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LINK: https://www.iso.org/obp/ui#iso:std:iso:tr:20529:-1:ed-1:v1:en 730
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European foreword

This document (CEN/TR 17868:2022) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

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Introduction

This report provides a Guide to Intelligent transport system standards deliverables from CEN and ISO, and other associated deliverables from other SDOs, together with hotlinks to their source, and to other relevant and related information and Regulations.

It has been sponsored by SA 2019-03 Project Assisted by the European Commission and the product of project SA 2019-03 is also available online at www.mobilityits.eu.

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1 Scope

This document provides a Guide to Intelligent transport system standards deliverables from CEN and ISO, and other associated deliverables from other SDOs, together with hotlinks to their source, and to other relevant and related information and Regulations

2 Normative references

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

ISO/TR 14812, *Intelligent transport systems — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TR 14812 apply.ISO and IEC maintain terminological databases for use in standardization at the following addresses:

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

4 Abbreviations and acronyms

For the purposes of this document, the following abbreviations and acronyms apply.

Abbreviation		**Principal Section(s) where used**
2G	2nd Generation mobile communications	s11 eCall
3G	3rd Generation mobile communications	s11 eCall
3GPP	3rd Generation partnership project	s11 eCall
3GPP TSG	3GPP Task Service Group	s11 eCall
4G	Fourth generation cellular technology	s9 CCAM;s13 aut mobility/kerbside
5G	Fifth generation cellular technology	s9 CCAM;s13 aut mobility/kerbside
A APDS	Alliance for Parking Data Standards	s16 parking
ADASIS	Advanced Driver Assistance Systems Interface Specifications	s9 CCAM

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ADR	Accord européen relatif au transport international des marchandises Dangereuses par Route (dangerous goods regulations UNECE)	s12 Freight & Fleet
ADTF	Automotive Data- and Time-Triggered Framework	s9 CCAM
AEI	Automatic Equipment Identification	s7 Architecture
AGV	Automated Guided Vehicle	s9 CCAM
AI	Artificial Intelligence	s9 CCAM;s13 aut mobility/kerbside
AID	Application Identifier	s22 TTI
AID	Automatic Incident Detection	s9 CCAM
ALERT-C	(Location reference system originally created in ALERT project) {21}	s21 TMC
ALKS	Automated Lane Keeping Systems	s9 CCAM
AM Radio	Amplitude Moderated Radio	s22 TTI
AMQP	Advanced Message Queuing Protocol	s9 CCAM
ANPR	Automatic Number Plate Recognition	s10 EFC; s14 LA; s17 Pub. Transport; s21 TMC
APDS	Alliance for Parking Data Standards	s9 CCAM; s14 LA
API	Application Programming Interface	s9 CCAM; s17 Pub. Transport;s18 Railway
ARC-IT	Architecture Reference for Cooperative and Intelligent Transportation Systems	s7 Architecture; s8 Communications
ARI	Autofahrer-Rundfunk-Information	s22 TTI
ASAM	Association for Standardization of Automation and Measuring Systems	s9 CCAM
ASCI	Advanced Speech Call Item (ETSI/3GPP)	s11 eCall
ASIL	Automotive Safety Integrity Level	s9 CCAM
ASN.1	Abstract Syntax Notation 1	s7 Architecture
ATSVR	After Theft Systems for Vehicle Recovery	s18 Railway; s20 Stolen
AV	Automated Vehicle	s9 CCAM; s14 LA
AVI	Automatic Vehicle Identification	s7 Architecture; s17 Pub. Transport; s18 Railway; s20 Stolen; s21 TMC
AVL	Automatic Vehicle Location	s14 LA; s21 TMC
AVMS	Automatic Vehicle Monitoring System	s18 Railway
AVPS	Automated valet parking systems	s16 parking
AWI	Approved Work Item	s9 CCAM
B2B	Business to Business	s22 TTI
BA Range		s11 eCall
BLE	Bluetooth low energy	s8 Communications
BusFMS	Bus Fleet Management System	s17 Pub. Transport

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CAI	Conditional Access Information	s22 TTI
CAM	Cooperative Awareness Message	s9 CCAM; s14 LA
CAN	Controller Area Network	s9 CCAM
CAV	Connected and Autonomous Vehicle {21}	s21 TMC
CAV	Connected and Autonomous/Automated Vehicle	s9 CCAM
CC	Common Criteria	s9 CCAM
CC	ETSI cleardown procedure	s11 eCall
CCAM	Connected Cooperative and Automated Mobility	s9 CCAM; s14 LA; s18 Railway; s20 Stolen; s21 TMC
CCBS	Call Completion Busy Subscriber (ETSI /3GPP)	s11 eCall
CCTV	Closed Circuit Television	s18 Railway; s21 TMC
CD	Committee Draft	s7 Architecture
CD	Compact Disc	s9 CCAM
CD	Committee Draft	s9 CCAM
CEN	Committee European Normalisation	all
CEN/TC278	European committee for standardisation of ITS	s18 Railway
CENELEC	European Committee for Electrotechnical Standardization	s9 CCAM; s18 Railway
CID	(European) Commission Implementation Decision	s15 Mobility Integration
C-ITS	Cooperative Intelligent Transport Systems	All
CLARS	Charging, Low Emission Zones, other Access Regulation Schemes	s14 LA
CO2	Carbon Dioxide	s17 Pub. Transport
CONOPS	Concept of Operations	s15 Mobility Integration
COVID -19	coronavirus 19	s13 aut mobility/kerbside
C-Roads	Harmonised C-ITS deployments in Europe	s9 CCAM
CS	circuit switched (network)	s11 eCall
CS/OTA	Cybersecurity and Over-the-air updates	s9 CCAM
CSA	The Cybersecurity Act	s9 CCAM
CSG	Closed Subscriber Group (ETSI/3GPP)	s11 eCall
CTP	Conformace Test Protocol (ETSI/3GPP)	s11 eCall
CV	Commercial Vehicle	s12 Freight & Fleet
CV	Connected Vehicle	s9 CCAM
C-V2X	Cellular Vehicle-to-Everything	s9 CCAM
CVIS	Cooperative Vehicle Infrastructure System	s8 Communications
CVO	Commercial Vehicle Operations	s12 Freight & Fleet
CZ	Controlled Zone	s14 LA; s15 Mobility Integration
CZDD	Controlled Zone Data Dictionary	s14 LA

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CZDD	Controlles Zone Data Dictionary	s15 Mobility Integration
DAB	Digital Audio Broadcasting	s22 TTI
DAS	Driver Advisory Systems	s18 Railway
DATEX (II)	“DATa EXchange" – project name for standards now in EN16157 series {21}	s9 CCAM;s14 LA; s15 Mobility Integration; s17 Pub. Transport; s21 TMC
DDT	Dynamic Driving Task	s9 CCAM
DE	Detection Equipment	s18 Railway; s20 Stolen
DENM	Decentralized Environmental Notification Message	s9 CCAM
DIASER	DIAlogue Standard des Équipements de Régulation de traffic (AFNOR) {21}	s21 TMC
DIS	Draft International Standard	All
DMA	the Digital Markets Act	s9 CCAM
DSA	the Digital Services Act	s9 CCAM
DSRC	dedicated-short range communication	s8 Communications; s10 EFC; s14 LA
DSSAD	Data Storage System for Automated Driving	s9 CCAM
DVD	Digital Versatile Disc	s9 CCAM
EC	European Commission	All
eCall	Emergency Call (automatically from vehicle)	s9 CCAM
ECM	Entities in Charge of Maintenance	s18 Railway
ECVVR	European Centralised Virtual Vehicle Register	s18 Railway
EDR	Event Data Recorder	s9 CCAM
EDR	Environmental Data Retrieval	s9 CCAM
EETS	European electronic toll service	s10 EFC
EFC	Electronic Fee Collection	s7 Architecture; s10 EFC; s14 LA; s16 parking
EIB	European Investment Bank	s14 LA
EMC	Electromagnetic Compatibility	s11 eCall; s21 TMC
EMV	Europay, Mastercard, Visa (system for bank card payments)	s17 Pub. Transport
EN	European Norm (standard)	All
ENISA	The European Union Agency for Cybersecurity	s9 CCAM
EPTIS	European Public Transport Information Services	s18 Railway
ERA	European Union Agency for Railways	s18 Railway
ERADIS	European Railway Agency Database of Interoperability and Safety	s18 Railway
ERAIL	European Railway Accident Information Links	s18 Railway
ERATV	European Register of Authorised Types of Vehicles	s18 Railway
ERTMS	European Rail Traffic Management System	s18 Railway
ESRI	Environmental Systems Research Institute	s9 CCAM
EToN	Electronic Transfer of Notices – UK-based specification for streetworks data {21}	s21 TMC
ETRS 89	The European Terrestrial Reference System 1989	s18 Railway

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ETRS 89	The European Terrestrial Reference System 1989	s20 Stolen
ETSI	European Telecommunications Standards Insttute	All
EU	European Union	All
EU CCMS	European Union's C-ITS Security Credential. Management System	s9 CCAM
EU-ICIP	European ITS communications and information protocols	s8 Communications
EU-ICIP	European ITS Communications and Information Protocols	s9 CCAM
E-UTRAN	Evolved UMTS Terrestrial Radio Access Network	s11 eCall
EV	Electric vehicle	s16 parking
EVR	European Vehicle Register	s18 Railway
FIDO	Fast IDentity Online	s9 CCAM
FM Radio	Frequency Modulated Radio	s22 TTI
FRMCS	Future Railway Mobile Communication System	s18 Railway
FS	Further Study	s11 eCall
GDF	Geographic Data Files	s9 CCAM
GDPR	General Data Protection Regulation	All
GERAN	GSM/EDGE Radio Access Network	s11 eCall
GERAN-IU mode	GERAN Interface User	s11 eCall
GIS	Geographic Information System	s9 CCAM
GLONASS	Globalnaya Navigatsionnaya Sputnikovaya Sistema	s9 CCAM
GLOSA	Green Light Optimal Speed Advisory	s9 CCAM; s14 LA; s21 TMC
GLR	Geographic Location Referencing	s22 TTI
GML	Geography Markup Language	s9 CCAM
GNSS	Global Navigation Satellite System	All
GNSS	Global Navigation Satellite System	s14 LA
GPRS	General Packet Radio Service	s8 Communications
GPRS-AMF	GPRS - Auto Mains Failure	s11 eCall
GPRS-GLDM	GPRS-Gray Level Dependence Matrix	s11 eCall
GPRS-MS	GPRS-Message service	s11 eCall
GPT-3	Generative Pre-trained Transformer 3	s9 CCAM
GPU	Graphics Processing Unit	s9 CCAM
GSM	Global System for Mobile communications	All
GSMR	Group System Mobile for Railways	s18 Railway
GSR	The General Safety Regulation	s9 CCAM
HARTS	Harmonized Architecture Reference for Technical Standards	s7 Architecture; s8 Communications
HAS	Galileo High Accuracy Service	s9 CCAM
HAZMAT	Hazardous and Dangerous Goods Material	s12 Freight & Fleet
HD	High definition	s16 parking

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HD maps	High Definition Maps	s9 CCAM
HGV	Heavy Goods Vehicle	s11 eCall; s21 TMC;
HGV	Heavy Goods Vehicle {21}	s21 TMC
HLAP	High Level Application Protocol	s11 eCall
HLR	High level requirementa	s15 Mobility Integration
HMI	Human machine Interface/Interaction	s9 CCAM
HSM	Hardware Security Module	s9 CCAM
HTML	Hypertext Markup Language	s18 Railway
HW	Hardware	s9 CCAM
I2V	Infrastructure-to-Vehicle	s14 LA
IATA	International Air Transport Association	s17 Pub. Transport
IBM	International Business Machines Corporation	s9 CCAM
ICRV	International Convention for the Recovery of Stolen Vehicles (ICRV): 2006	s18 Railway; s20 Stolen
ICT	Information and communications technology	s13 aut mobility/kerbside
ICT	Information and Communications Technology	s8 Communications; s9 CCAM
IEC	International Electrotechnical Commission	s7 Architecture; s9 CCAM; s18 Railway
IEEE	Institute of Electrical and Electronics Engineers	s15 Mobility Integration
IETF	Internet Engineering Task Force	s11 eCall
IFM	Interoperable Fare Management	s17 Pub. Transport; s18 Railway
IM	Integrated Mobility	s15 Mobility Integration
IMS	internet protocol multimedia	s11 eCall
IMT	International Mobile Telecommunications	s8 Communications
IMU	Inertial Measurement Unit	s9 CCAM
INFO	Information (3GPP/ETSI)	s11 eCall
INSPIRE	INfrastructure for SPatial InfoRmation in the European Community	s14 LA; s16 parking; s17 Pub. Transport
IoT	Internet of Things	s9 CCAM
IP	Internet Protocol	s8 Communications; s17 Pub. Transport
IP4	Innovation Programme 4 for Shift2Rail	s18 Railway
IPIPS	International Parking Industry Payments Standards	s16 parking
IPv4	IP version 4	s8 Communications
IPv6	IP version 6	s8 Communications
IPX	Innovation Programme X	s18 Railway
IR	Infra-Red {21}	s21 TMC
IRS	International Railway Solutions	s18 Railway
ISA	Intelligent Speed Adaptation {21}	s21 TMC
ISAD	Infrastructure support for automated driving	s9 CCAM; s14 LA
ISM	Industrial, Scientific and Medical radio communication	s9 CCAM

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ISO	International Standards Organisation	All
ITS	Intelligent Transport Systems	All
ITS-AID	ITS Application Identifier	s8 Communications
ITS-G5	European implementation of IEEE 802.11p 5.9 GHz communication	s9 CCAM; s14 LA
ITSO	Integrated Transport Smartcard Organisation (UK industry forum)	s17 Pub. Transport
ITS-S	ITS station	s8 Communications
ITS-SCP	ITS-secure communication profile	s13 aut mobility/kerbside
ITS-SCU	ITS- secure communications unit	s13 aut mobility/kerbside
ITS-SU	ITS-station unit	s13 aut mobility/kerbside; s14 LA; s15 Mobility Integration
ITU	International Telecommunication Union	s7 Architecture; s15 Mobility Integration; s18 Railway
ITxPT	Information Technology for Public Transport (European industry forum)	s9 CCAM; s17 Pub. Transport
IVERA	(Dutch standards initiative for traffic systems) {21}	s21 TMC
IVI	In-Vehicle Information (a C-ITS function) {21}	s21 TMC
IVI	Infrastructure to Vehicle Information	s9 CCAM
IVS	in-vehicle system	s11 eCall; s14 LA; s16 parking
JSON	JavaScript Object Notation	s9 CCAM
JWT	JSON Web Token	s9 CCAM
KHz	KiloHertz	s22 TTI
LA	Lcal Authority	s14 LA
LAN	local area network	s8 Communications
LDM	Local Dynamic Map	s8 Communications; s9 CCAM
LEA	Law Enforcement Agency	s18 Railway; s20 Stolen
LEZ/ZEZ	Low Emission Zone/Zero Emission Zone	s14 LA
LGV	large goods vehicle (was HGV)	s11 eCall
LGV	Laser Guided Vehicles	s9 CCAM
LIDAR	Light Detection and Ranging	s9 CCAM
LIN	Local Interconnect Network	s9 CCAM
LoRa	Long Range	s8 Communications
LOS	line of sight (ETSI)	s15 Mobility Integration
LPP	LTE Positioning Protocol	s9 CCAM
LPWAN	Low Power WAN	s8 Communications
LR	Long Range	s18 Railway; s20 Stolen
LSAD	Low Speed Automated Driving	s15 Mobility Integration
LTE	long term evolution (3GPP/ETSI)	s8 Communications; s11 eCall; s18 Railway
LTN	linked telephone number	s11 eCall
LTZ	Limited Traffic Zone	s14 LA
LV	low voltage	s11 eCall
MAAP	Multi Annual Action Plan	s18 Railway

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MaaS	Mobility as a Service	s9 CCAM; s15 Mobility Integration; s17 Pub. Transport; s18 Railway
MAC	medium access control	s11 eCall
MAFA	Mobile Assisted Frequency Allocation (ETSI/3GPP)	s11 eCall
MAN	metropolitan area network	s8 Communications
MAP	Map Data	s9 CCAM
MAP(EM)	Map (Enhanced Management)	s14 LA
MEMS	Micro Electro Mechanical System	s9 CCAM
METR	Management of Electronic Traffic Regulations	s9 CCAM; s14 LA; s21 TMC
MIS	Management Information System	s15 Mobility Integration
MISRA	Motor Industry Software Reliability Association	s9 CCAM
MM	mobility management	s11 eCall
MMTI	Multimodal Travel Information Services	s9 CCAM
MMTIS	Multi-modal Travel Information Service	s14 LA
MNO	mobile network operator	s11 eCall
MOST	Media Oriented Systems Transport	s9 CCAM
MOT	Ministry of Transport (safety test)	s13 aut mobility/kerbside
MOVA	Microprocessor-Optimised Vehicle Activation – a traffic signal algorithm{21}	s21 TMC
MQTT	Message Queuing Telemetry Transport	s9 CCAM
MrSID	Multiresolution Seamless Image Database	s9 CCAM
MSD	minimum set of data (EN 15722)	s11 eCall
MSG	mobile standards grup (ETSI)	s11 eCall
MVE	Mixed Vendor Environment	s14 LA; s15 Mobility Integration
NAD	Network access device (ETSI)	s11 eCall
NAP	National access point	s9 CCAM; s16 parking
NAS	Non Access Structure	s11 eCall
NDS	Navigation Data Standard	s9 CCAM
NeTEx	Network and Timetable Exchange	s14 LA; s17 Pub. Transport; s18 Railway
NFC	Near Field Communication	s9 CCAM; s17 Pub. Transport
NIA	Network Indication of Alerting in MS (ETSI/3GPP)	s11 eCall
NOTIF-IT	Notification of national railway safety and technical rules	s18 Railway
NP	New Project	s15 Mobility Integration
NPRA	Norwegian Public Roads Administration	s14 LA
OAD	Optional additional data	s11 eCall
OAuth	Open Authorization	s9 CCAM
OBDII	On-board diagnostics 2	s9 CCAM
OBE	On-Board Equipment	s7 Architecture; s10 EFC; s18 Railway; s20 Stolen
OBU	On-board Unit	s9 CCAM; s14 LA

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OCIT	Open Communication Interface for road Traffic control systems – German-led standards initiative {21}	s14 LA; s21 TMC
OCPP	Open Charge Point Protocol	s9 CCAM
OCR	Organisation Code Register	s18 Railway
ODD	Operational Design Domains	s9 CCAM
ODP	Open Distributed Processing	s7 Architecture
OEDR	Object and Event Detection and Recognition	s9 CCAM
OEM	Original Equipment Manufacturer	s9 CCAM; s16 parking
OGC	Open Geospatial Consortium	s9 CCAM
OHLN	Other Hazardous Location Notifications	s9 CCAM
OIDC	OpenID Connect	s9 CCAM
OMTS	On-board multimedia and telematic subsystems for railways	s18 Railway
OpRa	Operating Raw Data and statistics exchange	s18 Railway
OSI	Open Systems Interconnection	s7 Architecture
OSI	Open Simulation Interface	s9 CCAM
OSJD	Organisation for Co-Operation Between Railways	s18 Railway
OTA	Over the air (programming updates)	s9 CCAM
P2P	Peer to Peer	s22 TTI
PAN	personal area network	s8 Communications
PAS	Publicly Available Specification	s7 Architecture; s9 CCAM
PC5	C-V2X 5.9GHz direct communication	s9 CCAM
PER	Packed Encoding Rules	s7 Architecture
PIXIT	Protocol Implementation. eXtra Information for Testing (ETSI)	s11 eCall
PLEV	personal light electric vehicle	s13 aut mobility/kerbside
PLMN	Public land mobile network	s11 eCall
PM10	Particulate Matter sub-10µm {21}	s21 TMC
PM2.5	Particulate Matter sub-2.5µm {21}	s21 TMC
PPP	Precise Point Positioning	s9 CCAM
PRESTO	PREemption and prioritization Signal systems for emergency and public TranspOrt vehicles	s14 LA; s17 Pub. Transport; s21 TMC
PS	packet switched	s11 eCall
PSA	Programme Support Action	s14 LA
PSAP	public service access point	s9 CCAM; s11 eCall; s12 Freight & Fleet
PSID	Provider Service Identifier	s8 Communications
PT	Project Team	s15 Mobility Integration
PTI	Public Transport Information	s17 Pub. Transport; s22 TTI
PTS	Public transport information service (a TPEG variant)	s17 Pub. Transport
QI	communication protocol used for wireless charging of phones	s9 CCAM

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QR	Quick Response (code) – a specification for 2D barcode	s16 parking; s17 Pub. Transport; s21 TMC
R&TTE	radio equipment and telecommunications terminal equipment (EU)	s11 eCall
RADAR	RAdio Detection And Ranging	s9 CCAM
RAILML	Markup Language for Rail	s18 Railway
RaSCoP	Rail Standardisation Coordination Platform for Europe	s18 Railway
RDD	Reference Document Database	s18 Railway
RDS	Radio Data Systems	s22 TTI
RDS-TMC	Radio Data System - Traffic Message Channel	s9 CCAM; s17 Pub. Transport; s18 Railway; s21 TMC; s22 TTI
REST	Representative State Transfer	s9 CCAM
ReVeAL	Regulating Vehicle access for improved Livability	s14 LA
RFID	Radio Frequency IDentification	s13 aut mobility/kerbside; s17 Pub. Transport
RINF	Registers of Infrastructure	s18 Railway
RLAN	Radio LAN	s8 Communications
RLC	Radio Link Control (ETSI)	s11 eCall
ROS	Robot Operating System	s9 CCAM
RR	ETSI cleardown procedure	s11 eCall
RSMP	Roadside Message Protocol	s14 LA; s21 TMC
RSU	Roadside Unit	s9 CCAM
RTIG	?? Real-time Information Group	s14 LA
RTIG	Real Time Information Group (UK industry forum)	s17 Pub. Transport
RTK	Real-Time Kinematic	s9 CCAM
RTLS	Real-Time Location System	s9 CCAM
RTM	Road Traffic Message (in the context of TPEG standards) {21}	s21 TMC
RTS	Road Traffic Safety {21}	s21 TMC
RTTI	Real-Time Traffic Information	s9 CCAM; s14 LA
RWW	Road Works Warning	s9 CCAM
SAE	Society of Automotive Engineers	s7 Architecture; s9 CCAM; s15 Mobility Integration; s21 TMC
SAEV	shared automated/autonomous electric vehicle	s15 Mobility Integration
SAM	Service Announcement Message	s9 CCAM
SAML	Security Assertion Markup Language	s9 CCAM
SCOOT	Split, Cycle, Offset Optimisation Technique – a traffic signal algorithm {21}	s21 TMC
SIG	Special Interest Group	s8 Communications
SIP	Session Initiation Protocol (internet)	s11 eCall
SIRI	Service Interface for Real-time Information	s17 Pub. Transport; s18 Railway; s21 TMC
SIRI-PT	SIRI – Planned Timetable service	s17 Pub. Transport

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SLA	Service level agreement	s10 EFC
SM	Session management (3GPP/ETSI)	s11 eCall
SMB	Small and Midsize Business	s9 CCAM
SME	Small to Medium Enterprises	s18 Railway
SNMP	Simple Network Management Protocol {21}	s21 TMC
SOAP	Simple Object Access Protocol	s9 CCAM
SOC	System Operation Centre	s18 Railway; s20 Stolen
SP	Service Provider	s22 TTI
SPAT	Signal Phase and Timing	s8 Communications; s9 CCAM
SPaT(EM)	Signal Phase and Timing (Enhanced Management)	s14 LA
SR	Short Range	s18 Railway; s20 Stolen
SRC	short-range communication	s10 EFC
SRTI	Safety Related Traffic Information	s9 CCAM
SUMP	Sustainable Urban Mobility Plan	s14 LA
TA Flag	Traffic Announcement Flag	s22 TTI
TAF TSI	Telematic Applications for Freight - Technical Specifications for Interoperability	s18 Railway
TAP TSI	Telematic Applications for Passengers - Technical Specifications for Interoperability	s18 Railway
TARV	telematics applications for regulated vehicles	s12 Freight & Fleet
TC	Toll Charger	s10 EFC
TCC	Traffic Control Centre	s15 Mobility Integration; s22 TTI
TCP	Transmission Control Protocol	s8 Communications
TEC	Traffic Event Compact (in the context of TPEG standards) {21}	s21 TMC
TfL	Transport for London	s14 LA
TIC	Traffic Information Centre	s15 Mobility Integration; s22 TTI
TIFF	Tag Image File Format	s9 CCAM
TIN	Triangulated Irregular Network	s9 CCAM
TISAX	Trusted Information Security Assessment Exchange	s9 CCAM
TI-VIP	Traveller Information for Visually Impaired People	s17 Pub. Transport
TLS	Transport Layer Security	s9 CCAM
TM	Traffic management	s15 Mobility Integration
TMC	Traffic Management Centre	s22 TTI
TN-ITS	Transport Network ITS spatial data – a mapping standards initiative	s14 LA; s15 Mobility Integration; s21 TMC
TP Flag	Traffic Programme Flag	s22 TTI
TPEG	Transport Protocol Experts Group	s9 CCAM; s17 Pub. Transport; s18 Railway; s21 TMC; s22 TTI

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TPMS	Tire Pressure Monitoring System	s9 CCAM
TPS	Third party service	s11 eCall
TPSP	Third party service provider	s11 eCall
TR	Technical Report	All
TRM	Transmodel	s18 Railway
TS	Technical Specification	All
TS12	Teleservice 12 (emergency) (3GPP/ETSI)	s11 eCall
TSP	Toll Service Provider	s10 EFC
TTCN	Testing and Test Control Notation (ETSI)	s11 eCall
TTI	Traffic and Traveller Information	s17 Pub. Transport; s21 TMC; s22 TTI
UE	User Equipment (3GPP/ETSI)	s11 eCall
UGTMS	Urban Guided Transport Management and Command/Control Systems	s18 Railway
UIC	International Union of Railways	s18 Railway
U-ITS	Urban ITS	s8 Communications
UK	United Kingdom {21}	s21 TMC
UML	Unified Modelling Language	s7 Architecture; s22 TTI
UMTS	Universal Mobile Telephone system (3GPP)	s11 eCall
UNECE	United Nations Economic Commission for Europe	s9 CCAM; s12 Freight & Fleet; s15 Mobility Integration;
UNICF	Union Internatioal de chemin de fer	s18 Railway
URL	Uniform Resource Locator	s9 CCAM
US	United States	s9 CCAM
USGS DEM	United States Geological Survey, Digital Elevation Model	s9 CCAM
USIM	universal Subscriber identity module	s11 eCall
UTMC	Urban Traffic Management and Control – UK standards initiative	s14 LA; s16 parking; s17 Pub. Transport; s21 TMC
UTRA-RRC	Evolved Universal Terrestial Radio (e UTRA) Radio Resource Control (RRC)	s11 eCall
UVAR	Urban Vehicle Access Restriction(s)	s9 CCAM; s14 LA; s15 Mobility Integration; s21 TMC
UWB	Ultra-wideband	s9 CCAM
V2I	Vehicle to Infrastructure	s9 CCAM; s21 TMC
V2V	Vehicle to Vehicle	s9 CCAM
V2X	Vehicle to Everything	s9 CCAM
VDV	Verband Deutsches Verkehrsunternehmen (German industry forum)	s17 Pub. Transport
VHF/FM	Very High Frequency/Frequency Modulated	s18 Railway; s22 TTI
VIN	Vehicle Identification Number	s11 eCall; s18 Railway; s20 Stolen
VKM	Vehicle Keeper Marking register	s18 Railway
VMS	Variable Message Sign {21}	s21 TMC
W3C	World Wide Web Consortium	s22 TTI
W3C	World Wide Web Consortium	s9 CCAM; s22 TTI

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WAN	wide area network	s8 Communications
WCS	Web Coverage Service	s9 CCAM
WFS	Web Feature Services	s9 CCAM
WG	Working Group	s14 LA
WGS 84	World Geodetic System 1984	s18 Railway
WGS 84	World Geodetic System 1984	s20 Stolen
WGS 84	World Geodetic System 1984	s22 TTI
WiFi	Wireless Fidelity (implementation of IEEE802.11)	s9 CCAM; s17 Pub. Transport
WIM	Weigh-in-motion	s12 Freight & Fleet
WMS	Web Map Services	s9 CCAM
WP.29 GRVA	UNECE WP29 Working Party on Automated/Autonomous and Connected Vehicles	s9 CCAM
WPAN	wireless PAN	s8 Communications
WTP	Wireless Transfer Charging communication protocl	s9 CCAM
XML	Extensible Markup Language	s17 Pub. Transport; s18 Railway; s20 Stolen ; s21 TMC; s22 TTI
ZEZ	Zero Emissions Zone	s14 LA

5 About ITS

For those unfamiliar with the paradigm of ITS and its standards, the following links provide different perspectives of the scenario:

https://www.mobilityits.eu/about-its-1

https://en.wikipedia.org/wiki/Intelligent_transportation_system

https://ec.europa.eu/transport/themes/its

https://www.its.dot.gov/

https://www.itsstandards.eu/

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6 About EU-ICIP

6.0 Background

EU-ICIP is a European Commission funded standardisation project : SA 2019-03 : European ITS communications and information protocols

There are now several hundred standards deliverables supporting the rapidly evolving "Intelligent Transport Systems" sector. They have particular relevance as society tries to decarbonise the transport paradigm and make our transport systems fit for purpose to achieve and maintain habitable cities and an efficient and pleasurable transport experience in the 21st century and, indeed, for centuries to come.

Thanks to a combination of leading European technology expertise, and the forward-looking project initiatives funded by the European Commission, Europe is at the forefront of these developments, which, in places, are showing signs of disruptive revolutionary change, and in other places, exhibiting progressive evolution, to a safer and more ecologically sound travelling paradigm.

ITS standards deliverables (Standards, Technical Specifications, Technical Reports, Recommendations, recommended practices, etc.) are developed largely by volunteer experts involved in the sector, mostly with a commercial, political or academic interest in their production, but in many cases also enabled, in Europe's case, by European Commission funded initiatives (sometimes in direct or indirect competition with each other).

The prime Standards Deliverables are developed by CEN, ISO and ETSI, with some specialised standards deliverables from IETF, IEEE, and SAE.

On the one hand it is really beneficial to base so much of ITS developments and implementations on internationally/European member state approved Standards, but as the sector evolves and grows ever more complex, how does the erstwhile implementer know where to begin?

What standards deliverables are available to help him/her introduce/implement their project?

How do those standards fit together, and what combinations are needed?

Without guidance, even standardisation experts struggle. What chance does the local authority, National DoT, or commercial implementer have?

The EU-ICIP Guide is designed to provide that assistance, information and guidance.

6.1 Context

This part of the EU-CIP Guide provides a brief overview of EU-ICIP as well as a discussion of the motivations that lead to the adoption of ITS standards and their objectives, and discusses the ethos and issues involved. EU-ICIP provides some advice (below) on implementation/instantiation of ITS (see also Section 5 About ITS), raises strategic issues to be considered, information issues (sources and distribution), general application issues to be considered, and ways to address communications aspects.

In short **EU_ICIP is designed to be a resource and support to assist you to develop and implement your project in a cohesive way.**

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EU-ICIP is not designed to instruct you, but to provide guidance and advice, and most importantly, hotlinks to where you will find more information and advice on specific aspects that you determine are of interest to you, in order to help you to make a success of your ITS project, If you are a student, EU-ICIP should provide guidance and the basis for much of your research,

It is the objective that EU-ICIP will provide a basis for information and knowledge of what communications and data standards are available, and provide the basis for interoperability and regulated requirements for ITS in Europe, informing potential users of the compatibilities and incompatibility issues of various options, and provide the opportunity for training opportunities, and guidance to universities to assist training programmes for ITS experts.

But it is important to state clearly that **EU-ICIP provides GUIDANCE and not necessarily requirements.** Interoperability is an essential and important aspect of efficient, fully functional ITS, but it is not the only consideration, and the particular aspects of any instantiation must also be taken into account….. that said, such considerations should not be used as an excuse to build a non interoperable 'silo' system, just because it is easier to do in the short term.

6.2 Understanding EU-ICIP

This Section provides a general purpose technical overview of EU-ICIP and the EU-ICIP Framework.

While architectures, such as the comprehensive ARC-IT and the European Framework Architecture FRAME describe the 'what' is to be achieved (see Section 7 -ITS Architecture), the EU-ICIP guide provides 'How to best achieve at the current time' guidance (and will therefore be a living and hopefully regularly revised guide).

EU-ICIP is a natural follow on to the EU initiative of the C-ITS platform. According to the C-ITS Platform initiated by the European Commission, "……cooperative Intelligent Transport Systems (C-ITS) use technologies that allow road vehicles to communicate with other vehicles, with traffic signals, and roadside infrastructure as well as with other road users. The systems are also known as vehicle-to-vehicle communications, or vehicle-to-infrastructure communications." (C-ITS Platform Final Report)

The C-ITS Platform final report stated "……. The C-ITS Platform, which gathers public and private stakeholders, represents all of the key stakeholders along the value chain including public authorities, vehicle manufacturers, suppliers, service providers, telecomm companies etc., and delivered in its first phase (November 2014 – January 2016) its contribution towards a shared vision on the interoperable deployment of Cooperative Intelligent Transport Systems in the European Union.)".

However, having shared the vision, potential implementers (largely urban and other authorities or their agents) need to know what tools are available, and what standards combinations are required to implement their visions. In this respect, EU-ICIP takes into account the work of the C-ROADS platform (https://www.c-roads.eu/), and in particular the definition of C-ITS services and common specifications.

EU-ICIP is envisaged as a natural follow-on to act as a living guide that will evolve and develop with the opportunities that technical evolution brings. But it must be remembered that while EU-ICIP embraces the C-ITS promise of C-Roads, its span is nor constrained to C-ITS but encompasses the whole paradigm of ITS and its standards deliverables.

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6.3 EU-ICIP and the US NTCIP

Faced with problems to achieve cost effective and consistent instantiation across 50 US State Transportation Departments, of just the traffic management and control aspects of ITS, the US NTCIP initiative combined the development of a family of standards that provides both the rules for communicating (called protocols) and the vocabulary (called objects) necessary to allow electronic traffic control equipment from different manufacturers to operate with each other as a system, together with a path that required adoption and consistency in order to get access to federal funding..

NTCIP was the first set of standards for the transportation industry that allows traffic control systems to be built using a "mix and match" approach with equipment from different manufacturers. NTCIP standards reduce the need for reliance on specific equipment vendors and customized one-of-a-kind software, and combined with a requirement to comply with NTCIP standards to get Federal USDoT funding for electronic traffic control systems, US DoT has obtained consistency, interoperability, and an open market in this area.

NOTE: the CEN Standards deliverables:
CEN TS 17400:2020 Intelligent transport systems - Urban ITS - Mixed vendor environments, methodologies & translators

CEN TR 17401:2020 Intelligent transport systems - Urban-ITS - Mixed vendor environment guide

CEN TS 17402:2020 Intelligent transport systems - Urban ITS - Use of regional traffic standards in a mixed vendor environment

CEN TS 17466:2020 Intelligent transport systems - Urban ITS - Communication interfaces and profiles for traffic management

while not tied to funding constraints, provide specific guidance to achieving an open market in these aspects within the European context.

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But, in addition to providing a route to funding projects, the NTCIP documents gave extremely valuable advice about what standards, and combinations of standards, are needed to implement a system in the USA. How to build an open, but secure, standards based implementation. Implementers have found this resource, information and advice, highly valuable to assist them to further their projects.

Move away from the access to funding, and step out from the limitation of just traffic management and control, into the wider needs of all ITS instantiation, right across the sector. EU-ICIP is designed to provide that resource, both as a technical report and, more importantly as a highly hotlinked website location where the designer, potential implementer, evaluator, inspector, actual implementer, students and operators of ITS systems, can find guidance.

EU-ICIP stands as a single website where you can research any ITS subject area where there are standards deliverables or standards under development; Find out what deliverables exist, what combinations are required, what flexibilities are (or are not) possible.

Every standards deliverable is hotlinked through to its on-board platform or abstract, and in most cases either to the full text of the document or source where you can acquire it (some documents need to be purchased to acquire the full text).

Related organisation or summaries of organisations are directly hotlinked, and terms and abbreviations explained.

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