



**International
Standard**

ISO/IEC 23001-19

**Information technology — MPEG
systems technologies —**

**Part 19:
Carriage of green metadata**

**First edition
2026-08**

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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*.

A list of all parts in the ISO 23001 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at <https://www.iso.org/members.html> and <https://www.iec.ch/national-committees>.

Introduction

Green metadata is used for representing information that will help to reduce the energy consumption in the video distribution chain, towards a more sustainable industry.

This document addresses technologies defining the carriage of green metadata for storage and delivery purposes. This document includes (but is not limited to):

- Storage and carriage of green metadata using the ISO Base Media File Format (ISOBMFF) as specified in ISO/IEC 14496-12;
- Encapsulation, signalling, and streaming of green metadata data in a media streaming system, e.g., dynamic adaptive streaming over HTTP (DASH) as specified in ISO/IEC 23009-1.

Information technology — MPEG systems technologies —

Part 19: Carriage of green metadata

1 Scope

This document defines a storage and delivery format for metadata for energy-efficient decoding, encoding, presentation, and selection of media (green metadata) as defined in ISO/IEC 23001-11. The green metadata are timed metadata which can be associated with other tracks in the ISO Base Media File Format. Timed metadata such as power consumption information and their metrics are defined in this document for carriage in files based on ISO/IEC 14496-12.

In the context of DASH delivery, the green metadata representations and their association to the media representations are also defined using the signalling mechanisms specified in ISO/IEC 23009-1:2022 and ISO/IEC 23009-3^[1].

These metadata can be used for multiple purposes, including optimizing power consumption during playback and supporting dynamic adaptive streaming.

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 14496-5, *Information technology — Coding of audio-visual objects — Part 5: Reference software*

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

ISO/IEC 14496-15, *Information technology — Coding of audio-visual objects — Part 15: Carriage of network abstraction layer (NAL) unit structured video in the ISO base media file format*

ISO/IEC 23001-10:2020, *Information technology — MPEG systems technologies — Part 10: Carriage of timed metadata metrics of media in ISO base media file format*

ISO/IEC 23001-11:2023, *Information technology — MPEG systems technologies — Part 11: Energy-efficient media consumption (green metadata)*

ISO/IEC 23009-1:2022, *Information technology — Dynamic adaptive streaming over HTTP (DASH) — Part 1: Media presentation description and segment formats*

Bibliography

- [1] ISO/IEC 23009-3, *Information technology — Dynamic adaptive streaming over HTTP (DASH) — Part 3: Implementation guidelines*