Technical Report

ISO/IEC TR 19566-9

First edition
2024-08

Information technology — JPEG Systems —

Part 9: JPEG extensions mechanisms to facilitate forwards and backwards compatibility

Technologies de l'information — Systèmes JPEG —

Partie 9: Mécanismes d'extension JPEG pour faciliter la compatibilité ascendante et descendante

Reference number
ISO/IEC TR 19566-9:2024(en)

© ISO/IEC 2024

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 ... **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 - Operators ... **2**
4.1 Arithmetic operators ... 3
4.2 Logical operators ... 3
4.3 Relational operators ... 3
4.4 Precedence order of operators ... 3
4.5 Mathematical functions ... 4

5 General extensions mechanisms ... **4**
5.1 General ... 4
5.2 Extensions mechanisms for codestreams ... 4
5.3 Extension mechanisms for file formats ... 6
5.4 File Type box ... 7
5.5 JPEG Universal Metadata Box Format (JUMBF) ... 8
5.6 Compressed boxes ... 8

6 Extension mechanisms for ITU Recommendation T.81 | ISO/IEC 10918-1 (JPEG 1) ... **9**
6.1 Application markers ... 9
6.2 APP11 based extensions ... 9
6.3 JUMBF Boxes ... 10

7 Extension mechanisms for Rec. ITU-T T.800 | ISO/IEC 15444 (JPEG 2000) series ... **10**
7.1 General ... 10
7.2 CAP marker ... 11
7.3 Profile indicators ... 11
7.4 COD marker ... 12
7.5 File Type Box ... 12
7.6 Reader Requirements Box ... 12

8 Extension mechanisms for the ISO/IEC 21122 series (JPEG XS) ... **13**
8.1 General ... 13
8.2 CAP marker ... 13
8.3 Marker allocation ... 14
8.4 Profile, level and sublevel indicators ... 14
8.5 File format ... 15

9 Extension mechanisms for ISO/IEC 18181 (JPEG XL) ... **15**
9.1 General ... 15
9.2 Codestream extensions ... 15
9.3 New component types ... 15
9.4 File Type Box ... 16

Bibliography ... **17**

© 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 not 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.

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 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 collects guiding principles on how standards discussed in ISO/IEC TR 19566-1 provide mechanisms for forwards compatibility, so called extension mechanisms, both on the basis of the codestream and the file format and lists specific implementations of these guiding principles in particular standards.

The purpose of this document is to provide documentation on these principles for the preparation of future extensions of these standards, and to ensure consistency of extension principles amongst standards.

© ISO/IEC 2024 – All rights reserved

Information technology — JPEG Systems —

Part 9: JPEG extensions mechanisms to facilitate forwards and backwards compatibility

1 Scope

This document summarizes mechanisms by which existing file formats and codestreams, such as those specified in ISO/IEC TR 19566-1, can be extended in a forward and backward-compatible way.

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.

Rec. ITU-T T.800 | ISO/IEC 15444-1, *Information technology — JPEG 2000 image coding system — Part 1: Core coding system*

Rec. ITU-T T.801 | ISO/IEC 15444-2, *Information technology — JPEG 2000 image coding system — Part 2: Extensions*

Rec. ITU-T T.802 | ISO/IEC 15444-3, *Information technology — JPEG 2000 image coding system — Part 3: Motion JPEG 2000*

ISO/IEC 18181-1, *Information technology — JPEG XL image coding system — Part 1: Core coding system*

ISO/IEC TR 19566-1, *Information technology — JPEG Systems — Part 1: Packaging of information using codestreams and file formats*

ISO/IEC 21122-1, *Information technology — JPEG XS low-latency lightweight image coding system — Part 1: Core coding system*

© ISO/IEC 2024 – All rights reserved