INTERNATIONAL STANDARD

ISO 17972-1

First edition
2015-05-01

Graphic technology — Colour data exchange format —

Part 1: Relationship to CxF3 (CxF/X)

Technologie graphique — Format d'échange des données en couleur — Partie 1: Relation avec le CxF3 (CxF/X)

Reference number
ISO 17972-1:2015(E)

© ISO 2015



COPYRIGHT PROTECTED DOCUMENT

© ISO 2015

All rights reserved. Unless otherwise specified, 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
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 in Switzerland

Contents

Page

Foreword ... **iv**

Introduction ... **v**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **1**
3.1 Terms ... 1
3.2 Definitions ... 2

4 Symbols and abbreviated terms ... **2**

5 Requirements ... **3**
5.1 CxF/X specific requirements ... 3
5.2 General description of a Color Exchange Format conforming file ... 3
5.2.1 General ... 3
5.2.2 FileInformation ... 4
5.2.3 Resources ... 4
5.2.4 Example CxF file structure ... 6
5.2.5 CustomResources ... 7
5.3 Document Format ... 8
5.3.1 General ... 8
5.3.2 CxF 3.0 Major Schema Elements ... 8
5.3.3 Object ... 8
5.3.4 ColorValues ... 9
5.3.5 DeviceColorValues ... 9
5.3.6 PhysicalAttributes ... 9

Annex A (informative) **Color Exchange Format mapping to ISO 28178** ... **10**

Annex B (informative) **CxF3 Schema** ... **14**

Annex C (informative) **Use Cases** ... **15**

Bibliography ... **17**

© ISO 2015 – All rights reserved

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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).

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

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary Information

The committee responsible for this document is ISO/TC 130, *Graphic technology*.

ISO 17972 consists of the following parts, under the general title *Graphic technology — Colour data exchange format (CxF/X)*:

— *Part 1: Relationship to CxF3(CxF/X)*

— *Part 4: Spot color characterisation data (CxF/X-4)*

The following parts are under development:

— *Part 2: Scanner target data (CxF/X-2)*

— *Part 3: Printer target data (CxF/X-3)*

© ISO 2015 – All rights reserved

Introduction

ISO 17972 (all parts) defines methods for the use of CxF3 to exchange measurement data and associated metadata within the graphic arts industry and for the exchange of these files between graphic arts users. It is a multi-part document where each part is intended to respond to different workflow requirements. The goal throughout the various parts of ISO 17972 has been to maintain the degree of flexibility required while minimizing the uncertainty of the data exchanged.

A number of International Standards used by the graphic technology community require the reporting of measured and/or computed data. Several of these standards, e.g. ISO 12642 and ISO 13655, have used the ASCII keyword-value pair approach and have been widely used by some industry segments. However, there has been a large degree of variability in implementation, which has not facilitated good automated data exchange creating uncertainty. ISO 28178 attempted to rectify this situation by creating a bridge between the ASCII Keywords approach and an XML flat file approach, but the flat file approach had limitations and has not been widely used. This part of ISO 17972 advances this process further by identifying the use of the publicly available Color Exchange Format version 3 (CxF3) for prepress data exchange and verification. In order to achieve a level of exchange that avoids any ambiguity in interpretation of the file. Each part defines a required and optional set of CxF elements that are permitted to be used. This first document will outline the mapping of CxF to the existing elements in ISO 28178 (provided in Annex A) and illustrate the underlying concepts of CxF.

NOTE X-Rite Inc., the original creator of the CxF file format, claims no intellectual property rights to the materials used in this part of ISO 17972.

This part of ISO 17972 is intended to support all existing and future graphic arts standards that require the exchange of measured, computed, or process control data and the associated metadata necessary for its proper interpretation.

In reviewing the needs of such a format, the following requirements were identified:

— existing applications using ISO 28178 formatted documents in ASCII format should not be rendered obsolete by the new standard;

— data needs to be in a form that is both human-readable (once the digital file has been displayed using standard editors or file readers) and machine-readable;

— data needs to be readable by automated programs to extract the necessary information;

— data files need to be extensible by end users in such a way as to allow additional information to be included without breaking automated readers of the file;

— data files need to be capable of being created by automated programs;

— the format needs to allow multiple language representation of data.

The following files are part of ISO 17972-1, and are included as electronic inserts:

— CxF3_Core.xsd;

— CxF3_Schema_Diagram.pdf;

— Scannertarget.cxf;

— Scannertarget.txt;

— Holidays_test.cxf.

© ISO 2015 – All rights reserved

Graphic technology — Colour data exchange format —

Part 1:
Relationship to CxF3 (CxF/X)

1 Scope

This part of ISO 17972 defines an exchange format for colour and process control data (and the associated metadata necessary for its proper interpretation) in electronic form. It is the base document for describing the use of CxF3 for data exchange. Where required, this part of ISO 17972 also defines additional requirements for a valid CxF/X file. Using XML, all CxF3 and CxF/X documents also support the exchange of data outside of the graphic arts workflow and can support future standards with an extensible architecture using standard XML Names and Metadata tags which can be used with standard XML tools and pass XML validation.

Additional parts of ISO 17972 will use custom resources in conjunction with CxF3 to define the required and optional data for a particular workflow.

2 Normative references

Color Exchange Format v3.0 documents[1)]

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 Terms

NOTE The spelling of terms taken from Color Exchange Format v3.0 is not altered from that used in the normative reference. A specific example is the word color instead of colour.

3.1.1
ColorSpecification
information about the *ColorValue* (3.1.2) including its source (measurement specifications), illuminant/observer calculation method (tristimulus specifications), and physical attributes of the *objects* (3.1.5) (size, quantity, finish, etc.)

[SOURCE: Color Exchange Format v3.0]

3.1.2
ColorValue
one of a number of defined colour space types that can hold values and associated information related to that specific type of device independent colour space

[SOURCE: Color Exchange Format v3.0]

1) Available at http://www.colorexchangeformat.com.

© ISO 2015 – All rights reserved