**COMMITTEE DRAFT****© ISO/IEC 2020 – All rights reserved****Text of ISO/IEC CD 23090-16** **63****Part 16: Reference software for versatile video coding****Information technology — Coded representation of immersive media****Élément introductif — Élément central — Partie 16: Titre de la partie****Information technology — Coded representation of immersive media — Part 16: Reference software for versatile video coding****E****2020-10-16****(30) Committee****ISO/IEC****ISO/IEC J****202x****International Standard****202x****10****ISO/IEC 23090‑****ISO/IEC 23090‑16****ISO/IEC 23090-16****JISC****Coding of audio, picture, multimedia and hypermedia information****Information technology****5****29****1** **2****見出し 2****見出し 1****0****2****STD Version 2.1c2****30** **4** **ISO/IEC JTC 1/SC 29 /WG 5 N 10**

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**Information technology — Coded representation of immersive media — Part 16: Reference software for versatile video coding**

*Élément introductif — Élément central — Partie 2: Titre de la partie*

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This document was prepared by Technical Committee ISO/IEC JTC1, *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.266.2 (xx/202x).

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Information technology — Coded representation of immersive media — Part 16: Reference software for versatile video coding

Introduction[[1]](#footnote-1)\*

This Recommendation | International Standard accompanies reference software for Rec. ITU-T H.266 | ISO/IEC 23090-3 Versatile video coding. The reference software includes both encoder and decoder functionality.

Reference software is useful in aiding users of a video coding standard to establish and test conformance and interoperability, and to educate users and demonstrate the capabilities of the standard. For these purposes, the accompanying software is provided as an aid for the study and implementation of Rec. ITU‑T H.266 | ISO/IEC 23090-3 Versatile video coding.

The software has been jointly developed by the ITU-T Video Coding Experts Group (VCEG, Question 6 of ITU-T Study Group 16) and the ISO/IEC Moving Picture Experts Group (MPEG Joint Video Coding Team(s) with ITU-T SG 16, Working Group 5 of Subcommittee 29 of ISO/IEC Joint Technical Committee 1).

0.1 Purpose

The purpose of this Recommendation | International Standard is to provide the following:

– Reference decoder software capable of decoding bitstreams that conform to Rec. ITU‑T H.266 | ISO/IEC 23090-3 in a manner that conforms to the decoding process specified in Rec. ITU-T H.266 | ISO/IEC 23090-3.

– Reference encoder software capable of producing bitstreams that conform to Rec. ITU‑T H.266 | ISO/IEC 23090-3.

0.2 Examples of use

Some examples of uses that may be appropriate for the reference decoder software are as follows:

– As an illustration of how to perform the decoding process specified in Rec. ITU-T H.266 | ISO/IEC 23090-3.

– As the starting basis for the implementation of a decoder that conforms to Rec. ITU-T H.266 | ISO/IEC 23090-3.

– For testing the conformance of a decoder implementation with the decoding process specified in Rec. ITU-T H.266 | ISO/IEC 23090-3 (as the values of the samples in all decoded pictures and the relative ordering of those pictures will be identical from all conforming decoder implementations that support the profile and level used in a bitstream that conforms to Rec. ITU-T H.266 | ISO/IEC 23090-3).

– For testing the conformance of a bitstream to the constraints specified for bitstream conformance in Rec. ITU-T H.266 | ISO/IEC 23090-3, as the software can detect and report many bitstream conformance violations.

NOTE 1 – However, the lack of the detection of any conformance violation by the reference decoder software should not be considered as definitive proof that the bitstream conforms to all constraints specified for bitstream conformance in Rec. ITU-T H.266 | ISO/IEC 23090-3.

Some examples of uses that may be appropriate for the reference encoder software are as follows:

– As an illustration of how to perform an encoding process that produces bitstreams that conform to the constraints specified for bitstream conformance in Rec. ITU-T H.266 | ISO/IEC 23090-3.

– As the starting basis for the implementation of an encoder that conforms to Rec. ITU‑T H.266 | ISO/IEC 23090-3.

– As a means of generating bitstreams for testing the conformance of a decoder implementation with the decoding process specified in Rec. ITU-T H.266 | ISO/IEC 23090-3.

– As a means of evaluating and demonstrating examples of the quality that can be achieved by an encoding process that conforms to Rec. ITU-T H.266 | ISO/IEC 23090-3.

NOTE 2 – However, no guarantee of the quality that will be achieved by an encoder is provided by its conformance to Rec. ITU-T H.266 | ISO/IEC 23090-3, as the conformance of an encoder to Rec. ITU‑T H.266 | ISO/IEC 23090-3 is defined only in terms of format constraints imposed on the bitstream syntax. Thus, while the reference encoder software may suffice to provide some illustrative examples of what quality can be achieved in conformance to Rec. ITU-T H.266 | ISO/IEC 23090-3, it provides neither an assurance of minimum guaranteed video encoding quality nor maximum achievable video encoding quality.

0.3 Warranty disclaimer

Regardless of any and all statements made herein or elsewhere regarding the possible uses of the reference software, the following disclaimers of warranty apply to the provided reference software.

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Recommendation ITU-T H.266.2 | International Standard ISO/IEC 23090-16

Reference software for ITU-T H.266 | ISO/IEC 23090-3 Versatile video coding

# Scope

This Recommendation | International Standard provides accompanying reference software for Rec. ITU-T H.266 | ISO/IEC 23090-3 as an electronic attachment. The software is an integral part of this Recommendation | International Standard.

The use of this reference software is not required for making an implementation of an encoder or decoder in conformance to Rec. ITU-T H.266 | ISO/IEC 23090-3. Requirements established in Rec. ITU-T H.266 | ISO/IEC 23090-3 take precedence over the behaviour of the reference software.

# References

## Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

### ITU-T Recommendations

– None.

### Identical Recommendations | International Standards

– None.

### Paired Recommendations | International Standards equivalent in technical content

– Recommendation ITU-T H.266 (2020), *Versatile video coding for generic audiovisual services*.

ISO/IEC 23090-3:202X, *Information technology – Coding of audio-visual objects – Part 2: Versatile video coding*.

## Additional references

– None.

# Definitions

For the purposes of this Recommendation, the terms, definitions, abbreviations and symbols specified in Rec. ITU‑T H.266 | ISO/IEC 23090-3 (particularly in clause 3) apply. Definitions 3.1, 3.2, and 3.3 below replace the corresponding definitions in Rec. ITU-T H.266 | ISO/IEC 23090-3. Definitions 3.4 and 3.5 are additional definitions.

**3.1 bitstream**: A sequence of bits that may conform to Rec. ITU-T H.266 | ISO/IEC 23090-3. A bitstream that conforms to Rec. ITU-T H.266 | ISO/IEC 23090-3 will contain one or more slices.

**3.2 decoder**: An embodiment of a process that operates on a bitstreamand may conform to the decoding process requirements specified for conformance to Rec. ITU-T H.266 | ISO/IEC 23090-3. The scope of decoder, as considered herein, does not include a display process, which is outside the scope of this Recommendation | International Standard.

**3.3 encoder**: An embodiment of a process, not specified in this Recommendation | International Standard, that produces a bitstream.

**3.4 reference software decoder**: The decoding software accompanying this Recommendation | International Standard.

**3.5 reference software encoder**: The encoding software accompanying this Recommendation | International Standard.

# Abbreviations

For the purposes of this Recommendation | International Standard, relevant abbreviations are specified in clause 4 of Rec. ITU‑T H.266 | ISO/IEC 23090-3.

# Conventions

For the purposes of this Recommendation | International Standard, relevant conventions are specified in clause 5 of Rec. ITU-T H.266 | ISO/IEC 23090-3.

# Reference software for Rec. ITU-T H.266 | ISO/IEC 23090-3

The reference software for Rec. ITU-T H.266 | ISO/IEC 23090-3 is found in the electronic attachment to this Recommendation | International Standard.

The attached software package contains one part:

– VTM software: Support for the Main 10, Main 10 Still Picture, Main 10 4:4:4, Main 10 4:4:4 Still Picture, Multilayer Main 10 and Multilayer Main 10 4:4:4 profiles.

1. \* This introduction does not form an integral part of this Recommendation | International Standard. [↑](#footnote-ref-1)