ISO/IEC 23008-12:2025-07 (E)

Information technology - High efficiency coding and media delivery in heterogeneous environments - Part 12: Image File Format

Contents

Page

Foreword vi

Introduction vii

1 Scope 1

2 Normative references 1

3 Terms, definitions, abbreviated terms and symbols 2
3.1 Terms and definitions 2
3.2 Abbreviated terms 6
3.3 Mathematical functions 7

4 Overview 7

5 General requirements 7
5.1 General requirements on files 7
5.2 General requirements on readers 7
5.3 Multi-purpose files 8
5.4 Other boxes 8

6 Single image and image collection 8
6.1 General 8
6.2 Derivation from the ISO base media file format 8
6.3 Derivation of an output image of an image item 8
6.4 Roles of images 9
6.4.1 General 9
6.4.2 Hidden images 9
6.4.3 Cover image 9
6.4.4 Thumbnail images 9
6.4.5 Auxiliary images 10
6.4.6 Master images 10
6.4.7 Pre-derived coded images 10
6.4.8 Multi-layer images 10
6.4.9 Predictively coded image items 11
6.5 Image properties 11
6.5.1 General 11
6.5.2 Decoder configuration and initialization 12
6.5.3 Image spatial extents 12
6.5.4 Pixel aspect ratio 13
6.5.5 Colour information 13
6.5.6 Pixel information 14
6.5.7 Relative location 15
6.5.8 Image properties for auxiliary images 15
6.5.9 Clean aperture 16
6.5.10 Image rotation 16
6.5.11 Layer selection 17
6.5.12 Image mirroring 18
6.5.13 Image scaling 18
6.5.14 Content light level 19
6.5.15 Mastering display colour volume 20

6.5.16 Content colour volume 20
6.5.17 Required reference types 21
6.5.18 Creation time information 21
6.5.19 Modification time information 22
6.5.20 User description 22
6.5.21 Accessibility text 23
6.5.22 Auto exposure information 24
6.5.23 White balance information 24
6.5.24 Focus information 25

6.5.25 Flash exposure information 26
6.5.26 Depth of field information 26
6.5.27 Panorama information 27
6.5.28 Sub-sample information 28
6.5.29 Target output layer set 28
6.5.30 Wipe transition effect 29
6.5.31 Zoom transition effect 30
6.5.32 Fade transition effect 31
6.5.33 Split transition effect 32
6.5.34 Suggested transition period 33
6.5.35 Suggested time display duration 33
6.5.36 Ambient viewing environment 34
6.5.37 Progressive derived image item information 35
6.5.38 Single stream 37
6.5.39 Camera extrinsic matrix 38
6.5.40 Camera intrinsic matrix 41
6.6 Derived images and derived image items 42
6.6.1 General 42
6.6.2 Derived image types and derived image item types 43
6.7 Image metadata 45
6.8 Entity and sample groups 45
6.8.1 Relating an untimed item to a timed sequence 45
6.8.2 Burst images 46
6.8.3 'tsyn' entity group 47
6.8.4 'iaug' entity group 47
6.8.5 'ster' entity group 48
6.8.6 Bracketed sets/logically group of images at capture-time 48
6.8.7 User-defined image collections 51
6.8.8 Panorama 52
6.8.9 Slideshow entity group 53
6.8.10 Progressive rendering entity group 53
6.9 Auxiliary image item types and sample formats 54
6.9.1 CICP-compliant alpha plane 54
6.9.2 CICP-compliant depth map 55
6.10 Text and font items 55
6.10.1 Text item 55
6.10.2 Text properties 56
6.10.3 Font item 58
6.10.4 Font properties 59

7 Image sequences 60
7.1 General 60
7.2 Derivation from the ISO base media file format 60
7.2.1 Track Header box 60
7.2.2 Handler type 60
7.2.3 Coding Constraints box 61
7.3 Presentation of an image sequence track 61
7.4 Sample groups 62
7.4.1 Direct reference samples list 62
7.5 Other tracks 63
7.5.1 General 63
7.5.2 Thumbnail image sequence track 63

7.5.3 Auxiliary image sequence track 64

8 Metadata support 64
8.1 General 64
8.2 Metadata for image items 65
8.2.1 General 65
8.2.2 Deductive information 65
8.3 Metadata for image sequence tracks 65

8.4 Integrity checks 66
8.4.1 General 66
8.4.2 Syntax 66
8.4.3 Semantics 66

9 Extensions to the ISO base media file format 67

10 Image file format brands 67
10.1 General 67
10.2 Image and image collection brands 67
10.2.1 General requirements on brands 67
10.2.2 'mif1' structural brand 68
10.2.3 'mif2' structural brand 69
10.2.4 'pred' brand 70
10.2.5 '1pic' brand 71
10.3 Image sequence brands 71
10.3.1 'msf1' structural brand 71

11 Region and region annotation 72
11.1 Overview 72
11.2 Common definitions for image sequence or video tracks and for image items 72
11.2.1 Region geometry structure 72
11.2.2 Mask item 76
11.3 Regions and region annotations for an image item 77
11.3.1 General 77
11.3.2 Region item 78
11.3.3 Derived region item 79
11.4 Regions and region annotations for an image sequence or a video track 79
11.4.1 General 79
11.4.2 Region track 80
11.4.3 Sample groups for region track 82

Annex A (normative) Storage of externally specified metadata 85

Annex B (normative) HEVC Image File Format 87

Annex C (normative) High efficiency image file MIME type registration 98

Annex D (normative) High efficiency image sequence file MIME type registration 101

Annex E (normative) AVC in the Image File Format 103

Annex F (normative) Advanced coding image MIME type registration 107

Annex G (normative) Advanced coding sequence MIME type registration 109

Annex H (normative) JPEG in the Image File Format 111

Annex I (informative) Guidelines for specifying storage of image coding formats 115

Annex J (informative) Examples of image collections 116

Annex K (informative) Examples of progressive decoding, rendering and refinement 120

Annex L (normative) VVC Image File Format 128

Annex M (normative) EVC Image File Format 138

Annex N (informative) Privacy and security considerations 143

Bibliography 145