

health education assets library



national digital library

## HEAL METADATA ELEMENTS DESCRIPTION

**VERSION 1.6, AUGUST 2005**

### VERSION HISTORY

| Version | Date           | Changed By    | Changes Made   |
|---------|----------------|---------------|--|
| 1.0     | 03 May 2003    | HEAL Team     | Initial version  |
| 1.1     | 14 May 2004    | srd           | Edited language throughout; revised formatting; updated to reflect current practices |
| 1.2     | 22 July 2004   | srd           | Edited language and formatting throughout; added version history                     |
| 1.3     | 16 August 2004 | srd           | Modified version numbering; edited Creative Commons URLs                             |
| 1.4     | 20 August 2004 | srd           | Removed Inappropriate element (Section 2.6.9)  |
| 1.5     | 28 Sept 2004   | csc, sam, srd | Language editing. Content corrections. Updated TOC.                                  |
| 1.6     | 18 August 2005 | srd           | Updated throughout to reflect current practices.                                     |

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## Overview

### Introduction

The mission of the [Health Education Assets Library \(HEAL\)](#) project is to provide free digital materials of the highest quality that meet the needs of today's health sciences educators. HEAL promotes the preservation and exchange of useful educational assets while respecting ownership and privacy. The vision: HEAL is the leading digital library relied upon by a worldwide community of teachers and learners to improve the effectiveness of health sciences education. To this end the HEAL team has developed the following HEAL metadata specification. This revision is based on the [Metadata Elements Description Version 1.5](#).

This document provides an in-depth description of the metadata elements used by the HEAL system and is intended to promote sharing among health science educators and institutions. The HEAL metadata elements described below are based on the content and structure of the widely-accepted Instructional Management Systems (IMS) metadata specification. They include i) selected elements from the [IMS Meta-Data Version 1.2.1 specification](#), and ii) several non-IMS elements that have utility within the Health Sciences (e.g., *SpecimenType*, *Orientation*, etc.).

In general, the breadth and depth of any metadata is subject to ongoing debate based on the variety of user perspectives and needs. The goal of the HEAL metadata specification is to find a balance between manageability and adequacy that both serves the broad needs of health sciences educators and the interoperability needs of the planned HEAL "federation" of institution-based educational resource collections. While this document contains over seventy elements, it should be noted that the vast majority of elements are entirely optional and that the required set of elements for any given item is quite minimal.

The "core metadata" was primarily designed to describe a variety of common multimedia items (e.g. images, animations, videos, etc.). However, this metadata may also, to a limited extent, be used to describe more complex resources such as problem-based learning (PBL) cases, practice quiz questions, etc. Future versions of HEAL metadata will provide additional metadata elements aimed at these more complex resources.

The element definitions below are not necessarily bound to a particular implementation technology; organizations are free to implement the HEAL metadata specification through a variety of means including database and eXtensible Markup Language (XML) applications. Technical implementers should note that the HEAL-specific (i.e. non-IMS) elements have been added according to the IMS mechanism for extension outlined in the [IMS Learning Resource Meta-data Best Practice and Implementation Guide](#). Locally-developed applications may further extend this HEAL specification through the same mechanism.

### Organization of this Document

This document is organized according to the metadata hierarchy set forth by IMS. The table of contents above provides a quick overview of this hierarchy. Elements lower in the hierarchy are listed further to the right; hence, the *SpecimenType* element is a child of the *Extension* element which is a child of the *General* element. Top level elements (e.g. *CatalogEntry*, *Contribute*, etc.) do not have formal definitions as they are treated as simple containers for sub-elements. Elements are defined according to the conventions described in the following table. Several elements (e.g. *Coverage*) do not have complete domain definitions and are currently considered experimental.

## Element Definition Convention

|                     |  |
|---------------------|--|
| Overview:           | A brief description of the element and its purpose.  |
| Database Table:     | The corresponding HEAL database table associated with this element. Intended for internal HEAL use but may be used by other applications as well.  |
| Optional/Mandatory: | Defines whether or not this element is required or optional.   |
| Data Type:          | Defines the formal element data type:<br>Bit - integer data type of 1 or 0<br>Varchar - variable length character data<br>Text - character data allocated in 8K pages<br>Integer - whole numbers from 0 to 2,147,483,647 |
| Automatic:          | Defines whether or not this element is generated automatically by the HEAL application or must be user-defined. Intended for internal use but may be used by other applications as well.                                 |
| Multiplicity:       | Defines whether or not this element may have multiple values.  |
| Domain:             | Describes whether or not this element has a restricted vocabulary. For instance, the <i>SpecimenType</i> element is restricted to the following values: gross anatomical descriptor, organ, organ system; and organelle. |
| Example(s):         | Illustrate(s) how the element might be used.   |

## References

- HEAL. *Metadata Elements Description*. Version 1.5. September 2004. Accessed 18 August 2005 at [http://www.healcentral.org/services/schema/HEALmdElementsDescript\\_v1p5.doc](http://www.healcentral.org/services/schema/HEALmdElementsDescript_v1p5.doc).
- IMS Global Learning Consortium. *IMS Learning Resource Meta-data Best Practice and Implementation Guide*. Version 1.2 Final Specification. 17 May 2001. Accessed 18 August 2005 at [http://www.imsproject.org/metadate/imsmdv1p2/imsmd\\_bestv1p2.html](http://www.imsproject.org/metadate/imsmdv1p2/imsmd_bestv1p2.html).
- IMS Global Learning Consortium. *IMS Learning Resource Meta-data XML Binding*. Version 1.2 Final Specification. 17 May 2001. Accessed 18 August 2005 at [http://www.imsproject.org/metadate/imsmdv1p2/imsmd\\_bindv1p2.html](http://www.imsproject.org/metadate/imsmdv1p2/imsmd_bindv1p2.html).
- International Standards Organization (ISO). *Numeric Representation of Dates and Time*. 30 January 2003. Accessed 18 August 2005 at <http://www.iso.ch/iso/en/prods-services/popstds/datesandtime.html>.
- ISO639 Joint Advisory Committee. *Codes for the Representation of the Names of Languages*. 25 July 2005. Accessed 18 August 2005 at <http://www.loc.gov/standards/iso639-2/englangn.html>.
- ISO. *ISO 3166 Code Lists: English Country Names and Code Elements*. Accessed 18 August 2005 at <http://www.iso.org/iso/en/prods-services/iso3166ma/02iso-3166-code-lists/list-en1.html>.
- Internet Assigned Numbers Authority (IANA). *MIME Media Types*. 02 January 2002. Accessed 18 August 2005 at <http://www.iana.org/assignments/media-types/>.

## 1. MetaMetaData

### 1.1 CatalogEntry

#### 1.1.1 Catalogue

|                     |  |
|---------------------|--|
| Overview            | A description of the library containing the metadata instance, created at runtime. It will usually be a namespace used for a Universally Unique Identifier.  |
| Database Table:     | None   |
| Optional/Mandatory: | Mandatory  |
| Data Type:          | Varchar (500)  |
| Automatic           | Yes  |
| Multiplicity:       | Single value   |
| Domain:             | Namespace  |
| Example(s):         | <a href="http://www.healcentral.org">http://www.healcentral.org</a>  |
| Rationale/Comments: | Metametadata.CatalogEntry.Catalog is the name of the library containing the <i>metadata record</i> , while General.CatalogEntry.Catalog is the name of the library containing the actual <i>multimedia content</i> . |

#### 1.1.2 Entry

|                     |  |
|---------------------|--|
| Overview            | The ID of the metadata record within the library specified in <Catalogue>. |
| Database Table:     | None   |
| Optional/Mandatory: | Mandatory  |
| Data Type:          | Varchar (500)  |
| Automatic           | Yes  |
| Multiplicity:       | Single value   |
| Domain:             | None   |
| Example(s):         | "879F-298A-3AF3-7E8A"  |

### 1.2 Contribute

#### 1.2.1 Role

|                     |   |
|---------------------|---|
| Overview            | Role of the metadata contributor.   |
| Database Table:     | MetadataContribute.Role   |
| Optional/Mandatory: | Mandatory   |
| Data Type:          | Varchar (255)   |
| Automatic           | No  |
| Multiplicity:       | Single Value  |
| Domain:             | Restricted vocabulary: {Primary, Secondary}.  |
| Example(s):         | "Primary"   |
| Rationale/Comments: | Derived from <a href="#">IMS standard pick list</a> : Primary = Creator; Secondary = Validator. |

#### 1.2.2 CEntity

|                     |  |
|---------------------|--|
| Overview            | Representing the entity or entities (people or institutions) involved in creating and/or contributing the metadata record. |
| Database Table:     | MetaContribute.VCard   |
| Optional/Mandatory: | Optional   |
| Data Type:          | Text (16)  |

|               |  |
|---------------|--|
| Automatic     | No   |
| Multiplicity: | Yes  |
| Domain:       | VCard  |
| Example(s):   | <pre> "begin:vcard n:Smith;John;A;PhD tel;type=fax:000-000-0000 tel;type=work:000-000-0000 url:http://www.healcentral.org org:Health Education Assets Library (HEAL) email;type=internet:info@healcentral.org title:Director adr;quoted-printable::;Area B1n30=0D=0A8600 Rockville Pike=0D=0A;City;State;99999;USA fn:John A. Smith, PhD end:vcard"                     </pre> |

### 1.2.3 Date

|                     |   |
|---------------------|---|
| Overview            | Metadata contribution date expressed as per <a href="#">ISO8601</a> .                                   |
| Database Table      | MetaContribute.Date   |
| Optional/Mandatory: | Optional  |
| Data Type:          | Datetime  |
| Automatic:          | No  |
| Multiplicity:       | Single value  |
| Domain:             | ISO8601 standard  |
| Example(s):         | "1999-07-26", "1999-07-26T12:15:35+01:00"   |
| Rationale/Comments: | Dates are captured using the CCYY-MM-DD form while Time is specified as hh:mm:ss. Generated at runtime. |

### 1.3 Language

|                     |   |
|---------------------|---|
| Overview            | Describes the language of the metadata record.      |
| Database Table:     | None  |
| Optional/Mandatory: | Optional  |
| Data Type:          | Varchar (255)                                       |
| Automatic           | Yes   |
| Multiplicity:       | Single Value  |
| Domain:             | <a href="#">ISO 3166</a> & <a href="#">ISO639</a>   |
| Example(s):         | "en"  |
| Rationale/Comments: | English is the only accepted language at this time. |

### 1.4 Metadatascheme

|                     |   |
|---------------------|---|
| Overview            | Represents the name and version of the authoritative specification used to create the metadata instance (generated at runtime). |
| Database Table:     | None  |
| Optional/Mandatory: | Optional  |
| Data Type:          | Varchar (255)   |
| Automatic           | Yes   |
| Multiplicity:       | Yes   |
| Domain:             | None  |

|                     |                                       |
|---------------------|---------------------------------------|
| Example(s):         | "IMS:1.2"                             |
| Rationale/Comments: | Format is "Name of Structure:version" |

## 1.5 Extension

### 1.5.1 HEALMetadataScheme

|                     |   |
|---------------------|---|
| Overview            | Represents the name and version of the HEAL specification used to create the metadata instance. |
| Database Table:     | None  |
| Optional/Mandatory: | Optional  |
| Data Type:          | Varchar (255)   |
| Automatic           | Yes   |
| Multiplicity:       | No  |
| Domain:             | {HEALCOREMETADATA:1.0, HEALMETADATA:1.5}  |
| Example(s):         | "HEALMETADATA:1.5"  |
| Rationale/Comments: | Format is "Name of Structure:version"   |

## 2. General

### 2.1 Identifier

|                     |   |
|---------------------|---|
| Overview            | A unique global ID which identifies the multimedia content. |
| Database Table:     | Metadata.GlobalID   |
| Optional/Mandatory: | Mandatory   |
| Data Type:          | Varchar (500)   |
| Automatic           | Yes   |
| Multiplicity:       | Single value  |
| Domain:             | None  |
| Example(s):         | "879F-298A-3AF3-7E8A"                                       |

### 2.2 CatalogEntry

#### 2.2.1 Catalogue

|                     |   |
|---------------------|---|
| Overview            | A description of the library containing the multimedia content. It will usually be a namespace used for a Universally Unique Identifier.  |
| Database Table:     | Metadata.Catalog  |
| Optional/Mandatory: | Mandatory   |
| Data Type:          | Varchar (500)   |
| Automatic           | No  |
| Multiplicity:       | Single value  |
| Domain:             | Namespace   |
| Example(s):         | " <a href="http://www.healcentral.org">http://www.healcentral.org</a> "   |
| Rationale/Comments: | General.CatalogEntry.Catalogue is the name of the library containing the <i>multimedia content</i> while Metametadata.CatalogEntry.Catalogue is the name of the library containing the <i>metadata record</i> . |

#### 2.2.2 Entry

|          |   |
|----------|---|
| Overview | The ID of the multimedia content within the library specified in <Catalogue>. |
|----------|---|

|                     |  |
|---------------------|--|
| Database Table:     | Metadata.Entry   |
| Optional/Mandatory: | Mandatory  |
| Data Type:          | Varchar (500)  |
| Automatic           | No   |
| Multiplicity:       | Single value   |
| Domain:             | None   |
| Example(s):         | "879F-298A-3AF3-7E8A"  |
| Rationale/Comments: | If the content is within the HEAL catalog, this value will be identical to <Identifier>. |

### 2.3 Coverage

|                     |   |
|---------------------|---|
| Overview            | The span or extent of such things as time, culture, geography or region that applies to this learning object. |
| Database Table:     | Metadata.Coverage   |
| Optional/Mandatory: | Optional  |
| Data Type:          | Text (8)  |
| Automatic           | No  |
| Multiplicity:       | Yes   |
| Domain:             | Restricted vocabulary: {health sciences}.<br>NOTE: THIS ELEMENT DOMAIN IS CURRENTLY EXPERIMENTAL              |
| Example(s):         | "health sciences"   |
| Rationale/Comments: | This element corresponds with the Dublin Core element DC.Coverage.  |

### 2.4 Title

|                     |                               |
|---------------------|-------------------------------|
| Overview            | Name given to the resource.   |
| Database Table:     | Metadata.Title                |
| Optional/Mandatory: | Mandatory                     |
| Data Type:          | Varchar (2048)                |
| Automatic           | No                            |
| Multiplicity:       | Single value                  |
| Domain:             | None                          |
| Example(s):         | "Large cell carcinoma"        |
| Rationale/Comments: | IMS limit of 2048 characters. |

### 2.5 Description

|                     |  |
|---------------------|--|
| Overview            | Detailed description of the media item in free text.   |
| Database Table:     | Metadata.Description   |
| Optional/Mandatory: | Mandatory  |
| Data Type:          | Text (1000)  |
| Automatic           | No   |
| Multiplicity:       | Single value   |
| Domain:             | None   |
| Example(s):         | "Large cell undifferentiated carcinomas lack features that would characterize them as a squamous, adeno small cell carcinoma. They are composed of large, mitotically-active tumor cells with pleomorphic nuclei and prominent nucleoli. This tumor shows extensive necrosis." |

## 2.6 Language

|                     |   |
|---------------------|---|
| Overview            | Describes the language of the resource.           |
| Database Table:     | None  |
| Optional/Mandatory: | Optional  |
| Data Type:          | Varchar (255)                                     |
| Automatic           | Yes   |
| Multiplicity:       | Yes   |
| Domain:             | <a href="#">ISO 3166</a> & <a href="#">ISO639</a> |
| Example(s):         | "en-US," "en-UK"                                  |

## 2.7 Extension

### 2.7.1 SpecimenType

|                     |  |
|---------------------|--|
| Overview            | Type of specimen   |
| Database Table:     | Metadata.SpecimenType  |
| Optional/Mandatory: | Optional   |
| Data Type:          | VarChar (255)  |
| Automatic           | No   |
| Multiplicity:       | Single value   |
| Domain:             | Restricted vocabulary: {cell, organ, organ system, organelle, tissue}. |
| Example(s):         | "organ system"   |

### 2.7.2 RadiographType

|                     |   |
|---------------------|---|
| Overview            | Radiology technology used to generate the multimedia item.                    |
| Database Table:     | Metadata.RadiographType   |
| Optional/Mandatory: | Optional  |
| Data Type:          | VarChar (255)   |
| Automatic           | No  |
| Multiplicity:       | Single value  |
| Domain:             | Restricted vocabulary: {angiogram, CT, MRI, nuclear, PET, plain, ultrasound}. |
| Example(s):         | "MRI"   |

### 2.7.3 Orientation

|                     |  |
|---------------------|--|
| Overview            | Orientation of the image.  |
| Database Table:     | Metadata.Orientation   |
| Optional/Mandatory: | Optional   |
| Data Type:          | VarChar (255)  |
| Automatic           | No   |
| Multiplicity:       | Single value   |
| Domain:             | Restricted vocabulary: {Axial, Coronal, Horizontal, Longitudinal, Sagittal, Transverse}. |
| Example(s):         | "Axial"  |

### 2.7.4 Magnification

|                     |                                    |
|---------------------|------------------------------------|
| Overview            | Magnification of microscopic image |
| Database Table:     | Metadata.Magnification             |
| Optional/Mandatory: | Optional                           |

|                     |   |
|---------------------|---|
| Data Type:          | VarChar (255)                                     |
| Automatic           | No  |
| Multiplicity:       | Single value                                      |
| Domain:             | ISO/IEC 646:1991, but only the digits 0 through 9 |
| Example(s):         | "100", "20", "40"                                 |
| Rationale/Comments: | Free text   |

### 2.7.5 Annotated

|                     |   |
|---------------------|---|
| Overview            | "Yes" indicates that the multimedia is labeled or annotated;<br>"No" indicates no annotations |
| Database Table:     | Metadata.Annotated  |
| Optional/Mandatory: | Mandatory   |
| Data Type:          | Bit   |
| Automatic           | No  |
| Multiplicity:       | Single value  |
| Domain:             | {Yes, No}   |
| Example(s):         | "Yes"   |
| Rationale/Comments: | "No" is the default value.  |

### 2.7.6 DiseaseProcess

|                     |  |
|---------------------|--|
| Overview            | Indicates disease process displayed, discussed, or implied in the item.  |
| Database Table:     | Metadata.DiseaseProcess  |
| Optional/Mandatory: | Optional   |
| Data Type:          | VarChar (255)  |
| Automatic           | No   |
| Multiplicity:       | Yes  |
| Domain:             | Restricted vocabulary: {allergic/autoimmune, congenital, degenerative, economic, endocrine, environmental, inflammatory, intoxication, legal, neoplastic, normal, psychological, social, traumatic, vascular}. |
| Example(s):         | "endocrine"  |

### 2.7.7 ClinicalHistory

|                     |  |
|---------------------|--|
| Overview            | Clinical history of patient/subject in free text.  |
| Database Table:     | Metadata.ClinicalHistory   |
| Optional/Mandatory: | Optional   |
| Data Type:          | Text (16)  |
| Automatic           | No   |
| Multiplicity:       | Single value   |
| Domain:             | None   |
| Example(s):         | "Fifty-year old male with family history of congestive heart failure presented with acute chest pain and shortness of breath." |

### 2.7.8 CONTEXT

#### 2.7.8.1 ContextURL

|          |  |
|----------|--|
| Overview | URL pointing to the educational context in which the item is used. |
|----------|--|

|                     |  |
|---------------------|--|
| Database Table:     | ContextURLs.ContextURL   |
| Optional/Mandatory: | Optional   |
| Data Type:          | Varchar (255)  |
| Automatic           | No   |
| Multiplicity:       | Yes  |
| Domain:             | None   |
| Example(s):         | "http://www.medsch.ucla.edu/histology"   |
| Rationale/Comments: | The context in which the item is used can be a course, a case, etc., when essential for the correct understanding/usage of the item. |

### 2.7.8.2 ContextURLDescription

|                     |  |
|---------------------|--|
| Overview            | Description of the ContextURL provided in General.Extension.ContextUrl                         |
| Database Table:     | ContextURLs.ContextURLDescription  |
| Optional/Mandatory: | Optional   |
| Data Type:          | Varchar (2048)   |
| Automatic           | No   |
| Multiplicity:       | No   |
| Domain:             | None   |
| Example(s):         | "This web site provides additional narrative text that explains the structures on this image." |

## 3. Lifecycle

### 3.1 Contribute

#### 3.1.1 Role

|                     |   |
|---------------------|---|
| Overview            | Role of contributor in creating/providing the multimedia content.   |
| Database Table:     | Contributors.Role   |
| Optional/Mandatory: | Mandatory   |
| Data Type:          | Varchar (255)   |
| Automatic           | No  |
| Multiplicity:       | Single Value  |
| Domain:             | Restricted vocabulary: {Primary, Secondary}.  |
| Example(s):         | "Primary"   |
| Rationale/Comments: | Based on <a href="#">IMS standard pick list</a> . Author = Primary (main responsibility for the intellectual content of the resource) and maps to Dublin Core (DC).Creator. All other IMS roles (e.g., editor, instructional designer) = Secondary and map to DC.Contributor or DC.Publisher. |

#### 3.1.2 CEntity

|                 |  |
|-----------------|--|
| Overview        | Representing the entity or entities (people or institutions) involved in creating/publishing the multimedia item |
| Database Table: | Contributors.VCard   |

|                     |  |
|---------------------|--|
| Optional/Mandatory: | Optional   |
| Data Type:          | Text (16)  |
| Automatic:          | No   |
| Multiplicity:       | Yes  |
| Domain:             | VCard  |
| Example(s):         | <pre> "begin:vcard n:Smith;John;A;PhD tel;type=fax:000-000-0000 tel;type=work:000-000-0000 url:http://www.healcentral.org org:Health Education Assets Library (HEAL) email;type=internet:info@healcentral.org title:Director adr;quoted-printable;;;Area B1n30=0D=0A8600 Rockville Pike=0D=0A;City;State;99999;USA fn:John A. Smith, PhD end:vcard"                     </pre> |

### 3.1.3 Date

|                     |  |
|---------------------|--|
| Overview            | Creation/copyright date expressed as per <a href="#">ISO8601</a> standard. |
| Database Table      | Metadata.ContributeDate  |
| Optional/Mandatory: | Optional   |
| Data Type:          | Datetime   |
| Automatic:          | No   |
| Multiplicity:       | Single value   |
| Domain:             | None   |
| Example(s):         | "1999-07-26", "1999-07-26T12:15:35+01:00" Dates:CCYY-MM-DD Time: hh:mm:ss. |

## 4. Technical

### 4.1 Extension

#### 4.1.1 FileExtension

|                     |                        |
|---------------------|------------------------|
| Overview            | File name suffix.      |
| Database Table      | Metadata.FileExtension |
| Optional/Mandatory: | Mandatory              |
| Data Type:          | Varchar (255)          |
| Automatic:          | Yes                    |
| Multiplicity:       | Single value           |
| Domain:             | None                   |
| Example(s):         | "jpg", "gif", "mov"    |
| Rationale/Comments: | None                   |

#### 4.1.2 FileWidth

|                     |                                   |
|---------------------|-----------------------------------|
| Overview            | File width in pixels.             |
| Database Table      | Metadata.FileWidth                |
| Optional/Mandatory: | <i>Mandatory</i> for images only. |

|               |                       |
|---------------|-----------------------|
| Data Type:    | Integer (4)           |
| Automatic:    | Yes (for images ONLY) |
| Multiplicity: | Single value          |
| Domain:       | None                  |
| Example(s):   | "400"                 |

#### 4.1.3 FileHeight

|                     |                                   |
|---------------------|-----------------------------------|
| Overview            | File height in pixels             |
| Database Table      | Metadata.FileHeight               |
| Optional/Mandatory: | <i>Mandatory</i> for images only. |
| Data Type:          | Integer (4)                       |
| Automatic:          | Yes (for images ONLY)             |
| Multiplicity:       | Single value                      |
| Domain:             | None                              |
| Example(s):         | "600"                             |

#### 4.2 Size

|                     |   |
|---------------------|---|
| Overview            | File size in bytes.                               |
| Database Table      | Metadata.FileSize                                 |
| Optional/Mandatory: | Mandatory (except for Web pages)                  |
| Data Type:          | Integer (4)                                       |
| Automatic:          | Yes   |
| Multiplicity:       | Single value                                      |
| Domain:             | ISO/IEC 646:1991, but only the digits 0 through 9 |
| Example(s):         | "1052", "500502"                                  |

#### 4.3 Location

|                     |  |
|---------------------|--|
| Overview            | A URL pointing to the location of the resource.                |
| Database Table      | Metadata.Location + Metadata.FileName + Metadata.FileExtension |
| Optional/Mandatory: | Mandatory  |
| Data Type:          | Varchar (255)  |
| Automatic:          | Yes  |
| Multiplicity:       | Single value   |
| Domain:             | None   |
| Example(s):         | "http://www.medsch.ucla.edu/content/image0001.jpg"             |

#### 4.4 Duration

|                     |  |
|---------------------|--|
| Overview            | Continuous play time for a resource at intended speed, in seconds. |
| Database Table      | Metadata.Duration  |
| Optional/Mandatory: | Optional   |
| Data Type:          | Integer (4)  |
| Automatic:          | No   |
| Multiplicity:       | Yes  |
| Domain:             | None   |
| Example(s):         | "180" (for a resource 3 minutes long)                              |
| Rationale/Comments: | For animations, videos, and audio clips only.                      |

## 4.5 Requirements

### 4.5.1 Type

|                     |   |
|---------------------|---|
| Overview            | Type of requirements                                |
| Database Table      | Requirements.RequirementType                        |
| Optional/Mandatory: | Optional  |
| Data Type:          | VarChar (255)                                       |
| Automatic:          | No  |
| Multiplicity:       | Yes   |
| Domain:             | Restricted vocabulary: {Operating System, Browser}. |
| Example(s):         | "Browser"   |

### 4.5.2 Name

|                     |  |
|---------------------|--|
| Overview            | Specifies the requirement for the RequirementsType |
| Database Table      | Requirements.RequirementName                       |
| Optional/Mandatory: | Optional   |
| Data Type:          | VarChar (255)                                      |
| Automatic:          | No   |
| Multiplicity:       | Unordered list                                     |
| Domain:             | None   |
| Example(s):         | "Microsoft IE 5.0+"                                |

## 4.6 Format

|                     |  |
|---------------------|--|
| Overview            | Technical data type of the resource.   |
| Database Table:     | Formats.Format   |
| Optional/Mandatory: | Mandatory  |
| Data Type:          | Varchar (100)  |
| Automatic           | No   |
| Multiplicity:       | Multiple Values  |
| Domain:             | MIME types based on IANA registration (see <a href="#">RFC 2048:1996</a> )   |
| Example(s):         | "application/pdf", "video/mov"   |
| Rationale/Comments: | Partial list of formats at <a href="http://www.isi.edu/in-notes/iana/assignments/media-types/media-types">http://www.isi.edu/in-notes/iana/assignments/media-types/media-types</a> as specified in the IMS best practices guide. |

# 5. Educational

## 5.1 Context

|                     |  |
|---------------------|--|
| Overview            | User group for which the multimedia item is designed.  |
| Database Table:     | Metadata.TargetUserGroup   |
| Optional/Mandatory: | Optional   |
| Data Type:          | VarChar (255)  |
| Automatic           | No   |
| Multiplicity:       | Yes  |
| Domain:             | Restricted vocabulary {consumer health/patient education, health profession education, higher education, K-12 education} |

|             |                    |
|-------------|--------------------|
| Example(s): | "higher education" |
|-------------|--------------------|

### 5.2 InteractivityType

|                     |   |
|---------------------|---|
| Overview            | The type of interactivity supported by the learning object.   |
| Database Table:     | Metadata.interactivitytype  |
| Optional/Mandatory: | Optional  |
| Data Type:          | VarChar (1000)  |
| Automatic           | No  |
| Multiplicity:       | Single Value  |
| Domain:             | Restricted vocabulary: {Active, Expositive, Mixed, Undefined}.  |
| Example(s):         | "Active"  |
| Rationale/Comments: | <a href="#">IMS standard pick list</a> . In an expositive resource, the information flows mainly from the resource to the learner. Expositive documents are typically used for learning-by-reading. In an active learning object, information also flows from the learner to the resource. Active documents are typically used for learning-by-doing. Note: Activating links to navigate in hypertext documents is not considered as an information flow. Thus, hypertext documents are expositive. |

### 5.3 InteractivityLevel

|                     |   |
|---------------------|---|
| Overview            | Level of interactivity between an end user and the learning object. |
| Database Table:     | Metadata.interactivitylevel   |
| Optional/Mandatory: | Optional  |
| Data Type:          | VarChar (1000)  |
| Automatic           | No  |
| Multiplicity:       | Single Value  |
| Domain:             | Restricted Vocabulary: {very low, low, medium, high, very high}.    |
| Example(s):         | "high"  |
| Rationale/Comments: | <a href="#">IMS standard pick list</a>                              |

### 5.4 LearningResourceType

|                     |  |
|---------------------|--|
| Overview            | Specific kind of resource, most dominant kind first.   |
| Database Table:     | Metadata.learningresourcetype  |
| Optional/Mandatory: | Optional   |
| Data Type:          | VarChar (100)  |
| Automatic           | No   |
| Multiplicity:       | Yes  |
| Domain:             | Restricted vocabulary: {Animation, Audio, Case Study, Exam, Exercise, Image, Lecture, Other, Tutorial, Video, Virtual Patient} |
| Example(s):         | "Video"  |

### 5.5 TypicalLearningTime

|                 |   |
|-----------------|---|
| Overview        | Approximate or typical time it takes to work with the resource. |
| Database Table: | Metadata.typicallearningtime                                    |

|                     |                         |
|---------------------|-------------------------|
| Optional/Mandatory: | Optional                |
| Data Type:          | VarChar (200)           |
| Automatic           | No                      |
| Multiplicity:       | Single Value            |
| Domain:             | <a href="#">ISO8601</a> |
| Example(s):         | "01:30:00", "00:01:45"  |

## 6. Rights

### 6.1 CopyrightsAndOtherRestrictions

|                     |   |
|---------------------|---|
| Overview            | Flag indicating whether or not the multimedia item has copyright or other restrictions. |
| Database Table:     | None  |
| Optional/Mandatory: | Mandatory   |
| Data Type:          | Bit   |
| Automatic           | Yes   |
| Multiplicity:       | Single value  |
| Domain:             | {Yes, No}   |
| Example(s):         | "Yes"   |
| Rationale/Comments: | All items have copyright and other restrictions per default.                            |

### 6.2 Extension

#### 6.2.1 CopyrightHolder

|                     |  |
|---------------------|--|
| Overview            | Representing the entity or entities (people or institutions) holding the copyrights to the multimedia content.   |
| Database Table:     | CopyrightHolders.VCard   |
| Optional/Mandatory: | Optional   |
| Data Type:          | Text (16)  |
| Automatic           | No   |
| Multiplicity:       | Yes  |
| Domain:             | VCard  |
| Example(s):         | "begin:vcard<br>n:Smith;John;A;PhD<br>tel;type=fax:000-000-0000<br>tel;type=work:000-000-0000<br>url:http://www.healcentral.org<br>org:Health Education Assets Library (HEAL)<br>email;type=internet:info@healcentral.org<br>title:Director<br>adr;quoted-printable::;Area B1n30=0D=0A8600 Rockville<br>Pike=0D=0A;City;State;99999;USA<br>fn:John A. Smith, PhD<br>end:vcard" |

#### 6.2.3 CopyrightDescription

|                 |                                    |
|-----------------|------------------------------------|
| Overview        | Conditions on use of the resource. |
| Database Table: | CopyrightTexts.CopyrightText       |

|                     |  |
|---------------------|--|
| Optional/Mandatory: | Mandatory  |
| Data Type:          | LangString (SPM 1000 char)   |
| Automatic           | No   |
| Multiplicity:       | Single value   |
| Domain:             | Prefer latest Creative Commons license version, or free text rights statement. |
| Example(s):         | "http://creativecommons.org/licenses/by-nc-sa/2.5/"                            |
| Rationale/Comments: | Based on <a href="#">Creative Commons licenses</a> .                           |

## 7. Relation

### 7.1 Kind

|                     |  |
|---------------------|--|
| Overview            | Defines the nature of the relationship between resources.  |
| Database Table:     | Relations.Kind   |
| Optional/Mandatory: | Optional   |
| Data Type:          | VarChar (255)  |
| Automatic           | No   |
| Multiplicity:       | Single value   |
| Domain:             | Dublin Core vocabulary list: {IsPartOf, HasPart, IsVersionOf, HasVersion, IsFormatOf, HasFormat, References, IsReferencedBy, IsBasedOn, IsBasisFor, Requires, IsRequiredBy}. NOTE: THIS ELEMENT DOMAIN IS CURRENTLY EXPERIMENTAL |
| Example(s):         | "IsPartOf"   |

### 7.2 Resource

#### 7.2.1 Description

|                     |  |
|---------------------|--|
| Overview            | Describes the resources related to this particular item. |
| Database Table:     | Relations.Description                                    |
| Optional/Mandatory: | Optional   |
| Data Type:          | VarChar (255)  |
| Automatic           | No   |
| Multiplicity:       | Single value   |
| Domain:             | None   |
| Example(s):         | "Different magnification of same specimen."              |

#### 7.2.2 CatalogEntry

##### 7.2.2.1 Catalogue

|                     |  |
|---------------------|--|
| Overview            | A description of the library containing the related multimedia content, created at runtime. It will usually be a namespace used for a Universally Unique Identifier. |
| Database Table:     | None   |
| Optional/Mandatory: | Mandatory  |
| Data Type:          | Varchar (500)  |
| Automatic           | Yes  |
| Multiplicity:       | Single value   |
| Domain:             | Namespace  |
| Example(s):         | <a href="http://www.healcentral.org">http://www.healcentral.org</a>  |

|                     |  |
|---------------------|--|
| Rationale/Comments: | Relation.Resource.CatalogEntry.Catalogue is the library containing the <b>related</b> multimedia content, whereas General.CatalogEntry.Catalogue is the library containing the multimedia content being described by this instance of the metadata record. |
|---------------------|--|

#### 7.2.2.2 Entry

|                     |  |
|---------------------|--|
| Overview            | A unique global ID for the related resource generated at upload. |
| Database Table:     | Relations.Resource→Metadata.GlobalID                             |
| Optional/Mandatory: | Mandatory  |
| Data Type:          | Varchar (500)  |
| Automatic           | Yes  |
| Multiplicity:       | Single value   |
| Domain:             | None   |
| Example(s):         | "879F-298A-3AF3-7E8A"  |

## 8. Classification

### 8.1 TaxonPath

#### 8.1.1 Source

|                     |  |
|---------------------|--|
| Overview            | Vocabulary used for subject terms.   |
| Database Table:     | TaxonPaths.Source  |
| Optional/Mandatory: | Optional   |
| Data Type:          | Varchar (255)  |
| Automatic           | No   |
| Multiplicity:       | Yes  |
| Domain:             | Restricted vocabulary : {Consumer Health, MeSH, UMLS-KS-ConceptID, NOVEL}. |
| Example(s):         | "MeSH"   |
| Rationale/Comments: | Required if controlled vocabulary subject terms are entered.               |

#### 8.1.2 Taxon

##### 8.1.2.1 ID

|                     |   |
|---------------------|---|
| Overview            | Identifier used within the TaxonPath Source |
| Database Table:     | Taxons.ID                                   |
| Optional/Mandatory: | Optional                                    |
| Data Type:          | Varchar (255)                               |
| Automatic           | No  |
| Multiplicity:       | Yes   |
| Domain:             | Based on TaxonPath.Source                   |
| Example(s):         | "A03.620"                                   |

##### 8.1.2.2 Entry

|                     |  |
|---------------------|--|
| Overview            | Entry used within the TaxonPath Source |
| Database Table:     | Taxons.Entry                           |
| Optional/Mandatory: | Optional                               |

|               |                           |
|---------------|---------------------------|
| Data Type:    | Varchar (255)             |
| Automatic     | No                        |
| Multiplicity: | Yes                       |
| Domain:       | Based on TaxonPath.Source |
| Example(s):   | "Liver"                   |

## 8.2 Keywords

|                     |   |
|---------------------|---|
| Overview            | Free text keywords describing the subject content of the multimedia item.   |
| Database Table:     | Keywords.Keyword  |
| Optional/Mandatory: | Optional  |
| Data Type:          | Varchar (255)   |
| Automatic           | No  |
| Multiplicity:       | Yes   |
| Domain:             | Free Text   |
| Example(s):         | "Abdomen"   |
| Rationale/Comments: | Free text keywords. These should not correspond to a controlled vocabulary. If a controlled vocabulary is used, the Taxon/Taxonpath mechanism above should be employed. |