

# Publishing controlled vocabularies for access and reuse

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# Overview

- Making vocabularies available for access and reuse
- What is SKOS. Why was it developed? Why use it?
- Expressing a classical vocabulary in SKOS
- Extending and combining SKOS
- Tools for creating, managing, publishing and accessing SKOS vocabularies
- Vocabulary registry interoperability
- Australian Vocabulary Special Interest Group (AVSIG)
  - Getting started with vocabularies

# Why publish vocabularies on the web?

- Vocabularies are relevant to the Internet
- Vocabularies help improve search precision within an indexed collection
- Hierarchical and associative relationships assist collection browsing
- Published vocabularies become independently accessible resources for reuse
- Published vocabularies are visible
- Vocabulary visibility supports discussion about duplication and consolidation
- Published vocabularies may be mapped to each other
- Vocabularies provide points of relation and connection across the Semantic Web

# Why use SKOS? Why not use OWL?

- OWL provides a formal and precise way to represent domain knowledge.
- Vocabularies are not formally precise representations of domain knowledge.
- Vocabularies are not as complex as ontologies
- SKOS is simpler than OWL
- Translation to OWL can take considerable effort and expertise
- Translation to OWL may introduce misleading logical precision
- SKOS focuses on features typical of vocabularies
- SKOS provides a low-cost migration path to the semantic web



## *Simple Knowledge Organization System*

Scope: knowledge organization systems (KOS) such as thesauri, classification systems, subject heading lists...

SKOS is for representing KOSs in RDF in a *simple* way

# Thesaurus example

Animals

cats

UF (*used for*) domestic cats

RT (*related term*) wildcats

BT (*broader term*) animals

SN (*scope note*) used only for domestic cats

domestic cats

USE cats

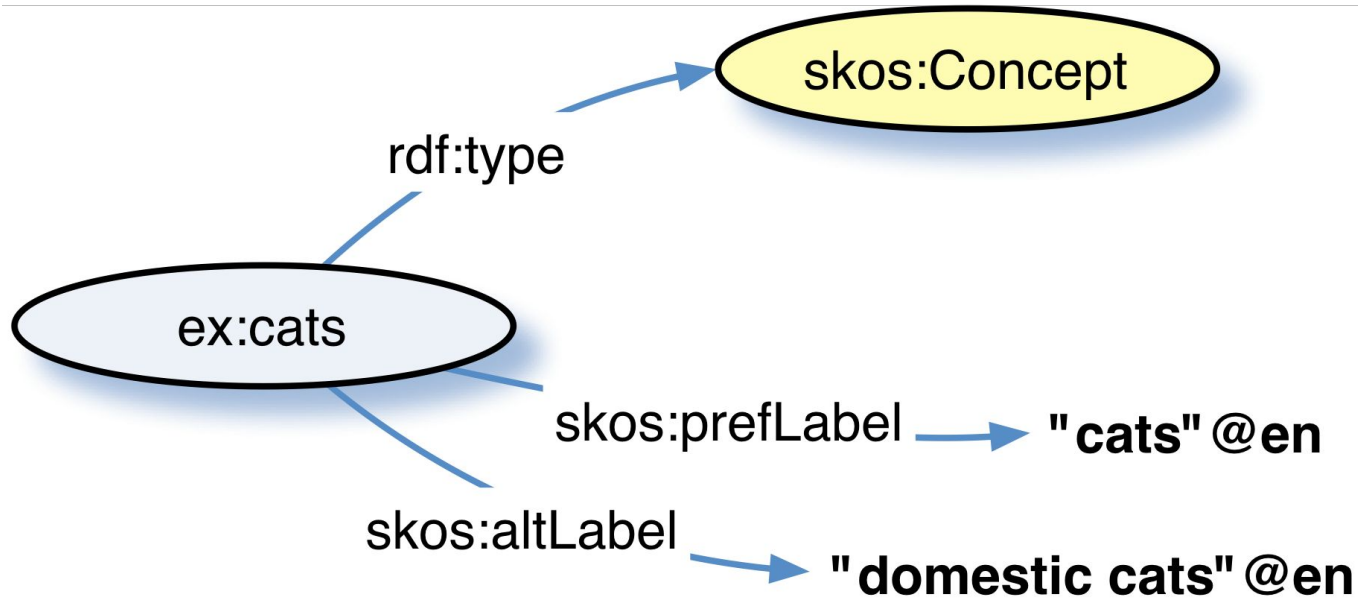
wildcats

# Concepts and labels

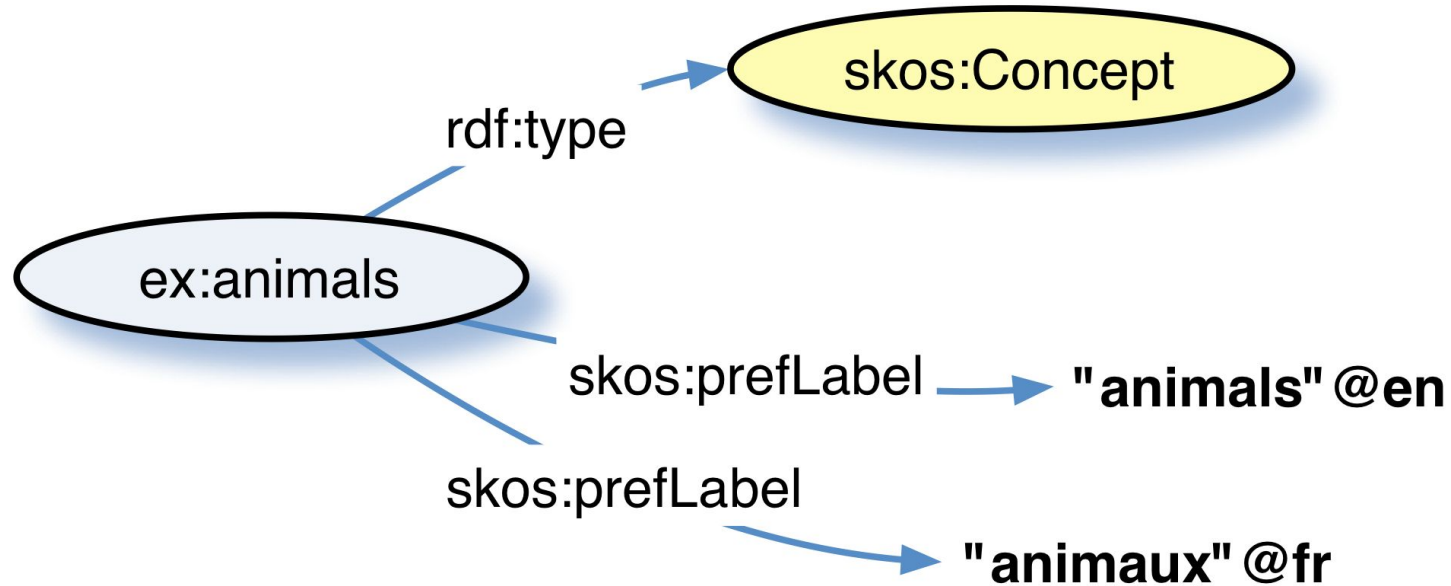
cats

UF (*used for*) domestic cats

---



# Note: multilingual labels



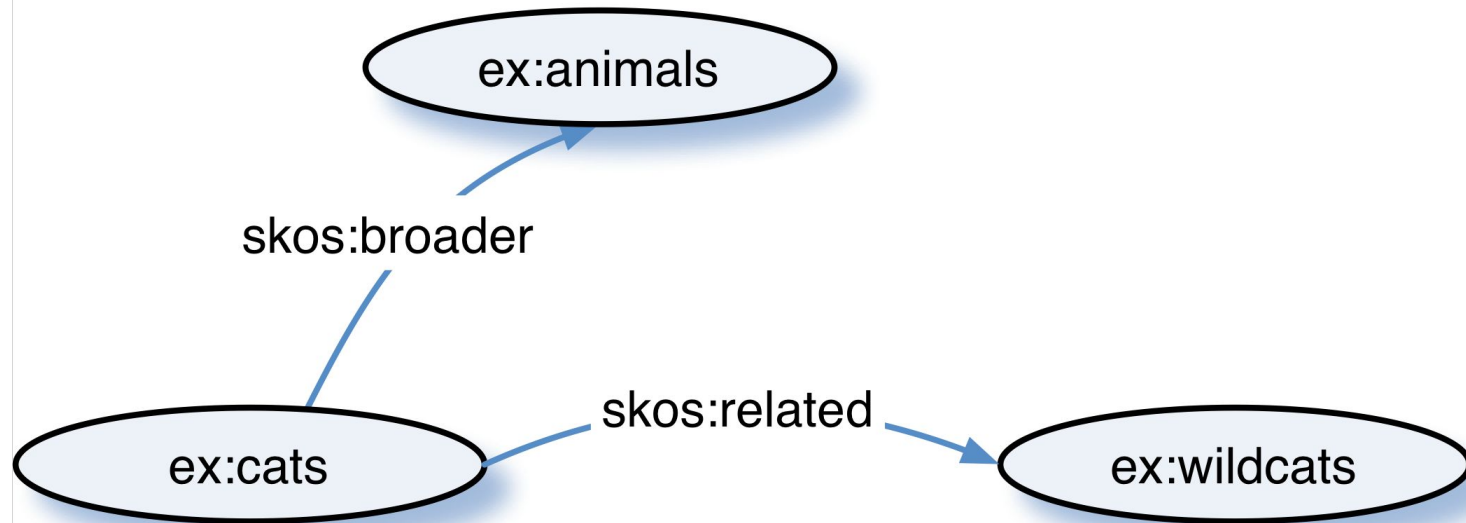


# Semantic relations

cats

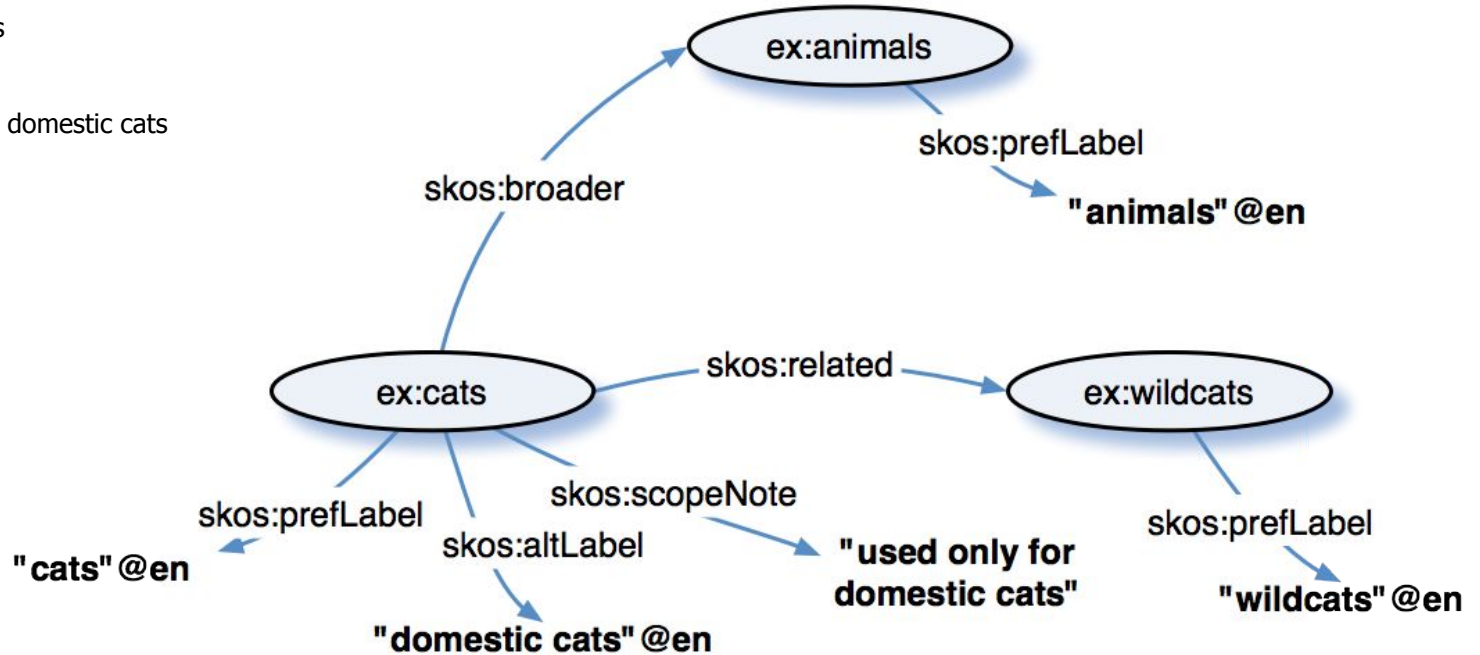
RT (*related term*) wildcats

BT (*broader term*) animals



# A SKOS graph

animals  
cats  
  UF domestic cats  
  RT wildcats  
  BT animals  
  SN used only for domestic cats  
domestic cats  
  USE cats  
wildcats

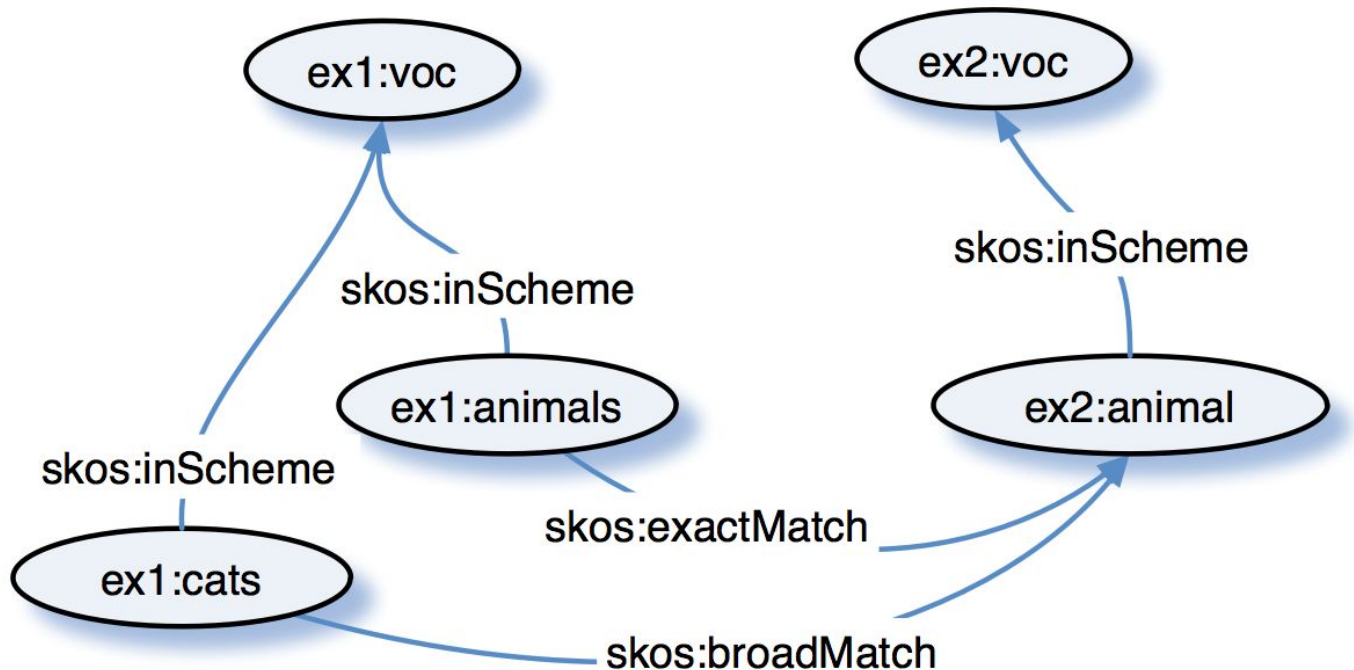


# SKOS mappings

SKOS allows bridging across KOSs from different contexts

**KOS 1:**  
animals  
cats  
wildcats

**KOS 2:**  
animal  
human  
object



# SKOS mappings: Agrovoc

Table 1 below provides some figures about the vocabularies to which AGROVOC is aligned:

	Resource	Topics	Total # of Linked concepts	Languages	Linked Resource available as LOD?	Type of link (and # of linked concepts)
1	<a href="#">ASFA</a>	Fisheries	1784		Yes	skos:closeMatch (38), skos:lexMatch (1741)
2	<a href="#">Biotechnology Glossary (FAO)</a>	Biotechnologies	793	EN, ES, FR, +3 more	Yes	skos:closeMatch (793)
3	Chinese Agriculture Thesaurus (CAT)	Agriculture			Yes	skos:narrowMatch (137) skos:broadMatch (10153) skos:exactMatch (10325)
4	<a href="#">DBpedia</a>	General	11009	EN, ES, FR + 8 more	Yes	skos:closeMatch (11009)
5	<a href="#">Dewey Decimal Classification (DDC)</a>	General	401	EN, ES, FR + 8 more	Yes	skos:closeMatch (2) skos:exactMatch (399)
6	<a href="#">EUROVOC</a>	General EU	1 269	EN, ES, FR + 21 more	Yes	skos:exactMatch (1269)
7	<a href="#">GEMET</a>	Environment	1 175	EN, ES, FR + 30 more	Yes	skos:exactMatch (1175)
8	<a href="#">GeoNames</a>	Geographical entities	206	EN, ES, FR + 63 more	Yes	skos:exactMatch (206)
9	<a href="#">Geopolitical Ontology</a>	Geopolitical entities	253	AR, CH, EN, ES, FR, RU	Yes	skos:exactMatch (253)
10	<a href="#">Library of Congress Subject Headings</a>	General	1 075	EN	Yes	skos:exactMatch (1075)

# SKOS mappings: Agrovoc

**AGROVOC** Content language English  Search

Alphabetical Hierarchy

A B C D E F G H I J K L M N O  
P Q R S T U V W X Y Z 0-9

*catmint* → *Nepeta cataria*  
*catnip* → *Nepeta cataria*  
Catolaccus  
Catoprius mento  
Catostomidae  
Catostomidae (14001XXXXX)  
Catostomus  
Catostomus catostomus  
Catostomus commersoni  
Catostomus latipinnis  
Catostomus macrocheilus  
Catostomus tahoensis  
Cats  
*cattails* → *Typha*  
**Cattle**  
*cattle housing* → *cattle sheds*  
cattle sheds  
Cattleya  
*Cauassu* → *Calathea lutea*  
Cauca River  
*Caucasian fir* → *Abies nordmanniana*  
Caudiuverbera caudiuverbera  
Caulerpa brachypus  
Caulerpa cupressoides  
Caulerpa lentillifera  
Caulerpa prolifera  
Caulerpa racemosa  
Caulerpa serrulata  
Caulerpa sertularioides  
Caulerpa taxifolia  
Caulerpaceae  
*Caulerpales* → *Bryopsidales*  
*cauliflower (plant)* → *Brassica oleracea botrytis*  
Cauliflower mosaic caulimovirus  
*Cauliflower mosaic virus* → *Cauliflower mosaic caulimovirus*  
cauliflowers  
Caulimoviruses  
Caulolatilus affinis  
Caulolatilus chrysops  
Caulolatilus micros  
Caulolatilus princeps  
Caulophryne jordani  
Caulophryniidae  
*caul* → *cowpeas*

... > animals > vertebrates > mammals > ruminants > Cattle  
... > animals > useful animals > domestic animals > livestock > Cattle

**PREFERRED TERM** **Cattle**

---

**BROADER CONCEPT** livestock  
ruminants

---

**NARROWER CONCEPTS** Banteng  
beef cattle  
bullocks  
bulls  
calves  
cows  
dairy cattle  
heifers  
Zebu

---

**RELATED CONCEPTS** *Bos taurus*

---

**ALTERNATIVE LABEL** *domestic cattle*

---

**IS USED AS** meat animals

---

**IN OTHER LANGUAGES**

ماشية	Arabic
牛	Chinese
牦牛	
skot	Czech
<i>domáci dobytek</i>	
Bovin	French
Rind	German
<i>Hausrind</i>	
गौ पशु	Hindi
पालतू पशु	
szarvasmarha	Hungarian
<i>házasított szarvasmarha</i>	
Bovini	Italian
<i>Bovini domestici</i>	

# SKOS mappings: Agrovoc

Alphabetical	Hierarchy
A B C D E F G H I J K L M N O	
P Q R S T U V W X Y Z 0-9	
<i>catmint</i> → <i>Nepeta cataria</i>	
<i>catnip</i> → <i>Nepeta cataria</i>	
Catolaccus	
Catopriion mento	
Catostomidae	
Catostomidae (14001XXXXX)	
Catostomus	
Catostomus catostomus	
Catostomus commersoni	
Catostomus latipinnis	
Catostomus macrocheilus	
Catostomus tahoensis	
Cats	
<i>cattails</i> → <i>Typha</i>	
<b>Cattle</b>	
<i>cattle housing</i> → <i>cattle sheds</i>	
<i>cattle sheds</i>	
<i>Cattleya</i>	
<i>Cauassu</i> → <i>Calathea lutea</i>	
Cauca River	
<i>Caucasian fir</i> → <i>Abies nordmanniana</i>	
<i>Caudiverbera caudiverbera</i>	
<i>Caulerpa brachypus</i>	
<i>Caulerpa cupressoides</i>	
<i>Caulerpa lentillifera</i>	
<i>Caulerpa prolifera</i>	
<i>Caulerpa racemosa</i>	
<i>Caulerpa serrulata</i>	
<i>Caulerpa sertularioides</i>	
<i>Caulerpa taxifolia</i>	
Caulerpaceae	
<i>Caulerpales</i> → <i>Bryopsidales</i>	
<i>cauliflower (plant)</i> → <i>Brassica oleracea botrytis</i>	
<i>Cauliflower mosaic caulimovirus</i>	
<i>Cauliflower mosaic virus</i> → <i>Cauliflower mosaic caulimovirus</i>	
<i>cauliflowers</i>	
<i>Caulimoviruses</i>	
<i>Caulolatilus affinis</i>	
<i>Caulolatilus chrysops</i>	
<i>Caulolatilus microps</i>	
<i>Caulolatilus princeps</i>	
<i>Caulophryne jordani</i>	
<i>Caulophrynidiae</i>	
<i>caupi</i> → <i>cowpeas</i>	
<i>Cautin</i> → <i>Chile</i>	
<i>Cauvery River</i>	
<i>Cavariella</i>	
<i>caves</i>	
<i>Cavia</i> → <i>Guinea pigs</i>	
<i>caviar</i>	
<i>caviar substitutes</i>	
<i>Cavies</i> → <i>Guinea pigs</i>	




<b>Bovini</b>	Italian
<i>Bovini domestici</i>	
ウシ	Japanese
黄牛	
소	Korean
송아지	
ຊີວ	Lao
ຊີວໂນນ	
كاريما (اعلى)	Persian
كار اعلى	
<b>Bydło</b>	Polish
<i>Bydło domowe</i>	
<b>Gado vacum</b>	Portuguese
<i>Gado doméstico</i>	
<b>крупный рогатый скот</b>	Russian
<i>домашний крупный рогатый скот</i>	
<b>hovädzí dobytok</b>	Slovak
<i>domáci hovädzí dobytok</i>	
<b>Ganado bovino</b>	Spanish
మొలకవేళ్లనోకలు	Telugu
โค	Thai
โคเลี้ยง	
<b>Siğir</b>	Turkish
<i>Evcil siğir</i>	
URI	<a href="http://aims.fao.org/aos/agrovoc/c_1391">http://aims.fao.org/aos/agrovoc/c_1391</a>
Download this concept:	RDF/XML TURTLE JSON-LD Created 2/3/12, last modified 2/3/12

CLOSELY MATCHING CONCEPT	<a href="http://dbpedia.org/resource/Cattle">http://dbpedia.org/resource/Cattle</a>	dbpedia.org
EXACT MATCH	<a href="http://cat.aii.caas.cn/concept/c_33072">http://cat.aii.caas.cn/concept/c_33072</a>	cat.aii.caas.cn
	<a href="http://d-nb.info/gnd/4050061-5">http://d-nb.info/gnd/4050061-5</a>	d-nb.info
	<a href="http://eurovoc.europa.eu/5034">http://eurovoc.europa.eu/5034</a>	eurovoc.europa.eu
	<a href="http://linkeddata.ge.imati.cnr.it:2020/resource/EARTH/46850">http://linkeddata.ge.imati.cnr.it:2020/resource/EARTH/46850</a>	linkeddata.ge.imati.cnr.it
	<a href="http://lod.nal.usda.gov/nalt/16304">http://lod.nal.usda.gov/nalt/16304</a>	lod.nal.usda.gov
	<a href="http://stitch.cs.vu.nl/vocabularies/rameau/ark:/12148/cb11936414qstitch.cs.vu.nl">http://stitch.cs.vu.nl/vocabularies/rameau/ark:/12148/cb11936414qstitch.cs.vu.nl</a>	stitch.cs.vu.nl
	<a href="http://www.eionet.europa.eu/gemet/concept/1225">http://www.eionet.europa.eu/gemet/concept/1225</a>	www.eionet.europa.eu
	<a href="http://zbw.eu/stw/descriptor/14142-3">http://zbw.eu/stw/descriptor/14142-3</a>	zbw.eu

# SKOS Concept URIs

PREFERRED TERM	<b>Cattle</b>
-----	
BROADER CONCEPT	livestock ruminants
-----	
NARROWER CONCEPTS	Banteng beef cattle bullocks bulls calves cows dairy cattle heifers Zebu
-----	
RELATED CONCEPTS	Bos taurus
-----	
ALTERNATIVE LABEL	<i>domestic cattle</i>
-----	
URI	<a href="http://aims.fao.org/aos/agrovoc/c_1391">http://aims.fao.org/aos/agrovoc/c_1391</a>
Download this concept:	RDF/XML TURTLE JSON-LD <span style="float: right;">Created 2/:</span>
-----	
CLOSELY MATCHING CONCEPT	<a href="http://dbpedia.org/resource/Cattle">http://dbpedia.org/resource/Cattle</a>
-----	
EXACT MATCH	<a href="http://cat.ii.caas.cn/concept/c_33072">http://cat.ii.caas.cn/concept/c_33072</a> <a href="http://d-nb.info/gnd/4050061-5">http://d-nb.info/gnd/4050061-5</a> <a href="http://eurovoc.europa.eu/5034">http://eurovoc.europa.eu/5034</a> <a href="http://linkeddata.ge.imati.cnr.it:2020/resource/EARTH/46850">http://linkeddata.ge.imati.cnr.it:2020/resource/EARTH/46850</a> <a href="http://lod.nal.usda.gov/nalt/16304">http://lod.nal.usda.gov/nalt/16304</a> <a href="http://stitch.cs.vu.nl/vocabularies/rameau/ark:/12148/cb11936414q">http://stitch.cs.vu.nl/vocabularies/rameau/ark:/12148/cb11936414q</a> <a href="http://www.eionet.europa.eu/gemet/concept/1225">http://www.eionet.europa.eu/gemet/concept/1225</a> <a href="http://zbw.eu/stw/descriptor/14142-3">http://zbw.eu/stw/descriptor/14142-3</a>



# SKOS Concept URIs



<http://www.esa.edu.au/>




HTML **Visual**

Australian education vocabularies > Schools Online Thesaurus English

## Arts

Alternative Label

- Art in education*
- Arts literacy*
- Fine art*
- Humanities (Arts)*
- Multi arts*
- The arts*
- Works of art*



URI <http://vocabulary.curriculum.edu.au/scot/1556>

Hidden Label Work of art

Scope Note Use for resources about visual arts or performing arts. For resources about written works, use Literature.

Narrower Concept

- [Artistic purpose](#)
- [Films](#)
- [Visual arts](#)
- [Design](#)
- [Dance](#)
- [Drama \(Arts\)](#)
- [Music](#)
- [Art movements](#)
- [Regional art](#)
- [Media arts](#)
- [Audiences](#)

Related Concepts

- [Commercial art](#)
- [Arts industry](#)

Last Modified 20 February 2014 [AEST: 12:58 PM]

[view more](#)

Formats: [RDF/XML](#)





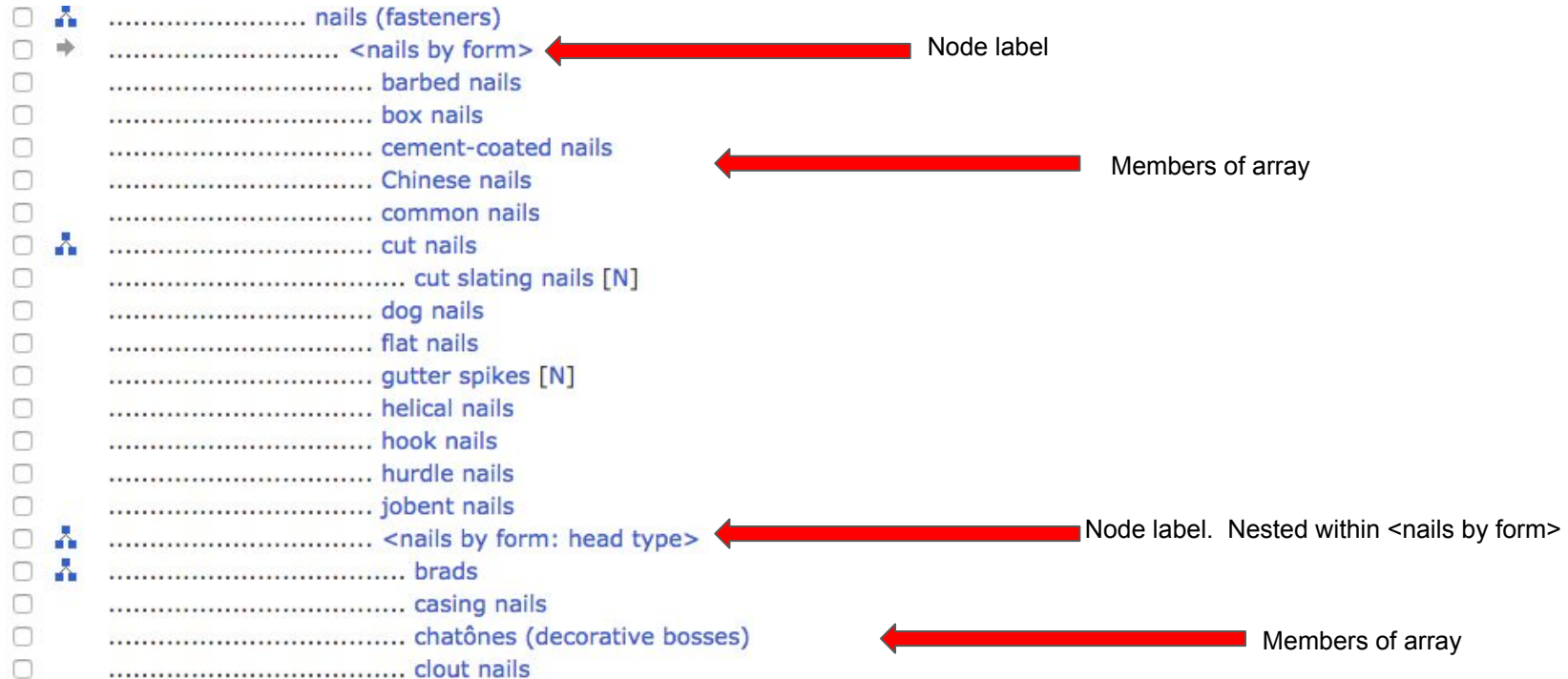
## SKOS Concepts

- have labels (such as preferred and alternative)
- may be related to each other (broader, narrower, related)
- may be documented (such as scope notes, definitions, examples)
- are organised into concept schemes
- may be mapped across concept schemes
- are identified using URIs
- may be grouped into collections

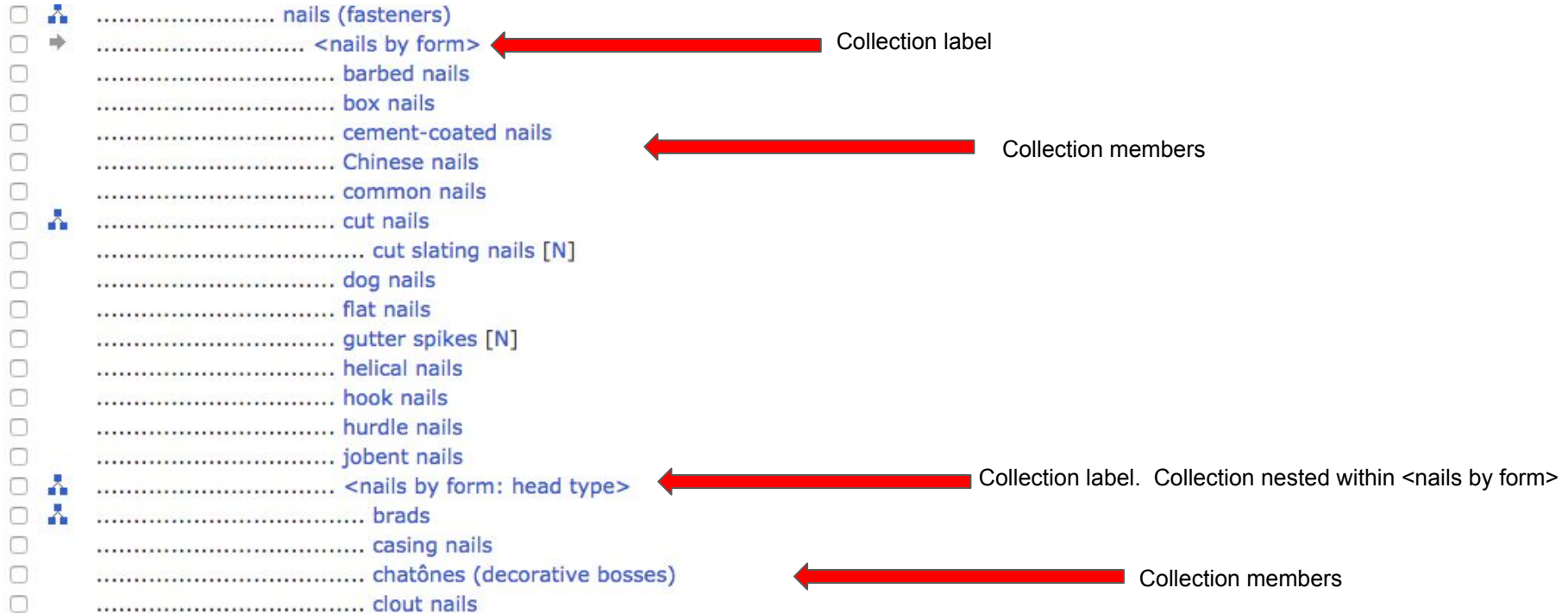
# SKOS Collections

-  ..... nails (fasteners)
-  ..... <nails by form> 
- ..... barbed nails
- ..... box nails
- ..... cement-coated nails
- ..... Chinese nails
- ..... common nails
-  ..... cut nails
- ..... cut slating nails [N]
- ..... dog nails
- ..... flat nails
- ..... gutter spikes [N]
- ..... helical nails
- ..... hook nails
- ..... hurdle nails
- ..... jobent nails
-  ..... <nails by form: head type> 
-  ..... brads
- ..... casing nails
- ..... chatônes (decorative bosses)
- ..... clout nails

# SKOS Collections (thesaurus nodes and arrays)



# SKOS Collections (thesaurus nodes and arrays)



# Nodes & arrays as SKOS Collection & members

## <nails by form>

Source: <http://vocab.getty.edu/aat/300048926>

Subject (63) [Predicate](#) [Object](#) [All](#)

Predicate	Object
rdf:type	<a href="#">gvp:GuideTerm</a>
<b>skos:member</b>	<a href="#">aat:300033566</a> , <a href="#">aat:300036375</a> , <a href="#">aat:300036382</a> , <a href="#">aat:300036402</a> , <a href="#">aat:300079433</a> , <a href="#">aat:300389652</a> , <a href="#">aat:300389653</a>

## GuideTerm

Source: <http://vocab.getty.edu/ontology#GuideTerm>

Subject (8) [Predicate](#) [Object](#) [All](#)

Predicate	Object	Statements in which
rdf:type	<a href="#">owl:Class</a>	
rdfs:subClassOf	<a href="#">iso-thes:ThesaurusArray</a> , <a href="#">gvp:Subject</a>	
rdfs:comment	<a href="#">Guide Term: place holder to create a level in the hierarchy.</a> Used in AAT and ULAN. Not used for indexing or cataloguing.	

## Thesaurus Array

Source: <http://purl.org/iso25964/skos-thes#ThesaurusArray>

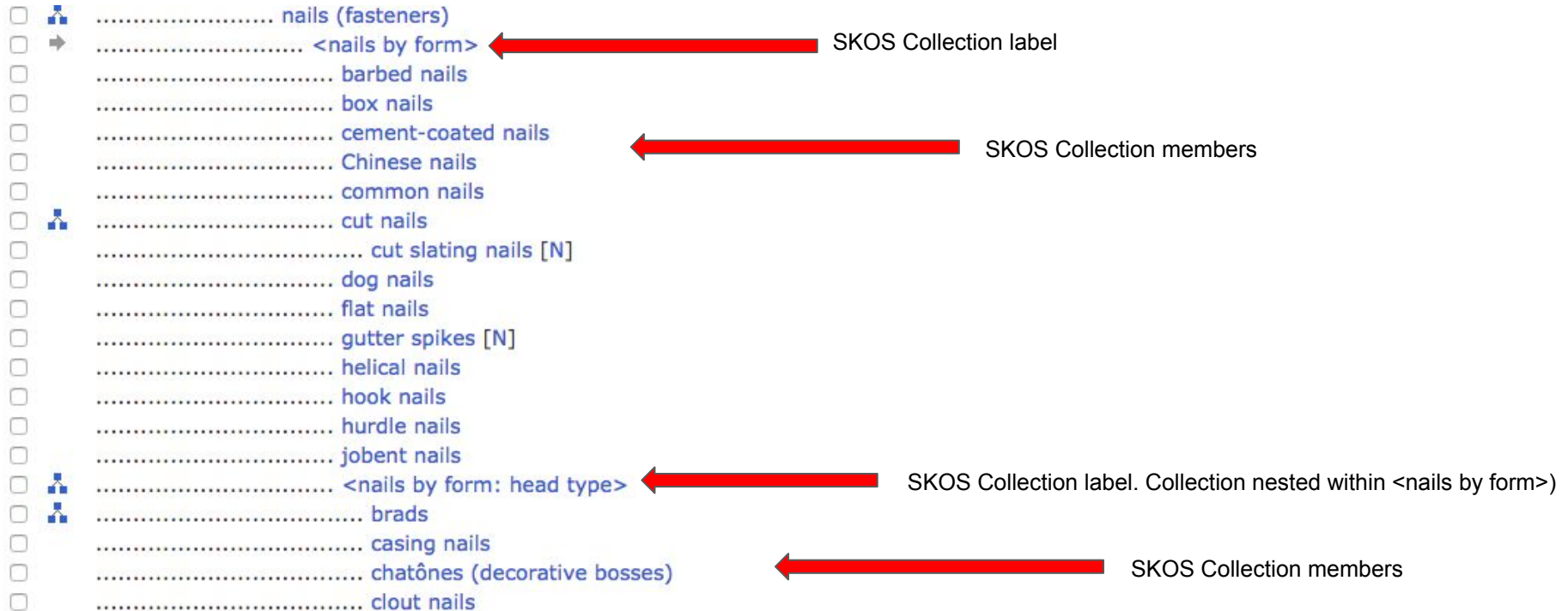
Subject (6) [Predicate](#) [Object](#) [All](#)

Download in: [JSON](#) | [JS](#)

Inference

Predicate	Object	Statements in which the resource exists as a subject.
rdf:type	<a href="#">owl:Class</a>	
rdfs:subClassOf	<a href="#">skos:Collection</a>	
rdfs:label	<a href="#">Thesaurus Array@en</a>	
rdfs:isDefinedBy	<a href="http://purl.org/iso25964/skos-thes">http://purl.org/iso25964/skos-thes</a>	
dcterms:modified	2013-11-11	
skos:definition	Definition: ISO ThesaurusArray Instances of ThesaurusArray should be instances of skos:OrderedCollection (a subclass of skos:Collection) if the array needs to be an ordered array (in ISO-25964 model: value of its Boolean attribute "ordered" is true).	

# Nodes & arrays as SKOS Collections and members



# Combining SKOS with other vocabularies

```
<rdf:Description rdf:about="http://vocabulary.curriculum.edu.au/scot/15977">  
→ <dcterms:created rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2013-09-24T04:54:18Z</dcterms:created>  
  <dcterms:creator rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Education Services Australia Ltd</dcterms:creator>  
  <dcterms:hasVersion rdf:datatype="http://www.w3.org/2001/XMLSchema#int">0</dcterms:hasVersion>  
→ <rdf:type rdf:resource="http://www.w3.org/2004/02/skos/core#Concept"/>  
  <skos:broader rdf:resource="http://vocabulary.curriculum.edu.au/scot/435"/>  
→ <skos:inScheme rdf:resource="http://vocabulary.curriculum.edu.au/scot/6f1bbd29-fccf-4b0a-91d5-9089f768e88c"/>  
  <skos:notation rdf:datatype="http://www.w3.org/2001/XMLSchema#string">224111A</skos:notation>  
  <skos:prefLabel xml:lang="en">Actuaries</skos:prefLabel>  
</rdf:Description>
```

Schools Online Thesaurus. <http://scot.curriculum.edu.au>

# Extending SKOS (eg. XKOS)



[Standards](#) - [Resources](#) - [Training](#) - [Community](#) - [Publications](#) - [About](#) -

[Standards](#) / [Specification](#) / [DDI RDF Vocabularies](#) / [XKOS - Extended Knowledge Organization System](#)

## XKOS - Extended Knowledge Organization System

XKOS leverages the Simple Knowledge Organization System (SKOS) for managing statistical classifications and concept management systems, since SKOS is widely used. LOD is used to create Web artifacts that machines can interpret, so publishing machine-readable statistical classifications and other concept management systems as SKOS instances is desired. The XKOS developers found that SKOS was insufficient for the problem. No aspect of SKOS was found to be wrong, just incomplete. Therefore, an extension to SKOS, called XKOS, is proposed.

XKOS extends SKOS for the needs of statistical classifications. It does so in two main directions. First, it defines a number of terms that enable the representation of statistical classifications with their structure and textual properties, as well as the relations between classifications. Second, it refines SKOS semantic properties to allow the use of more specific relations between concepts. Those specific relations can be used for the representation of classifications or for any other case where SKOS is employed. XKOS adds the extensions that are desirable to meet the requirements of the statistical community.

- [Specification](#)
- [Development resources](#)
- [Related publications](#)
- [License](#)

### Specification

- RDF namespace <http://rdf-vocabulary.ddialliance.org/xkos#>
- HTML document, latest draft
- Other representations
  - Turtle / Terse RDF Triple Language (canonical version)
  - N-Triples
  - RDF XML

### Development resources

- [Discussion forum](#)
  - [Subscription email address: ddi-rdf-vocabulary+subscribe@googlegroups.com](mailto:ddi-rdf-vocabulary+subscribe@googlegroups.com)
  - [Address for sending an email to the list: ddi-rdf-vocabulary@googlegroups.com](mailto:ddi-rdf-vocabulary@googlegroups.com)
- [GitHub repository](#) (revision control system)
- [Issue tracker](#)



# Extending SKOS (eg. XKOS)

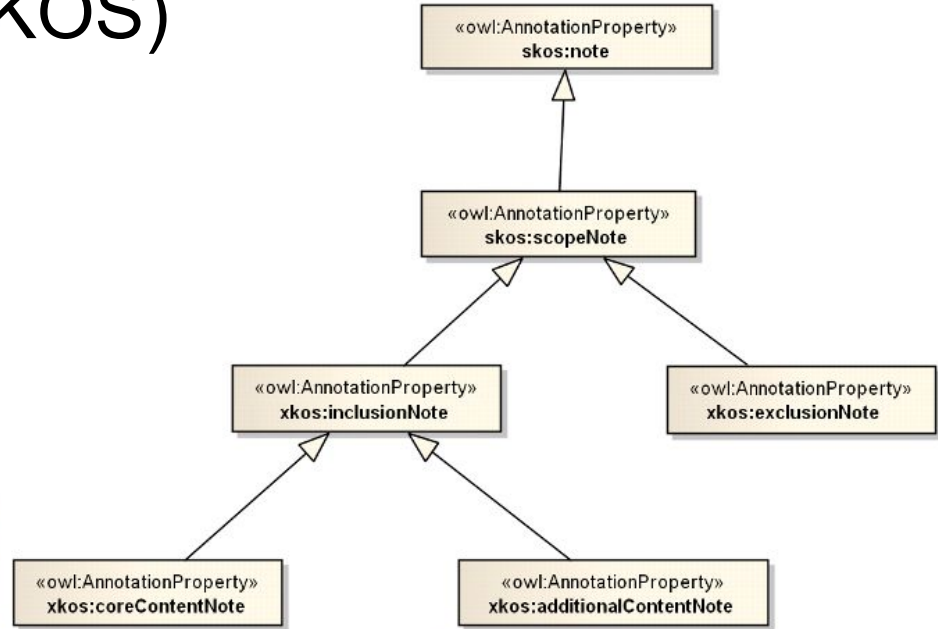


Figure 5 – XKOS annotations

## 4.7 On Specializing the SKOS Model

SKOS is intended to serve as a common denominator between different modeling approaches. As such, the current vocabulary specification will allow many existing KOSs to be ported to the Semantic Web. However, the great variety of KOS models makes it impossible to capture every detail of these models while still retaining the first "S" ("simple") in "SKOS".

Applications that require finer granularity will greatly benefit from SKOS's being a Semantic Web vocabulary. SKOS can indeed be seamlessly *extended* to suit the specific needs of a particular KOS community while retaining compatibility with applications that are based on the core SKOS features.

This can mostly be done by *specializing* existing SKOS constructs into more-specific ones. Users can create their own properties and classes and attach them to the standard SKOS vocabulary elements by using the `rdfs:subPropertyOf` and `rdfs:subClassOf` properties from the RDF Schema vocabulary [[RDF-PRIMER](#)].

# SKOS-XL

- SKOS Core
  - A Concept is a Resource
  - A Label
    - is a property of a Concept
    - cannot be related to other labels
- SKOS-XL
  - A Label is a Resource
  - Supports relationships between labels
    - `skosxl:labelRelation`
  - Users may define relationships which specialise `skosxl:labelRelation`
    - `ex:isAcronymOf` (e.g. `FAO isAcronymOf Food and Agriculture Organisation`)

# Overview

- Making vocabularies available for access and reuse
- What is SKOS. Why was it developed? Why use it?
- Expressing a classical vocabulary in SKOS
- Extending and combining SKOS
- Tools for creating, managing, publishing and accessing SKOS vocabularies
- Vocabulary registry interoperability
- Australian Vocabulary Special Interest Group (AVSIG)
- Getting started with vocabularies

# Research Vocabularies Australia (RVA)

- ANDS provides software and support for
  - Creating and editing
    - Edit existing vocabularies or create new
  - Publishing
    - Description, access, licensing, versioning
  - Discovery
    - Metadata harvested by google
  - Integration
    - Application programming interface and widget

# Using a GUI to edit SKOS

The screenshot displays a web-based SKOS editor interface. On the left, a navigation tree shows the hierarchy: Zoological Institute Animal Vocabulary (1) > Animals (2) > Cats (0) > Wildcats (0). Below this are 'Lists' and 'Collections' buttons. The main content area is titled 'Cats' with the URL <https://lod.zoology.org.au/def/animals/2>. A tabbed interface includes 'Details', 'Notes', 'Documents', 'Linked Data', 'Triples', 'Visualization', 'Quality Report', and 'History'. The 'Details' tab is active, showing a 'SKOS' section with a user icon and a plus sign. A 'Relations' section is also visible, containing three panels: 'Broader Concepts' with a link to 'Animals', 'Narrower Concepts' with a plus sign, and 'Related Concepts' with a link to 'Wildcats'. On the right, three panels are visible: 'Preferred Label' with 'Cats', 'Alternative Labels' with 'Domestic cats', and 'Hidden Labels' with a plus sign. At the bottom right, a 'Scope Notes' panel contains the note 'Used only for domestic cats'.

Zoological Institute Animal Vocabulary (1)

- Animals (2)
  - Cats (0)
  - Wildcats (0)
- Lists
- Collections

## Cats

<https://lod.zoology.org.au/def/animals/2>

Details Notes Documents Linked Data Triples Visualization Quality Report History

SKOS +

Relations

**Broader Concepts**  
[Animals](#)

**Narrower Concepts**  
 +

**Related Concepts**  
 [Wildcats](#)

**Preferred Label**  
 Cats

**Alternative Labels**  
 Domestic cats  
+

**Hidden Labels**  
+

**Scope Notes**  
 Used only for domestic cats  
+

# Using a GUI to edit SKOS

## URI Generation

URI: <https://lod.zoology.org.au/def/animals/<Increment>>



## Cats

<https://lod.zoology.org.au/def/animals/2>



Details

Notes

Documents

Linked Da

## Wildcats

<https://lod.zoology.org.au/def/animals/3>



Details

Notes

Documents

Linked Dat

# Using a GUI to edit SKOS

The screenshot shows a web interface for editing SKOS concepts. On the left is a navigation tree for 'Zoological Institute Animal Vocabulary (1)', showing 'Animals (2)', 'Cats (0)', and 'Wildcats (0)'. The main area is titled 'Cats' with a URL 'https://lod.zoology.org.au/def/animals/2'. Below the title are tabs for 'Details', 'Notes', 'Documents', 'Linked Data', 'Triples', 'Visualization', 'Quality Report', and 'History'. The 'Details' tab is active, showing a 'SKOS' section with a user icon and a '+' sign. A 'Relations' section is expanded, showing three categories: 'Broader Concepts' (Animals), 'Narrower Concepts' (empty), and 'Related Concepts' (Wildcats). To the right of these are four panels: 'Preferred Label' (Cats), 'Alternative Labels' (Domestic cats), 'Hidden Labels' (empty), and 'Scope Notes' (Used only for domestic cats).

```
<rdf:Description rdf:about="https://lod.zoology.org.au/def/animals/2">
  <dcterms:created rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2016-11-30T04:32:48Z</dcterms:created>
  <dcterms:creator rdf:datatype="http://www.w3.org/2001/XMLSchema#string">J.Smith</dcterms:creator>
  <rdf:type rdf:resource="http://www.w3.org/2004/02/skos/core#Concept"/>
  <skos:broader rdf:resource="https://lod.zoology.org.au/def/animals/1"/>
  <skos:prefLabel xml:lang="en">Cats</skos:prefLabel>
  <dcterms:contributor rdf:datatype="http://www.w3.org/2001/XMLSchema#string">J.Smith</dcterms:contributor>
  <skos:related rdf:resource="https://lod.zoology.org.au/def/animals/3"/>
  <skos:scopeNote xml:lang="en">Used only for domestic cats</skos:scopeNote>
  <skos:altLabel xml:lang="en">Domestic cats</skos:altLabel>
  <dcterms:modified rdf:datatype="http://www.w3.org/2001/XMLSchema#dateTime">2016-11-30T04:34:23Z</dcterms:modified>
</rdf:Description>
```

# Some examples of software for editing SKOS



Food and Agriculture Organization  
of the United Nations



University of  
Rome  
Tor Vergata

---

## VOCBENCH 2.0

A Collaborative Environment Web Application for the  
Development of Large Scale Thesauri and Concept Schemes

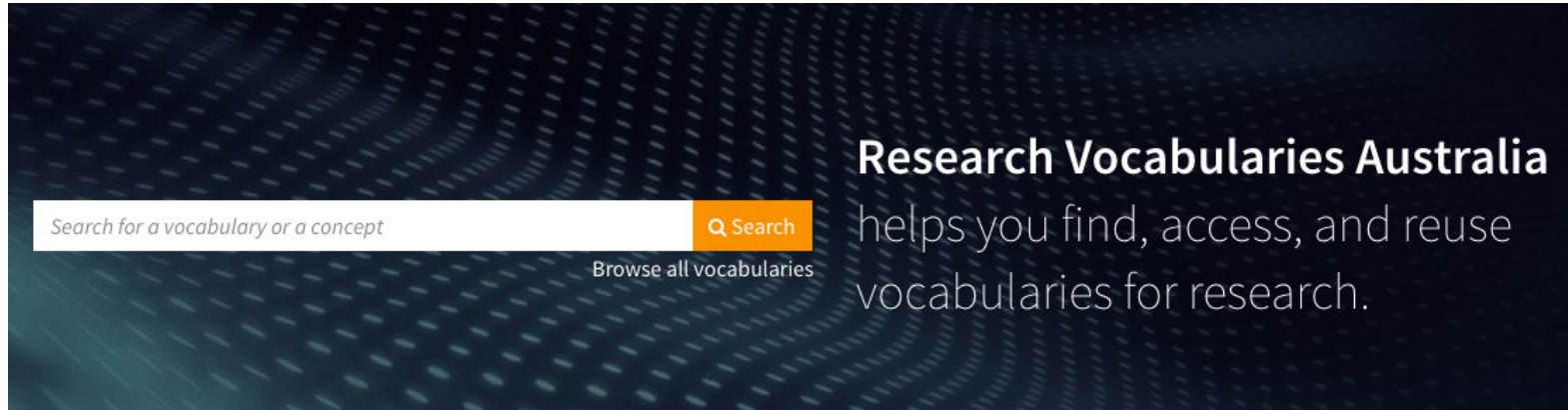




# Research Vocabularies Australia (RVA)

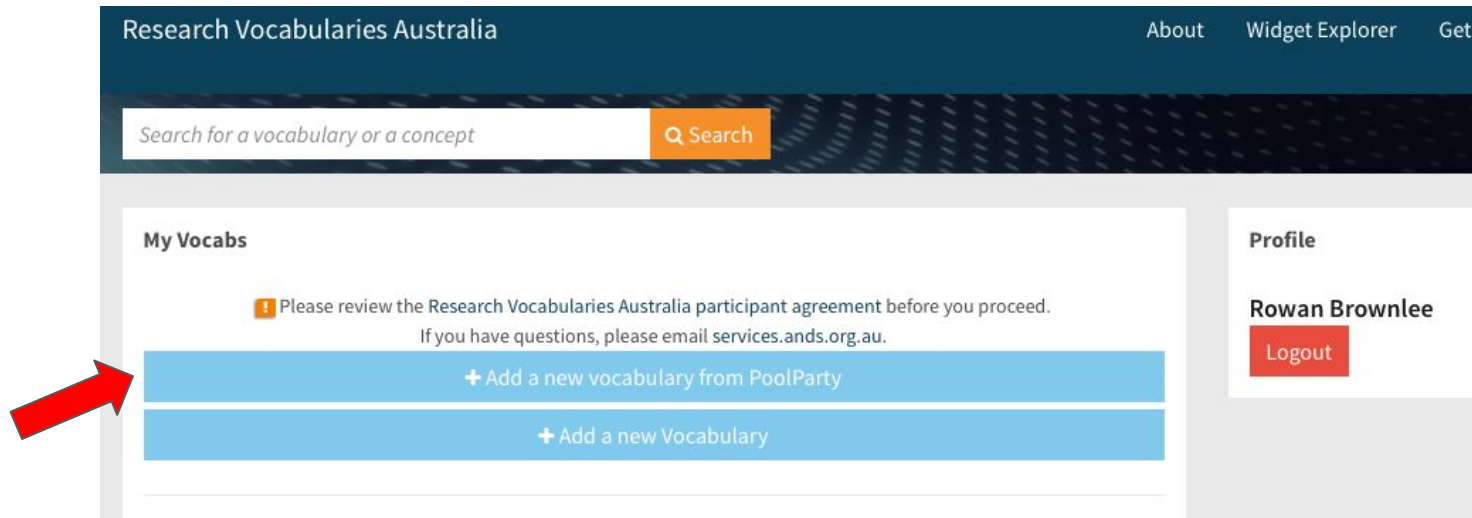
- ANDS provides software and support for
  - Creating and editing
    - Edit existing vocabularies or create new
  - Publishing
    - Description, access, licensing, versioning
  - Discovery
    - Metadata harvested by google
  - Integration
    - Application programming interface and widget

# Publishing



The image shows a dark-themed user interface for 'Research Vocabularies Australia'. On the left, there is a search bar with the placeholder text 'Search for a vocabulary or a concept' and an orange 'Search' button with a magnifying glass icon. Below the search bar is a link that says 'Browse all vocabularies'. To the right of the search bar, the text reads: 'Research Vocabularies Australia helps you find, access, and reuse vocabularies for research.'

# Publishing




Research Vocabularies Australia

About Widget Explorer Get

Search for a vocabulary or a concept

### My Vocabs

 Please review the Research Vocabularies Australia participant agreement before you proceed.  
If you have questions, please email [services.ands.org.au](mailto:services.ands.org.au).

### Profile

**Rowan Brownlee**

# Publishing

## AODN Platform Vocabulary

**Vocabulary Title** ⓘ

AODN Platform Vocabulary

**Vocabulary Acronym** ⓘ

AODN Platforms

**Vocabulary Description** ⓘ

A controlled vocabulary for platforms that can be used in Marine Community Profile metadata. This vocabulary will be used by the faceted search in the AODN/IMOS portal 1-2-3.

**Vocabulary Licence** ⓘ

CC-BY

**Vocabulary Creation Date** ⓘ

2015-09-23

**Revision Cycle** ⓘ

Periodic

**Note** ⓘ

Notes

### PoolParty Project Info

#### PoolParty Project ID

1DCE1494-A022-0001-FFBD-12DE19E01FEB

### Versions

TITLE	STATUS	
Version 1.0	superseded	✕
Version 1.1	superseded	✕
Version 1.2	superseded	✕
Version 1.3	superseded	✕
Version 2.0	current	✕

+ Add a version

### Related

TITLE	TYPE	
eMarine Information Infrastructure (eMII)	party	✕
eMII_Finney.Kim_Admin	party	✕
Natalia_Atkins	party	✕
eMII_Atkins.Natalia	party	✕

# Publishing

Research Vocabularies Australia

About Widget Explorer Get Involved My Vocab Login

Search for a vocabulary or a concept  Search

## AODN Platform Vocabulary widgetable

Acronym: AODN Platforms  
Publisher eMarine Information Infrastructure (eMII) Created: 23 Sep 2015 [f](#) [t](#) [g](#)

**Version 2.0** current

[Download](#)

[Access Linked Data API](#)

Show SPARQL Endpoint  
released: 13 Oct 2016 [view notes](#)

**Version 1.0** superseded

**Version 1.1** superseded

**Version 1.2** superseded

**Version 1.3** superseded

A controlled vocabulary for platforms that can be used in Marine Community Profile metadata. This vocabulary will be used by the faceted search in the AODN/IMOS portal 1-2-3.

**Languages**  
English

**Notes**

**Licence**

**Related**


**Related people and organisations**

- Has contributor [eMII\\_Finney.Kim\\_Admin](#)
- Has contributor [Natalia\\_Atkins](#)
- Has contributor [eMII\\_Atkins.Natalia](#)
- Has contributor [Kim\\_Finney](#)
- Has author [Sebastien Mancini](#)

**Browse**  Search

- coastal structure
- diver
- drifting subsurface profiling float (12)

# RVA Repository & endpoints

- OpenRDF Sesame
  - RDF repository & SPARQL 1.1 query endpoints
- SISSVoc
  - Linked data API 

Endpoint template	Type	Query
<code>/collection</code>	List	List of all Collections and OrderedCollections
<code>/concept</code>	List	List of all Concepts
<code>/concept/broader?anylabel={text}</code>	List	List of all Concepts broader than the one where a label matches the text
<code>/concept/broader?uri={baseConcept}</code>	List	List of all Concepts broader than the one identified by this IRI
<code>/concept/broaderTransitive?anylabel={text}</code>	List	List of all Concepts broaderTransitive than the one where a label matches the text
<code>/concept/broaderTransitive?uri={baseConcept}</code>	List	List of all Concepts broaderTransitive than the one identified by this IRI
<code>/concept/narrower?anylabel={text}</code>	List	List of all Concepts narrower than the one where a label matches the text
<code>/concept/narrower?uri={baseConcept}</code>	List	List of all Concepts narrower than the one identified by this IRI
<code>/concept/narrowerTransitive?anylabel={text}</code>	List	List of all Concepts narrowerTransitive than the one where a label matches the text
<code>/concept/narrowerTransitive?uri={baseConcept}</code>	List	List of all Concepts narrowerTransitive than the one identified by this IRI
<code>/concept/topConcepts</code>	List	List of all topConcepts
<code>/concept/topConcepts?scheme={schemeIRI}</code>	List	List of all topConcepts that belong to the given ConceptScheme
<code>/concept?anylabel={text}</code>	List	List of all Concepts where a label matches the text
<code>/concept?labelcontains={text}</code>	List	List of all Concepts where a label contains the text, any language, case-insensitive
<code>/conceptscheme</code>	List	List of all ConceptSchemes
<code>/resource?uri={IRI}</code>	Item	Describe the given resource

# Skosmos

## Skosmos

Open source web-based SKOS browser and publishing tool

### Features

- search and browse vocabularies
- alphabetical index
- thematic index
- structured concept display
- visualized concept hierarchy
- multilingual user interface

Try the Skosmos demo!

### Use cases

Access to controlled vocabularies for indexing, information retrieval and vocabulary development.

### Current users

- [Finto](#)
- [FAO / AGROVOC](#)
- [Rhineland-Palatinate spatial data initiative classifications](#)
- [UNESCO Thesaurus](#)
- [University of Oslo Library thesauri](#)

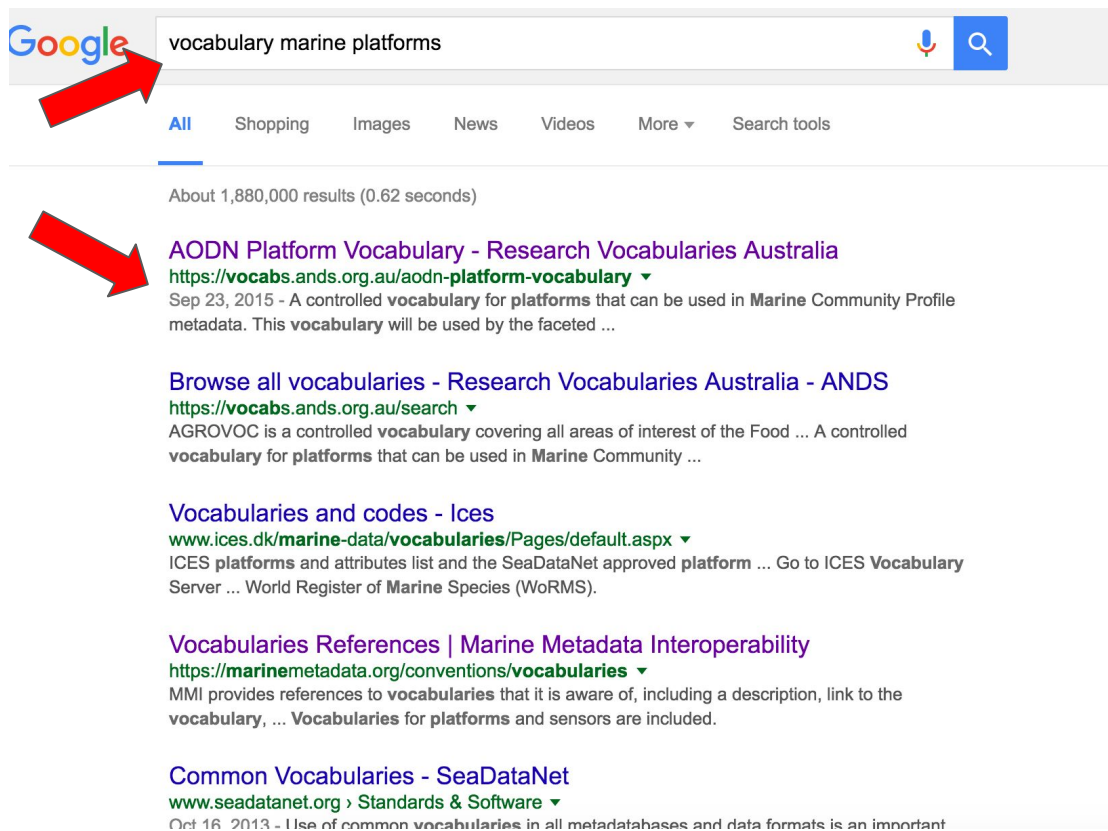


# Research Vocabularies Australia (RVA)

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  - Integration
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# Discovery



Google vocabulary marine platforms

All Shopping Images News Videos More Search tools

About 1,880,000 results (0.62 seconds)

**AODN Platform Vocabulary - Research Vocabularies Australia**  
<https://vocabs.ands.org.au/aodn-platform-vocabulary>  
Sep 23, 2015 - A controlled vocabulary for platforms that can be used in Marine Community Profile metadata. This vocabulary will be used by the faceted ...

**Browse all vocabularies - Research Vocabularies Australia - ANDS**  
<https://vocabs.ands.org.au/search>  
AGROVOC is a controlled vocabulary covering all areas of interest of the Food ... A controlled vocabulary for platforms that can be used in Marine Community ...

**Vocabularies and codes - Ices**  
[www.ices.dk/marine-data/vocabularies/Pages/default.aspx](http://www.ices.dk/marine-data/vocabularies/Pages/default.aspx)  
ICES platforms and attributes list and the SeaDataNet approved platform ... Go to ICES Vocabulary Server ... World Register of Marine Species (WoRMS).

**Vocabularies References | Marine Metadata Interoperability**  
<https://marinemetadata.org/conventions/vocabularies>  
MMI provides references to vocabularies that it is aware of, including a description, link to the vocabulary, ... Vocabularies for platforms and sensors are included.

**Common Vocabularies - SeaDataNet**  
[www.seadatanet.org](http://www.seadatanet.org) Standards & Software  
Oct 16 2013 - Use of common vocabularies in all metadatabases and data formats is an important

# Discovery

Research Vocabularies Australia

About Widget Explorer Get Involved My Vocab Login

Search for a vocabulary or a concept

## AODN Platform Vocabulary widgetable

Acronym: AODN Platforms  
Publisher eMarine Information Infrastructure (eMII) Created: 23 Sep 2015 [f](#) [t](#) [g](#)

**Version 2.0** current

[Download](#)

[Access Linked Data API](#)

Show SPARQL Endpoint  
released: 13 Oct 2016 [view notes](#)

**Version 1.0** superseded

**Version 1.1** superseded

**Version 1.2** superseded

**Version 1.3** superseded

A controlled vocabulary for platforms that can be used in Marine Community Profile metadata. This vocabulary will be used by the faceted search in the AODN/IMOS portal 1-2-3.

**Languages**  
English

**Notes**

**Licence**

**Related**

**Related people and organisations**

- Has contributor [eMII\\_Finney.Kim\\_Admin](#)
- Has contributor [Natalia\\_Atkins](#)
- Has contributor [eMII\\_Atkins.Natalia](#)
- Has contributor [Kim\\_Finney](#)
- Has author [Sebastien Mancini](#)

**Browse**

- coastal structure
- diver
- drifting subsurface profiling float (12)

# Research Vocabularies Australia (RVA)

- ANDS provides software and support for
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# Integration

**AODN** Open Access to Ocean Data  
Australian Ocean Data Network

1 Select a Data Collection    2 Create a Subset    3 Download

## Step 1: Select a Data Collection

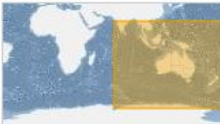


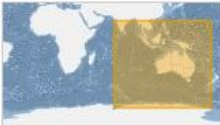





### Parameter

- Physical-Water (92)
- Biological (42)
- Chemical (16)
- Physical-Atmosphere (15)

### Organisation

### Platform

- Satellite (36)
- Vessel (27)
- Mooring and buoy (22)
- Biological platform (12)
- Radar (10)
- Fixed station (4)

<b>IMOS - SRS Satellite - SST L3S - 01 day composite - night time</b>		<ul style="list-style-type: none"><li>Temperature</li><li>Integrated Marine Observing System (IMOS), Bureau of Meteorology (BOM)</li><li>Satellite</li><li>1992 - 2016</li></ul>	<a href="#">more</a> 		<b>Select &gt;&gt;</b>
<b>IMOS - SRS Satellite - SST L3S - 06 day composite - day time</b>		<ul style="list-style-type: none"><li>Temperature</li><li>Integrated Marine Observing System (IMOS), Australian Bureau of Meteorology (BOM)</li><li>Satellite</li><li>1992 - 2016</li></ul>	<a href="#">more</a> 		<b>Select &gt;&gt;</b>
<b>IMOS - Australian National Mooring Network (ANMN) Facility - Current velocity time-series</b>		<ul style="list-style-type: none"><li>Acoustics, Current, Temperature, Water pressure</li><li>Integrated Marine Observing System (IMOS), Australian Institute of Marine Science (AIMS)</li><li>Mooring and buoy</li><li>2007 - 2016</li></ul>	<a href="#">more</a> 		<b>Select &gt;&gt;</b>

# Integration

Research Vocabularies Australia

About Widget Explorer Get Involved My Vocabs Login

Search for a vocabulary or a concept  Search

## AODN Platform Vocabulary widgetable

Acronym: AODN Platforms  
Publisher eMarine Information Infrastructure (eMII) Created: 23 Sep 2015 [f](#) [t](#) [g](#)

**Version 2.0** current

[Download >](#)  
[Access Linked Data API](#)  
Show SPARQL Endpoint  
released: 13 Oct 2016 [view notes](#)

**Version 1.0** superseded

**Version 1.1** superseded

**Version 1.2** superseded

**Version 1.3** superseded

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**Languages**  
English

**Notes**

**Licence**

**Related**

**Related people and organisations**

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- Has contributor [eMII\\_Atkins.Natalia](#)
- Has contributor [Kim\\_Finney](#)
- Has author [Sebastien Mancini](#)

**Browse**  Search

- coastal structure
- diver
- drifting subsurface profiling float (12)

# Integration



## What is this widget?

The ANDS Vocabulary Widget allows you to **instantly add Data Classification capabilities** to your data capture tools through the ANDS Vocabulary Service.

The widget has been written in the style of a jQuery plugin, allowing complete control over styling and functionality with just a few lines of javascript. The widget also ships with some UI helper modes for:

- Searching for vocabulary terms
- Creates a **navigable "autocomplete" widget**, with users able to search for the appropriate controlled vocabulary classification when inputting data.
- Narrowing on a (hierarchical) vocabulary item
- **Populates a select list (or autocomplete textbox)** with items comprising a base vocabulary classification URI.
- Browsing a (hierarchical) vocabulary set as a tree
- Creates a **tiered term tree** (such as that used in the RDA "Browse" screen)

It is also possible to use the widget in a more programmatic manner; refer to the 'core usage' section below for more details.

# Integration

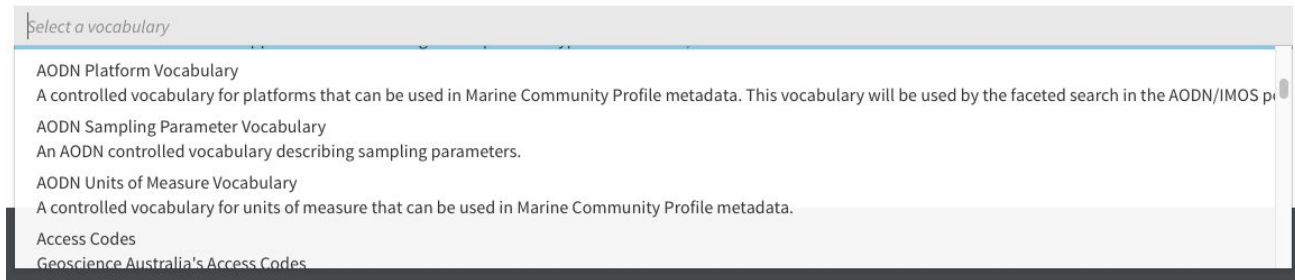


## Widget Explorer

The Research Vocabularies Australia widget allows you to add data classification capabilities to your data discovery tools. By incorporating the widget ([using a simple jQuery plugin](#)) in a data discovery workflow using your chosen vocabularies, your users can browse and select concepts to aid in their discovery of your resources. In addition, you can incorporate the widget into your description tools to allow those describing your resources to easily make use of controlled terminology. Below you'll find a five-step process to explore and configure the vocabulary widget for use in your web applications. Start by browsing the "widgetable" vocabularies listed in the dropdown under step 1.

If there is a vocabulary you'd like to use via the Research Vocabularies Australia widget that you can't find in the RVA portal, please [let us know!](#)

### 1. Select a widgetable vocabulary



# RVA service components. Pick & mix

	<b>Edit using PoolParty</b>	<b>Publish to portal (available for reuse)</b>	<b>Describe in portal (without publishing)</b>
1			✓
2	✓	✓	
3		✓	
4	✓		



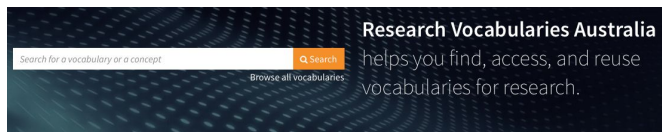
# How to access RVA services

- RVA portal
  - Anyone may search, browse and access the vocabularies described in the RVA portal
  - Anyone may self-register to describe or upload a vocabulary.
- RVA software interfaces
  - Anyone may use the linked data API, SPARQL endpoint and widget
- PoolParty editor
  - Commercial software licensed for use by Australian research organisations including
    - universities
    - research institutes
    - collecting organisations (such as libraries, archives, galleries, museums)
    - government agencies

# Research Vocabularies Australia (RVA)

- ANDS provides software and support for
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    - Metadata harvested by google
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    - Application programming interface and widget

# Registry interoperability



Research Vocabularies Australia helps you find, access, and reuse vocabularies for research.

Search for a vocabulary or a concept  Search

Browse all vocabularies

## Controlled Vocabulary for Resource Type Genres (Version 1.1)

title: **Controlled Vocabulary for Resource Type Genres (Version 1.1)**  
description: **The Resource Type vocabulary defines concepts to identify the genre of a resource. Such resources, like publicat vocabularies and dictionaries.**  
contributor: **COAR Controlled Vocabularies Interest Group** [<http://purl.org/coar/igcv>]



Getty Vocabularies: LOD

SPARQL Queries

Any Search... Search Brief

## The Getty Vocabularies

Welcome to the SPARQL endpoint [vocab.getty.edu](http://vocab.getty.edu)

The **Getty Vocabularies**: The AAT, TGN, ULAN, and CONA contain structured terminology for art and other material culture, archival materials, visual surrogates, and bibliographic materials. Compliant with international standards, they provide authoritative information for catalogs and researchers, and can be used to enhance access to databases and Web sites. The Getty Vocabularies are produced by the Getty Vocabulary Program (GVP) and grow through contributions.



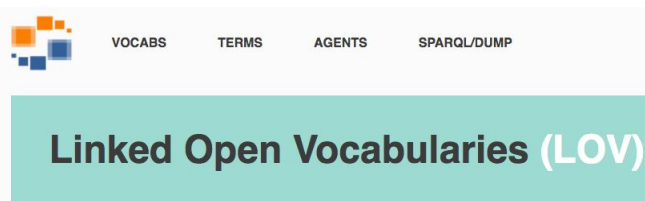
## Schools Online Thesaurus

SPARQL

### SPARQL Endpoint

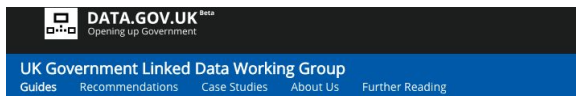


## Geoscience Australia Vocabularies



VOCABS TERMS AGENTS SPARQL/DUMP

# Linked Open Vocabularies (LOV)



DATA.GOV.UK Opening up Government

UK Government Linked Data Working Group

[Guides](#) [Recommendations](#) [Case Studies](#) [About Us](#) [Further Reading](#)

## Linked Data Registry

# Registry interoperability

Research Vocabularies Australia

About Widget Explorer Get Involved My Vocab's Login

Search for a vocabulary or a concept Search

## AODN Platform Vocabulary

Acronym: AODN Platforms  
Publisher eMarine Information Infrastructure (eMI)  
Created: 23 Sep 2015

Version 2.0 **current**

Download  
Access Linked Data API  
Show SPARQL Endpoint  
released: 13 Oct 2016 view notes

Version 1.0 superseded  
Version 1.1 superseded  
Version 1.2 superseded  
Version 1.3 superseded

A controlled vocabulary for platforms that can be used in Marine Community Profile metadata. This vocabulary will be used by the faceted search in the AODN/IMOS portal 1-2-3.

Languages  
English

Notes

Licence

Related

Related people and organisations

- Has contributor eMI\_Finney,Kim\_Admin
- Has contributor Natalia\_Atkins
- Has contributor eMI\_Atkins,Natalia
- Has contributor Kim\_Finney
- Has author Sebastien Mancini

Browse

Search

- coastal structure
- diver
- drifting subsurface profiling float

## Browse

Search

- coastal structure
- diver
- drifting subsurface profiling float (12)
- drifting surface float
- fishing vessel (12)
  - Antarctic Chieftain
  - Atlas Cove
  - Austral Leader II
  - Corinthian Bay
  - Isla Eden
  - Janas
  - Rehua
  - Santo Rocco
  - Saxon Onward

Browse hosted vocabularies

# Registry interoperability

This vocabulary is described but not hosted  
Top concepts recorded as flat text



Research Vocabularies Australia About Widget Explorer

Search for a vocabulary or a concept Search

## Controlled Vocabulary for Resource Type Genres

Publisher Confederation of Open Access Repositories (COAR) Created: 31 Jul 2015 f t g

1.1 current


[Access Web Page](#)  
released: 03 Oct 2016

The Resource Type vocabulary defines concepts to identify the genre of a resource. Such resources, like publications, research data, audio and video objects, are typically deposited in institutional and thematic repositories or published in e-journals. This vocabulary supports a hierarchical model that relates narrower and broader concepts. Multilingual labels regard regional distinctions in language and term. Concepts of this vocabulary are mapped with terms and concepts of similar vocabularies and dictionaries. The Resource Type vocabulary builds on and extends the controlled list of publication types defined in info:eu-repo/semantics .

**Languages**

English

**Licence**



**Top Concepts**

text
image
software
cartographic material
interactive resource
sound
workflow
other
dataset

53

# Australian Vocabulary Special Interest Group

ANDS | Partners & Communities | Communities

## Australian Vocabulary Special Interest Group



The Australian Vocabulary Special Interest Group (AVSIG) provides a forum for discussion and activity in the use and creation of [controlled vocabularies](#) in research, data, information and collection management.

AVSIG has a [Google Group Discussion List](#) to support communication among members. Become an AVSIG member by subscribing to the discussion list. AVSIG also has a [wiki site](#) which includes information about scheduled meetings.

## Australian Vocabulary Special Interest Group

### Navigation

[Home](#)

[About](#)

### Areas of focus

[Join](#)

[Resources](#)

[Events](#)

[Contact](#)

### Communication

## Areas of focus

AVSIG members have identified the following as topics that the group should focus on

1. Identify a range of common vocabularies that cut across domains. If they exist, how to re-use and add to them
2. General topic of vocabulary re-use (technicalities and social etiquette).
3. Actual use-cases of applying vocabularies.
4. Vocabulary versioning.
5. Learning and training. Getting started in vocabulary creation using good practice.
6. Vocabulary governance. (relates to topic 1.)
7. Compile information about important domain-specific vocabularies.



# Links

- Key Choices in the Design of Simple Knowledge Organization System (SKOS)
  - <https://arxiv.org/abs/1302.1224>
- SKOS Primer
  - <https://www.w3.org/TR/skos-primer/>
- ANDS Research Vocabularies Australia (RVA)
  - <https://vocabs.ands.org.au/>
  - <https://documentation.ands.org.au/display/DOC/Research+Vocabularies>
- SISSVoc: A Linked Data API for access to SKOS vocabularies
  - <http://www.semantic-web-journal.net/system/files/swj880.pdf>
- Publishing SKOS Vocabularies with Skosmos
  - [skosmos.org/publishing-skos-vocabularies-with-skosmos.pdf](http://skosmos.org/publishing-skos-vocabularies-with-skosmos.pdf)
- Reuse of library thesaurus data as ontologies for the public sector
  - <http://library.ifla.org/819/1/086-lappalainen-en.pdf>
- Australian Vocabulary Special Interest Group (AVSIG)
  - <http://www.ands.org.au/partners-and-communities/ands-communities/avsig>