TECHNICAL SPECIFICATION SPÉCIFICATION TECHNIQUE TECHNISCHE SPEZIFIKATION

CEN ISO/TS 19091

March 2017

ICS 03.220.20; 35.240.60

English Version

Intelligent transport systems - Cooperative ITS - Using V2I and I2V communications for applications related to signalized intersections (ISO/TS 19091:2017)

Systèmes intelligents de transport - Coopérative ITS - Utilisation de communications V2I et I2V pour des applications relatives aux intersections signalées (ISO/TS 19091:2017)

Intelligente Transportsysteme - Kooperative ITS -Nutzung von V2I und I2V-Kommunikation für Anwendungen bezogen auf Signalanlagen an Kreuzungen (ISO/TS 19091:2017)

This Technical Specification (CEN/TS) was approved by CEN on 3 March 2017 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.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents	Page
European foreword	3

European foreword

This document (CEN ISO/TS 19091:2017) 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO/TS 19091:2017 has been approved by CEN as CEN ISO/TS 19091:2017 without any modification.

TECHNICAL SPECIFICATION

ISO/TS 19091

First edition 2017-03

Intelligent transport systems — Cooperative ITS — Using V2I and I2V communications for applications related to signalized intersections

Systèmes intelligents de transport — Coopérative ITS — Utilisation de communications V2I et I2V pour des applications relatives aux intersections signalées





COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office Ch. de Blandonnet 8 • CP 401 CH-1214 Vernier, Geneva, Switzerland Tel. +41 22 749 01 11 Fax +41 22 749 09 47 copyright@iso.org www.iso.org

Contents				
Fore	word		vi	
Intro	oductio	on	vii	
1	Scon	oe	1	
2	-	native references		
3		ns and definitions		
4		reviated terms		
5		eral description (informative)		
	5.1	Overview		
	5.2	Functional model		
		5.2.1 Description		
		5.2.2 Architecture		
		5.2.3 Message interactions		
	5.3	5.2.4 Common operational assumptions Safety use cases		
	5.5	5.3.1 Intent		
		5.3.2 Additional assumptions		
		5.3.3 Architecture implications		
	5.4	Mobility/sustainability use cases		
		5.4.1 Intent		
		5.4.2 Additional assumptions		
		5.4.3 Architecture implications	18	
	5.5	Priority/pre-emption use cases	18	
		5.5.1 Intent		
		5.5.2 Additional assumptions		
		5.5.3 Architecture implications		
		5.5.4 Public transport signal priority application		
		5.5.5 Freight vehicle signal priority application		
		5.5.6 Emergency (public safety) vehicle pre-emption application		
6		ction description (informative)		
	6.1	Public safety vehicle		
		6.1.1 Broadcast public safety vehicle information		
	6.0	6.1.2 Broadcast emergency response indication		
	6.2	Signal pre-emption		
		6.2.1 Signal pre-empt request (normal power)		
		6.2.2 Signal pre-empt request (high power)		
		6.2.4 Request signal pre-empt — Intersection identifier		
		6.2.5 Request signal pre-empt — Intersection identifier		
		6.2.6 Request signal pre-empt — Egress lane		
		6.2.7 Request signal pre-empt — Vehicle class	26	
		6.2.8 Request signal pre-empt — Time of service	26	
		6.2.9 Request signal pre-empt — Vehicle identity	26	
		6.2.10 Request signal pre-empt — Vehicle location and speed	26	
		6.2.11 Request signal pre-empt — Cancellation	26	
		6.2.12 Request signal pre-empt — Transaction identifier	27	
		6.2.13 Request signal pre-empt — Duration	27	
	6.3	Public transport and commercial vehicle	27	
		6.3.1 Broadcast priority requesting vehicle information	27	
	6.4	Signal priority requirements		
		6.4.1 Signal priority request		
		6.4.2 Request signal priority — Message identifier		
		6.4.3 Request signal priority — Intersection identifier	28	

	6.4.4	Request signal priority — Approach lane	28
	6.4.5	Request signal priority — Egress lane	28
	6.4.6	Request signal priority — Vehicle class	28
	6.4.7	Request signal priority — Time of service	28
	6.4.8	Request signal priority — Vehicle identity	
	6.4.9	Request signal priority — Vehicle location and speed	
	6.4.10	Request signal priority — Service information	
	6.4.11	Request signal priority cancellation	
	6.4.12	Request signal priority — Priority request level	
	6.4.13	Request signal priority — Transaction identifier	
	6.4.14	Request signal priority — Duration	
	6.4.15	Request signal priority — Transit schedule	
6.5		ast area's geometrics	
	6.5.1	Broadcast roadway geometrics	
	6.5.2	Broadcast roadway geometrics — Message identifier	
	6.5.3	Broadcast intersection — Identifier	
	6.5.4	Broadcast intersection — Reference point	
	6.5.5	Broadcast intersection — Lane/approach default width	
	6.5.6	Broadcast intersection — Egress lanes/approach	
	6.5.7	Broadcast intersection — Ingress lanes/approach	31
	6.5.8	Broadcast intersection — Lane/approach number	31
	6.5.9	Broadcast intersection — Lane/approach centerline coordinates	31
	6.5.10	Broadcast intersection — Vehicle lane/approach manoeuvres	31
	6.5.11	Broadcast intersection — Pedestrian crossing lane/approach manoeuvres	32
	6.5.12	Broadcast intersection — Special lane/approach manoeuvres	
	6.5.13	Broadcast intersection — Version identifier	
	6.5.14	Broadcast intersection — Crossings	
	6.5.15	Broadcast intersection — Lane/approach width	
	6.5.16	Broadcast intersection — Node lane/approach width	33
	6.5.17	Broadcast intersection — Egress connection	
	6.5.18	Broadcast intersection — Traffic control	
	6.5.19	Broadcast intersection — Traffic control by lane/approach	
	6.5.20	Broadcast road conditions	
	6.5.21		
6.6		ast GNSS augmentation details	
0.0	6.6.1	Broadcast GNSS augmentations	
	6.6.2	Broadcast GNSS augmentation detail — NMEA	
	6.6.3	Broadcast GNSS augmentation detail — RTCM	
6.7		zed intersection requirements	
0.7	6.7.1	Broadcast signal phase and timing information	
	6.7.1	Broadcast signal phase and timing — Message identifier	
	6.7.3	Broadcast signal phase and timing — Message identifier Broadcast signal phase and timing — Intersection identifier	35 25
	6.7.4	Broadcast signal phase and timing — Intersection identifier Broadcast signal phase and timing — Intersection status	35 25
	6.7.5	Broadcast signal phase and timing — Timestamp	33 25
	6.7.6	Broadcast manoeuvre — Signal group	
	6.7.7	Broadcast manoeuvre — Signal group	
	6.7.8	Broadcast manoeuvre — Manoeuvre state	
	6.7.8	Broadcast manoeuvre — Pedestrian state	
	6.7.9	Broadcast manoeuvre — Pedestrian State	
	6.7.11	Broadcast manoeuvre — Special state	
		Broadcast manoeuvre — Time of change — Minimum	
	6.7.12		
	6.7.13	Broadcast manoeuvre — Succeeding signal indications	
	6.7.14	Broadcast manoeuvre — Succeeding signal indication time of change	
	6.7.15	Broadcast manoeuvre pending manoeuvre start time	
	6.7.16	Broadcast manoeuvre — Pedestrian detect	
	6.7.17	Broadcast manoeuvre — Pedestrian call	
	6.7.18	Broadcast manoeuvre — Optimal speed information	
	0./.19	Broadcast manoeuvre — Signal progression information	38