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Information technology — Coding of audio-visual objects —

Part 10: Advanced video coding

Technologies de l'information — Codage des objets audiovisuels —

Partie 10: Codage visuel avancé

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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see http://patents.iec.ch).

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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*, in collaboration with ITU-T. The technically identical text is published as ITU-T H.264 (06/2019).

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This ninth edition cancels and replaces the eighth edition (ISO/IEC 14496-10:2014), which has been technically revised. It also incorporates the Amendments ISO/IEC 14496-10:2014/Amd. 1:2015 and ISO/IEC 14496-10:2014/Amd. 3:2016.

The main changes compared to the previous edition are as follows:

— specification of an additional profile (the Progressive High 10 profile);

— additional colour-related video usability information codepoint identifiers;

— additional supplemental enhancement information messages;

— minor corrections and clarifications throughout the document.

A list of all parts in the ISO/IEC 14496 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.

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0 Introduction

0.1 Prologue

As the costs for both processing power and memory have reduced, network support for coded video data has diversified, and advances in video coding technology have progressed, the need has arisen for an industry standard for compressed video representation with substantially increased coding efficiency and enhanced robustness to network environments. Toward these ends the ITU-T Video Coding Experts Group (VCEG) and the ISO/IEC Moving Picture Experts Group (MPEG) formed a Joint Video Team (JVT) in 2001 for development of a new Recommendation | International Standard.

0.2 Purpose

This Recommendation | International Standard was developed in response to the growing need for higher compression of moving pictures for various applications such as videoconferencing, digital storage media, television broadcasting, internet streaming, and communication. It is also designed to enable the use of the coded video representation in a flexible manner for a wide variety of network environments. The use of this Recommendation | International Standard allows motion video to be manipulated as a form of computer data and to be stored on various storage media, transmitted and received over existing and future networks and distributed on existing and future broadcasting channels.

0.3 Applications

This Recommendation | International Standard is designed to cover a broad range of applications for video content including but not limited to the following:

- CATV: cable TV on optical networks, copper, etc.
- DBS: direct broadcast satellite video services.
- DSL: digital subscriber line video services.
- DTTB: digital terrestrial television broadcasting.
- ISM: interactive storage media (optical disks, etc.).
- MMM: multimedia mailing.
- MSPN: multimedia services over packet networks.
- RTC: real-time conversational services (videoconferencing, videophone, etc.).
- RVS: remote video surveillance.
- SSM: serial storage media (digital VTR, etc.).

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0.4 Publication and versions of this document

ITU-T Rec. H.264 | ISO/IEC 14496-10 version 1 refers to the first approved version of this Recommendation | International Standard.

ITU-T Rec. H.264 | ISO/IEC 14496-10 version 2 refers to the integrated text containing the corrections specified in the first technical corrigendum.

ITU-T Rec. H.264 | ISO/IEC 14496-10 version 3 refers to the integrated text containing both the first technical corrigendum (2004) and the first amendment, which is referred to as the "Fidelity range extensions".

ITU-T Rec. H.264 | ISO/IEC 14496-10 version 4 refers to the integrated text containing the first technical corrigendum (2004), the first amendment (the "Fidelity range extensions"), and an additional technical corrigendum (2005).

ITU-T Rec. H.264 | ISO/IEC 14496-10 version 5 refers to the integrated version 4 text with its specification of the High 4:4:4 profile removed.

ITU-T Rec. H.264 | ISO/IEC 14496-10 version 6 refers to the integrated version 5 text after its amendment to support additional colour space indicators.

ITU-T Rec. H.264 | ISO/IEC 14496-10 version 7 refers to the integrated version 6 text after its amendment to define five new profiles intended primarily for professional applications (the High 10 Intra, High 4:2:2 Intra, High 4:4:4 Intra, CAVLC 4:4:4 Intra, and High 4:4:4 Predictive profiles) and two new types of supplemental enhancement information (SEI) messages (the post-filter hint SEI message and the tone mapping information SEI message).

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