

**SLOVENSKI STANDARD**  
**SIST-TS CEN ISO/TS 24530-3:2006**  
**01-julij-2006**

Dfca YfbY]b'dclcj UbY]bZfa UWYfHHLEHHdfY\_c`LA @!fUny]f`1j Y[ U  
cnbU Yj Ug\_Y[ UYn]\_UY\_gdYfbYg\_i d]bYnUdfca YfbY]b'dclcj UbYdfclc\_c`Y  
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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)

Reise- und verkehrsinformation (TTI) - TTI über Datenströme der Transportprotokoll  
Expertengruppe (TPEG) Erweiterbare Auszeichnungssprache (XML) - Teil 3: tpeg-rtmML  
(ISO/TS 24530-3:2006)

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Informations sur le trafic et le tourisme (TTI) - Messages TTI via le langage de balisage  
extensible (XML) du groupe d'experts du protocole de transport (TPEG) - Partie 3: tpeg-  
rtmML (ISO/TS 24530-3:2006)

**Ta slovenski standard je istoveten z: CEN ISO/TS 24530-3:2006**

**ICS:**

03.220.20

35.240.60

**SIST-TS CEN ISO/TS 24530-3:2006 en**

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English Version

**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)**

Informations sur le trafic et le tourisme (TTI) - Messages  
TTI via le langage de balisage extensible (XML) du groupe  
d'experts du protocole de transport (TPEG) - Partie 3: tpeg-  
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Reise- und verkehrsinformation (TTI) - TTI über  
Datenströme der Transportprotokoll Expertengruppe  
(TPEG) Erweiterbare Auszeichnungssprache (XML) - Teil  
3: tpeg-rtmML (ISO/TS 24530-3:2006)

This Technical Specification (CEN/TS) was approved by CEN on 5 March 2005 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**Management Centre: rue de Stassart, 36 B-1050 Brussels**

## **Foreword**

This document (CEN ISO/TS 24530-3:2006) has been prepared by Technical Committee CEN/TC 278 "Road transport and traffic telematics", the secretariat of which is held by NEN, in collaboration with Technical Committee ISO/TC 204 "Transport information and control systems".

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this CEN Technical Specification: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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**Traffic and Travel Information (TTI) — TTI  
via Transport Protocol Experts Group  
(TPEG) Extensible Markup Language  
(XML) —**

**Part 3:  
tpeg-rtmML**

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*Informations sur le trafic et le tourisme (TTI) — Messages TTI via le  
langage de balisage extensible (XML) du groupe d'experts du protocole  
de transport (TPEG) —*

*SIST-160344X/TS-24530-3:2006*

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**Partie 3: tpeg-rtmML**



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Published in Switzerland

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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 with a view to deciding whether it should be confirmed for a further three years, revised to become an International Standard, or withdrawn. In the case of a confirmed ISO/PAS or ISO/TS, it is reviewed again after six years at which time it has to be either transposed into an International Standard or 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 24530-3 was prepared by the European Committee for Standardization (CEN) in collaboration with Technical Committee ISO/TC 204, *Intelligent transport systems*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Throughout the text of this document, read "...this European pre-Standard..." to mean "...this Technical Specification...".

ISO/TS 24530 consists of the following parts, under the general title *Traffic and Travel Information (TTI) — TTI via Transport Protocol Experts Group (TPEG) Extensible Markup Language (XML)*:

- *Part 1: Introduction, common data types and tpegML*
- *Part 2: tpeg-locML*
- *Part 3: tpeg-rtmML*
- *Part 4: tpeg-ptiML*



## Introduction

TPEG in XML (mpegML) provides the solution to diverse requirements for the ultimate delivery of TPEG applications (potentially simultaneously) via for example ARIB, ATSC, DAB, DVB and the Internet. This will solve the minimal adaptation layers requirement and without doubling up on message carousels, which are handled at different layers of the protocol stacks.

The original 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 binary was initially designed to meet a particular brief, from the EBU's Broadcast Management Committee; to develop a new protocol for Traffic and Travel Information, for use in the multimedia broadcasting environment. TPEG applications were developed with service and transport features, which enable travel-related messages to be coded, decoded, filtered and understood both by humans (visually and/or audibly) and by agent systems. This brief was also endorsed by the EBU TTI Broadcast Strategy Team, who recognized the vital importance of a bearer independent TTI protocol.

The development of TPEG binary technology is excellently matched both technically and economically to DAB and possibly to internet bearers, where of the order of up to 10 kbits/s is considered acceptable. However other bearers such as ARIB, ATSC and DVB may be able to offer much higher data rates with economic and technical utility. Nevertheless these bearers are highly structured (layered) in their ability to handle transparent data services and they include mechanisms suitable for carousel delivery, which would require a considerably different TPEG data structure before real transparency could be achieved.

Another potential use of mpegML is provided to Service Providers who would have a standardised message generation interface, yet be able to develop systems suited to their own requirements. This will enable Service Providers to exchange pre-edited information regardless of their message generation systems and be substantially language independent.

mpegML has been developed using the DTD approach, which allows the use of different language entity files to easily provide a truly language independent service. This approach has the advantage that mpegML files can be rendered in any language, provided the language entity file is available to the internet browser. This document provides English language entity files only. For other languages the entity files in this document only require direct translation.

The development of this ISO/TS 24530 series was undertaken jointly with European Broadcasting Union B/TPEG Group, which has evolved into the TPEG Forum Standards Task Force. Attention is drawn to the EBU sponsored TPEG Forum development principles, which require all inputs containing IPR to be declared during drafting work. No such declarations have been made.

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# Traffic and Travel Information (TTI) — TTI via Transport Protocol Experts Group (TPEG) Extensible Markup Language (XML) —

## Part 3: tpeg-rtmML

### 1 Scope

This document establishes the XML encoding of the method of the Road Traffic Message application.

The TPEG-RTM Application is intended to convey information to road users. The information provided relates to event and some status information on the road network and on associated infrastructure affecting a road journey. For example, limited information about abnormal operation of links in the network may be included, such as ferries, lifting-bridges, etc.

The TPEG-RTM Application has the broad objective to allow the generation of Traffic and Travel Information (TTI) messages, for delivery to the end-user by one or more bearers. A hierarchical methodology has been developed to allow the creation of messages from a set of TPEG-RTM tables, which are essentially word-oriented and cover most needs.

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These TPEG-RTM tables (essentially word-oriented data object dictionaries) comprise a wide ranging ability to describe a TTI event and some status information, introducing new precision in a number of areas such as "Vehicle types", "Positional information on the carriageway" and "Diversion routing advice".

*It is vital, for further understanding of this document, to have more than a passing understanding of the TPEG-RTM binary specification which describes, among other things, in a step-by step approach: Message Management, Level One Classes and how they are structured, hierarchically to provide a full Road Traffic Message together with the TPEG Location Referencing system.*

### 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/TS 24530-1, *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 18234-1, *Traffic and Travel Information (TTI) — TTI via Transport Protocol Expert Group (TPEG) data-streams — Part 1: Introduction, Numbering and Versions*

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

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

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes*

ISO 8601, *Data elements and interchange formats — Information interchange — Representation of dates and times*

### **3 Abbreviated terms**

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

#### **3.1**

##### **ARIB**

Association of Radio Industries and Business (Japan)

#### **3.2**

##### **ATSC**

American Television Standards Committee (USA)

#### **3.3**

##### **DAB**

Digital Audio Broadcasting

#### **3.4**

##### **DTD/dtd**

Document Type Definition - lower case used for file naming

#### **3.5**

##### **DVB**

Digital Video Broadcasting

#### **3.6**

##### **EBU**

European Broadcasting Union

#### **3.7**

##### **IPR**

Intellectual Property Right(s)

#### **3.8**

##### **RTM**

Road Traffic Message

#### **3.9**

##### **TPEG**

Transport Protocol Experts Group

#### **3.10**

##### **tpegML**

tpeg XML applications - use lower case to distinguish them from the TPEG binary applications which use upper case

#### **3.11**

##### **tpeg-loc**

location referencing for applications

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**3.12****TTI**

Traffic and Travel Information

**3.13****WGS84**

World Geodetic System 1984

**3.14****XML**

Extensible Markup Language

**4 Format of this document**

This document is divided into Sections, each describes an XML element used in tpegML. Each element has an introduction explaining what it is for, the DTD definition relevant to it, guidelines “extending” the DTD and an example. The complete .dtd and .ent files are contained in Annexes A and B.

**4.1 Tables**

A large number of attributes used in elements in tpegML are based on tables in the TPEG specifications. To encode this in XML there are defined general entity references for all the table entries. In this Technical Specification series these entities are taken from the TPEG tables defined in the equivalent part of ISO/TS 18234.

For display in other languages these entity files only need to be replaced by directly translated equivalents.

These are named, for example `rtmX_Y`, where X is the table number and Y is the row number (e.g. “`rtm01_01`” is the entry in the RTM vehicle type table for car). The DTD does not restrict the entity references that can be used in an attribute so the guidelines sections indicate which entities/tables should be used for which attributes.

Table numbers use a leading zero below 10, whereas the row number within a table does not use a leading zero. Table numbers are random and entries within a table are random – no priority order is implied.

**4.2 Example XML**

This example shows the following message: “*An accident closes A12 at Brentwood, Essex*” expressed as a single tpegML message using elements from tpeg-locML and tpeg-rtmML.

```
<tpeg_message>
  <originator country="UK" originator_name="BBC Travel"/>
  <summary xml:lang="en">Accident closes A12 at Brentwood, Essex</summary>
  <road_traffic_message message_id="123"
    version_number="1"
    message_generation_time="2002-04-03T13:03:00Z"
    severity_factor="&rtm31_4;">

    <!-- Location is on A12 in Brentford, Essex -->
    <location_container language="&loc41_30;">
      <location_coordinates location_type="&loc01_5;">
        <location_point>
          <WGS84 longitude="-0.1337" latitude="51.52641"/>
          <location_descriptor descriptor_type="&loc03_7;" descriptor="A12"/>
          <location_descriptor descriptor_type="&loc03_8;" descriptor="A128"/>
          <location_descriptor descriptor_type="&loc03_24;" descriptor="Brentwood"/>
          <location_descriptor descriptor_type="&loc03_25;" descriptor="Essex"/>
        </location_point>
        <direction direction_type="&loc02_2;">
      </location_coordinates>
    </location_container>
```

```

<!-- Accident in thick fog involving 50 vehicles -->
<accidents number_of="1">
  <position position="&rtm10_37;" />
  <vehicles number_of="50">
    <vehicle_problem vehicle_problem="&rtm03_22;" />
  </vehicles>
</accidents>
<visibility>
  <obscurity obscurity_problem="&rtm17_2;" visibility_distance="20" />
</visibility>
<network_conditions>
  <position position="&rtm10_37;" />
  <restriction restriction="&rtm49_1;" />
</network_conditions>

</road_traffic_message>
</mpeg_message>

```

This example shows the following message: *“Temporary traffic lights on A811 at Drymen”*.

```

<mpeg_message>
  <originator country="UK" originator_name="BBC Travel" />
  <summary xml:lang="en">Temporary traffic lights on A811 at Drymen</summary>
  <road_traffic_message message_id="124"
    version_number="1"
    message_generation_time="2002-04-03T13:40:00Z"
    severity_factor="&rtm31_2;">

    <!-- Location is A811 at Drymen -->
    <location_container language="&loc41_30;">
      <location_coordinates location_type="&loc01_6;">
        <location_point>
          <WGS84 longitude="-4.45451" latitude="56.05573" />
          <location_descriptor descriptor_type="&loc03_7;" descriptor="A811" />
          <location_descriptor descriptor_type="&loc03_8;" descriptor="A809" />
          <location_descriptor descriptor_type="&loc03_24;" descriptor="Dumbarton" />
          <location_descriptor descriptor_type="&loc03_24;" descriptor="Stirling" />
        </location_point>
      </location_coordinates>
    </location_container>

    <!-- Temporary traffic lights -->
    <facilities_performance>
      <traffic_control traffic_control_type="&rtm42_11;" traffic_control_status="&rtm43_12;">
        <position position="&rtm10_37;" />
      </traffic_control>
    </facilities_performance>

  </road_traffic_message>
</mpeg_message>

```

This example shows the following message: *“Collision of a motor bike and a large car in Munich right in front of the IBIS hotel on Ungerer Straße between the junctions with Fröttmaninger Straße (E11.60028°/N48.17583°) and Schenkendorfstraße/Isar- ring (E11.59722°/N48.17306°) on wet road (all lanes).”*



```
<tpg_message>
  <originator country="DE"/>
  <summary xml:lang="en">Collision of a motor bike and a large car in Munich right in front of the IBIS hotel on Ungerer Straße
between the junctions with Fröttmaninger Straße (E11.60028°/N48.17583°) and Schenkendorfstraße/Isar- ring (E11.59722°/N48.17306°)
on wet road (all lanes).</summary>
  <summary xml:lang="de">Unfall zwischen Motorrad und grossem Auto in München in Höhe des IBIS Hotel in der Ungerer
Straße zwischen den Kreuzungen mit Fröttmaninger Straße (E11.60028°/N48.17583°) und Schenkendorfstraße/Isar- ring
(E11.59722°/N48.17306°) auf nasser Straße (alle Spuren).</summary>
```

```
<road_traffic_message message_id="7"
  version_number="25"
  message_expiry_time="2000-09-30T12:05:00Z"
  severity_factor="rtm31_5">
  <location_container language="de">
    <location_coordinates location_type="loc01_3">
      <location_point>
        <WGS84 longitude="1160028" latitude="4817583"/>
        <location_descriptor descriptor_type="loc03_7;" descriptor="B11;Ungerer Straße"/>
        <location_descriptor descriptor_type="loc03_8;" descriptor="Fröttmaninger Straße"/>
      </location_point>
      <location_point>
        <WGS84 longitude="1159722" latitude="4817306"/>
        <location_descriptor descriptor_type="loc03_7;" descriptor="B11;Ungerer Straße"/>
        <location_descriptor descriptor_type="loc03_8;" descriptor="B2R;Schenkendorfstraße"/>
        <location_descriptor descriptor_type="loc03_9;" descriptor="B2R;Isarring"/>
      </location_point>
    </location_coordinates>
  </location_container>
  <accidents number_of="1">
    <position position="rtm10_9;/>
    <vehicles number_of="2">
      <position position="rtm10_9;/>
      <vehicle_info vehicle_type="rtm01_19;" vehicle_subtype="rtm48_3;/>
      <vehicle_info vehicle_type="rtm01_1;" vehicle_subtype="rtm07_3;/>
    </vehicles>
  </accidents>
  <road_conditions>
    <position position="rtm10_37;/>
    <surface general_magnitude="rtm31_4;" surface_condition="rtm18_9;/>
    <adhesion general_magnitude="rtm31_4;" adhesion_condition="rtm39_18;/>
  </road_conditions>
```

```
</road_traffic_message>
</tpg_message>
```