

A snapshot of the standardization of intelligent transport systems



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This book is a joint effort from YTL, ITS Finland, ITS Factory and Infotripla Oy and the wide expertise within the network.

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Standardization is one of the key issues to enable scalable, replicable and interoperable solutions and products and to gain success in European or even in global market. In this book you will find basic information on ITS standardization.

Standardization is important – no matter if you are a builder of new business ecosystems, a representative of a large enterprise, a governmental player supporting market growth or an innovator scaling up your new products in a smaller

company. Intelligent Transport Systems standardization landscape is complex entirety involving several standardization bodies and activities, which makes it rather challenging to approach without a basic understanding.

1. Introduction

The objective of this book is to give a useful overview to standardization activities of intelligent transport systems and to help the reader to find more information related to preferred area of interest. Therefore, the descriptions of the technologies and standardization activities have been kept in general level. This book covers several technical committees (TC) from CEN, ISO and ETSI.

Appendix A includes overview to these technical committees and their

currently active work items. The links to existing standards are presented in appendix B and standardization terminology is presented in appendix C.

This book is a joint effort from YTL, Infotripla Oy, ITS Finland and ITS Factory and the wide expertise within the network. The ITS Factory publication ITS Standardization handbook (2012) was used as a background for this updated publication. Infotripla Oy was the author of this book.

1.1 Three steps to use this book

This book is developed to help different actors to gain basic knowledge of ITS standardization and opportunities to join the standardization work. Chapters one and two give an overview to standardization organizations, authorities, and possibilities to participate in standardization activities in Finland. This book is most useful when approached in three sequential steps.

Step 1.

This book gives an overview of current situation in the field of ITS standardization bodies, activities, active work groups and work items.

Step 2.

The current situation of the ITS working groups from CEN, ISO and ETSI is presented in chapter 3. The key items of different working groups are categorized as preliminary, under approval and approved.

Step 3.

The topics of interest can be studied in detail from the tables in appendix A. The appendix A offers detailed information of the work items in different technical committees and their current status and potentially upcoming stage.

In addition, this book includes several links to further information from existing ITS standards to different working groups and their working programs.

ITS have become the focus of several policy and legislative initiatives in Europe.



1.2 European legislation and ITS

ITS has become the focus of several policy and legislative initiatives in Europe. The European Commission has laid down the legal framework in order to accelerate the deployment of these innovative transport technologies across Europe. Furthermore, the European Commission has requested the European Standards Organizations to develop and adopt European standards in support of this legal framework. Thus, there is considerable activity in this area by the standards organizations CEN, CENELEC and ETSI. The following documents are relevant for the standardization work in these standardization bodies:

- The EC Rolling plan for ICT standardization provides an overview of the needs for preliminary or complementary ICT standardization activities to be undertaken in support of EU policy activities.
- Directive 2004/52/EC (EFC directive) on the interoperability of electronic road toll systems in the Community.
- Directive 2010/40/EU (ITS directive) on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport.
- Commission Decision 2009/750/EC on the definition of the European Electronic Toll Service and its technical elements.
- Mandate M/338 on Electronic Fee Collection in support of Interoperability of electronic road toll systems in Europe.
- Mandate M/453 on co-operative systems for Intelligent Transport in the field of information and communication technologies to support interoperability of co-operative systems for intelligent transport in Europe.
- Mandate M/546 on Urban ITS on Intelligent Transport Systems (ITS) in urban areas in support of Directive 2010/40/EU on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport.



2. Standardization activities in Finland

Standardization is shaped by those who contribute to its development. In Finland, standardization activities have been distributed among the affiliates (standards writing bodies) of SFS, and, as the central organization, SFS supports their standardization work. SFS and its affiliates co-ordinate the participation of Finnish stakeholders in the international standardization work.

YTL is one of the standards writing bodies of SFS and it is responsible for standardization in ITS sector and holds national mirror committee (NMC) in this area.

NMC is responsible for developing the national position on a particular standard or standardization area and present their position to the relevant CEN and ISO Technical Committee. Through the National Committee, the manufacturer or any other relevant stakeholder can become involved and it may also be possible for them to become a member of the national delegation of the CEN or ISO Technical Committee, or to be nominated to serve as a technical expert in one of the Working Groups (WG). For more information, please contact kiimo.konkarikoski@ytl.fi.

	Electrotechnical industry	Other industries	Telecommunications industry
Global level 	IEC International Electrotechnical Commission	ISO International Organization for Standardization	ITU International Telecommunication Union
European level 	CENELEC European Committee for Electrotechnical Standardization	CEN European Committee for Standardization	ETSI European Telecommunications Standards Institute
National level 	SESKO Electrotechnical Industry	SFS Finnish Standards Association SFS with its standards writing bodies	Traficom Finnish Transport and Communications Agency

Figure 1. Standardization organizations.

2.1 Standardization

Standardization means creating agreed ways of doing something. The purpose of standards is to simplify the work of authorities, to facilitate trade, and to make consumers' everyday lives easier. Standardization increases product compatibility and safety, protects the consumer and the environment, and facilitates both domestic and international trade. Figure 1 shows how standardization is organized around the world and in different levels.

Standards are developed in technical committees of these organizations and their subcommittees and working groups. Like most countries, Finland has national technical committees and other groups. Joining these groups gives you an opportunity to influence international standardization and become a member of international working groups. Standardization process is presented in the figure 2. Main focus here is – the earlier you are involved in the process the better chance you have to influence it.

The ISO standardization process

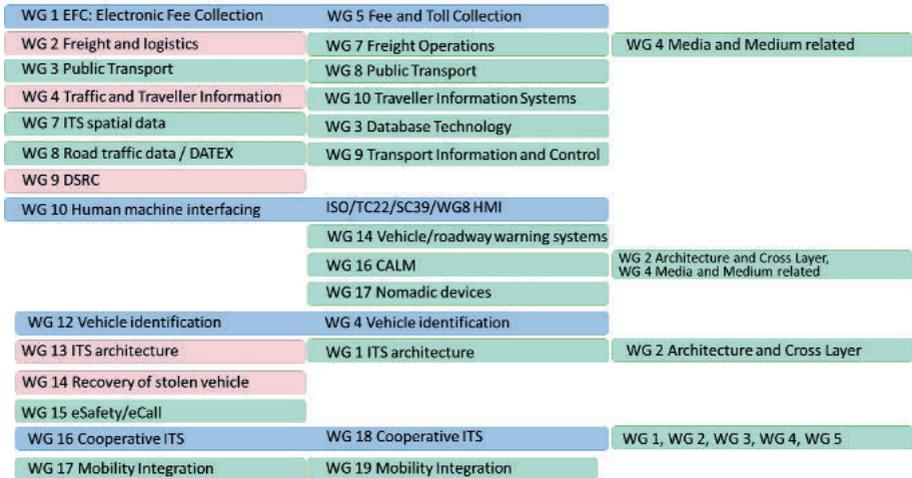


* Obligatory stage

Figure 2. Standardization process

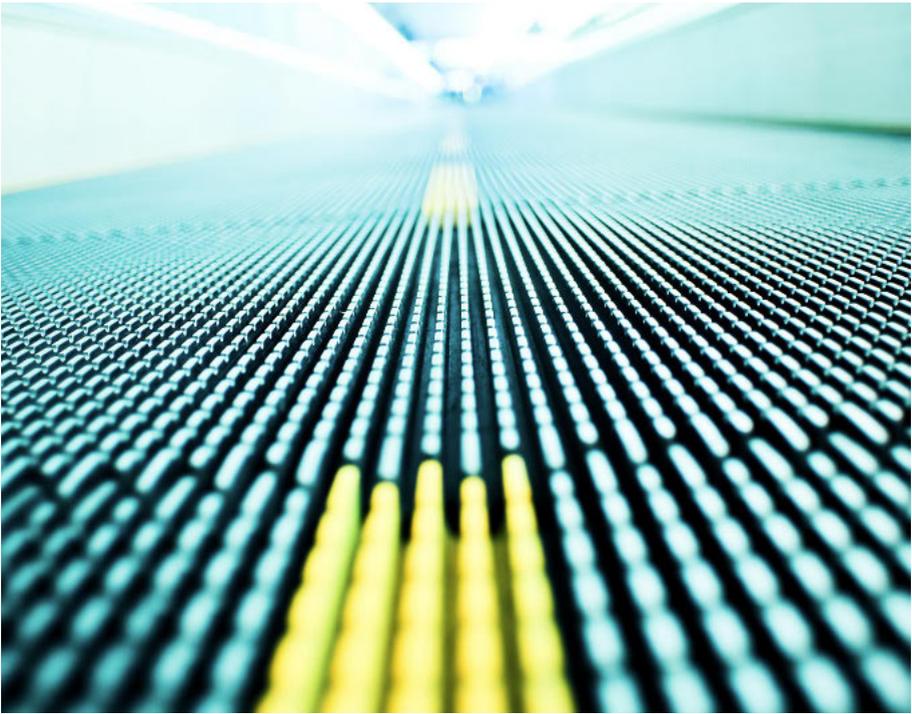
Benefits arising from a membership in a technical committee or a mirror committee include the following:

- acquiring up-to-date information on European and international standardization
- acquiring advance information on future work items and standards under preparation
- possibility to influence the standards' contents at different stages of their development
- right to participate in CEN and ISO working groups and their international meetings
- networking with experts in the field.



WG
 Joint WG
 DormantWG

Figure 3. Working groups, joint working groups and dormant working groups of CEN/TC 278, ISO/TC 204 and ETSI TC/ITS.



2.2 Authorities

Finnish transport authorities have followed the work done at CEN Technical Committees with the main focus being on CEN/TC 278 Intelligent Transport Systems. The work of this TC is and has been closely connected with the implementation of the ITS Directive 2010/40/EU. Transport authority participation activity has varied throughout the years, as representation and active followers from the Ministry and the agencies have changed.

Most interesting application areas (Working Groups) in the past years have been eSafety (eCall, WG 15), Co-operative ITS (WG 16) and Public transport (WG 3).

The work done in these groups has been directly linked with the implementation of the ITS Directive, and it has proved useful to actively monitor the work at the standardization level.

As the field of ITS is expanding more and more towards telecom and ICT, more potential overlap in standardization activities exists. This is one reason to be active in the different standardization organizations and to coordinate nationally what is being developed in each forum. Transport authorities can bring to the table up-to-date information on where the regulatory work is and where it is expected to go in the near future. Active collaboration and information sharing is strongly encouraged.

3. Standardization of intelligent transport systems

European standardization body CEN works closely with other standardization bodies. In the field of ITS, CEN has important liaisons with ETSI and ISO. On a global level the corresponding standardization is handled by ISO/TC 204 Intelligent Transport Systems and a great deal of CEN standards is developed in conjunction with ISO/TC 204. This cooperation allows for optimal use of available resources and expertise

in both organizations. The European Telecommunications Standards Institute (ETSI) produces globally-applicable standards for Information and Communications Technologies. ETSI and CEN cooperate in several fields where there is a common interest. The strategic coordination is handled by the ITS coordination group (ITS-CG). The figure 3 (page 10) shows the alignment of the working groups.

3.1 CEN / TC 278 Road transport and traffic telematics

Scope

CEN/TC 278 Road transport and traffic telematics is responsible for the development of European standards and technical specifications in the domain of Intelligent Transport Systems (ITS). ITS standards help to ensure interoperability across countries and harmonize technical solutions. The standardization areas include Cooperative systems, Travel and Traffic Information, Route Guidance and

Navigation, Public Transport, Emergency vehicles and Electronic Fee Collection. Standardization in the field of telematics to be applied to road traffic and transport, including those elements that need technical harmonization for intermodal operation in the case of other means of transport.

For more information visit CEN: <https://www.itsstandards.eu>.

3.1.1 WG 1 Electronic Fee Collection

CEN/TC 278/WG 1 is responsible for European standardizing of the EFC application, whilst other international standardization groups develop technology-related standards (such as GNSS and communication protocols).

Most EFC standards are developed as joint work items with ISO (TC 204/WG 5). In addition, ETSI provides certain technical standards on testing that are important for EFC.

Approved	Under Approval	Preliminary
Vehicle-related tolling	Autonomous toll systems	API for short-range communication
	Information exchange for tolling	Test procedures for V2X equipment

For more information visit CEN: <https://bit.ly/2pvgJSs>

3.1.2 WG 3 Public transport

WG 3 topics are organized around 8 sub-groups related to the ITS applications in public transport. These subgroups include IT architecture on board, auto-

matic vehicle monitoring, data bases and formats, fare collection, real time information and journey planner and identification of point of interest.

Approved	Under Approval	Preliminary
Reference data model	Road vehicle scheduling and control systems	Service interface for public transport operations
	Network and Time-table Exchange (NeTEx)	Fare management system
	Fare management system	

For more information visit CEN: <https://bit.ly/2Mnvakv>

3.1.3 WG 4 Traffic and traveller information

The scope of both CEN/TC 278 WG 4 and ISO/TC 204 WG 10 is clearly in the delivery of Traffic and Traveller Information to end users as the Delivery Segment, but

staying clear of the 'generation by' and 'exchange of' information between information centers and described as within the Content Segment.

Approved	Under Approval	Preliminary
	Graphic data dictionary	

For more information visit CEN: <https://bit.ly/2IVolyO>

3.1.4 WG 7 ITS Spatial data

CEN/TC278/WG7 is responsible for standardization of static geographic road network data and development of stand-

ards for data exchange between public road authorities, mapmakers and other users of such data.

Approved	Under Approval	Preliminary
		Dynamic events and map database specifications

For more information visit CEN: <https://bit.ly/2prMKuB>

3.1.5 WG 8 Road Traffic Data

Working group 8 is responsible for the multi part DATEX II standard; With the aim to support sustainable mobility in Europe, the European Commission has been supporting the development of information exchange mainly between the actors of the road traffic management domain for a number of years. Road traf-

fic data is not limited to (the systems of) public authorities and providers. In fact, it is part of several information chains. Thus WG 8 co-operates with other working groups to align their standards – e.g. CEN/TC 278/WG 3, WG 4 and ISO TC 204/WG 9. Note that the current focus in WG 8 is on C2C-exchange.

Approved	Under Approval	Preliminary
	Platform independent model specifications	
	Parking	
	Variable Message Signs	
	Measured and elaborated data	

For more information visit CEN: <https://bit.ly/2Bf5Qqr>

3.1.6 WG 15 eSafety (eCall)

The remit of WG 15 is “eSafety”, i.e. to develop standards deliverables which use Intelligent Transport Systems to increase the safety of users of road transport systems. During its first decade of work, the focus of the work of WG 15 has been on eCall. WG 15 is also providing specifi-

cations for messaging and data formats between the emergency responders and other sources of key information, and to enable the forwarding of eCall data, and indeed the eCalls themselves, along the rescue chain.

Approved	Under Approval	Preliminary
Additional data	eCall for autonomous vehicles	Aftermarket eCall
	eCall for motorcycles	
	Additional data	
	Public & private data exchange	

For more information visit CEN: <https://bit.ly/32mNCzf>

3.1.7 WG 16 Co-operative ITS

WG 16 is established as the group in charge of co-operative ITS, with standardization being performed in co-operation with TC 204. Thus, WG 16 is

fully joint with ISO/TC 204/WG 18, and has two main roles:

Firstly, to develop new standards in the field of CS, and secondly to help coordinate and foster new

CS thinking in the existing WGs of CEN/TC 278 and ISO/TC 204.

Approved	Under Approval	Preliminary
Security connections for trusted device and ITS stations	Hybrid communications	Fast service announcement protocol
	In-vehicle information data structures	
	ITS station functionalities	
	Sensor and control networks messages	
	Security connections for trusted device	
	ITS station information exchange	

For more information visit CEN: <https://bit.ly/2MLNeUh>

3.1.8 WG 17 Mobility Integration

WG 17 acts as coordination point for Urban ITS standards development, including other WGs of CEN/TC 278, another CEN TCs and ETSI/TC ITS. WG 17 also acts as leader of Project Teams to progress Urban ITS work items quickly and is the harmonization and

consensus forming group for Urban ITS. WG 17 develops relevant Urban ITS documents that does not fall under other responsibilities and handles international coordination and harmonization, e.g. with ISO and IEEE.

Approved	Under Approval	Preliminary
Location Referencing Harmonisation for Urban-ITS	Mixed vendor environment	European ITS communications and information protocols
Air quality management in urban areas	Datex2 extensions for traffic signals in urban environments	Electronic traffic regulations
	New urban transport modes	
	Traffic management interfaces and information	
	Datex2 extensions for urban environments	

For more information visit CEN: <https://bit.ly/2porg1J>

3.2 CEN/TC 226 Road equipment

Scope

To prepare specifications for safety, traffic control and other road equipment in the following fields: Safety fences and barriers, including guard rails, safety fences, crash barriers, crash absorbers and bridge parapets; Horizontal signs including road studs and road markings; Vertical signs including signs, cones and marker posts; Traffic lights including signals, traffic control and danger lamps; Street lighting, performance requirements only; Other equipment including bollards, anti-glare screens and noise pro-

tection devices. The WG 12 (Road interaction – ADAS / Autonomous vehicles) of the TC 226 has in its scope, the necessity to understand the interactions between the road equipment and automated vehicles using ADAS. It has also the goal to develop a vision and associated functional and operational requirements enabling the deployment of a smart system ensuring the consistency between the road infrastructure and the embedded automated vehicle system. WG 12 does not have any working items, yet.

3.2.1 WG 12 Road interaction – ADAS / Autonomous vehicles

Approved	Under Approval	Preliminary

For more information visit CEN: <https://bit.ly/2BhELCT>

3.3 ISO/TC 204 Intelligent transport systems

Scope

Standardization of information, communication and control systems in the field of urban and rural surface transportation, including intermodal and multi-modal aspects thereof, traveller information, traffic management, public transport, commercial transport, emergency services and commercial services in the intelligent transport systems field. ISO/TC 204 is responsible for the

overall system aspects and infrastructure aspects of intelligent transport systems (ITS), as well as the coordination of the overall ISO work programme in this field including the schedule for standards development, considering the work of existing international standardization bodies. For more information visit ISO: www.iso.org/committee/54706.html.

3.3.1 WG 01 Architecture

WG 1 is developing standards for common information and methods in the ITS sector, including shared terminology, the standardization of data representa-

tion formats, architectures for sharing service and system concepts, as well as risk assessment methods and the benefits of services.

Approved	Under Approval	Preliminary
Reference model	Reference model	Privacy aspects
Data dictionaries and structures	Identifiers	Terminology
Web services	Data distribution	Reference model
	Web services	Identifiers
		Connected and automated vehicles
		Electronic privacy regulations
		ITS deployment plans
		Data dictionaries and structures

3.3.2 WG 03 ITS database technology

WG 3 has been involved in standardizing exchange formats between geographic data providers, as well as compact storage formats allowing high-speed searching. It has also worked on developing functional requirement specifica-

tions, data models, and data elements for geographic data. WG 3 has limited its scope to static geographic data but seeks to take part in the standardization of dynamic data.

Approved	Under Approval	Preliminary
Spatio-temporal data dictionary	Location referencing for geographic data-bases	Connencted and automated driving system applications
	Shareable geospatial data-bases	
	Geographic data files	
	Spatio-temporal data dictionary	

3.3.3 WG 04 Automatic Vehicle and Equipment Identification

The AVI/AEI discussed in WG 4 is a system that automatically identifies cars (Vehicles) and freight (Equipment) using onboard devices or simple media such as tags. It also plays the role of standardizing items required for interoperability between systems. Since its launch, WG

4 has been discussing standardization for land transportation, such as trucks, and later, as a discussion topic, added standardization of an intermodal AVI/AEI system that supports movement through different modes of transportation, such as by air and sea.

Approved	Under Approval	Preliminary
	Interfaces	
	Secure communications	
	Electronic Registration Identification	

3.3.4 WG 05 Fee and toll collection

WG 5 is working on standardizing Electronic Fee Collection (EFC), which includes ETC (Electronic Toll Collection) as well as all other charging and settlement types such as tolls for roads, fees for parking lots and ferries. WG 5 is working on the standardization of the EFC

application interface (data elements, command definitions, and other factors) both for DSRC and GNSS/CN, which are means of communication between Service Providers and Users, and on the standardization of the test procedures and data security.

Approved	Under Approval	Preliminary
Autonomous system compliance	Autonomous system compliance	External interfaces
Evaluation of equipment for ISO 177-1/2	Dedicated short-range communication	Vehicle related tolling
Charging performance	Evaluation of equipment for ISO 17575-1/2	Personalization of on-board equipment
Security protection profiles	Vehicle related tolling	
Personalization of on-board equipment	Future charging profiles	
Interface for integrated circuit card	Traffic management interoperability	
	Common media	

3.3.5 WG 07 General fleet management and commercial/freight

Specific work items being discussed for standardization include the operational monitoring of commercial freight vehicles, data dictionary and message sets for international multi-modal transport, and commercial freight vehicle monitoring.

Approved	Under Approval	Preliminary
Cooperative telematics applications, e.g. eCall, dangerous goods, regulated vehicles	Cooperative telematics applications, e.g. security, electronic tachograph monitoring, weight in motion, stability monitoring	
	Intermodal transfer and information exchange	
	Cargo condition information	

3.3.6 WG 08 Public transport/emergency

WG 8 is responsible for the standardization of public transport. Public transport includes buses, trains, trams and emergency vehicles.

Approved	Under Approval	Preliminary
Account-based ticketing	Common transport service account systems	Public transport user information
		Fare management system
		Emergency systems
		Charging systems
		Terminology and role models
		Automated driving bus

3.3.7 WG 09 Integrated transport information, management and control

WG 9 is working on the standardization of traffic management (traffic information and control, etc.). Specifically, it is working on the systematization of information and standardization of communication systems between traffic management centers, between centers and roadside modules, and between roadside modules, to enable efficient data exchange and to provide information to outside organizations.

Approved	Under Approval	Preliminary
	Data interfaces (centres, roadside modules/units)	Data interfaces (roadside SNMP/DATEX)
	Co-operative signal control	
	Data interfaces (roadside SNMP)	

3.3.8 WG 10 Traveler information systems

Traveler information systems, subject to standardization by WG 10, constitute a core part of ITS. This working group has work items designed to study data dictionaries and message sets to provide information to drivers through var-

ious communication media, such as FM broadcasting, DSRC, and digital broadcasting. Recently, the Transport Protocol Experts Group (TPEG) has stepped up its UML modeling activities.

Approved	Under Approval	Preliminary
Graphic data dictionary	Graphic data dictionary	TPEG2 - Traffic and travel information location reference
TPEG2 - Traffic and travel information location reference, electromobility charging		

3.3.9 WG 14 Vehicle/roadway warning and control systems

WG 14 is working on the standardization of driving control technology to reduce driver workload, improve con-

venience, raise awareness of danger, prevent accidents and mitigate damage using advanced technologies.

Approved	Under Approval	Preliminary
Performance requirements and test procedures	ADAS - Advance driver-assistance systems, e.g. PAPS, PALS, PADS, BDCMS, TINS, CACC, RBDPS	Automated valet parking systems
ADAS - Advance driver-assistance systems	Performance requirements and test procedures	V2V intersection collision warning systems
		Functional safety for V2V cooperative functions
		Low-speed automated driving systems for limited operational design domain

3.3.10 WG 16 Communications

WG 16 is involved in standardizing the communication systems used in ITS. This

working group holds discussions on the CALM systems used in ITS and the DSRC.

Approved	Under Approval	Preliminary
Disaster and emergency communication	Probe vehicle information systems	CALM
IPv6 Networking	CALM	IPv6 Networking
CALM	LTE-v2X	Personal data protection
Fast service advertisement protocol	IPv6 Networking systems	Probe vehicle information
Fast networking & transport layer protocol	ITS station	

3.3.11 WG 17 Nomadic Devices in ITS Systems

This work group oversees developing standards targeting ITS services using nomadic devices such as smartphones and portable navigation devices which are rapidly disseminating worldwide.

It covers the standardization of vehicle interfaces, guidance protocols for safety assistance systems, and services that provide information to travelers.

Approved	Under Approval	Preliminary
Personal ITS stations	Green ITS	Micro mobility
Vehicle interface	Indoor navigation	Urban mobility applications
Green ITS	Vehicle interface	Indoor navigation
		Data exchange

3.3.12 WG 18 Co-operative systems

Co-operative ITS integrates vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I) and infrastructure-to-infrastructure

(I2I) communications, and simultaneously supports extensive ITS services via the communications system.

Approved	Under Approval	Preliminary
Identification	ITS station functionalities	ITS station data exchange
Application requirements	Data exchange between devices and ITS station	Test use cases and architecture
Security	Hybrid communications	
Test use cases and architecture	V2I and I2V	
ITS station data exchange	Security	
Dynamic map	Test use cases and architecture	

3.3.13 WG 19 Mobility integration

The scope of WG 19 is the development of ITS standards products supporting enhanced integration of services and applications of ITS solutions focused on the urban ITS and mobility integration. Potential preliminary work items of WG 19 include Management for Electronic

Traffic Regulations (METR), Urban ITS models and definitions for new modes, traffic management systems – TM interfaces and information, DATEX II traffic and traffic signal management publications dedicated to the urban environment.

Approved	Under Approval	Preliminary
		VRU's, light modes of transport
		Architecture for automation
		Parking

3.4 ISO/TC 22 Road vehicles

Scope

All questions of standardization concerning compatibility, interchangeability and safety, with particular reference to terminology and test procedures (including the characteristics of instrumentation) for evaluating the performance of the following types of road vehicles and their equipment as defined in the relevant items of Article 1 of the conven-

tion on Road Traffic, Vienna in 1968 concluded under the auspices of the United Nations: mopeds; motor cycles; motor vehicles; trailers; semi-trailers; light trailers; combination vehicles; articulated vehicles.

For more information visit ISO: www.iso.org/committee/46706.html.

3.4.1 SC 31 Data communication

Data communication for vehicle applications, which includes Data buses and protocols (including dedicated sensor communication); V2X communication (including V2G); Diagnostics; Test protocols; Interfaces and gateways (including those for nomadic devices); Data formats; and Standardized data content.

Approved	Under Approval	Preliminary
Extended Vehicle (ExVe) time critical applications	End-of-life activation of in-vehicle pyrotechnical devices	Data communication standards
	Extended Vehicle (ExVe) time critical applications	Modular vehicle communication interface (MVCI)
	Data fusion unit for automated driving functions	In-vehicle Ethernet
	Vehicle domain data collection service	electronic Periodic Technical Inspection (ePTI)
	Media oriented systems transport (MOST) framework	Tachograph systems
	In-vehicle Ethernet	Vehicle to grid communication interface
	electronic Periodic Technical Inspection (ePTI)	Unified diagnostic services (UDS)
	Clock extension peripheral interface (CXPI)	
	Vehicle to grid communication interface	
	Diagnostic communication over Controller Area Network (DoCAN)	
	Diagnostic communication over Controller Area Network (DoCAN)	
	Interchange of digital information on electrical connections between towing and towed vehicles	
	Open Test sequence eXchange format (OTX)	
	Diagnostic communication over Internet Protocol (DoIP)	

For more information visit ISO: <https://www.iso.org/committee/5383568.html>

3.4.2 SC 32 Electrical and electronic components and general system aspects

Electrical and electronic (E/E) components and cross-sectional specifications for E/E systems and components. This includes Wiring harness (e.g cables, connectors, interconnections); Dedicated connectors (e.g trailer connectors, OBD-

connector); Dedicated E/E components and parts (e.g. alternators, fuses, ignition equipment); EMC; Environmental conditions; Functional safety; Cybersecurity; Dedicated optical components; Software update.

Approved	Under Approval	Preliminary
Connection interface for pyrotechnic devices	Connection interface for pyrotechnic devices	
	Automotive cables	
	Degrees of protection (IP code)	
	In-vehicle Ethernet	
	Cybersecurity engineering	
	Safety of the intended functionality	
	Supply voltage of 48 V	
	Software update engineering	
	Starting devices and electrical generators	
	Towing and towed vehicles	
	Spark-plugs and their cylinder head housings	
	Electrical disturbances by conduction and coupling	
	Connections for on-board electrical wiring harnesses	
	Fuse-links	
	Narrowband radiated electromagnetic energy	
	Spark plugs	
	Environmental conditions and testing for electrical and electronic equipment	

For more information visit ISO: <https://www.iso.org/committee/5383636.html>

3.4.3 SC 33 Vehicle dynamics and chassis components

Lateral and longitudinal vehicle dynamics and controls/systems/functions affecting vehicle dynamics, such as chassis components, wheels, steering, brakes and suspension. This includes automated driving, means and performance of collision

avoidance and mitigation. There are ten working groups directly under SC 33, and working groups 3 “Driver assistance and active safety functions” and 9 “Test scenarios of automated driving systems”, are related to ITS.

Approved	Under Approval	Preliminary
	Autonomous braking systems	Test scenarios for automated driving
	Car-to-car	Autonomous emergency braking systems
	Lanekeeping assistance systems	Car-to-pedestrian
		Scenario-based safety evaluation

For more information visit ISO: <https://www.iso.org/committee/5383785.html>

3.5 ETSI/TC ITS

Scope

TC ITS develops standards related to the overall communication architecture, management, security as well as the related access layer agnostic protocols: the physical layer, network layer, transport layer and facility layer. Applications include road safety, traffic control, fleet and freight management and location-based services, providing driver assistance and

hazard warnings and supporting emergency services. Other addressed topics include platooning, specifications to protect vulnerable road users, specifications for Cooperative Adaptive Cruise Control as well as multichannel operation.

For more information visit ETSI: <https://www.etsi.org/committee/1402-ITS>.

3.5.1 WG 1 Application Requirements and Services

WG 1 develops ETSI deliverables on the application requirements and services. This includes requirements from passengers, automotive industry, road network operator, freight and logistics, and public authorities. WG 2 is responsible for, development of the application classification and specify a V2V/V2I-Communication Basic Set of Applications on harmonized requirements basis, and defining the functions, services and inter-

faces to support the V2V/V2I-C Basic Set of Applications. WG 2 also specifies application protocols and messages specification to support the Basic applications set and the operational requirements for the supporting system. In addition, WG 2 considers conformance, interoperability testing procedures and test suites and contributes to the harmonization and optimization of the overall system.

Approved	Under Approval	Preliminary
	Communication congestion control	CAM PICS, TSS & TP, ATS
	MCD basic service	DEN PICS, TSS & TP, ATS
	Platooning	SPAT/MAP PICS, TSS & TP, ATS
	BSA	Applications and facilities layer common data dictionary
	Vulnerable road users	Diagnosis, Logging and Status Service
	CPS	Infrastructure Services
	Transport pollution management	Vulnerable road users
	Facility Position and Time	
	Collective Perception Service	
	Maneuver Co-ordination Service	
	Diagnosis, Logging and Status Service	
	Payment applications	

For more information visit ETSI: <https://portal.etsi.org/TBSiteMap/ITS/ITSWG1ToR.aspx>

3.5.2 WG 2 Architecture and Cross Layer

WG 2 includes the overall architecture and address cross (OSI) layer issues. This includes ITS and communications architecture, cross layer issues, and separation of Service provision from Medium

provision. WG 2 includes different perspectives from user, standardization, network, security, operation to implementation.

Approved	Under Approval	Preliminary
	Interoperability among heterogeneous ITS systems and backward compatibility	Multi Channel Operations; architecture
	ITS stations with multiple access layer technologies	
	Mobile network support of C-ITS	

For more information visit ETSI: <https://portal.etsi.org/TBSiteMap/ITS/ITSWG2ToR.aspx>

3.5.3 WG 3 Transport and Network

WG 3 develops ETSI deliverables for the data transport and network protocol layers and management of these layers. Development and harmonization of a network architecture which covers existing and future wireless and wired technologies and various application services for any kind of ITS users, including vehicle drivers and passengers, railway users, pedestrians, bicyclists and other. WG 3 also develops novel networking protocols for ITS, such as ad hoc and multi-hop

routing protocols, reliable transport protocols over multi-hop routing and is in charge for the integration of dedicated ITS network protocols and transport protocols with the Internet protocol suite and IP mobility extensions. In addition, WG 3 ensures that the networking and data transport protocols and algorithms are efficient, scalable and protects the user's privacy and increase the security.

3.5.4 WG 4 Media and Medium Related

WG 4 encompasses ITS standardization on OSI model layers 1 and 2 – physical and data link layers, including the management of these layers. Currently identified core subject areas include ERM liaison and participation; WG 4 is respon-

sible group inside TC ITS for the development of ETSI system reference documents for ITS. Other subgroups include 5 GHz, 60 GHz, CEN Infra-red (WG 9) and ISO CALM (WG 16) 2G / 3G related issues.

Approved	Under Approval	Preliminary
	ITS-G5 Access layer	DSRC/G5
	LTE-V2X Access layer	MCO Access Layer specification
	ITS Performance Analysis	
	DSRC/G5	
	TTT DSRC	
	ITS test mode	

For more information visit ETSI: <https://portal.etsi.org/TBSiteMap/ITS/ITSWG4ToR.aspx>

3.5.5 WG 5 Security

WG 5 is responsible for conducting studies leading to deliverables on Security and assuring ITS solutions conform to regulatory requirements for privacy, data protection, lawful interception and data retention. WG 5 is also in charge of management and co-ordination of the development of security specifications for ITS communication and data, and investigation of security services and mechanisms

required for providing ITS services over the Internet. In addition, development of security analyses of candidate protocols and network elements to be used within the ITS framework to implement capabilities e.g., EMTEL aspects, IPv6 migration, keying strategies and methods and tracking ongoing worldwide security activities of interest to ITS (notably in ISO/TC 204) are in the remit of WG 5.

Approved	Under Approval	Preliminary
	Malicious behavior detection	Definition and usage of PSID and SSP for C-ITS services
	TVRA Revision	
	Security	
	Cellular ITS	
	ITS SF-SAP	

For more information visit ETSI: <https://portal.etsi.org/TBSiteMap/ITS/ITSWG5ToR.aspx>

Literature

CEN – <https://standards.cen.eu/index.html>

ETSI – <https://www.etsi.org/>

ISO – <https://www.iso.org/home.html>

ITS Factory – <https://businessstampere.com/business-environment/business-ecosystems/mobility/>

ITS-Finland – <https://www.its-finland.fi/index.php/fi/>

SFS – <https://www.sfs.fi>

SFS sales – <https://sales.sfs.fi>

YTL – http://www.ytl.fi/mita_teemme/standardisointi

Appendix A

Appendix A can also be found at YTL website <https://urly.fi/1oDM>

Technical Committees and active work items of CEN

Work Group	Project	Title	Status
WG 1	EN ISO 14906:2018/prA1	Application interface definition for dedicated short-range communication – Amendment 1 (ISO 14906:2018/DAM 1:2019)	Under Enquiry
WG 1	FprCEN/TS 16702-1	Secure monitoring for autonomous toll systems – Part 1: Compliance checking	Under Approval
WG 1	FprCEN/TS 16702-2	Secure monitoring for autonomous toll systems – Part 2: Trusted recorder	Under Approval
WG 1	FprEN ISO 12813	Compliance check communication for autonomous systems (ISO/FDIS 12813:2019)	Under Approval
WG 1	FprEN ISO 17573-1	System architecture for vehicle-related tolling – Part 1: Reference model (ISO/FDIS 17573-1:2019)	Approved
WG 1	prEN ISO 12855 re	Information exchange between service provision and toll charging	Under Drafting
WG 1	prEN ISO 13143-1 rev	Evaluation of onboard and roadside equipment for conformity to ISO 12813 – Part 1: Test suite structure and test purposes	Under Drafting
WG 1	prEN ISO 14907-1	Test procedures for user and fixed equipment – Part 1: Description of test procedures (ISO/DIS 14907-1:2019)	Under Enquiry
WG 1	prEN ISO 19299 rev	Security framework	Under Approval
WG 1	N/A	Pre-study of the potential use of ITS-G5 and LTEV2X	Preliminary
WG 3	CEN/TR 12896-9:2019	Reference data model – Part 9: Informative documentation	Approved
WG 3	CEN/TS 16794-1:2019	Communication between contactless readers and fare media – Part 1: Implementation requirements for ISO/IEC 14443	Approved
WG 3	CEN/TS 16794-2:2019	Communication between contactless readers and fare media – Part 2: Test plan for ISO/IEC 14443	Approved
WG 3	EN 12896-4:2019	Reference data model – Part 4: Operations monitoring and control	Approved

Work Group	Project	Title	Status
WG 3	EN 12896-5:2019	Reference data model – Part 5: Fare management	Approved
WG 3	EN 12896-6:2019	Reference data model – Part 6: Passenger information	Approved
WG 3	EN 12896-7:2019	Reference data model – Part 7: Driver management	Approved
WG 3	EN 12896-8:2019	Reference data model – Part 8 : Management information & statistics	Approved
WG 3	FprCEN/TS 13149-10	Road vehicle scheduling and control systems – Part 10: Location service	Under Approval
WG 3	FprCEN/TS 13149-11	Road vehicle scheduling and control systems – Part 11: Vehicle platform interface service	Under Approval
WG 3	FprCEN/TS 13149-7	Road vehicle scheduling and control systems – Part 7: System and network architecture	Under Approval
WG 3	FprCEN/TS 13149-9	Road vehicle scheduling and control systems – Part 9: Time service	Under Approval
WG 3	FprCEN/TS 16614-1	Network and Timetable Exchange (NeTEx) – Part 1: Public transport network topology exchange format	Under Approval
WG 3	FprCEN/TS 16614-4	Network and Timetable Exchange (NeTEx) – Part 4: Passenger information european profile	Under Approval
WG 3	prCEN/TS 15531-5 rev	Service interface for realtime information relating to public transport operations – Part 5: Functional service interfaces: Situation exchange	Preliminary
WG 3	prCEN/TS 16614-2 rev	Network and Timetable Exchange (NeTEx) – Part 2: Scheduled timetables exchange format	Under Approval
WG 3	prCEN/TS 16614-3 rev	Public transport – Network and Timetable Exchange (NeTEx) – Part 3: Fares exchange format	Under Approval
WG 3	prEN 24014-1 rev	Interoperable fare management system – Part 1: Architecture	Under Drafting
WG 3	N/A	Interoperable fare management system – Back Office Interface	Preliminary
WG 4	prEN ISO 14823-1 rev	Graphic data dictionary – Part 1: Specification	Under Drafting

Work Group	Project	Title	Status
WG 7	N/A	Dynamic events and map database specifications for applications of automated driving systems, cooperative ITS, and advanced road/traffic management systems (ISO/PWI 22726)	Preliminary
WG 8	Fpr CEN ISO/TS 19468	Data interfaces between centres for transport information and control systems - Platform independent model specifications for data exchange protocols for transport information and control systems (ISO/PRF TS 19468:2019)	Under Approval
WG 8	prCEN/TS 16157-6 rev	DATEX II data exchange specifications for traffic management and information – Part 6: Parking publications	Under Drafting
WG 8	prEN 16157-4	DATEX II data exchange specifications for traffic management and information – Part 4: VMS publication	Under Approval
WG 8	prEN 16157-5	DATEX II data exchange specifications for traffic management and information – Part 5: Measured and elaborated data publications	Under Approval
WG 15	CEN/TS 17363:2019	ECall optional additional data - Linked mobile phone number data concept	Approved
WG 15	FprCEN/TS 17395	eSafety – eCall for automated and autonomous vehicles	Under Approval
WG 15	prEN 15722	ESafety – eCall minimum set of data	Under Approval
WG 15	prEN 17358	ESafety – eCall OAD for multiple Optional Additional Datasets	Under Approval
WG 15	N/A	eSafety – eCall interface between PSAPS and dangerous goods or transport databases	Under Drafting
WG 15	N/A	Aftermarket eCall	Preliminary
WG 15	N/A	eSafety – eCall end to end conformance tests for P2WV, quadricycles and tricycles	Under Drafting
WG 15	N/A	eSafety – eCall TPSP-PSAP data sharing exchange mechanism	Under Drafting
WG 15	N/A	eSafety – eCall TPSP-PSAP CAP data format	Under Drafting
WG 16	FprCEN ISO/TS 21177	ITS station security services for secure session establishment and authentication between trusted devices (ISO/DTS 21177:2019)	Approved

Work Group	Project	Title	Status
WG 16	prCEN ISO/TR 21186	Cooperative ITS – Guidelines on the use of C-ITS standards for hybrid communications	Under Drafting
WG 16	prCEN ISO/TS 19321 rev	Cooperative ITS – Dictionary of in-vehicle information (IVI) data structures	Under Approval
WG 16	prCEN ISO/TS 21176	Cooperative ITS – Position, velocity and time functionality in the ITS station	Under Drafting
WG 16	prCEN ISO/TS 21184	Management of messages containing information of sensor and control networks specified in data dictionaries	Under Drafting
WG 16	prCEN ISO/TS 21185	Communication profiles for secure connections between trusted devices	Under Approval
WG 16	prEN ISO 17429	Cooperative ITS – ITS station facilities for the transfer of information between ITS stations	Under Drafting
WG 16	prEN ISO 22418	Fast service announcement protocol (FSAP) for general purposes in ITS (ISO/DIS 22418:2019)	Under Enquiry
WG 17	CEN/TS 17297-2:2019	Location Referencing Harmonisation for Urban-ITS – Part 2: Transformation methods	Approved
WG 17	CEN/TS 17378:2019	Urban ITS - Air quality management in urban areas	Approved
WG 17	CEN/TS 17380:2019	Urban-ITS – ‘Controlled Zone’ management for UVARs using C-ITS	Under Approval
WG 17	FprCEN/TR 17401	Urban-ITS – Mixed vendor environment guide	Under Approval
WG 17	FprCEN/TS 16157-9	DATEX II data exchange specifications for traffic management and information – Part 9: Traffic signal management publications dedicated to the urban environment	Under Approval
WG 17	FprCEN/TS 17400	Urban ITS – Mixed vendor environments, methodologies & translators	Under Approval
WG 17	FprCEN/TS 17402	Urban ITS – Use of regional traffic standards in a mixed vendor environment	Under Approval
WG 17	FprCEN/TS 17413	Urban ITS – Models and definitions for new modes	Under Approval
WG 17	prCEN/TS	Traffic management systems – TM interfaces and information	Under Drafting

Work Group	Project	Title	Status
WG 17	prCEN/TS 16157-8	DATEX II data exchange specifications for traffic management and information – Part 8: Traffic management publications and extensions dedicated to the urban environment	Under Approval
WG 17	N/A	Urban ITS – European ITS communications and information protocols	Preliminary
WG 17	N/A	Management for Electronic Traffic Regulations (METR) – Part 1: General concept and architecture	Preliminary

ETSI and CEN cooperate in several fields
where there is a common interest.



Technical Committees and active work items of ISO

Work Group	Work Item	Title	Status
WG 1	ISO/NP TR 12859	Privacy aspects in ITS standards and systems	NP
WG 1	ISO/NP TR 14812	Intelligent transport systems – Terminology	NP
WG 1	ISO/NP 14813-1	Reference model architecture(s) for the ITS sector – Part 1: ITS service domains, service groups and services	NP
WG 1	ISO/DIS 14813-5	Reference model architecture(s) for the ITS sector – Part 5: Requirements for architecture description in ITS standards	DIS
WG 1	ISO 14813-6:2017	Reference model architecture(s) for the ITS sector – Part 6: Use of ASN.1	PU
WG 1	ISO/PWI 14813-7	Reference model architecture(s) for the ITS sector – Part 7: ITS standards framework	PWI
WG 1	ISO 14817-3:2017	Intelligent transport systems – ITS data dictionaries – Part 3: Object identifier assignments for ITS data concepts	PU
WG 1	ISO/AWI 17419-2	Identifiers – Part 2: Management and operation of registries	WD
WG 1	ISO/PWI 17419-3	Identifiers – Part 3: Architecture requirements for ITS-AID requests	PWI
WG 1	ISO/NP TR 23254	Architecture – Use cases and high-level reference architecture for connected, automated vehicles	NP
WG 1	ISO/AWI TR 23255	Architecture – Applicability of data distribution technologies within ITS	WD
WG 1	ISO/PWI 23507	Management of electronic privacy regulations (MEPR)	PWI
WG 1	ISO 24097-1:2017	Using web services (machine-machine delivery) for ITS service delivery – Part 1: Realization of interoperable web services	PU
WG 1	ISO/PRF TR 24097-3	Using web services (machine-machine delivery) for ITS service delivery – Part 3: Quality of service	FDIS
WG 1	ISO/NP TR 2409	System architecture, taxonomy and terminology – Procedures for developing ITS deployment plans utilizing ITS system architecture	NP
WG 1	ISO/NP 24531-2	System architecture, taxonomy and terminology – Part 2: Using ASN.1 in ITS standards, data registries and data dictionaries	NP
WG 3	ISO/PRF 17572-2	Location referencing for geographic databases – Part 2: Pre-coded location references (pre-coded profile)	FDIS

Work Group	Work Item	Title	Status
WG 3	ISO/CD 17572-4	Location referencing for geographic databases – Part 4: Lane-level location referencing	CD
WG 3	ISO/DIS 19297-1	Shareable geospatial databases for ITS applications – Part 1: Framework	DIS
WG 3	ISO/DIS 20524-1	Geographic Data Files (GDF) – GDF5.1 – Part 1: Application independent map data shared between multiple sources	DIS
WG 3	ISO/AWI 20524-2	Geographic Data Files (GDF) GDF5.1 – Part 2: Map data used in automated driving systems, Co-operative ITS, and multi-modal transport	WD
WG 3	ISO/DTR 21718	Spatio-temporal data dictionary for co-operative ITS and automated driving systems 2.0	FDIS
WG 3	ISO/TR 21718:2017	Spatio-temporal data dictionary for co-operative ITS and automated driving systems	PU
WG 3	ISO/NP TS 22726-1	Dynamic data and map database specification for connected and automated driving system applications – Part 1: Architecture and data model for harmonization of static map data	NP
WG 3	ISO/PWI TS 22726-2	Dynamic data and map database specification for connected and automated driving system applications – Part 2: Data model of static transitory and dynamic transitory data	PWI
WG 4	ISO 17264:2009/DAmd 1	Automatic vehicle and equipment identification – Interfaces – Amendment 1	FDIS
WG 4	ISO 24534-4:2010/DAmd 1	Electronic registration identification (ERI) for vehicles – Part 4: Secure communications using asymmetrical techniques – Amendment 1	FDIS
WG 4	ISO 24534-5:2011/DAmd 1	Automatic vehicle and equipment identification – Electronic Registration Identification (ERI) for vehicles – Part 5: Secure communications using symmetrical techniques – Amendment 1	FDIS
WG 5	ISO/CD 12813	Compliance check communication for autonomous systems	CD
WG 5	ISO 12813:2015/ Amd 1:2017	Compliance check communication for autonomous systems – Amendment 1	PU
WG 5	ISO 13141:2015/ Amd 1:2017	Localisation augmentation communication for autonomous systems – Amendment 1	PU

Work Group	Work Item	Title	Status
WG 5	ISO/FDIS 14906	Application interface definition for dedicated short-range communication	FDIS
WG 5	ISO/TR 16401-1:2018	Evaluation of equipment for conformity to ISO/TS 17575-2 – Part 1: Test suite structure and test purposes	PU
WG 5	ISO/TR 16401-2:2018	Evaluation of equipment for conformity to ISO 17575-2 – Part 2: Abstract test suite	PU
WG 5	ISO 16407-1:2017	Evaluation of equipment for conformity to ISO 17575-1 – Part 1: Test suite structure and test purposes	PU
WG 5	ISO/DIS 16407-2	Evaluation of equipment for conformity to ISO 17575-1 – Part 2: Abstract test suite	DIS
WG 5	ISO/NP TS 16785	Interface definition between DSRC-OBE and external in-vehicle devices	NP
WG 5	ISO/TS 17444-1:2017	Charging performance – Part 1: Metrics	PU
WG 5	ISO/TS 17444-2:2017	Charging performance – Part 2: Examination framework	PU
WG 5	ISO/DIS 17573-1	Systems architecture for vehicle-related tolling – Part 1: Reference model	DIS
WG 5	ISO/PWI TR 17573-2	System architecture for vehicle related tolling – Part 2: Terminology	PWI
WG 5	ISO/TS 17574:2017	Guidelines for security protection profiles	PU
WG 5	ISO/CD TR 21190	Investigation of charging policies and technologies for future standardization	CD
WG 5	ISO/AWI TS 21192	Support for traffic management	WD
WG 5	ISO/AWI TS 21193	Requirements for EFC application interfaces on common media	WD
WG 5	ISO/TS 21719-1:2018	Personalization of on-board equipment (OBE) – Part 1: Framework	PU
WG 5	ISO/TS 21719-2:2018	Personalization of on-board equipment (OBE) – Part 2: Using dedicated short-range communication	PU
WG 5	ISO/PWI TS 21719-3	Personalization of on-board equipment – Part 3: Using bluetooth	PWI
WG 5	ISO 25110:2017 E	Interface definition for on-board account using integrated circuit card (ICC)	PU
WG 7	ISO/CD 15638-4	Framework for co-operative telematics applications for regulated commercial freight vehicles (TARV) – Part 4: System security requirements	CD

Work Group	Work Item	Title	Status
WG 7	ISO/DIS 15638-9	Framework for co-operative telematics applications for regulated freight vehicles (TARV) – Part 9: Remote electronic tachograph monitoring (RTM)	DIS
WG 7	ISO 15638-10:2017	Framework for co-operative telematics applications for regulated commercial freight vehicles (TARV) – Part 10: Emergency messaging system/eCall	PU
WG 7	ISO 15638-18:2017	Framework for co-operative telematics applications for regulated commercial freight vehicles (TARV) – Part 18: ADR (Dangerous Goods)	PU
WG 7	ISO/AWI 15638-20	Framework for co-operative telematics applications for regulated commercial freight vehicles (TARV) – Part 20: Weigh in motion (WIM)	WD
WG 7	ISO 15638-21:2018	Framework for co-operative telematics applications for regulated commercial freight vehicles (TARV) – Part 21: Monitoring of regulated vehicles using roadside sensors and data collected from the vehicle for enforcement and other purposes	PU
WG 7	ISO/DIS 15638-22	Framework for collaborative telematics applications for regulated commercial freight vehicles (TARV) – Part 22: Freight vehicle stability monitoring	DIS
WG 7	ISO/DTS 17187	Electronic information exchange to facilitate the movement of freight and its intermodal transfer – Governance rules to sustain electronic information exchange methods	FDIS
WG 7	ISO/DTS 24533	Electronic information exchange to facilitate the movement of freight and its intermodal transfer – Road transport information exchange methodology	FDIS
WG 7	ISO/CD 26683-3	Freight land conveyance content identification and communication – Part 3: Monitoring cargo condition information during transport	CD
WG 8	ISO/NP 17185-4	Public transport user information – Part 4: Use cases for mobility journey planning systems and their inter-operation	NP
WG 8	ISO/NP 17185-5	Public transport user information – Part 5: Governance of mandatory public transport standards	NP

Work Group	Work Item	Title	Status
WG 8	ISO/NP 17185-6	Public transport user information – Part 6: Modelling stops and network topology	NP
WG 8	ISO/NP 17185-7	Public transport user information – Part 7: Conformance test of interoperable fare management system (ISO 24014-1)	NP
WG 8	ISO/NP 17185-8	Public transport user information – Part 8: Framework message architecture	NP
WG 8	8 ISO/NP 19083-3	Public transport – Emergency evacuation and disaster response and recovery – Part 3: Use cases	NP
WG 8	ISO/TR 20526:2017	Account-based ticketing state of the art report	PU
WG 8	ISO/AWI TR 20527	Intelligent transport systems – Interoperability between IFM systems and NFC mobile devices	WD
WG 8	ISO/PWI 20989	Conformance testing for fare management systems	PWI
WG 8	ISO/PWI 21344	Emergency services E-Call device for emergency on connected vehicles using ITS station	PWI
WG 8	ISO/PWI 21344	Charging infrastructure for public transport electric bus for Bus Rapid Transit (BRT) applications	PWI
WG 8	ISO/DTR 21724-1	Common transport service account systems – Part 1: Framework and use cases	FDIS
WG 8	ISO/PWI 21733	Synchronization of terminology and role models	PWI
WG 8	ISO/NP 21734	Performance testing for connectivity and safety functions of automated driving bus	NP
WG 8	ISO/NP 24014-1	Interoperable fare management system – Part 1: Architecture	NP
WG 9	ISO/DIS 14827-3	Data interfaces between centres for transport information and control systems – Part 3: Data interfaces between centres for intelligent transport systems (ITS) using XML	DIS
WG 9	ISO/CD 19082	Definition of data elements and data frames between roadside units and signal controllers for co-operative signal control	CD

Work Group	Work Item	Title	Status
WG 9	ISO/DTS 19468	Data interfaces between centres for transport information and control systems – Platform independent model specifications for data exchange protocols for transport information and control systems	FDIS
WG 9	ISO/AWI 20684-1	Roadside modules SNMP data interface – Part 1: Overview	WD
WG 9	ISO/AWI 20684-2	Roadside modules SNMP data interface – Part 2: Generalized field devices – Basic management	WD
WG 9	SO/NP 20684-3	Roadside modules SNMP data interface – Part 3: Generalized field device – Scheduler	NP
WG 9	ISO/NP 20684-4	Roadside modules SNMP data interface – Part 4: Generalized field device – Exceptions	NP
WG 9	ISO/AWI 20684-10	Roadside modules SNMP data interface – Part 10: Variable message signs	WD
WG 9	ISO/PWI 22741-1	Roadside modules AP-DATEX data interface – Part 1: Overview	PWI
WG 9	ISO/PWI 22741-2	Roadside modules AP-DATEX data interface – Part 2: Generalized field devices - basic management	PWI
WG 9	ISO/PWI 22741-3	Roadside modules AP-DATEX data interface – Part 3: Generalised field device scheduler	PWI
WG 9	ISO/PWI 22741-4	Roadside modules AP-DATEX data interface – Part 4: Generalised field device exceptions	PWI
WG 9	ISO/PWI 22741-10	Roadside modules AP-DATEX data interface – Part 10: Variable message signs	PWI
WG 10	ISO/AWI TR 14823-2	Graphic data dictionary – Part 2: Examples	WD
WG 10	ISO 14823:2017	Graphic data dictionary	PU
WG 10	ISO/TS 21219-7:2017	Traffic and travel information (TTI) via transport protocol experts group, generation 2 (TPEG2) – Part 7: Location referencing container (TPEG2-LRC)	PU
WG 10	ISO/NP TS 21219-20	Traffic and travel information (TTI) via transport protocol expert group, generation 2 (TPEG2) – Part 20: Extended TMC location referencing (TPEG2-ETL)	NP

Work Group	Work Item	Title	Status
WG 10	ISO/TS 21219-21:2018	Traffic and travel information via transport protocol experts group, generation 2 (TPEG2) – Part 21: Geographic location referencing (TPEG-GLR)	PU
WG 10	ISO/TS 21219-22:2017	Traffic and travel information (TTI) via transport protocol experts group, generation 2 (TPEG2) – Part 22: OpenLR location referencing (TPEG2-OLR)	PU
WG 10	ISO/TS 21219-24:2017	Traffic and travel information (TTI) via transport protocol experts group, generation 2 (TPEG2) – Part 24: Light encryption (TPEG2-LTE)	PU
WG 10	ISO/TS 21219-25:2017	Traffic and travel information (TTI) via transport protocol experts group, generation 2 (TPEG2) – Part 25: Electromobility charging infrastructure (TPEG2-EMI)	PU
WG 10	ISO/DTS 21219-26	Traffic and travel information via transport protocol experts group, generation 2 (TPEG2) – Part 26: Vigilance location information (TPEG2-VLI)	FDIS
WG 14	ISO/PRF 15622	Adaptive cruise control systems – Performance requirements and test procedures	FDIS
WG 14	ISO 16787:2017	Assisted parking system (APS) – Performance requirements and test procedures	PU
WG 14	ISO 17361:2017	Lane departure warning systems – Performance requirements and test procedures	PU
WG 14	SO 19237:2017	Pedestrian detection and collision mitigation systems (PDCMS) – Performance requirements and test procedures	PU
WG 14	ISO/PRF 19638	Road boundary departure prevention systems (RBDPS) – Performance requirements and test procedures	FDIS
WG 14	ISO/DIS 20035	Co-operative adaptive cruise control systems (CACC) – Performance requirements and test procedures	DIS
WG 14	ISO/TR 20545:2017	Vehicle/roadway warning and control systems – Report on standardisation for vehicle automated driving systems (RoVAS)/Beyond driver assistance systems	PU
WG 14	ISO/DIS 20900	Partially automated parking systems (PAPS) – Performance requirements and test procedures	DIS

Work Group	Work Item	Title	Status
WG 14	ISO/AWI 21202	Partially Automated Lane Change Systems (PALS) – Functional / operational requirements and test procedures	WD
WG 14	ISO/PRF 21717-1	Partially Automated In-Lane Driving Systems (PADS) – Performance requirements and test procedures	FDIS
WG 14	ISO/CD 22078	Bicyclist detection and collision mitigation systems (BDCMS) – Performance requirements and test procedures	CD
WG 14	ISO/PWI 22084-1	Traffic incident notification systems (TINS) – System requirements	PWI
WG 14	ISO/SAE NP PAS 22736	Taxonomy and definitions for terms related to driving automation systems for on-road motor vehicles	NP
WG 14	ISO/PWI 22737	Low-speed automated driving systems for limited operational design domain (LSAD) – Performance requirements, system requirements and performance test procedures	PWI
WG 14	ISO/PWI 23374-1	Automated valet parking systems (AVPS) – Part 1: System overview and framework	PWI
WG 14	ISO/PWI 23374-2	Automated valet parking systems (AVPS) – Part 2: Requirements and test procedures for the vehicle, parking facility, and the communication interface	PWI
WG 14	ISO/PWI 23374-3	Automated valet parking systems (AVPS) – Part 3: Requirements for the interface to back-office operation	PWI
WG 14	ISO/PWI 23374-4	Automated valet parking systems (AVPS) – Part 4: Requirements for user interface	PWI
WG 14	ISO/PWI 23375	Collision avoidance in-lane lateral control systems (CALC) – Performance requirements and test procedures	PWI
WG 14	ISO/PWI 23376	Vehicle-to-vehicle intersection collision warning systems (V2VICWS) – Performance requirements and test procedures	PWI
WG 14	ISO/PWI 23377-1	Functional safety for vehicle-to-vehicle co-operative functions (FSV2V) – Part 1: Platooning	PWI
WG 16	ISO/PRF 16461	Criteria for privacy and integrity protection in probe vehicle information systems	FDIS
WG 16	ISO/AWI 17515-2	Communications access for land mobiles (CALM) – Evolved universal terrestrial radio access network (E-UTRAN) – Part 2: Device to device communications (D2D)	WD

Work Group	Work Item	Title	Status
WG 16	ISO/DIS 17515-3	Evolved-universal terrestrial radio access network – Part 3: LTE-V2X	DIS
WG 16	ISO/TR 18317:2017	Pre-emption of ITS communication networks for disaster and emergency communication – Use case scenarios	PU
WG 16	ISO/NP 18376	Criteria for Privacy and Integrity protection in Probe Vehicle Information Systems	NP
WG 16	ISO/NP 18378	Communications access for land mobiles (CALM) – Multicast	NP
WG 16	ISO/NP 18380	Communications access for land mobiles (CALM) – IPv4-IPv6 interoperability	NP
WG 16	ISO/CD 19414	Service architecture of probe vehicle systems	CD
WG 16	ISO/AWI 21210	Communications access for land mobiles (CALM) – IPv6 Networking	WD
WG 16	ISO 21210:2012/ Amd 1:2017	Communications access for land mobiles (CALM) – IPv6 Networking – Amendment 1	PU
WG 16	ISO 21215:2018 I	Localized communications – ITS-M5	PU
WG 16	ISO 21218:2018	Hybrid communications – Access technology support	PU
WG 16	ISO 22418:2018	Fast service announcement protocol (FSAP)	PU
WG 16	ISO/NP 22738	Localized communications – Optical camera communication	NP
WG 16	ISO/NP 22837	Vehicle probe data for wide area communications	NP
WG 16	ISO/NP 24100	Basic principles for personal data protection in probe vehicle information services	NP
WG 16	ISO/PRF 24102-1	ITS station management – Part 1: Local management	FDIS
WG 16	ISO 24102-1:2013/ Amd 1:2017	Communications access for land mobiles (CALM) – ITS station management – Part 1: Local management – Amendment 1	FDIS
WG 16	ISO/PRF 24102-2	ITS station management – Part 2: Remote management of ITS-SCUs	FDIS
WG 16	ISO/PRF 24102-3	ITS station management – Part 3: Service access points	FDIS
WG 16	ISO 24102-3:2013/ Amd 1:2017	Communications access for land mobiles (CALM) – ITS station management – Part 3: Service access points – Amendment 1	PU
WG 16	ISO/PRF 24102-4	ITS station management – Part 4: Station-internal management communications	FDIS

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WG 16	ISO 24102-4:2013/ Amd 1:2017	Communications access for land mobiles (CALM) – ITS station management – Part 4: Station-internal management communications – Amendment 1	PU
WG 16	ISO 24102-5:2013/ Amd 1:2017	Communications access for land mobiles (CALM) – ITS station management – Part 5: Fast service advertisement protocol (FSAP) – Amendment 1	PU
WG 16	ISO 24102-6:2018	Communications access for land mobiles (CALM) – ITS station management – Part 6: Path and flow management	PU
WG 16	ISO/NP TS 25114	Probe data reporting management (PDRM)	NP
WG 16	ISO 29281-1:2018	Localized communications – Part 1: Fast networking & transport layer protocol (FNTP)	PU
WG 16	ISO/DIS 29281-2	Localized communications – Part 2: Legacy system support	DIS
WG 17	ISO/TR 10992-2:2017	Use of nomadic and portable devices to support ITS service and multimedia provision in vehicles – Part 2: Definition and use cases for mobile service convergence	PU
WG 17	ISO 13111- 1:2017	The use of personal ITS station to support ITS service provision for travellers – Part 1: General information and use case definitions	PU
WG 17	ISO/NP 13111-2	The use of personal ITS station to support ITS service provision for travelers – Part 2: General requirements for data exchange between personal ITS station and other ITS stations	NP
WG 17	ISO 13184-3:2017	Guidance protocol via personal ITS station for advisory safety systems – Part 3: Road guidance protocol (RGP) conformance test specification	PU
WG 17	ISO 13185-3:2018	Vehicle interface for provisioning and support of ITS Services – Part 3: Unified vehicle interface protocol (UVIP) server and client API specification	PU
WG 17	ISO/CD 13185-4	Vehicle interface for provisioning and support of ITS Services – Part 4: Unified vehicle interface protocol (UVIP) conformance test specification	CD
WG 17	ISO/NP 17438-2	Indoor navigation for personal and vehicle ITS station – Part 2: TBD	NP

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WG 17	ISO/NP 17438-3	Indoor navigation for personal and vehicle ITS station – Part 3: TBD	NP
WG 17	ISO/DIS 17438-4	Indoor navigation for personal and vehicle ITS station – Part 4: Requirements and specification for interface between Personal/Vehicle and Central ITS stations	DIS
WG 17	ISO/NP 18561-1	Urban mobility applications via nomadic device for green transport management – Part 1: Requirements for interface between ITS stations	NP
WG 17	ISO/TR 20529-1:2017	Framework for green ITS (G-ITS) standards – Part 1: General information and use case definitions	PU
WG 17	ISO/CD 20529-2	Framework for green ITS (G-ITS) standards – Part 2: Integrated mobile service application and specification	CD
WG 17	ISO/CD 20530	Information for emergency service support via personal ITS station – General requirements and technical definition	CD
WG 17	ISO/DTR 21735	Framework architecture for plug & play (PnP) functionality in vehicles utilizing nomadic devices	FDIS
WG 17	ISO/PWI 22085-2	Nomadic device service platform for micro mobility – Part 2: Functional requirements and data set definitions	PWI
WG 17	ISO/PWI 22085-3	Nomadic device service platform for micro mobility – Part 3: Data structure and data exchange procedures	PWI
WG 17	ISO/DTR 22086-1	Network based precise positioning infrastructure for land transportation – Part 1: General information and use cases description	FDIS
WG 17	ISO/PWI 22087 I	Exchanging driving experience information collected by nomadic devices	PWI
WG 18	ISO 17419:2018	Co-operative systems – Globally unique identification	PU
WG 18	ISO 17423:2018	Co-operative systems – Application requirements and objectives	PU
WG 18	ISO 17427-1:2018	Co-operative ITS – Part 1: Roles and responsibilities in the context of co-operative ITS architecture(s)	PU
WG 18	ISO/CD TR 17427-5	Co-operative ITS – Part 5: Common approaches to security	CD
WG 18	ISO/CD TR 17427-12	Co-operative ITS – Part 12: Release processes	CD

Work Group	Work Item	Title	Status
WG 18	ISO/CD TR 17427-13	Co-operative ITS – Part 13: Use case test cases	CD
WG 18	ISO/CD TR 17427-14	Co-operative ITS – Part 14: Maintenance requirements and processes	CD
WG 18	ISO/NP 17429	Co-operative ITS – ITS station facilities for the transfer of information between ITS stations	NP
WG 18	ISO/TS 17429:2017	Co-operative ITS – ITS station facilities for the transfer of information between ITS stations	PU
WG 18	ISO 18750:2018	Co-operative ITS – Local dynamic map	PU
WG 18	ISO/DTS 19091	Co-operative ITS – Using V2I and I2V communications for applications related to signalized intersections	FDIS
WG 18	ISO/TS 20026:2017	Co-operative ITS – Test architecture	PU
WG 18	ISO/PWI TS 20594	Co-operative ITS – Test requirements and protocol implementation conformance statements (PICS) pro forma for TS 17429	PWI
WG 18	ISO/PWI TS 20597	Co-operative ITS – Test requirements and protocol implementation conformance statements (PICS) pro forma for TS 19321	PWI
WG 18	ISO/PWI TS 20598	Co-operative ITS – Test requirements and protocol implementation conformance statements (PICS) pro forma for TS 19091	PWI
WG 18	ISO/AWI TS 21176	Position, velocity and time functionality in the ITS station	WD
WG 18	ISO/AWI TS 21177	ITS station security services for secure session establishment and authentication between trusted devices	WD
WG 18	ISO/AWI TS 21184	Management of messages containing information of sensor and control networks specified in data dictionaries	WD
WG 18	ISO/AWI TS 21185	Communication profiles for secure connections between trusted devices	WD
WG 18	ISO/AWI TR 21186	Guidelines on the use of C-ITS standards for hybrid communications	WD
WG 18	ISO/NP TS 21189	Test requirements and protocol implementation conformance statement (PICS) pro forma for CEN ISO TS 17426	NP
WG 19	N/A	Mobility integration needs for vulnerable users and light modes of transport	PWI
WG 19	N/A	Architecture for automation	PWI
WG 19	N/A	Parking	PWI



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SC 31	ISO/CD 11992-3	Interchange of digital information on electrical connections between towing and towed vehicles – Part 3: Application layer for equipment other than brakes and running gear	CD	Interchange of digital information on electrical connections between towing and towed vehicles
SC 31	ISO/AWI 13209-2	Open Test sequence eXchange format (OTX) – Part 2: Core data model specification and requirements	WD	Open Test sequence eXchange format (OTX)
SC 31	ISO/AWI 13209-3	Open Test sequence eXchange format (OTX) – Part 3: Standard extensions and requirements	WD	
SC 31	ISO/CD 13209-4	Open Test sequence eXchange format (OTX) – Part 4: Enhanced extensions and requirements	CD	
SC 31	ISO/FDIS 13400-2	Diagnostic communication over Internet Protocol (DoIP) – Part 2: Transport protocol and network layer services	FDIS	Diagnostic communication over Internet Protocol (DoIP)
SC 31	ISO/FDIS 14229-1	Unified diagnostic services (UDS) – Part 1: Application layer	FDIS	Unified diagnostic services (UDS)
SC 31	ISO/CD 14229-2	Unified diagnostic services (UDS) – Part 2: Session layer services	CD	
SC 31	ISO/CD 14229-3	Unified diagnostic services (UDS) – Part 3: Unified diagnostic services on CAN implementation (UDSonCAN)	CD	
SC 31	ISO/NP 14229-5	Unified diagnostic services (UDS) – Part 5: Unified diagnostic services on Internet Protocol implementation (UDSonIP)	NP	Unified diagnostic services (UDS)

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SC 31	ISO/DIS 14229-8	Unified diagnostic services (UDS) – Part 8: USD on Clock eXtension Peripheral Interface (UDSonCXPI)	DIS	
SC 31	ISO/NP 15118-9	Vehicle to grid communication interface – Part 9: Physical and data link layer conformance test for wireless communication	NP	Vehicle to grid communication interface
SC 31	ISO/DIS 15118-20	Vehicle to grid communication interface – Part 20: 2nd generation network and application protocol requirements	DIS	Vehicle to grid communication interface
SC 31	ISO/CD 15765-4	Diagnostic communication over Controller Area Network (DoCAN) – Part 4: Requirements for emissions-related systems	CD	Diagnostic communication over Controller Area Network (DoCAN)
SC 31	ISO/DIS 15765-5	Diagnostic communication over Controller Area Network (DoCAN) – Part 5: Specification for an in-vehicle network connected to the diagnostic link connector	DS	
SC 31	ISO/NP 16844-1	Tachograph systems – Part 1: Electromechanical components	NP	Tachograph systems
SC 31	ISO/NP 16844-2	Tachograph systems – Part 2: Recording unit communication interface	NP	
SC 31	ISO/NP 16844-3	Tachograph systems – Part 3: Motion sensor communication interface	NP	
SC 31	ISO/NP 16844-4	Tachograph systems – Part 4: Display unit communication interface	NP	

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SC 31	ISO/NP 16844-6	Tachograph systems – Part 6: Diagnostic communication interfaces	NP	
SC 31	ISO/NP 16844-7	Tachograph systems – Part 7: Parameters	NP	
SC 31	ISO/FDIS 17987-8	Local Interconnect Network (LIN) – Part 8: Electrical physical layer (EPL) specification: LIN over DC powerline (DC-LIN)	FDIS	
SC 31	ISO/NP 18541-1	Standardized access to automotive repair and maintenance information (RMI) – Part 1: General information and use case definition	NP	Standardized access to automotive repair and maintenance information (RMI)
SC 31	ISO/NP 18541-2	Standardized access to automotive repair and maintenance information (RMI) – Part 2: Technical requirements	NP	
SC 31	ISO/NP 18541-3	Standardized access to automotive repair and maintenance information (RMI) – Part 3: Functional user interface requirements	NP	
SC 31	ISO/NP 18541-4	Standardized access to automotive repair and maintenance information (RMI) – Part 4: Conformance test	NP	
SC 31	ISO/FDIS 20730-1	Vehicle interface for electronic Periodic Technical Inspection (ePTI) – Part 1: Application and communication requirements	FDIS	electronic Periodic Technical Inspection (ePTI)
SC 31	ISO/NP 20730-3	Vehicle interface for electronic Periodic Technical Inspection (ePTI) – Part 3: Data definitions	NP	electronic Periodic Technical Inspection (ePTI)

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SC 31	ISO/DIS 20794-2	Clock extension peripheral interface (CXPI) – Part 2: Application layer	DIS	Clock extension peripheral interface (CXPI)
SC 31	ISO/DIS 20794-3	Clock extension peripheral interface (CXPI) – Part 3: Transport and network layer	DIS	
SC 31	ISO/DIS 20794-4	Clock extension peripheral interface (CXPI) – Part 4: Data link layer and physical layer	DIS	
SC 31	ISO/CD 20794-5	Clock extension peripheral interface (CXPI) – Part 5: Application layer conformance test plan	CD	
SC 31	ISO/CD 20794-6	Clock extension peripheral interface (CXPI) – Part 6: Transport and network layer conformance test plan	CD	
SC 31	ISO/CD 20794-7	Clock extension peripheral interface (CXPI) – Part 7: Data link and physical layer conformance test plan	CD	
SC 31	ISO/DIS 21111-1	In-vehicle Ethernet – Part 1: General information and definitions	DIS	In-vehicle Ethernet
SC 31	ISO/DIS 21111-2	In-vehicle Ethernet – Part 2: Common physical entity requirements	DIS	
SC 31	ISO/DIS 21111-3	In-vehicle Ethernet – Part 3: Optical 1-Gbit/s physical entity requirements and conformance test plan	DIS	
SC 31	ISO/DIS 21111-5	In-vehicle Ethernet – Part 5: Optical 1-Gbit/s physical layer system requirements and test plans	DIS	

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SC 31	ISO/NP 21111-6	In-vehicle Ethernet – Part 6: Electrical 100-Mbit/s physical entity requirements and conformance test plan	NP	In-vehicle Ethernet
SC 31	ISO/NP 21111-7	In-vehicle Ethernet – Part 7: Electrical 100-Mbit/s physical layer system requirements and test plans	NP	
SC 31	ISO/NP 21111-9	In-vehicle Ethernet – Part 9: Data link layer requirements and conformance test plan	NP	
SC 31	ISO/NP 21111-10	In-vehicle Ethernet – Part 10: Application to network layer requirements and test plans	NP	
SC 31	ISO/DIS 21806-1	Media oriented systems transport (MOST) framework – Part 1: General information and document structure definitions	DIS	
SC 31	ISO/DIS 21806-2	Media oriented systems transport (MOST) framework – Part 2: Application layer	DIS	Media oriented systems transport (MOST) framework
SC 31	ISO/DIS 21806-3	Media oriented systems transport (MOST) framework – Part 3: Application layer conformance test plan	DIS	
SC 31	ISO/DIS 21806-4	Media oriented systems transport (MOST) framework – Part 4: Transport and network layer	DIS	
SC 31	ISO/DIS 21806-5	Media oriented systems transport (MOST) framework – Part 5: Transport and network layer conformance test plan	DIS	

Sub committee	Work Item	Title	Status	Key items
SC 31	ISO/DIS 21806-6	Media oriented systems transport (MOST) framework – Part 6: Data link layer	DIS	
SC 31	ISO/DIS 21806-7	Media oriented systems transport (MOST) framework – Part 7: Data link layer conformance test plan	DIS	
SC 31	ISO/DIS 21806-8	Media oriented systems transport (MOST) framework – Part 8: 150 Mbit/s optical physical layer	DIS	
SC 31	ISO/DIS 21806-9	Media oriented systems transport (MOST) framework – Part 9: 150 Mbit/s optical physical layer conformance test plan	DIS	
SC 31	ISO/AWI 21806-10	Media Oriented Systems Transport (MOST) framework – Part 10: 150-Mbit/s coaxial physical layer	WD	
SC 31	ISO/AWI 21806-11	Media Oriented Systems Transport (MOST) framework – Part 11: 150-Mbit/s coaxial physical layer conformance test plan	WD	
SC 31	ISO/AWI 21806-12	Media Oriented Systems Transport (MOST) framework – Part 12: 50-Mbit/s balanced media physical layer	WD	
SC 31	ISO/AWI 21806-13	Media Oriented Systems Transport (MOST) framework – Part 13: 50-Mbit/s balanced media physical layer conformance test plan	WD	
SC 31	ISO/AWI 21806-14	Media Oriented Systems Transport (MOST) framework – Part 14: Lean application layer	WD	

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SC 31	ISO/AWI 21806-15	Media Oriented Systems Transport (MOST) framework – Part 15: Lean application layer conformance test plan	WD	
SC 31	ISO/NP 22900-2	Modular vehicle communication interface (MVCI) – Part 2: Diagnostic protocol data unit (D-PDU API)	NP	Modular vehicle communication interface (MVCI)
SC 31	ISO/DIS 23132	Extended Vehicle (ExVe) time critical applications – General requirements, definitions and classification methodology of time-constrained situations related to Road and ExVe Safety (RExVeS)	DIS	Extended Vehicle (ExVe) time critical applications
SC 31	ISO/CD 23150	Data communication between sensors and data fusion unit for automated driving functions – Logical interface	CD	Data fusion unit for automated driving functions
SC 31	ISO/CD 23239-1	Vehicle domain data collection service – Part 1: General information and use case definitions	CD	Vehicle domain data collection service
SC 31	ISO/DTR 23786	Solutions for remote access to vehicle – Criteria for risk assessment	CD	
SC 31	ISO/TR 23791	Extended vehicle (ExVe) web services – Result of the risk assessment on ISO 20078 series	PU	Extended Vehicle (ExVe) time critical applications
SC 31	ISO/NP TR 23841	Guidelines for the structure and layout of data communication standards	NP	Data communication standards
SC 31	ISO/AWI 26021-1	End-of-life activation of in-vehicle pyrotechnical devices – Part 1: Application and communication interface	WD	End-of-life activation of in-vehicle pyrotechnical devices

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SC 31	ISO/AWI 26021-2	End-of-life activation of in-vehicle pyrotechnical devices – Part 2: Application and communication interface conformance test plan	WD	
SC 32	ISO/CD 7637-2	Electrical disturbances by conduction and coupling – Part 2: Electrical transient conduction along supply lines	CD	Electrical disturbances by conduction and coupling
SC 32	ISO/DTS 7637-4	Electrical disturbance by conduction and coupling – Part 4: Electrical transient conduction along shielded high voltage supply lines only	CD	
SC 32	ISO/AWI 8092-2	Connections for on-board electrical wiring harnesses – Part 2: Definitions, test methods and general performance requirements	WD	Connections for on-board electrical wiring harnesses
SC 32	ISO/DIS 8092-5	Connections for on-board electrical wiring harnesses – Part 5: Test methods and general performance requirements for wiring harness connector operation	DIS	
SC 32	ISO/FDIS 8820-8	Fuse-links – Part 8: Fuse-links with bolt-in contacts (Type H and J) with rated voltage of 450 V	FDIS	Fuse-links
SC 32	ISO/CD 8820-10	Fuse-links – Part 10: Fuse-links with tabs Type L (high current miniature)	CD	
SC 32	ISO/DIS 8820-11	Fuse-links – Part 11: Fuse-links with tabs (blade type) Type M (medium-high current)	DIS	
SC 32	ISO/DIS 8820-12	Fuse-links – Part 12: Fuse-links with tabs (blade type) Type N (sub miniature)	DIS	

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SC 32	ISO/DIS 8820-13	Fuse-links – Part 13: Fuse-links with tabs (blade type) Type P (sub miniature three tabs)	DIS	
SC 32	ISO/AWI 11451-5	Vehicle test methods for electrical disturbances from narrowband radiated electromagnetic energy – Part 5: Reverberation chamber	WD	Narrowband radiated electromagnetic energy
SC 32	ISO/DIS 11452-4	Component test methods for electrical disturbances from narrowband radiated electromagnetic energy – Part 4: Harness excitation methods	DIS	
SC 32	ISO/CD 11452-9	Component test methods for electrical disturbances from narrowband radiated electromagnetic energy – Part 9: Portable transmitters	CD	
SC 32	AWI 11452-10	Component test methods for electrical disturbances from narrowband radiated electromagnetic energy – Part 10: Immunity to conducted disturbances in the extended audio frequency range	WD	
SC 32	ISO/CD 11565	Spark plugs – Test methods and requirements	CD	Spark plugs
SC 32	ISO/DIS 12098	Connectors for the electrical connection of towing and towed vehicles – 15-pole connector for vehicles with 24 V nominal supply voltage	DIS	
SC 32	ISO/AWI 16750-1	Environmental conditions and testing for electrical and electronic equipment – Part 1: General	WD	Environmental conditions and testing for electrical and electronic equipment

Sub committee	Work Item	Title	Status	Key items
SC 32	ISO/AWI 16750-2	Environmental conditions and testing for electrical and electronic equipment – Part 2: Electrical loads	WD	
SC 32	ISO/AWI 16750-3	Environmental conditions and testing for electrical and electronic equipment – Part 3: Mechanical loads	WD	
SC 32	ISO/AWI 16750-4	Environmental conditions and testing for electrical and electronic equipment – Part 4: Climatic loads	WD	
SC 32	ISO/AWI 16750-5	Environmental conditions and testing for electrical and electronic equipment – Part 5: Chemical loads	WD	
SC 32	ISO/CD 17447-1	Glow-plugs with conical seating and their cylinder head housing – Part 1: Basic characteristics and dimensions for metal-sheath-type glow-plugs	CD	
SC 32	ISO/DIS 19072-2	Connection interface for pyrotechnic devices, two-way and three-way connections – Part 2: Test methods and general performance requirements	DIS	Connection interface for pyrotechnic devices
SC 32	ISO/TS 19072-5	Connection interface for pyrotechnic devices, two-way and three-way connections – Part 5: Pyrotechnic device and harness connector assembly - type 3 (only two-way)	PU	Connection interface for pyrotechnic devices
SC 32	ISO/DIS 19453-6	Environmental conditions and testing for electrical and electronic equipment for drive system of electric propulsion vehicles – Part 6: Traction battery packs and systems	DIS	

Sub committee	Work Item	Title	Status	Key items
SC 32	ISO/AWI 19642-11	Automotive cables – Part 11: Dimensions and requirements for coaxial RF cables with a specified analog bandwidth up to 6 GHz (20 GHz)	WD	Automotive cables
SC 32	ISO/AWI 19642-12	Automotive cables – Part 12: Unscreened paired or quad RF cables with a specified analog bandwidth up to 1 GHz	WD	
SC 32	ISO/FDIS 20076	Test methods and performance requirements for voltage class B connectors	FDIS	
SC 32	ISO/AWI 20653	Degrees of protection (IP code) – Protection of electrical equipment against foreign objects, water and access	WD	Degrees of protection (IP code)
SC 32	ISO/DIS 21111-4	In-vehicle Ethernet – Part 4: General requirements and test methods of optical Gigabit Ethernet components	DIS	
SC 32	ISO/CD 21111-8	In-vehicle Ethernet – Part 8: Electrical 100 Mbit/s communication channel and components requirements and test methods	CD	In-vehicle Ethernet
SC 32	ISO/SAE CD 21434	Cybersecurity engineering	CD	Cybersecurity engineering
SC 32	ISO/AWI 21448	Safety of the intended functionality	WD	Safety of the intended functionality
SC 32	ISO/DIS 21780	Road vehicles – Supply voltage of 48 V – Electrical requirements and tests	DIS	Supply voltage of 48 V
SC 32	ISO/AWI 24089	Software update engineering	WD	Software update engineering
SC 32	ISO/AWI 24195	Vocabulary for engineering of starting devices and electrical generators	WD	Starting devices and electrical generators

Sub committee	Work Item	Title	Status	Key items
SC 32	ISO/DIS 25981	Connectors for the electrical connection of towing and towed vehicles – Connectors for electronically monitored charging systems with 12 V or 24 V nominal supply voltage	DIS	Towing and towed vehicles
SC 32	ISO/AWI 28741	Spark-plugs and their cylinder head housings – Basic characteristics and dimensions	WD	Spark-plugs and their cylinder head housings
SC 33	ISO/ 22733-1	Test method to evaluate the performance of autonomous braking systems (AEBS) – Part 1: Car to car	WD	Autonomous braking systems
SC 33	ISO/ 22735	Test method to evaluate the performance of lanekeeping assistance systems (LKAS)	WD	Lanekeeping assistance systems
SC 33	ISO/ 22733-2	Test method to evaluate the performance of autonomous braking systems – Part 2: Car-to-pedestrian	PWI	Autonomous emergency braking systems, car-to-car, car-to-pedestrian
SC 33	ISO/34501	Terms and definitions of test scenarios for automated driving systems	PWI	Test scenarios for automated driving
SC 33	ISO/34502	Engineering framework and process of scenario-based safety evaluation	PWI	Scenario-based safety evaluation
SC 33	ISO/34503	Taxonomy for operational design domain for automated driving systems	PWI	
SC 33	ISO/34504	Scenario attributes and categorization	PWI	



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WG 1	DTS/ITS-0010021	Communication congestion control	Early draft	Communication congestion control
WG 1	DTS/ITS-00135	MCD basic service specification	Final draft for approval	MCD basic service
WG 1	DTR/ITS-00156	Platooning pre-standardization study	Early draft	Platooning
WG 1	RTR/ITS-00161	BSA Release 2 revision	Early draft	BSA
WG 1	DTR/ITS-00165	VRU study	Draft receipt by ETSI Secretariat	Vulnerable road users
WG 1	DTS/ITS-00167	CPS	Early draft	CPS
WG 1	DTR/ITS-00181	Transport pollution management in C-ITS	Early draft	Transport pollution management
WG 1	RTS/ITS-00181	Infrastructure Services	Start of work	Infrastructure Services
WG 1	REN/ITS-00182	Facility Position and Time	Stable draft	Facility Position and Time
WG 1	DTS/ITS-00183	VRU basic service	TB adoption of WI	Vulnerable road users
WG 1	DTR/ITS-00183	Informative Report for the Collective Perception Service	Early draft	Collective Perception Service
WG 1	DTS/ITS-00184	Maneuver Coordination Service	Early draft	Maneuver Coordination Service
WG 1	DTR/ITS-00185	Vehicular Communications; Informative report for the Maneuver Coordination Service	Early draft	
WG 1	DTS/ITS-00186	VRU Architecture	Early draft	
WG 1	DTR/ITS-00187	Pre-Standardization Study on payment applications in ETSI ITS-G5	Early draft	Payment applications
WG 1	RTS/ITS-00188	CAM PICS	TB adoption of WI	CAM PICS, TSS & TP, ATS
WG 1	RTS/ITS-00189	CAM TSS & TP	TB adoption of WI	
WG 1	RTS/ITS-00190	CAM ATS	TB adoption of WI	

Work Group	Work Item	Title	Status	Key items
WG 1	RTS/ITS-00191	DEN PICS	TB adoption of WI	DEN PICS, TSS & TP, ATS
WG 1	RTS/ITS-00192	DEN TSS & TP	TB adoption of WI	
WG 1	RTS/ITS-00193	DEN ATS	TB adoption of WI	
WG 1	RTS/ITS-001944	SPAT/MAP PICS	TB adoption of WI	SPAT/MAP PICS, TSS & TP, ATS
WG 1	RTS/ITS-001944	SPAT/MAP TSS & TP	TB adoption of WI	
WG 1	RTS/ITS-001945	SPAT/MAP ATS	TB adoption of WI	
WG 1	RTS/ITS-00194	Applications and facilities layer common data dictionary - Release 2	Start of work	Applications and facilities layer common data dictionary
WG 1	DTS/ITS-00195	Diagnosis, Logging and Status Service	Start of work	Diagnosis, Logging and Status Service
WG 1	DTR/ITS-00199	Informative report for the Diagnosis, Logging and Status Service	Early draft	Diagnosis, Logging and Status Service
WG 2	DTS/ITS-002200	ITS Architecture for MCO	TB adoption of WI	
WG 2	DTS/ITS-002202		TB adoption of WI	
WG 2	DTR/ITS-00276-1	Pre-standardization study on ITS architecture; Part 1: Architecture for communications among ITS stations with multiple access layer technologies;	Early draft	Interoperability among heterogeneous ITS systems and backward compatibility
WG 2	DTR/ITS-00276-2	Pre-standardization study on ITS architecture; Part 2: Interoperability among heterogeneous ITS systems and backward compatibility	Final draft for approval	ITS stations with multiple access layer technologies
WG 2	RTR/ITS-00278	Mobile network support of C-ITS	Early draft	Mobile network support of C-ITS

Work Group	Work Item	Title	Status	Key items
WG 2	DTR/ITS-00279	Multi Channel Operations	TB adoption of WI	Multi Channel Operations
WG 3	DTS/ITS-003203	ITS GeoNetworking MCO extensions	Start of work	GeoNetworking, MCO extensions
WG 3	DTR/ITS-00356	GeoNetworking Pre-standardization study Release 2	Stable draft	
WG 3	REN/ITS-00358	Geonetworking; geographical addressing; media independent	End of EN Approval Procedure	GeoNetworking; media independent
WG 3	RTS/ITS-00363	Geonetworking; geographical addressing; media dependent	Stable draft	GeoNetworking; media dependent
WG 4	REN/ITS-0040191	ITS-G5 Access layer ITS 5 GHz	Start of TB review after AP comments	ITS-G5 Access layer
WG 4	REN/ITS-0040199	ITS-G5 Access layer ITS 5 GHz	Start of TB review after AP comments	LTE-V2X Access layer
WG 4	DTS/ITS-004204	Access Layer specification for MCO	TB adoption of WI	MCO Access Layer specification
WG 4	DTS/ITS-00437-2	ITS Performance Analysis Framework	Early draft	ITS Performance Analysis
WG 4	RTS/ITS-00439	DSRC/G5 Radio Test TSS & TP	WG approval	DSRC/G5
WG 4	RTS/ITS-00440	DSRC/G5 Radio Test PICS	WG approval	
WG 4	RTS/ITS-00441	DSRC/G5 Radio Test ATS	Start of work	DSRC/G5
WG 4	DTR/ITS-00442	Investigation to improve TTT DSRC	Early draft	TTT DSRC
WG 4	DTR/ITS-00443	ITS test mode for infield testing	Final draft for approval	ITS test mode

Work Group	Work Item	Title	Status	Key items
WG 5	DTR/ITS-00539	Malicious behavior detection	Early draft	Malicious behavior detection
WG 5	RTR/ITS-00546	TVRA Revision	Early draft	TVRA Revision
WG 5	RTS/ITS-00549	Security header and certificate formats	Early draft	
WG 5	DTS/ITS-00550	Security management messages communication requirements and distribution protocols	Early draft	Security
WG 5	DTR/ITS-00550	Management process and guidance for the definition and usage of PSID and SSP for C-ITS services	Start of work	Definition and usage of PSID and SSP for C-ITS services
WG 5	DTR/ITS-00551	Cellular ITS	Early draft	Cellular ITS
WG 5	DTS/ITS-00553	ITS SF-SAP	Early draft	ITS SF-SAP



Informational sign

Storvikstua

Informational sign

60

km/h

Stop sign

Appendix B

Links to existing ITS standards

CEN/TC 278 available standards:

<https://bit.ly/32lIE5z>

CEN/TC 226 available standards:

<https://bit.ly/33HjRcn>

ISO/TC 204 available standards:

<https://bit.ly/35CDCnz>

ISO/TC 22/SC 31, SC 32 & SC 33 available standards:

<https://www.iso.org/committee/5383568/x/catalogue/p/1/u/0/w/0/d/0>

<https://www.iso.org/committee/5383636/x/catalogue/p/1/u/0/w/0/d/0>

<https://www.iso.org/committee/5383785/x/catalogue/p/1/u/0/w/0/d/0>

ETSI/TC ITS available standards:

<https://bit.ly/32kCymc>

Appendix C

Standardization Terminology

AWI – Approved Work Item

CD – Committee Draft

DIS – Draft International Standard

DTS – Draft Technical Specification

FDIS – Final Draft International Standard

FprEN – Final Draft European Standard

NP – New Proposal

NSB – National Standards Body

NWI – New Work Item

prEN – Draft European Standard

PRF – Proof

PU – Published

PWI – Preliminary Work Item

SC – Sub Committee

SR – Systematic Review

TR – Technical Report

TS – Technical Specification

WD – Working Draft

WG – Working group

WI – Work Item

Become Involved and Influence Standards of Your Field

If you make the decision to participate in standardization, you will be able to anticipate trends in future requirements of your industry. You will be able to take them into account in your planning and possibly influence them. Standardization is always a strategic choice: Do you wish to keep track of standards and have an effect on them, or is it enough to utilize a finished standard?

Standardization is an international effort, as most standards approved in Finland are European or global. Responding to the needs of markets, standards are developed in cooperation with industry and other stakeholder experts.

Join us in standardization to gain an edge on the market!

More information!

www.sfs.fi/en/standardization/how_can_i_participate

Standardization is one of the key issues to enable scalable, replicable and interoperable solutions and products and to gain success in European or even in global market. Standardization is important – no matter if you are a builder of new business ecosystems, a representative of a large enterprise, a governmental player supporting market growth or an innovator scaling up your new products in a smaller company. ITS standardization landscape is complex entirety involving several standardization bodies and activities, which makes it rather challenging to approach without a basic understanding. The objective of this handbook is to give a useful overview to standardization activities of intelligent transport systems and to help the reader to find more information related to preferred area of interest. Therefore, the descriptions of the technologies and standardization activities have been kept in general level.

This book is a joint effort from YTL, ITS Finland, ITS Factory and Infotripla Oy and the wide expertise within the network. The ITS Factory publication ITS Standardization handbook (2012) was used as a background for this updated publication.



Yhteinen Toimialaliitto ry

Eteläranta 10, PL 325, 00131 Helsinki
p. 040 579 4393, www.ytl.fi



Suomen Standardisoimisliitto SFS ry

Malminkatu 34, PL 130, 00101 Helsinki
p. 09 149 9331, www.sfs.fi, sales@sfs.fi