NAPCORE Mobility data days
9th 9th November 2023

Overviews of ISO14823-1:2023

Intelligent transport systems
Graphic data dictionary

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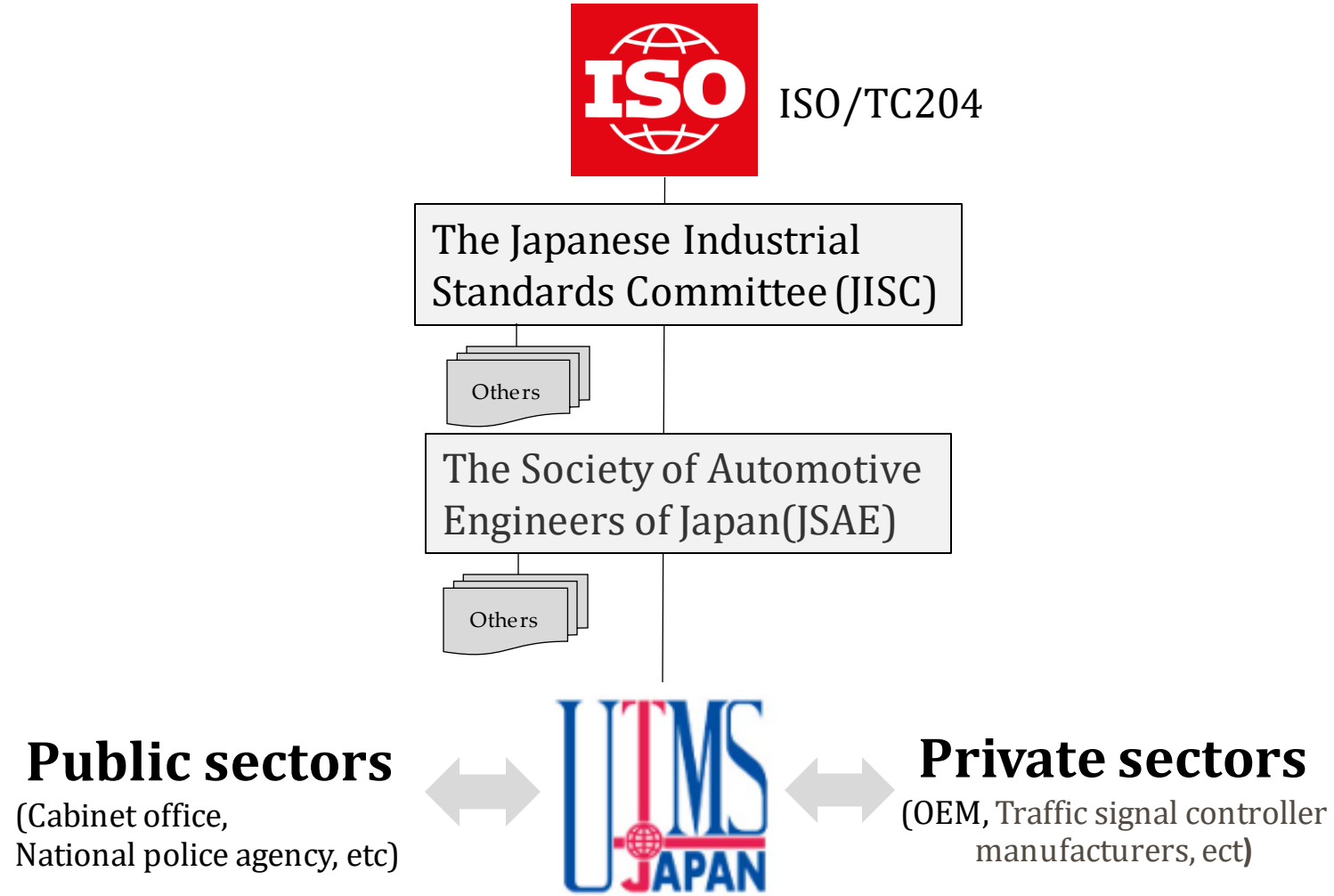
ISO14823-1 project leader

UTMS society of Japan

Position of UTMS Japan

UTMS(Universal traffic management systems)



R & D of UTMS, Standardization, FOT,etc

ISO/TC204

Vienna agreement

CEN TC278 ⟷ **TC204**

Secretariat : SAE International

AG2	: Identifiers	Germany
AG3	: Operational improvement group	USA
AG4	: Program coordination	Norway
AG5	: Publication and marketing review	USA
JWG1	: City data model transportation planning	USA

Working Group		Convenor
WG 1	: Architecture	USA
WG 3	: ITS geographic data	Japan
WG 5	: Fee and toll collection	Sweden
WG 7	: General fleet management and commercial/freight	Canada
WG 8	: Public transport/emergency	USA
WG 9	: Integrated transport information, management and control	Australia
WG 10	: Traveller information systems	France
WG 14	: Vehicle/roadway warning and control systems	Japan
WG 16	: Communications	USA
WG 17	: Nomadic Devices in ITS Systems	Korea
WG 18	: Cooperative systems	Germany
WG 19	: Mobility Integration	Norway
WG 20	: Big Data and Artificial Intelli-gence supporting ITS	South Africa

Map/ Location

GDD TPEG

C-ITS

METR

Policy of GDD

UNECE

Convention on Road Signs and Signals, of 8 November 1968
(2006 consolidated version)

+

Official traffic signs of 22 countries

Annex I
(informative)

Categorization

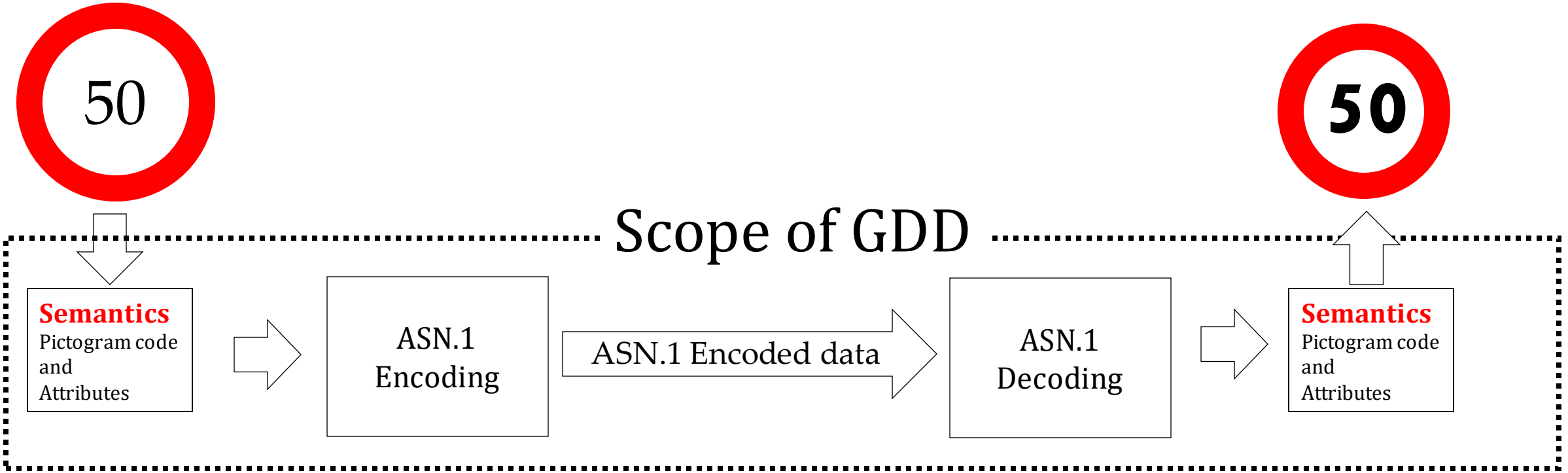
Numbering

Pictogram code list

Policy of GDD

This document specifies a graphic data dictionary (GDD) that has been developed with the intent of creating a common basis for transmitting encoded information for existing road traffic signs and pictograms.

The GDD supports intelligent transport system (ITS) application such as VMS or in-vehicle information, etc.



Design(size, color), installation and location of sign are out of scope

Brief history of GDD

1996?: The project was initiated.

2008: Publication of ISO/TS 14823

The project was adjourned.

2010: ITS directive was adopted.

The project resumed and worked with ISO/TC204/WG18(C-ITS).

2017:Publication of ISO 14823:2017

2018:Renewal project initiated.

UTC 12:00

30 online meetings were held during COVID-19

Next week: Publication of ISO 14823:2023 !

What is new in ISO 14823:2023

This first edition **cancels and replaces** the first edition (ISO 14823:2017), which has been technically revised. The main changes are as follows:

- the mechanism of "relative object identifier" has been specified;
- the inclusion of up to 4 pictograms in the graphic data dictionary (GDD) has been allowed;
- redundant pictogram codes have been deleted;
- new pictogram codes requested by certain countries have been added;
- new attributes to comply with new signs have been added;
- existing attributes have been changed to be more flexible and to be harmonized with existing International Standards.
- Some elements have been harmonized with DATEX II to be used in VMS signs
- SupplementaryPanel have been added to the main category(Request from C-roads)

Version 1 and version 2

GDD allows the selection of following two versions.

The first version (version 1) uses the sequence of the country code and pictogram code. Version 1 is expected to be used mainly when expanding or maintaining the existing C-ITS applications which presently use GDD (i.e. ISO 14823:2017).

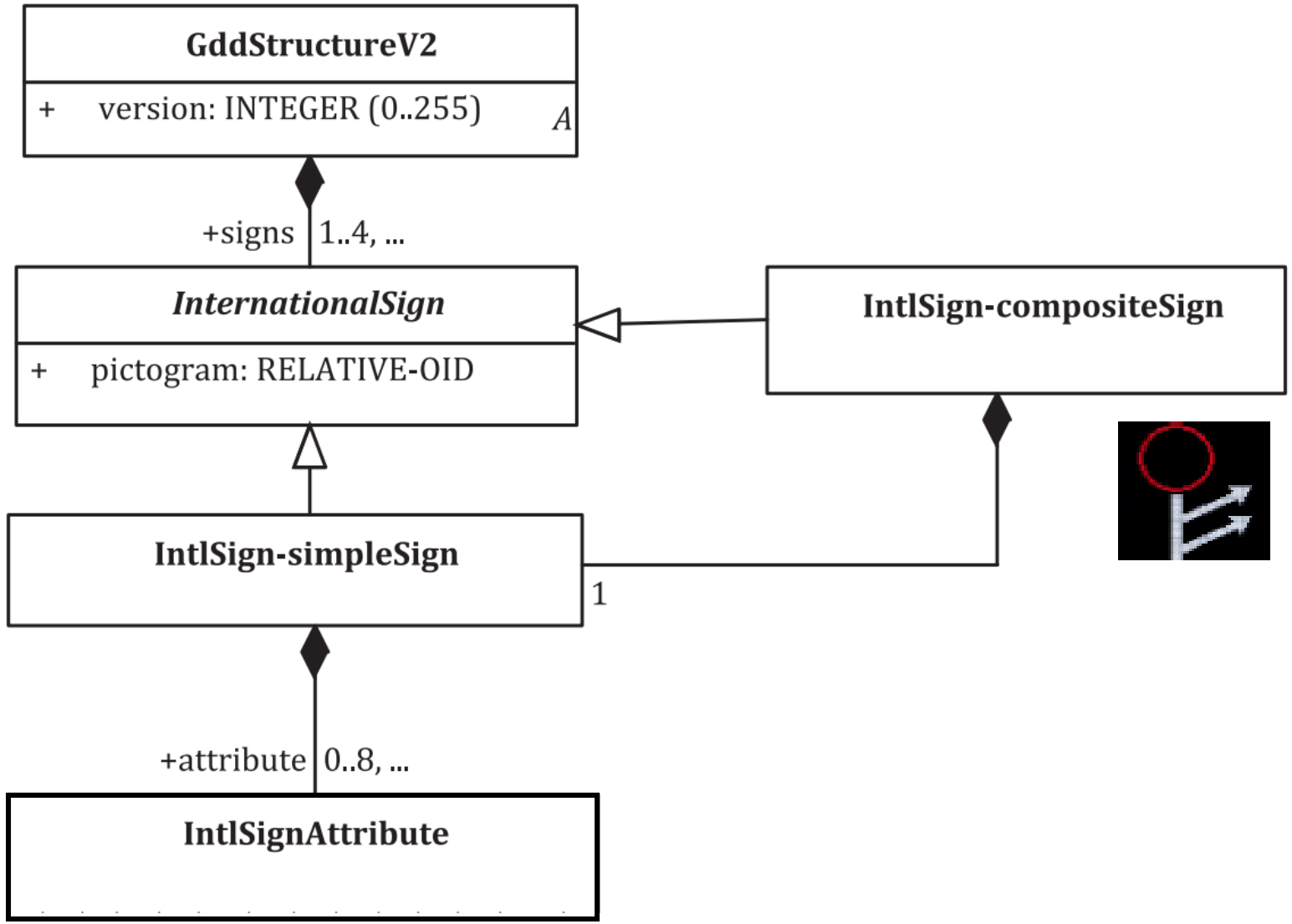
The second version (version 2) uses the ASN.1 relative object identifier. This mechanism has been introduced to cope with **a global identification of pictogram codes** and a flexibility when adding new pictogram codes. Version 2 allows to the inclusion of up to 4 pictograms in the GDD

Version 1 and version 2 are **maintained independ**ently by introducing the notion of "revision" in complement of the notion of "version".

It is up to **each application or service** to determine how to use these versions.

It is recommended to **avoid mixing versions** in the same application or service.

Main structure of GDD (version2)



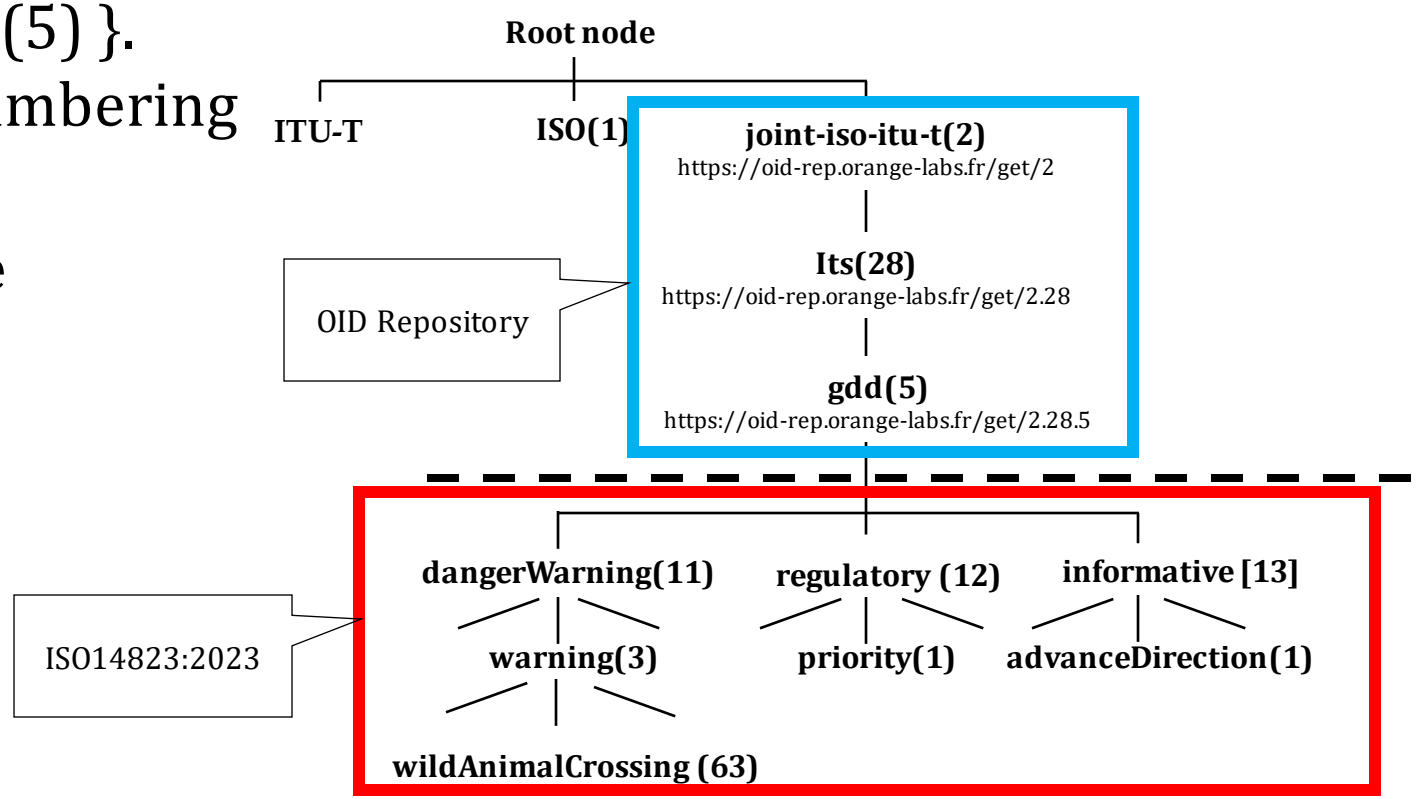
Relative object identifier

The international object identifier tree as defined in ISO/IEC 9834-1 is a tree whose root corresponds to ISO14823 and whose nodes correspond to Registration Authorities responsible for allocating arcs from a parent node.

The pictogram codes are registered on the international object identifier tree under the arc {joint-iso-itu-t(2) its(28) gdd(5) }.

The first three sub-arcs follow the numbering structure:

- the two-digit service category code
- the one-digit nature category code
- the two-digit serial number code



e.g. {joint(2) its(28) gdd(5) dangerWarning(11) warning3(3) wildAnimalCrossing (63)}

Structure of pictogram code

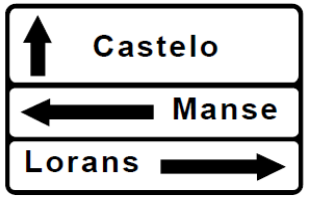
Pictogram code(Normative)				Relative object identifier
Service category code		Pictogram category code		
Main category	Sub-category	Nature category number	Serial number	
trafficSign(1)	dangerWarning(1)	warning(1 - 9)	xx	{11 1 xx} - {11 9 xx}
	regulatory (2)	priority(1 -3)	xx	{12 1 xx} - {12 3 xx}
		prohibitionOrRestriction (4 - 6)	xx	{12 4 xx} - {12 6 xx}
		mandatory (7 - 9)	xx	{12 7 xx} - {12 9 xx}
	informative [3]	advanceDirection(1 – 3)	xx	{13 1 xx} - {13 3 xx}
		instruction(4)	xx	{13 4 xx}
		notification(5)	xx	{13 5 xx}
		laneGuidance(6)	xx	{13 6 xx}
		alert(7)	xx	{13 7 xx}
		publicFacilitiesAndServices(8 -9)	xx	{13 8 xx} -{13 9 xx}

Structure of pictogram code

Pictogram code(Normative)				Relative object identifier
Service category code		Pictogram category code		
Main category	Sub-category	Nature category number	Serial number	
publicFacilities [2]	publicFacilities [1]	publicFacilitiesAndServices1[1-2]	xx	{21 1 xx} - {21 2 xx}
ambientConditions [3]	ambientConditions [1]	ambientConditions1 [1]	xx	{31 1 xx}
	roadConditions [1]	roadConditions [1]	xx	{31 1 xx}
supplementaryPanel [4]	supplementaryPanel [4]	supplementaryPanel [1]	xx	{41 1 xx}

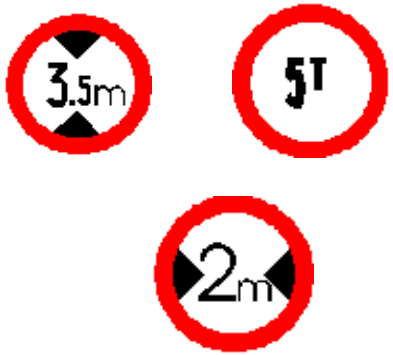
Attributes : Flexibility

speedLimits
50 → 60



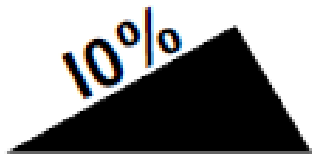
destinationInfo

applicablePeriod
exemptedPeriod
07:00 → 08:00



applicableVehicleDimensions

includedRoadUser
excludedRoadUser



rateOfIncline

Extensibility

Common meaning: “Warning: wild animal crossing”

{joint(2) its(28) gdd(5) dangerWarning(11) warning3(3) wildAnimalCrossing(63)}

Country-specific representation:

“Warning: wild animal crossing: deer”

{ joint(2) its(28) gdd(5) dangerwarning(11) warning 3(3) wildAnimalCrossing(63) unspecified(0) japan(392) deer(1) }

Regional-representation(local state, prefecture):

“Warning: wild animal crossing: especially crab”

{ joint(2) its(28) gdd(5) dangerwarning(11) warning 3(3) wildAnimalCrossing(63) unspecified(0) japan(392) unspecified(0) okinawa(47) crab(2)}

Examples of regulatory

Total:151 category codes in GDD

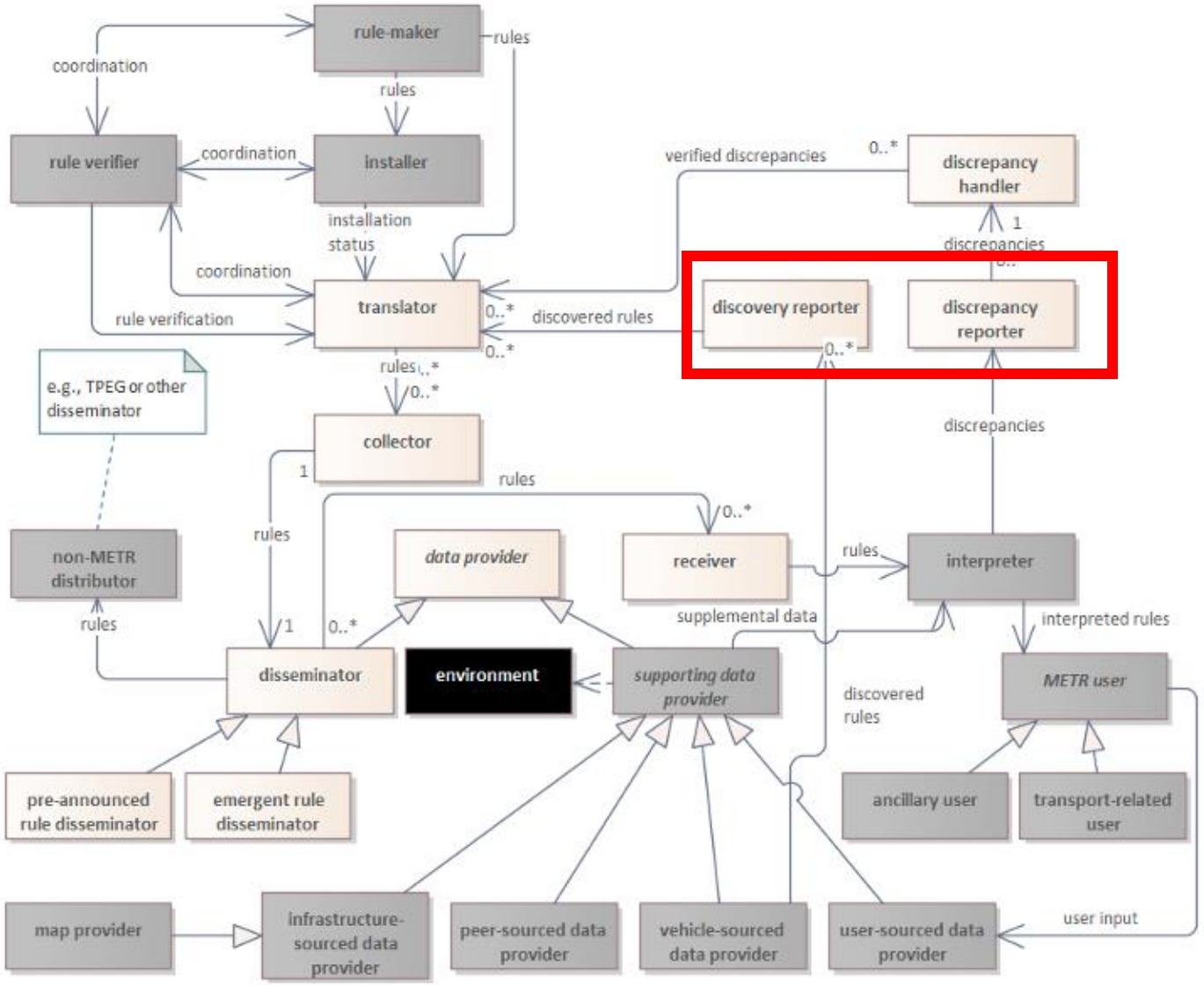
Nature category	Example sign	Category code name	Relative object identifier
priority		STOP	{12 1 12}
priority		Give way	{12 1 17}
priority		Priority road	{12 1 78}
prohibitionOrRestriction		No entry	{12 4 12}
prohibitionOrRestriction		No motor vehicles except solo motorcycles	{12 4 16}
prohibitionOrRestriction		No entry for goods vehicles	{12 4 21}
prohibitionOrRestriction		No entry for pedestrians	{12 4 23}
prohibitionOrRestriction		No entry for vehicles having an over-all width exceeding specified width	{12 4 99}

Examples of regulatory

Nature category	Example sign	Category code name	Relative object identifier
prohibitionOrRestriction		Driving of vehicles less than specified distance apart prohibited	{12 5 15}
prohibitionOrRestriction		Overtaking prohibited	{12 5 42}
prohibitionOrRestriction		Maximum speed limited to the figure indicated	{12 5 57}
prohibitionOrRestriction		Parking prohibited	{12 5 77}
prohibitionOrRestriction		Alternate parking (odd days)	{12 5 79}
prohibitionOrRestriction		Zone in which parking is prohibited at certain times	{12 5 96}
mandatory		Direction to be followed straight ahead	{12 7 13}
mandatory		Compulsory footpath	{12 7 53}
mandatory		Compulsory snow chains	{12 7 96}

Digitalization of traffic regulation

Source: Draft of ISO 24315-2
Management of electronic traffic regulations (METR) — Part 2: Operational Concept (ConOps)

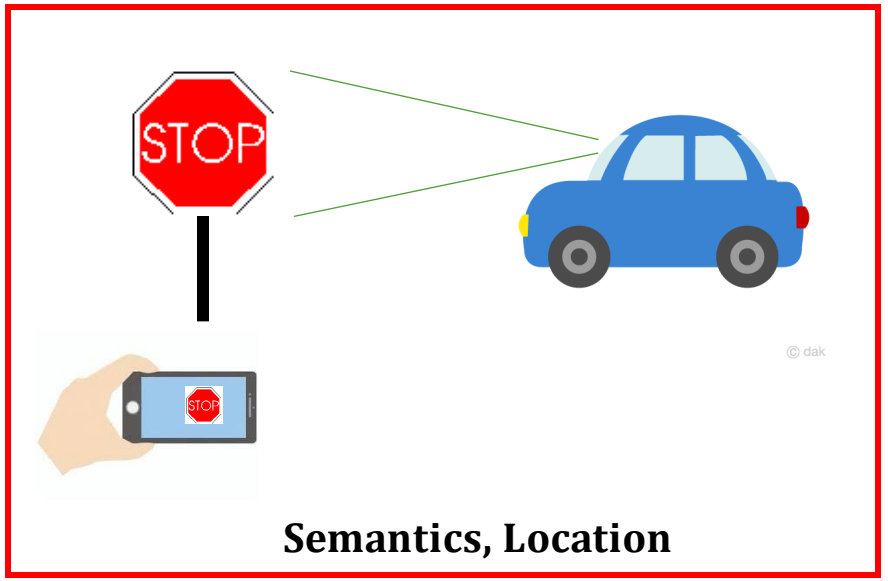


Issue 1: Efficiency

Paper to digital data

labour cost, typographical errors, etc

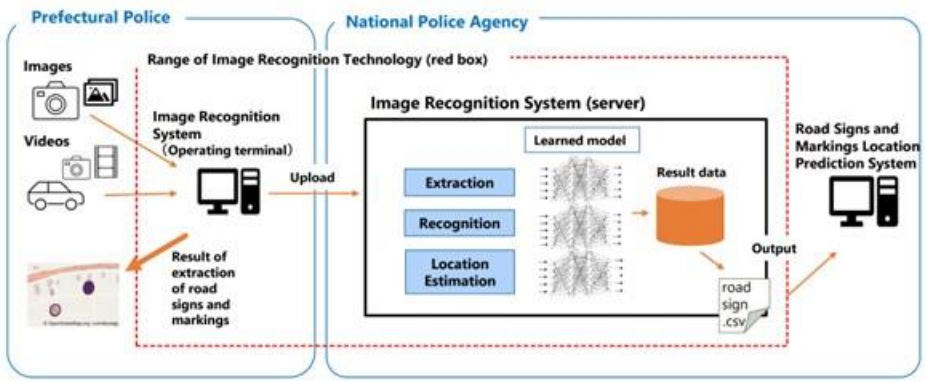
METR Discovery report



Occlusion

Deterioration

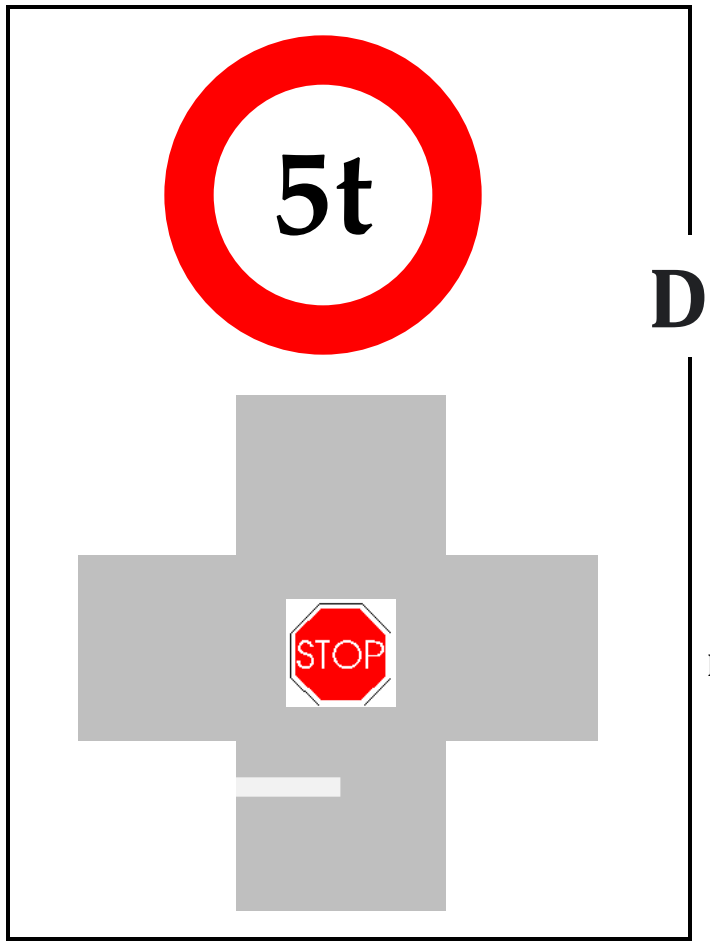
Distortion



Source: Cross-ministerial Strategic Innovation Promotion Program Automated Driving for Universal Service.

Issue 2: Accuracy

Digital information

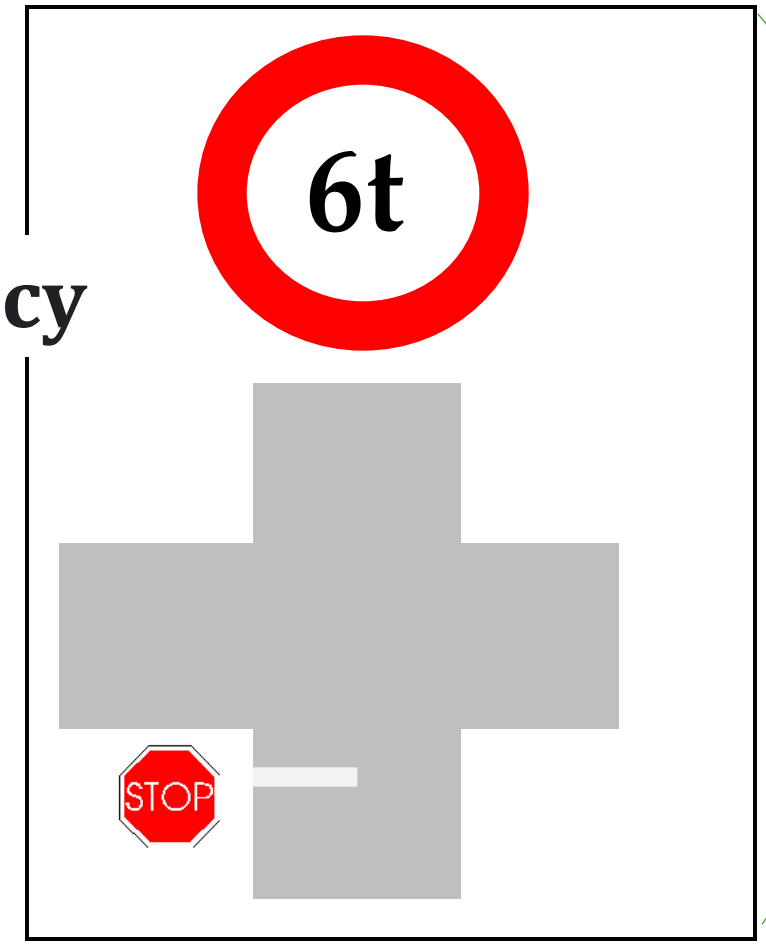


Semantics

Discrepancy

Location
HD map will be needed

Physical(Real)



METR Discrepancy report

Improving the accuracy of regulatory information is essential to ensure the safety of automated driving

GDD Next step

CEN/TS 17268
ITS spatial data - Data exchange on changes in road attributes

EN 16157-4
DATEXII Part 4:
Variable Message Sign (VMS) Publications

ISO/TS 19321:2020
Cooperative ITS
Dictionary of in-vehicle information (IVI) data structures

Validation, harmonization, feedback, etc

ISO 14823:2023
Intelligent transport systems
Graphic data dictionary

still need to grow

Collaboration with ISO METR/DATXII-11 UNECE WP.1

Dissemination to other regions


Thank you!