

INTERNATIONAL STANDARD

ISO/IEC
14492

First edition
2001-12-15

AMENDMENT 1
2004-12-15

Information technology — Lossy/lossless coding of bi-level images

AMENDMENT 1: Encoder

*Technologies de l'information — Codage avec ou sans perte des
images au trait*

AMENDEMENT 1: Codeur



Reference number
ISO/IEC 14492:2001/Amd.1:2004(E)

AVA **Documents**
Document Sharing Hub
© ISO/IEC 2004

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO/IEC 2004

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published by ISO in 2005

Published in Switzerland

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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Amendment 1 to ISO/IEC 14492:2001 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*, in collaboration with ITU-T. The identical text is published as ITU-T Rec. T.88 (2000)/Amd.1.

Introduction

In this amendment, the following new materials are added:

- a) new clauses 9, 10, and 11 to describe the required architecture and procedures for JBIG2 encoding; and
- b) a new Annex J to document optional JBIG2 encoding methods.

The encoding procedures in clauses 9 and 10 are essentially the inverse of the decoding procedures already described in clauses 6 and 7 of ITU-T Rec. T.88 | ISO/IEC 14492. To simplify the required new documentation, description of each of the encoding procedures is given by referring to the corresponding decoding procedures in clauses 6 and 7, wherever applicable. Clause 11 and Annex J, however, are new material and thus contain more detailed documentation. In clause 11 (although the encoding complements that of clause 8 of ITU-T Rec. T.88 | ISO/IEC 14492), JBIG2 encoding architecture as well as its technical components are described, and their corresponding implementation methods are given by reference. In J.1, compliant example encoding methods are summarized in table form.

**INTERNATIONAL STANDARD
ITU-T RECOMMENDATION**

Information technology – Lossy/lossless coding of bi-level images

Amendment 1

Encoder

1) New clauses 9, 10, and 11

Add the following clauses:

9 Encoding procedures

The encoding procedures in this clause are essentially the inverse of the decoding procedures already described in clause 6 and will not be duplicated here. The inverse of generic region encoding is described in 6.2. The inverse of generic refinement encoding is described in 6.3. The inverse of text region encoding is described in 6.4. The inverse of symbol dictionary encoding is described in 6.5. The inverse of halftone region encoding is described in 6.6. The inverse of pattern dictionary encoding is described in 6.7.

10 Control encoding procedures

The control encoding procedures in this clause are essentially the inverse of the decoding control procedures already described in clause 7 and will not be duplicated here. The inverse of segment header syntax encoding is described in 7.2. The inverse of segment type encoding is described in 7.3. The segment types syntax for the region segment information field, symbol dictionary segment, text region segment, pattern dictionary segment, halftone region segment, generic region, generic refinement segment, end of page segment, end of stripe segment, end of file segment, profiles segment, code table segment and extension segment are described in detail in 7.4.1 to 7.4.15 respectively.

11 Page break-up

The page break-up ("Front end") procedures in this clause are conceptually the inverse of the page make-up ("Back end") procedures already described in clause 8. However, page break-up also requires additional page and document decomposition steps prior to encoding.

11.1 Page break-up architecture

This clause describes the JBIG2 encoder break-up defined by compliant, but optional, technical 'components' (with a range of 'algorithms' possible to implement each of these components). These JBIG2 page break-up components are a set of processing steps labelled: Capture, Filter, Orient (de-skew), Identify, eXtract, Screen, Align (register), Match, Post-match, Dictionary (optimize), and Refine. An example sequence of this component set is illustrated in the Architectural Components figure below as the horizontal axis with abbreviated labels C F O I X S A M P D R (leading from input on the left to a compressed data stream on the right). The vertical dimension above each label represents the range of possible algorithms that may be used to implement each component. The horizontal band illustrates an example JBIG2 compliant page break-up method, using some algorithm for each architectural component and spanning over these components.