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**Traffic and Travel Information (TTI) — TTI  
via Transport Protocol Expert Group  
(TPEG) data-streams —**

**Part 1:  
Introduction, numbering and versions**

*Informations sur le trafic et le tourisme (TTI) — Messages TTI via les  
flux de données du groupe d'experts du protocole de transport  
(TPEG) —*

*Partie 1: Introduction, numérotage et versions*



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## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

- an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;
- an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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.

ISO/TS 18234-1 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

ISO/TS 18234 consists of the following parts, under the general title *Traffic and Travel Information (TTI) — TTI via Transport Protocol Expert Group (TPEG) data-streams*:

- *Part 1: Introduction, numbering and versions*
- *Part 2: Syntax, Semantics and Framing Structure (SSF)*
- *Part 3: Service and Network Information (SNI) application*
- *Part 4: Road Traffic Message (RTM) application*
- *Part 5: Public Transport Information (PTI) application*
- *Part 6: Location referencing applications*

## Introduction

TPEG technology uses a byte-oriented stream format, which may be carried on almost any digital bearer with an appropriate adaptation layer. TPEG messages are delivered from service providers to end-users, and are used to transfer application data from the database of a service provider to an end-user's equipment.

TPEG has initially been planned and designed to meet a particular brief, from the EBU's Broadcast Management Committee. Namely: "to develop a new protocol for Traffic and Travel Information, for use in the multimedia broadcasting environment to develop applications, service and transport features which will enable travel-related messages to be coded, decoded, filtered and understood both by humans (visually and/or audibly) and by agent systems". This brief is also endorsed by the EBU TTI Broadcast Strategy Team, which recognizes the vital importance of a bearer independent TTI protocol for broadcast applications.

The following principles have been assumed in the development of the TPEG protocol, structure and semantics:

- TPEG is unidirectional
- TPEG is byte oriented, where a byte is represented by eight bits
- TPEG provides a protocol structure, which employs asynchronous framing
- TPEG includes a CRC error detection capability applicable on a variety of different levels
- TPEG assumes the use of a transparent data channel
- TPEG assumes that underlying systems will have an appropriate level of reliability
- TPEG assumes that underlying systems may employ error correction
- TPEG has a hierarchical data frame structure
- TPEG is used to transport information from database to database
- TPEG provides service provider name, service name and network information
- TPEG permits the use of encryption mechanisms, if required by an application

TPEG applications contain all the information required by a client TPEG decoder to present all the information intended for the end-user when it was originated by the service provider.

The protocol is structured in a layered manner and employs a general purpose framing system which is adaptable and extensible, and which carries frames of variable length. This has been designed with the capability of explicit frame length identification at nearly all levels, giving greater flexibility and integrity, and permitting the modification of the protocol and the addition of new features without disturbing the operation of earlier receiver/decoder models.

TPEG technology has been designed to be usable for a wide range of applications that require the efficient transmission of point to multi-point data over potentially unreliable broadcast channels. It is also suitable for point-to-point and multicast applications and may easily be encapsulated in Internet Protocol.

The Broadcast Management Committee of the European Broadcast Union (EBU) established the B/TPEG project group in autumn 1997 with the mandate to develop, as soon as possible, a new protocol for broadcasting traffic and travel-related information in the multimedia environment. The TPEG technology, its

applications and service features are 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.

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

CEN/TC 278/WG 4, in conjunction with ISO/TC 204/WG 10, established a project group comprising the members of B/TPEG and they have continued the work concurrently since March 1999. Since then two further parts have been developed to make the initial complete set of four parts, enabling the implementation of a consistent service. Part 3 (TPEG-SNI, CEN ISO/TS 18234-3) describes the Service and Network Information Application, which is likely to be used by all service implementations to ensure appropriate referencing from one service source to another. Part 1 (TPEG-INV, CEN ISO/TS 18234-1, this document) completes the work, by describing the other parts and their relationships; it also contains the Application IDs used within the other parts.

In April 2000, the B/TPEG group released revised Parts 1 to 4, all four parts having been reviewed and updated in the light of initial implementation results. Thus a consistent suite of specifications, ready for wide scale implementation, was submitted to the CEN/ISO commenting process.

In November 2001, after extensive response to the comments received and from many internally suggested improvements, all four parts were completed for the next stage: the Parallel Formal Vote in CEN and ISO. But a major step forward has been to develop the so-called TPEG-Loc location referencing method, which enables both map-based TPEG-decoders and non map-based ones to deliver either map-based location referencing or human readable information. Part 6 (TPEG-Loc, CEN ISO/TS 18234-6) is now a separate specification and is used in association with the other parts of CEN ISO/TS 18234 to provide comprehensive location referencing. Additionally Part 5, the Public Transport Information Application (TPEG-PTI, CEN ISO/TS 18234-5), has been developed and been through the commenting process.

This Technical Specification, CEN ISO/TS 18234-1, provides an index to the other parts of CEN ISO/TS 18234 and describes the AID for TPEG (section 5). This document has been prepared by CEN/TC 278, *Road Transport and Traffic Telematics*, in co-operation with ISO/TC 204, *Intelligent Transport Systems*.

During the development of the TPEG technology a number of versions have been documented and various trials implemented using various versions of the specifications. At the time of the publication of this Technical Specification, all parts are fully inter-workable and no specific dependencies exist. This Technical Specification has the technical version number TPEG-INV/102 (see Annex A).

# Traffic and Travel Information (TTI) — TTI via Transport Protocol Expert Group (TPEG) data-streams —

## Part 1: Introduction, numbering and versions

### 1 Scope

This Technical Specification provides an introduction and index to the initial set of TPEG applications and specifications. It allows the indexing of new applications as they are added to the TPEG applications family, by defining their Application Identification (AID).

As such developments occur, this Technical Specification will be updated to indicate the latest status and the interworking of the various TPEG specifications. It shall be issued as a new editorial-version every time a new issue of *any* other specification is issued.

### 2 Normative references

The following referenced documents are indispensable for the application 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/IEC 7498 (all parts), *Information processing systems — Open Systems Interconnection*

ISO/TS 18234-2, *Traffic and Travel Information (TTI) — TTI via Transport Protocol Expert Group (TPEG) data-streams — Part 2: Syntax, Semantics and Framing Structure (SSF)*

ISO/TS 18234-3, *Traffic and Travel Information (TTI) — TTI via Transport Protocol Expert Group (TPEG) data-streams — Part 3: Service and Network Information (SNI) Application*

ISO/TS 18234-4, *Traffic and Travel Information (TTI) — TTI via Transport Protocol Expert Group (TPEG) data-streams — Part 4: Road Traffic Message (RTM) Application*

ISO/TS 18234-5, *Traffic and Travel Information (TTI) — TTI via Transport Protocol Expert Group (TPEG) data-streams — Part 5: Public Transport Information Application*

ISO/TS 18234-6, *Traffic and Travel Information (TTI) — TTI via Transport Protocol Expert Group (TPEG) data-streams — Part 6: Location Referencing applications*

### 3 Terms and definitions

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

#### 3.1 application

term used in TPEG technology to describe specific applications (e.g. TPEG-RTM) which are at the highest layer of the ISO OSI model, as defined in ISO/IEC 7498

## 4 Symbols and abbreviations

For the purposes of this Technical Specification, the following abbreviations apply.

### 4.1

#### **AID**

Application Identification

### 4.2

#### **ARIB**

Association of Radio Industries and Businesses (Japan)

### 4.3

#### **ATSC**

Advanced Television Systems Committee, Inc. (USA)

### 4.4

#### **BPN**

Broadcast, Production and Networks (an EBU document publishing number system)

### 4.5

#### **B/TPEG**

Broadcast/TPEG (the EBU project group name for the specification drafting group)

### 4.6

#### **CEN**

Comité Européen de Normalisation

### 4.7

#### **DAB**

Digital Audio Broadcasting

### 4.8

#### **DVB**

Digital Video Broadcasting

### 4.9

#### **EBU**

European Broadcasting Union

### 4.10

#### **INV**

Introduction, Numbering and Versions (this specification)

### 4.11

#### **IPR**

Intellectual Property Right(s)

### 4.12

#### **ISO**

International Organization for Standardization

### 4.13

#### **OSI**

Open Systems Interconnection

### 4.14

#### **PTI**

Public Transport Information (see CEN ISO/TS 18234-5)



**4.15****RDS-TMC**

Radio Data System – Traffic Message Channel

**4.16****RTM**

Road Traffic Message (see CEN ISO/TS 18234-4)

**4.17****SNI**

Service and Network Information (see CEN ISO/TS 18234-3)

**4.18****SSF**

Syntax, Semantics and Framing Structure (see CEN ISO/TS 18234-2)

**4.19****tba**

to be announced

**4.20****TPEG**

Transport Protocol Experts Group

**4.21****TPEG-Loc**

Location Referencing for Applications (see CEN ISO/TS 18234-6)

**4.22****TTI**

Traffic and Travel Information

## 5 Application identification

Each TPEG application is assigned a unique number, called the application identification (AID). An AID is defined whenever a new application is developed.

The application identification number is used within the TPEG-SNI Application (CEN ISO/TS 18234-3) to indicate how to process TPEG content and facilitates the routing of information to the appropriate Application decoder.

Table 1 shows application identification numbers allocated, *to date*.

**Table 1 — Application identifier numbers allocated**

AID Number (hex)	Application
0000	Service and Network Information application
0001	Road Traffic Message application
0002	Public Transport Information application
0003	tba
0004	tba
0005	tba