
**Information technologies — JPEG
systems —**

**Part 6:
JPEG 360**

*Technologies de l'information — Systèmes JPEG JPEG 360 —
Partie 6: JPEG 360*





COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2019

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
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms, definitions and abbreviated terms	1
3.1 Terms and definitions.....	1
3.2 Abbreviated terms.....	2
4 Conventions	2
4.1 Conformance language.....	2
4.2 Typesetting.....	3
5 Description and definition of JPEG 360 images	3
5.1 Relative orientation.....	5
5.2 File position for the 360 image codestream.....	7
5.3 Viewport representation.....	8
5.4 Basic set of general 360 image parameters.....	10
6 Structuring of JPEG 360 Metadata	10
6.1 General.....	10
6.2 Definition of JPEG 360 Content Type boxes.....	11
Annex A (normative) JPEG 360 Content Type JUMBF box	12
Annex B (normative) XML box for JPEG 360	14
Bibliography	25

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 ISO documents 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 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>).

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.

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*.

A list of all parts in the ISO/IEC 19566 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

The ISO/IEC 19566 series is designed primarily for format and metadata storage and protection method of compressed continuous-tone photographic content.

There is increasing use of multi-sensor images from multiple image sensor devices, such as 360 degree capturing cameras or dual-camera smartphones available to consumers. Images from these cameras are shown on computers, smartphones, and head-mounted displays (HMD).

Because existing JPEG standards do not fully cover these new uses, incompatibilities have reduced the interoperability of these images, and thus reducing the widespread ubiquity which consumers have come to expect when using JPEG-based images.

Additionally, new modalities for interacting with images, such as computer-based augmentation, face-tagging, and object classification require support for metadata that was not part of the original JPEG scope.

This document defines “JPEG 360”, building upon the features of JPEG Universal Metadata Box Format (JUMBF) (see ISO/IEC 19566-5) which itself builds upon ISO/IEC 18477-3 (Box file format) which provides compatibility with ISO/IEC 10918-5 (JPEG File Interchange Format (JFIF)).

This document defines the use of the JPEG 360 Content Type JUMBF superbox with respect to the sub-box components which include the definition of an XML box, the use of other boxes such as unstitched image elements for omnidirectional captures together with the main image and descriptive metadata, and encrypted parts of the image.

Information technologies — JPEG systems —

Part 6: JPEG 360

1 Scope

This document specifies omnidirectional/360-degree image and motion contents using Rec. ITU-T T.81 | ISO/IEC 10918-1, Rec. ITU-T T.800 (11/2015) | ISO/IEC 15444-1, and ISO/IEC 18477-3.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 19566-5, *Information technology — JPEG Systems — Part 5: JPEG Universal Metadata Box Format (JUMBF)*