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Information technology — MPEG systems technologies —

Part 11: Energy-efficient media consumption (green metadata)

*Technologies de l'information — Technologies des systèmes MPEG —
Partie 11: Consommation des supports éconergétiques
(métadonnées vertes)*



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Foreword

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

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

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 23001-11:2015), which has been technically revised. It also incorporates the Amendments ISO/IEC 23001-11:2015/Amd 1:2016 and ISO/IEC 23001-11:2015/Amd 2:2018. The main changes compared to the previous edition are as follows:

- specification of an HEVC SEI message carrying green metadata and modification of text specifying the carriage of green Metadata in an AVC SEI message so that the AVC and HEVC SEI messages are consistent;
- inclusion of Annex C which specifies conformance-verification procedures for the power-reduction technologies specified in this document, precises the role of the reference software for each technology and gives the links to reference softwares and test vectors.
- specification of HEVC Complexity metrics and improvement of the existing AVC Complexity metrics.

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

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 www.iso.org/members.html.

Introduction

This document specifies the metadata (green metadata) that facilitates reduction of energy usage during media consumption as follows:

- the format of the metadata that enables reduced decoder power consumption;
- the format of the metadata that enables reduced display power consumption;
- the format of the metadata that enables media selection for joint decoder and display power reduction;
- the format of the metadata that enables quality recovery after low-power encoding.

This metadata facilitates reduced energy usage during media consumption without any degradation in the quality of experience (QoE). However, it is also possible to use this metadata to get larger energy savings, but at the expense of some QoE degradation.