



PICS Rating Vocabularies in XML/RDF

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Editors:

Dan Brickley <danbri@w3.org>

Ralph R. Swick <swick@w3.org>

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Abstract

PICS, the Platform for Internet Content Selection [[PICS96](#)], [[PICSSYS96](#)] is a system for associating metadata (PICS "labels") with Internet content. PICS provides a mechanism whereby independent groups can develop metadata vocabularies without naming conflict. The syntax of a PICS label is very compact and does not use any of the subsequent Web technology such as XML and XSL. RDF, the Resource Description Framework [[RDF99](#)], [[RDFSCHEMA00](#)] provides a model for representing metadata that is even more general than PICS, with more expressive power, and uses XML syntax. A goal of RDF was to permit the mechanical translation of PICS metadata into RDF form. This document represents one possible mapping of [PICS](#) into XML/RDF.

Status of this document

The material in this document was first published as part of the RDF Schema specification [Proposed Recommendation of 1999-03-03](#). It has been published as an independent document to facilitate its evolution independently of the RDF Schema specification. At the time this document was created, no working group was chartered to advance the PICS RDF/XML mapping. Consequently this document in its current version has no formal standing in W3C process and is provided here for reference and discussion amongst PICS and RDF implementors. Refer to the [latest version](#) of this document for information about its status.

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This section describes the status of this document at the time of its publication. Other documents may supersede this document. The [latest status](#) of this document series is maintained at the W3C. Refer to [Appendix A](#), About W3C Documents, for a description of the W3C Technical Report publishing policy.

A Prototype PICS/RDF Schema

This is work-in-progress illustrating how a PICS schema could be expressed using the RDF Schema language [[RDFSCHEMA00](#)]. This mapping should not be considered definitive; other representations are possible.

There are three parts:

- Part 1 covers the vocabulary in the [PICS-1.1 Label Specification](#) [[PICS96](#)]
- Part 2 covers the [PICS-1.1 Rating Service Description](#) [[PICSSYS96](#)] vocabulary
- Part 3 illustrates an example PICS rating system from [[PICSSYS96](#)]

1. PICS-1.1 Label Vocabulary

The vocabulary that appears in a PICS-1.1 label is a mixture of descriptions of the service providing the rating, data having to do with the mechanics of transporting the ratings, descriptions of the ratings themselves, and descriptions of the target resource. The vocabulary associated with the transport mechanics (`error`, `for`) are not included here. The `generic` keyword is handled by the RDF `aboutURIPrefix` mechanism. Two deprecated PICS-1.1 options (`signature-RSA-MD5` and `MIC-MD5`) are omitted from this vocabulary.

The syntax presented in the RDF/XML fragments below assumes that the RDF Model and Syntax namespace is available using the prefix `rdf:`, and that the RDF Schema namespace is the current default XML namespace.

1.1. Document Properties

The PICS 'at' option is a higher-order relation between the document being rated and the rating statement. As such, it is modelled as a property of the (reified) rating statement.

```
<rdf:Property ID="at"
  comment="The last modification date of the
  subject resource at the time the rating was assigned">
  <domain rdf:resource="http://www.w3.org/1999/02/22-rdf-syntax-ns#Statement"/>
</rdf:Property>
```

1.2. Label Options

The rating service URI identifies the source of the labels. In PICS-1.1 the rating system (rating vocabulary) is identified within the service description at the service URI. In PICS/RDF the rating vocabulary should be identified with its own schema (and namespace name). The `ratingService` property therefore serves only to identify the source of the statements. It is an open question of semantics as to what responsibility the `ratingService` has for the *content* of the statements.

```
<rdf:Property ID="ratingService"
  comment="The service from whom this rating was received.">
  <domain rdf:resource="http://www.w3.org/1999/02/22-rdf-syntax-ns#Statement"/>
</rdf:Property>
```

The remainder of the label options identify additional properties of the rating statement itself.

```
<rdf:Property ID="by"
  comment="An identifier for the person or entity within the rating service
    who was responsible for creating this particular rating.">
  <domain rdf:resource="http://www.w3.org/1999/02/22-rdf-syntax-ns#Statement"/>
</rdf:Property>

<rdf:Property ID="on"
  comment="The date on which this rating was issued.">
  <domain rdf:resource="http://www.w3.org/1999/02/22-rdf-syntax-ns#Statement"/>
</rdf:Property>
```

The PICS 'until' label option can also be written as 'exp'. We could use `subPropertyOf` to represent this synonym; instead, we eliminate it altogether in this representation of PICS.

```
<rdf:Property ID="until"
  comment="The date on which this rating expires.">
  <domain rdf:resource="http://www.w3.org/1999/02/22-rdf-syntax-ns#Statement"/>
</rdf:Property>
```

1.3. Other Information

The collection of statements may have the following two properties.

```
<rdf:Property ID="comment"
  comment="Information for humans who may see the label; no associated semantics.">
  <domain
    rdf:resource="http://www.w3.org/2000/01/rdf-schema#Container"/>
</rdf:Property>
```

The 'completeLabel' property will appear only on a container that has not (yet) been replaced by the contents of the complete label resource. When the complete label is used, the statements in the original collection are withdrawn from the database and the statements in the complete label resource are added.

```

<rdf:Property ID="completeLabel"
  comment="A complete label that can be used in place of the current one.">
  <domain
    rdf:resource="http://www.w3.org/2000/01/rdf-schema#Container"/>
</rdf:Property>

```

2. PICS-1.1 Rating Service Description Vocabulary

A PICS Rating Service Description is essentially a schema. Some of the vocabulary used in PICS-1.1 translates directly to the RDF Schema vocabulary. In this RDF representation of PICS the rating system is specified separately from the rating service, rather than as a part of the rating service.

```

<rdf:Property ID="ratingService"
  comment="A document describing the rating service in human-readable terms."/>

<rdf:Property ID="icon"
  comment="A graphic associated with the rating service or with a
  specific rating property."/>

```

The following properties are used within the rating system schema to describe the schema and the properties within the schema.

```

<rdf:Property ID="name"
  comment="The name of the rating system."/>

<rdf:Property ID="description"
  comment="A human-readable description of the rating system."/>

<rdf:Property ID="minimum"
  comment="The minimum numeric value permitted."/>

<rdf:Property ID="maximum"
  comment="The maximum numeric value permitted."/>

<Class rdf:ID="Integer"
  comment="Integer numbers."/>

<Class rdf:ID="Encoding"
  comment="A value with a label"/>

<Class rdf:ID="Multivalue">
  <subClassOf resource="http://www.w3.org/1999/02/22-rdf-syntax-ns#Bag"/>
  <!-- used as the range of properties that can take either a singleton or a Bag as their value -->
</Class>

<Class rdf:ID="Multiorordered">
  <subClassOf resource="http://www.w3.org/1999/02/22-rdf-syntax-ns#Seq"/>

```

```
<!-- used as the range of properties that can take either a singleton or a Seq as their value -->
</Class>
```

'Categories' and the `transmit-as` property are simply the property name. The category name is the `RDF_label` property.

3. Sample PICS Rating System

The "[Good Clean Fun](#)" rating system example can be written in RDF/XML as follows:

```
<!-- This=http://www.gcf.org/ratings -->

<Description
  xmlns="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:s="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:p="http://www.w3.org/TR/WD-pics2.0#"
  about="">

  <p:icon rdf:resource="icons/gcf.gif"/>
  <p:name>The Good Clean Fun Rating System</p:name>
  <p:description>Everything you ever wanted to know about soap, cleaners, and
    related products. For demonstration purposes only.</p:description>
</Description>

<Property ID="suds"
  s:label="Soapsuds Index"
  p:minimum="0.0"
  p:maximum="1.0"/>

<Property ID="density"
  s:label="suds density">
  <s:range rdf:resource="#DensityValue"/>
</Property>

<Bag ID="DensityValue">
  <li>
    <p:Encoding
      rdf:value="0"
      s:label="none">
      <p:icon rdf:resource="icons/none.gif"/>
    </p:Encoding>
  </li>
  <li>
    <p:Encoding
      rdf:value="1"
```

```

        s:label="lots">
        <p:icon rdf:resource="icons/lots.gif"/>
    </p:Encoding>
</li>
</Bag>

<Property ID="subject"
  s:label="document subject">
  <s:range rdf:resource="#SubjectValue">
</Property>

<p:Multivalue rdf:ID="SubjectValue">
  <li>
    <p:Encoding
      rdf:value="0"
      s:label="soap"/>
  </li>
  <li>
    <p:Encoding
      rdf:value="1"
      s:label="water"/>
  </li>
  <li>
    <p:Encoding
      rdf:value="2"
      s:label="soapdish"/>
  </li>
</p:Multivalue>

<Property ID="color"
  s:label="picture color">
  <s:range resource="#ColorValue">
</Property>

<s:Class rdf:ID="ColorValue"/>

<Property ID="hue"
  s:label="hue">
  <s:domain rdf:resource="#ColorValue"/>
  <s:range rdf:resource="#HueValue"/>
</Property>

<p:Multivalue rdf:ID="HueValue">
  <li>
    <p:Encoding
      rdf:value="0"
      s:label="blue"/>
  </li>
  <li>

```

```
<p:Encoding
  rdf:value="1"
  s:label="red"/>
</li>
<li>
  <p:Encoding
    rdf:value="2"
    s:label="green"/>
</li>
</p:Multivalue>

<Property ID="intensity">
  <s:domain rdf:resource="#ColorValue"/>
  <s:range rdf:resource="http://www.w3.org/TR/WD-pics2.0#Integer"/>
  <p:minimum>0</p:minimum>
  <p:maximum>255</p:maximum>
</Property>
```

4. References

[PICS96]

PICS Label Distribution Label Syntax and Communication Protocols, Version 1.1, W3C Recommendation 31-October-96, <http://www.w3.org/TR/REC-PICS-labels-961031>

[PICSSYS96]

Rating Services and Rating Systems (and Their Machine Readable Descriptions), Version 1.1, W3C Recommendation 31-October-96, <http://www.w3.org/TR/REC-PICS-services-961031>

[RDF99]

Resource Description Framework (RDF) Model and Syntax Specification, W3C Recommendation, 22 February 1999, <http://www.w3.org/TR/1999/REC-rdf-syntax-19990222>

[RDFSCHEMA00]

[*Resource Description Framework \(RDF\) Schema Specification*](#), W3C Candidate Recommendation, 27 March 2000

Appendix A. About W3C Documents

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1. Each technical report is a stable published document that has a unique identifier (URI).
2. Each stable published document will always be available, unchanged, at that URI. Retrieving (e.g., by bookmarking) the resource at that URI will always return the same content.
3. A specific revision of a document is generally one of a series of related documents (e.g., from Working Draft to Recommendation). Each series has a unique identifier (URI) that when followed, will return the *latest* stable published document available in the series.

4. Each document includes a "Status" section that describes the document's publication context *on the date of publication*. Note that since W3C does not change stable published documents, the status section of a published document cannot be changed, even if the document becomes obsolete at a later date.
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[Brickley](#), [Swick](#)

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