine Tutorial Test Message+EN'  
UNT+13+M0001'
```

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History Traffic Regulations in DATEX

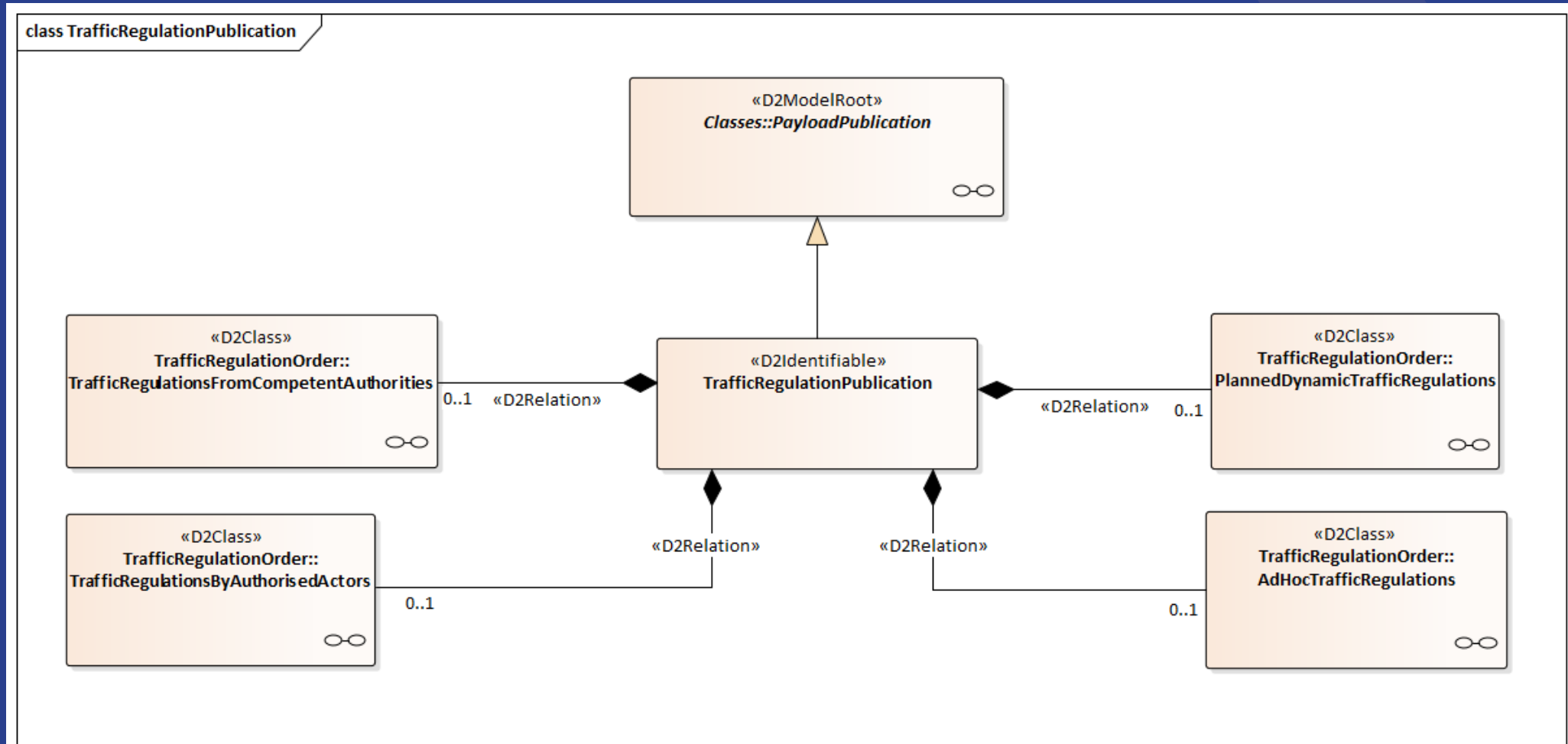
- Traffic regulations have always been in DATEX as part of general information
- 1990ies – DATEX: TRAVIN
- Since ~2004 – DATEX II: SituationPublication (CEN EN 16157-3)
- The regulation content is mixed with other aspects, like environmental observations, operator actions, etc.
- Good enough for informing human travellers – not good for machines

```
1 <payload modelBaseVersion="3" xsi:type="sit:SituationPublication"
2   xmlns:sit="http://datex2.eu/schema/3/situation" xmlns:com="ht
3   xmlns:loc="http://datex2.eu/schema/3/locationReferencing"
4   xmlns="http://datex2.eu/schema/3/d2Payload"
5   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" lang="s
6   xsi:schemaLocation="http://datex2.eu/schema/3/d2Payload ../..
7   <com:feedType>SITUATIONS</com:feedType>
8   <com:publicationTime>2017-07-26T16:00:00+01:00</com:publicati
9   <com:publicationCreator>
10     <com:country>SE</com:country>
11     <com:nationalIdentifier>STA</com:nationalIdentifier>
12   </com:publicationCreator>
13   <sit:situation id="GUID2A22530C-D452-4ae8-B942-993BC2923D13">
14     <sit:overallSeverity>high</sit:overallSeverity>
15     <sit:situationVersionTime>2017-07-26T16:05:00+02:00</sit:
16     <sit:headerInformation>
17       <com:confidentiality>noRestriction</com:confidentiali
18       <com:informationStatus>real</com:informationStatus>
19     </sit:headerInformation>
```

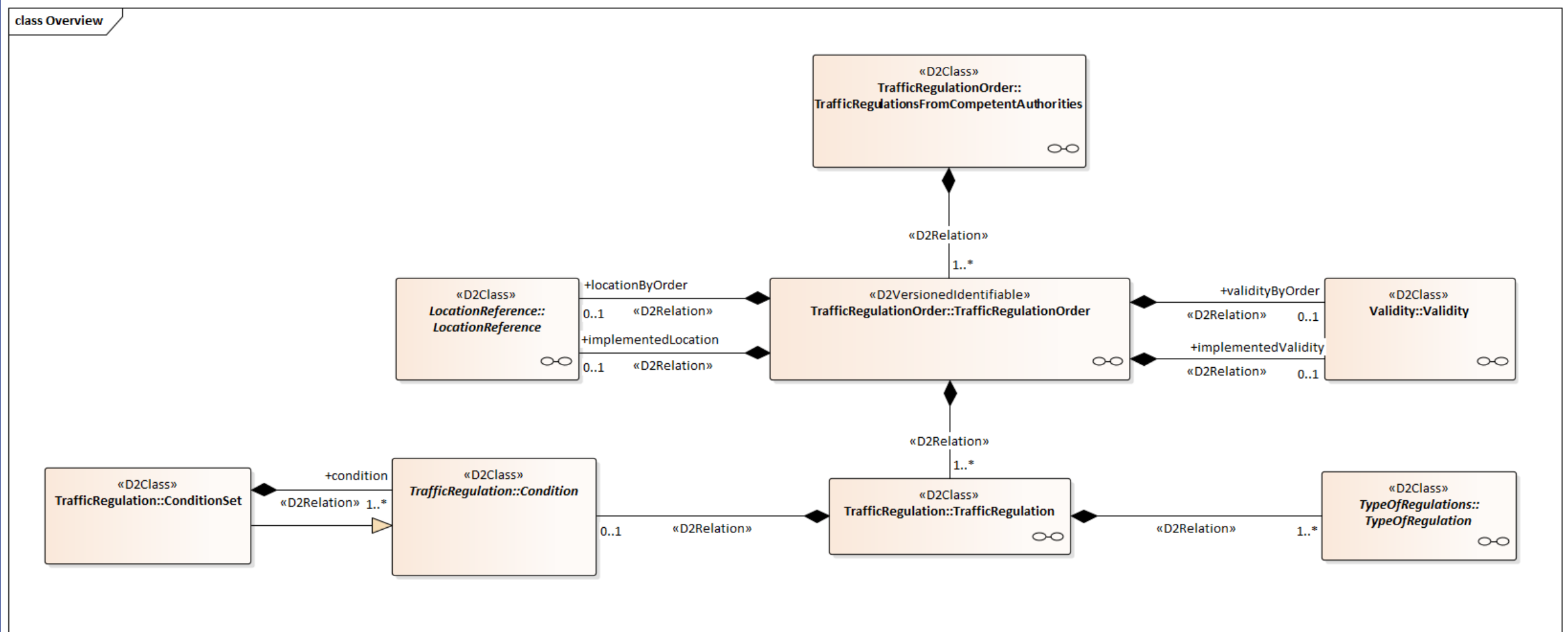
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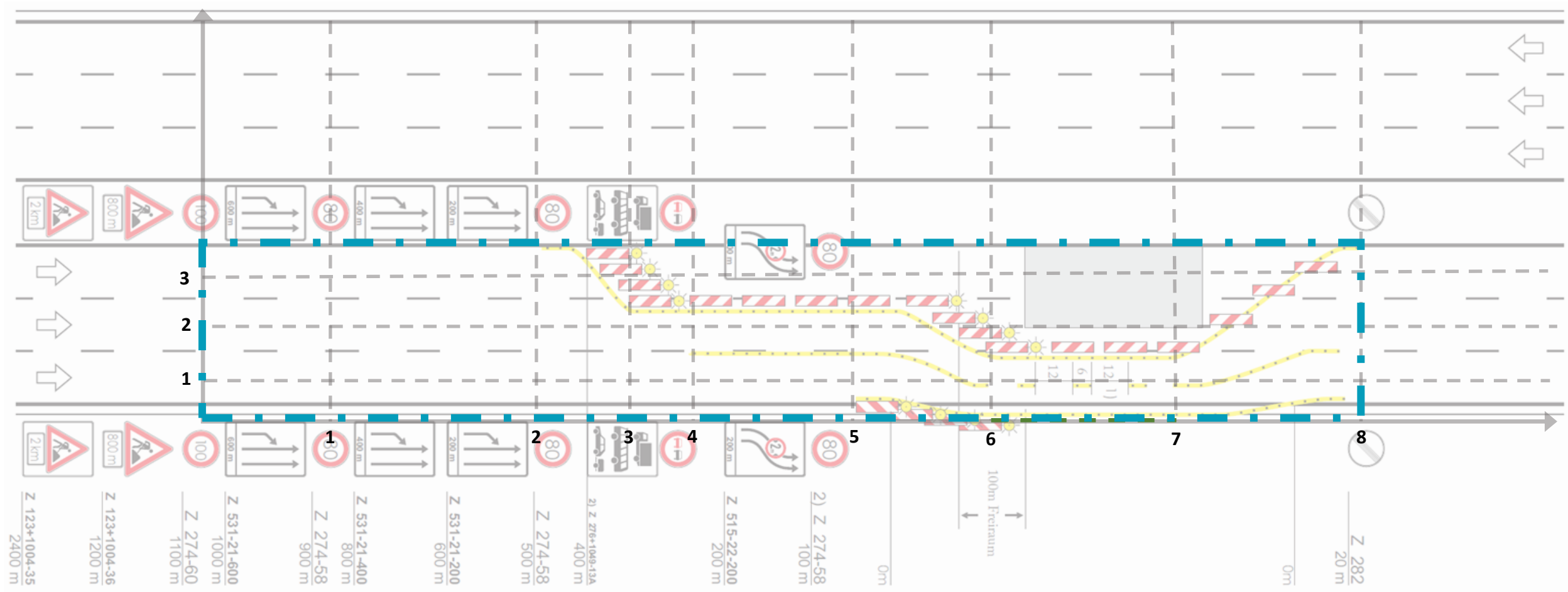
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A new approach: TrafficRegulationPublication

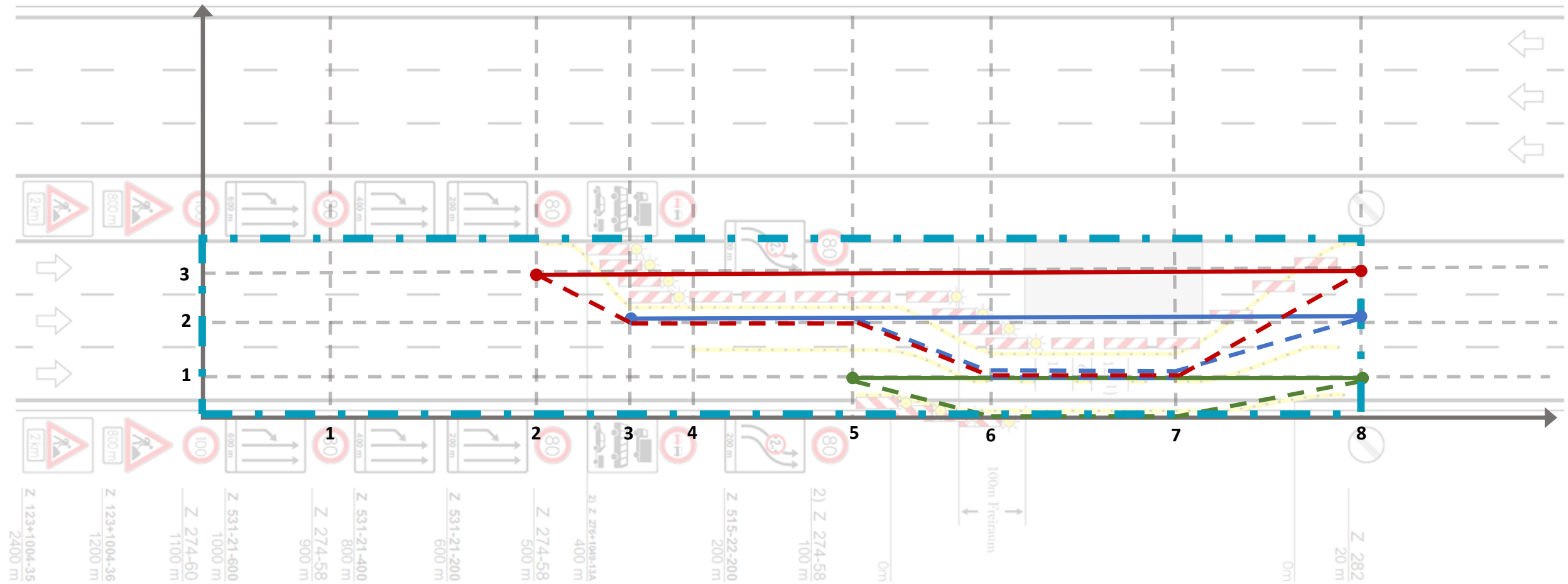


A new approach: TrafficRegulationPublication





trafficRegulationOrder: orderedValidity – overallStartTime/overallEndTime, orderedLocation – posList = 0.0 0.0 0.0 3.5 8.0 3.5 8.0 0.0

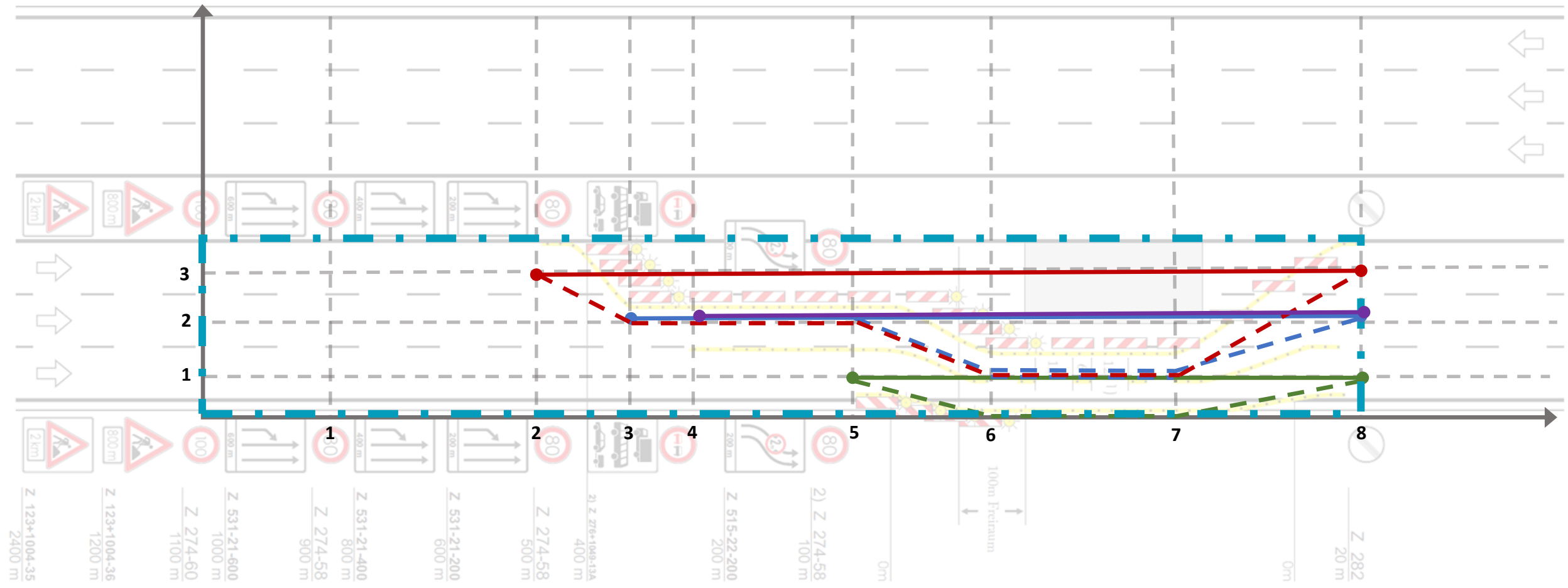


trafficRegulationOrder: orderedValidity – overallStartTime/overallEndTime, **orderedLocation** – posList = 0.0 0.0 0.0 3.5 8.0 3.5 8.0 0.0

trafficRegulation (type: AlternateRoadOrCarriagewayOrLaneLayout):
 alternateRoadOrCarriagewayOrLaneLayout (deviationToHardshoulder = true, yellowMarkings = true, roadOrCarriagewayOrLaneLayoutType = lane, newLayout = 5.0 1.0 6.0 0.0 7.0 0.0 8.0 1.0);
 applicableFor: orderedLocation (laneNumber = 1, posList = 5.0 1.0 6.0 1.0 7.0 1.0 8.0 1.0)

trafficRegulation (type: AlternateRoadOrCarriagewayOrLaneLayout):
 alternateRoadOrCarriagewayOrLaneLayout (yellowMarkings = true, roadOrCarriagewayOrLaneLayoutType = lane, newLayout = 3.0 2.0 4.0 2.0 5.0 2.0 6.0 1.0 7.0 1.0 8.0 2.0);
 applicableFor: orderedLocation (laneNumber = 2, posList = 3.0 2.0 4.0 2.0 5.0 2.0 6.0 2.0 7.0 2.0 8.0 2.0), vehicleWidth (comparisonOperator = lessOrEqualThan, vehicleWidth = 2)

trafficRegulation (type: AccessRestriction (accessRestrictionType = laneClosedDueToRoadworks) & AlternateRoadOrCarriagewayOrLaneLayout):
 alternateRoadOrCarriagewayOrLaneLayout (mergedToOtherLane = true, yellowMarkings = true, roadOrCarriagewayOrLaneLayoutType = lane, newLayout = 2.0 3.0 3.0 2.0 4.0 2.0 5.0 2.0 6.0 1.0 7.0 1.0 8.0 3.0);
 applicableFor: orderedLocation(laneNumber = 3, posList = 2.0 3.0 3.0 3.0 4.0 3.0 5.0 3.0 6.0 3.0 7.0 3.0 8.0 3.0), vehicleWidth (comparisonOperator = lessOrEqualThan, vehicleWidth = 2)



- trafficRegulation (type: SpeedLimit)
 - maxValue=100
 - applicableFor: orderedLocation (carriageway = mainCarriageway, posList = 0.0 2.0 1.0 2.0)
- trafficRegulation (type: SpeedLimit)
 - maxValue=80
 - applicableFor: orderedLocation (carriageway = mainCarriageway, posList = 1.0 2.0 2.0 2.0 3.0 2.0 4.0 2.0 5.0 2.0 6.0 2.0 7.0 2.0 8.0 2.0)
- trafficRegulation (type: OvertakingBan)
 - applicableFor: orderedLocation (carriageway = mainCarriageway, posList = 4.0 2.0 5.0 2.0 6.0 2.0 7.0 2.0 8.0 2.0), vehicleType = heavyGoodsVehicle, bus, carWithTrailer

All you want to know about the TRO,
Including time specification & overall location

Three separate traffic regulations, describing
The alternate lane layout (yellow markings)

Two separate speed limit sections

One HGV overtaking ban

In total less than 200 'lines' of XML!

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <d2:payload xmlns:tro="http://levelC/schema/3/trafficRegulation"
3   xmlns:com="http://levelC/schema/3/common" xmlns:loc="http://levelC/schema/3/locationReferencing"
4   xmlns:sit="http://levelC/schema/3/situation" xmlns:d2="http://levelC/schema/3/d2Payload"
5   xmlns:c2="http://levelC/schema/3/controlledZone"
6   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
7   xsi:schemaLocation="http://levelC/schema/3/d2Payload LevelC_3_D2Payload.xsd"
8   xsi:type="tro:TrafficRegulationPublication" modelBaseVersion="3" lang="de-DE" id="4711">
9   <com:publicationTime>2019-11-01T08:13:32+01:00</com:publicationTime>
10  <com:publicationCreator> [3 lines]
11  <tro:trafficRegulationsFromCompetentAuthorities>
12    <tro:trafficRegulationOrder id="4712" version="1">
13      <tro:description>
14        <com:values>
15          <com:value lang="de">Arbeitsstelle von längerer Dauer</com:value>
16          <com:value lang="en">Long term roadworks</com:value>
17        </com:values>
18      </tro:description>
19      <tro:issuingAuthority> [5 lines]
20      <tro:reason>roadworks</tro:reason>
21      <tro:regulationId>ThisIsAnIdentifierIssuedByTheRoadTrafficAuthority</tro:regulationId>
22      <tro:status>madeAndImplemented</tro:status>
23      <tro:orderedValidity> [6 lines]
24      <tro:orderedLocation xsi:type="loc:AreaLocation"> [8 lines]
25      <tro:trafficRegulation>
26        <tro:typeOfRegulation xsi:type="tro:AlternateRoadOrCarriagewayOrLaneLayout"> [9 lines]
27        <tro:applicableFor> [14 lines]
28      </tro:trafficRegulation>
29      <tro:trafficRegulation>
30        <tro:typeOfRegulation xsi:type="tro:AlternateRoadOrCarriagewayOrLaneLayout"> [8 lines]
31        <tro:applicableFor> [20 lines]
32      </tro:trafficRegulation>
33      <tro:trafficRegulation>
34        <tro:typeOfRegulation xsi:type="tro:AccessRestriction"> [2 lines]
35        <tro:typeOfRegulation xsi:type="tro:AlternateRoadOrCarriagewayOrLaneLayout"> [9 lines]
36        <tro:applicableFor> [20 lines]
37      </tro:trafficRegulation>
38      <tro:trafficRegulation>
39        <tro:typeOfRegulation xsi:type="tro:SpeedLimit"> [2 lines]
40        <tro:applicableFor> [11 lines]
41      </tro:trafficRegulation>
42      <tro:trafficRegulation>
43        <tro:typeOfRegulation xsi:type="tro:SpeedLimit"> [2 lines]
44        <tro:applicableFor> [11 lines]
45      </tro:trafficRegulation>
46      <tro:trafficRegulation>
47        <tro:typeOfRegulation xsi:type="tro:OvertakingBan"/>
48        <tro:applicableFor> [16 lines]
49      </tro:trafficRegulation>
50    </tro:trafficRegulationOrder>
51  </tro:trafficRegulationsFromCompetentAuthorities>
52 </d2:payload>
53
```

Status of standardisation

- The TrafficRegulation model was proposed to become CEN/TS 16157-11
- A preliminary work item ran through a review in 2020
- Based on the comment resolution, a work item activation was proposed together with a second review
- The work item was approved and the second review carried out
- Comment resolution has taken place and a final draft is currently being prepared for final vote
- The model will be published on datex2.eu

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Further activities

- The European Commission has contracted a project to work on a DATEX II model for Urban Vehicle Access Regulations: UVAR Box (<http://uvarbox.eu>)
- This work is based on the TrafficRegulation package, but extends this with a specialisation for “Controlled Zones” (based on SOCRATES 2.0)
- It is intended to feed the result also into a new CEN standard in the 16157-series
- A Hackathon is planned for the Transport Research Arena 2022 in Lisbon

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