Technical Report

ISO/IEC TR 14496-24

Information technology — Coding of audio-visual objects —

Part 24: Audio and systems interaction

Technologies de l'information — Codage d'objets audiovisuels — Partie 24: Codage audio et interaction de systèmes

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

This second edition cancels and replaces the first edition (ISO/IEC TR 14496-24:2008), which has been technically revised.

The main changes are as follows:

— addition of details about complex audio and system interaction scenarios and HE-AAC content signalling;

— refactored description of timestamp and delay handling;

— extension of the HE-AAC example.

A list of all parts in the ISO/IEC 14496 series can be found on the ISO and IEC websites.

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Information technology — Coding of audio-visual objects —

Part 24:
Audio and systems interaction

1 Scope

This document describes the desired joint behaviour of MPEG-4 Systems (MPEG-4 File Format) and MPEG-4 Audio codecs. It is desired that MPEG-4 Audio encoders and decoders permit finite length signals to be encoded to a file (particularly MPEG-4 files) and decoded again to obtain the identical signal, subject to codec distortions. This enables the use of audio in systems implementations (particularly MPEG-4 Systems), perhaps with other media such as video, in a deterministic fashion. Most importantly, the decoded signal has nothing “extra” at the beginning or “missing” at the end.

This permits:

a) an exact "round trip" from raw audio to encoded file back to raw audio (excepting encoding artefacts);

b) predictable synchronization between audio and other media such as video;

c) correct behaviour when performing random access as well as when starting at the beginning of a stream;

d) identical behaviour when edits are applied in the raw domain and the encoded domain (excepting encoding artefacts).

It is also expected that there be predictable interoperability between encoders (as represented by files) and decoders. There are two kinds of audio "offsets" (or "delay" in the context of transmission): those that are result from the encoding process, and those that are result from the decoding process. This document is primarily concerned with the latter.

These issues are resolved by the following:

— The handling of composition time stamps for audio composition units is specified. Special care is taken in the case of compressed data, like HE-AAC coded audio, that can be decoded in a backward compatible fashion as well as in an enhanced fashion.

— Examples are given that show how a finite length signals can be encoded to an MPEG-4 file and decoded again to obtain the identical signal, excepting codec distortions. Most importantly, the decoded signal has nothing “extra” at the beginning or “missing” at the end.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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/IEC 14496-3:2019, *Information technology — Coding of audio-visual objects — Part 3: Audio*

ISO/IEC 14496-12, *Information technology — Coding of audio-visual objects — Part 12: ISO base media file format*