



# Metadata Elements Comparison: Vetadata and ANZ-LOM

## The Learning Federation and E-standards for Training

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[flexiblelearning.net.au](http://flexiblelearning.net.au)  
[thelearningfederation.edu.au](http://thelearningfederation.edu.au)



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# 1. Introduction

Interoperable standards and specifications are fundamental to support distributed management and access to learning content across Australia, New Zealand and internationally. Metadata requirements are met for the schools and vocational education and training (VET) sectors by the ANZ-LOM 1.0 (Jan 2008) and Vetadata 1.03 (March 2007) metadata application profiles respectively. Vetadata uses a subset of the elements used by ANZ-LOM.

The Learning Federation (TLF)<sup>1</sup> and the Australian Flexible Learning Framework's (Framework)<sup>2</sup> E-standards for Training<sup>3</sup> business activity undertook a comprehensive comparison of the ANZ-LOM (TLF) and Vetadata (VET) metadata application profiles in order to identify potential interoperability issues with the exchange of ANZ-LOM and Vetadata.

## 2. Metadata framework

### 2.1 Metadata model

The information model used in both ANZ-LOM and Vetadata is based on and extends the information model used by the IEEE Learning Object Metadata standard [LOM v1.0].

### 2.2 Obligation

Some metadata elements are mandatory within an application profile for certain types of content. That is, those metadata elements **MUST** appear in metadata instances conforming to this profile.

Elements may have both mandatory sub-elements and optional sub-elements. In this case, only the mandatory sub-elements must appear. Default values for mandatory elements may be automatically generated. Note that other mandatory elements can be completed **AFTER** data has been imported. Metadata records may also be copied from other items containing typical values for all mandatory elements.

Refer to IETF RFC 2119 for exact definitions of the following words: **MUST**, **MUST NOT**, **REQUIRED**, **SHOULD**, **SHOULD NOT**; **RECOMMENDED**; **OPTIONAL**.

### Metadata attributes

Each data element and sub-element is described using a set of eight attributes from the ISO/IEC 11179 standard for the description of data elements.

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<sup>1</sup> The TLF develops digital curriculum content for all Australian and New Zealand schools; for more information: <http://www.thelearningfederation.edu.au>

<sup>2</sup> The Framework is the national training system's e-learning strategy; for more information: <http://www.flexiblelearning.net.au>

<sup>3</sup> E-standards for Training is focused on developing national standards to underpin essential e-learning infrastructure, conducting research into new technology areas and providing guidance materials and tools to support the effective use of emerging technologies; for more information: <http://www.flexiblelearning.net.au/e-standards>

Attribute	Definition										
Name	The label assigned to the data element.										
Identifier	The unique identifier assigned in IEEE LOM to the data element.										
Version	The version of the data element										
Registration authority	The entity authorised to register the data element, and the identifier for the element used by that authority.										
Definition	A statement that clearly represents the concept and essential nature of the data element										
Obligation	<p>Indicates if the data element is required to always or sometimes be present.</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>Mandatory</td> <td>Required. A value must be supplied.</td> </tr> <tr> <td>Recommended</td> <td>A value should be supplied unless there is a valid reason not to. If irrelevant, then do not enter any values.</td> </tr> <tr> <td>Optional</td> <td>A value may be supplied if desired.</td> </tr> <tr> <td>Not recommended</td> <td>Do not use this element; it may cause interoperability issues.</td> </tr> </tbody> </table> <p><b>Note:</b> Some mandatory elements may be automatically maintained by a content management system. These are also noted in this table.</p>	Value	Definition	Mandatory	Required. A value must be supplied.	Recommended	A value should be supplied unless there is a valid reason not to. If irrelevant, then do not enter any values.	Optional	A value may be supplied if desired.	Not recommended	Do not use this element; it may cause interoperability issues.
Value	Definition										
Mandatory	Required. A value must be supplied.										
Recommended	A value should be supplied unless there is a valid reason not to. If irrelevant, then do not enter any values.										
Optional	A value may be supplied if desired.										
Not recommended	Do not use this element; it may cause interoperability issues.										

### 2.2.1 Vocabulary

Data values from vocabularies must indicate the vocabulary from which they are sourced. One possible representation is a (source, value) pair. For example, values for the element '5.2 learning resource type' are based on the Dublin Core DCMI type vocabulary. The 'Moving image' value from this vocabulary would be indicated by the pair ('DCMI Type', 'Moving image')

### 3. Metadata elements and sub-elements

Identifier	Name	Obligation - Vetadata for LORN <sup>4</sup> & Toolboxes <sup>5</sup>	Obligation - ANZ-LOM	Notes
1	General	-	-	-
1.1	Identifier	-	-	-
1.1.1	Catalog	Mandatory	Mandatory#	-
1.1.2	Entry	Mandatory	Mandatory#	-
1.2	Title	Mandatory	Mandatory	-
1.3	Language	Desirable	Mandatory	Default language in LORN automatically added: en-AU TLF generally apply 'en'.
1.4	Description	Mandatory	Mandatory	-
1.5	Keyword	Mandatory	Mandatory	-
1.6	Coverage	-	Not recommended. Refer to element 9.	-
1.7	Structure	-	Not recommended. Refer to element 9.	Vocabulary
1.8	Aggregation level	Mandatory	Mandatory#	Vocabulary LOM v1.0  In practice, TLF applies '2' to all resources. If a single file is being described, '2' is applied because the file is accompanied by other files. This is a technical interpretation – could be revisited.  VET Toolboxes commonly apply '2' or '3'.
2	Life cycle	-	-	-
2.1	Version	Mandatory	Mandatory#	-

<sup>4</sup> LORN is an easy to use portal that allows teachers and trainers to access quality resources for the VET sector; for more information: <http://www.flexiblelearning.net.au/lorn>

<sup>5</sup> Flexible Learning Toolboxes (Toolboxes) are high quality, cost effective interactive e-learning and assessment resources featuring scenarios, images and activities that simulate real-life; for more information: <http://www.flexiblelearning.net.au/toolboxes>

Identifier	Name	Obligation - Vetadata for LORN <sup>4</sup> & Toolboxes <sup>5</sup>	Obligation - ANZ-LOM	Notes
2.2	Status	Mandatory	Mandatory#	LOM v1.0 Status vocabulary <ul style="list-style-type: none"> <li>• draft</li> <li>• final</li> <li>• revised</li> </ul> Avoid 'unavailable'. In practice, neither TLF nor VET apply 'unavailable'.
2.3	Contribute	-	-	-
2.3.1	Role	Highly desirable	Mandatory	ANZ-LOM includes extension of LOM v1.0 role vocabulary, ie MARC Relator <i>Copyright holder#</i>
2.3.2	Entity	Highly desirable	Mandatory	Vocabulary: vCard v3.0 For vCard role, refer to MARC relators <a href="http://www.loc.gov/marc/relators/">http://www.loc.gov/marc/relators/</a>
2.3.3	Date	Mandatory	Optional	
3	Meta-metadata	-	-	-
3.1	Identifier	-	-	-
3.1.1	Catalog	-	Mandatory#	Required for SCORM 2004.
3.1.2	Entry	-	Mandatory#	Required for SCORM 2004. Arbitrary, unique values are generated by TLF.
3.2	Contribute	-	Optional	Similar to lifecycle contribute
3.3	Metadata scheme	Mandatory	Mandatory#	Different schemes are referenced. That is appropriate – not an interoperability issue.
3.4	Language	-	Mandatory#	Vocabulary Required for SCORM 2004. Check that systems can accept and display values such as 'aus' = [Indigenous] Australian languages; 'mi' = Maori
4	Technical	-	-	-
4.1	Format	Mandatory	Mandatory#	MIME Media types.
4.2	Size	-	Mandatory#	-

Identifier	Name	Obligation - Vetadata for LORN <sup>4</sup> & Toolboxes <sup>5</sup>	Obligation - ANZ-LOM	Notes
4.3	Location	Mandatory	Mandatory#	TLF generates resolvable handles. Vetadata recommends a URL is used.
4.4	Requirement	-	-	-
4.4.1	OrComposite	-	-	-
4.4.1.1	Type	-	Mandatory	Vocabulary Refer to <i>Curriculum Corporation Technical requirements vocabulary</i> . Operating system; Browser; Plug-in.
4.4.1.2	Name	-	Mandatory	Vocabulary Refer to <i>Curriculum Corporation Technical requirements vocabulary</i> .
4.4.1.3	Minimum version	-	Recommended	Becoming less important for Flash, Shockwave.
4.4.1.4	Maximum version	-	Optional	Hard to specify reliably
4.5	Installation remarks	-	Optional	Never used.
4.6	Other platform requirements	-	Recommended	eg Load time issues; requirements for advanced graphics processing.
4.7	Duration	-	Optional	Vocabulary [ISO8601] Duration
5	Educational	-	-	-
5.1	Interactivity type	-	Not recommended	Vocabulary
5.2	Learning Resource Type	None [Highly desirable for Vetadata]	Mandatory	<b>Vocabulary</b> [ordered] Curriculum Corporation Learning resource type vocabulary: <a href="http://www.thelearningfederation.edu.au/metadata">http://www.thelearningfederation.edu.au/metadata</a> Vetadata education use: <a href="http://e-standards.flexiblelearning.net.au/topics/vocab.htm">http://e-standards.flexiblelearning.net.au/topics/vocab.htm</a>
5.3	Interactivity level	-	Not recommended	Vocabulary (Enumerated) [LOMv1.0]
5.4	Semantic density	-	Not recommended	Vocabulary (Enumerated) [LOMv1.0]

Identifier	Name	Obligation - Vetadata for LORN <sup>4</sup> & Toolboxes <sup>5</sup>	Obligation - ANZ-LOM	Notes
5.5	Intended end user role	-	Mandatory (learning objects); Optional (digital resources)	Vocabulary [LOMv1.0] <ul style="list-style-type: none"> <li>• learner</li> <li>• teacher</li> <li>• manager</li> <li>• author</li> </ul>
5.6	Context	Mandatory	Mandatory (learning objects); Optional (digital resources)	Vocabulary [LOMv1.0] <ul style="list-style-type: none"> <li>• school</li> <li>• higher education</li> <li>• training</li> <li>• other</li> </ul>
5.7	Typical age range	-	Mandatory (learning objects); Optional (digital resources)	Important in schools – direct relation to 'year level'. Not relevant to VET sector, ages 15-85?
5.8	Difficulty	-	Not recommended	Vocabulary
5.9	Typical learning time	-	Not recommended	Not used.
5.10	Description	-	Optional.	Free text.
5.11	Language	-	Not recommended.	Least important of the 'language' elements.
6	Rights	-	-	-
6.1	Cost	Mandatory	Mandatory#	Vocabulary[LOMv1.0] <ul style="list-style-type: none"> <li>• yes</li> <li>• no</li> </ul> <p>VET recommends that any further information that tracks the price of a resource be maintained outside the metadata record.</p>
6.2	Copyright and other descriptions	Mandatory	Mandatory#	Vocabulary [LOMv1.0] <ul style="list-style-type: none"> <li>• yes</li> <li>• no</li> </ul>

Identifier	Name	Obligation - Vetadata for LORN <sup>4</sup> & Toolboxes <sup>5</sup>	Obligation - ANZ-LOM	Notes
6.3	Description	Mandatory	Mandatory	VET: It is desirable to include pre-formulated statements of copyright, licensing and use conditions. If not it is recommended to point to a copyright or conditions of use statement.  Include a URL (if available) in your information which directs users to copyright information.
7	Relation	-	-	
7.1	Kind	-	Recommended	Vocabulary  Extension of LOM v1.0 'kind' vocabulary – includes GEM value <i>issiblingof</i> .
7.2	Resource	-	Recommended	-
7.2.1	Identifier	-	Recommended	-
7.2.1.1	Catalog	-	Recommended	-
7.2.1.2	Entry	-	Recommended	-
7.2.2	Description	-	Optional	-
8	Annotation	-	-	-
8.1	Entity	-	Optional	-
8.2	Date	-	Optional	-
8.3	Description	-	Optional	-
9	Classification	-	-	-
9.1	Purpose	Mandatory	Mandatory	Vocabulary [LOM v.1.0]
9.2	Taxon path	-	-	-
9.2.1	Source	Mandatory	Mandatory	-
9.2.2	Taxon	-	-	-
9.2.2.1	ID	Mandatory [if 'source' is controlled]	Recommended	Some classification schemes do not have identifiers.
9.2.2.2	Entry	Mandatory [if 'source' is controlled]	Mandatory	-
9.3	Description	Mandatory	Optional	To meet SCORM 1.2 requirements, Vetadata recommends repeating the 9.2.2.2 entry values here.

Identifier	Name	Obligation - Vetadata for LORN <sup>4</sup> & Toolboxes <sup>5</sup>	Obligation - ANZ-LOM	Notes
9.4	Keyword	Mandatory	Not recommended.	As per element 9.3 Description

# These values are automatically assigned within the TLF Exchange and Sharing Exchange. In some cases, further values may be added or imported to supplement the system-maintained values.

## 4. Metadata harmonisation

### 4.1 Recommendations for Vetadata

- Refer to *IMS Best Practice Guide*.  
IMS Global Learning Consortium (2006) IMS Meta-data Best Practice Guide for IEEE 1484.12.1-2002 Standard for Learning Object Metadata. Version 1.3 Final Specification (<http://www.imsproject.org/metadata/>).  
Two specific points for consideration:
  - Vetadata profile includes specific statements about versions of packaging standards (refer to p.13) and should be independent of packaging standards
  - Vetadata profile includes vocabularies and equivalents in appendixes 2-4. Ideally, remove these vocabularies from the Vetadata profile and publish them separately. Also remove the paragraph titled 'describing mobile content' (refer to p.13. That paragraph could form a note within the relevant vocabulary 'Vetadata Educational Use scheme'.
- 2.3.2 Entity: Investigate syntax used in VET records (this is technically complex). VET values for vCard include 'none'. Investigate whether this practice is acceptable.

### 4.2 Recommendations for ANZ-LOM

- Relax obligations  
ANZ-LOM is a broad specification covering all sectors within the education industry. Note that many elements have an obligation that is 'recommended' or 'optional'. Consider implications of downgrading obligation for some elements (especially elements that are mandatory for all learning objects). For example, 'typical age range' is much less relevant to VET resources than schools resources.
- VET examples in ANZ-LOM  
Expand table of classification examples to include several examples drawn from the VET sector. TLF to supply updated table of classification examples; Framework to confirm validity of those examples.

### 4.3 General considerations

- 2.3.1 Role:  
Consider upgrading the obligation of this category in Vetadata profile to 'Mandatory'. Missing this element may affect metadata display in some downstream TLF systems.

- Classification element – Identifier (Coded value):  
LOM standards and CanCore are not specific about where coded values and strings should be located (ie taxon ID and/or Taxon entry). However, best practice is to include coded values wherever feasible.
- Classification element – Source:  
VET references sources by URL. TLF references sources by name (including versions). Needs discussion to agree principles for best practice.
- Learning resource type vocabulary:  
TLF and Framework both maintain controlled vocabs that extend DCMI and IEEE vocabs respectively. Indeed, there is no readily available vocabulary to meet industry needs. TLF and Framework need to monitor future developments in this area and contribute to discussions as relevant. As an interim measure, establish a data table to crosswalk between the vocabularies. Consider how these two controlled vocabs can be rationalised or extended.
- Relation element:  
TLF uses the relation element in conjunction with persistent URLs to enable downstream systems to prominently display closely related content (with hyperlinks redirected to item metadata and content). The Framework's E-standards for Training business activity is currently exploring methods for implementing persistent URLs. Consider interoperable opportunities for representing relationships between resources.
- Classification: purpose = idea: Use of thesauri:  
Consider opportunities for VET to complement keywords with controlled vocabularies using classification schemes such as ScOT<sup>6</sup> and VOCED<sup>7</sup> via purpose 'idea'.

## 5. References

[edna] edna Metadata Standard, v1.1: This is an Australian Education Sector metadata standard based on the Dublin Core Metadata Element Set.

<http://www.edna.edu.au/edna/go/resources/metadata>

[IEEE 1484.12.1-2002] IEEE LOM: Draft Standard for Learning Object Metadata. This standard defines a structure for interoperable descriptions of learning content.

[http://ltsc.ieee.org/wg12/files/LOM\\_1484\\_12\\_1\\_v1\\_Final\\_Draft.pdf](http://ltsc.ieee.org/wg12/files/LOM_1484_12_1_v1_Final_Draft.pdf)

[IMS Best practice guide] IMS Global Learning Consortium (2006) IMS Meta-data Best Practice Guide for IEEE 1484.12.1-2002 Standard for Learning Object Metadata. Version 1.3 Final Specification

<http://www.imsproject.org/metadata/>

[MARC Relators] This is a controlled vocabulary (including codes) for describing contributor roles. <http://lcweb.loc.gov/marc/relators/>

[SA HB 256:2007] Standards Australia: November 2007. Metadata usage in Australian and New Zealand education and training. This handbook introduces the topic of metadata and documents current practices with particular focus on the Australia and New Zealand environment.

<http://www.saiglobal.com/shop/script/Details.asp?DocN=AS0733782701AT>

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<sup>6</sup> ScOT is the Schools Online Thesaurus; for more information: <http://scot.curriculum.edu.au/>

<sup>7</sup> VOCED is the Vocational Education Thesaurus; for more information: <http://www.voced.edu.au>

[vCard] This standard defines how contact details for people and organisations can be represented. <http://www.imc.org/pdi/>

## **6. For more information:**

### **Australian Flexible Learning Framework**

Phone: (07) 3307 4700

Fax: (07) 3259 4371

Email: [enquiries@flexiblelearning.net.au](mailto:enquiries@flexiblelearning.net.au)

Website: [flexiblelearning.net.au](http://flexiblelearning.net.au)

GPO Box 1326

Brisbane QLD 4001

### **The Le@rning Federation**

Phone: (03) 9207 9600

Fax: (03) 9910 9800

Email: [information@thelearningfederation.edu.au](mailto:information@thelearningfederation.edu.au)

Website: [thelearningfederation.edu.au](http://thelearningfederation.edu.au)

PO Box 177

Carlton South VIC 3053