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**Terminalska oprema (TE) – Aplikacijski programski vmesnik za ravnanje z  
multimedijskimi in hipermedijskimi informacijskimi objekti**

Terminal Equipment (TE); Application Programming Interface (API) for the manipulation  
of Multimedia and Hypermedia information objects

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## Foreword

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

## Introduction

This ETS specifies the abstract Application Programming Interface (API) for the manipulation of multimedia and hypermedia information objects, i.e. the API that shall be provided by Multimedia and Hypermedia Experts Group (MHEG) engines for their control by MHEG applications.

This ETS is part of a broader standardisation framework that specifies the usage of MHEG so that interoperable equipment can be effectively developed to support multimedia information services and applications. This implies:

- specifying additional constraints on the use of MHEG objects within distributed systems and applications using telecommunication networks;
- defining APIs that building blocks of architectures using MHEG should provide;
- defining MHEG profiles complementing the MHEG-1 standard by specifying restrictions on the coded representation and specifying the complete required behaviour of an MHEG engine that should be supported for a given category of applications and/or terminal equipment;
- defining an MHEG script interchange representation;
- defining end-to-end protocols for multimedia/hypermedia information services using MHEG;
- specifying conformance testing procedures for these standards.

Functional and technical requirements of this ETS have been described in ETR 225 [4].

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## 1 Scope

Multimedia and Hypermedia Experts Group (MHEG) Part 1 (ISO/IEC DIS 13522-1 [1]) is a generic standard, which specifies the coded representation of interchanged multimedia/hypermedia information objects (MHEG objects). These so-called MHEG objects are handled, interpreted and presented by MHEG engines.

This European Telecommunication Standard (ETS) specifies the abstract Application Programming Interface (API) for the manipulation of multimedia and hypermedia information objects, i.e. the API that shall be provided by MHEG engines for their control by MHEG applications.

This API meets the following requirements:

- it is independent of the programming language used for the MHEG application;
- it is independent of the underlying operating system;
- it is independent of the mechanism used for interchanging information between the API user (i.e. MHEG application) and the API provider (i.e. MHEG engine, the messages that are exchanged as the result of triggering API primitives);
- it is independent of the actual encoding of these messages;
- it is generic and meant to cover all application requirements;
- it is conformance testable;
- it aims to be as easy as possible to implement.

## 2 Normative references

This ETS incorporates by dated and 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/IEC DIS 13522-1 (1994): "Information technology - Coding of Multimedia and Hypermedia Information - Part 1: MHEG object representation - Base Notation"  
<https://standards.iteh.ai/catalog/standards/sist/eb6d602a-f446-43cb-8366-e4fc664d1823/sist-ets-300-714-e1-2003>
- [2] ISO/IEC 9646 Parts 1 to 5 (1991): "Information Technology - Open Systems Interconnection - Conformance testing methodology and framework".
- [3] ETR 173 (1995): "Terminal Equipment (TE); Functional Model for Multimedia Applications".
- [4] ETR 225 (1995): "Terminal Equipment (TE); Application Programmable Interface (API) and script representation for MHEG; Requirements and framework".
- [5] (Reserved).
- [6] (Reserved).
- [7] ITU-T Recommendation I.113 (1994): "Vocabulary of terms for broadband aspects of ISDN".
- [8] ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".
- [9] CCITT Recommendation Q.9 (1990): "Vocabulary of switching and signalling terms".
- [10] ISO/IEC 14750-1 Working Draft: "CORBA IDL as an Interface Definition Language for ODP Systems".

### 3 Definitions and abbreviations

#### 3.1 Definitions

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

**NOTE:** Due to the particular nature of this ETS, some of the words and expressions used in this ETS come from the "telecommunication services" standards glossary, while others come from the "software technology" standards glossary. This leads to words whose meaning vary according to the context, i.e. the expression within which they are used. For this reason, many of these expressions are defined in this subclause.

Should any ambiguity occur, definitions of the following standards would apply, in decreasing order:

- ISO/IEC DIS 13522-1 [1];
- any other standard part of ISO/IEC 13522 [1];
- ITU-T Recommendation I.113 [7];
- ITU-T Recommendation I.112 [8];
- CCITT Recommendation Q.9 [9].

**Application Programming Interface (API):** A boundary across which a software application uses facilities of programming languages to invoke software services. These facilities may include procedures or operations, shared data objects and resolution of identifiers.

**function family:** A cluster of functional MHEG API requirements consisting of functions with related semantics and applying to the same type of target.

**hypermedia:** The ability to access monomedia and multimedia information by interaction with explicit links.

**interactive service:** A service which provides the means for bidirectional exchange of information between users or between users and hosts. Interactive services are subdivided into three classes of services: conversational services, messaging services and retrieval services (ITU-T Recommendation I.113 [7]).

**local application:** A piece of software which is part of the (telecommunication) application and is running on the considered equipment.

**MHEG API:** The API provided by an MHEG engine to MHEG applications for the manipulation of MHEG objects, as defined in this ETS.

**MHEG application:** A piece of software which uses the MHEG API. An MHEG application is therefore a client of an MHEG engine.

**MHEG engine:** A process or a set of processes that interpret MHEG objects encoded according to the encoding specifications of ISO/IEC DIS 13522-1 [1]: Abstract Syntax Notation One (ASN.1) for Part 1, Standard Generalized Markup Language (SGML) for Part 2.

**MHEG using application:** An application which involves the interchange of MHEG objects within itself or with another application.

**multimedia and hypermedia application:** An application which involves the presentation of multimedia information to the user and the interactive navigation across this information by the user.

**Multimedia And Hypermedia Information Retrieval Services (M&HIRS):** A generic set of services which provide users with the capability to access and interchange multimedia and hypermedia information.

**multimedia application:** An application which involves the presentation of multimedia information to the user.

**multimedia:** The property of handling several types of representation media.

**primitive:** One of the basic entry points provided by a provider module to any user module to enable the user module to access the software service(s) supplied by the provider module.

**software application:** A piece of software answering a set of user's requirements and for use by a computer user.

**software service:** A set of functions provided by a (server) software or system to a client software or system, usually accessible through an application programming interface.

**telecommunication application:** A set of a user's requirements (CCITT Recommendation Q.9 [9]).

**telecommunication service:** That which is offered by an administration to its customers in order to satisfy a specific telecommunication requirement (ITU-T Recommendation I.112 [8]).

**terminal application:** A piece of software running on the terminal and performing that part of the processing required to make the terminal appropriate for user access to the application. The terminal application is usually the "master" module in the terminal.

**user:** A person or machine delegated by a customer to use the services and/or facilities of a telecommunication network (ITU-T Recommendation I.112 [8]).

**action object:** An object that provides operation on objects: e.g. to change their attributes or states.

**channel:** A logical space in which rt-components are positioned for final presentation. Channels are mapped by the MHEG engine to physical devices such as screen windows or loudspeaker for making the rt-objects within them perceivable by the user.

**component object:** An abstraction which represents objects of Content or Composite type.

**composite object:** A list of Composition Elements grouped for presentation. The presentation of a Composite object consists of the presentation of its Composition Elements.

**container object:** A means to group objects without specifying specific relationships.

**content object:** Encoded generic value, media or non-media data.

**descriptor object:** A structure for the interchange of resource information about a single or a set of other interchanged objects.

**IDL attribute:** An identifiable association between an object and a value. An attribute A is made visible to clients as a pair of operations: get\_A and set\_A. Read only attributes only generate a get operation.

**IDL class:** An implementation that can be instantiated to create multiple objects with the same behaviour. An object is an instance of a class. Types classify objects according to a common implementation.

**IDL data type:** A categorisation of values operation arguments, typically covering both behaviour and representation (i.e., the traditional non-Object Oriented (OO) programming language notion of type).

**IDL instance:** A object is an instance of an interface if it provides the operations, signatures and semantics specified by that interface. An object is an instance of an implementation if its behaviour is provided by that implementation.