

# SVENSK STANDARD

## SS-ISO 16684-2:2015

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### **Grafisk teknik – Specifikation av utbyggbar metadataplattform (XMP) – Del 2: Beskrivning av XMP-scheman med användning av RELAX NG (ISO 16684-2:2014, IDT)**

### **Graphic technology – Extensible metadata platform (XMP) – Part 2: Description of XMP schemas using RELAX NG (ISO 16684-2:2014, IDT)**

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The International Standard ISO 16684-2:2014 has the status of a Swedish Standard. This document contains the official version of ISO 16684-2:2014.

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## 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](http://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](http://www.iso.org/patents)).

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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/130 *Graphic technology*.

ISO 16684 consists of the following parts, under the general title *Graphic technology — Extensible metadata platform (XMP)*:

- *Part 1: Data model, serialization, and core properties*
- *Part 2: Description of XMP schemas using RELAX NG*

## Introduction

ISO 16684 (all parts) defines aspects of the Extensible Metadata Platform (XMP) that are generic, neutral to the domain of usage. Refer to the Introduction in ISO 16684-1 for general information. This part of ISO 16684 is about description of XMP schemas for formal or mechanical validation of XMP. RELAX NG has been chosen as the schema language. It is an ISO standard, ISO/IEC 19757-2, and is both powerful and easy to use.

There are two major components of formal validation, schemas and validation engines. A schema, or schema file, is a formal description of constraints regarding the structure and contents of properties in an XMP packet, on top of the requirements for conforming XMP packets as mandated by ISO 16684-1. A validation engine is a software tool that compares an input XMP packet to one or more schemas, and produces a report on whether the XMP packet conforms to the schemas.

This part of ISO 16684 defines policies for validation engines to follow so that schemas can be shared, so that the schemas do not require customization for each validation engine. It also defines policies for schemas to follow in order to operate with a conforming validation engine, and to make the schemas robust and modular.

This part of ISO 16684 does not address how a validation engine reports success or failure. Reporting success is easy, reporting failure can be complicated by a number of factors.

- It can be difficult to relate a specific RDF usage error to a human-understood XMP data model.
- Recovery from one error can be difficult, masking other errors after the first.
- As an open model, creation of new data items in XMP is expected. Allowing for this in schemas and/or clear reporting of unexpected input when validating can be difficult.





# Graphic technology — Extensible metadata platform (XMP) —

## Part 2: Description of XMP schemas using RELAX NG

### 1 Scope

This part of ISO 16684 specifies the use of RELAX NG to describe serialized XMP metadata. This applies to how conforming schemas can use the features of RELAX NG.

### 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 16684-1:2012, *Graphic technology — Extensible metadata platform (XMP) specification — Part 1: Data model, serialization and core properties*

ISO/IEC 19757-2, *Information technology — Document Schema Definition Language (DSDL) — Part 2: Regular-grammar-based validation — RELAX NG*

### 3 Terms and definitions

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

#### 3.1

##### **canonical serialization**

serialization providing a one-to-one mapping between the XMP data model and the serialized XML

#### 3.2

##### **general qualifier**

XMP qualifier other than `xml:lang`

#### 3.3

##### **schema**

##### **schema file**

formal description of serialized XMP

#### 3.4

##### **validation**

process of verifying whether serialized XMP follows one or more schemas

#### 3.5

##### **validation engine**

software tool that performs validation

#### 3.6

##### **XMP**

extensible metadata platform, as defined by ISO 16684-1

### 3.7

#### **XMP entity**

XMP property, array item, structure field, or qualifier

## 4 Conformance

This part of ISO 16684 describes methodology to create interoperable software and schema files in order to validate XMP metadata using regular-grammar-based validation schemas defined in ISO/IEC 19757-2 and referred to in this part of ISO 16684 as RELAX NG. Conformance on the part of a software validation engine enables the creation of schema files with lower complexity. Conforming validation engines shall adhere to all requirements of ISO 16684-1 and this part of ISO 16684. Conforming validation engines can provide additional features that are not explicitly forbidden by this part of ISO 16684. Conformance on the part of schema files enables their interchange among conforming validation engines. Conforming schema files shall adhere to all requirements of this part of ISO 16684. Conforming schema files can provide additional features that are not explicitly forbidden by this part of ISO 16684.

## 5 Canonical serialization of XMP

### 5.1 General

A major difficulty in validating XMP is that the RDF metadata format used by XMP allows multiple XML representations for the same metadata content. For reference, see ISO 16684-1:2012, 7.9. The RELAX NG schema language is used to validate serialized XML, not the RDF or XMP data models. Writing a RELAX NG schema to cover all possible XML forms for XMP is unacceptably complex. A canonical serialization of XMP is defined to limit this complexity. The canonical serialization requires specific forms of the XMP serialization defined in ISO 16684-1:2012, Clause 7, banning other forms. This provides a one-to-one mapping between the XMP data model and the canonical XML.

An XMP validation engine shall produce a canonical serialization of the XMP as part of the validation process. The validation engine shall accept any XMP as input that is allowed under ISO 16684-1. This XMP shall be parsed then serialized using the canonical forms described in this Clause. Next, the RELAX NG schema or schemas shall be applied to that canonical serialization. The XMP validation engine shall not modify original files containing the input XMP as part of the validation process.

### 5.2 XMP packet serialization

The canonical serialization of XMP shall have an `rdf:RDF` outermost XML element, which shall contain a single `rdf:Description` element to contain all XMP properties. That is, properties for all top-level namespaces are within this one `rdf:Description` element. The XMP properties shall be grouped by namespace. The namespace groups can have any order.

**EXAMPLE** An XMP metadata packet is shown containing XMP properties of different namespaces in a single `rdf:Description` element.

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:xmp="http://ns.adobe.com/xap/1.0/"
  xmlns:xmpMM="http://ns.adobe.com/xap/1.0/mm/">
  <rdf:Description rdf:about="">
    <dc:format>image/jpeg</dc:format>
    <xmp:Rating>3</xmp:Rating>
    <xmp:CreateDate>2012-02-29T12:33:44</xmp:CreateDate>
    <xmpMM:DocumentID>uuid:example1234</xmpMM:DocumentID>
  </rdf:Description>
</rdf:RDF>
```

### 5.3 Property serialization

The canonical serialization of XMP shall use the XML element form for XMP properties. The property attribute notation defined in ISO 16684-1:2012, 7.9.2.2 shall not be used.

## 5.4 Structure value serialization

The canonical serialization of XMP shall use a nested `rdf:Description` element for structure values. The structure fields shall be serialized as XML elements within that `rdf:Description` element. Values in a structure can be of type simple, structure, or array. They shall be serialized as described in 6.3, 6.4, and 6.5. The `rdf:parseType="resource"` attribute notation defined in ISO 16684-1:2012, 7.9.2.3 shall not be used. The structure field attribute notation defined in ISO 16684-1:2012, 7.9.2.4 shall not be used.

**EXAMPLE** A structure value from an XMP metadata stream is shown in its canonically serialized form.

```
<xmpMM:DerivedFrom>
  <rdf:Description>
    <stRef:documentID>id:document</stRef:documentID>
    <stRef:instanceID>id:instance</stRef:instanceID>
  </rdf:Description>
</xmpMM:DerivedFrom>
```

## 5.5 Array value serialization

The canonical serialization of XMP shall use a nested `rdf:Bag`, `rdf:Seq`, or `rdf:Alt` element for array values. The array items shall be `rdf:li` elements within the `rdf:Bag`, `rdf:Seq`, or `rdf:Alt` element.

**EXAMPLE** An array value from an XMP metadata stream is shown in its canonically serialized form.

```
<dc:subject>
  <rdf:Bag>
    <rdf:li>subject 1</rdf:li>
    <rdf:li>subject 2</rdf:li>
  </rdf:Bag>
</dc:subject>
```

## 5.6 Qualifier serialization

The canonical serialization of XMP shall use the XML syntax defined in ISO 16684-1:2012, 7.8 for qualifiers. An `xml:lang` qualifier shall be serialized as an `xml:lang` attribute in the start tag of the XML element whose name is that of the XMP entity having the `xml:lang` qualifier. All general qualifiers shall be serialized as XML elements within an `rdf:Description` element that is within the XML element whose name is that of the XMP entity having the qualifier. The value of that XMP entity shall be within an `rdf:value` element within that `rdf:Description` element. The `rdf:value` element should be the first XML element within that `rdf:Description` element.

The `rdf:parseType="resource"` notation defined in ISO 16684-1:2012, 7.9.2.3 shall not be used for an XMP entity with general qualifiers. The field attribute notation defined in ISO 16684-1:2012, 7.9.2.4 shall not be used for an XMP entity with general qualifiers. The RDF `TypedNode` notation defined in ISO 16684-1:2012, 7.9.2.5 shall not be used for an `rdf:type` qualifier.

**EXAMPLE** A part from an XMP metadata stream using a qualifier is shown in its canonically serialized form.

```
<xmp:Identifier>
  <rdf:Bag>
    <rdf:li>
      <rdf:Description>
        <rdf:value>0-13-110941-3</rdf:value>
        <xmpidq:Scheme>ISBN</xmpidq:Scheme>
      </rdf:Description>
    </rdf:li>
  </rdf:Bag>
</xmp:Identifier>
```

# 6 RELAX NG idioms for XMP

## 6.1 General

Having a canonical serialization for XMP is necessary to simplify the creation of RELAX NG schemas. As a consequence, considerably more freedom can be granted in the creation of the RELAX NG schemas.