

# **MLA Learning Object Metadata (LOM) application profile: mapping to the MICHAEL data model**

## **Version 1.0, March 2008**

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### **Introduction**

The MLA LOM metadata application profile is based on the Institute of Electrical and Electronics Engineers - Learning Object Metadata Standard (IEEE-LOM, or LOM) and the LOM application profiles that have been developed for: [Curriculum Online](#), [JORUM](#) and [European Schoolnet's Learning Resource Exchange \(LRE\)](#).

The MLA LOM application profile was developed specifically for use by cultural institutions wishing to enable discovery of their digital resources by the UK and European education community. A primary objective has been to establish a tagging tool to enable cultural sector publishers to create metadata records based on the MLA LOM profile for upload to a repository capable of exposing educational metadata to the education sector through the use of the OAI-PMH protocol for metadata harvesting. This mapping between the MICHAEL data model was established to enable cultural institutions who had described their digital collections and online services in MICHAEL to enrich those descriptions with curriculum specific metadata and vocabularies using the tagging tool.

### **MICHAEL and LOM**

The IEEE LOM standard is designed for the description of learning objects. A LOM record generally describes a single learning object together with details of contributions/contributors to the learning object, related resources and other associated learning objects.

The MICHAEL data model supports the description of Digital Collections, Services or Products that provide access to those Digital Collections, Physical Collections from which those Digital Collections have been derived and agents (Institutions, Projects/Programmes) related to these entities. Given MICHAEL's broad concept a Service/Product that make available a single Collection can, from the perspective of LOM, be considered as a distinct learning objects. For example where an image library is made available via a Web site and also on CD-ROM, the Web site and the CD ROM should be considered to be different learning objects. For the purposes of this mapping it is assumed that a digital collection made available by a single Service/Product is the subject of the LOM record.

The LOM profile is divided into nine sections: General, Life-cycle, meta-metadata, technical, educational, rights, relation, annotation and curriculum. The MICHAEL model has been mapped to each section.

No.	Name	Explanation	Occurs	Type	Oblig.	Vocab / Value space	MICHAEL mapping
1	General	General information about the resource itself.	1	Container	M		
1.1	<b>Identifier</b>	A unique identifier for the resource such as the web-address or ISBN. It has to be a global identifier.	1 to10	Container	M		Digital collection. Identifier
1.1.1	Catalog	The name or type of the classification scheme, e.g. ISBN, .	1	Character-String , max 1000 chars	M	Repertoire of ISO/IEC 10646-1:2000	MICHAEL
1.1.2	Entry	The entry which is the actual identifier, e.g. 12cb25.	1	Character-String, max 1000 chars	M	Repertoire of ISO/IEC 10646-1:2000	Digital collection. Identifier e.g. UK-DC-23ef5g7b
1.2	Title	The title or name of the resource of learning object.	1	LangString, max 1000 chars	M		Digital collection.title
1.3	Language	The primary language used within the resource.	1 to 10	Character-String	M	ISO 639:1988 and ISO 3166-1:1997 default=en-GB	Digital collection.language(s)
1.4	Description	The description should tell the user, as concisely as possible, what the resource is.	1 to 10	LangString, max 2000 chars	M	It is best kept to about 30 words so that it can be read quickly by users.	Digital collection.description
1.5	Keyword	Free-text keywords or phrases that describe the content of the resource.	1 to 10	LangString max 1000 chars	O		Digital collection.subject
1.6	Coverage	The time, culture, geography or region to which this learning object applies.	1 to 10	LangString max 1000 chars	O		Digital collection.spatial coverage + period + culture
1.8	Aggregation Level	The granularity of the learning object.	1	Vocabulary	O	LOM v1.0 (1- a single lesson, 2 – a unit, 3 – an academic year or years, 4 – curriculum wide, multiple subjects and stages)	

No.	Name	Explanation	Occurs	Type	Oblig.	Vocab / Value space	MICHAEL
<b>2</b>	<b>Life Cycle</b>	Information about the life cycle of the resource itself.	1	Container	O		
2.1	Version	The version number or edition of the resource.	1	LangString max 50 chars	O		
2.2	Status	The completion status of the metadata record.	1	Vocabulary (State)	O	LOM v1.0 (draft, final, revised, unavailable)	
<b>2.3</b>	<b>Contribute</b>	The people or organisations who have contributed to a resource.	1 to 30	Container	M	As a minimum you must include at least publisher.	Institution identified through relations to digital collection or service
2.3.1	Role	Kind of contribution.	1	Vocabulary (State)	M	LOM v1.0 (publisher, author, etc.)	
2.3.2	Entity	The name and email address of the person or organizations contributing to this learning object.	1 to 40	Character-String max 1000 chars	M	<u>Vcard</u> ( <a href="http://www.imc.org/pdi/">http://www.imc.org/pdi/</a> )	Publisher = Institution identified through relation to collection
2.3.3	Date	The date of the contribution.	1	DateTime	M	.	

No.	Name	Explanation	Occurs	Type	Oblig.	Vocab / Value space	MICHAEL
3	<b>Meta-Metadata</b>	This category describes the metadata record itself (rather than the learning object).	1	Container	M		
3.1	<b>Identifier</b>	A unique identifier for the metadata record.	1	Container	M		
3.1.1	Catalog	This is the supplier ID, which is a four-digit code e.g. MLAC. .	1	Container	M	Repertoire of ISO/IEC 10646-1:2000	Supplier of the MICHAEL catalogue, e.g. MLAC
3.1.2	Entry	The record identifier itself.	1	Character-String max 40 chars	M	Repertoire of ISO/IEC 10646-1:2000	
3.2	Contribute	The name and email of the person or organisation that created or validated this metadata record.	1 to 10	Container	M	It is mandatory to have a creator, validator is optional.	Creator = Owner of digital collection metadata record
3.2.1	Role	The kind of contribution.	1	Vocabulary	M	LRE v3.0 (creator, enricher, provider validator)	Creator
3.2.2	Entity	The name and email address of the person or organizations contributing to this metadata record	1 to 10	Character-String max 1000 chars	M	<u>Vcard</u> ( <a href="http://www.imc.org/pdi/">http://www.imc.org/pdi/</a> )	Name + Email address
3.2.3	Date	The date of the contribution.	1	DateTime	M	.	Creation date of the MICHAEL metadata record
3.3	Metadata Schema	The version of the metadata scheme used, e.g. 'MLA v1.0'.	1 to 10	Character-String max 30 chars	M		MLA v1.0
3.4	Language	The predominant language you have used for the metadata record..	1	Character-String max 100 chars	M	ISO 639:1988 and ISO 3166-1:1997 default=en-GB	Default =en-GB
3.5	Tagging Tool Version				O	Auto generated by the tagging tool (if used)	

No.	Name	Explanation	Occurs	Type	Oblig.	Vocab / Value space	MICHAEL
4	<b>Technical</b>	This section gives guidance on the technical requirements for using the resource.	1	Container element	M		
4.1	Format	The type or format.	1 to 40	Character-String max 500 chars	O	MIME types based on IANA registration (see RFC2048:1996) or 'non-digital'	Digital collection.digital type
4.2	Size	This is the size of the resource in bytes (not Kbytes, Mbytes or Gigabytes).	1	Character-String max 30 chars	O	ISO 646:1991, but only the digits '0'..'9'	
4.3	Location	This is a URL linking to where the resource or information about it can be found. A webpage should be set up for CD-ROMs describing them and how to obtain them.	1 to 10	Character-String max 1000 chars	M	Repertoire of ISO/IEC 10646-1:2000	Service. Location locator = URL

No.	Name	Explanation	Occurs	Type	Oblig.	Vocab / Value space	MICHAEL
5	<b>Educational</b>	This section gives pedagogical information about how the resource can be used	SPM 100	Container	M		
5.1	Interactivity Type	Interactivity type can be used to indicate how active the learner is expected to be.	1	Vocabulary (State)	O	LOM v1.0 (active, expositive, mixed).	
5.2	Learning Resource Type	This element is used to indicate what type of resource your product is.	1 to 10	Vocabulary (State)	M	Celebrate v1.0 subset Default = 'information resource'	
5.5	Intended End User Role	The person the resource is intended to be used by.	1 to 10	Vocabulary (State)	O	LOM v1.0 (teacher, author, learner, manager)	
5.6	Context	The context where the resource is intended to be used.	1 to 10	Vocabulary (State)	O	UKEC (primary education, secondary education, higher education, vocational training.)	
5.7	Typical Age Range	The age of the intended audience, which can be a single year (7) or a range (11-13)..	1 to 5	LangString max 1000 chars	O		
5.8	Difficulty	The difficulty of the resource for the target audience.	1	Vocabulary (Enum)	O	LOM v1.0 (very easy, easy, medium, difficult, very difficult)	
5.1	Description	This can be used to describe the way the resource is used by teacher or learner.	1 to 10	LangString max 1000 chars	O		

No.	Name	Explanation	Occurs	Type	Oblig.	Vocab / Value space	MICHAEL
6	Rights	This section gives details of the IPR and costs associated with using the resource.	1	Container	M		
6.1	Cost	Indicate whether the resource is paid-for, or free.	1	Vocabulary (State)	M	LOM v1.0 (yes or no)	Default = no
6.2	Copyright and Other Restrictions	Used to indicate whether the resource has copyright restrictions, or not..	1	Vocabulary (State)	M	LOM v1.0 (yes or no)	Default = yes
6.3	Description	A description of the cost or copyright, which may be a brief summary with a link to a web page for a copyright notice.	1	LangString max 1000 chars	M		Service.comments access conditions
6.4	Cost/ Price	Used to describe licencing in more detail.	1 to 10	Container	O		
6.4.1	Licence model	A description of the licencing model.	1	Vocabulary	O	COL v1.1 (single user, 5 user, 10 user, class set, unlimited site licence, etc.)	
6.4.2	Currency	This specifies the currency used.	1	Vocabulary (State)	O	Default = GBP	
6.4.3	Amount	The amount	1	Number string	O		
6.4.4	Tax	Indicates whether tax is included in the cost or not.	1	Vocabulary	O	COL v1.1 (yes or no)	
6.5	Technical support	Used to describe the technical support available to teachers.	1	Container	O		
	Tech support cost	The cost of the technical support	1	Vocabulary	O	COL v1.1 (extra, included, none.)	
	Teacher support	The availability of teacher support, or not.	1	Vocabulary (State)	O	COL v1.1 (yes or no)	

No.	Name	Explanation	Occurs	Type	Oblig.	Vocab / Value space	MICHAEL
7	Relation	This section can be used to indicate that this resource is related to another resource.	1 to 100	Container	O		
7.1	Kind	The type of relationship between the resource and the other object.	1	Vocabulary (State)	O	LOM v1.0 (ispartof, haspart, isversionof, hasversion, isformatof, hasformat, references, etc.)	
7.2.1	Identifier	A unique identifier for the resource such as the web-address or ISBN. It has to be a global identifier.	SPM 10	Container	O	URI, DOI, ISBN	
7.2.1.1	Catalog	The name or type of the classification scheme, e.g. ISBN, .	1	Character-String max 1000 chars	O	Repertoire of ISO/IEC 10646-1:2000	
7.2.1.2	Entry	The entry which is the actual identifier, e.g. 12cb25.	1	LangString max 1000 chars	O		
7.2.2	Description	A description of the related resource and how the resources are related.	1	LangString max 1000 chars	O		



No.	Name	Explanation	Occurs	Type	Oblig.	Vocab / Value space	MICHAEL
<b>9</b>	<b>Classification</b>	Classification of the resource based on the vocabularies specific to teaching.	1 to 40	Container	M		
9.1	Purpose	The purpose of classifying this learning object.	1	Vocabulary (State)	O	LOM v.10 (discipline, idea, accessibility restrictions, etc.) <i>not authored by tagging tool</i>	
<b>9.2</b>	<b>Taxon Path</b>	A taxonomic path in a specific classification system.	SPM 15	Container	M	Each succeeding level is a refinement in the definition of the preceding level. There may be different paths, in the same or different classifications, which describe the same characteristic.	
9.2.1	Source	The name of the classification system.	1	LangString max 1000 chars	M	Repertoire of ISO/IEC 10646-1:2000.	
<b>9.2.2</b>	<b>Taxon</b>	The particular term within the classification system.	SPM 15	Container	M	See COL Guidance on use of: Teaching Subject (M), Low Level Specifiers (M), Key Stage (M), School Year (M) Strategies (O), Cross-curricula (O), SEN (O), Attainment Level (O)	
9.2.2.1	Id	The identifier for the term, which may be alphanumeric..	1	Character-String max 100 chars	M	Repertoire of ISO/IEC 10646-1:2000	
9.2.2.2	Entry	The actual term.	1	LangString max 500 chars	M		