

# **Intelligent Transport System (ITS) in Europe**

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## 1. Glossary

1	ITS	Intelligent Transport Systems
2	CEN	European Committee for Standardization
3	CENELEC	European Committee for Electro-technical Standardization
4	ETSI	European Telecommunications Standards Institute (ETSI)
5	C-ITS	Cooperative-Intelligent Transport Systems
6	ICT	Information and Communication Technologies
7	GNSS	Global Navigation Satellite System
8	TCs	Technical Committees
9	ISO	International Organization for Standardization
10	WGs	Working Groups
11	EC	European Commission
12	SDOs	Standards Developing Organizations
13	CG	Coordination Group
14	ITU	International Telecommunication Union
15	IEC	International Electro-Technical Commission
16	ERTICO	European Road Transport Telematics Implementation Coordination Organization
17	3GPP	3 <sup>rd</sup> Generation Partnership Project
18	C-V2X	Cellular Vehicle to Everything
19	V2I	Vehicle to Infrastructure
20	V2P	Vehicle to pedestrian
21	TS	Technical Specification
22	TR	Technical Report

## 2. Intelligent transport system (ITS) in Europe

Intelligent Transport Systems (ITS) add information and communications technology (ICT) to transport infrastructures and vehicles in an effort to improve their safety, reliability, efficiency and quality. ITS services are also designed to optimize transport times and fuel consumption thus providing greener and safer transportation. However, the deployment of Intelligent Transport Systems and the provision of corresponding services are not limited to the road transport sector only, but include other domains such as railways, aviation and maritime as well.. Consequently, ITS have become the focus of a number of 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 (ESOs) to develop and adopt European standards in support of this legal framework. Not surprisingly there is considerable activity in this area by the European standards organizations CEN, CENELEC and ETSI. In Europe, the Network of National ITS Associations is a consortium of organisations with various ITS interests, with the secretariat at [ERTICO - ITS Europe \(European Road Transport Telematics Implementation Coordination scl\)](#) which is a public/private partnership promoting the development and deployment of ITS. They connect public authorities, industry players, infrastructure operators, users, national ITS associations and other organisations together.

### 2.1. Policy Initiatives:

In many respects today's vehicles are already connected devices. However, in the very near future they will also interact directly with each other and with the road infrastructure. In the coming years, the digitalisation of transport in general and ITS in particular are expected to take a leap forwards. As part of the [Digital Single Market Strategy](#), the European Commission aims to make more use of ITS solutions to achieve a more efficient management of the transport network for passengers and business.

In December 2008, the European Commission (EC) launched its Action Plan for the Deployment of Intelligent Transport Systems in Europe with the aim of accelerating and coordinating the deployment of Intelligent Transport Systems (ITS) in road transport, including interfaces with other transport modes". The Action Plan suggested a number of targeted actions to unlock the full potential of ITS in serving EU policies in the field of enhanced road safety, improved transport efficiency and reduced environmental impact and to create the momentum necessary to speed up market penetration of (rather mature) ITS applications and services.

A new legal framework ([Directive 2010/40/EU](#)) was adopted on 7 July 2010 to accelerate the deployment of these innovative transport technologies across Europe. This Directive is an important instrument for the coordinated implementation of ITS in Europe. It aims to establish interoperable and seamless ITS services while leaving Member States the freedom to decide which systems to invest in.

Under this Directive the European Commission has to adopt within the next seven years specifications (i.e. functional, technical, organisational or services provisions) to address the compatibility, interoperability and continuity of ITS solutions across the EU. The first priorities will be traffic and travel information, the eCall emergency system and intelligent truck parking.

The European Commission also works to set the ground for the next generation of ITS solutions, through the deployment of [Cooperative-ITS \(C-ITS\)](#), paving the way for automation in the transport

sector. C-ITS, which will allow road users and traffic managers to share information and use it to coordinate their actions.

This cooperative element – enabled by digital connectivity between vehicles and between vehicles and transport infrastructure – is expected to significantly improve road safety, traffic efficiency and comfort of driving, by helping the driver to take the right decisions and adapt to the traffic situation.

These are few other initiatives of the European Commission which include Intelligent Transport Systems (ITS) in general or specific applications.

- **[Intelligent Car Initiative](#)**

The **Intelligent Car Initiative** is a policy framework set up by the European Commission to tie up all activities relating to 'intelligent' automobiles to accelerate the deployment of intelligent vehicle systems. The term covers all vehicles that are equipped with modern information and communication technologies (ICT) to increase road safety and/or the flow of traffic, or to reduce the environmental impact of road transport.

- **[iMobility forum \(former eSafety initiative\)](#)**

In the beginning came the eSafety Initiative, launched by the European Commission in 2002. Its main aim was to contribute to the European Commission's 2001 goal of halving the number of fatalities on Europe's roads by 2010. After years of social change that took into account traffic-related environmental issues such as fuel efficiency and reduction in pollutant exhausts to the same level of importance as traffic safety, the eSafety Initiative became part of the Commission's new Intelligent Car Initiative. The eSafety Forum not only took into account changes in the policy and social framework, but also changed its name to reflect its field of work and include ICT systems for resource-efficient and clean mobility in addition to ICT-based safety technologies: the **iMobility Forum** was born. iMobility forum was the first pillar of the Intelligent Car Initiative to foster development, deployment and use of intelligent vehicle safety systems and advanced driver assistance systems. [Read more](#)

- **[Action Plan on Global Navigation Satellite System \(GNSS\) Applications](#)**

The Global Navigation Satellite Systems (GNSS) Applications Action Plan was adopted on 14 June. The actions outlined in the document are designed to place European industry in a key position to take full advantage of the global downstream market, estimated to be worth about €100 billion. [Read more](#)

- **[Action Plan on Urban Transport](#)**

The European Commission adopted the Action Plan on urban mobility on 30 September 2009. [Green paper on urban mobility](#) to be followed by action plan, including issues of integrated information and ticketing. The Action Plan proposed twenty measures to encourage and help local, regional and national authorities in achieving their goals for sustainable urban mobility. With the Action Plan, the European Commission presented for the first time a comprehensive support package in the field of urban mobility. [Read more](#)

- **[EASYWAY](#)**

The EasyWay Programme (2007 - 2020) provide a reference for stakeholders in ITS deployment to develop guidelines for harmonisation, to build consensus, to exchange best

practice and disseminate knowledge, to assess impacts of ITS and evaluate European deployment. By the different Project (Study and Works) generated under the EasyWay Programme, ITS deployment were and are accelerated in a harmonised way along Corridors and cross border sections of the Trans-European Transport Networks (TEN-T) Road network making better use of existing infrastructures, to realise until 2020 ambitious objectives: 25% reduction of congestion, 25% reduction of fatalities and a contribution to the climate protection objectives of 10% less GHG-emissions from traffic. [Read more](#)

## 2.2. Standardization of ITS:

The [ITS directive](#) is supported by mandate [M/ 453](#), and even though this mandate has formally ended there are several standards activities still under support by M/453. Getting a good understanding of what is being standardised, who is working with what, and the importance and impact of the standardisation for ITS stakeholders is thus important.

Within ITS standardisation there are Technical Committees (TCs) of three Standards Development Organisations (SDOs) which are of special interest for the European domain. These are [CEN TC 278](#), [ETSI TC ITS](#), [ERM TG37](#) and [ISO TC 204](#).

- [CEN TC 278](#): CEN/TC 278 is responsible for managing the preparation of standards in the field of Intelligent Transport Systems (ITS) in Europe. It serves as a platform for European stakeholder to exchange knowledge, information, best practices and experiences in ITS. [CEN/TC 278](#) has a number of [Working Groups \(WG\)](#), each responsible for a specific ITS area:
  - **WG 1:** [Electronic Fee Collection](#)
  - **WG 3:** [Public Transport](#)
  - **WG 7:** [ITS Spatial Data](#)
  - **WG 8:** [Road Traffic Data](#)
  - **WG 10:** [Human - Machine Interfacing](#)
  - **WG 12:** [Vehicle identification](#)
  - **WG 15:** [e - safety / eCall](#)
  - **WG 16:** [Cooperative ITS](#)
  - **WG17:** [Urban- ITS](#)

**The following documents are relevant for the standardization work in CEN/TC 278:**

- [Directive 2004/52/EC \(EFC directive\)](#) on the interoperability of electronic road toll systems in the Community.
- [Mandate M/338 on Electronic Fee Collection](#) in support of Interoperability of electronic road toll systems in Europe.
- [Commission Decision 2009/750/EC](#) on the definition of the European Electronic Toll Service and its technical elements
- [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
- [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.

- [Mandate M/453 on Co-operative systems](#) for Intelligent Transport in the field of information and communication technologies to support interoperability of cooperative systems for intelligent transport in Europe.
- The EC [Rolling plan for ICT standardization](#) provides an overview of the needs for preliminary or complementary ICT standardisation activities to be undertaken in support of EU policy activities.

**List of Standards developed by CEN TC 278 on intelligent transport systems (ITS) is available as [Annexure 1](#).**

- [ETSI TC ITS](#): TC ITS develops standards related to the overall communication architecture, management (including e.g. Decentralized Congestion Control), security as well as the related access layer agnostic protocols: the physical layer (e.g. with ITS-G5), Network Layer, Transport Layer (e.g. with the GeoNetworking protocol), Facility Layer, (e.g. with the definition of facility services such as Cooperative Awareness - CA, Decentralized Environmental Notification - DEN and Cooperative Perception – CP, used by the ITS applications).

**ETSI TC ITS has created five Working Groups (WGs) given below:**

- **WG1:** Application Requirements & Service
  - **WG2:** Architecture & Cross Layer
  - **WG3:** Transport & Network
  - **WG4:** Media & Medium related
  - **WG5:** Security
- [ERM TG37](#): ERM TG37 covers ITS (road transport) Harmonised Standards and other relevant deliverables. ERM TG37 has a close relationship with TC ITS and acts as its vehicle into ERM related deliverables. ERM TG37 conducts their meeting as joint meetings with TC ITS WG 4 since maintenance work on the harmonised standards be carried out jointly managed between TC ERM and TC ITS.

**List of latest published ETSI standards on intelligent transport systems is available as [Annexure 2](#) and for work in progress see the ETSI [Work Programme](#)**

The ITS Coordination Group (ITS-CG) between CEN and ETSI has been established to ensure on-going coordination of the standardization activities within these two SDOs.

ISO, IEC and ITU are global SDOs who standardise ITS on a global level. Many of the working groups (WGs) in CEN TC278 are overlapping with WGs in ISO TC 204. The figure below shows the alignment of the working groups.



To harmonise and obtain a good and fruitful cooperation CEN 278 and ISO TC 204 have joint meetings twice a year. Cooperation between regional and global ITS SDOs is important in order to achieve harmonised standards providing global interoperability. Detailed cooperation between the SDOs has been initiated in addition to the already existing cross participation by membership in the relevant organisations.

**3rd Generation Partnership Project (3GPP) work on ITS:**

- **Cellular-Vehicle-to-Everything (C-V2X):** Vehicle-to-everything (V2X) communication technology is essential in providing real-time and highly reliable information flows to enable safe, efficient and environmentally-conscious transportation services and paving the way to connected and automated driving (CAD). C-V2X is the technology developed in 3GPP and is designed to operate in two modes:
  - Device-to-device: This is Vehicle-to-Vehicle (V2V), Vehicle-to-(Roadway) Infrastructure (V2I) and Vehicle-to-Pedestrian (V2P) direct communication without necessarily relying on network involvement for scheduling.



- Device-to-network: This is Vehicle-to-Network (V2N) communication which uses the traditional cellular links to enable cloud services to be part of the end-to-end solution by means of network slicing architecture for vertical industries.

The initial Cellular V2X (C-V2X) standard of release 14 was completed in September 2016, focused on V2X Direct Communication. In June 2017, 3GPP finalised Cellular Vehicle-to-Everything (C-V2X) technology in [Release 14](#) of its standards. Based on LTE, this cellular technology is designed to deliver safety and information services to vehicles, paving the way for the development of cooperative intelligent transport systems (C-ITS) that reduce congestion and pollution, while making travel faster and more efficient. C-V2X is designed to be fully compatible with forthcoming 5G mobile technologies, meaning investments in infrastructure and modules today will be future-proof. C-V2X technology will be further refined and its capabilities expanded with [Release 15](#) of the 3GPP standards, due in June 2018, and [Release 16](#) in June 2019.

A number of other standards support V2X communication networks, such as [Network Function Virtualization \(NFV\)](#) and [Multi-access Edge Computing \(MEC\)](#), both developed by ETSI and being adopted by 3GPP.

**For more information about 3GPP please click [here](#) and a list of technical reports (TRs) is available as [Annexure 3](#).**

#### **OneM2M work on ITS:**

The purpose and goal of oneM2M is to develop technical specifications which address the need for a common M2M Service Layer that can be readily embedded within various hardware and software and relied upon to connect the myriad of devices in the field with M2M application servers worldwide. In particular, [TS-0036 “Advanced Vehicular Domain Enablement”](#) provides the necessary adaptations to the endorsed document.

**For more information about OneM2M please click [here](#) and a list of technical specifications and technical reports is available as [Annexure 4](#).**

### **3. References**

- **Digital Single Market Strategy**  
(<https://ec.europa.eu/commission/priorities/digital-single-market/>)
- **Directive2010/40/EU**  
(<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32010L0040>)
- **Cooperative-ITS (C-ITS)**  
[https://ec.europa.eu/transport/themes/its/c-its\\_en](https://ec.europa.eu/transport/themes/its/c-its_en)
- **Intelligent Car Initiative**  
<https://www.lu.lv/materiali/biblioteka/es/pilnieteksti/transports/i2010.%20Intelligent%20car.pdf>

- **Action Plan on GNSS Applications**  
<https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0308:FIN:EN:PDF>
- **iMobility forum**  
[http://ec.europa.eu/information\\_society/activities/esafety/index\\_en.htm](http://ec.europa.eu/information_society/activities/esafety/index_en.htm)
- **Action Plan on Urban Transport**  
<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52009DC0490>
- **M/453 STANDARDISATION MANDATE**  
<http://ec.europa.eu/growth/tools-databases/mandates/index.cfm?fuseaction=search.detail&id=434>
- **CEN/TC 278 ITS Standardization**  
<http://www.itsstandards.eu/>
- **European Telecommunication Standardization Institute ITS**  
<https://www.etsi.org/technologies-clusters/technologies/automotive-intelligent-transport>
- **ISO/TC 204 Intelligent transport systems**  
<https://www.iso.org/committee/54706.html>
- **Mandate M/546 on Urban ITS**  
<http://ec.europa.eu/growth/tools-databases/mandates/index.cfm?fuseaction=search.detail&id=568>
- **3<sup>rd</sup> Generation Partnership project**  
<http://www.3gpp.org/>
- **Cellular Vehicle-to-Everything (C-V2X) Enabling Intelligent Transport**  
[https://www.gsma.com/iot/wp-content/uploads/2017/12/C-2VX-Enabling-Intelligent-Transport\\_2.pdf](https://www.gsma.com/iot/wp-content/uploads/2017/12/C-2VX-Enabling-Intelligent-Transport_2.pdf)
- **oneM2M**  
<http://www.onem2m.org/>  
[http://member.onem2m.org/static\\_Pages/others/WPM-pages/TR-TS\\_List.htm](http://member.onem2m.org/static_Pages/others/WPM-pages/TR-TS_List.htm)

## 4. Annexure: List of Standards published by CEN and ETSI

### 4.1 Annexure 1: List of standards published by CEN TC 278:

S. No.	Reference, Title	Status
1	<a href="#">(WI=00278352)</a>	Under Drafting
	Intelligent transport systems - Data interfaces between centres for transport information and control systems - Platform independent model specifications for data exchange protocols for transport information and control systems	
2	<a href="#">(WI=00278491)</a>	Under Drafting
	Intelligent transport systems - Urban ITS - Models and definitions for new modes	
3	<a href="#">(WI=00278429)</a>	Under Drafting
	Public transport - Operating raw data and statistics exchange	
4	<a href="#">(WI=00278457)</a>	Under Drafting
	Public transport - Network and Timetable Exchange (NeTEx) - Passenger information european profile	
5	<a href="#">(WI=00278475)</a>	Under Drafting
	Public transport - Reference data model - Part 9: Informative documentation	
6	<a href="#">(WI=00278473)</a>	Under Drafting
	Intelligent Transport Systems - Location Referencing Harmonisation for Urban-ITS - Part 2: Translation methods	
7	<a href="#">(WI=00278477)</a>	Under Drafting
	Public transport - Reference data model part 4-8	
8	<a href="#">(WI=00278496)</a>	Under Drafting
	Intelligent transport systems - Cooperative ITS - Test requirements and Protocol Implementation Conformance Statement (PICS) pro forma for CEN ISO TS 17426	
9	<a href="#">CEN ISO/TR 16401-1:2018 (WI=00278417)</a>	Published
	Electronic fee collection - Evaluation of equipment for conformity to ISO/TS 17575-2 - Part 1: Test suite structure and test purposes (ISO/TR 16401-1:2018)	
10	<a href="#">CEN ISO/TR 17424:2015 (WI=00278269)</a>	Published
	Intelligent transport systems - Cooperative systems - State of the art of Local Dynamic Maps concepts (ISO/TR 17424:2015)	
11	<a href="#">CEN ISO/TR 24014-2:2013 (WI=00278222)</a>	Published
	Public transport - Interoperable fare management system - Part 2: Business practices (ISO/TR 24014-2:2013)	
12	<a href="#">CEN ISO/TR 24014-3:2013 (WI=00278339)</a>	Published

	Public transport - Interoperable fare management system - Part 3: Complementary concepts to Part 1 for multi-application media (ISO/TR 24014-3:2013)	
13	<a href="#">CEN ISO/TS 14907-1:2015 (WI=00278388)</a>	Published
	Electronic fee collection - Test procedures for user and fixed equipment - Part 1: Description of test procedures (ISO/TS 14907-1:2015)	
14	<a href="#">CEN ISO/TS 14907-2:2016 (WI=00278410)</a>	Published
	Electronic fee collection - Test procedures for user and fixed equipment - Part 2: Conformance test for the on-board unit application interface (ISO/TS 14907-2:2016)	
15	<a href="#">CEN ISO/TS 16407-2:2012 (WI=00278276)</a>	Published
	Electronic fee collection - Evaluation of equipment for conformity to ISO/TS 17575-1 - Part 2: Abstract test suite (ISO/TS 16407-2:2012)	
16	<a href="#">CEN ISO/TS 16410-2:2012 (WI=00278278)</a>	Published
	Electronic fee collection - Evaluation of equipment for conformity to ISO/TS 17575-3 - Part 2: Abstract test suite (ISO/TS 16410-2:2012)	
17	<a href="#">CEN ISO/TS 17425:2016 (WI=00278287)</a>	Published
	Intelligent transport systems - Cooperative systems - Data exchange specification for in-vehicle presentation of external road and traffic related data (ISO/TS 17425:2016)	
18	<a href="#">CEN ISO/TS 17426:2016 (WI=00278289)</a>	Published
	Intelligent transport systems - Cooperative systems - Contextual speeds (ISO/TS 17426:2016)	
19	<a href="#">CEN ISO/TS 17427:2014 (WI=00278286)</a>	Published
	Intelligent transport systems - Cooperative systems - Roles and responsibilities in the context of cooperative ITS based on architecture(s) for cooperative systems (ISO/TS 17427:2014)	
20	<a href="#">CEN ISO/TS 17429:2017 (WI=00278288)</a>	Published
	Intelligent transport systems - Cooperative ITS - ITS station facilities for the transfer of information between ITS stations (ISO/TS 17429:2017)	
21	<a href="#">CEN ISO/TS 17444-1:2017 (WI=00278432)</a>	Published
	Electronic fee collection - Charging performance - Part 1: Metrics (ISO/TS 17444-1:2017)	
22	<a href="#">CEN ISO/TS 17444-2:2017 (WI=00278433)</a>	Published
	Electronic fee collection - Charging performance - Part 2: Examination framework (ISO/TS 17444-2:2017)	
23	<a href="#">CEN ISO/TS 17574:2017 (WI=00278416)</a>	Published
	Electronic fee collection - Guidelines for security protection profiles (ISO/TS 17574:2017)	
24	<a href="#">CEN ISO/TS 18234-10:2013 (WI=00278324)</a>	Published

	Intelligent transport systems - Traffic and travel information via transport protocol experts group, generation 1 (TPEG1) binary data format - Part 10: Conditional access information (TPEG1-CAI) (ISO/TS 18234-10:2013)	
25	<a href="#">CEN ISO/TS 18234-11:2013 (WI=00278313)</a>	Published
	Intelligent transport systems - Traffic and Travel Information (TTI) via transport protocol experts group, generation 1 (TPEG1) binary data format - Part 11: Location Referencing Container (TPEG1-LRC) (ISO/TS 18234-11:2013)	
26	<a href="#">CEN ISO/TS 18234-1:2013 (WI=00278322)</a>	Published
	Intelligent transport systems - Traffic and travel information via transport protocol experts group, generation 1 (TPEG1) binary data format - Part 1: Introduction, numbering and versions (TPEG1-INV) (ISO/TS 18234-1:2013)	
27	<a href="#">CEN ISO/TS 18234-2:2013 (WI=00278326)</a>	Published
	Intelligent transport systems - Traffic and travel information via transport protocol experts group, generation 1 (TPEG1) binary data format - Part 2: Syntax, semantics and framing structure (TPEG1-SSF) (ISO/TS 18234-2:2013)	
28	<a href="#">CEN ISO/TS 18234-3:2013 (WI=00278312)</a>	Published
	Intelligent transport systems - Traffic and travel information via transport protocol experts group, generation 1 (TPEG1) binary data format - Part 3: Service and network information (TPEG1-SNI) (ISO/TS 18234-3:2013)	
29	<a href="#">CEN ISO/TS 18234-4:2006 (WI=00278150)</a>	Published
	Traffic and Travel Information (TTI) - TTI via Transport Protocol Expert Group (TPEG) data-streams - Part 4: Road Traffic Message (RTM) application (ISO/TS 18234-4:2006)	
30	<a href="#">CEN ISO/TS 18234-5:2006 (WI=00278159)</a>	Published
	Traffic and Travel Information (TTI) - TTI via Transport Protocol Expert Group (TPEG) data-streams - Part 5: Public Transport Information (PTI) application (ISO/TS 18234-5:2006)	
31	<a href="#">CEN ISO/TS 18234-6:2006 (WI=00278160)</a>	Published
	Traffic and Travel Information (TTI) - TTI via Transport Protocol Expert Group (TPEG) data-streams - Part 6: Location referencing applications (ISO/TS 18234-6:2006)	
32	<a href="#">CEN ISO/TS 18234-7:2013 (WI=00278321)</a>	Published
	Intelligent transport systems - Traffic and travel information via transport protocol experts group, generation 1 (TPEG1) binary data format - Part 7: Parking information (TPEG1-PKI) (ISO/TS 18234-7:2013)	
33	<a href="#">CEN ISO/TS 18234-9:2013 (WI=00278323)</a>	Published

	Intelligent transport systems - Traffic and travel information via transport protocol experts group, generation 1 (TPEG1) binary data format - Part 9: Traffic event compact (TPEG1-TEC) (ISO/TS 18234-9:2013)	
34	<a href="#">CEN ISO/TS 19091:2017 (WI=00278396)</a> Intelligent transport systems - Cooperative ITS - Using V2I and I2V communications for applications related to signalized intersections (ISO/TS 19091:2017)	Published
35	<a href="#">CEN ISO/TS 19299:2015 (WI=00278358)</a> Electronic fee collection - Security framework (ISO/TS 19299:2015)	Published
36	<a href="#">CEN ISO/TS 19321:2015 (WI=00278360)</a> Intelligent transport systems - Cooperative ITS - Dictionary of in-vehicle information (IVI) data structure (ISO/TS 19321:2015)	Published
37	<a href="#">CEN ISO/TS 21719-1:2018 (WI=00278455)</a> Electronic fee collection - Personalization of on-board equipment (OBE) - Part 1: Framework (ISO/TS 21719-1:2018)	Published
38	<a href="#">CEN ISO/TS 21719-2:2018 (WI=00278456)</a> Electronic fee collection - Personalization of on-board equipment (OBE) - Part 2: Using dedicated short-range communication (ISO/TS 21719-2:2018)	Published
39	<a href="#">CEN ISO/TS 24530-1:2006 (WI=00278161)</a> Traffic and Travel Information (TTI) - TTI via Transport Protocol Experts Group (TPEG) Extensible Markup Language (XML) - Part 1: Introduction, common data types and tpegML (ISO/TS 24530-1:2006)	Published
40	<a href="#">CEN ISO/TS 24530-2:2006 (WI=00278162)</a> Traffic and Travel Information (TTI) - TTI via Transport Protocol Experts Group (TPEG) Extensible Markup Language (XML) - Part 2: tpeg-locML (ISO/TS 24530-2:2006)	Published
41	<a href="#">CEN ISO/TS 24530-3:2006 (WI=00278163)</a> Traffic and Travel Information (TTI) - TTI via Transport Protocol Experts Group (TPEG) Extensible Markup Language (XML) - Part 3: tpeg-rtmML (ISO/TS 24530-3:2006)	Published
42	<a href="#">CEN ISO/TS 24530-4:2006 (WI=00278164)</a> Traffic and Travel Information (TTI) - TTI via Transport Protocol Experts Group (TPEG) Extensible Markup Language (XML) - Part 4: tpeg-ptiML (ISO/TS 24530-4:2006)	Published
43	<a href="#">CEN/ISO TR 16401-2:2018 (WI=00278418)</a> Electronic fee collection - Evaluation of equipment for conformity to ISO/TS 17575-2 - Part 2: Abstract test suite (ISO/TR 16401-2:2018)	Published
44	<a href="#">CEN/TR 12896-9:2016 (WI=00278387)</a>	Published

	Public transport - Reference data model - Part 9: Informative documentation	
45	<a href="#">CEN/TR 15762:2008 (WI=00278215)</a>	Published
	Road transport and traffic telematics - Electronic fee collection (EFC) - Ensuring the correct function of EFC equipment installed behind metallised windshield	
46	<a href="#">CEN/TR 16040:2010 (WI=00278251)</a>	Published
	Electronic fee collection - Requirements for urban dedicated short-range communication	
47	<a href="#">CEN/TR 16092:2011 (WI=00278252)</a>	Published
	Electronic fee collection - Requirements for pre-payment systems	
48	<a href="#">CEN/TR 16152:2011 (WI=00278250)</a>	Published
	Electronic fee collection - Personalisation and mounting of first mount OBE	
49	<a href="#">CEN/TR 16219:2011 (WI=00278259)</a>	Published
	Electronic Fee Collection - Value added services based on EFC on-board equipment	
50	<a href="#">CEN/TR 16427:2013 (WI=00278309)</a>	Published
	Intelligent transport systems - Public transport - Traveller Information for Visually Impaired People (TI-VIP)	
51	<a href="#">CEN/TR 16690:2014 (WI=00278315)</a>	Published
	Electronic fee collection - Guidelines for EFC applications based on in-vehicle ITS stations	
52	<a href="#">CEN/TR 16742:2014 (WI=00278314)</a>	Published
	Intelligent transport systems - Privacy aspects in ITS standards and systems in Europe	
53	<a href="#">CEN/TR 16959:2016 (WI=00278389)</a>	Published
	Public transport - Network and Timetable Exchange (NeTEx) - Examples, guidelines and explanatory materials	
54	<a href="#">CEN/TR 16968:2016 (WI=00278381)</a>	Published
	Electronic Fee Collection - Assessment of security measures for applications using Dedicated Short-Range Communication	
55	<a href="#">CEN/TR 17143:2017 (WI=00278454)</a>	Published
	Intelligent transport systems - Standards and actions necessary to enable urban infrastructure coordination to support Urban-ITS	
56	<a href="#">CEN/TS 13149-3:2007 (WI=00278196)</a>	Published
	Public transport - Road vehicle scheduling and control systems - Part 3: WorldFIP message content	
57	<a href="#">CEN/TS 13149-6:2005 (WI=00278125)</a>	Published
	Public transport - Road vehicle scheduling and control systems - Part 6: CAN message content	
58	<a href="#">CEN/TS 13149-7:2015 (WI=00278380)</a>	Published

	Public transport - Road vehicle scheduling and control systems - Part 7: System and Network Architecture	
59	<a href="#">CEN/TS 13149-8:2013 (WI=00278332)</a>	Published
	Public transport - Road vehicle scheduling and control systems - Part 8: Physical layer for IP communication	
60	<a href="#">CEN/TS 15213-6:2011 (WI=00278214)</a>	Published
	Road transport and traffic telematics - After-theft services for the recovery of stolen vehicles - Part 6: Test procedures	
61	<a href="#">CEN/TS 15504:2007 (WI=00278195)</a>	Published
	Public transport - Road vehicles - Visible variable passenger information devices inside the vehicle	
62	<a href="#">CEN/TS 15531-4:2011 (WI=00278218)</a>	Published
	Public transport - Service interface for real-time information relating to public transport operations - Part 4: Functional service interfaces: Facility Monitoring	
63	<a href="#">CEN/TS 15531-5:2016 (WI=00278383)</a>	Published
	Public transport - Service interface for real-time information relating to public transport operations - Part 5: Functional service interfaces situation exchange: Situation Exchange	
64	<a href="#">CEN/TS 16157-1:2011 (WI=00278225)</a>	Published
	Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 1: Context and framework	
65	<a href="#">CEN/TS 16157-2:2011 (WI=00278226)</a>	Published
	Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 2: Location referencing	
66	<a href="#">CEN/TS 16157-3:2011 (WI=00278227)</a>	Published
	Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 3: Situation Publication	
67	<a href="#">CEN/TS 16157-4:2014 (WI=00278318)</a>	Published
	Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 4: Variable Message Sign (VMS) Publications	
68	<a href="#">CEN/TS 16157-5:2014 (WI=00278320)</a>	Published
	Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 5: Measured and elaborated data publications	
69	<a href="#">CEN/TS 16157-6:2015 (WI=00278351)</a>	Published
	Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 6: Parking Publications	
70	<a href="#">CEN/TS 16331:2012 (WI=00278272)</a>	Published



	Electronic fee collection - Interoperable application profiles for autonomous systems	
71	<a href="#">CEN/TS 16405:2017 (WI=00278350)</a> Intelligent transport systems - Ecall - Additional data concept specification for heavy goods vehicles	Published
72	<a href="#">CEN/TS 16406:2013 (WI=00278319)</a> Intelligent transport systems - Public transport - Indirect Fulfilment for Rail	Published
73	<a href="#">CEN/TS 16614-1:2014 (WI=00278307)</a> Public transport - Network and Timetable Exchange (NeTEx) - Part 1: Public transport network topology exchange format	Published
74	<a href="#">CEN/TS 16614-2:2014 (WI=00278308)</a> Public transport - Network and Timetable Exchange (NeTEx) - Part 2: Public transport scheduled timetables exchange format	Published
75	<a href="#">CEN/TS 16614-3:2016 (WI=00278330)</a> Public transport - Network and Timetable Exchange (NeTEx) - Part 3: Public transport fares exchange format	Published
76	<a href="#">CEN/TS 16702-1:2014 (WI=00278282)</a> Electronic fee collection - Secure monitoring for autonomous toll systems - Part 1: Compliance checking	Published
77	<a href="#">CEN/TS 16702-2:2015 (WI=00278338)</a> Electronic fee collection - Secure monitoring for autonomous toll systems - Part 2: Trusted recorder	Published
78	<a href="#">CEN/TS 16794-1:2017 (WI=00278404)</a> Public transport - Communication between contactless readers and fare media - Part 1: Implementation requirements for ISO/IEC 14443	Published
79	<a href="#">CEN/TS 16794-2:2017 (WI=00278405)</a> Public transport - Communication between contactless readers and fare media - Part 2: Test plan for ISO/IEC 14443	Published
80	<a href="#">CEN/TS 16986:2016 (WI=00278348)</a> Electronic Fee Collection - Interoperable application profiles for information exchange between Service Provision and Toll Charging	Published
81	<a href="#">CEN/TS 16986:2016/AC:2017 (WI=00278C11)</a> Electronic Fee Collection - Interoperable application profiles for information exchange between Service Provision and Toll Charging	Published
82	<a href="#">CEN/TS 17118:2017 (WI=00278420)</a> Intelligent transport systems - Public transport - Open API for distributed journey planning	Published
83	<a href="#">CEN/TS 17148:2018 (WI=00278400)</a> Intelligent Transport Systems - eSafety - ProForma eCall Agreement between TPSP and PARES	Published

84	<a href="#">CEN/TS 17184:2018 (WI=00278452)</a>	Approved
	Intelligent transport systems - eSafety - eCall High level application Protocols (HLAP) using IMS packet switched networks	
85	<a href="#">EN 12253:2004 (WI=00278141)</a>	Published
	Road transport and traffic telematics - Dedicated short-range communication - Physical layer using microwave at 5,8 GHz	
86	<a href="#">EN 12795:2003 (WI=00278142)</a>	Published
	Road transport and traffic telematics - Dedicated Short Range Communication (DSRC) - DSRC data link layer: medium access and logical link control	
87	<a href="#">EN 12834:2003 (WI=00278143)</a>	Published
	Road transport and traffic telematics - Dedicated Short Range Communication (DSRC) - DSRC application layer	
88	<a href="#">EN 12896-1:2016 (WI=00278371)</a>	Published
	Public transport - Reference data model - Part 1: Common concepts	
89	<a href="#">EN 12896-2:2016 (WI=00278367)</a>	Published
	Public transport - Reference data model - Part 2: Public transport network	
90	<a href="#">EN 12896-3:2016 (WI=00278368)</a>	Published
	Public transport - Reference data model - Part 3: Timing information and vehicle scheduling	
91	<a href="#">EN 13149-1:2004 (WI=00278169)</a>	Published
	Public transport - Road vehicle scheduling and control systems - Part 1: WORLDIFIP definition and application rules for onboard data transmission	
92	<a href="#">EN 13149-2:2004 (WI=00278170)</a>	Published
	Public transport - Road vehicle scheduling and control systems - Part 2: WORLDIFIP cabling specifications	
93	<a href="#">EN 13149-4:2004 (WI=00278175)</a>	Published
	Public transport - Road vehicle scheduling and control systems - Part 4: General application rules for CANopen transmission buses	
94	<a href="#">EN 13149-5:2004 (WI=00278176)</a>	Published
	Public transport - Road vehicle scheduling and control systems - Part 5: CANopen cabling specifications	
95	<a href="#">EN 13372:2004 (WI=00278144)</a>	Published
	Road Transport and Traffic Telematics (RTTT) - Dedicated short-range communication - Profiles for RTTT applications	
96	<a href="#">EN 15213-1:2013 (WI=00278333)</a>	Published
	Intelligent transport systems - After-theft systems for the recovery of stolen vehicles - Part 1: Reference architecture and terminology	

97	<a href="#">EN 15213-2:2013 (WI=00278335)</a>	Published
	Intelligent transport systems - After-theft systems for the recovery of stolen vehicles - Part 2: Common status message elements	
98	<a href="#">EN 15213-3:2013 (WI=00278336)</a>	Published
	Intelligent transport systems - After-theft systems for the recovery of stolen vehicles - Part 3: Interface and system requirements in terms of short range communication system	
99	<a href="#">EN 15213-4:2013 (WI=00278334)</a>	Published
	Intelligent transport systems - After-theft systems for the recovery of stolen vehicles - Part 4: Interface and system requirements in terms of long range communication system	
100	<a href="#">EN 15213-5:2013 (WI=00278337)</a>	Published
	Intelligent transport systems - After-theft systems for the recovery of stolen vehicles - Part 5: Messaging interface	
101	<a href="#">EN 15509:2014 (WI=00278327)</a>	Published
	Electronic fee collection - Interoperability application profile for DSRC	
102	<a href="#">EN 15531-1:2015 (WI=00278340)</a>	Published
	Public transport - Service interface for real-time information relating to public transport operations - Part 1: Context and framework	
103	<a href="#">EN 15531-2:2015 (WI=00278341)</a>	Published
	Public transport - Service interface for real-time information relating to public transport operations - Part 2: Communications	
104	<a href="#">EN 15531-3:2015 (WI=00278342)</a>	Published
	Public transport - Service interface for real-time information relating to public transport operations - Part 3: Functional service interfaces	
105	<a href="#">EN 15722:2015 (WI=00278376)</a>	Published
	Intelligent transport systems - ESafety - ECall minimum set of data	
106	<a href="#">EN 15876-1:2016 (WI=00278406)</a>	Published
	Electronic fee collection - Evaluation of on-board and roadside equipment for conformity to EN 15509 - Part 1: Test suite structure and test purposes	
107	<a href="#">EN 15876-2:2016 (WI=00278407)</a>	Published
	Electronic fee collection - Evaluation of on-board and roadside equipment for conformity to EN 15509 - Part 2: Abstract test suite	
108	<a href="#">EN 16062:2015 (WI=00278378)</a>	Published

	Intelligent transport systems - ESafety - eCall high level application requirements (HLAP) using GSM/UMTS circuit switched networks	
109	<a href="#">EN 16072:2015 (WI=00278375)</a>	Published
	Intelligent transport systems - ESafety - Pan-European eCall operating requirements	
110	<a href="#">EN 16102:2011 (WI=00278244)</a>	
	Intelligent transport systems - eCall - Operating requirements for third party support	
111	<a href="#">EN 16312:2013 (WI=00278285)</a>	
	Intelligent transport systems - Automatic Vehicle and Equipment Registration (AVI/AEI) - Interoperable application profile for AVI/AEI and Electronic Register Identification using dedicated short range communication	
112	<a href="#">EN 16454:2015 (WI=00278349)</a>	Published
	Intelligent transport systems - ESafety - ECall end to end conformance testing	
113	<a href="#">EN 28701:2012 (WI=00278317)</a>	
	Intelligent transport systems - Public transport - Identification of Fixed Objects in Public Transport (IFOPT)	
114	<a href="#">EN ISO 12813:2015 (WI=00278362)</a>	Published
	Electronic fee collection - Compliance check communication for autonomous systems (ISO 12813:2015)	
115	<a href="#">EN ISO 12813:2015/A1:2017 (WI=00278411)</a>	Published
	Electronic fee collection - Compliance check communication for autonomous systems - Amendment 1 (ISO 12813:2015/Amd 1:2017)	
116	<a href="#">EN ISO 12855:2015 (WI=00278353)</a>	Published
	Electronic fee collection - Information exchange between service provision and toll charging (ISO 12855:2015)	
117	<a href="#">EN ISO 13140-1:2016 (WI=00278390)</a>	Published
	Electronic fee collection - Evaluation of on-board and roadside equipment for conformity to ISO 13141 - Part 1: Test suite structure and test purposes (ISO 13140-1:2016)	
118	<a href="#">EN ISO 13140-2:2016 (WI=00278413)</a>	Published
	Electronic fee collection - Evaluation of on-board and roadside equipment for conformity to ISO 13141 - Part 2: Abstract test suite (ISO 13140-2:2016)	
119	<a href="#">EN ISO 13141:2015 (WI=00278363)</a>	Published
	Electronic fee collection - Localisation augmentation communication for autonomous systems (ISO 13141:2015)	
120	<a href="#">EN ISO 13141:2015/A1:2017 (WI=00278412)</a>	Published
	Electronic fee collection - Localisation augmentation communication for autonomous systems - Amendment 1 (ISO 13141:2015/Amd 1:2017)	

121	<a href="#">EN ISO 13143-1:2016 (WI=00278391)</a>	Published
	Electronic fee collection - Evaluation of on-board and roadside equipment for conformity to ISO 12813 - Part 1: Test suite structure and test purposes (ISO 13143-1:2016)	
122	<a href="#">EN ISO 13143-2:2016 (WI=00278392)</a>	Published
	Electronic fee collection - Evaluation of on-board and roadside equipment for conformity to ISO 12813 - Part 2: Abstract test suite (ISO 13143-2:2016)	
123	<a href="#">EN ISO 14814:2006 (WI=00278157)</a>	Published
	Road transport and traffic telematics - Automatic vehicle and equipment identification - Reference architecture and terminology (ISO 14814:2006)	
124	<a href="#">EN ISO 14815:2005 (WI=00278172)</a>	Published
	Road transport and traffic telematics - Automatic vehicle and equipment identification - System specifications (ISO 14815:2005)	
125	<a href="#">EN ISO 14816:2005 (WI=00278173)</a>	Published
	Road transport and traffic telematics - Automatic vehicle and equipment identification - Numbering and data structure (ISO 14816:2005)	
126	<a href="#">EN ISO 14816:2005/prA1 (WI=00278384)</a>	Under Approval
	Road transport and traffic telematics - Automatic vehicle and equipment identification - Numbering and data structure - Amendment 1 (ISO 14816:2005/DAmD 1:2017)	
127	<a href="#">EN ISO 14819-1:2013 (WI=00278300)</a>	Published
	Intelligent transport systems - Traffic and travel information messages via traffic message coding - Part 1: Coding protocol for Radio Data System - Traffic Message Channel (RDS-TMC) using ALERT-C (ISO 14819-1:2013)	
128	<a href="#">EN ISO 14819-2:2013 (WI=00278197)</a>	Published
	Intelligent transport systems - Traffic and travel information messages via traffic message coding - Part 2: Event and information codes for Radio Data System - Traffic Message Channel (RDS-TMC) using ALERT-C (ISO 14819-2:2013)	
129	<a href="#">EN ISO 14819-3:2013 (WI=00278301)</a>	Published
	Intelligent transport systems - Traffic and travel information messages via traffic message coding - Part 3: Location referencing for Radio Data System - Traffic Message Channel (RDS-TMC) using ALERT-C (ISO 14819-3:2013)	
130	<a href="#">EN ISO 14819-6:2006 (WI=00278158)</a>	Published
	Traffic and Traveller Information (TTI) - TTI messages via traffic message coding - Part 6: Encryption and conditional access for the Radio Data System - Traffic Message Channel ALERT C coding (ISO 14819-6:2006)	
131	<a href="#">EN ISO 14823:2017 (WI=00278394)</a>	Published

	Intelligent transport systems - Graphic data dictionary (ISO 14823:2017)	
132	<a href="#">EN ISO 14825:2011 (WI=00278256)</a> Intelligent transport systems - Geographic Data Files (GDF) - GDF5.0 (ISO 14825:2011)	Published
133	<a href="#">EN ISO 14906:2011 (WI=00278234)</a> Electronic fee collection - Application interface definition for dedicated short-range communication (ISO 14906:2011)	Published
134	<a href="#">EN ISO 14906:2011/A1:2015 (WI=00278357)</a> Electronic fee collection - Application interface definition for dedicated short-range communication - Amendment 1 (ISO 14906:2011/Amd 1:2015)	Published
135	<a href="#">EN ISO 14906:2011/AC:2013 (WI=00278C06)</a> Electronic fee collection - Application interface definition for dedicated short-range communication - Technical Corrigendum 1 (ISO 14906:2011/Cor 1:2013)	Published
136	<a href="#">EN ISO 15005:2017 (WI=00278402)</a> Road vehicles - Ergonomic aspects of transportation and control systems - Dialogue management principles and compliance procedures (ISO 15005:2017)	Published
137	<a href="#">EN ISO 15006:2011 (WI=00278271)</a> Road vehicles - Ergonomic aspects of transport information and control systems - Specifications for in-vehicle auditory presentation (ISO 15006:2011)	Published
138	<a href="#">EN ISO 15007-1:2014 (WI=00278280)</a> Road vehicles - Measurement of driver visual behaviour with respect to transport information and control systems - Part 1: Definitions and parameters (ISO 15007-1:2014)	Published
139	<a href="#">EN ISO 15008:2017 (WI=00278345)</a> Road vehicles - Ergonomic aspects of transport information and control systems - Specifications and test procedures for in-vehicle visual presentation (ISO 15008:2017)	Published
140	<a href="#">EN ISO 16407-1:2017 (WI=00278408)</a> Electronic fee collection - Evaluation of equipment for conformity to ISO 17575-1 - Part 1: Test suite structure and test purposes (ISO 16407-1:2017)	Published
141	<a href="#">EN ISO 16410-1:2017 (WI=00278409)</a> Electronic fee collection - Evaluation of equipment for conformity to ISO 17575-3 - Part 1: Test suite structure and test purposes (ISO 16410-1:2017)	Published
142	<a href="#">EN ISO 17261:2012 (WI=00278263)</a> Intelligent transport systems - Automatic vehicle and equipment identification - Intermodal goods transport architecture and terminology (ISO 17261:2012)	Published
143	<a href="#">EN ISO 17262:2012 (WI=00278264)</a>	Published

	Intelligent transport systems - Automatic vehicle and equipment identification - Numbering and data structures (ISO 17262:2012)	
144	<a href="#">EN ISO 17262:2012/AC:2013 (WI=00278C09)</a>	Published
	Intelligent transport systems - Automatic vehicle and equipment identification - Numbering and data structures - Technical Corrigendum 1 (ISO 17262:2012/Cor 1:2013)	
145	<a href="#">EN ISO 17262:2012/prA1 (WI=00278385)</a>	Under Approval
	Intelligent transport systems - Automatic vehicle and equipment identification - Numbering and data structures - Amendment 1 (ISO 17262:2012/DAmD 1:2017)	
146	<a href="#">EN ISO 17263:2012 (WI=00278265)</a>	Published
	Intelligent transport systems - Automatic vehicle and equipment identification - System parameters (ISO 17263:2012)	
147	<a href="#">EN ISO 17263:2012/AC:2013 (WI=00278C10)</a>	Published
	Intelligent transport systems - Automatic vehicle and equipment identification - System parameters - Technical Corrigendum 1 (ISO 17263:2012/Cor 1:2013)	
148	<a href="#">EN ISO 17264:2009 (WI=00278228)</a>	Published
	Intelligent transport systems - Automatic vehicle and equipment identification - Interfaces (ISO 17264:2009)	
149	<a href="#">EN ISO 17264:2009/prA1 (WI=00278386)</a>	Under Approval
	Intelligent transport systems - Automatic vehicle and equipment identification - Interfaces - Amendment 1 (ISO 17264:2009/DAmD 1:2017)	
150	<a href="#">EN ISO 17287:2003 (WI=00278128)</a>	Published
	Road vehicles - Ergonomic aspects of transport information and control systems - Procedure for assessing suitability for use while driving (ISO 17287:2003)	
151	<a href="#">EN ISO 17419:2018 (WI=00278419)</a>	Published
	Intelligent transport systems - Cooperative systems - Globally unique identification (ISO 17419:2018)	
152	<a href="#">EN ISO 17423:2018 (WI=00278459)</a>	Published
	Intelligent transport systems - Cooperative systems - Application requirements and objectives (ISO 17423:2018)	
153	<a href="#">EN ISO 17575-1:2016 (WI=00278356)</a>	Published
	Electronic fee collection - Application interface definition for autonomous systems - Part 1: Charging (ISO 17575-1:2016)	
154	<a href="#">EN ISO 17575-2:2016 (WI=00278364)</a>	Published
	Electronic fee collection - Application interface definition for autonomous systems - Part 2: Communication and connection to the lower layers (ISO 17575-2:2016)	
155	<a href="#">EN ISO 17575-3:2016 (WI=00278365)</a>	Published

	Electronic fee collection - Application interface definition for autonomous systems - Part 3: Context data (ISO 17575-3:2016)	
156	<a href="#">EN ISO 18750:2018 (WI=00278403)</a> Intelligent transport systems - Co-operative ITS - Local dynamic map (ISO 18750:2018)	Published
157	<a href="#">EN ISO 24014-1:2015 (WI=00278346)</a> Public transport - Interoperable fare management system - Part 1: Architecture (ISO 24014-1:2015)	Published
158	<a href="#">EN ISO 24534-1:2010 (WI=00278229)</a> Automatic vehicle and equipment identification - Electronic Registration Identification (ERI) for vehicles - Part 1: Architecture (ISO 24534-1:2010)	Published
159	<a href="#">EN ISO 24534-2:2010 (WI=00278230)</a> Automatic vehicle and equipment identification - Electronic Registration Identification (ERI) for vehicles - Part 2: Operational requirements (ISO 24534-2:2010)	Published
160	<a href="#">EN ISO 24534-3:2016 (WI=00278302)</a> Intelligent transport systems - Automatic vehicle and equipment identification - Electronic registration identification (ERI) for vehicles - Part 3: Vehicle data (ISO 24534-3:2016)	Published
161	<a href="#">EN ISO 24534-4:2010 (WI=00278232)</a> Automatic vehicle and equipment identification - Electronic Registration Identification (ERI) for vehicles - Part 4: Secure communications using asymmetrical techniques (ISO 24534-4:2010)	Published
162	<a href="#">EN ISO 24534-4:2010/prA1 (WI=00278395)</a> Automatic vehicle and equipment identification - Electronic registration identification (ERI) for vehicles - Part 4: Secure communications using asymmetrical techniques - Amendment 1 (ISO 24534-4:2010/DAmD 1:2017)	Under Approval
163	<a href="#">EN ISO 24978:2009 (WI=00278206)</a> Intelligent transport systems - ITS Safety and emergency messages using any available wireless media - Data registry procedures (ISO 24978:2009)	Published
164	<a href="#">EN ISO 25110:2017 (WI=00278434)</a> Electronic fee collection - Interface definition for on-board account using integrated circuit card (ICC) (ISO 25110:2017)	Published
165	<a href="#">ENV 12313-4:2000 (WI=00278116)</a> Traffic and Traveller Information (TTI) - TTI Messages via Traffic Message Coding - Part 4: Coding Protocol for Radio Data System - Traffic Message Channel (RDS-TMC) - RDS-TMC using ALERT Plus with ALERT C	Published
166	<a href="#">ENV 12694:1997 (WI=00278077)</a>	



	Public transport - Road vehicles - Dimensional requirements for variable electronic external signs	
167	<a href="#">ENV 12796:1997 (WI=00278079)</a>	Published
	Road transport and traffic telematics - Public transport - Validators	
168	<a href="#">ENV 13093:1998 (WI=00278078)</a>	Published
	Public transport - Road vehicles - Driver's console mechanical interface requirements - Minimum display and keypad parameters	
169	<a href="#">ENV 13998:2001 (WI=00278083)</a>	
	Road transport and traffic telematics - Public transport - Non-interactive dynamic passenger information on ground	
170	<a href="#">FprCEN/TR 17249-1 (WI=00278466)</a>	Approved
	Intelligent transport systems - eSafety - Part 1: Extending eCall to other categories of vehicle	
171	<a href="#">FprCEN/TR 17297 (WI=00278474)</a>	Under Drafting
	Intelligent Transport Systems - Location Referencing Harmonisation for Urban-ITS - Part 1: State of the art and guidelines	
172	<a href="#">FprCEN/TR 17311 (WI=00278451)</a>	Under Approval
	Public transport - Interoperable fare management system - Bluetooth low energy ticketing use cases and guidelines	
173	<a href="#">FprCEN/TS 17154-1 (WI=00278421)</a>	Under Drafting
	Electronic Fee collection - Conformity evaluation of implementation to CEN/TS 16986 - Part 1: Test suite structure and test purposes	
174	<a href="#">FprCEN/TS 17154-2 (WI=00278422)</a>	Under Drafting
	Electronic Fee collection - Conformity evaluation of implementation to CEN/TS 16986 - Part 2: Abstract test	
175	<a href="#">FprCEN/TS 17182 (WI=00278453)</a>	Approved
	Intelligent transport systems - eSafety - eCall via an ITS-station	
176	<a href="#">FprCEN/TS 17234 (WI=00278463)</a>	Under Approval
	Intelligent transport systems - eSafety - eCall: Tests to enable PSAPs to demonstrate conformance and performance	
177	<a href="#">FprCEN/TS 17240 (WI=00278460)</a>	Under Approval
	Intelligent transport systems - eSafety - ECall end to end conformance testing for IMS packet switched based systems	
178	<a href="#">FprCEN/TS 17241 (WI=00278478)</a>	Under Drafting
	Intelligent transport systems - Traffic management systems - Status, fault and quality requirements	
179	<a href="#">FprCEN/TS 17249-2 (WI=00278467)</a>	Under Approval
	Intelligent transport systems - eSafety - Part 2 : eCall for HGVs and other commercial vehicles	

180	<a href="#">FprCEN/TS 17249-3 (WI=00278468)</a> Intelligent transport systems - eSafety - Part 3: eCall for Coaches and buses	Under Approval
181	<a href="#">FprCEN/TS 17249-4 (WI=00278469)</a> Intelligent transport systems - eSafety - Part 4: eCall for UNECE Category T, R, S agricultural/forestry vehicles	Under Approval
182	<a href="#">FprCEN/TS 17249-5 (WI=00278470)</a> Intelligent transport systems - eSafety - Part 5: eCall for UNECE Category L1 and L3 powered two-wheeled vehicles	Under Approval
183	<a href="#">FprCEN/TS 17249-6 (WI=00278471)</a> Intelligent transport systems - eSafety - Part 6: eCall for UNECE Category L2, L4, L5, L6 and L7 tricycles and quadricycles	Under Approval
184	<a href="#">FprCEN/TS 17268 (WI=00278479)</a> Intelligent transport systems - ITS spatial data - Data exchange on changes in road attributes	Under Approval
185	<a href="#">FprCEN/TS 17312 (WI=00278476)</a> Intelligent transport systems - eSafety - eCall via satellite	Under Approval
186	<a href="#">FprCEN/TS 17313 (WI=00278401)</a> Intelligent transport systems - eSafety - Interoperability and user choice in eCall aftermarket and third party eCall services	Under Approval
187	<a href="#">FprEN 16157-1 (WI=00278423)</a> Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 1: Context and framework	Under Approval
188	<a href="#">FprEN 16157-2 (WI=00278398)</a> Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 2: Location referencing	Under Approval
189	<a href="#">FprEN 16157-3 (WI=00278399)</a> Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 3: Situation Publication	Under Approval
190	<a href="#">FprEN 16157-7 (WI=00278424)</a> Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 7: Common data elements	Under Approval
191	<a href="#">FprEN ISO 14906 (WI=00278425)</a> Electronic fee collection - Application interface definition for dedicated short-range communication (ISO/FDIS 14906:2018)	Under Approval
192	<a href="#">FprEN ISO 17427-1 (WI=00278393)</a>	Approved

	Intelligent transport systems - Cooperative ITS - Part 1: Roles and responsibilities in the context of co-operative ITS architecture(s) (ISO/FDIS 17427-1:2018)	
193	<a href="#">prCEN ISO/TR 21186 (WI=00278436)</a> Intelligent transport systems - Cooperative ITS - Guidelines on the use of C-ITS standards for hybrid communications	Under Drafting
194	<a href="#">prCEN ISO/TS 19091 rev (WI=00278461)</a> Intelligent transport systems - Cooperative ITS - Using V2I and I2V communications for applications related to signalized intersections	Under Drafting
195	<a href="#">prCEN ISO/TS 21176 (WI=00278437)</a> Intelligent transport systems - Cooperative ITS - Position, velocity and time functionality in the ITS station	Under Drafting
196	<a href="#">prCEN ISO/TS 21177 (WI=00278438)</a> Intelligent transport systems – ITS-station security services for secure session establishment and authentication between trusted devices	Under Drafting
197	<a href="#">prCEN ISO/TS 21184 (WI=00278439)</a> Intelligent transport systems -- Management of messages containing information of sensor and control networks specified in data dictionaries	Under Drafting
198	<a href="#">prCEN ISO/TS 21185 (WI=00278440)</a> Intelligent transport systems -- Communication profiles for secure connections between trusted devices	Under Drafting
199	<a href="#">prCEN/TS 16614-1 rev (WI=00278489)</a> Public transport - Network and Timetable Exchange (NeTEx) - Part 1: Public transport network topology exchange format	Under Drafting
200	<a href="#">prCEN/TS 16614-2 rev (WI=00278490)</a> Public transport - Network and Timetable Exchange (NeTEx) - Part 2: Public transport scheduled timetables exchange format	Under Drafting
201	<a href="#">prCEN/TS 16614-3 rev (WI=00278488)</a> Public transport - Network and Timetable Exchange (NeTEx) - Part 3: Public transport fares exchange format	Under Drafting
202	<a href="#">prCEN/TS 16702-1 rev (WI=00278465)</a> Electronic fee collection - Secure monitoring for autonomous toll systems - Part 1: Compliance checking	Under Drafting
203	<a href="#">prCEN/TS 16702-2 rev (WI=00278486)</a> Electronic fee collection - Secure monitoring for autonomous toll systems - Part 2: Trusted recorder	Under Drafting
204	<a href="#">prCEN/TS 16794-1 rev (WI=00278481)</a> Public transport - Communication between contactless readers and fare media - Part 1: Implementation requirements for ISO/IEC 14443	Under Drafting
205	<a href="#">prCEN/TS 16794-2 rev (WI=00278482)</a>	Under Drafting

	Public transport - Communication between contactless readers and fare media - Part 2: Test plan for ISO/IEC 14443	
206	<a href="#">prEN (WI=00278494)</a>	Under Drafting
	Intelligent transport systems - eSafety - eCall OAD for multiple Optional Additional Datasets	
207	<a href="#">prEN 15722 rev (WI=00278493)</a>	Under Drafting
	Intelligent transport systems - eSafety - eCall minimum set of data	
208	<a href="#">prEN 24014-1 rev (WI=00278435)</a>	Under Drafting
	Public transport - Interoperable fare management system - Part 1: Architecture	
209	<a href="#">prEN ISO 12813 rev (WI=00278495)</a>	Under Drafting
	Electronic fee collection - Compliance check communication for autonomous systems	
210	<a href="#">prEN ISO 16407-2 (WI=00278414)</a>	Under Approval
	Electronic fee collection - Evaluation of equipment for conformity to ISO 17575-1 - Part 2: Abstract test suite (ISO/DIS 16407-2:2017)	
211	<a href="#">prEN ISO 16410-2 (WI=00278415)</a>	Under Approval
	Electronic fee collection - Evaluation of equipment for conformity to ISO 17575-3 - Part 2: Abstract test suite (ISO/DIS 16410-2:2017)	
212	<a href="#">prEN ISO 17429 (WI=00278462)</a>	Under Drafting
	Intelligent transport systems - Cooperative ITS - ITS station facilities for the transfer of information between ITS stations	
213	<a href="#">prEN ISO 17573-1 (WI=00278485)</a>	Under Approval
	Electronic fee collection - System architecture for vehicle related tolling - Part 1: Reference model	
214	<a href="#">prEN ISO 22418 (WI=00278492)</a>	Under Drafting
	Intelligent transport systems - Fast service announcement protocol (FSAP) (ISO 22418:2018)	

## 4.2 Annexure 2: List of standards published by ETSI TC ITS:

The following is a list of the 20 latest published ETSI standards on intelligent transport systems.

S. No.	Standard No.	Title	Status
1	<a href="#">TS 101 539-2</a>	Intelligent Transport Systems (ITS); V2X Applications; Part 2: Intersection Collision Risk Warning (ICRW) application requirements specification	Published
2	<a href="#">TS 102 941</a>	Intelligent Transport Systems (ITS); Security; Trust and Privacy Management	Published
3	<a href="#">TR 103 415</a>	Intelligent Transport Systems (ITS); Security; Pre-standardization study on pseudonym change management	Published
4	<a href="#">TS 102 687</a>	Intelligent Transport Systems (ITS); Decentralized Congestion Control Mechanisms for Intelligent Transport Systems operating in the 5 GHz range; Access layer part	Published
5	<a href="#">TS 102 940</a>	Intelligent Transport Systems (ITS); Security; ITS communications security architecture and security management	Published
6	<a href="#">EN 300 674-2-2</a>	Transport and Traffic Telematics (TTT); Dedicated Short Range Communication (DSRC) transmission equipment (500 kbit/s / 250 kbit/s) operating in the 5 795 MHz to 5 815 MHz frequency band; Part 2: Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU; Sub-part 2: On-Board Units (OBU)	Published
7	<a href="#">TS 103 097</a>	Intelligent Transport Systems (ITS); Security; Security header and certificate formats	Published
8	<a href="#">TS 103 544-1</a>	Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink; Part 1: Connectivity	Published
9	<a href="#">TS 103 544-10</a>	Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink; Part 10: UPnP Client Profile Service	Published
10	<a href="#">TS 103 544-11</a>	Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink; Part 11: UPnP Notification Server Service	Published
11	<a href="#">TS 103 544-12</a>	Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink; Part 12: UPnP Server Device	Published
12	<a href="#">TS 103 544-13</a>	Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink; Part 13: Core Architecture	Published
13	<a href="#">TS 103 544-14</a>	Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink; Part 14: Application Certificates	Published
14	<a href="#">TS 103 544-15</a>	Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink; Part 15: Application Programming Interface (API) Level 1 & 2	Published
15	<a href="#">TS 103 544-16</a>	Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink; Part 16: Application Developer Certificates	Published

16	<a href="#">TS 103 544-17</a>	Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink; Part 17: MirrorLink over Wi-Fi Display (WFD)	Published
17	<a href="#">TS 103 544-18</a>	Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink; Part 18: IEEE 802.11TM Car Connectivity Consortium (CCC) Information Element	Published
18	<a href="#">TS 103 544-19</a>	Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink; Part 19: Network Information Data Service	Published
19	<a href="#">TS 103 544-2</a>	Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink; Part 2: Virtual Network Computing (VNC) based Display and Control	Published
20	<a href="#">TS 103 544-20</a>	Publicly Available Specification (PAS); Intelligent Transport Systems (ITS); MirrorLink; Part 20: Internet Accessibility	Published

A full list of related standards in the public domain by ETSI is Available [here](#)

#### 4.3 Annexure 3: List of technical Report (TR) released by 3GPP

Spec. No.	Title
<a href="#">TR 36.785</a>	Vehicle to Vehicle (V2V) services based on LTE sidelink; User Equipment (UE) radio transmission and reception
<a href="#">TR 36.786</a>	Vehicle-to-Everything (V2X) services based on LTE; User Equipment (UE) radio transmission and reception
<a href="#">TR 36.787</a>	Vehicle-to-Everything (V2X) new band combinations
<a href="#">TR 36.788</a>	Vehicle-to-Everything (V2X) Phase 2; User Equipment (UE) radio transmission and reception

Full list of 3GPP specification is available [here](#)

#### 4.4 Annexure 4: List of Technical Specifications and Technical Reports by oneM2M

Spec. No.	Title	Related WI
<a href="#">TS-0036</a>	Advanced Vehicular Domain Enablement	<a href="#">WI-0046 - Vehicular domain enablement</a>
<a href="#">TR-0026</a>	Vehicular Domain Enablement	<a href="#">WI-0046 - Vehicular domain enablement</a>

Full list of oneM2M Technical Specifications & Technical Reports is available [here](#)