
**Information technology — Coding of
multimedia and hypermedia information —**

Part 6:

Support for enhanced interactive applications

*Technologies de l'information — Codage de l'information multimédia et
hypermédia —*

Partie 6: Support pour les applications interactives améliorées

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialised system for worldwide standardisation. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organisation to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organisations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of Information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 13522-6 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

ISO/IEC 13522 consists of the following parts, under the general title *Information technology - Coding of multimedia and hypermedia information*:

- Part 1: MHEG object representation - Base notation (ASN.1)
- Part 3: MHEG script interchange representation
- Part 4: MHEG registration procedure
- Part 5: Support for base-level interactive applications
- Part 6: Support for enhanced interactive applications
- Part 7: Interoperability and conformance testing for ISO/IEC 13522-5

Annexes A to C form an integral part of this part of ISO/IEC 13522. Annexes D to G are for information only.

Information technology – Coding of multimedia and hypermedia information –

Part 6: Support for enhanced interactive applications

1 Scope

1.1 Context of the scope

ISO/IEC 13522 specifies the coded representation of multimedia/hypermedia information objects (MHEG objects) for interchange as final form units within or across services and applications, by any means of interchange including local area networks, wide area telecommunication or broadcast networks, storage media, etc.

MHEG objects can be produced by computer tools taking as source form multimedia applications designed using multimedia scripting languages. In this context, the MHEG script (or program) classes are intended to complement the other MHEG classes in expressing the functionality commonly supported by scripting languages. Script (or program) objects express more powerful control mechanisms and describe more complex relationships among MHEG objects than can be expressed by MHEG action and link objects alone. Furthermore, script (or program) objects express access to and interaction with external services provided by the run-time environment.

ISO/IEC 13522-5 defines the MHEG object classes for interchange and use in base-level applications intended to be run on limited resource terminals such as set-top-boxes in such contexts as interactive broadband services.

ISO/IEC 13522-5 defines the coded representation for program objects in an open manner so that program objects may encapsulate either standardised or proprietary program code. ISO/IEC 13522-5 allows program objects to include or reference programs that may be encoded in any encoding format as defined by the application domain.

1.2 Scope of this part of ISO/IEC 13522

The scope of this part of ISO/IEC 13522 is to define the semantics and final-form coded representation for the interchange of enhanced interactive multimedia applications.

These applications extend applications covered by ISO/IEC 13522-5 in incorporating functionality such as computing (data processing) and extended communication with the external environment, including servers, local devices, etc.

These applications may be exploited in any communication environment including broadcast-only mode, interactive client-server or peer-to-peer (conversational). However, the main focus is on interactive retrieval (client-server) applications running on limited resource set-top-units involving asymmetrical data interchange with real-time audiovisuals on the downstream channel.

The coded representation defined by this part of ISO/IEC 13522 specialises the coded representation defined by ISO/IEC 13522-5. Especially, this part of ISO/IEC 13522 defines the coded representation for the OriginalContent attribute of the MHEG-5 InterchangedProgram class. In addition, this part of ISO/IEC 13522

defines the Applet class; this subclass of InterchangedProgram features the ability to manage its own display and interaction, by delegation from the engine.

The resulting coded representation is

- compatible with that defined by ISO/IEC 13522-5;
- appropriate for execution on a set-top-unit with the same minimal resource constraints as expressed by ISO/IEC 13522-5.

This part of ISO/IEC 13522 specifies

- the interchange format for the OriginalContent attribute of the MHEG-5 InterchangedProgram class;
- the semantics of this coded representation;
- the coded representation and semantics of the Applet class;
- the semantic extensions to the MHEG-5 engine behaviour described by ISO/IEC 13522-5;
- the semantic restrictions on the MHEG-5 interchange format described by ISO/IEC 13522-5;
- the MHEG-5 API, which allows the code of an InterchangedProgram object to call upon the MHEG-5 engine's presentation functionality;
- the provisions for interworking between the MHEG-5 engine execution model and the execution model that underlies the program content interchange format.

MHEG engines are system or application components that handle, interpret and present MHEG objects. This part of ISO/IEC 13522 specifies the semantics of the MHEG-6 coded representation. These semantics are defined in terms of minimum requirements on the behaviour of MHEG-6 engines.

This part of ISO/IEC 13522 is applicable to all applications that interchange multimedia and hypermedia information.

2 Normative references

2.1 International standards

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 13522. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO/IEC 13522 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC 646:1991, *Information technology - ISO 7-bit coded character set for information interchange*.

ISO/IEC 8824-1:1995, *Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation*.

ISO/IEC 8825-1:1995, *Information technology - ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)*.

ISO/IEC 10646-1:1993, *Information technology - Universal Multiple-Octet Coded Character Set (UCS) - Part 1: Architecture and Basic Multilingual Plane*.

ISO/IEC 13522-5:1997, *Information technology - Coding of multimedia and hypermedia information - Part 5: Support for base-level interactive applications*.

2.2 Referenced specifications

All references in this subclause were correct at the time of approval of this part of ISO/IEC 13522. The provisions of the referenced specifications, as identified in this subclause, are valid within the context of this part of ISO/IEC 13522. The reference to a specification within this part of ISO/IEC 13522 does not give it any further status within ISO/IEC; in particular, it does not give the referenced specification the status of an International Standard.

Lindholm, Tim and Yellin, Frank (September 1996), *The Java™ Virtual machine specification*. ISBN: 0-201-63452-X, Addison-Wesley Publishing Co.: Reading, Massachussets.

Gosling, James, Yellin, Frank and the Java team (May 1996), *The Java™ Application Programming Interface, Volume 1: Core Packages*. ISBN: 0-201-63453-8, Addison-Wesley Publishing Co.: Reading, Massachussets.