FINAL DRAFT
International Standard

ISO/IEC
FDIS
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

Technologies de l'information — Codage des objets audiovisuels —

Partie 15: Transport de vidéo structurée en unités NAL sur la couche réseau au format ISO de base pour les fichiers médias

ISO/IEC JTC **1**/SC **29**

Secretariat: **JISC**

Voting begins on:
2024-07-29

Voting terminates on:
2024-09-23

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO/IEC FDIS 14496-15
https://standards.iteh.ai/catalog/standards/iso/8cb0-475d-a5c9-3e48d68492fb/iso-iec-fdis-14496-15

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

Reference number
ISO/IEC FDIS 14496-15:2024(en)

© ISO/IEC 2024

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO/IEC FDIS 14496-15
https://standards.iteh.ai/catalog/standards/iso/827b6806-8cb0-475d-a5c9-3e48d68492fb/iso-iec-fdis-14496-15

COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2024
All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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

Published in Switzerland

Contents

Page

Foreword ... **viii**
Introduction ... **ix**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms, definitions, abbreviated terms and conventions ... **1**
3.1 Terms and definitions ... 1
3.2 Abbreviated terms ... 9
3.3 Conventions ... 11
4 General definitions ... **11**
4.1 Overview ... 11
4.2 Sample and configuration definition ... 11
4.2.1 General ... 11
4.2.2 Canonical order and restrictions ... 11
4.2.3 Sample format ... 12
4.2.4 Optional boxes in the sample entry ... 13
4.3 Video track structure ... 13
4.4 Template fields used ... 13
4.5 Visual width and height ... 13
4.6 Decoding time (DTS) and composition time (CTS) ... 14
4.7 Sample groups on random access recovery points `'roll'` and random access points `'rap '` ... 14
4.8 Hinting ... 14
4.9 On change of sample entry (informative) ... 15
4.10 SEI information box ... 16
4.10.1 Definition ... 16
4.10.2 Syntax ... 16
4.10.3 Semantics ... 16
4.11 Post-decoder requirements scheme for signalling of SEI ... 16
4.11.1 General ... 16
4.11.2 Definition ... 17
4.12 Alternative extraction source track grouping ... 17
4.13 NAL unit map entry ... 17
4.13.1 Definition ... 17
4.13.2 Syntax ... 18
4.13.3 Semantics ... 18
4.14 Rectangular region group entry ... 19
4.14.1 Definition ... 19
4.14.2 Syntax ... 19
4.14.3 Semantics ... 19
4.15 Layer information sample group ... 21
4.15.1 Definition ... 21
4.15.2 Syntax ... 21
4.15.3 Semantics ... 21
4.16 Storage of SEI manifest and SEI prefix indication SEI messages ... 22
4.17 Supplementary track reference ... 22
4.18 Picture region replacement sample group ... 23
4.18.1 Definition ... 23
4.18.2 Syntax ... 23
4.18.3 Semantics ... 23
5 AVC elementary streams and sample definitions ... **24**
5.1 Overview ... 24
5.2 Elementary stream structure ... 25
5.3 Sample and configuration definition ... 27

iTeh Standards (https://standards.iteh.ai) Document Preview
ISO/IEC FDIS 14496-15
https://standards.iteh.ai/catalog/standards/...iso-iec-fdis-14496-15

© ISO/IEC 2024 – All rights reserved

5.3.1 Canonical order and restrictions ... 27
5.3.2 Decoder configuration information ... 28
5.4 Derivation from ISO base media file format ... 30
5.4.1 AVC file type and identification ... 30
5.4.2 AVC video stream definition ... 31
5.4.3 AVC parameter set stream definition ... 32
5.4.4 Parameter sets ... 33
5.4.5 Sync sample ... 34
5.4.6 Shadow sync ... 34
5.4.7 Layering and sub-sequences ... 34
5.4.8 Alternate streams and switching pictures ... 38
5.4.9 Definition of a sub-sample for AVC ... 40

6 SVC elementary stream and sample definitions ... 40
6.1 Overview ... 40
6.2 Elementary stream structure ... 41
6.3 Use of the plain AVC file format ... 41
6.4 Sample and configuration definition ... 42
6.4.1 Canonical order and restrictions ... 42
6.4.2 Decoder configuration record ... 42
6.5 Derivation from the ISO base media file format ... 43
6.5.1 SVC track structure ... 43
6.5.2 Data sharing and extraction ... 43
6.5.3 SVC video stream definition ... 44
6.5.4 SVC visual width and height ... 46
6.5.5 Sync sample ... 46
6.5.6 Shadow sync ... 46
6.5.7 Independent and disposable samples box ... 47
6.5.8 Sample groups on random access recovery points `'roll'` and random access points `'rap '` ... 47
6.5.9 Definition of a sub-sample for SVC ... 47

7 MVC and MVD elementary stream and sample definitions ... 48
7.1 Overview ... 48
7.2 Overview of MVC or MVD Storage ... 49
7.3 MVC and MVD elementary stream structures ... 51
7.4 Use of the plain AVC file format ... 52
7.5 Sample and configuration definition ... 52
7.5.1 Canonical order and restriction ... 52
7.5.2 Decoder configuration record ... 53
7.6 Derivation from the ISO base media file format ... 55
7.6.1 MVC and MVD track structures ... 55
7.6.2 Reconstruction of an access unit ... 55
7.6.3 Sample entry ... 56
7.6.4 Sync sample ... 66
7.6.5 Shadow sync ... 66
7.6.6 Independent and disposable samples box ... 66
7.6.7 Sample groups on random access recovery points `'roll'` and random access points `'rap '` ... 66
7.7 MVC specific information boxes ... 67
7.7.1 Overview ... 67
7.7.2 Multiview information box ... 67
7.7.3 Multiview group box ... 67
7.7.4 Multiview group relation box ... 69
7.7.5 Multiview relation attribute box ... 70
7.7.6 Multiview scene info box ... 74
7.7.7 MVC view priority assignment box ... 75

8 HEVC elementary streams and sample definitions ... 75
8.1 Overview ... 75

iTeh Standards
(https://standards.iteh.ai)
Document Preview
ISO/IEC FDIS 14496-15
https://standards.iteh.ai/catalog/standards/sist/475d...-6a9c-3e40-d68d-4023b...-15

© ISO/IEC 2024 – All rights reserved

8.2 Elementary stream structure 76
8.3 Sample and configuration definition 76
8.3.1 Canonical order and restrictions 76
8.3.2 Decoder configuration information 77
8.4 Derivation from ISO base media file format 80
8.4.1 HEVC video stream definition 80
8.4.2 Parameter sets in sample entry 81
8.4.3 Sync sample 81
8.4.4 Sync sample sample grouping 82
8.4.5 Temporal scalability sample grouping 83
8.4.6 Temporal sub-layer access sample grouping 84
8.4.7 Step-wise temporal layer access sample grouping 85
8.4.8 Definition of a sub-sample for HEVC 85
8.4.9 Handling non-output samples 88

9 Layered HEVC elementary stream and sample definitions 88
9.1 Overview 88
9.2 Overview of L-HEVC storage 89
9.3 L-HEVC elementary stream structure 89
9.4 Sample and configuration definition 90
9.4.1 Overview 90
9.4.2 Canonical order and restrictions 90
9.4.3 Decoder configuration record 90
9.5 Derivation from the ISO base media file format and the HEVC file format (Clause 8) 91
9.5.1 L-HEVC track structure 91
9.5.2 Data sharing and reconstruction of an L-HEVC bitstream 92
9.5.3 L-HEVC video stream definition 93
9.5.4 L-HEVC visual width and height 97
9.5.5 Sync sample 97
9.5.6 Independent and disposable samples box 98
9.5.7 Stream access point sample group 98
9.5.8 The `'roll'`, `'rap '`, `'sync'`, `'tsas'` and `'stsa'` sample groups 98
9.5.9 Definition of a sub-sample for L-HEVC 99
9.5.10 Handling non-output samples 99
9.6 L-HEVC specific structures 99
9.6.1 External base layer sample group 99
9.6.2 The operating points information sample group 100
9.6.3 The layer information sample group 103
9.6.4 The decoding time hint sample group 103

10 Storage of tiled HEVC and L-HEVC video streams 104
10.1 Overview 104
10.2 NAL unit map entry 105
10.3 Tile region group entry 105
10.4 Tile sub track definition 105
10.4.1 Overview 105
10.4.2 TileSubTrackGroupBox 105
10.5 HEVC and L-HEVC tile track 106
10.5.1 Overview 106
10.5.2 Sample entry name and format for HEVC tile tracks 107
10.5.3 Sample entry name and format for L-HEVC tile tracks 108
10.5.4 Bitstream reconstruction from tile base and tile tracks 108
10.5.5 Sample entry names for tile base tracks 109
10.5.6 HEVC tile track with slice segment header info 109
10.6 HEVC slice segment data track 110
10.6.1 Overview 110
10.6.2 Sample entry name and format for HEVC slice segment data tracks 110

11 VVC elementary streams and sample definitions 111
11.1 Overview 111

iTeh Standards (https://standards.iteh.ai) Document Preview
ISO/IEC FDIS 14496-15
https://standards.iteh.ai/catalog/standards/sist/8cb0-475d-a5c9-3e48d68492fb/iso-iec-fdis-14496-15

© ISO/IEC 2024 – All rights reserved

11.1.1 General ... 111
11.1.2 Background: features of VVC ... 111
11.1.3 Types of tracks for carriage of VVC elementary streams ... 112
11.1.4 Overview of VVC storage with multiple layers or sublayers ... 113
11.1.5 Overview of VVC storage with VVC subpictures ... 114
11.1.6 Overview of rectangular regions carried in a VVC bitstream ... 115
11.2 Sample and configuration definition ... 116
11.2.1 Sample format of VVC tracks and VVC subpicture tracks ... 116
11.2.2 Sample format of VVC non-VCL tracks ... 116
11.2.3 Canonical order and restrictions ... 117
11.2.4 Decoder configuration information ... 118
11.3 Derivation from ISO base media file format ... 124
11.3.1 VVC sample entries ... 124
11.3.2 VVC subpicture sample entry `'vvs1'` ... 125
11.3.3 VVC non-VCL sample entry ... 126
11.3.4 Constraints related to VVC merge base tracks, VVC extraction base tracks and VVC subpicture tracks ... 127
11.3.5 Sync sample ... 128
11.3.6 Definition of a sub-sample for VVC ... 131
11.3.7 Handling non-output samples ... 134
11.4 Sample groups ... 134
11.4.1 Common layer_id_method_idc semantics ... 134
11.4.2 Stream access point sample group ... 136
11.4.3 Random access recovery point sample group ... 136
11.4.4 Alternative startup sequences sample group ... 136
11.4.5 Random access point sample group ... 136
11.4.6 Temporal level sample group ... 136
11.4.7 Step-wise sublayer access sample group ... 137
11.4.8 Decoding time hint sample group ... 137
11.4.9 Layer information sample group ... 137
11.4.10 Operating points information sample group ... 137
11.4.11 Decoding capability information sample group ... 142
11.4.12 Parameter set sample group ... 142
11.4.13 Access unit delimiter sample group ... 143
11.4.14 End of sequence sample group ... 144
11.4.15 End of bitstream sample group ... 144
11.4.16 Subpicture ID sample group ... 145
11.4.17 Subpicture order sample group ... 146
11.4.18 Subpicture layout map entry ... 147
11.4.19 Mixed NAL unit type pictures sample group ... 148
11.4.20 Rectangular region order sample group ... 149
11.4.21 Subpicture level information sample group ... 150
11.5 Entity groups ... 151
11.5.1 Subpicture entity groups ... 151
11.5.2 Operating point entity group ... 153
11.5.3 VVC bitstream entity group ... 156
11.5.4 VVC switchable tracks entity group ... 156
11.6 Data sharing and VVC bitstream reconstruction ... 157
11.6.1 General ... 157
11.6.2 Implicit reconstruction of a VVC bitstream ... 159
11.6.3 Reconstructing a picture unit from a sample in a VVC track with `'subp'` or `'vvcN'` track references ... 160
11.6.4 Resolving subpicture track references ... 162
11.6.5 Parameter set updating ... 162
11.6.6 Reconstructing a picture unit from a sample in a VVC track with `'recr'` track reference ... 163

12 EVC elementary streams and sample definitions ... 165
12.1 Overview ... 165

iTeh Standards
(https://standards.iteh.ai)
Document Preview
https://standards.iteh.ai/catalog/standards/iso/...14496-15

© ISO/IEC 2024 – All rights reserved

12.2 Elementary stream structure 165
12.3 Sample and configuration definition 165
12.3.1 Overview 165
12.3.2 Canonical order and restrictions 166
12.3.3 Decoder configuration information: EVC decoder configuration record 166
12.4 Derivation from ISO base media file format 168
12.4.1 EVC video stream definition: sample entry name and format 168
12.4.2 Parameter sets 169
12.4.3 Sync sample 170
12.4.4 Definition of a sub-sample for EVC 170
12.5 EVC slice track 171
12.5.1 Overview 171
12.5.2 Implicit reconstruction of an EVC bitstream 171
12.5.3 EVC slice component track 172
12.5.4 EVC slice base track 173

13 LCEVC elementary streams and sample definitions 174
13.1 Overview 174
13.2 Elementary stream structure 174
13.3 Sample and configuration definitions 174
13.3.1 Overview 174
13.3.2 Canonical order 174
13.3.3 Decoder configuration information 175
13.4 Derivation from ISO base media file format 177
13.4.1 LCEVC video stream definition: sample entry name and format 177
13.4.2 LCEVC track structure 177
13.4.3 Parameter sets 178
13.4.4 Sync sample 178

Annex A (normative) **In-stream structures 179**

Annex B (normative) **SVC, MVC, and MVD sample group and sub-track definitions 193**

Annex C (normative) **Temporal metadata support 213**

Annex D (normative) **File format toolsets and brands 221**

Annex E (normative) **Sub-parameters for the MIME type 'codecs' parameter 224**

Annex F (informative) **Unspecified nal_unit_type value management for sample entry types of AVC and HEVC 231**

Annex G (informative) **Examples of VVC base and subpicture tracks 233**

iTeh Standards
(https://standards.iteh.ai)
Document Preview
ISO/IEC FDIS 14496-15
https://standards.iteh.ai/catalog/standards/iso/627b6806-7b60-4750-a259-5e45d6849216/iso-iec-fdis-14496-15

© ISO/IEC 2024 – All rights reserved

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 or www.iec.ch/members_experts/refdocs).

ISO and IEC draw attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO and IEC take no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO and IEC had received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents and https://patents.iec.ch. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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. In the IEC, see www.iec.ch/understanding-standards.

iTeh Standards
(https://standards.iteh.ai)

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 seventh edition cancels and replaces the sixth edition (ISO/IEC 14496-15:2022), which has been technically revised. It also incorporates the Amendment ISO/IEC 14496-15:2022/Amd 1:2023.

Document Preview
https://standards.iteh.ai/catalog/standards/iso/827b6806-8cb0-475d-a5c9-3e48d68492fb/iso-iec-fdis-14496-15

The main changes are as follows:

— support for the Low Complexity Enhancement Video Coding (ISO/IEC 23094-2);

— addition of the supplementary track reference and the picture region replacement sample group, for support of picture-in-picture services.

A list of all parts in the ISO/IEC 14496 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 www.iso.org/members.html and www.iec.ch/national-committees.

© ISO/IEC 2024 – All rights reserved

Introduction

This document defines a storage format based on, and compatible with, the ISO Base Media File Format (ISO/IEC 14496-12), which is used by the MP4 file format (ISO/IEC 14496-14) and the Motion JPEG 2000 file format (ISO/IEC 15444-3) among others. This document enables video streams formatted as Network Adaptation Layer Units (NAL Units) to

a) be used in conjunction with other media streams, such as audio,

b) be used in an MPEG-4 systems environment, if desired,

c) be formatted for delivery by a streaming server, using hint tracks, and

d) inherit all the use cases and features of the ISO Base Media File Format on which MP4 and MJ2 are based.

This document may be used as a standalone document; it specifies how NAL unit structured video content shall be stored in an ISO Base Media File Format compliant format. However, it is normally used in the context of a specification, such as the MP4 file format, derived from the ISO Base Media File Format, that permits the use of NAL unit structured video such as AVC (ISO/IEC 14496-10) video and High Efficiency Video Coding (HEVC, ISO/IEC 23008-2) video.

The ISO Base Media File Format is becoming increasingly common as a general-purpose media container format for the exchange of digital media, and its use in this context should accelerate both adoption and interoperability.

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO/IEC FDIS 14496-15
https://standards.iteh.ai/catalog/standards/iso/827b6806-8cb0-475d-a5c9-3e48d68492fb/iso-iec-fdis-14496-15

© ISO/IEC 2024 – All rights reserved

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO/IEC FDIS 14496-15
https://standards.iteh.ai/catalog/standards/iso/827b6806-8cb0-475d-a5c9-3e48d68492fb/iso-iec-fdis-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

1 Scope

This document specifies the storage format for streams of video that is structured as NAL units, such as AVC (ISO/IEC 14496-10) and HEVC (ISO/IEC 23008-2) video streams. In addition, Annex E specifies parameters and sub-parameters applying when sample entries specified in this document are used as the `'codecs'` parameter of a MIME type, as specified in IETF RFC 6381.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO/IEC 14496-10[1)], *Information technology — Coding of audio-visual objects — Part 10: Advanced video coding*

ISO/IEC 23008-2, *Information technology — High efficiency coding and media delivery in heterogeneous environments — Part 2: High efficiency video coding*

ISO/IEC 23008-12, *Information technology — MPEG systems technologies — Part 12: Image file format*

ISO/IEC 23090-3, *Information technology — Coded representation of immersive media — Part 3: Versatile video coding*

ISO/IEC 23094-1, *Information technology — General video coding — Part 1: Essential video coding*

ISO/IEC 23094-2, *Information technology – General video coding — Part 2: Low complexity enhancement video coding*

IETF RFC 4648, *The Base16, Base32, and Base64 data encodings*

IETF RFC 6381, *MIME codecs and profiles*

3 Terms, definitions, abbreviated terms and conventions

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 14496-10, ISO/IEC 23008-2, ISO/IEC 23090-3 or ISO/IEC 23094-1, and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

1) Under preparation. Stage at the time of publication: ISO/IEC DIS 14496-10:2024.

© ISO/IEC 2024 – All rights reserved

— IEC Electropedia: available at https://www.electropedia.org/

3.1.1
3D-AVC NAL unit
3D AVC VCL NAL unit
NAL unit with type 21 with avc_3d_extension_flag equal to 1

3.1.2
aggregator
in-stream structure using a NAL unit header for grouping of NAL units belonging to the same sample

3.1.3
alternate region set
set of rectangular regions that are alternatives to be used as a rectangular region when reconstructing a VVC bitstream from a VVC extraction base track

3.1.4
applicable video coding standard
video coding standard for the data carried in the track

Note 1 to entry: The video coding standard can be ISO/IEC 14496-10, ISO/IEC 23008-2, ISO/IEC 23090-3, or ISO/IEC 23094-1.

3.1.5
AU- or picture-level non-VCL NAL unit
non-VCL NAL unit that applies to one or more entire AUs or one or more entire pictures

Note 1 to entry: An AU-level non-VCL NAL unit applies to one or more entire AUs. A picture-level non-VCL NAL unit applies to one or more entire pictures. In VVC, AU-level or picture-level non-VCL NAL units include: 1) all the DCI, OPI, VPS, SPS, PPS, AUD, PH, EOS, and EOB NAL units; 2) APS NAL units that apply to one or more entire AUs or pictures; and 3) SEI NAL units that only contain SEI messages that apply to one or more entire AUs or pictures.

3.1.6
AVC base layer
maximum subset of a bitstream that is AVC compatible

Note 1 to entry: The AVC base layer is represented by AVC VCL NAL units and associated non-VCL NAL units. The AVC base layer is not using any of the functionality of ISO/IEC 14496-10:—, Annex G, Annex H, Annex I, or Annex J.

Note 2 to entry: The AVC base layer itself can be a temporal scalable bitstream.

3.1.7
AVC parameter set sample
sample in a parameter set elementary stream that consists of those parameter set NAL units that are to be considered as if present in the video elementary stream at the same instant in time

3.1.8
AVC sample
access unit as defined in ISO/IEC 14496-10

3.1.9
AVC NAL unit
AVC VCL NAL unit or a non-VCL NAL unit associated with an AVC VCL NAL unit as specified in ISO/IEC 14496-10

3.1.10
AVC VCL NAL unit
NAL unit with type 1 to 5 (inclusive)

iTeh Standards
(https://standards.iteh.ai)
Document Preview
ISO/IEC FDIS 14496-15

© ISO/IEC 2024 – All rights reserved

3.1.11
canonical order
order of NAL units that conforms to the applicable video standard

Note 1 to entry: When a single track carries a video bitstream, the NAL units are stored in the canonical order. When multiple tracks are used to a carry a video bitstream, an implicit or explicit video bitstream reconstruction process might be applied to recover the canonical order.

3.1.12
canonical stream format
elementary stream that contains NAL units in the canonical order and conforms to the constraints specified in this document for carrying an elementary stream of the applicable video standard in one or more tracks

3.1.13
complete subset
minimal set of tracks that contain all the information in the original bitstream

3.1.14
cropped frame dimensions
width and height of the decoded frame after applying the output cropping parameters

3.1.15
default sample group description index
`default_group_description_index` of `SampleGroupDescriptionBox` with `version` greater than or equal to 2

3.1.16
elementary stream
sequence of one or more bitstreams of the applicable video standard

Note 1 to entry: The term elementary stream is not directly related to the terms video elementary stream, parameter set elementary stream, and video and parameter set elementary stream.

Note 2 to entry: The applicable video standard can be included as a prefix to the term elementary stream. For example, an AVC elementary stream refers to an elementary stream that is a sequence of one or more bitstreams conforming to ISO/IEC 14496-10.

3.1.17
extractor
in-stream structure using a NAL unit header for extraction of data from other tracks

Note 1 to entry: Extractors contain instructions on how to extract data from other tracks. Logically an Extractor can be seen as a pointer to data. While reading a track containing Extractors, the Extractor is replaced by the data it is pointing to.

3.1.18
HEVC sample
access unit as defined in ISO/IEC 23008-2

3.1.19
implicit reconstruction
reconstruction of a stream of access units from two or more tracks not using extractors

3.1.20
in-stream structure
structure residing within sample data

iTeh Standards
(https://standards.iteh.ai)
Document Preview
ISO/IEC FDIS 14496-15
https://standards.iteh.ai/catalog/standards/iso/827b6806-8cb0-475d-a5c9-3e48d68492fb/iso-iec-fdis-14496-15

© ISO/IEC 2024 – All rights reserved

3.1.21
layer
scalable layer
<SVC, MVC, and MVD> set of VCL NAL units with the same values of dependency_id, quality_id, and temporal_id, and the associated non-VCL NAL units

Note 1 to entry: A scalable layer with any of dependency_id, quality_id, and temporal_id not equal to 0 enhances the video by one or more scalability levels in at least one direction (temporal, quality or spatial resolution)

Note 2 to entry: SVC uses a "layered" encoder design that results in a bitstream representing "coding layers". In some publications the 'base layer' is the first quality layer of a specific coding layer. In some publications the base layer is the scalable layer with the lowest priority. The SVC file format uses "scalable layer" or "layer" in a general way for describing nested bitstreams (using terms like AVC base layer or SVC enhancement layer).

3.1.22
layer
scalable layer
<HEVC and VVC> set of VCL NAL units with the same value of nuh_layer_id and the associated non-VCL NAL units

3.1.23
layer set
set of layers represented within a bitstream created from another bitstream by operation of the sub-bitstream extraction process

3.1.24
L-HEVC sample
picture units that are within an access unit as specified in Annex F of ISO/IEC 23008-2 and are represented by the track

iTeh Standards
(https://standards.iteh.ai)
Document Preview

3.1.25
MVC NAL unit
MVC VCL NAL unit or a non-VCL NAL unit associated with an MVC VCL NAL unit as specified in ISO/IEC 14496-10

Note 1 to entry: The association of non-VCL NAL units with MVC VCL NAL units is specified in Annex H of ISO/IEC 14496-10.

ISO/IEC FDIS 14496-15
https://standards.iteh.ai/catalog/standards/iso/827b6806-8cb0-475d-a5c9-3e48d68492fb/iso-iec-fdis-14496-15

3.1.26
MVC sample
one or more view components as defined in Annex H of ISO/IEC 14496-10:— and the associated non-VCL NAL units

3.1.27
MVC VCL NAL unit
NAL unit with type 20, or NAL unit with type 14 when the immediately following NAL unit is an AVC VCL NAL unit

Note 1 to entry: MVC VCL NAL units do not affect the decoding process of a legacy AVC decoder.

3.1.28
MVC+D depth NAL unit
MVC+D depth VCL NAL unit
NAL unit with type 21 containing a coded slice extension for a depth view component

3.1.29
MVD NAL unit
MVD VCL NAL unit
NAL unit with type 21, containing a coded slice extension for a depth view component coded with MVC+D or 3D-AVC, or a 3D-AVC texture view component

© ISO/IEC 2024 – All rights reserved