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Terminalska oprema (TE) – Videotex – Zvokovna skladnja

Terminal Equipment (TE); Videotex Audio syntax

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Foreword

This European Telecommunication Standard (ETS) has been prepared by the Terminal Equipment (TE) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS is part of a series of standards which describe the Videotex data syntax and is consistent with the work being carried out by CCITT Study Group VIII on Question 14. It also specifies a common data syntax for transmitting sound to be used by Videotex terminal equipment.

This ETS defines a data syntax for conveying audio data in a Videotex environment. In this data syntax a variety of audio encoding techniques are embedded in one general structure. No algorithms or specific sound encodings are specified. It allows for the embedding of both waveform and phonemic encodings.

This ETS closely follows the concepts and coding techniques as defined in ISO/IEC 9281 [1] for the identification of pictorial information and for switching between picture encoding environments and coding systems according to ISO 2022 [2].

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1 Scope

This standard specifies the data syntax to be used by Videotex services for conveying sound information.

This standard is applicable to terminals connected to public data networks. Typically, these should be terminals, supporting Integrated Services Digital Network (ISDN) syntax-based Videotex, to be attached at either side of a T reference point or coincident S and T reference points of a public ISDN.

2 Normative references

This ETS incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1]   ISO 9281: "Information technology - Picture coding methods".

[2]   ISO 2022: "Information Processing - ISO 7-bit and 8-bit coded character sets - Code extension techniques".

[3]   ETS   300   072   (1990):   "Terminal   Equipment   (TE); Videotex presentation layer protocol, Videotex presentation layer data syntax".

[4]   ETS 300 073 (1990): "Videotex presentation layer data syntax : Geometric display (CEPT Recommendation T/TE 06-03, Edinburgh 1988)".

[5]   ETS 300 074 (1990): "Videotex presentation layer data syntax : Transparent data (CEPT Recommendation T/TE 06-03, Edinburgh 1988)".

[6]   ETS 300 075 "1990": "Terminal Equipment (TE); Videotex processable data".

[7]   ETS 300 076 (1990): "Terminal Equipment (TE); Videotex, Terminal Facility Identifier (TFI)".

[8]   CCITT Recommendation T.101 (1988): "International Interworking for Videotex".

[9]   ISO 646: "Information processing - ISO 7-bit coded character set for information exchange".

[10]   CCITT Recommendation G.711 (1988): "Pulse code modulation of voice frequencies".

[11]   CCITT Recommendation G.721 (1988): "32 kbit/s adaptive differential pulse code modulation.

[12]   CCITT Recommendation G.723 (1988): "Extensions of Recommendation G.721 ADPCM to 24 and 40 kbit/s for DCME application".

[13]   CCITT Recommendation G.722 (1988): "7 kHz audio-coding within 64 kbit/s".

[14]   GSM Specification 06.10: "GSM Full-rate speech transcoding".

[15]   CCITT Recommendation J.41: "Characteristics of equipment for the coding of analogue high quality sound programme signals for transmission on 384 kbit/s channels".

[16]   CCITT Recommendation J.42: "Characteristics of equipment for the coding of analogue medium quality sound programme signals for transmission on 384 kbit/s channels".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply:

Audio bit rate: the bit rate required to convey data which is coded according to a specific encoding in real time.

Data Syntax: data syntax I, II or III.

Data Syntax I: data syntax used in the CAPTAIN system.

Data Syntax II: European data syntax (ETSs 300 072 to 300 076 [3] to [7]).

Data Syntax III: data syntax used in the NAPLPS system.

> NOTE : The three data syntaxes above are described in CCITT Recommendation T.101 [8].

Encoding: coding method of audio data according to a specific algorithm and coding convention.

Recording level: the mean level of the sound signal as it was recorded.

Sampling rate: aspect of a sound encoding defining the amount of samples encoded per time unit.

Synchronisation mode: attribute of an encoding defining the synchronisation to be applied to the audio data.

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Transfer rate: the effective amount of data bits which can be exchanged between communicating entities.

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Translation mode: attribute of an encoding defining the method of packing data into octets in order to achieve transparency.

3.2 Symbols and abbreviations

For the purposes of this ETS the following abbreviations apply:

ADPCM	Adaptive Differential Pulse Code Modulation
AM	Alphamosaic
CMI	Coding Method Identifier
GSM	Special Mobile Group
LI	Length Indicator
MI	Method Identifier
P	Profile in Data syntax II
PCD	Picture Coding Delimiter
PCE	Picture Control Entity
PCM	Pulse Code Modulation
PDE	Picture Data Entity
PE	Picture Entity
PI	Picture Identifier

PM   Picture Mode

RPE-LTP   Residual Pulse Excitation - Long Term Predictive

VPCE   Videotex Presentation Control Element

4   Overview

The audio data syntax allows for the embedding of a variety of different audio-coding techniques in one single overall structure. Each information element is tagged with an introducer indicating:

-        the coding technique being used;

-        the audio bit rate of the coding.

The audio bit rate indicates the bit rate with which the used encoding can be conveyed in real time. The audio bit rate is strongly related to the sampling rate and may be different from the actual transfer rate of the protocol being used for data exchange.

The audio data syntax provides for block-wise transmission of audio data, thus avoiding the need for terminals to scan through streams of audio data for delimiter sequences.

To increase the actual data throughput, the audio data syntax provides for transparent data transport, thereby surpassing the coding convention, that data representing information is coded in columns 2 - 7 (and 10 - 15 in a 8-bit environment).

5   Introducer

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The introducer for sound shall be in accordance with ISO/IEC 9281 [1] and has the following coding: ESC 7/0 2/4 where 2/4 identifies audio-coding.

The return from the sound environment may be done by using ESC 2/5 4/0 (return to default ISO 2022 [2] environment) or by switching explicitly to an identified environment using another ESC 2/5 x/y sequence, or by the end of an ISO/IEC 9281 [1] picture element, at which time the current ISO 2022 [2] coding environment (i.e. the base Videotex data syntax) takes effect.

6   ISO/IEC 9281 syntax and switching structure

In some Videotex systems, in a situation where an interruption of the audio data flow is required (caused probably by user interaction) the following may occur. The Picture Entity (PE) being sent to the terminal is completely sent. The next PE sent to the terminal can have the Picture Data Entity (PDE) value set to 04/02 to indicate the end of the data, the PDE will contain only byte (Length Indicator = 1).

If possible, the speed of the network should be taken into account when defining the number of bytes in a PDE with the aim of tolerable interaction response time. As a rough guide, a block length that does not result in a response time exceeding 200 ms - 500 ms may by used.

6.1   Overall switching of coding environment

ISO/IEC 9281 [1] describes a technique for identifying coding methods. The Videotex photographic audio mode is one of the coding methods identified by ISO/IEC 9281 [1]. The diagram in figure 1 gives an overview of the relationship between the Videotex data syntaxes and ISO/IEC 9281 [1] coding environments.

A Videotex data syntax can be explicitly entered using an ESC 2/5 F code, this is also the mechanism for entering an ISO/IEC 9281 [1] environment. The Videotex data syntaxes can therefore be regarded as being ISO/IEC 9281 [1] environments.