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TN-ITS
Map Update Exchange

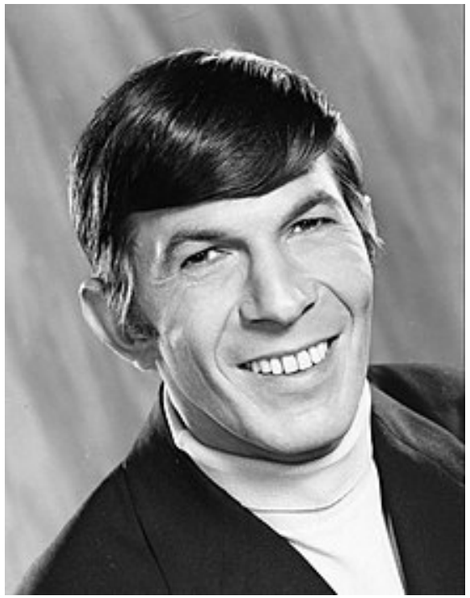
TN-ITS & Traffic Regulations

3nd November 2022, DATEX II User Forum

Stephen T'Siobbel, ERTICO ITS Europe (credits Knut Jetlund, NPRA)

“The miracle is this
the more we share,
the more we have.”

Leonard Nimoy



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Overview

- Short Introduction
- Scope of TN-ITS
- Technical Specifications
- Example TN-ITS service
- Conclusions

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Introduction

- Maintenance of digital maps supporting ITS
- Focus on road safety (ADAS), efficiency, automation
- Automate the exchange of changes of road attributes between data providers (road authorities/operators, cities) and data users (digital map & service providers)
- The TN-ITS duality:
  - ERTICO platform - 2013
  - Formal Technical Specification – CEN TS 17268: 2018

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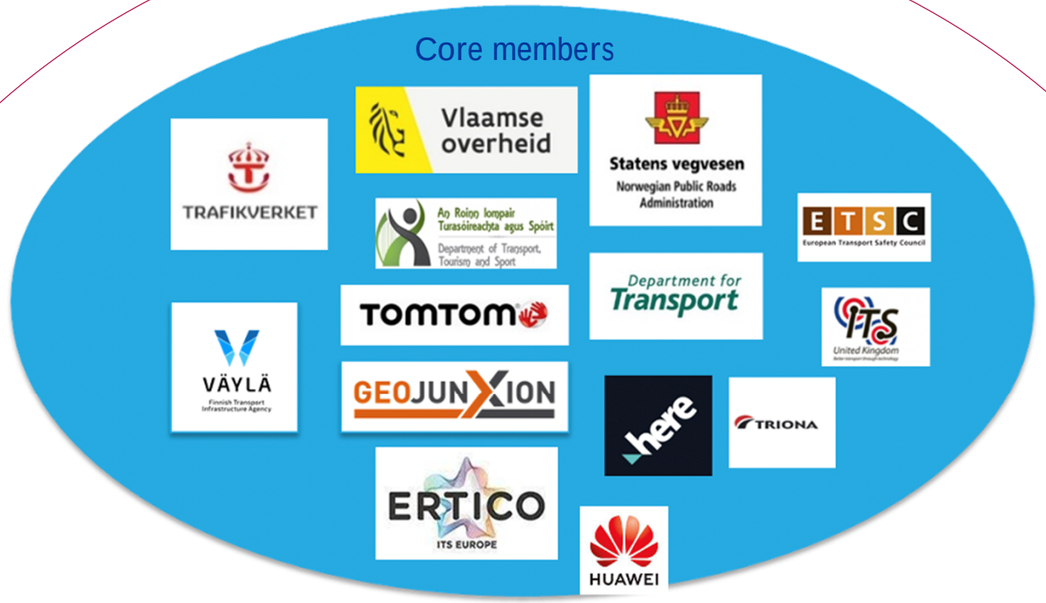
Members

Core members



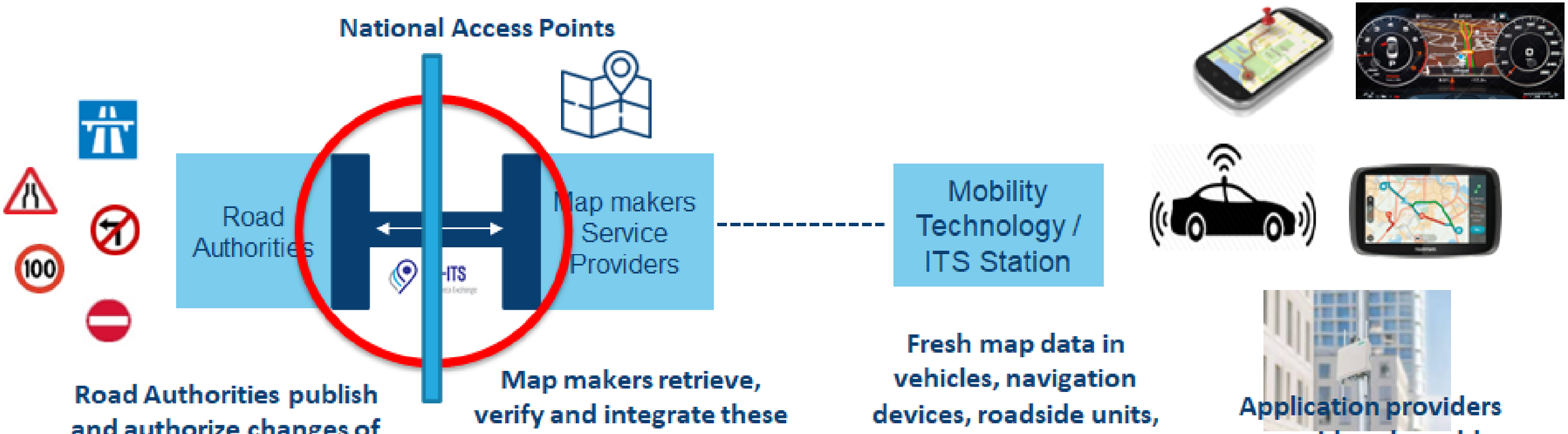
NAPCORE partners

Participants:

AT	BE	BE-FL	BG	HR	CY	CZ	DK	EE	FI	HE	UITP
F	A	A	F	A	A	A	F	F	A		
FR	DE-BASt	DE-AB	GR	GR-EG	HU	IE	IT	LV	LT	ERTICO	ITxPT
F		F	F	F	A	F	A	F	F	L	
LU	NL	MT	PL	PT	RO	SK	SI	ES	SE	NPRA	FEDRO
F	F	F	F	F	F	F	A	F	F	A	

L = activity/task leader, A = active contributor, F = Follower

TN-ITS Data Chain



Road Authorities publish and authorize changes of road data as part of their SDI maintenance

Map makers retrieve, verify and integrate these changes in their platform and bring this to map users

Fresh map data in vehicles, navigation devices, roadside units, traffic control centres, …

Application providers provide value add applications based upon regulatory and authoritative data

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Scope elements

- Authoritative data (speed limits, traffic signs, …)
- Changes of road attributes ⇔ INSPIRE
- For static layers / reference map db ⇔ DATEX II
- Updates provided on monthly ⇔ daily basis
- All sources today available under an Open Data license
- Specifications combines standards from GIS and ITS
- Specifications incorporates models from DATEX & ISO14823 (traffic signs)

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Technical Specifications & Traffic Regulations

- Top level Abstract Dataset Class
  - RoadFeatureDataset
  - FeedbackDataset

https://opendata.apps.mow.vlaanderen.be/tn-its/rest/dataset/v2/oMFopmSfQVyPyNKrCaUdhwAAAABhQLKLAAAAAGFAspU%3D

Ertico New

Dit XML-bestand lijkt geen geassocieerde stijlinformatie te hebben. De documentstructuur is hieronder weergegeven.


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Technical Specifications & Traffic Regulations

- TN-ITS RoadFeature Class reflects Traffic Regulations
- Type of regulations & their properties are given in a extrenal code lists
- Conditions are same as in DATEX II, yet some are missing (driver condition/required permit,…)
- Validity model – most classes are the same – with Fuzzy Period class
- Vehicle characteristic model is the same (iso tc211 style)
- Location referencing, uses GML schema (eg linestring) and linear referencing, incl map agnostic methods OpenLR/AGORA-C

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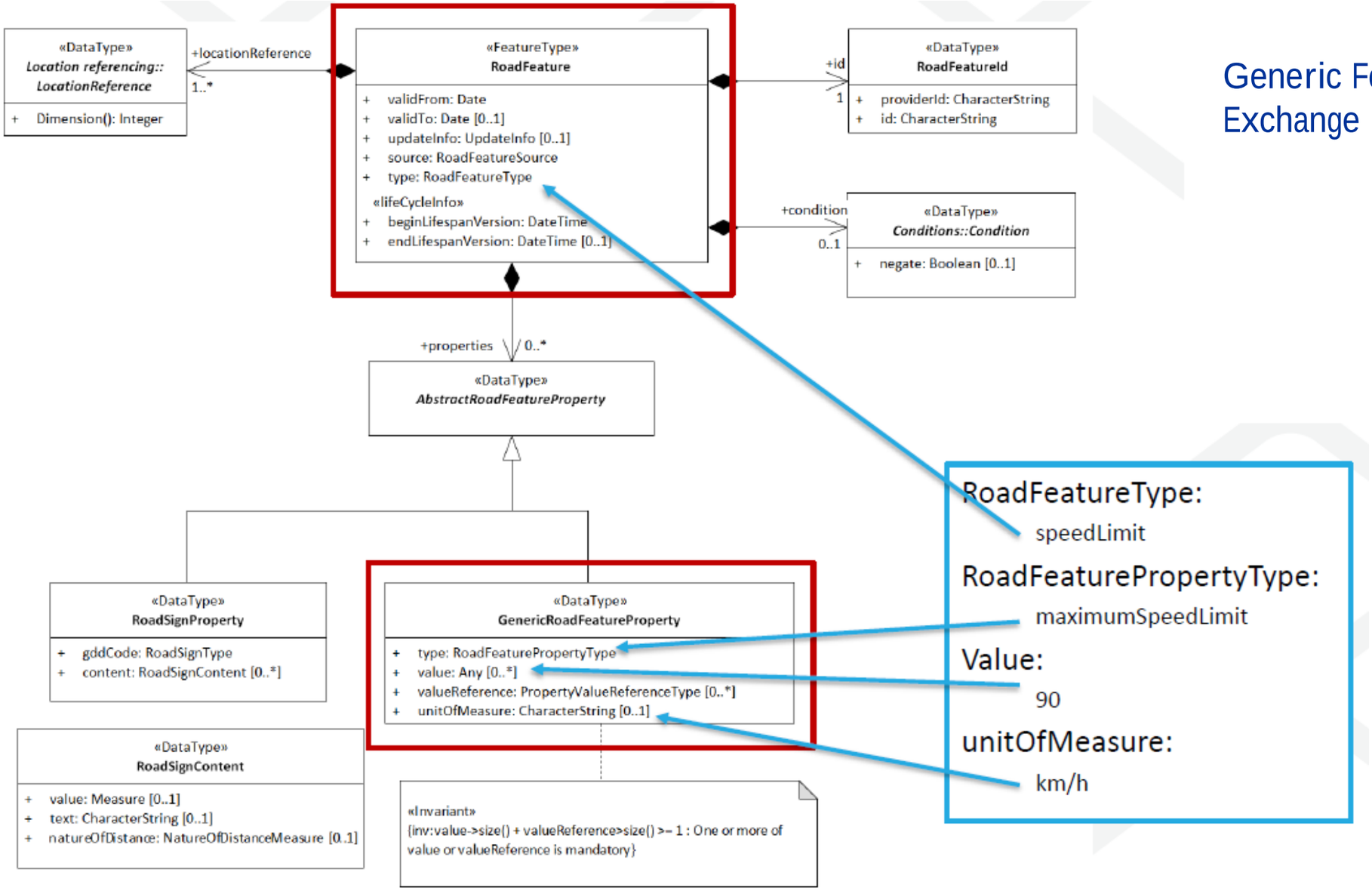
RoadFeature Class reflects Traffic Regulations



Generic Feature Exchange Model

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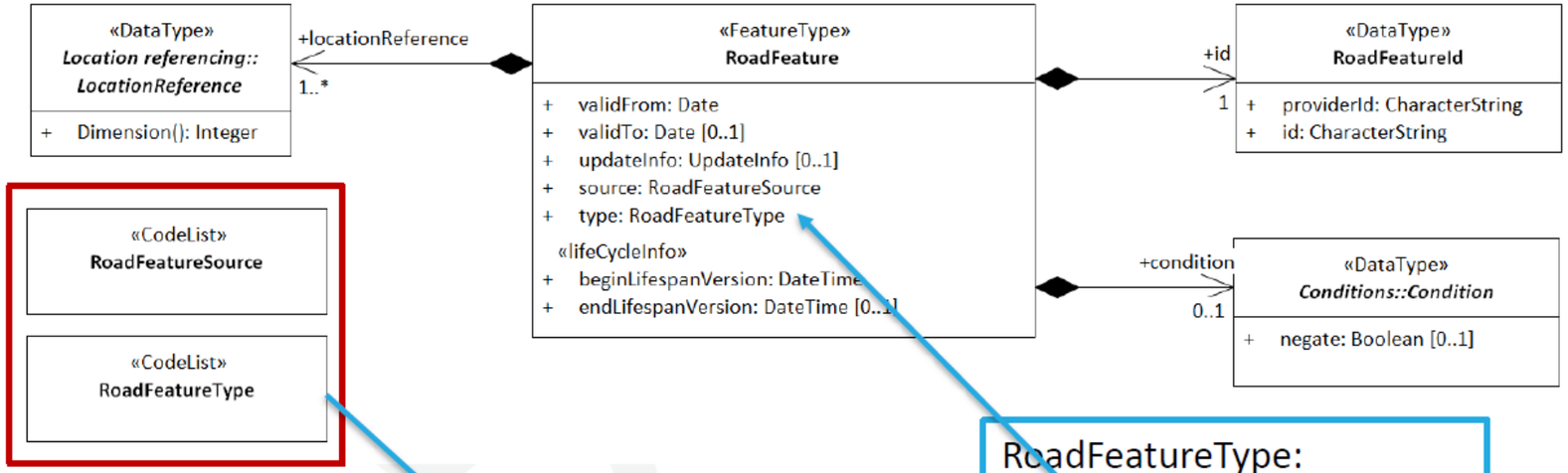
TN-ITS uses external & extendible codelists

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RoadFeatureType:

speedLimit

RoadFeaturePropertyType:

maximumSpeedLimit

Value:

90

unitOfMeasure:

km/h

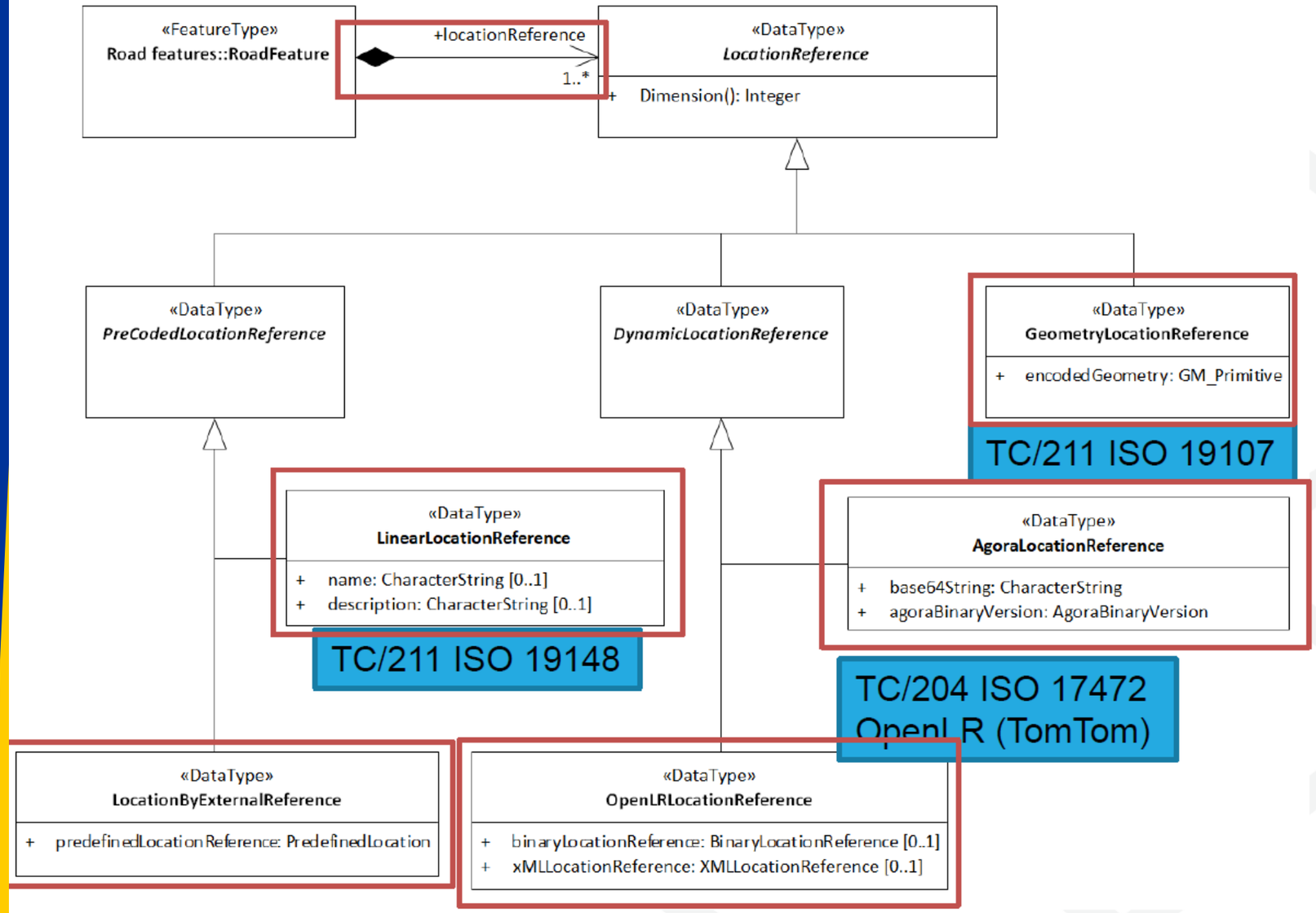
http://spec.tn-its.eu/codelists

- A set of standardized code values
- Flexibility to extend without revising the standard
- Flexibility to extend for service providers

Photo: The University Centre in Svalbard

TN-ITS
Map Update Exchange

TN-ITS Location Referencing

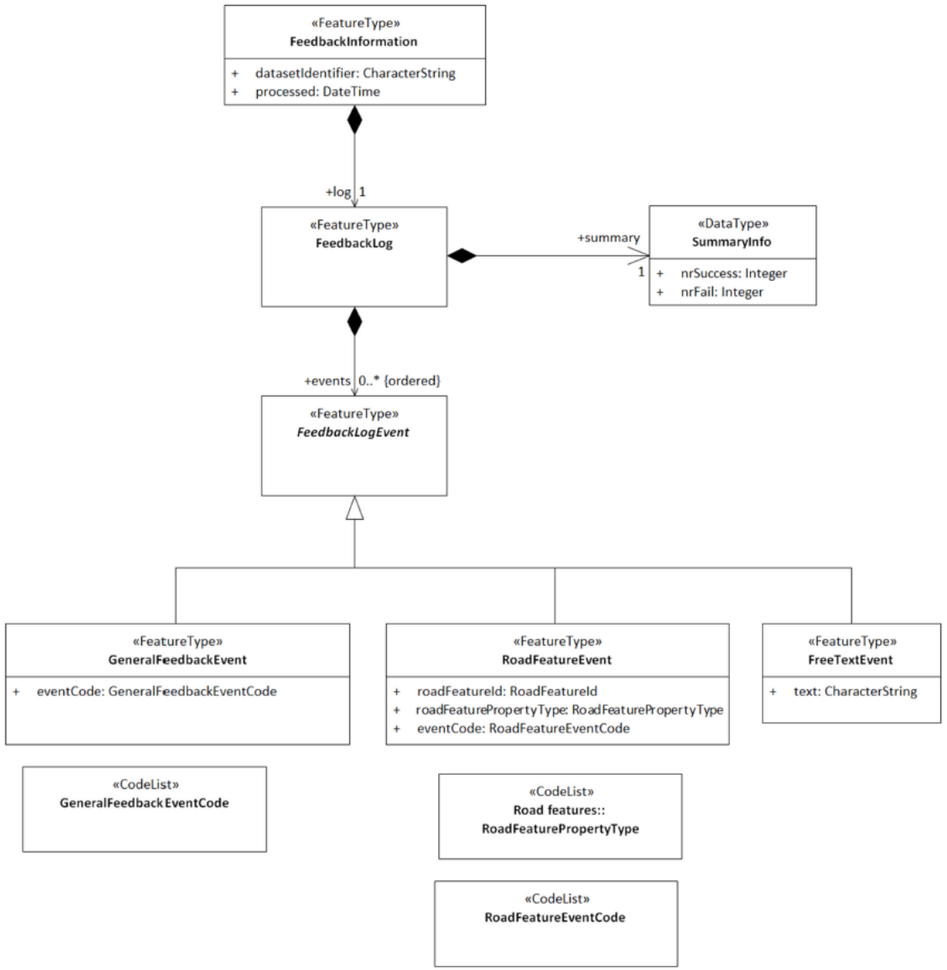


- Dynamic referencing – prefered by the map providers
  - AGORA-C: Standardized, but licensed
  - OpenLR: Industry, but open
- Linear referencing
  - E.g.: For lookup on INSPIRE Transport Network road links, in case of unmatched dynamic references
- Location by reference
  - E.g.: New general speed limits for a country (From 90 to 80 km/h)
- Location by geometry
  - E.g.: Geofencing – Low emission zones

TN-ITS
Map Update Exchange

TN-ITS Technical Specifications

- Differences with DATEX
  - Open World Assumption – classification of the real world
  - TN-ITS has a Feedback Class
    - To be further developed
  - Implementation format
    - XML – ISO GML schema ⇔ DATEXII XML
- Similarities
  - Model Driven Architecture



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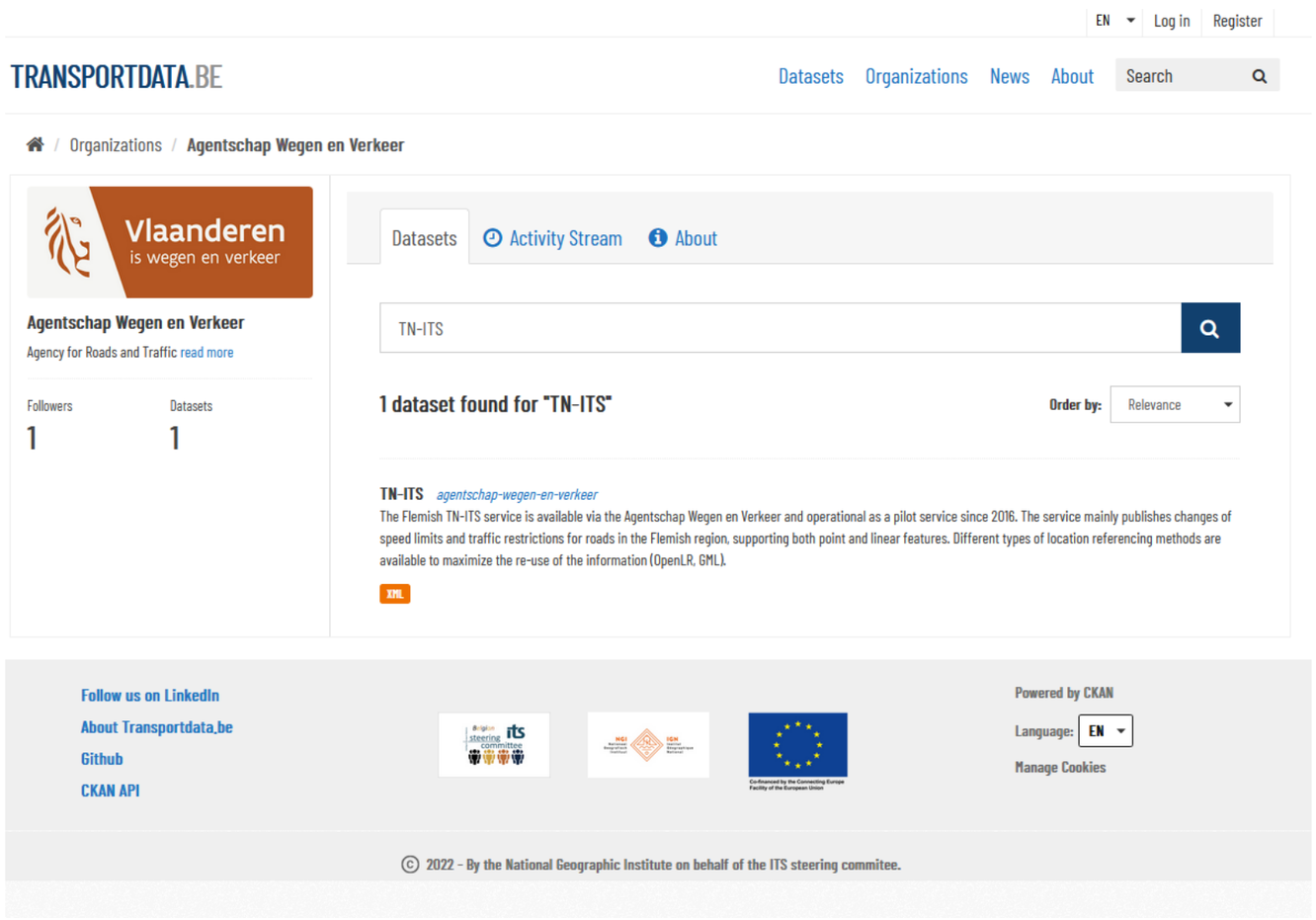
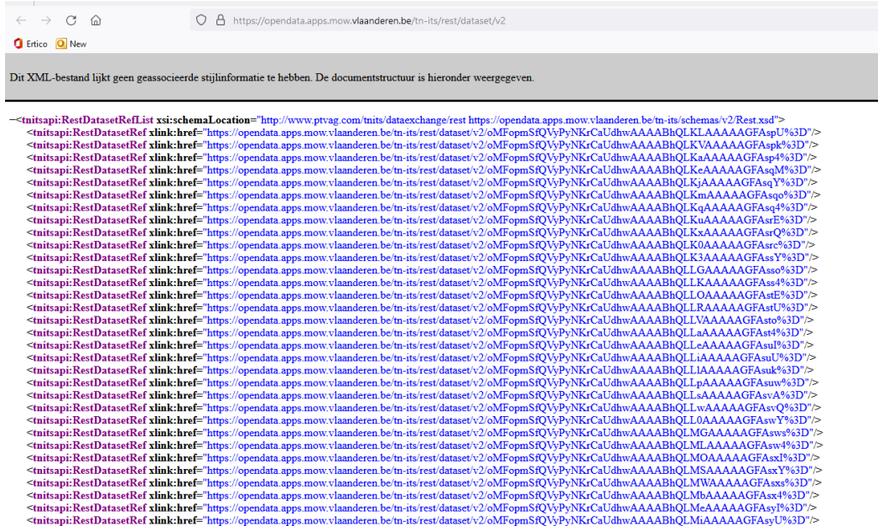
TN-ITS Services

- Example : NAP Belgium



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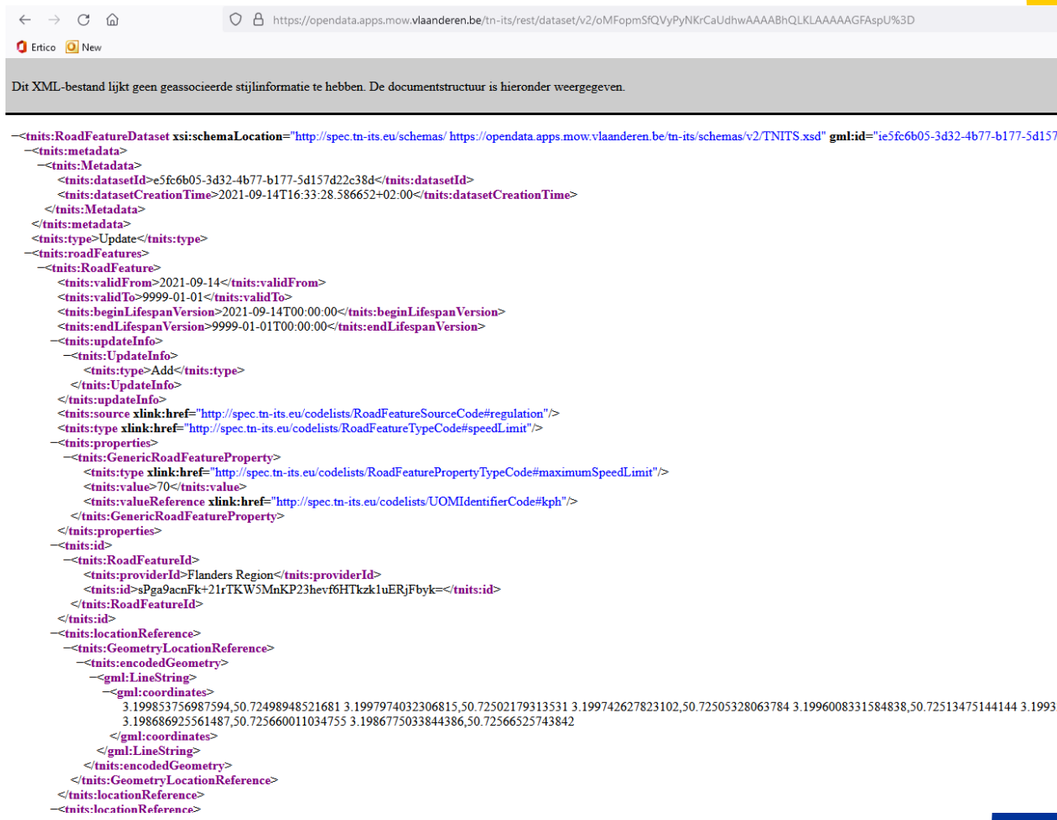


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TN-ITS in NAPCORE wrt Traffic Regulations

- Alignment task T4.2.1 ⇔ T4.1.1 DATEXII
  - Workshop June 2022 defined work items – to support definition roadmap of tasks (M3 2023)

- Specifications Task T4.2.3
  - Address the proposals TN-ITS GO project
  - Close some gaps with rev RTTI
  - Maintenance TS: systematic review is due: CEN TS update is discussed (nov 2022)

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Conclusions

- TN-ITS can/does describe Traffic Regulations – and changes thereof – yet, there are some gaps wrt DATEXII, but also describes extra (e.g. feedback)
- Is easily extendable with external codelists
- Very similar/identical: Conditions/Validity/Vehicle characteristics, location referencing
- NAPCORE offers opportunity to „discuss, define & align“ – work items are defined, concrete timing tbd…

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Thank You !

Stephen T'Siobbel

TN-ITS WG2 Leader (Specifications) – ERTICO

NAPCORE Task 4.2.1 Leader + other tasks - ERTICO

Mail : s.tsiobbel@mail.ertico.com

"Alien abduction site warning"
supported by TN-ITS specs!