SLOVENSKI STANDARD

SIST-TS CEN ISO/TS 24530-2:2006

01-julij-2006

Prometne in potovalne informacije (TTI) ï TTI preko XML - razġirljivega oznaḷ evalskega jezika ekspertne skupine za prometne in potovalne protokole (TPEG) - 2. del: tpeg-locML (ISO/TS 24530-2:2004)

Traffic and Travel Information (TTI) - TTI via Transport Protocol Experts Group (TPEG) Extensible Markup Language (XML) - Part 2: tpeg-locML (ISO/TS 24530-2:2006)

Reise- und Verkehrsinformation (TTI)) - TTI über Datenströme der Transportprotokoll Expertengruppe (TPEG) Erweiterbare Auszeichnungssprache (XML) - Teil 2: tpeg-locML (ISO/TS 24530-2:2006)

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 2: tpeg-locML (ISO/TS 24530-2:2006)

Ta slovenski standard je istoveten z: **CEN ISO/TS 24530-2:2006**

ICS:

03.220.20

35.240.60

SIST-TS CEN ISO/TS 24530-2:2006 **en**

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN ISO/TS 24530-2

April 2006

ICS 35.240.60; 03.220.20

English Version

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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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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. CEN ISO/TS 24530-2:2006: E

Foreword

This document (CEN ISO/TS 24530-2:2006) 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.

TECHNICAL SPECIFICATION

ISO/TS 24530-2

First edition
2006-04-15

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

Part 2: tpeg-locML

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Reference number
ISO/TS 24530-2:2006(E)

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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 24530-2 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 (tpegML) 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 tpegML 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.

tpegML 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 tpegML 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.

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

Part 2: tpeg-locML

1 Scope

This document establishes the XML encoding of the method of Location Referencing used by TPEG applications.

TPEG applications contain the information required by a client TPEG decoder (i.e. both Location Referencing and event information), to present all the information intended for the end-user when it was originated by the service provider.

Location Referencing requires a service provider to give an impression or image, to the human end-user, of where an event has taken place. This cannot be done easily because the human end-user may or may not be familiar with the location. tpeg-loc has the added challenge of attempting to be as language independent as possible. This is achieved by the use of tpeg-loc tables (essentially word-oriented data object dictionaries).

tpeg-loc is the recommended Location Referencing system for TPEG. It provides location data in a machine readable form that allows a “thick” client such as a navigation system to map-match, on-the-fly, to locate the event being described onto a digital map display. However, it is possible to additionally use other location methods, such as the ‘Link-id’ method by suitably modifying the tpegML.dtd to include the relevant lines, e.g.:

```
<!ENTITY % link-idML PUBLIC "-//EBU//DTD tpeg-locML//EN" "link-idML.dtd">

%link-idML;
```

It is vital, for further understanding of this document, to have more than a passing understanding of the tpeg-loc binary specification which describes, among other things, in a step-by step approach: point, link and area definitions, and how they are structured to provide a full 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 24530-3, *Traffic and Travel Information (TTI) — TTI via Transport Protocol Experts Group (TPEG) Extensible Markup Language (XML) — Part 3: tpeg-rtmML*

ISO/TS 24530-4, *Traffic and Travel Information (TTI) — TTI via Transport Protocol Experts Group (TPEG) Extensible Markup Language (XML) — Part 4: tpeg-ptiML*

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

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 18234-6, *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*

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
PTI
Public Transport Information

3.9
RTM
Road Traffic Message

3.10
SSF
Syntax, Semantics and Framing Structure

3.11
TPEG
Transport Protocol Experts Group

3.12
tpegML
tpeg XML applications - use lower case to distinguish them from the TPEG binary applications which use upper case

3.13
tpeg-loc
location referencing for applications

3.14
tpeg-ilc
descriptor formed according to tpeg-loc rules

3.15
TTI
Traffic and Travel Information

3.16
WGS84
World Geodetic System 1984

3.17
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 the ISO/TS 18234-series.

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

These are named, for example `locX_Y`, where X is the table number and Y is the row number (e.g. “`loc01_01`” is the entry in the Loc `location_type` table for `large area`). 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.

5 tpeg-locML

This is defined fully in the tpeg-locML.dtd and tpeg-locML.ent files (see Annexes A and B).

5.1 location_container

```
<!ELEMENT location_container ((location_coordinates | location_descriptions)*)>
<!ATTLIST location_container
    language CDATA #REQUIRED
>
```

location_container: This is the location referencing method for TPEG. It combines machine readable and human understandable location referencing information.

The language attribute shall use entity references of the form `loc41_x`.

Example:

```
<location_container language="&loc41_4;">
     <location_coordinates>…</location_coordinates>
     <location_descriptions>…</location_descriptions>
</location_container>
```

5.2 location_coordinates


```
<!-- loc_table 01: location type -->
<!ENTITY loc01_0 "unknown">
<!ENTITY loc01_1 "large area">
<!ENTITY loc01_2 "nodal area">
<!ENTITY loc01_3 "segment">
<!ENTITY loc01_4 "reserved for future use">
<!ENTITY loc01_5 "intersection">
<!ENTITY loc01_6 "framed point">
<!ENTITY loc01_7 "non-linked point">
<!ENTITY loc01_8 "connected point">
<!ENTITY loc01_255 "unknown">

<!ELEMENT location_coordinates ((mode_type_list | location_point | direction)*)>
<!ATTLIST location_coordinates
    location_type CDATA #REQUIRED
>
```


location_coordinates: The location type attribute shall use entity references of the form `loc01_x`.

Example:

```
<location_coordinates location_type="&loc01_3;">
    <location_point>
          <WGS84>…</WGS84>
          <location_descriptor>…</location_descriptor>
    </location_point>

    <location_point>
          <WGS84>…</WGS84>
          <location_descriptor>…</location_descriptor>
    </location_point>
</location_coordinates>
```

5.2.1 location_point

<!ELEMENT location_point ((WGS84 | location_descriptor)*)>

location_point: The elements can be grouped together in a number of ways according to the type of area or point to be described.

Example:

```
<location_point>
    <WGS84>…</WGS84>
    <location_descriptor>…</location_descriptor>
</location_point>
```

5.2.2 mode_type_list

<!ELEMENT mode_type_list (mode_of_transport*)>

mode_type_list: This describes the modes of transport that this description applies to.

Example:

```
<mode_type_list>
    <mode_of_transport>…</mode_of_transport>
</mode_type_list>
```


5.2.2.1 mode_of_transport


```
<!-- loc_table 05: modes of transport -->
<!ENTITY loc05_0 "unknown">
<!ENTITY loc05_1 "road">
<!ENTITY loc05_2 "railway">
<!ENTITY loc05_3 "coach">
<!ENTITY loc05_4 "suburban railway">
<!ENTITY loc05_5 "underground">
<!ENTITY loc05_6 "bus">
<!ENTITY loc05_7 "tram">
<!ENTITY loc05_8 "water transport">
<!ENTITY loc05_9 "aircraft">
<!ENTITY loc05_10 "telecabin">
<!ENTITY loc05_11 "funicular">
<!ENTITY loc05_12 "taxi">
<!ENTITY loc05_13 "self drive">
<!ENTITY loc05_14 "cable-drawn boat">
<!ENTITY loc05_15 "monorail">
<!ENTITY loc05_16 "light railway">
<!ENTITY loc05_255 "undefined">

<!ELEMENT mode_of_transport EMPTY>
<!ATTLIST mode_of_transport
    mode_of_transport CDATA #REQUIRED
>
```

mode_of_transport: This describes a mode of transport. The mode attribute shall use entity references of the form `loc05_x`.

Example:

```
<mode_of_transport mode_of_transport =”&loc05_3;”/>
```