

This is a preview of "ISO/TS 21219-9:2016". [Click here to purchase the full version from the ANSI store.](#)

First edition
2016-04-01

Intelligent transport systems — Traffic and travel information (TTI) via transport protocol experts group, generation 2 (TPEG2) —

Part 9: Service and network information (TPEG2-SNI)

Systèmes intelligents de transport — Informations sur le trafic et le tourisme via le groupe expert du protocole de transport, génération 2 (TPEG2) —

Partie 9: Information de service et de réseau (TPEG2-SNI)



Reference number
ISO/TS 21219-9:2016(E)

© ISO 2016



COPYRIGHT PROTECTED DOCUMENT

© ISO 2016, Published in Switzerland

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

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

This is a preview of "ISO/TS 21219-9:2016". Click here to purchase the full version from the ANSI store.

Contents

	Page
Foreword	v
Introduction	vii
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Abbreviated terms	4
5 Application specific constraints	5
5.1 Application identification.....	5
5.2 Version number signalling.....	5
5.3 TPEG 1 binary compatibility of SNI.....	5
5.4 TPEG Service Component Frame.....	5
5.5 Conceptual model — Multiplexed applications and services.....	5
6 Design principle	6
6.1 Variable content referencing.....	6
6.2 Example of the TPEG-SNI application in a TPEG data-stream.....	7
6.3 Concept of allocating services.....	8
6.4 General rules for the TPEG-SNI application.....	10
7 SNI Structure	11
8 SNI Message components	11
8.1 SNI1Template.....	11
8.1.1 General.....	11
8.1.2 Usage of the version number.....	12
8.2 CurrentServiceInformation.....	12
8.3 ServiceLogo.....	12
8.4 SubscriberInformation.....	13
8.5 FreeTextInformation.....	13
8.6 HelpInformation.....	13
8.7 GST_GuideToServiceTables.....	13
8.8 GST1_FastTuningTable.....	14
8.9 GST2_TimeScheduleTable.....	15
8.10 GST3_ContentDescription.....	15
8.11 GST4_GeographicalCoverage.....	16
8.12 GST5_ServiceComponentReset.....	16
8.13 GST6_ConditionalAccessInformationReference.....	16
8.14 GST7_Versioning.....	16
8.15 GST_ServiceTableAccelerator.....	17
8.16 LinkageToSameService.....	17
8.17 Same Service Definition.....	18
8.18 LinkageToRelatedService.....	19
8.19 Reserved for future use.....	19
8.20 BearerLinkageInfoDAB.....	19
8.21 BearerLinkageInfoDARC.....	19
8.22 BearerLinkageInfoDVB.....	19
8.23 BearerLinkageInfoURL.....	20
8.24 BearerLinkageInfoHDRadio.....	20
8.25 SIT_ServiceInformationTables.....	20
8.26 SIT1_NumberOfMessages.....	21
9 SNI Datatypes	22
9.1 MaskedTime.....	22
9.2 DayMask.....	22
9.3 AppStartTime.....	22

This is a preview of "ISO/TS 21219-9:2016". Click here to purchase the full version from the ANSI store.

9.4	TimeSlot.....	23
9.5	OpTime.....	23
9.6	GeographicCoverage.....	24
9.7	CoordinatePair.....	24
9.8	ByteField.....	24
9.9	GST1_Entry.....	24
9.10	GST2_Entry.....	25
9.11	GST3_Entry.....	26
9.12	GST4_Entry.....	26
9.13	GST5_Entry.....	26
9.14	GST6_Entry.....	26
9.15	GST7_Entry.....	27
9.16	RelatedServiceEntry.....	27
9.17	DABFrequency.....	28
9.18	DVBFrequency.....	28
9.19	FMFrequency.....	28
9.20	AMFrequency.....	28
9.21	SameServiceEntry.....	29
9.22	SIT1_Entry.....	30
9.23	HDRadioStationID.....	30
9.24	HDFMBearerInfo.....	31
9.25	HDAMBearerInfo.....	31
10	SNI Tables.....	31
10.1	sni001:GraphicType.....	31
10.2	sni002:CharacterEncoding.....	32
Annex A (normative) TPEG SNI, TPEG-Binary Representation.....		33
Annex B (normative) TPEG SNI, tpegML representation.....		49
Bibliography.....		62

This is a preview of "ISO/TS 21219-9:2016". Click here to purchase the full version from the ANSI store.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#).

The committee responsible for this document is ISO/TC 204 *Intelligent transport systems*, in cooperation with the Traveller Information Services Association (TISA), TPEG Applications Working Group through Category A Liaison status.

ISO/TS 21219 consists of the following parts, under the general title *Intelligent transport systems — Traffic and travel information (TTI) via transport protocol experts group, generation 2 (TPEG2)*:

- *Part 1: Introduction, numbering and versions*
- *Part 2: UML modelling rules*
- *Part 3: UML to binary conversion rules*
- *Part 4: UML to XML conversion rules*
- *Part 5: Service framework*
- *Part 6: Message management container*
- *Part 9: Service and network information*
- *Part 10: Conditional access information*
- *Part 14: Parking information application*
- *Part 15: Traffic event compact*
- *Part 18: Traffic flow and prediction application*
- *Part 19: Weather information*

The following parts are under preparation:

- *Part 16: Fuel price information and availability application*

This is a preview of "ISO/TS 21219-9:2016". [Click here to purchase the full version from the ANSI store.](#)

The following parts are planned:

- *Part 7: Location referencing container*
- *Part 20: Extended TMC location referencing*
- *Part 21: Geographic location referencing*
- *Part 22: OpenLR location referencing*
- *Part 23: Roads and multi-modal routes application*
- *Part 24: Light encryption*
- *Part 25: Electromobility information*

This is a preview of "ISO/TS 21219-9:2016". [Click here to purchase the full version from the ANSI store.](#)

Introduction

History

TPEG technology was originally proposed by the European Broadcasting Union (EBU) Broadcast Management Committee, who established the B/TPEG project group in the autumn of 1997 with a brief to develop, as soon as possible, a new protocol for broadcasting traffic and travel-related information in the multimedia environment. TPEG technology, its applications and service features were designed to enable travel-related messages to be coded, decoded, filtered and understood by humans (visually and/or audibly in the user's language) and by agent systems. Originally, a byte-oriented data stream format, which can be carried on almost any digital bearer with an appropriate adaptation layer, was developed. Hierarchically structured TPEG messages from service providers to end-users were designed to transfer information from the service provider database to an end-user's equipment.

One year later in December 1998, the B/TPEG group produced its first EBU specifications. Two documents were released. Part 2 (TPEG-SSF, which became ISO/TS 18234-2) described the Syntax, Semantics and Framing structure, which was used for all TPEG applications. Meanwhile, Part 4 (TPEG-RTM, which became ISO/TS 18234-4) described the first application, for Road Traffic Messages.

Subsequently in March 1999, CEN TC 278, in conjunction with ISO/TC 204, established a group comprising members of the former EBU B/TPEG and this working group continued development work. Further parts were developed to make the initial set of four parts, enabling the implementation of a consistent service. Part 3 (TPEG-SNI, ISO/TS 18234-3) described the Service and Network Information Application, used by all service implementations to ensure appropriate referencing from one service source to another.

Part 1 (TPEG-INV, ISO/TS 18234-1) completed the series by describing the other parts and their relationship; it also contained the application IDs used within the other parts. Additionally, Part 5, the Public Transport Information Application (TPEG-PTI, ISO/TS 18234-5), was developed. The so-called TPEG-LOC location referencing method, which enabled both map-based TPEG-decoders and non-map-based ones to deliver either map-based location referencing or human readable text information, was issued as ISO/TS 18234-6 to be used in association with the other applications parts of the ISO/TS 18234 series to provide location referencing.

The ISO/TS 18234 series has become known as TPEG Generation 1.

TPEG Generation 2

When the Traveller Information Services Association (TISA), derived from former Forums, was inaugurated in December 2007 TPEG development was taken over by TISA and continued in the TPEG Applications Working Group.

It was about this time that the (then) new Unified Modelling Language (UML) was seen as having major advantages for the development of new TPEG Applications in communities who would not necessarily have binary physical format skills required to extend the original TPEG TS work. It was also realized that the XML format for TPEG described within the ISO/TS 24530 series (now superseded) had a greater significance than previously foreseen; especially in the content-generation segment and that keeping two physical formats in synchronism, in different standards series, would be rather difficult.

As a result, TISA set about the development of a new TPEG structure that would be UML based, this has subsequently become known as TPEG Generation 2.

TPEG2 is embodied in the ISO/TS 21219 series and it comprises many parts that cover introduction, rules, toolkit and application components. TPEG2 is built around UML modelling and has a core of rules that contain the modelling strategy covered in Parts 2, 3, 4 and the conversion to two current physical formats: binary and XML; others could be added in the future. TISA uses an automated tool to convert from the agreed UML model XMI file directly into an MS Word document file, to minimize drafting errors, that forms the Annex for each physical format.

This is a preview of "ISO/TS 21219-9:2016". [Click here to purchase the full version from the ANSI store.](#)

TPEG2 has a three container conceptual structure: Message Management (Part 6), Application (many Parts) and Location Referencing (Part 7). This structure has flexible capability and can accommodate many differing use cases that have been proposed within the TTI sector and wider for hierarchical message content.

TPEG2 also has many location referencing options as required by the service provider community, any of which may be delivered by vectoring data included in the Location Referencing Container.

The following classification provides a helpful grouping of the different TPEG2 parts according to their intended purpose:

- Toolkit parts: TPEG2-INV (part 1), TPEG2-UML (part 2), TPEG2-UBCR (part 3), TPEG2-UXCR (part 4), TPEG2-SFW (part 5), TPEG2-MMC (part 6), TPEG2-LRC (part 7);
- Special applications: TPEG2-SNI (part 9), TPEG2-CAI (part 10);
- Location referencing: TPEG2-ULR (part 11), TPEG2-ETL (part 20), TPEG2-GLR (part 21), TPEG2-OLR (part 22);
- Applications: TPEG2-PKI (part 14), TPEG2-TEC (part 15), TPEG2-FPI (part 16), TPEG2-TFP (part 18), TPEG2-WEA (part 19), TPEG2-RMR (part 23).

TPEG2 has been developed to be broadly (but not totally) backward compatible with TPEG1 to assist in transitions from earlier implementations, while not hindering the TPEG2 innovative approach and being able to support many new features, such as dealing with applications having both long-term, unchanging content and highly dynamic content, such as Parking Information.

This Technical Specification is based on the TISA specification technical/editorial version reference:

SP13006/3.2/001

The International Organization for Standardization (ISO) (and/or) International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this Technical Specification may involve the use of a patent concerning "the HD Radio Bearer and Linkage Information" given in 10.5. ISO [and/or] IEC take[s] no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has ensured the ISO (and/or) IEC that he/she is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with ISO (and/or) IEC. Information may be obtained from the following.

iBiquity Digital Corporation

6711 Columbia Gateway Drive, Suite 500

Columbia, MD 21046

USA