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Ersatz für
DIN CEN ISO/TS 19321:2021-02

**Intelligente Transportsysteme –
Kooperative ITS –
Verzeichnis von Datenstrukturen fahrzeuginterner Informationen (IVI)
(ISO/TS 19321:2024);
Englische Fassung CEN ISO/TS 19321:2024**

Intelligent transport systems –
Cooperative ITS –
Dictionary of in-vehicle information (IVI) data structures (ISO/TS 19321:2024);
English version CEN ISO/TS 19321:2024

Systèmes intelligents de transport –
Coopérative STI –
Dictionnaire de structures de données d'informations dans les véhicules (IVI)
(ISO/TS 19321:2024);
Version anglaise CEN ISO/TS 19321:2024

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DIN-Normenausschuss Auto und Mobilität (NAAutomobil)

Nationales Vorwort

Das Dokument CEN ISO/TS 19321:2024 wurde vom Technischen Komitee ISO/TC 204 „Intelligent transport systems“, in Zusammenarbeit mit dem Technischen Komitee CEN/TC 278 „Intelligente Verkehrssysteme“ ausgearbeitet, dessen Sekretariat von NEN (Niederlande) gehalten wird.

Das zuständige nationale Normungsgremium ist der Gemeinschaftsarbeitsausschuss NA 052-00-71 GA „Gemeinschaftsarbeitsausschuss NAAutomobil/DKE: Intelligente Verkehrssysteme“ im DIN-Normenausschuss Auto und Mobilität (NAAutomobil).

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- vorzugsweise als Datei per E-Mail an naautomobil@din.de in Form einer Tabelle. Die Vorlage dieser Tabelle kann im Internet unter www.din.de/stellungnahme abgerufen werden;
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Dieses Dokument unterstützt vorgeschriebene und empfehlende Straßenbeschilderungen, wie kontextuelle Geschwindigkeiten und Baustellenwarnungen. Fahrzeuginterne Informationen können mittels ITS-Station übertragen werden und korrespondieren mit festen oder variablen Straßenschildern oder Baustellen.

Dieses Dokument liefert außerdem einen Datencontainer fahrzeuginterner Informationselemente. Dieses Containerkonzept liefert eine Möglichkeit für eine ITS-Station relevante IVI zu steuern. Es liefert außerdem Details für die Anwendung von IVI. Die Datenelementbeschreibung umfasst Datensyntax und Semantiken, d.h. Definitionen des Datenformats und Inhalte, zusammen mit der Beschreibung zur Nutzung der Datenelemente.

Nutzer dieses Dokumentes sind vor allem Straßenbetreiber sowie Hersteller von entsprechenden Systemen.

Für die in diesem Dokument zitierten Dokumente wird im Folgenden auf die entsprechenden deutschen Dokumente hingewiesen:

ISO 3166-1	siehe	DIN EN ISO 3166-1
ISO 14816	siehe	DIN EN ISO 14816
ISO 14823-1	siehe	DIN EN ISO 14823-1
ISO 17419	siehe	DIN EN ISO 17419

ISO 17427-1	siehe	DIN EN ISO 17427-1
ISO 17573-3	siehe	DIN EN ISO 17573-3
ISO/TS 17425	siehe	DIN CEN ISO/TS 17425 (DIN SPEC 71996)
ISO/TS 17426	siehe	DIN CEN ISO/TS 17426 (DIN SPEC 71997)
ISO/TS 19091:2019	siehe	DIN CEN ISO/TS 19091 (DIN SPEC 72001):2019-11

Aktuelle Informationen zu diesem Dokument können über die Internetseiten von DIN (www.din.de) durch eine Suche nach der Dokumentennummer aufgerufen werden.

Änderungen

Gegenüber DIN CEN ISO/TS 19321:2021-02 wurden folgende Änderungen vorgenommen:

- a) zusätzliche Erklärungen wurden in 5.2.2 ergänzt;
- b) der Container zur Unterstützung der Infrastruktur und darauf bezogene Datenrahmen und -elemente wurden ergänzt;
- c) der Datenrahmen „SegmentExtended“ wurde hinzugefügt.

Frühere Ausgaben

DIN CEN ISO/TS 19321 (DIN SPEC 72002): 2015-08
DIN CEN ISO/TS 19321: 2021-02

Nationaler Anhang NA (informativ)

Begriffe

Die Benummerung der folgenden Begriffe und Abkürzungen ist identisch mit der Benummerung in der englischen Fassung.

Für die Anwendung dieses Dokuments gelten die folgenden Begriffe.

ISO und IEC stellen terminologische Datenbanken für die Verwendung in der Normung unter den folgenden Adressen bereit:

- IEC Electropedia: verfügbar unter <https://www.electropedia.org/>
- ISO Online Browsing Platform: verfügbar unter <https://www.iso.org/obp>

3.1

Anwendungsdateneinheit

en **application data unit**

Dateneinheit, die zwischen ITS-S Anwendungen ausgetauscht werden

3.2

Container

en **container**

Gruppe von *Datenrahmen* (3.4) und *Datenelementen* (3.3), die semantisch an einem Ort der *fahrzeuginternen Informationsstruktur* (3.8) zusammengehören

3.3

Datenelement

en **data element**

Datentyp, der einen einzigen Datenwert enthält

[QUELLE: ETSI/TS 102 894-2]

3.4

Datenrahmen

en **data frame**

Datentyp, der mehr als ein *Datenelement* (3.3) in einer festgelegten Reihenfolge enthält

[QUELLE: ETSI/TS 102 894-2]

3.5

Entdeckungsbereich

en **detection zone**

Teil eines Straßennetzwerkes, das von einem Fahrzeug in Annäherung eines *Bereiches von Bedeutung* (3.16) passiert wird

3.6

digitale Kartendatenbank

en **digital map database**

strukturierte Menge digitaler und alphanumerischer Daten, welche geographische Orte und Beziehungen von örtlichen Eigenschaften abbilden

[QUELLE: ISO 17572-1:2022, 3.9, modifiziert — Anmerkung 1 zum Begriff wurde gelöscht]

3.7**Fahrer-Bewusstseinsbereich**en **driver awareness zone**

Teile eines Straßennetzwerks, in dem eine Botschaft dargestellt wird, die den Fahrer über aufkommende Situationen informiert

3.8**fahrzeuginterne Information**en **in-vehicle information**

Informationen, die in fahrzeuginternen Informationsdatenstrukturen beinhaltet sind und von verschiedenen intelligenten Verkehrssystem-Diensten benötigt werden

3.9**fahrzeuginterne Darstellung der Beschilderung**en **in-vehicle signage**

intelligenter Verkehrssystem-Dienst, der sowohl statische als auch dynamische Straßen und Informationsschilder dem Fahrer liefert

3.10**Kreuzung**en **intersection**

Kreuzung und/oder Verbindung von zwei oder mehrerer *Straßen* (3.14)

[QUELLE: ISO 17572-1:2022, 3.16, modifiziert — Anmerkungen zum Begriff wurden gelöscht]

3.11**Verbindung**en **link**

direkte topographische Verbindung zwischen zwei Knoten, die einen eindeutigen Verbindungsbezeichner (3.12) in einer vorhandenen *digitalen Kartendatenbank* (3.6) hat

[QUELLE: ISO 17572-1:2022, 3.19, modifiziert — Zweiter Begriff „Grenze“, Domain „<ITS>“ und Anmerkung 1 zum Begriff wurden gelöscht. Die Formulierung „die einen eindeutigen Verbindungsbezeichner hat“ wurde an das Ende der Definition verschoben.]

3.12**Verbindungs-ID****Verbindungsbezeichner**en **link ID, link identifier**

[lokal, global] Bezeichner, der einer *Verbindung* (3.11) eindeutig zugeordnet ist

[QUELLE: ISO 17572-1:2022, 3.20, modifiziert — Der bevorzugte Begriff und der zweite Begriff wurden vertauscht. Anmerkung 1 zum Begriff wurde gelöscht]

3.13**minimales Verbreitungsgebiet**en **minimal dissemination area**

Teile eines Straßennetzwerks, in dem die Botschaft für die *fahrzeuginterne Darstellung der Beschilderung* (3.9) von potentiellen Zielfahrzeugen empfangen werden können

3.14**Straße**en **road**

Teil eines Straßennetzwerkes, welches im Allgemeinen als Ganzes betrachtet wird und durch eine einzige Bezeichnung, wie z. B. einen Straßennamen oder Straßenummer durchgehend adressiert werden kann

[QUELLE: ISO 17572-1:2022, 3.36, modifiziert — Anmerkungen 1 und 2 zum Begriff wurden gelöscht]

3.15

Straßensegment

en **road segment**

Teil einer *Straße* (3.14), welches seinen Anfang und sein Ende entlang dieser Straße hat

[QUELLE: ISO 17572-1:2022, 3.40, modifiziert — Anmerkung zum Begriff wurde gelöscht]

3.16

Bereich von Bedeutung

en **relevance zone**

Teile eines Straßennetzwerks, in dem die Information in einem Anwendungscontainer gültig ist

3.17

Baustellenwarnung

en **road works warning**

Warnungen an Straßennutzer, Baustellen und/oder Straßenreparaturbereiche zu umfahren

3.18

variables Anzeigeschild

en **variable message sign**

elektronisches Schild, auf dem Text, Symbole, oder eine Kombination aus beidem, dargestellt wird

Nationaler Anhang NB (informativ)

Abkürzungen

AVC	Automatischer Fahrzeugcontainer (en: Automated Vehicle Container)
ASN.1	Abstrakte Syntax Notation Eins (en: Abstract Syntax Notation One)
BLOB	großes binäres Datenobjekt (en: data binary large object)
C-ITS	kooperative Intelligente Verkehrssysteme (en: cooperative intelligent transport systems)
DE	Datenelement (en: data element)
DENM	dezentrale Ereignisnachricht der Umwelt (en: decentralized environmental notification message)
DF	Datenrahmen (en: data frame)
GIC	allgemeiner IVI-Container (en: General IVI Container)
GLC	geographischer Positionscontainer (en: Geographic Location Container)
ID	Bezeichnung (en: identification)
ISC	Container zur Unterstützung der Infrastruktur (en: Infrastructure Support Container)
ITS	Intelligente Verkehrssysteme (en: Intelligent Transport Systems)
ITS-S	ITS-Station (en: ITS station)
IVI	fahrzeuginterne Information (en: in-vehicle information)
IVS	fahrzeuginterne Darstellung der Beschilderung (en: in-vehicle signage)
LAC	Layout Container
MAP	Kartendatenbotschaft (en: map data message)
MLC	Kartenpositionscontainer (en: map location container)
PDU	Protokolldateneinheit (en: protocol data unit)
RCC	Straßenkonfigurationscontainer (en: road configuration container)
RSC	Straßenbelagscontainer (en: road surface container)
RWW	Warnung vor Straßenarbeiten (en: road works warning)
TC	Textcontainer

Nationaler Anhang NC (informativ)

Literaturhinweise

DIN CEN ISO/TS 17425 (DIN SPEC 71996), *Intelligente Transportsysteme — Kooperative Systeme — Datenaustausch Spezifikation für die fahrzeuginterne Darstellung von externen Straßen- und verkehrsrelevanten Daten*

DIN CEN ISO/TS 17426 (DIN SPEC 71997), *Intelligente Transportsysteme (ITS) — Kooperative Systeme — Kontextuelle Geschwindigkeiten*

DIN CEN ISO/TS 19091 (DIN SPEC 72001):2019-11, *Intelligente Transportsysteme — Kooperative ITS — Nutzung von V2I und I2V-Kommunikation für Anwendungen bezogen auf Signalanlagen an Kreuzungen (ISO/TS 19091:2019); Englische Fassung CEN ISO/TS 19091:2019*

DIN EN ISO 3166-1, *Codes für die Namen von Ländern und deren Untereinheiten — Teil 1: Codes für Ländernamen*

DIN EN ISO 14816, *Telematik für den Straßenverkehr und Transport — Automatische Identifizierung von Fahrzeugen und Geräten — Nummerierung und Datenstrukturen*

DIN EN ISO 14823-1, *Intelligente Verkehrssysteme — Graphisches Verzeichnis — Teil 1: Spezifikation*

DIN EN ISO 17419, *Intelligente Verkehrssysteme — Kooperative Systeme — Global eindeutige Identifikation*

DIN EN ISO 17427-1, *Intelligente Transportsysteme — Kooperative IST — Teil 1: Rollen und Verantwortlichkeiten im Zusammenhang mit kooperativer(n) ITS-Architektur(en)*

DIN EN ISO 17573-3, *Elektronische Gebührenerhebung — Systemarchitektur für fahrzeugbezogene Maut — Teil 3: Datendefinition*

English Version

Intelligent transport systems - Cooperative ITS -
Dictionary of in-vehicle information (IVI) data structures
(ISO/TS 19321:2024)

Systèmes intelligents de transport - Coopérative STI -
Dictionnaire de structures de données d'informations
dans les véhicules (IVI) (ISO/TS 19321:2024)

Intelligente Transportsysteme - Kooperative ITS -
Verzeichnis von Datenstrukturen fahrzeuginterner
Informationen (IVI) (ISO/TS 19321:2024)

This Technical Specification (CEN/TS) was approved by CEN on 25 May 2024 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

This document (CEN ISO/TS 19321:2024) has been prepared by Technical Committee ISO/TC 204 "Intelligent transport systems" in collaboration with Technical Committee CEN/TC 278 "Intelligent transport systems" the secretariat of which is held by NEN.

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This document supersedes CEN ISO/TS 19321:2020.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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Endorsement notice

The text of ISO/TS 19321:2024 has been approved by CEN as CEN ISO/TS 19321:2024 without any modification.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 278, *Intelligent transport systems*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO/TS 19321:2020), which has been technically revised.

The main changes are as follows:

- additional explanations have been added in 5.2.2;
- the Infrastructure Support Container and related data frames and data elements have been added;
- the data frame `SegmentExtended` has been added.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

In a cooperative intelligent transport system (C-ITS), presenting information related to the traffic situation or regulation of a road to the driver of a vehicle is an important component of road operations. The road operators are responsible for road setup, operation, signage and maintenance for traffic management and road safety, and in some countries, also for the enforcement of road laws. For road operators, efficient transport of vehicles on roadways ensures a safe and predictable trip for all road users. Road operators, together with equipment manufacturers, whether of vehicles or of roadside equipment, contribute to how road information is properly presented to drivers.

So far, one defined C-ITS method for notifying road users of road and/or traffic situations and events is by transmission of messages such as Cooperative Awareness Messages (CAM), Decentralized Environment Notification Messages (DENM) or Basic Safety Messages (BSM).

This document supports mandatory and advisory road signage such as contextual speeds and road works warnings. In-vehicle information can be sent by an ITS station (ITS-S) and either corresponds to physical road signs such as static or variable road signs or does not correspond to physical road signs (a virtual sign), or corresponds to road works. In-vehicle information (IVI) does not include identification of road events as already provided by DENM.

This document provides a toolbox of information elements for IVI. It can be used for fulfilling the requirements of the service provider considering the needs of the receiving ITS-S. The container concept provides a way for an ITS-S to manage the relevant IVI information, determine where the IVI is relevant, and to provide details for the application of the IVI. The description of data elements encompasses the data syntax and semantics, i.e. a definition of data format and content, together with a description of how to use those data elements.

This document is of an enabling nature. It does not specify which information is necessary for a certain service, but it supports those IVI information elements that it can be necessary to transmit to a receiving ITS-S to carry out a certain service. Usage of the IVI information elements depends on the specific context and application of IVI for a specific service. Usage is established as mandatory or optional only for messaging purposes, not for application purposes. In order to fulfil the requirements of a specific service, the IVI structure can be appropriately profiled.

This document refers to ISO 14823-1 as one system of standardized codes for existing road signs codes.

NOTE ISO 14823-1 does not contain codes for specific national or regional signs that are not commonly used, and it does not represent a catalogue of road sign pictograms for all applicable nations.

Intelligent transport systems — Cooperative ITS — Dictionary of in-vehicle information (IVI) data structures

1 Scope

This document specifies the in-vehicle information (IVI) data structures that are required by different intelligent transport system (ITS) services for exchanging information between ITS stations (ITS-S). A general, extensible data structure is specified, which is split into structures called containers to accommodate current-day information. Transmitted information includes IVI such as contextual speed, road works warnings, vehicle restrictions, lane restrictions, road hazard warnings, location-based services and re-routing. The information in the containers is organized in sub-structures called data frames and data elements, which are described in terms of their content and syntax.

The data structures are specified as communications-agnostic. This document does not provide the communication protocols. This document provides scenarios for usage of the data structure, e.g. in case of real time, short-range communications.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 639:2023, *Code for individual languages and language groups*

ISO 14823-1, *Intelligent transport systems — Graphic data dictionary — Part 1: Specification*

ISO 17573-3, *Electronic fee collection — System architecture for vehicle-related tolling — Part 3: Data dictionary*

ETSI/TS 102 894-2, *Intelligent Transport Systems (ITS); Users and applications requirements; Part 2: Applications and facilities layer common data dictionary; Release 2*

SAE J2540/2, *International Traveler Information Systems (ITIS) Phrase Lists*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

application data unit

data unit exchanged between ITS station application instances

3.2

container

group of *data frames* (3.4) and *data elements* (3.3) semantically belonging together in one place in the *in-vehicle information* (3.8) structure

3.3

data element

data type that contains one single datum

[SOURCE: ETSI/TS 102 894-2]

3.4

data frame

data type that contains more than one *data element* (3.3) in a predefined order

[SOURCE: ETSI/TS 102 894-2]

3.5

detection zone

part of the road network that is passed by a vehicle in approach of the *relevance zone* (3.16)

3.6

digital map database

structured set of digital and alphanumeric data portraying geographic locations and relationships of spatial features

[SOURCE: ISO 17572-1:2022, 3.9, modified — Note 1 to entry has been removed.]

3.7

driver awareness zone

parts of the road network in which a message is presented to inform drivers about upcoming situations

3.8

in-vehicle information

information contained in the in-vehicle information data structure that is required by different intelligent transport system services

3.9

in-vehicle signage

intelligent transport system service that provides static, as well as dynamic, road sign and message sign information to drivers

3.10

intersection

crossing and/or connection of two or more *roads* (3.14)

[SOURCE: ISO 17572-1:2022, 3.16, modified — Notes to entry have been removed.]

3.11

link

direct topological connection between two nodes in a given *digital map database* (3.6), that has a unique *link ID* (3.12)

[SOURCE: ISO 17572-1:2022, 3.19, modified — Admitted term “edge”, domain “<ITS> and Note 1 to entry have been removed. The phrase “that has a unique link ID” has been moved to the end of the definition.]

3.12

link ID

link identifier

[locally, globally] identifier that is uniquely assigned to a *link* (3.11)

[SOURCE: ISO 17572-1:2022, 3.20, modified — Preferred term and admitted term have been exchanged. Note 1 to entry has been removed.]

3.13

minimum dissemination area

parts of the road network where the *in-vehicle signage* (3.9) message can be received by the potentially targeted vehicles

3.14

road

part of the road network which is generally considered as a whole and which can be addressed by a single identification like a road name or road number throughout

[SOURCE: ISO 17572-1:2022, 3.36, modified — Notes 1 and 2 to entry have been removed.]

3.15

road segment

part of a *road* (3.14), having its start and end along that road

[SOURCE: ISO 17572-1:2022, 3.40, modified — Note to entry has been removed.]

3.16

relevance zone

parts of the road network for which the information in an Application Container is valid

3.17

road works warning

alert for routing road users around road construction and/or road repair

3.18

variable message sign

electronic sign board presenting text, symbols, or a combination of both

4 Abbreviated terms

AVC	Automated Vehicle Container
ASN.1	Abstract Syntax Notation One
BLOB	data binary large object
C-ITS	cooperative intelligent transport systems
DE	data element
DENM	decentralized environmental notification message
DF	data frame
GIC	General IVI Container
GLC	Geographic Location Container
ID	identification
ISC	Infrastructure Support Container
ITS	intelligent transport systems
ITS-S	ITS station
IVI	in-vehicle information
IVS	in-vehicle signage

LAC	Layout Container
MAP	map data message
MLC	Map Location Container
PDU	protocol data unit
RCC	Road Configuration Container
RSC	Road Surface Container
RWW	road works warning
TC	Text Container

5 In-vehicle information data structure

5.1 Structural model

5.1.1 General model

The in-vehicle information (IVI) structure represents the application data unit to be transmitted and received by an ITS station (ITS-S). The IVI structure shall conform to the syntax defined in Annex A as the data type `IviStructure`. This means that it shall be composed of Containers defined in this document and it shall follow the form depicted in Figure 1.

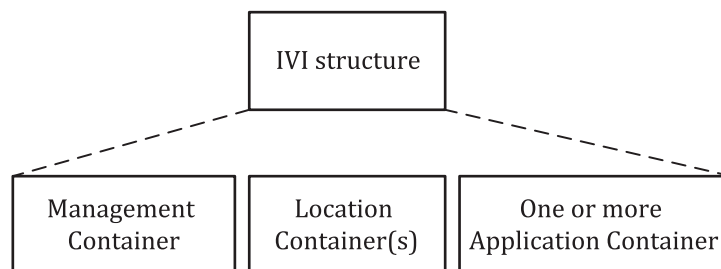


Figure 1 — IVI structure

The IVI structure is extensible and other Containers can be added in the future.

The IVI structure is intended to be encapsulated in a message with the appropriate ITS common header, for example, the `ItsPduHeader` of ETSI/TS 102 894-2. The header structure and contents are out of the scope of this document and are specified in ETSI/TS 103 301, for example.

The IVI structure shall contain a Management Container. The information in the Management Container is applicable to the entire IVI structure. The presence of this Container is mandatory and it provides a receiving ITS-S with enough information to handle the IVI structure and decide on its further processing.

The IVI structure can contain one or more Location Container(s). The Location Container describes the essential information for applications in the receiving ITS-S. Applications can use the location information to understand how to apply information provided by Application Containers. Location Containers can carry information relevant for different Application Containers or carry the same content but expressed in different forms (see 5.2). This enables a receiving ITS-S to choose the appropriate location referencing system that the ITS-S supports.

The IVI Structure can contain one or more Application Container(s). The Application Container provides IVI information for use by an application. Application information is self-contained and refers to the location information for its spatial validity. Application information of the same type shall not refer to overlapping

relevance zones. Each Application Container refers to zones defined in the Location Container identified by their identifications (IDs) for the following usage:

- a) detection zone,
- b) relevance zone, and
- c) driver awareness zone.

An Application Container may optionally provide information about the minimum awareness time, that is, the minimum time for which the IVI should be available before the vehicle enters the relevance zone. This `MinimumAwarenessTime` information can be used by the receiving ITS-S to determine the appropriate driver awareness zone.

5.1.2 Conceptual zones

When an ITS-S receives the IVI structure, the ITS-S can interpret the application information in the context of the appropriate location information. Principally, there are four conceptual zones:

- a) minimum dissemination area;
- b) detection zone;
- c) driver awareness zone;
- d) relevance zone.

The Minimum Dissemination Area refers to the minimum area where the IVI structure is disseminated by an ITS-S based on application requirements. The extension of the Minimum Dissemination Area is defined in the relevant application standards or specification(s) and is therefore out of scope of this document.

In some situations, a vehicle ITS-S needs to be able to detect whether or not it is approaching a relevance zone at a certain minimum time before it enters the relevance zone. This is, for example, to guarantee that the relevance zone is detected immediately at its entry (e.g. in case of a very small relevance zone) or to guarantee that the relevance zone is correctly detected (in case it is near to other road segments, e.g. parallel or on different altitude level). Therefore, a detection zone occurs in the approach to a relevance zone. In this way, if a receiving ITS-S moves through the detection zone, it can detect that it is approaching a relevance zone.

The IVI can be used to inform drivers about upcoming situations in a relevance zone. The driver awareness zone can be determined by the receiving ITS-S because the driver awareness zone can be based on the dynamic status of the receiving ITS-S and can depend on the presence of other higher priority information to be presented. Alternatively, the driver awareness zone can be provided by the sending ITS-S for usage by the receiving ITS-S.

The relevance zone covers the area where the information in the Application Container is applicable.

Examples of the detection and relevance zones for the spatial validity of the IVI Structure are illustrated in Figure 2. In traffic direction East (right-hand traffic), i.e. under the green middle barrier, the figure shows a detection zone and a relevance zone for a speed limit (80 km/h) under slippery road conditions, for the entire carriageway. The driver awareness zone can be physically overlapping with the detection zone (but is not necessarily equal in size). In traffic direction West, Figure 2 shows lane-specific detection and relevance zones for speed limits (80 km/h and 100 km/h) and lane closure (red X).