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BSI Standards Publication

# Intelligent transport systems — Cooperative systems — Contextual speeds (ISO/TS 17426:2016)

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# Intelligent transport systems - Cooperative systems - Contextual speeds (ISO/TS 17426:2016)

Systèmes intelligents de transport - Systèmes coopératifs - Vitesses contextuelles (ISO/TS 17426:2016)

Intelligente Transportsysteme (ITS) - Kooperative Systeme - Kontextuelle Geschwindigkeiten (ISO/TS 17426:2016)

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## European foreword

This document (CEN ISO/TS 17426:2016) has been prepared by Technical Committee ISO/TC 204 "Intelligent transport systems" in collaboration with Technical Committee CEN/TC 278 “Road transport and traffic telematics” the secretariat of which is held by NEN.

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### Endorsement notice

The text of ISO/TS 17426:2016 has been approved by CEN as CEN ISO/TS 17426:2016 without any modification.

# Contents

Page

**Foreword** ..... **iv**
**Introduction** ..... **v**
**1 Scope** ..... **1**
**2 Conformance** ..... **2**
**3 Normative references** ..... **2**
**4 Terms and definitions** ..... **2**
**5 Symbols and abbreviated terms** ..... **3**
**6 Contextual Speeds: Architecture** ..... **4**
**7 Contextual speeds: Use cases** ..... **5**
7.1 General ..... 5
7.2 Use case 1: Provision of mandatory speed limit information into vehicle – for driver awareness purposes ..... 6
7.3 Use case 2 - Provision of advisory speed information into vehicle – for driver awareness purposes ..... 10
**8 Contextual speeds: Roles and responsibilities** ..... **14**
8.1 Scenarios for contextual speeds ..... 14
8.2 System operation roles in scenario 7 ..... 15
8.3 Possible actors in the Contextual Speed Information Service ..... 15
**9 Contextual speeds: Characteristics** ..... **16**
**10 Contextual speeds: General service requirements** ..... **16**
**11 Contextual speeds: Communication requirements** ..... **17**
11.1 General ..... 17
11.2 General communication requirements ..... 18
11.2.1 General ..... 18
11.2.2 ITS-S application processes of the Contextual Speed Application ..... 18
11.2.3 Flow types of the Contextual Speed Application ..... 18
11.2.4 Flow Type 1 of the Contextual Speed Application ..... 19
11.2.5 Flow Type 2 of the Contextual Speed Application ..... 19
11.2.6 Flow Type 3 of the Contextual Speed Application ..... 20
11.2.7 Sources and Sink ITS stations of the Flow Types ..... 21
11.2.8 Other general communication requirements ..... 21
11.3 Application specific data element requirements ..... 21
**Annex A** (normative) **Contextual speeds: IVI Profile (Definition of CSM)** ..... **23**
**Bibliography** ..... **29**

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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 documents 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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The committee responsible for this document is ISO/TC 204, *Intelligent transport systems*.


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# Introduction

Traditional fixed speed limits have, in general, been set as the maximum mandatory speed that a vehicle or a category of vehicles can travel at. Such speed limits are defined by the competent authority. Some national authorities moderate mandatory speed limits when road or environment conditions change. When road or environmental conditions change, the decision as to the most appropriate speed a driver or rider should travel is, in general, left up to the individual vehicle driver. With the advent of Cooperative Intelligent Transport Systems (ITS), it has become possible to provide better guidance to vehicle drivers on what speed they should travel at when road, traffic, or environmental conditions are less than ideal. This function is known as Contextual Speed Information Service.

Delivering Contextual Speed information to road users can improve road safety, support traffic management, and reduce greenhouse gas emissions.

In a Cooperative ITS environment, Contextual Speeds are context-dependent (e.g. changed due to weather conditions), as well as time-specific and road section-specific speeds. Subject to local regulations, they can be mandatory speed limits or advisory speeds.

All Cooperative ITS Services follow the same abstract structure of detection (of an event) including pre-processing of the detected content, execution of the Service algorithm (processing of detected content) and presentation or utilization of the Service result. Figure 1 summarizes and further illustrates this process.

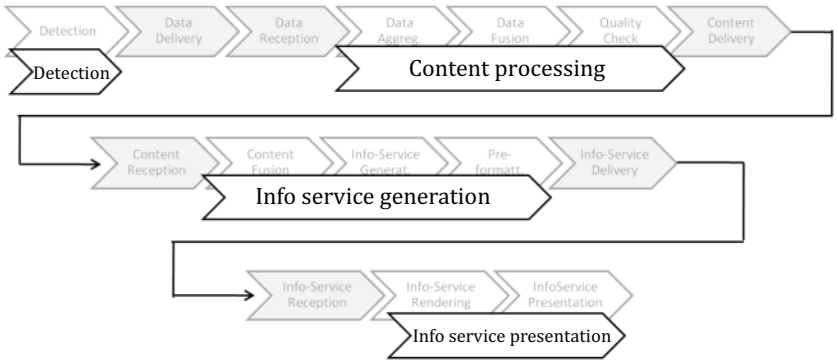



**Figure 1 — General Cooperative ITS Service process (from ISO/TS 17427:2014, Figure A.6)**

Based on this abstract process description, for any Cooperative ITS Service, a similar process description applies to the Contextual Speed Information Service. Every single step in the process chain can be executed by different actors or stakeholders. Execution of process elements by different stakeholders results in a large number of possible potential scenarios. Additionally, the involvement of stakeholders can be distinguished by spatial geography.

Assuming that there are two main stakeholder groups in Cooperative ITS, namely the Infrastructure and the Vehicle, multiple combinations are possible, as every step can be delivered by a different stakeholder group (see Figure 2).

| | CONTENT | SERVICE | PRESENTATION | | CONTENT | SERVICE | PRESENTATION |
|---|---|---|---|---|---|---|---|
| 1 | Vehicle | Vehicle | Vehicle | 5 | Infrastructure | Vehicle | Vehicle |
| 2 | Vehicle | Vehicle | Infrastructure | 6 | Infrastructure | Vehicle | Infrastructure |
| 3 | Vehicle | Infrastructure | Vehicle | 7 | Infrastructure | Infrastructure | Vehicle |
| 4 | Vehicle | Infrastructure | Infrastructure | 8 | Infrastructure | Infrastructure | Infrastructure |

**Figure 2 — Possible scenarios — Simple**

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The scenarios address different combinations; the basis for every scenario is one specific combination. This Technical Specification addresses the scenario where detection, content pre-processing, and information service generation is the responsibility of the infrastructure stakeholder. The direct presentation of Contextual Speed information on the driver interface of the vehicle is out of the scope of this Technical Specification. This Technical Specification therefore addresses only part of the whole process (Scenario 7).

Within the context of Scenario 7, this Technical Specification addresses Use Case 1 “Provision of mandatory speed limit information into vehicle – for driver awareness purposes” and Use Case 2 “Provision of advisory speed information into vehicle – for driver awareness purposes”.

This does not preclude other Use Cases or deployment models in later Technical Specification(s).


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# Intelligent transport systems — Cooperative systems — Contextual speeds

## 1 Scope

This Technical Specification

— specifies the Contextual Speed Information Service, namely the general requirements regarding the provision of the Contextual Speed Information Service, the data flow supporting the service, and the presentation of the service result,

— specifies the requirements to be fulfilled by the Contextual Speed Information Service,

— specifies the ITS Station (ITS-S) application processes of the vehicle ITS station, roadside ITS station, central ITS station, and personal ITS station that are required to instantiate the Contextual Speed Information Service,

— specifies sets of communication requirements and objectives (profiles) using the methods defined in ISO 17423 to select the level of performance (best effort or real-time, etc.), confidence and security (authentication, encryption, etc.) for each Contextual Speed Information Service communication flow between ITS stations,

— selects relevant functions and procedures provided by the ITS station facilities layer (see ISO 17429), and

— specifies messages, messages sets structure, content, and syntax to be used by the Contextual Speed Information Service.

This Technical Specification considers the scenario for the transmission of Contextual Speed information from the infrastructure/roadside to the vehicle, for onward presentation to the vehicle's driver. This scenario foresees that the calculation of Contextual Speed information is performed on the Infrastructure side, not within the vehicle.

Mandatory speed limits or advisory speed recommendations are output of the Contextual Speed Information Service which (in the scenario considered in this Technical Specification) is run by the Road Operator in its Traffic Control Centre or comparable infrastructure (e.g. Roadside ITS Station). To transfer this information to the vehicle (and therefore the driver) over the air (wireless communication), defined messages are required. These messages are specified in this Technical Specification.

When Contextual Speed information arrives in the vehicle, further pre-processing might be necessary before the Contextual Speed information, and, if available, additional explanations on speed limits or recommendations, can be presented to the driver. This Technical Specification specifies the requirements that need to be fulfilled when processing the messages. It does not specify how the vehicle handles the incoming messages.

The production of information supporting this application, its qualification and its relevance are out of the scope of this Technical Specification.

This Technical Specification addresses Use Case 1 "Provision of mandatory speed limit information into vehicle – for driver awareness purposes" and Use Case 2 "Provision of advisory speed information into vehicle – for driver awareness purposes".

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