

CanCore Guidelines Version 2.0: General Category



History of General Category Document

Date	Version	Comment	Person
June 6, 2002	1.1	Based on IMS Learning Resource Meta-data 1.2.1	Sue Fisher
December 6, 2002	1.8	Based on IEEE 1484.12.1 LOM	Norm Friesen
January 22, 2003	1.8.9	Revisions requested incorporated; format changed	Norm Friesen
July 7, 2003	1.9	Revisions; examples	Norm Friesen
November 20, 2003	2.0	Final revisions incorporating feedback	Norm Friesen

Use of General Category Elements in Other Application Profiles

Element	CanCore	SCORM	Curriculum Online	TLF	Sing-CORE	UK LOM Core	Dublin Core
1:General	Y	M	M	M	Y	M	
1.1:Identifier	Y	M	N	M	Y	M	
1.1.1:Catalog	Y	M	M	M	Y	M	
1.1.2:Entry	Y	M	M	M	Y	M	DC.Identifier
1.2:Title	Y	M	M	D	Y	M	DC.Title
1.3:Language	Y	O	M	D	Y	M	DC.Language
1.4:Description	Y	M	M	D	Y	M	DC.Description
1.5:Keyword	Y	M	O	D	N	O	DC.Subject
1.6:Coverage	N	O	O	O	N	O	DC.Coverage
1.7:Structure	N	O	O	N	N	O	
1.8:Aggregation Level	Y	O	O	M	N	O	

Legend

- Y = Yes, Included in Subset
- O = Optional
- N = No, Not Included in Subset
- M = Mandatory
- D = Draft Status
- DC = Dublin Core

1:General

<i>Explanation</i>	<i>Size</i>	<i>Order</i>	<i>Value Space</i>	<i>Datatype</i>
This category groups the general information that describes this learning object as a whole.	1	Unspecified	-	-
<p><i>The General element category provides a reasonable first point of contact with a learning resource.</i></p> <p>The sub-elements in this category are:</p> <ul style="list-style-type: none"> 1.1:Identifier <ul style="list-style-type: none"> 1.1.1:Catalog 1.1.2:Entry 1.2:Title 1.3:Language 1.4:Description 1.5:Keyword 1.6:Coverage 1.7:Structure 1.8:Aggregation Level <p>Elements listed in bold are included in the CanCore application profile.</p>				

Example

- General:
 - Identifier:
 - Catalog: CAREO
 - Entry: 632844
 - Identifier:
 - Catalog: URI
 - Entry: <http://www.pcc.edu/dl/idea.html>
 - Title:
 - Eng: Idea: The International Directory
 - Fra: Idea: la base de données internationale
 - Language: eng, fra
 - Description (English):
 - IDEA: the International Directory of resources for Education in the Arts provides international models of good practice in arts education. Through IDEA, InSEA (the International Society for Education through Art) and UNESCO promote cross-cultural understanding and co-operation, and catalyze joint research and teaching projects in art education among specialists from different cultures.
 - Description (French):
 - IDEA: fournit des modèles internationaux de bonnes pratiques dans l'enseignement des arts. Par l'entremise de

IDEA, InSEA et UNESCO font la promotion de la compréhension et de la coopération multiculturelle et créent des projets de recherche entre des spécialistes de différentes cultures.

Keyword:

Eng: Fine Arts

Fra: Beaux-Arts

Keyword:

Eng: Design

Fra: Arts appliqués

Coverage:

Eng: International

Fra: International

Structure: Hierarchical

Aggregation Level: 3

XML Example

```
<general>
  <identifiant>
    <catalog>CAREO</catalog>
    <entry>632844</entry>
  </identifiant>
  <identifiant>
    <catalog>URI</catalog>
    <entry>http://www.pcc.edu/dl/idea.html</entry>
  </identifiant>
  <title>
    <string language="eng">Idea: The International
    Directory</string>
    <string language="fra">Idea: la base de données
    Internationale</string>
  </title>
  <language>eng</language>
  <language>fra</language>
  <description>
    <string language="eng">IDEA: the International Directory of
    resources for Education in the Arts provides international
    models of good practice in arts education. Through IDEA,
    InSEA (the International Society for Education through Art)
    and UNESCO promote cross-cultural understanding and co-
    operation, and catalyze joint research and teaching
    projects in art education among specialists from different
    cultures.</string>
    <string language="fra">IDEA: fournit des modèles
    internationaux de bonnes pratiques dans l'enseignement des
    arts. Par l'entremise de IDEA, InSEA et UNESCO font la
    promotion de la compréhension et de la coopération
    multiculturelle et créent des projets de recherche entre
    des spécialistes de différentes cultures.</string>
  </description>
```

```
<keyword>
  <string language="eng">fine arts</string>
  <string language="fra">beaux arts</string>
</keyword>
<keyword>
  <string language="eng">design</string>
  <string language="fra">arts appliqués</string>
</keyword>
<coverage>
  <string language="eng">International</string>
  <string language="fra">International</string>
</coverage>
<structure>
  <source>LOMv1.0</source>
  <value>Hierarchical</value>
</structure>
<aggregationLevel>
  <source>LOMv1.0</source>
  <value>3</value>
</aggregationLevel>
</general>
```

1.1:Identifier

<i>Explanation</i>	<i>Size</i>	<i>Order</i>	<i>Value Space</i>	<i>Datatype</i>
A globally unique label that identifies this learning object.	Smallest permitted maximum: 10 items	Unspecified	-	-
<p><i>Using sub-elements 1.1.1:Catalog and 1.1.2:Entry, provide a name for the identification scheme and a unique value to identify the learning resource.</i></p> <p>1.1:Identifier consists of: 1.1.1:Catalog 1.1.2:Entry</p> <p>Recommendations for the formulation of globally unique, location-independent, and persistent identifiers are available from CanCore at http://www.cancore.ca/documents/Resourceids.doc.</p> <ul style="list-style-type: none"> • This element aggregate refers explicitly to the learning resource being described by the metadata record. It does not refer to the metadata record itself. To supply an identifier for the metadata record, refer to the 3.1:Meta-Metadata.Identifier aggregate element. • If the resource is non-electronic, use any globally unique identification system for identifying the resource, such as an ISBN or ISSN. 				

Vocabulary Recommendation

The use of a globally unique, location-independent, persistent identifier for each learning resource becomes important in a distributed environment. A local implementation should ensure its resources are identified uniquely before making its metadata records available for harvesting or other forms of distribution.

Examples

- Identifier:
Catalog: ISSN
Entry: 0317-8471
- Identifier:
Catalog: DOI
Entry: 10.1002/ISBNJ0-471-58064-3
- Identifier:
Catalog: CAREO
Entry: 632811
- Identifier:
Catalog: URI
Entry: http://www.pcc.edu/dl/development/decision_tree_1.html

XML Examples

```
<identifier>
  <catalog>ISSN</catalog>
  <entry>0317-8471</entry>
</identifier>
```

```
<identifier>
  <catalog>DOI</catalog>
  <entry>10.1002/ISBNJ0-471-58064-3</entry>
</identifier>
```

```
<identifier>
  <catalog>CAREO</catalog>
  <entry>632811</entry>
</identifier>
```

```
<identifier>
  <catalog>URI</catalog>
  <entry>http://www.pcc.edu/dl/development/decision_tree_1.html
</entry>
</identifier>
```

1.1.1:Catalog

<i>Explanation</i>	<i>Size</i>	<i>Order</i>	<i>Value Space</i>	<i>Datatype</i>
The name or designator of the identification or cataloging scheme for this entry. A namespace scheme.	1	Unspecified	Repertoire of ISO/IEC 10646-1:2000	CharacterString (smallest permitted maximum: 1000 char)
<p><i>Use the common abbreviation or the standard name for the identification scheme that is used to reference the learning resource.</i></p> <p><i>If a Web address is provided as the identifier for the learning resource, use URI (Uniform Resource Identifier).</i></p> <ul style="list-style-type: none"> • Catalog does not refer to a subject classification scheme (e.g., DDC, LCSH). For the identification of subject classification schemes, see 9.2.1:Classification.TaxonPath.Source. • Most catalogs are known by a standard abbreviation. Use this abbreviation rather than spelling out the name of the catalog (e.g., use DOI rather than Digital Object Identifier). • This element may be used in conjunction with 7.2.1:Relation.Resource.Identifier (and its child elements) to indicate relations between learning resources. For example, when URI values are associated with resources in a collection, they can be linked together by including the URIs of related resources in any one metadata record. • This element is not for the metadata record, but the learning resource. 				

Vocabulary Recommendations

CanCore recommends that the vocabulary values for this element include, but not be limited to URI, URL, URN, PURL, DOI, ISBN, and ISSN. (Recommendations for the formulation of globally unique, location-independent, persistent identifiers are available from CanCore at <http://www.cancore.ca/documents/Resourceids.doc>.) The recommended values are as follows:

URI Uniform Resource Identifier

<http://www.w3.org/Addressing/>

A character string used to identify a resource (such as a file) from anywhere on the Internet by type and location (e.g., <http://www.cancore.ca>, <ftp://www.ibm.com>). The document "RFC 2396" defines the generic syntax of URI, and provides guidelines for their use (see <http://www.ietf.org/rfc/rfc2396.txt>). Because of its generality, CanCore encourages its use as a value for 1.1.1:Catalog.

URL Uniform Resource Locator

<http://www.w3.org/Addressing/URL/Overview.html>

An informal name for addresses associated with the Web and other common Internet protocols (e.g., <http://www.cancore.ca>, <ftp://129.128.193.212>). Because this term is informal, CanCore discourages its use for 1.1.1:Catalog.

URN Uniform Resource Name

<http://www.ietf.org/rfc/rfc2141.txt>

"A particular scheme, urn:, specified by RFC 2141 and related documents, intended to serve as persistent, location-independent, resource identifiers." (See <http://www.w3.org/Addressing/>). Because this scheme does not appear to have progressed beyond the "request for comments" stage, and because of the ambiguity associated with its definition (e.g., <http://www.w3.org/Addressing/> and <http://foldoc.doc.ic.ac.uk/foldoc/foldoc.cgi?Uniform+Resource+Name>), CanCore does not recommend its use as a value for 1.1.1:Catalog.

PURL Persistent Uniform Resource Locator

<http://purl.oclc.org/>

Functionally, a PURL is a URL. However, instead of pointing directly to the location of an Internet resource, a PURL points to an intermediate resolution service. The PURL resolution service associates the PURL with the actual URL and returns that URL to the client. The client can then complete the URL transaction in the normal fashion. In other words, this is a standard HTTP redirect. PURLs satisfy many of the requirements of URNs, but they do not allow for complete location independence.

DOI Digital Object Identifier

<http://www.doi.org/>

A system for identifying and exchanging intellectual property in a distributed, digital environment, developed in part by the Association of American Publishers. DOIs have been widely implemented in some contexts, including publishing and government, and are being considered by some educational infrastructure initiatives. DOI systems also provide some digital rights management features. Their use, however, may involve some upfront costs (e.g., 10.1002, ISBNJ0-471-58064-3).

ISBN International Standard Book Number

<http://www.isbn-international.org/>

The ISBN is a ten-digit number that is used to identify books and similar publications.

ISSN International Standard Serial Number

<http://www.issn.org:8080/English/pub/faqs/issn>

The ISSN is an eight-digit number that identifies periodical publications, including electronic serials.

Technical Implementation Note

To avoid manual input, values for this element should be captured from existing electronic resources whenever possible.

Examples

- URN
- ISSN
- DOI

XML Examples

```
<catalog>URI</catalog>  
<catalog>ISSN</catalog>  
<catalog>DOI</catalog>
```

1.1.2:Entry

<i>Explanation</i>	<i>Size</i>	<i>Order</i>	<i>Value Space</i>	<i>Datatype</i>
The value of the identifier within the identification or cataloging scheme that designates or identifies this learning object. A namespace-specific string.	1	Unspecified	Repertoire of ISO/IEC 10646-1:2000	CharacterString (smallest permitted maximum: 1000 char)
<i>Provide the actual value of the URN or identifier as derived from any specified identification scheme.</i>				

Technical Implementation Notes

- To avoid manual input, values for this element should be captured from existing electronic resources whenever possible.
- Preserve any typographical symbols or spacing from your source.

Examples

- <http://www.ualberta.ca/~nfriesen/eno> (Catalog=URI)
- oai:telecampus.edu:R50253 (Catalog=URN)
- 0-89397-441-2 (Catalog=ISBN)

XML Examples

```
<identifier>
  <catalog>URI</catalog>
  <entry>http://www.ualberta.ca/~nfriesen/eno</entry>
</identifier>
```

```
<identifier>
  <catalog>URN</catalog>
  <entry>oai:telecampus.edu:R50253</entry>
</identifier>
```

```
<identifier>
  <catalog>ISBN</catalog>
  <entry>0-89397-441-2</entry>
</identifier>
```

1.2:Title

<i>Explanation</i>	<i>Size</i>	<i>Order</i>	<i>Value Space</i>	<i>Datatype</i>
Name given to this learning object.	1	Unspecified	-	LangString (smallest permitted maximum: 1000 char)

Use a common title appearing on or associated with the learning resource, following the recommendations provided below for exceptional title instances.

Capitalization in title elements is irrelevant. For the sake of consistency, you may want to use sentence style capitalization with all proper nouns capitalized.

Leading articles (The, A, An) should not be omitted nor their position changed when entering a title.

- The value should not be a filename.
- If untitled, the title generally should be a descriptive phrase, but not a description.
- 1.2:Title is a non-repeatable element; it can only be repeated to accommodate titles in other languages. This presents challenges when a resource has multiple titles. Many of these challenges, with suggestions for their resolution, are outlined here:
 - o *Subtitles*: Where applicable, include both title and subtitle separated by a colon.
 - o *Untitled*: If the learning resource does not have a title, create one that is succinct and descriptive. If a work is deliberately untitled (e.g., an artwork purposely left untitled by its creator), use "Untitled" as its title but, if possible, provide a description of the learning resource in 1.4:Description.
 - o *Multiple Titles*: If a resource is known by two competing yet equally valid titles (e.g., a painting is officially *Untitled* but historically known as *Field of Flowers*), provide the title most useful for resource discovery first, followed by the second in parentheses.
 - o *Official versus Common Titles*: If a resource has an official title, yet is more commonly known by an informal title, list the official title first, followed by the informal or more familiar title in parentheses. For example: "Building on Values: The Future of Health Care in Canada-- Final Report (Romanow Report)."
 - o *Multilingual Titles*: Enter the title in as many languages as is appropriate for your context, ensuring that the language of each instance is identified. Each of these titles will be interpreted as a single title with multiple translations in the metadata record. However, translated titles are not always literal equivalents of the original. For example, the 1993 American film *Grumpy Old Men* was released in French as *les Grincheux*; a more literal translation would be "*les vieillards grognons*." Alternate titles of this kind can be included using the recommendations provided for multiple titles, above.
 - o *Surrogate Resources*: Some learning resources, especially works of art and

archival materials, are representations or surrogates of physical or analog resources (e.g., a JPEG image of Van Gogh's *Starry Night* is only a surrogate for the painting). Indicate the original title in the title element, but make certain their surrogate nature is described in other key elements within your metadata record (e.g., 1.4:Description, 2.3:LifeCycle.Contribute, and 4:Technical).

- o **Series:** Examples of series include television shows comprising individual episodes, individually titled books or e-texts grouped under a common title, or individually named learning resources grouped together under a course title. There are several possible solutions for accommodating both series and individual titles, the first of which is recommended by CanCore:
 1. Indicate the title of the individual component or series episode followed by the series title in parentheses within the title element, including the word "Series:" at the beginning. This should be simple to implement, and its syntax lends itself to automated data migration.
 2. Include series or secondary title information in 1.4:Description. This suggestion does not preserve the important semantic distinction between title and description, and may present difficulties for automated data migration.
 3. Use the Relation element to point from a metadata record for the series as a whole to those that describe the individual series components. In the metadata record for the individual episode, text, or other learning resource, enter its title but do not enter the series title. In the Relation element in the same metadata record, reference the series using the **is part of** vocabulary item for 7.1:Relation.Kind. Finally, ensure that a separate metadata record for the series itself is created. In the relation element(s) for this record, use the **has part** vocabulary item for 7.1:Relation.Kind and reference as many individual series items as apply. Note that the General and Relation Identifier elements are understood as referring to a learning resource itself rather than its metadata record. Consequently, this method indicates a relationship between metadata instances only indirectly, and may consequently present data integrity problems in distributed systems.

Technical Implementation Note

Software systems will need to account for definite and indefinite articles (e.g., The, A, An, le, la, les, l') in searching and list generation. Stop lists (listings of these leading articles to facilitate their exclusion in machine indexing) should accommodate the needs of the user community. Should metadata be exchanged across linguistic and cultural domains, attention should be paid to the range of article variations that may arise.

Examples

- Circuit Switching in Action (for a Flash simulation on circuit switching)
- Electronic Text Centre at the University of New Brunswick (the home page for the UNB Electronic Text Centre)

- Online workshop for creating effective PowerPoint presentations (title created by indexer)
- Idea: The International Directory of resources for Education in the Arts (resource with subtitle)
- Volunteering and Networking (Series: Playing the game: How to find work without losing your mind) (work in a series)
- Untitled (Field of Flowers) (resource with two competing titles)
- *Multilingual title*
 - Idea: The International Directory of resources for Education in the Arts
 - Idea: la base de données internationale de l'Enseignement des Arts
 - Idea: la base de datos internacional de recursos para la Educación en las Artes

XML Examples

```
<title>
  <string language="eng">Circuit Switching in Action</string>
</title>
```

```
<title>
  <string language="eng">Electronic Text Centre at the
  University of New Brunswick</string>
</title>
```

```
<title>
  <string language="eng">Online workshop for creating
  effective PowerPoint presentations</string>
</title>
```

```
<title>
  <string language="eng">Idea: The International Directory of
  resources for Education in the Arts</string>
</title>
```

```
<title>
  <string language="eng">Volunteering and Networking (Series:
  Playing the game: How to find work without losing your
  mind)</string>
</title>
```

```
<title>
  <string language="eng">Untitled (Field of Flowers)</string>
</title>
```

```
<title>
  <string language="eng">Idea: The International Directory of
  resources for Education in the Arts</string>
  <string language="fra">Idea: la base de données
  internationale de l'Enseignement des Arts</string>
  <string language="spa">Idea: la base de datos internacional
  de recursos para la Educación en las Artes</string>
</title>
```

1.3:Language

<i>Explanation</i>	<i>Size</i>	<i>Order</i>	<i>Value Space</i>	<i>Datatype</i>
<p>The primary human language or languages used within this learning object to communicate to the intended user.</p> <p>NOTE 1: An indexation or cataloging tool may provide a useful default.</p> <p>NOTE 2: If the learning object had no lingual content (as in the case of a picture of the Mona Lisa, for example), then the appropriate value for this data element would be "none."</p>	Smallest permitted maximum: 10 items	Unordered	LanguageID = Langcode ("-"Subcode) with Langcode a language code as defined by the code set ISO 639:1988 and Subcode (which can occur an arbitrary number of times) a country code from the code set ISO 3166-1:1997.	Character String (smallest permitted maximum: 100 char)
<p><i>Indicate the human language of the learning resource using the appropriate language code(s). If the resource is multilingual, list all languages that apply in any convenient order.</i></p> <ul style="list-style-type: none"> • The LOM datamodel indicates that both two-letter language codes (ISO 639-1) and three-letter language codes (ISO 639-2) can be used for this element. <ul style="list-style-type: none"> ○ Two-letter language codes are widely used in XML and LOM communities, and should be acceptable for implementations in many jurisdictions and for the description of materials in common languages. ○ Some policies and official practices in Canada, the US, and elsewhere require three-letter language codes to be used to be able to accommodate indigenous and other languages. • Implementations using either predominantly one or the other of these language code sets in record creation should be able to accommodate both types. • For listings of two- and three-letter language codes, see the Library of Congress (LOC, the official ISO 639-2 Registration Authority) at http://lcweb.loc.gov/standards/iso639-2/langcodes.html. • Use the optional country code (ISO 3166) only if it provides information necessary to your community of users. Indication of country code is generally desirable, but not always practical. Identifying variations in written or spoken language use can be challenging. Further identifying regional variations (e.g., cockney English, Philadelphia English) may sometimes be desirable, but may introduce even further challenges. • For a list of optional country codes, see http://www.iso.org/iso/en/prods- 				

<services/iso3166ma/02iso-3166-code-lists/index.html>.

- This element is distinct from 3.4:Meta-Metadata.Language, the language of the metadata record, and 5.11:Educational.Language, the language of the typical intended user.

Examples

- eng-CA (English as used in Canada)
- fra-CA (French as used in Canada)
- iku (Inuktitut)

XML Examples

```
<language>eng-CA</language>  
<language>fra-CA</language>  
<language>iku</language>
```

1.4:Description

<i>Explanation</i>	<i>Size</i>	<i>Order</i>	<i>Value Space</i>	<i>Datatype</i>
<p>A textual description of the content of this learning object.</p> <p>NOTE: This description need not be in language and terms appropriate for the users of the learning object being described. The description should be in language and terms appropriate for those that decide whether or not the learning object being described is appropriate and relevant for the users.</p>	Smallest permitted maximum: 10 items	Unordered	-	LangString (smallest permitted maximum: 2000 char)
<p><i>Provide a neutral and concise yet thorough description of the learning resource. If the resource provides its own textual description, abstract, or table of contents, such information can be included verbatim (as long as copyright is respected). Use language most likely to be employed by searchers (whether they are teachers or students), providing as many relevant key terms and concepts as possible. Variant or synonymous key terms should be included.</i></p> <ul style="list-style-type: none"> The smallest permitted maximum of 2000 characters may be confining for longer descriptions; users should be able to add multiple descriptions if appropriate. However, because the repetition of the Description element is unordered, multiple annotations should be self-contained, and not serialized or interdependent in any way. 				

Examples

- A Draft Paper outlining the educational principles and benchmarks to guide the development, delivery, and evaluation of Internet-based distance education in British Columbia's public post-secondary system.
- This job-hunting, career-preparation video features Duhain Lam, who explains how he combined two of his favourite vocations: design and mountain biking, to come up with an exciting career. Video footage of Duhain Lam in his work environment at Rocky Mountain Bikes.
- *Multilingual example*
 - IDEA: the International Directory of resources for Education in the Arts provides international models of good practice in arts education. Through IDEA, InSEA (the International Society for Education through Art) and UNESCO promote cross-cultural understanding and co-operation, and catalyze joint research and teaching projects in art education among specialists from different cultures.
 - IDEA: fournit des modèles internationaux de bonnes pratiques dans l'enseignement des arts. Par l'entremise de IDEA, InSEA et UNESCO font la promotion de la compréhension et de la

coopératin multiculturelle et créent des projets de recherche entre des spécialistes de différentes cultures.

- IDEA: proporciona los modelos internacionales de buena práctica en la educación de artes. Por IDEA, UNESCO y INSEA promueven la cooperación, la investigación, y proyectos educativos entre educadores de arte de culturas diferentes.

XML Examples

```
<description>
  <string language="eng">A Draft Paper outlining the
    educational principles and benchmarks to guide the
    development, delivery, and evaluation of Internet-based
    distance education in British Columbia's public post-
    secondary system.</string>
</description>

<description>
  <string language="eng">This job-hunting, career-preparation
    video features Duhain Lam, who explains how he combined two
    of his favourite vocations: design and mountain biking, to
    come up with an exciting career. Video footage of Duhain
    Lam in his work environment at Rocky Mountain
    Bikes.</string>
</description>

<description>
  <string language="eng">IDEA: the International Directory of
    resources for Education in the Arts provides international
    models of good practice in arts education. Through IDEA,
    InSEA (the International Society for Education through Art)
    and UNESCO promote cross-cultural understanding and co-
    operation, and catalyze joint research and teaching
    projects in art education among specialists from different
    cultures.</string>
  <string language="fra">IDEA: fournit des modèles
    internationaux de bonnes pratiques dans l'éducation des
    arts. Par l'entremise de IDEA, InSEA et UNESCO font la
    promotion de la compréhension et de la coopératin
    multiculturelle et créent des projets de recherche entre
    des spécialistes de différentes cultures.</string>
  <string language="spa">IDEA: proporciona los modelos
    internacionales de buena práctica en la educación de artes.
    Por IDEA, UNESCO y INSEA promueven la cooperación, la
    investigación, y proyectos educativos entre educadores de
    arte de culturas diferentes.</string>
</description>
```

1.5:Keyword

<i>Explanation</i>	<i>Size</i>	<i>Order</i>	<i>Value Space</i>	<i>Datatype</i>
A keyword or phrase describing the topic of this learning object. This data element should not be used for characteristics that can be described by other data elements.	Smallest permitted maximum: 10 items	Unordered	-	LangString (smallest permitted maximum: 1000 char)
<p><i>Use the most specific terms that are descriptive of the subject covered by the learning resource. Use a separate keyword element for each term or phrase, avoiding lengthy phrases.</i></p> <ul style="list-style-type: none"> • Use 9.4:Classification.Keyword in place of 1.5:General.Keyword when these values apply to something other than the resource's topic or subject. • Use a separate Keyword element for each term or value used. 				

Examples (individual values are separated by commas)

- spreadsheets, budgets, Microsoft Excel tutorial
- cancer, acute mylogenous leukemia

XML Examples

```

<keyword>
  <string language="eng">spreadsheets</string>
</keyword>
<keyword>
  <string language="eng">budgets</string>
</keyword>
<keyword>
  <string language="eng">Microsoft Excel tutorial</string>
</keyword>

<keyword>
  <string language="eng">cancer</string>
  <string language="fra">cancer</string>
</keyword>
<keyword>
  <string language="eng">acute mylogenous leukemia</string>
  <string language="fra">leucémie aiguë myéloïde</string>
</keyword>

```

1.6:Coverage

<i>Explanation</i>	<i>Size</i>	<i>Order</i>	<i>Value Space</i>	<i>Datatype</i>
<p>The time, culture, geography, or region to which this learning object applies. The extent or scope of the content of the learning object. Coverage will typically include spatial location (a place name or geographic coordinates), temporal period (a period label, date, or date range), or jurisdiction (such as a named administrative entity). Recommended best practice is to select a value from a controlled vocabulary (for example, the <i>Thesaurus of Geographic Names [TGN]</i>) and that, where appropriate, named places or time periods be used in preference to numeric identifiers such as sets of coordinates or date ranges.</p> <p>NOTE 1: This is the definition from the Dublin Core Metadata Element Set, version 1.1.</p>	Smallest permitted maximum: 10 items	Unordered	-	LangString (smallest permitted maximum: 1000 char)
<p><i>Indicate the time period, areas, regions, and/or jurisdictions covered by the content of the resource using a customary, maintained vocabulary.</i></p> <p>CanCore does not recommend the use of this element for the purposes of interoperation in distributed environments.</p> <ul style="list-style-type: none"> • The current datatype assigned to this element (LangString) makes it difficult to implement it in an interoperable manner across collections or domains. It is impossible for individual projects to consistently identify the source of the vocabularies used in this element. In addition, outside of specific subject specialties (e.g., geomatics, geology), it is difficult to determine uncontroversial definitions of coverage either temporally or spatially. • The use of 1.6:Coverage may be desirable in specialized and local contexts where a consensus on a set of values for this element exists, and an identifiable vocabulary is available and can be assumed to be used. For example, the Canadian government recommends the use of 1.6:Coverage with the Canadian Geographical Names listing, available at http://geonames.nrcan.gc.ca/. • Should a project wish to extend 1.6:Coverage to reliably identify the vocabularies used, we recommend the use of documentation on Dublin Core qualifiers for DC.Coverage (see http://dublincore.org/usage/terms/dc/current-elements/). 				

Vocabulary Recommendations

Use customary, maintained vocabularies such as the *Getty Thesaurus of Geographic Names* (<http://www.getty.edu/research/tools/vocabulary/tgn/index.html>) and/or the W3C date-time format (<http://www.w3.org/TR/NOTE-datetime>).

Examples

- Winnipeg
- 16th century

XML Examples

```
<coverage>  
  <string language="eng">Winnipeg</string>  
</coverage>
```

```
<coverage>  
  <string language="eng">16th century</string>  
</coverage>
```

1.7:Structure

<i>Explanation</i>	<i>Size</i>	<i>Order</i>	<i>Value Space</i>	<i>Datatype</i>
Underlying organizational structure of this learning object.	1	Unspecified	See <i>vocabulary recommendations</i>	Vocabulary (State)
<p><i>Indicate the way in which the learning resource is logically related to other resources to form an aggregate or composite resource.</i></p> <p>CanCore does not recommend the use of this element for the purposes of interoperation in distributed environments.</p> <ul style="list-style-type: none"> Resources incorporating multiple levels of aggregation will likely include more than one kind of structure (e.g., a Website that includes both hierarchical and linear structures or linkages). The expressive power of this element is consequently limited in that it does not accommodate more than one value, and does not recommend a value that would indicate that a multiplicity of structures are incorporated into a single aggregate resource. It is not clear how the underlying structure of a resource might relate to learning styles or user preferences. The fact that this element recommends the use of non-numeric vocabulary values also presents difficulties for implementation in multilingual contexts. 				

*Vocabulary Recommendations***atomic** 

Any resource that is a raw media file or fragment, or corresponds with a level-1 resource as defined under 1.8:Aggregation Level.

collection 

Any set of resources with no established relationships or defined links between them. Examples include a Zip file with a number of media files or even other included Zip files, but the relationship between them is not described in any form; or a set of Web pages that are not linked with one another.

networked 

Any set of resources that are interrelated in a manner that is neither clearly hierarchical nor linear, or where relationships exist but are not clearly or consistently specified. Networked can also apply to resources that are interrelated in a manner that combines *both* hierarchical and linear relationships.

hierarchical 

Any set of resources that are interrelated with a logical tree structure, or which can be decomposed into resources that are themselves aggregate in nature.

linear 

Any set of resources that are interrelated as a single sequence.

Example

- atomic

XML Example

```
<structure>  
  <source>LOMv1.0</source>  
  <value>atomic</value>  
</structure>
```

1.8:Aggregation Level

<i>Explanation</i>	<i>Size</i>	<i>Order</i>	<i>Value Space</i>	<i>Datatype</i>
The functional granularity of this learning object.	1	Unspecified	See <i>vocabulary recommendations</i>	Vocabulary (Enumerated)
<p><i>Indicate the number of times that the learning resource or its component parts can be decomposed into still smaller components.</i></p> <ul style="list-style-type: none"> Indicates the "logical" size of the resource, not its file size or duration. It is conceivable that this element could be used in combination with the 7:Relation element category to indicate that a composite resource has component parts, or is itself a component in a still larger aggregation. 				

Vocabulary Recommendations

Vocabulary values for this element should consist of numerical values that correspond generally to the brief descriptions provided in the LOM datamodel, as indicated below. Further explanations provided for each number and LOM description can be referenced for greater clarity, but should not be considered as "normative" or as restricting the meaning of each vocabulary value.

1 (raw media data or fragments)

This value refers to any resource that cannot be further and easily decomposed into component resources. This applies to executable files (e.g., with file names ending in ".exe") or Macromedia Flash files (e.g., ending in ".swf") that may incorporate a number of component resources in a package that is locked or otherwise protected. However, it does *not* apply to Zip and other packages of files that are intended to be decomposable. This level of granularity corresponds to the Asset category in the SCORM (1.3) Content Aggregation Model.

2 (a collection of level-1 learning objects)

This value includes Zip and other packages that can be accessed as individual files, where those files together form a single aggregate resource. It also includes a single Web page (or HTML file) that might incorporate one or more images. This level of granularity corresponds with, but is not limited to the SCO (Shareable Content Object) category in the SCORM (1.2) Content Aggregation Model.

3 (a collection of level-2 learning objects)

This value refers to resources that can be decomposed into two or more resources that are themselves collections of raw data or fragments. This level of aggregation would include a set of Web pages (or a Website), where one or more of those Web pages incorporates images or other resources.

Although the LOM provides the example of a course as corresponding to this level of aggregation, it is conceivable that a course may, in practice, consist of several third-level aggregations. This level of granularity corresponds, but is not limited, to the Content Aggregation category in the SCORM (1.3) Content Aggregation Model.

4 (the largest level of granularity)

This value simply refers to any resource that incorporates more than two levels of combination or aggregation. In this case, a level-4 resource would be a combination of other resources that are themselves *not* entirely decomposable into raw media fragments. A level-4 resource can also be a collection of other level-4 resources. These aggregations of multiple aggregate objects may compose, but are not limited to, courses or certificate programs.

Example

- 2

XML Example

```
<aggregationLevel>  
  <source>LOMv1.0</source>  
  <value>2</value>  
</aggregationLevel>
```