

BS EN 15982:2011



BSI Standards Publication

# Metadata for Learning Opportunities (MLO) — Advertising

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**National foreword**

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Metadaten für Lernangebote (MLO) - Werbung

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## Foreword

This document (EN 15982:2011) has been prepared by Technical Committee CEN/TC 353 “Information and Communication Technologies for Learning, Education and Training”, the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2012, and conflicting national standards shall be withdrawn at the latest by March 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

MLO-Advertising (MLO-AD) is a standard addressing metadata sufficient for advertising a learning opportunity.

The goal of MLO-AD is to provide information about a learning opportunity, to enable the learner to make a decision if there is a need for more information about the learning opportunity, and where to find that information.

MLO-AD is a lightweight standard that fits well with existing business processes and technologies. The MLOAD standard facilitates semantic technologies and web architectures to support several mechanisms for exchange of information and aggregation of information by third party service suppliers. The standard is easy to implement to ensure a rapid uptake by the European countries.

At the design level, the group wanted the standard to support the ECTS descriptions and the exchange of ECTS information.

The standard only describes the datamodel for learning opportunities, and does not give any guidance on the vocabularies that are needed to ensure semantic interoperability between different educational and jurisdictional domains. The reason for not addressing vocabularies is that there is a need for frequently updating and maintaining the vocabularies, and that many vocabularies are mandated by the educational and jurisdictional domains where the standard is used.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

## 1 Scope

This European Standard specifies the characteristics of electronic representation of Learning Opportunities in order to facilitate their advertising and subsequent discovery by prospective learners.

Key users of the standard will be:

- those who provide opportunities for learning and wish to advertise them;
- those who offer electronic search services that aggregate results from multiple Learning Opportunity providers;
- those who wish to compare Learning Opportunities that have been represented electronically.

This European Standard specifies an abstract model for representing Learning Opportunities. The model specifies three resources about which metadata can be stored to facilitate advertising of Learning Opportunities:

- a) the Learning Opportunity Provider;
- b) the Learning Opportunity Specification; and
- c) the Learning Opportunity Instance.

This European Standard specifies the characteristics of relations between the three resources and recommends a core set of metadata for each.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15836, *Information and documentation — The Dublin Core metadata element set*

## 3 Terms and Definitions

For the purpose of this document, the following terms and definitions apply.

### 3.1 advertising

process of making descriptions of Learning Opportunities available to external systems

NOTE Typically this is for the purpose of encouraging applications from potential learners;

### 3.2 aggregator

system (application or service) that collates descriptions of Learning Opportunities from multiple Learning Opportunity Providers in order to offer additional functionality to users based on those descriptions, for example to search, browse, and compare Learning Opportunities

### 3.3 broker

system (application or service) that collates descriptions of Learning Opportunities from multiple Learning Opportunity Providers in order to support one or more business processes, such as mediated application to University, or financial services such as student loans

### 3.4

#### **provider**

party (person or organisation) that offers Learning Opportunities

NOTE      Synonymous with Learning Opportunity Provider;

### 3.5

#### **resource**

anything that might be identified

EXAMPLES      Familiar examples include an electronic document, an image, a service.

NOTE      Attention is drawn to W3C-RDFS for the detailed definition of this term.

### 3.6

#### **class**

group containing members that have attributes, behaviours, relationships or semantics in common

NOTE      Attention is drawn to W3C-RDFS for the detailed definition of this term.

### 3.7

#### **property**

specific aspect, characteristic, attribute, or relation used to describe resources

NOTE      Attention is drawn to W3C-RDFS for the detailed definition of this term.

### 3.8

#### **range**

range of values that may be used for a property

NOTE      Attention is drawn to W3C-RDFS for the detailed definition of this term.

### 3.9

#### **domain**

class of resource to which statements using a property may be made

NOTE      Attention is drawn to W3C-RDFS for the detailed definition of this term;

### 3.10

#### **sub property of**

a property that is derived from another property

NOTE      Attention is drawn to W3C-RDFS for the detailed definition of this term.

### 3.11

#### **sub class of**

a class that is derived from another class

NOTE      Attention is drawn to W3C-RDFS for the detailed definition of this term.

### 3.12

#### **literal**

literal value for a property defined within a statement; this may be a plain literal value (such as a string and language term) or a typed literal value (such as a value and data type specification identifier)

NOTE      Attention is drawn to W3C-RDFS for the detailed definition of this term.

**3.13**  
**statement**

combination of a property and a value specified for a resource

**3.14**  
**URI**  
uniform resource identifier

NOTE As defined by IETF-RFC2396.

## **4 Conformance**

### **4.1 Conforming Instance**

There are two levels at which conformance to this standard may be claimed: strictly conforming and conforming.

A *strictly conforming* instance is a set of structured information constituted only of objects and statements defined by the classes and properties of this standard and fully qualified refinements of the properties defined in this standard.

A fully qualified refinement is defined for the purpose of conformance as a property that explicitly extends a property defined by this standard. A fully qualified refinement must be capable of being processed according to the semantics of the property it extends.

A *conforming* instance may contain additional objects and properties.

NOTE As there are no cardinality restrictions on any of the properties of this standard, an instance consisting only of one or more objects conforming to classes defined in this standard but without any properties is a strictly conforming instance.

### **4.2 Conforming Bindings**

A *strictly conforming* binding is constituted only of bindings to an exchange format of the classes and properties defined by this standard and fully qualified refinements of the properties defined in this standard.

A *conforming* binding may contain additional properties that do not necessarily extend or map to the properties defined in this standard.

Both *strictly conforming* bindings and *conforming* bindings must be capable of being used to generate and validate instances that can be automatically converted to a strictly conforming instance of this standard.

Both *strictly conforming* bindings and *conforming* bindings may impose additional constraints upon the values of properties defined in this standard.

Both *strictly conforming* bindings and *conforming* bindings may impose cardinality constraints on properties defined in this standard.

Both *strictly conforming* bindings and *conforming* bindings may impose cardinality constraints on associations between instances of the classes defined in this standard.

NOTE Attention is drawn to the GRRDL (Gleaning Resource Descriptions from Dialects of Languages), and XSLT (XSL Transformations), both recommendations of W3C.

### **4.3 Conforming Applications**

There are two classes of application that may claim conformance to this standard: conforming providers and conforming consumers.



A conforming provider is an application that is capable of generating and sharing (1) conforming instances , and/or (2) instances that conform to a conforming binding.

A conforming consumer is an application that is capable of processing (1) conforming instances, and/or (2) instances that conform to a conforming binding.

## 5 Conventions

URIs for classes and properties defined in this European Standard and included from EN 15982:2011 are introduced with the "mlo:" prefixes."

NOTE The namespace for all classes and properties defined in this standard is currently <http://purl.org/net/mlo> (prefix "mlo:"). CEN has initiated a process for the establishment of a Namespace policy and the provision of related services. Upon resolution of this issue the text of this clause will be amended as appropriate.

## 6 Concepts

### 6.1 General

In the Informative Annex A, a UML representation of the concepts is presented.

### 6.2 Learning Opportunity (LO)

A chance to participate in education or training.

### 6.3 Learning Opportunity Provider (LOP)

An agent (person or organisation) that provides learning opportunities.

### 6.4 Learning Opportunity Specification (LOS)

An abstract description of a learning opportunity, consisting of information that will be consistent across multiple instances of the learning opportunity.

### 6.5 Learning Opportunity Instance (LOI)

A single occurrence of a learning opportunity. Unlike a Learning Opportunity Specification, a Learning Opportunity Instance is not abstract, may be bound to particular dates or locations, and may be applied for or participated in by learners.

## 7 Classes

The following classes represent the Resources defined for Learning Opportunities.

URI: [mlo:LearningOpportunityProvider](#)

Label: Learning Opportunity Provider

Definition: An agent (person or organisation) that provides learning opportunities.

URI: [mlo:LearningOpportunitySpecification](#)

Label: Learning Opportunity Specification

Definition: An abstract description of a learning opportunity, consisting of information that will be consistent across multiple instances of the learning opportunity.

URI: [mlo:LearningOpportunityInstance](#)

Label: Learning Opportunity Instance

Definition: A single occurrence of a learning opportunity. Unlike a Learning Opportunity Specification, a Learning Opportunity Instance is not abstract, may be bound to particular dates or locations, and may be applied for or participated in by learners.

## 8 Properties

### 8.1 General

URI: [mlo:url](#)

Label: Url

Range: <http://www.w3.org/2000/01/rdf-schema#Literal>

Definition: A link to a web resource that provides an alternate representation of the resource. The content should conform to a URI IETF-RFC2396.

URI: [mlo:location](#)

Label: Location

Range: <http://www.w3.org/2000/01/rdf-schema#Resource>

Definition: The spatial location of the Learning Opportunity Provider or Learning Opportunity.

URI: [mlo:qualification](#)

Label: Qualification

Range: <http://www.w3.org/2000/01/rdf-schema#Resource>

Definition: Status awarded to or conferred on a learner

Note: Many formal learning opportunities are designed to prepare learners for the assessment that may lead to an awarding body awarding them a qualification.

URI: [mlo:credit](#)

Label: Credit

Range: <http://www.w3.org/2000/01/rdf-schema#Resource>

Definition: An account of the credits according to a specified system that can be obtained from completion of a Learning Opportunity

URI: [mlo:languageOfInstruction](#)

Label: Language of Instruction

Range: <http://www.w3.org/2000/01/rdf-schema#Literal>

Sub Property Of: <http://purl.org/dc/elements/1.1/language> as defined in ISO 15836

Definition: A language in which the Learning Opportunity is available to be taught.

URI: [mlo:level](#)

Label: Level

Range: <http://www.w3.org/2000/01/rdf-schema#Literal>

Definition: An account of the education level of the Learning Opportunity.

URI: [mlo:start](#)

Label: Start

Range: <http://www.w3.org/2000/01/rdf-schema#Literal>

Sub Property Of: <http://purl.org/dc/elements/1.1/date>

Definition: A date from which the Learning Opportunity commences.

URI: [mlo:duration](#)

Label: Duration

Range: <http://www.w3.org/2000/01/rdf-schema#Literal>

Sub Property Of: <http://purl.org/dc/elements/1.1/date>

Definition: A duration of the Learning Opportunity.

URI: [mlo:cost](#)

Label: Cost

Range: <http://www.w3.org/2000/01/rdf-schema#Literal>

Definition: A cost associated with obtaining access to the Learning Opportunity.

URI: [mlo:prerequisite](#)

Label: Prerequisite

Range: <http://www.w3.org/2000/01/rdf-schema#Resource>

Definition: A prerequisite or entry requirement for accessing the Learning Opportunity.

URI: [mlo:places](#)

Label: Places

Range: <http://www.w3.org/2000/01/rdf-schema#Resource>

Definition: Number of places available for participants in the Learning Opportunity.

URI: [mlo:engagement](#)

Label: Engagement

Range: <http://www.w3.org/2000/01/rdf-schema#Literal>

Definition: The logistical means by which individuals engage in a Learning Opportunity, encompassing temporal, modal and spatial patterns of engagement and attendance.

URI: [mlo:objective](#)

Label: Objective

Range: <http://www.w3.org/2000/01/rdf-schema#Resource>

Definition: An aim or learning objective for the Learning Opportunity.

URI: [mlo:assessment](#)

Label: Assessment

Range: <http://www.w3.org/2000/01/rdf-schema#Resource>

Definition: assessment strategy: a description of the broad approach to assessment used in the Learning Opportunity.

## 8.2 Properties used to describe relationships between resources

URI: [mlo:offeredAt](#)

Label: Offered At

Range: [mlo:LearningOpportunityProvider](#)

Sub Property Of: <http://purl.org/dc/elements/1.1/relation>

Definition: A relation to a Learning Opportunity Provider that offers the Learning Opportunity Instance.

URI: [mlo:offers](#)

Label: Offers

Range: [mlo:LearningOpportunitySpecification](#)

Domain: [mlo:LearningOpportunityProvider](#)

Sub Property Of: <http://purl.org/dc/elements/1.1/relation>

Definition: A relation to a Learning Opportunity Specification offered by the Learning Opportunity Provider.

URI: [mlo:specifies](#)

Label: Specifies

Range: [mlo:LearningOpportunityInstance](#)

Domain: [mlo:LearningOpportunitySpecification](#)

Sub Property Of: <http://purl.org/dc/elements/1.1/relation>

Definition: A relation to a Learning Opportunity Instance that is an instance specified by the Learning Opportunity Specification.

URI: [mlo:hasPart](#)

Label: Has Part

Range: <http://www.w3.org/2000/01/rdf-schema#Resource>

Sub Property Of: <http://purl.org/dc/elements/1.1/relation>

Definition: A relation to a resource that is logically included in the described resource.

### 8.3 Properties included from ISO 15836

The following properties defined by ISO 15836 are specified by this standard as within the domain of the classes defined by this standard.

NOTE Attention is also drawn to other ISO 15836 properties that may be useful in conforming bindings, such as rights and format.

URI: <http://purl.org/dc/elements/1.1/contributor>

Label: Contributor

URI: <http://purl.org/dc/elements/1.1/date>

Label: Date

URI: <http://purl.org/dc/elements/1.1/description>

Label: Description

URI: <http://purl.org/dc/elements/1.1/identifier>

Label: Identifier

Comments: The content should conform to a URI, as defined by IETF-RFC2396.

URI: <http://purl.org/dc/elements/1.1/subject>

Label: Subject

URI: <http://purl.org/dc/elements/1.1/title>

Label: Title

URI: <http://purl.org/dc/elements/1.1/type>

Label: Type

## Annex A (informative)

### Informative data model

Figure 1 illustrates an example of a domain model that conforms to Metadata for Learning Opportunities. Attention is drawn to UML for an explanation of the underlying semantics of this diagram. Each box in the diagram relates to a Class defined in this standard (see Clause 6). Each named association (line with label) in the diagram represents a Property defined in this standard (see Clause 7). Arrows on named associations indicate the direction in which traversal between instances can occur. No cardinality is specified for any association. Lines with an open triangle arrowhead represent a subclass-superclass relationship between classes, and not an association between instances.

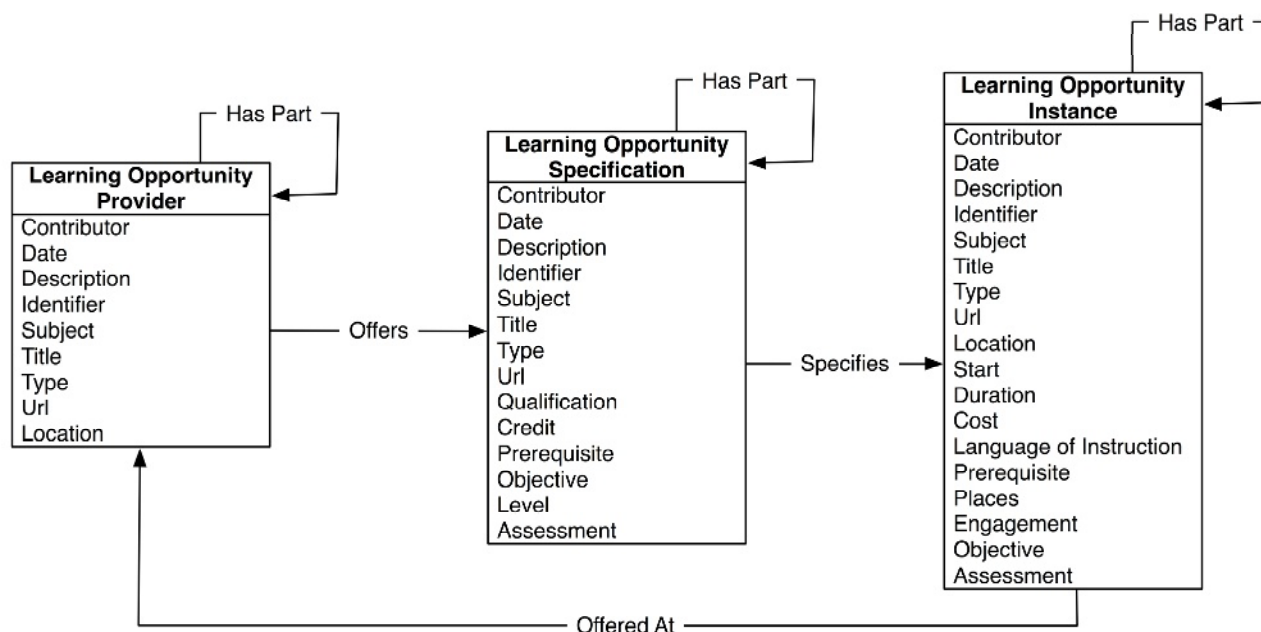


Figure A.1 — Concepts - Illustration of a domain model using MLO-AD

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- [1] CWA 15903:2008, *Metadata for Learning Opportunities (MLO) — Advertising*
- [2] [W3C-RDFS] W3C Resource Description Framework Schema Language 1.0 <http://www.w3.org/TR/rdf-schema/>
- [3] [IETF-RFC2396] Uniform Resource Identifier
- [4] [DCMI-TERMS] Dublin Core Metadata Initiative: Terms 1.1
- [5] [UML] Unified Modelling Language, v2.1.2 <http://www.omg.org/spec/UML/2.1.2/>







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