

First edition
2011-07-01

AMENDMENT 1
2015-12-15

Information technology — JPSearch —
Part 2:
Registration, identification and
management of schema and ontology
AMENDMENT 1: JPEG Ontology for
Image Description

Technologies de l'information — JPSearch —

*Partie 2: Enregistrement, identification et gestion des schémas et
de l'ontologie*

AMENDEMENT 1: Ontologie JPEG pour la description d'image



Reference number
ISO/IEC 24800-2:2011/Amd.1:2015(E)

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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/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

Information technology — JPSearch —

Part 2:

Registration, identification and management of schema and ontology

AMENDMENT 1: JPEG Ontology for Image Description

Page 1, Normative references

Add the following references at the end of Clause 2:

Internationalized Resource Identifiers (IRI), January 2005, Internet RFC 3987, available at <http://www.ietf.org/rfc/rfc3987.txt>

W3C OWL Working Group, OWL 2 Web Ontology Language: Document Overview, W3C Recommendation 27 October 2009, available at <http://www.w3.org/TR/2009/REC-owl2-overview-20091027/>

Resource Description Framework (RDF): Concepts and Abstract Syntax, W3C Recommendation 10 February 2004, available at <http://www.w3.org/TR/2004/REC-rdf-concepts-20040210>

W3C XML Schema Definition Language (XSD) 1.1 Part 2: Datatypes, W3C Recommendation 5 April 2012, available at <http://www.w3.org/TR/2012/REC-xmlschema11-2-20120405/>

Add the following Clauses after 7.10.4:

8 JPEG Ontology for Image Description (JPOnTo)

8.1 General

This Clause specifies the set of classes, properties, and restrictions that constitute the JPSearch Metadata Ontology (JPOnTo). This ontology specification provides the foundation to implement applications in different domains that can represent, exchange, and integrate digital image information generated in different systems and under different contexts.

JPOnTo users may only need to use parts of the entire ontology, depending on their needs and according to how much detail they want to include in their image information. For this, the JPOnTo terms (classes and properties) are grouped into two sub-vocabularies to provide an incremental introduction to the ontology.

- **JPOnTo-core:** A core vocabulary that acts as a central component to interconnect all the other sub-vocabularies.
- **JPOnTo-visual:** A rich set of constructs for semantic visual content description, including, but not limited to, a uniform description of identities, features, aspect, relationships, actions and emotional information of people appearing in the images, as well as description of events, locations and objects.

8.2 JPonto-core

8.2.1 Outline

A core vocabulary named JPonto-core is the basic set of entities and properties which serves as a central component to interconnect all the other sub-vocabularies of the JPEG Ontology for Image Description (JPonto). The following classes provide a basis for the rest of JPonto-core.

- **jponto:Image**: Represents a digital image.
- **jponto:RegionOfInterest**: A certain region within a digital image.
- **jponto:Agent**: An agent (e.g. person, group, software or physical artifact).

The primary classes relate to one another and to themselves using the properties shown in [Figure 1](#).

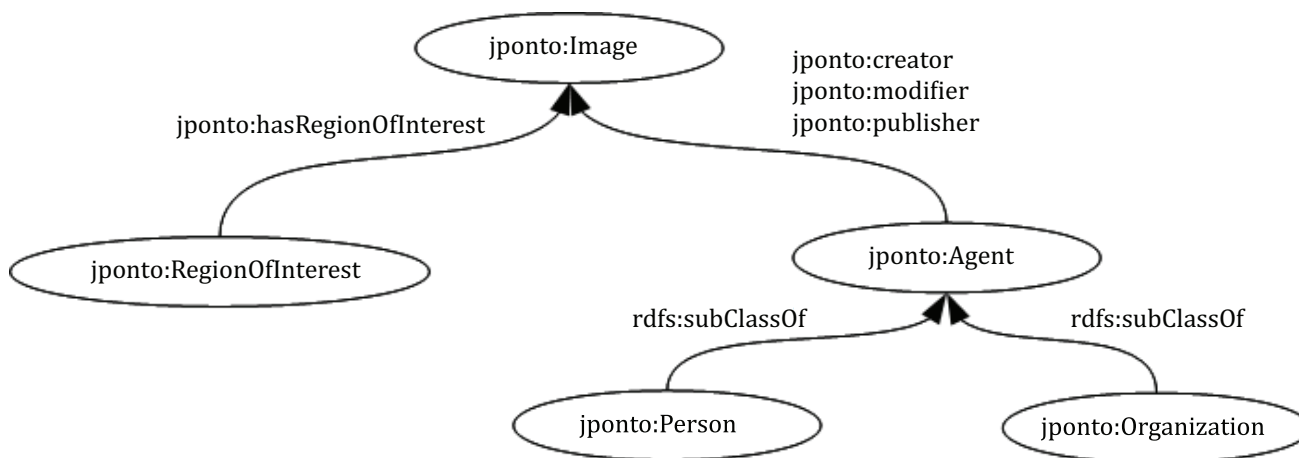


Figure 1 — Outline of JPonto-core

8.2.2 Example

This example shows a complete description of an imaginary image. It has a unique ID, a title and a creator.

```

@base <http://example.org/> .
@prefix jponto: <http://www.jpeg.org/ns/jponto#> .
<#image1> a jponto:Image;
  jponto:title "An example image";
  jponto:keyword "London";
  jponto:keyword "JPEG";
  jponto:creator [
    jponto:givenName "John";
    jponto:familyName "Smith";
    jponto:mbox <mailto:jsmith@example.com> ];
.
  
```

8.2.3 Semantics

8.2.3.1 JPonto-core class definitions (in alphabetical order)

Class	jponto:Agent
Superclasses	—
IRI	http://www.jpeg.org/ns/jponto#Agent
Description	An agent (eg. person, group, software or physical artifact).
Described with properties:	
In range of	jponto:creator, jponto:modifier, jponto:publisher
Has subclasses	jponto:Organisation, jponto:Person
Syntax	<pre> :Agent a owl:Class; rdfs:comment "An agent (eg. person, group, software or physical artifact)."; . </pre>
Example	(see examples for subclasses)

Class	jponto:Image
Superclasses	—
IRI	http://www.jpeg.org/ns/jponto#Image
Description	Represents a digital image
Described with properties:	jponto:creationDate, jponto:creator, jponto:depicts, jponto:description, jponto:GPSaltitude, jponto:GPSlatitude, jponto:GPSlongitude, jponto:hasRegionOfInterest, jponto:height, jponto:modifiedDate, jponto:modifier, jponto:publisher, jponto:title, jponto:width
In range of	—
Has subclasses	—
Syntax	<pre> :Image a owl:Class; rdfs:comment " Represents a digital image "; . </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . <#image1> a jponto:Image; jponto:title "An example image"; . </pre>

Class	jponto:Organisation
Superclasses	jponto:Agent
IRI	http://www.jpeg.org/ns/jponto#Organisation
Description	Organisation or moral agent.
Described with properties:	jponto:name
In range of	jponto:creator, jponto:modifier, jponto:publisher
Has subclasses	—
Syntax	<pre> :Organisation a owl:Class; rdfs:comment "Organisation or moral agent"; rdfs:subClassOf :Agent ; . </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . <#image1> a jponto:Image; jponto:hasCreatorPublisher [a jponto:Organisation; jponto:name "Example Company";]; . </pre>

Class	jponto:Person
Superclasses	
IRI	http://www.jpeg.org/ns/jponto#Person
Description	A physical person.
Described with properties:	jponto:familyName, jponto:givenName, jponto:mbox
In range of	jponto:creator, jponto:modifier, jponto:publisher, jponto:depicts
Has subclasses	—
Syntax	<pre> :Person a owl:Class; rdfs:comment "A physical person."; . </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . <#image1> a jponto:Image; jponto:hasCreator [a jponto:Person; foaf:givenName "John Smith"; foaf:mbox <mailto:jsmith@example.com>]; . </pre>

Class	jponto:RegionOfInterest
Superclasses	jponto:Image
IRI	http://www.jpeg.org/ns/jponto#RegionOfInterest
Description	Represents a certain region within a digital image.
Described with properties:	jponto:boundingPolygon, jponto:depicts
In range of	jponto:hasRegionOfInterest
Has subclasses	—
Syntax	<pre> :RegionOfInterest a owl:Class; rdfs:comment "Represents a certain region within a digital image."; rdfs:subClassOf :Image; . </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . <#image1> a jponto:Image; jponto:hasRegionOfInterest [jponto:boundingPolygon "0 0 100 100".]; . </pre>

8.2.3.2 JPOnto-core property definitions (in alphabetical order)

Property	jponto:boundingPolygon
IRI	http://www.jpeg.org/ns/jponto#boundingPolygon
Description	Specifies the coordinates of the edges of the polygon enclosing a region in the form "x1,y1, x2,y2, x3,y3, ...".
Has super-properties:	—
Has domain	jponto:RegionOfInterest
Has range	xsd:string
Syntax	<pre> :boundingPolygon a owl:DatatypeProperty; rdfs:comment "Specifies the coordinates of the edges of the polygon enclosing a region in the form "x1,y1, x2,y2, x3,y3, ..."; rdfs:domain :Image ; rdfs:range xsd:string ; . </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . @prefix xsd: <http://www.w3.org/2001/XMLSchema#> . <#image1> a jponto:Image; jponto:creationDate "20 01-10-26T21:32:52"^^xsd:date; jponto:hasRegionOfInterest [jponto:boundingPolygon "0 0 100 100";] . </pre>

Property	jponto:creatonDate
IRI	http://www.jpeg.org/ns/jponto#creationDate
Description	Describes the date when the image is created.
Has super-properties:	—
Has domain	jponto:Image
Has range	xsd:dateTime
Syntax	<pre> :creationDate a owl:DatatypeProperty; rdfs:comment "Describes the date when the image is created."; rdfs:domain :Image ; rdfs:range xsd:dateTime; . </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . @prefix xsd: <http://www.w3.org/2001/XMLSchema#> . <#image1> a jponto:Image; jponto:creationDate "20 01-10-26T21:32:52"^^xsd:date; . </pre>

Property	jponto:creator
IRI	http://www.jpeg.org/ns/jponto#creator
Description	Describes the creator of the image.
Has super - properties:	—
Has domain	jponto:Image
Has range	Jponto:Agent
Syntax	<pre> :creator a owl:ObjectProperty; rdfs:comment " Describes the creator of the image."; rdfs:domain :Image; rdfs:range:Agent; . </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . <#image1> a jponto:Image; jponto:creator [jponto:givenName "John Smith"; jponto:mbox <mailto:jsmith@example.com>]; . </pre>

Property	jponto:description
IRI	http://www.jpeg.org/ns/jponto#description
Description	the content of the image in the form of text
Has super-properties:	—
Has domain	jponto:Image
Has range	xsd:string
Syntax	<pre> :description a owl:DatatypeProperty; rdfs:comment "Specifies the content of the image in the form of text."; rdfs:domain :Image ; rdfs:range xsd:string ; . </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . <#image1> a jponto:Image; jponto:description "An example image taken during the MPEG meeting"; . </pre>

Property	jponto:familyName
IRI	http://www.jpeg.org/ns/jponto#familyName
Description	A name shared in common to identify the members of a family, as distinguished from each member's given name.
Has super-properties:	—
Has domain	jponto:Person
Has range	xsd:string
Syntax	<pre> :familyName a owl:DatatypeProperty; rdfs:comment " Specifies the family name of a person."; rdfs:domain :Person; rdfs:range xsd:string; . </pre>
Example	<pre> @base <http://example.org/>. @prefix jponto: <http://www.jpeg.org/ns/jponto#> <#image1> a jponto:Image; jponto:creator [jponto:givenName "John"; jponto:familyName "Smith"; jponto:mbox <mailto:jsmith@example.com>]; . </pre>

Property	jponto:givenName
IRI	http://www.jpeg.org/ns/jponto#givenName
Description	Specifies the given name of a person.
Has super-properties:	—
Has domain	jponto:Person
Has range	xsd:string
Syntax	<pre> :givenName a owl:DatatypeProperty; rdfs:comment " Specifies the given name of a person."; rdfs:domain :Person; rdfs:range xsd:string; .</pre>
Example	<pre> @ base <http://example.org/>. @prefix jponto: <http://www.jpeg.org/ns/jponto#> <#image1> a jponto:Image; jponto:creator [jponto:givenName "John"; jponto:familyName "Smith"; jponto:mbox <mailto:jsmith@example.com>]; .</pre>

Property	jponto:GPSAltitude
IRI	http://www.jpeg.org/ns/jponto#creator
Description	Specifies the GPS altitude of the image, in decimal meters.
Has super-properties:	—
Has domain	jponto:Image
Has range	xsd:double
Syntax	<pre> :GPSAltitude a owl:DatatypeProperty; rdfs:comment "Describes the GPS altitude of the image "; rdfs:domain :Image ; rdfs:range xsd:double; . </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . <#image1> a jponto:Image; jponto:GPSAltitude 1000.0; . </pre>

Property	jponto:GPSLatitude
IRI	http://www.jpeg.org/ns/jponto#GPSLatitude
Description	Specifies the GPS latitude of the image in decimal degrees.
Has super-properties:	—
Has domain	jponto:Image
Has range	xsd:double
Syntax	<pre> :GPSLatitude a owl:DatatypeProperty; rdfs:comment "Describes the GPS latitude of the image "; rdfs:domain :Image; rdfs:range xsd:double; </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . <#image1> a jponto:Image; jponto:GPSLatitude 34.0; </pre>

Property	jponto:GPSLongitude
IRI	http://www.jpeg.org/ns/jponto#GPSLongitude
Description	Specifies the GPS longitude of the image in decimal degrees.
Has super-properties:	—
Has domain	jponto:Image
Has range	xsd:double
Syntax	<pre> :GPSLongitude a owl:DatatypeProperty; rdfs:comment "Describes the GPS longitude of the image "; rdfs:domain :Image; rdfs:range xsd:double; . </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . <#image1> a jponto:Image; jponto:GPSLongitude 34.0; . </pre>

Property	jponto:hasRegionOfInterest
IRI	http://www.jpeg.org/ns/jponto#hasRegionOfInterest
Description	Describes a region of interest of the image.
Has super-properties:	—
Has domain	jponto:Image
Has range	jponto:RegionOfInterest
Syntax	<pre> :hasRegionOfInterest a owl:ObjectProperty; rdfs:comment "Describes a region of interest of the image."; rdfs:domain :Image; rdfs:range :RegionOfInterest; . </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . @prefix xsd: <http://www.w3.org/2001/XMLSchema#> . <#image1> a jponto:Image; jponto:hasRegionOfInterest [jponto:boundingPolygon "0 0 100 100"; . </pre>

Property	jponto:height
IRI	http://www.jpeg.org/ns/jponto#title
Description	Specifies the number of pixel rows of the image.
Has super-properties:	—
Has domain	jponto:Image
Has range	xsd:integer
Syntax	<pre> :height a owl:DatatypeProperty; rdfs:comment "Specifies the number of pixel rows of the image."; rdfs:domain :Image; rdfs:range xsd:integer; . </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . <#image1> a jponto:Image; jponto:height 1024; . </pre>

Property	jponto:keyword
IRI	http://www.jpeg.org/ns/jponto#keyword
Description	Describes a keyword that characterize the image
Has super-properties:	—
Has domain	jponto:Image
Has range	xsd:string
Syntax	<pre> :keyword a owl:DatatypeProperty; rdfs:comment "Describes a keyword that characterize the image "; rdfs:domain :Image ; rdfs:range xsd:string ; . </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . <#image1> a jponto:Image; jponto:keyword "Seoul"; jponto:keyword "MPEG"; jponto:keyword "social event"; . </pre>

Property	jponto:mbox
IRI	http://www.jpeg.org/ns/jponto#mbox
Description	An email address as defined in RFC 5321
Has super-properties:	—
Has domain	jponto:Person
Has range	xsd:string
Syntax	<pre> :mbox a owl:DatatypeProperty; rdfs:comment " Specifies the mbox of a person."; rdfs:domain :Person; rdfs:range xsd:string; . </pre>
Example	<pre> @base <http://example.org/> . @prefix jponto: <http://www.jpeg.org/ns/jponto#> . <#image1> a jponto:Image; jponto:creator [jponto:givenName "John"; jponto:familyName "Smith"; jponto:mbox <mailto:jsmith@example.com>]; . </pre>