



BSI Standards Publication

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

Part 10: Conditional access information  
(TPEG2-CAI)

**National foreword**

This Published Document is the UK implementation of ISO/TS 21219-10:2016.

The UK participation in its preparation was entrusted to Technical Committee EPL/278, Intelligent transport systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2016. Published by BSI Standards Limited 2016

ISBN 978 0 580 90185 0

ICS 03.220.01; 35.240.60

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 May 2016.

**Amendments issued since publication**

Date	Text affected
------	---------------

---

---

---

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

**Part 10:  
Conditional access information  
(TPEG2-CAI)**

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

*Partie 10: information d'accès conditionnel (TPEG2-CAI)*





**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

## Contents

	Page
Foreword .....	iv
Introduction .....	vi
<b>1 Scope .....</b>	<b>1</b>
<b>2 Terms and definitions .....</b>	<b>1</b>
<b>3 Abbreviated terms .....</b>	<b>1</b>
<b>4 Application specific constraints .....</b>	<b>2</b>
4.1 Application identification .....	2
4.2 Version number signalling .....	2
4.3 TPEG Service Component Frame .....	3
<b>5 Conditional access methodology .....</b>	<b>3</b>
<b>6 CAI structure .....</b>	<b>4</b>
<b>7 CAI message components .....</b>	<b>4</b>
7.1 CAIMessage .....	4
<b>Annex A (normative) TPEG CAI, TPEG-binary representation .....</b>	<b>5</b>
<b>Annex B (normative) TPEG CAI, tpegML Representation .....</b>	<b>6</b>
<b>Bibliography .....</b>	<b>7</b>

## 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](http://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](http://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 versioning
- 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 10: Conditional access information
- Part 18: Traffic flow and prediction application
- Part 19: Weather information

The following parts are under preparation:

- Part 9: Service and network information
- Part 14: Parking information application
- Part 15: Traffic event compact
- Part 16: Fuel price information application

The following parts are planned:

- *Part 7: Location referencing container*
- *Part 11: Universal location reference*
- *Part 21: Geographic location referencing*
- *Part 22: OpenLR location referencing*
- *Part 23: Road and multimodal routes application*
- *Part 24: Light encryption*
- *Part 25: Electromobility information*

Currently in preview, click buy full version

## 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 may 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/WG 4, in conjunction with ISO/TC 201/WG 10, 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 ISO/TS 21219-2, ISO/TS 21219-3, ISO/TS 21219-4 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.

TPEG2 has a three container conceptual structure: Message Management (ISO/TS 21219-6), Application (many Parts) and Location Referencing (ISO/TS 21219-7). 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 (ISO/TS 21219-1), TPEG2-UML (ISO/TS 21219-2), TPEG2-UXCR (ISO/TS 21219-3), TPEG2-UXCR (ISO/TS 21219-4), TPEG2-SFW (ISO/TS 21219-5), TPEG2-MMC (ISO/TS 21219-6), TPEG2-LRC (ISO/TS 21219-7);

Special applications: TPEG2-SNI (ISO/TS 21219-9), TPEG2-CAI (ISO/TS 21219-10);

Location referencing: TPEG2-ULR (ISO/TS 21219-11), TPEG2-GLR (ISO/TS 21219-21), TPEG2-OLR (ISO/TS 21219-22);

Applications: TPEG2-PKI (ISO/TS 21219-14), TPEG2-TEC (ISO/TS 21219-15), TPEG2-FPI (ISO/TS 21219-16), TPEG2-TFP (ISO/TS 21219-18), TPEG2-WEA (ISO/TS 21219-19), TPEG2-RMR (ISO/TS 21219-23).

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: SP13007/1.1/001.

Currently in preview, click buy full version

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

## Part 10: Conditional access information (TPEG2-CAI)

### 1 Scope

This part of ISO/TS 21219 defines the TPEG Conditional Access Information (CAI) application. It allows to protect the content of a TPEG service from unauthorized access. It further supports the management of subscriber information (e.g. Control Words and ECM) on the client devices in order to setup, prolong or revoke a subscription on a given client device.

The application defines

- the logical channel, for the transmission of the additional CA information (CAI), and
- how the CAI is linked and synchronized to the scrambled content.

This part of ISO/TS 21219 is related to conditional access applied on service component level. It is open for an integration of different conditional access systems.

**NOTE** The basic concept behind the CAI application is to transport CAI in separate TPEG service components of a dedicated application type and to define an SNI table that contains the link between scrambled content and related CAI.

### 2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 2.1

##### **service**

collection of different information streams (applications) logically bound together and delivered from a service provider to the end user

#### 2.2

##### **service component**

information stream (application) that is part of a *service* (2.1)

Note 1 to entry: A TPEG stream is logically divided into parts known as service components. Each service component carries an application instance. A service component is effectively a “channel” within the multiplex of a TPEG stream. Each stream comprises a number of these “channels” which are identified by the component identifier in TPEG2-SFW [5] and linked to the COID and AID in the TPEG2-SNI application.

### 3 Abbreviated terms

For the purposes of this Technical Specification, the following abbreviated terms apply.