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Graphic technology — Metadata for graphic arts workflow — XMP metadata for image and document proofing

Technologie graphique — Métadonnées pour le flux de travail des arts graphiques — Métadonnées XMP pour la relecture de document et d'image

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Foreword

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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*.

Introduction

This International Standard describes a set of metadata that can be used to communicate the approval status for images or documents that are used for graphic arts print production workflow.

It is based on the soft-proofing ticket defined by the Ghent PDF Workgroup which uses XMP. This specification includes the specification of the Ghent PDF Workgroup soft-proofing ticket and extends it to include metadata required for the image preparation stage of the workflow.

The intent of this metadata is to track who has approved the image or document, how the proof was prepared, and what the viewing conditions were during the approval. To achieve this, the approver is identified along with the document output conditions, the software used for the approval and details of the device configuration.

Graphic technology — Metadata for graphic arts workflow — XMP metadata for image and document proofing

1 Scope

This International Standard specifies the set of metadata to be used to communicate the approval status, proof preparation and viewing parameters for images and documents that are used in the graphic arts print production workflow.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15076-1, *Image technology colour management — Architecture, profile format and data structure — Part 1: Based on ICC.1:2010*

ISO 15930 (all parts), *Graphic technology — Prepress digital data exchange using PDF*

ISO 16684-1, *Graphic technology — Extensible metadata platform (XMP) specification — Part 1: Data model, serialization, and core properties*

ISO 32000-1, *Document management — Portable document format — Part 1: PDF 1.7*

3 Terms, definitions and abbreviated terms

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

3.1 Terms and definitions

3.1.1
ICC CMYK characterization data registry
central registry for CMYK print characterization data maintained by the ICC

3.1.2
ICC profile
set of colorimetric transforms prepared in accordance with ICC.1 or ISO 15076-1

3.1.3
PDF/X
file format for reliable exchange of print-ready data defined in ISO 15930

3.1.4
URI
Uniform Resource Identifier as defined in IETF RFC 3986

3.1.5
XMP
eXtensible Metadata Platform
standard format for the creation, processing, and interchange of metadata as defined by ISO 16684-1

3.2 Abbreviated terms

GWG	Ghent PDF Workgroup (see www.gwg.org)
ICC	International Color Consortium (see www.color.org)
URI	Uniform Resource Identifier
XMP	eXtensible Metadata Platform

4 Requirements

4.1 General

XMP shall be used to store information about the image and document preparation and approval and shall conform to the requirements of ISO 16684-1 and additional requirements as defined by this International Standard.

This metadata shall be added, as described in ISO 16684-1, as an XMP packet to the image or document to which it refers.

4.2 Namespace

The namespace URI for XMP properties and fields defined in this International Standard shall be "http://gwg.org/spt/xmlns/".

The preferred namespace prefix is **spt**.

4.3 XMP packet structure

An XMP packet conforming to this International Standard shall include either the ImageApprovals property or the ProofingApprovals property but not both. An XMP packet conforming to this International Standard may contain other XMP properties.

4.4 ImageApprovals property

The ImageApprovals property shall be a non-empty ordered array of ImageApproval records as specified in Table 1.

The ImageApprovals record shall contain entries for all fields marked as *Required* and, where appropriate, should contain entries for those fields marked as *Optional*.

NOTE There is currently no defined purpose to the ImageApprovals order. An ordered array is used for compatibility with earlier GWG specifications.

The fields of the ImageApproval record are shown in Table 1.

Table 1 — ImageApproval record

Name	Type	Field content
PrintingConditionIdentifier	open Choice of Text	*Required*. The reference name for the printing condition that was used when the image was approved. This is an open choice - preferred options are those indicated in the ICC CMYK characterization data registry (see www.color.org).
PrintingConditionDescription	Text	*Required*. A non-empty human readable string that describes the printing condition.
PrintingConditionProfileID	Text	*Required*. The ICC profile ID of the printing condition profile used when the image was approved. Note that if the ICC profile ID was not set (i.e. is zero) the profile ID shall be calculated as described in ISO 15076-1 (ICC profile format specification). The 16-byte ICC profile ID shall be expressed as a hexadecimal text string with dash separators between every 8 characters (4 bytes) making a total string length of 35 characters.
RenderingIntent	closed Choice of Text	*Required*. The rendering intent used when approving the image; closed choice of Absolute-Colorimetric, RelativeColorimetric, Perceptual or Saturation. NOTE If using BlackPointCompensation as defined in ISO 18619, then RenderingIntent cannot be AbsoluteColorimetric.
BlackPointCompensation	Boolean	*Required*. Indicates whether BlackPoint Compensation was used when the image was approved. BlackPoint Compensation should be performed as described in ISO 18619.
ApproverName	ProperName	*Required*. A human readable name.
ApprovalDevice	closed Choice of Text	*Required*. Closed choice of Monitor or Printer.
ApprovalStatus	closed Choice of Text	*Required*. The status of approval; closed choice of Approved or Rejected.
ApprovalDate	Date	*Required*. The date and time of approval.
ProofPrinters	ordered array of ProofPrinter records	*Required when hard copy proofing is performed*. One or more ProofPrinter records defined in 4.6 describing the hard copy proof.
ProofingDevices	ordered array of ProofingDevice records	*Required when soft proofing is performed*. One or more ProofingDevice records defined in 4.7 describing the proofing device(s).

4.5 ProofingApprovals property

The ProofingApprovals property shall be a non-empty ordered array of ProofingApproval records as specified in Table 2.

The ProofingApprovals record shall contain entries for all fields marked as *Required* and, where appropriate, should contain entries for those fields marked as *Optional*. When writing the ProofingApprovals record entries for those fields indicated as *Deprecated* should not be used, fields marked in this way indicate past usage and are provided in this International Standard for information only.

NOTE There is currently no defined purpose to the ProofingApprovals order. An ordered array is used for compatibility with earlier GWG specifications.

The fields of the ProofingApproval record are shown in Table 2.

Table 2 — ProofingApproval record

Name	Type	Field content
UsePDFXOutputCondition	Boolean	*Required*. A flag that indicates that the output conditions used for proofing are exactly the one found in the OutputIntent of PDF/X, TIFF or JPEG.
OldOutputConditionIdentifier	Text	*Deprecated*. A string identifying the intended output device or production condition in human- or machine- readable form that was formerly used in PDF/X.
OldDestOutputProfile	Text	*Deprecated*. The ICC profile data converted to Base64 notation (according to RFC 2045, section 6.8) defining the transformation from the PDF document's source colors to output device colorants that was formerly used in PDF/X.
UseSimulation	Boolean	*Deprecated*. A flag that indicates that the document was approved using a simulation profile.
SimulationConditionIdentifier	Text	*Deprecated (was Required if UseSimulation is True)*. A string identifying the simulation profile.
SimulationProfile	Text	*Deprecated (was Required if UseSimulation is true)*. An ICC profile used for simulation. The ICC profile data converted to Base64 notation (according to RFC 2045, section 6.8).
ProofingUserName	ProperName	*Optional*. A human readable name.
ProofingUserLogin	Text	*Required*. A (non-empty) user identification used by the user to connect on the proofing software.[a]
ProofingSoftwarePlatform	open choice of text	*Required*. A (non-empty) human readable identification of the OS of the platform on which the proofing was performed. This is an open choice whose values include *MacOS*, *Windows* and *Linux*.
ProofingSoftwareVendor	Text	*Required*. A (non-empty) human readable identification of the vendor company that made the proofing solution.
ProofingSoftwareMake	Text	*Required*. A (non-empty) human readable name describing the proofing solution used.
ProofingSoftwareVersion	Text	*Optional*. The version number of the solution used to proof the file.
ProofingApprovalStatus	closed Choice of Text	*Required*. The status of approval; closed choice of Approved or Rejected.
ProofingApprovalDate	Date	*Required*. The date and time of approval.
ProofingDevices	ordered array of ProofingDevice records	*Required if soft proofing is performed*. One or more ProofingDevice records defined in 4.7 describing the proofing device(s).
ProofPrinters	ordered array of ProofPrinter records	*Required if hard copy proofing is performed*. One or more ProofPrinter records defined in 4.6 describing the hard copy proof printer.

[a] When hard copy proofs are used, this should identify the person responsible for reflecting the status of the proof in the electronic version of the proof.

4.6 ProofPrinter record

The use of the ProofPrinter record is optional. When used, the ProofPrinter record shall contain entries for all fields marked as *Required* in Table 3 and, where appropriate, should contain entries for those fields marked as *Optional*.

The fields of the ProofPrinter record are shown in Table 3.

Table 3 — ProofPrinter record

Name	Type	Field content
ProofingDeviceCalibrated	Boolean	*Required*. A flag that describes whether the output device was calibrated or not when the user approved the document.
ProofingDeviceCalibrationDate	Date	*Optional*. Date and time when the proof printer was last calibrated.
PrintDate	Date	*Required.* Date and time when the proof was printed.
ProofProfileID	Text	*Required*. The ID of the ICC profile of the proof printer used when making the proof. The 16-byte ICC profile ID shall be expressed as a hexadecimal text string with dash separators between every 8 characters (4 bytes) making the total string length 35 characters.
SoftwareName	Text	*Required*. A (non-empty) human readable identification of the proofing software used for proofing.
SoftwareVersion	Text	*Required*. The software version of the proofing software used (non-empty string).
ProofingDeviceName	Text	*Optional.* A human readable identification of the manufacturer of the device used for proofing. In case of soft-proofing, this is the identification of the monitor used.
ProofingDeviceSerialNumber	Text	*Optional.* The serial number of the device used.

4.7 ProofingDevice record

The ProofingDevice record shall be used when approval is performed on a monitor.

NOTE While it would be more meaningful to name this a DisplayDevice record, the name ProofingDevice record has been used to maintain backwards compatibility with the original GWG specification.

The fields of the ProofingDevice record are shown in Table 4.

The ProofingDevice record shall contain entries for all fields marked as *Required* and, where appropriate, should contain entries for those fields marked as *Optional*.

Table 4 — ProofingDevice record

Name	Type	Field content
ProofingDeviceCalibrated	Boolean	*Required*. A flag that describes whether the output device was calibrated or not when the user approved the document.
ProofingDeviceCalibrationDate	Date	*Optional*. Date/time when monitor was last calibrated.
ProofProfileID	Text	*Required*. The ID of the ICC profile of the output device used when making the proof. The 16-byte ICC profile ID shall be expressed as a hexadecimal text string with dash separators between every 8 characters (4 bytes) making the total string length 35 characters.
ProofingDeviceLuminance	Real	*Optional*. Measured value of the display's luminance (cd/m^2) after calibration.
ProofingDeviceColorTemperature	Real	*Optional*. Value of the display's color temperature (Kelvin) after calibration.
ProofingDeviceWhitePointX	Real	*Optional*. CIE_X chromaticity value of the device white point.

Table 4 *(continued)*

Name	Type	Field content
ProofingDeviceWhitePointY	Real	*Optional*. CIE_Y chromaticity value of the device white point.
ProofingDeviceName	Text	*Optional*. A human readable identification of the manufacturer and model name of the device used for proofing. In case of soft-proofing, this is the identification of the monitor used.
ProofingDeviceSerialNumber	Text	*Optional*. The serial number of the device used.

5 Soft-Proofing PDF specifications

5.1 Encoding PDF/X output conditions

In order to conform with the existing PDF/X standard, the output conditions, as specified in ISO 15930 (all parts) should match the condition in which a user has soft-proofed the file.

The reference printing conditions and ICC profile in the output intent of a PDF/X file should be modified, if necessary, to match the conditions used for approval. This is consistent with the requirements of ISO 15930 (all parts) and is recommended by the GWG best practices.

Multiple approvals may be stored in the file provided they are all ProofingApprovals or all ImageApprovals. The PDF/X output conditions apply to the last approval made (the last entry in the ProofingApprovals array or the ImageApprovals array).

5.2 Using digital signatures

When approving PDF documents, in order to identify the person making the approval, the approver shall digitally sign the PDF as specified in ISO 32000-1.

Annex A
(informative)

XMP examples

A.1 Example XMP for image preparation and approval

Example 1 shows the metadata used to record a single approval of an image on a single hard copy proof printer.

Example 1 Single approval, single proof printer.

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
 <rdf:Description rdf:about="" xmlns:spt="http://gwg.org/spt/xmlns/">
  <spt:ImageApprovals>
   <rdf:Seq>
    <rdf:li rdf:parseType="Resource">
     <spt:PrintingConditionIdentifier>FOGRA39</spt:PrintingConditionIdentifier>
     <spt:PrintingConditionDescription>Offset commercial and specialty printing according to ISO 12647-2, gloss or
matte coated offset, 115 g/m2, screen frequency 60/cm</spt:PrintingConditionDescription>
     <spt:PrintingConditionProfileID>fcfc1110-14da77bf-28e1a620-12edcfdb</spt:PrintingConditionProfileID>
     <spt:RenderingIntent>Perceptual</spt:RenderingIntent>
     <spt:BlackPointCompensation>True</spt:BlackPointCompensation>
     <spt:ApproverName>W Craig Revie</spt:ApproverName>
     <spt:ApprovalDevice>Printer</spt:ApprovalDevice>
     <spt:ApprovalStatus>Approved</spt:ApprovalStatus>
     <spt:ApprovalDate>2007-06-30T00:00:00Z</spt:ApprovalDate>
     <spt:ProofPrinter>
      <rdf:Seq>
       <rdf:li rdf:parseType="Resource">
        <spt:ProofingDeviceCalibrated>True</spt:ProofingDeviceCalibrated>
        <spt:ProofingDeviceCalibrationDate>2007-06-24T06:42:23Z</spt:ProofingDeviceCalibrationDate>
        <spt:ProofProfileID>12345678-abcdefef-87654321-fefedcba</spt:ProofProfileID>
        <spt:SoftwareName>Fujifilm XMF</spt:SoftwareName>
        <spt:SoftwareVersion>4.2</spt:SoftwareVersion>
       </rdf:li>
      </rdf:Seq>
     </spt:ProofPrinter>
    </rdf:li>
   </rdf:Seq>
  </spt:ImageApprovals>
 </rdf:Description>
</rdf:RDF>
```

A.2 Example XMP for PDF document proofing and approval

Example 2 shows the metadata used to record approval from two approvers. The first approval was made based on viewing on a single display and the second approval was made based on viewing on two displays.

Example 2 Approval from two approvers.

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
 <rdf:Description rdf:about="" xmlns:spt="http://gwg.org/spt/xmlns/">
  <spt:ProofingApprovals>
   <rdf:Seq>
    <rdf:li rdf:parseType="Resource">
     <spt:UsePDFXOutputCondition>True</spt:UsePDFXOutputCondition>
     <spt:ProofingUserName>Jeremy Long</spt:ProofingUserName>
     <spt:ProofingUserLogin>jeremy.long</spt:ProofingUserLogin>
     <spt:ProofingSoftwarePlatform>MacOS</spt:ProofingSoftwarePlatform>
     <spt:ProofingSoftwareVendor>ICS</spt:ProofingSoftwareVendor>
     <spt:ProofingSoftwareMake>Remote Director</spt:ProofingSoftwareMake>
     <spt:ProofingSoftwareVersion>1.0</spt:ProofingSoftwareVersion>
     <spt:ProofingApprovalStatus>Approved</spt:ProofingApprovalStatus>
     <spt:ProofingApprovalDate>2007-06-30T00:00:00Z</spt:ProofingApprovalDate>
     <spt:ProofingDevices>
      <rdf:Seq>
       <rdf:li rdf:parseType="Resource">
          <spt:ProofingDeviceCalibrated>True</spt:ProofingDeviceCalibrated>
        <spt:ProofingDeviceCalibrationDate>2007-06-24T06:42:23Z</spt:ProofingDeviceCalibrationDate>
        <spt:ProofingDeviceLuminance>183</spt:ProofingDeviceLuminance>
         <spt:ProofingDeviceColorTemperature>4997</spt:ProofingDeviceColorTemperature>
```

```
        <spt:ProofingDeviceWhitePointX>0.9642</spt:ProofingDeviceWhitePointX>
        <spt:ProofingDeviceWhitePointY>0.8249</spt:ProofingDeviceWhitePointY>
        <spt:ProofingDeviceName>Apple Cinema Display 21"</spt:ProofingDeviceName>
        <spt:ProofingDeviceSerialNumber>AB0484674BC </spt:ProofingDeviceSerialNumber>
       </rdf:li>
      </rdf:Seq>
     </spt:ProofingDevices>
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     <spt:ProofingSoftwareVersion>4.0</spt:ProofingSoftwareVersion>
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        <spt:ProofingDeviceCalibrationDate>2007-06-26T07:22:21Z</spt:ProofingDeviceCalibrationDate>
        <spt:ProofingDeviceLuminance>161</spt:ProofingDeviceLuminance>
        <spt:ProofingDeviceColorTemperature>5012</spt:ProofingDeviceColorTemperature>
        <spt:ProofingDeviceWhitePointX>0.9640</spt:ProofingDeviceWhitePointX>
        <spt:ProofingDeviceWhitePointY>0.8252</spt:ProofingDeviceWhitePointY>
        <spt:ProofingDeviceName>EIZO CG210</spt:ProofingDeviceName>
        <spt:ProofingDeviceSerialNumber>FF1323274CD </spt:ProofingDeviceSerialNumber>
       </rdf:li>
       <rdf:li rdf:parseType="Resource">
        <spt:ProofingDeviceCalibrated>True</spt:ProofingDeviceCalibrated>
        <spt:ProofingDeviceCalibrationDate>2007-06-26T07:29:39Z</spt:ProofingDeviceCalibrationDate>
        <spt:ProofingDeviceLuminance>159</spt:ProofingDeviceLuminance>
        <spt:ProofingDeviceColorTemperature>5008</spt:ProofingDeviceColorTemperature>
        <spt:ProofingDeviceWhitePointX>0.9640</spt:ProofingDeviceWhitePointX>
        <spt:ProofingDeviceWhitePointY>0.8252</spt:ProofingDeviceWhitePointY>
        <spt:ProofingDeviceName>EIZO CG210</spt:ProofingDeviceName>
        <spt:ProofingDeviceSerialNumber>FF1327274CD </spt:ProofingDeviceSerialNumber>
       </rdf:li>
      </rdf:Seq>
     </spt:ProofingDevices>
    </rdf:li>
   </rdf:Seq>
  </spt:ProofingApprovals>
 </rdf:Description>
</rdf:RDF>
```

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