VRA Core 4.0

Introduction

The Visual Resources Association Data Standards Committee has updated the Core Categories in order to conform to ongoing developments in data standards, data sharing, and data storage technology. This new version is known as Core 4.0.

VRA Core and data standards

The VRA Core is a data standard for the cultural heritage community. It consists of a metadata element set (units of information such as title, location, date, etc.), as well as an initial blueprint for how those elements can be hierarchically structured. The element set provides a categorical organization for the description of works of visual culture as well as the images that document them.

Establishing an official encoding of the data elements into a data format (such as XML) is a logical next step in the development of efficient systems for cataloging, retrieval, and record sharing. To this end, the VRA Data Standards Committee has developed an XML Schema for the VRA Core 4.0 metadata element set to be used primarily for record sharing and exchange purposes.

It is important to realize that standardizing data elements and establishing a common data format will, in and of themselves, achieve neither a high rate of descriptive consistency on the part of catalogers, nor a high rate of retrieval on the part of end-users. Standards which specify how to fill the units of information with data are necessary to guide the choice of terms or words (*data values*) as well as the selection, organization, and formatting of those words (*data content*).

Some examples of data value standards that are used in the cultural heritage community include the *Thesaurus for Graphic Materials (TGM)*, *Art & Architecture Thesaurus (AAT)*, *Union List of Artist Names (ULAN)*, and the *Thesaurus of Geographic Names (TGN).* An example of a data content standard and one which is directly relevant to the VRA Core 4.0 is the *Cataloging Cultural Objects (CCO)* guidelines. Data value and content standards will not be discussed in detail in this document, but it is highly recommended that users of Core 4.0 refer to them in the development of their own data standards guidelines. A full list of data standards and their URLs is displayed in Appendix 1.

Why a new version of the Core?

This latest edition of the Core contains significant changes from the previous version, Core 3.0. The changes have been made in order to make an XML expression of the Core possible. These changes primarily concern the redefinition of what were known as *element qualifiers* in 3.0. Qualifiers have been converted to *sub-elements* and *attributes* following XML encoding syntax (see more on XML below).

Other changes reflect practices elaborated in CCO. Core 4.0 and CCO have effected a symbiotic relationship: Core 3.0 provided the groundwork upon which the CCO editors developed data content guidelines and CCO, in turn, has informed the methodology of Core 4.0, specifically in the differentiation of data values for *display* and *indexing*.

In Core 4.0, the VRA Data Standards Committee has continued to follow the "1:1 principle," developed by the Dublin Core community, i.e., only one object or resource may be described within a single metadata element record. However, images often show more than one work, or only a portion of a complex work made up of many parts. The Core RELATION element allows these complex "one-to-many" relationships to unambiguously co-exist within one metadata record. How database records are linked is a local implementation issue, but this introduction will give a general overview of relationships between database records and refer to other resources that can advise in this area.

Changes to elements between 3.0 and 4.0

Some element names have been modified from 3.0 to 4.0. In certain cases, the elements themselves are still used for the same types of information as in Core 3.0. In other cases, there have been structural changes, many of which were necessary for XML encoding. The changes are as follows:

Core 3.0	Core 4.0	Nature of change
RECORD TYPE	WORK, COLLECTION, or IMAGE	Name change and structural change (see below under discussion of XML)
TYPE	WORK TYPE	Name change only
CREATOR	AGENT	Name change and structural change
ID NUMBER	LOCATION.REFID	Sub-element under LOCATION for IDs associated with repository
	TEXTREF	IDs not associated with repository
CULTURE	AGENT.CULTURE	Sub-element under AGENT to denote agent culture or nationality
	CULTURAL CONTEXT	Describes cultural context
	INSCRIPTION	New element
	STATE EDITION	New element

A significant change was made to the CREATOR element. Encoding of this element was problematic in Core 3.0 because the term "creator" implied a particular role for the person or corporate body affiliated with the object or image. A person or corporation might be affiliated with the object or image in another role, such as a donor, commissioner, builder, etc. Therefore 4.0 created separate but repeateable data placeholders for the name and role. CREATOR has been renamed AGENT and sub-elements were created for name, role, culture, dates, and attribution.

CULTURE, which existed as a single, free-standing element in 3.0, is now recorded in two different places. As a sub-element under AGENT, culture may be associated with a named individual or corporate body to denote the nationality or cultural background of the agent of creation. That is, the cultural background of Edouard Manet or the anonymous architect(s) of the Great Pyramid of Tenochtitlan would be indicated by the values "French" and "Aztec" respectively in the AGENT.CULTURE sub-element. On the other hand, the free-standing element CULTURAL CONTEXT is meant to denote the cultural context in which the work was created. In this regard, the cultural context of Manet's "Olympia" or the Great Pyramid of Tenochtitlan could also take the values "French" and "Aztec" respectively. However, in the case of the Wilton Diptych, which was almost certainly created by a French artist in an English milieu, or "The Child's Bath" by Mary Cassatt, which was created by an American artist in a French milieu, the element CULTURAL CONTEXT would take the values "English" and "French" respectively (see table below).

Work	Agent	AGENT.CULTURE	CULTURAL CONTEXT
Olympia	Edouard Manet	French	French
Great Pyramid of Tenochtitlan	Anonymous Aztec architect	Aztec	Aztec
Wilton Diptych	Anonymous French artist	French	English
The Child's Bath	Mary Cassatt	American	French

In 3.0, it was possible to define whole/part relationships by referring to a LargerEntity qualifier in the TITLE element. While this was convenient, it created potential ambiguities among records. The Data Standards Committee decided it was more efficient and "cleaner", from a data integrity standpoint, to define whole/part relationships in 4.0 by creating record-to-record linkages using the RELATION element. The LargerEntity qualifier has thus been eliminated from the TITLE element.

Another noticeable change from Core 3.0 is the restructuring of the ID NUMBER element. IDs associated with a repository are now recorded in a sub-element (refid) of LOCATION. For example, an object belonging to the Louvre with an accession number 680 would be described as follows:

Display: **Musée du Louvre (Paris, FR) 680**

VRA element	XML element	*XML attribute*	XML sub-element	*XML attribute*	**Data example**
LOCATION	location				
		type			repository
			name		Musée du Louvre
				type	corporate
			name		Paris
				type	geographic
			refid		680
				type	accession

On the other hand, ID values derived from related textual references not associated with a particular location, such as a catalog number, are recorded in what is now called the TEXTREF element. For example:

Display: **ARV2 5 (6)**

VRA Element	XML element	XML sub-element	*XML Attribute*	Data example
TEXTREF	textref			
		name		Beazley, Attic Red-figure Vase Painters (2nd Edition)
			type	corpus
		refid		p. 5, no. 6
			type	citation

Two new elements have been introduced in Core 4.0: INSCRIPTION and STATE EDITION. INSCRIPTION records all marks or written words added to the object at the time of production or in its subsequent history, including signatures, dates, dedications, texts, and colophons, as well as marks, such as the stamps of silversmiths, publishers, or printers. STATE EDITION records the identifying number and/or name of a state, edition, or impression of a work that exists in more than one form and the placement of that work in the context of prior or later issuances of multiples of the same work.

Works, Images, and Collections

In version 3.0, Core elements could be used to describe two types of records: *works* and *images*. In version 4.0, a third record type has been added for *collections*. These three record types have been defined in Core 4.0 as follows:

A *work* is a unique entity such as an object or event. Examples include a painting, sculpture, or photograph; a building or other construction in the built environment; an object of material culture, or a performance. Works may be simple or complex. Works may have component parts that are cataloged as works themselves but related to the larger work in a whole/part or hierarchical fashion via the RELATION element.

An *image* is a visual representation of a work in either whole or part. The representation serves to provide access to the work when the work itself cannot be experienced firsthand. In image collections, such representations typically are found in the form of slides, photographs, and/or digital files.

A *collection* is an aggregate of work or image records. In 4.0, it was necessary to add an additional record type (other than work and image) in order to allow for collection-level cataloging, where a single record may be made for a group or collection of items when it is impractical to make separate records for a number of related works. While the term *collection* may have varying meanings in different communities, a *collection* in Core 4.0 may be comprised of multiple items that are conceptually or physically arranged together for the purpose of cataloguing or retrieval. This record type can also be used to record an archival group that share a common provenance or a series that encompasses multiple individual titles.

For more guidance see the CCO: Part I: Section II. What are you Cataloging?; Part I: Section III. Works and Images; and Part I: Section VI. Related Works.

Relationships between records

In the context of Core 4.0 there are three primary types of relationships between records: 1) work to work, 2) image to work, 3) image or work to collection

Work to Work relationships

According to CCO, there are two types of work to work relationships: *intrinsic* and *extrinsic*, and it is important to make this distinction at the beginning of the cataloging process.   An *intrinsic* relationship is one that is essential to the cataloging process and needs to be recognized in order to fully identify a given work. On the other hand, an *extrinsic* relationship, while informative, is not essential in order to fully identify or locate the work.

An *intrinsic* relationship exists where the described work is dependent on the referenced work, either physically or logically, for its identity. This dependency is typically part-to-whole, such as a component of an architectural complex, a panel of an altarpiece, a page of a manuscript, or an individual work in a series. The cataloger should use the RELATION element to establish a virtual link between the two works. The data values should include at minimum the identity of the related work (e.g. unique id at a minimum, title if needed) and a description of the type of relationship.

An *extrinsic* relationship between two works exists when the described and referenced works could stand independently and the relationship is informative but not essential either physically or logically in identifying either of the works. Some institutions may find it unnecessary to identify extrinsic relationships other than by adding a note in the DESCRIPTION element. But if an institution wants to record a virtual link in its system between the two works using the RELATION element, the link between the works should be reciprocal and the data values should include at minimum the identity of the related work (e.g. unique id at a minimum, title if needed) and a description of the type of relationship. Examples include: pendant works, a preparatory sketch for a later work, a work copied after another work, or a work referenced within another work.

Image to Work relationships

In order to give meaning to an Image Record, it is necessary to create a virtual link between one or more Work Records and the Image Record. This link is also made via the RELATION element, and the nature of the relationship is defined by the *type* attribute.

Typically, a given work record will have more than one image associated with it (e.g. several views of a work). In some cases an image may represent more than one work (e.g. image of several pieces of jewelry in a display) and needs to be related to multiple work records. The data values should include at minimum the identity of the related work (e.g. unique id at a minimum, title if needed) and a description of the type of relationship.

Image to Collection or Work to Collection relationships

Depending upon circumstance, an image or a work record can be associated with a given collection record (see above definition of *collection*), using the RELATION element. The data values should include at minimum the identity of the related work (e.g. unique id at a minimum, title if needed) and a description of the type of relationship.

For more guidance on relationships see CCO Part I: VI. Related Works; Part I: VII. Database Design and Relationships.

Required/Minimal elements

From a strictly technical standpoint, the only required element in a Core 4.0 record is that which contains information that uniquely identifies the record. In non-XML implementations, this is the WORK, COLLECTION, or IMAGE element; in XML implementations, this is the Work, Collection, or Image "wrapper" that contains the other elements (see XML and the Work, Collection, or Image Element below).

However, as a principle of good practice, there are certain descriptive elements that are deemed essential for meaningful retrieval. These are elements that provide information answering basic questions about an object: *what, who, where, when*. To this end, a minimum-level *work* record should contain the following elements:

> WORK TYPE (*what*)
> TITLE (*what*)
> AGENT (*who*)
> LOCATION (*where*)
> DATE (*when*)

The cataloger is encouraged to record more than the minimal descriptive elements listed here when the information is available and would be useful to the end user. For more guidance on minimal elements see CCO Part I, Section IV, Minimal Descriptions.

By the same token, a minimal-level *image* record should contain the following descriptive elements to ensure proper identification:

> WORK TYPE
> TITLE (CCO View Description)

Repeatable elements

A repeatable element means that there can be more than one data value assigned to that element within a single record. For example, SUBJECT is an element that is repeatable in order to store the many subject terms that may be needed to describe a work or image. For better storage, retrieval, and sharing of data, it is recommended that catalogers store multiple terms in separate, repeatable instances of an element rather than storing multiple terms within a single, non-repeated element. The data may still be concatenated for display or labeling if needed.

> Example:
> *Not recommended*: Multiple terms within a single, non-repeated element
> SUBJECT = woman with child, boat, dog
>
> *Recommended*: Multiple terms assigned to separate, repeated elements
> SUBJECT = woman with child
> SUBJECT = boat
> SUBJECT = dog

Why XML?

XML provides a stable, non-proprietary data storage and/or exchange environment from which data can easily be transferred to other software environments as necessary. XML stands for Extensible Markup Language. XML is a markup language much like HTML, but, unlike HTML**,** which is about displaying information, XML is about describing information's structure and meaning. Basic components in an XML data file include *elements*, *sub-elements*, *attributes* and data *values*.

Elements and *sub-elements* are analogous to field names in a database. They are also referred to as tags because they are used to tag or markup the data they describe. Tags are always easy to recognize because they are enclosed in <angle brackets>
> Example of an *element*:
>
> **<description>**back of panel in triptych**</description>**

Sub-elements are used to nest elements hierarchically within other elements.
> Example of *sub-elements*:
>
> <agent>
>   **<name>**Rubens, Peter Paul**</name>**
>   **<culture>**Flemish**</culture>**
>   **<role>**painter**</role>**
> </agent>

Attributes contain data that qualify the element data or sub-element data in some way. For example, the attribute **unit** modifies the element MEASUREMENT.

> Example of an *attribute*:
> <measurement **unit** ="cm">24</measurement>

Data *values* are the actual data that is enclosed within the XML tags. Unlike HTML, each data value must be surrounded by an opening and closing tag to be valid.

> Example of a data *value*:
> <technique>**etching**</technique>

This document provides only a very basic introduction to XML because it is presumed the cataloger will be working in conjunction with a programmer, database administrator, or technical support staff in setting up one's system. While this is only an introduction, it is highly recommended that the cataloger familiarize him/herself further with XML in order to understand its capabilities and limitations and to communicate more effectively with technical support staff in setting up a system. Additional XML resources are recommended in Appendix 2.

Display, Indexing, and Annotation

CCO recommends that data be recorded according to the requirements of both *display* and *indexing.* That is, data values for a given element should be formatted as they will be displayed to an end user of a database, whether in a slide label, text in a publication, or web page. At the same time, data values should be separately formatted and linked to controlled vocabularies as a set of indexing terms to facilitate successful retrieval. Furthermore, each element should retain a place for additional annotation, if it is needed.

To this end, the VRA Core XML schema provides each element with two separate sub-elements, display and notes, for display and annotation purposes respectively. These sub-elements, along with one or more index values contained within the element tags, are nested within an outer "wrapper" known as a *set* that contains the display, notes, and one or more sub-element values. For example, the MATERIAL element would be expressed as follows:

```
<materialSet>
    <display>oil on canvas</display>
    <notes source="Art Bulletin, v.87, no. 1 (March 2005)">Medium originally thought to
      be tempera. Oil medium discovered in tests at Uffizi in 2003</notes>
    <material type="medium" vocab="AAT" refid="300015050">oil paint</material>
    <material type="support" vocab="AAT" refid="300014078">canvas</material>
</materialSet>
```

The display value of the element is "oil on canvas", while the values "oil paint" and "canvas", derived as controlled vocabulary from AAT, are recorded as indexing terms in repeating instances of the <material> sub-element.   Each *set* must contain at least one instance of the element name (in this case, <material>) as a sub-element, whereas the *display* sub-element, which is used for a formatted version of the index data, is optional.

An optional *notes* sub-element within the *set* wrapper enables free-text annotation of element-specific information not already covered in the other attributes. If, however, the annotation refers to the entire record rather than to a specific element, it should be recorded in the DESCRIPTION element instead.

Keep in mind that some systems will allow you to create the display data automatically from the indexed data. In other cases, the displayed data will need to be entered manually.

XML and the WORK, COLLECTION, or IMAGE element

What was formerly known in Core 3.0 as the RECORD TYPE element has been reconfigured into an element called WORK, COLLECTION, or IMAGE.   The data contained within the record (*work*, *collection*, or *image data*) determines the name of the element itself.
This element is a crucial storehouse of administrative data that provides context within a given record-keeping environment. The *attributes* of the WORK, COLLECTION, or IMAGE element provide this information as follows:

- *id* contains a unique identifier for the XML record
- the global *refid* attribute may be used to record a local number, code, or address that uniquely identifies the record within the local context identified in the source attribute

- the global *source* attribute records the set or environment to which the record belongs, such as a visual resources collection or museum

In the XML schema, Work, Image, or Collection functions as an upper-level "wrapper" within which the other elements, each packaged in *sets*, are contained. The global *id, refid,* and *source* attributes of the Work, Image, or Collection wrapper serve as unique identifiers in different contexts. The *id* attribute uniquely identifies an individual XML record within a file consisting of many XML records, and the *refid + source* uniquely identifies the XML record in the system from which it came. The hierarchy of tags, with a Work record used as an example and the first element, Agent, elaborated, is as follows:

```
<work id="w_98765432"  refid="14363" source="History of Art Visual Resources Collection, UCB">
    <agentSet>
        <display></display>
        <notes></notes>
        <agent></agent>
    </agentSet>
    <dateSet></dateSet>
    <culturalContextSet></culturalContextSet>
    <descriptionSet></descriptionSet>
     etc…
</work>
```

Global attributes

Some attributes in the VRA Core 4.0 are considered global or "floating" because they can be used to modify any element or sub-element rather than being tied to any specific one. The VRA Core 4.0 attributes *extent, dataDate, href, pref, refid, rules, vocab, source,* and *xml:lang*, have been designated as global attributes. These attributes are optional and may be applied as needed.

- *extent* refers to the part of the work, image or collection being described by the element or sub-element that it modifies.

- *dataDate* refers to the date and/or time a particular piece of data was captured

- *href* refers to a hypertext reference that provides a link to another electronic resource

- *pref* indicates that a particular data value is the preferred value when multiple data values for the same element or sub-element exist

- *refid* refers to id numbers or codes coming from the local institution or resource named in the source attribute

- *rules* refers to any data content standards used to construct the value recorded in the element (e.g. AACR2, CCO)

- *source* refers to the local, print, or electronic source from which information is derived for a specific element (e.g. Grove Dictionary of Art). Please note: SOURCE is also used as an element and should be used when you want to record a single print or electronic source for information pertaining to the entire record rather than pertaining to individual elements.

- *vocab* refers to the controlled vocabulary source from which the term or phrase is derived (e.g. AAT, LCSH).

- *xml:lang* refers to the language in which the information is recorded in the system (e.g. English, French).

XML ID attributes

Besides the global attribute *refid*, which may refer to id numbers or codes associated with external sources of information, such as AAT, ICONCLASS, or a local contributing collection, there are two specialized identification attributes in Core 4.0.

- *id* is used in the WORK, COLLECTION, or IMAGE element.   The value of this attribute is a unique identifier for the XML record. It is analogous to a primary key in a relational database. The value must begin with a letter or underscore. As a matter of best practice, it is recommended that the value begin with a "w_" for works, "c_" for collections and "i_" for images (e.g. *w_123456*, *c_345678*, and *i_983247*). This prefix may be added in the XML export process, and need not be part of the database record.

- *relids* is used in the RELATION element. The value of this attribute is the *id* of the Work, Collection, or Image to which the specified Relation is pointing. It is analogous to a foreign key or relational key in a relational database.

XML Schemas

An encoding schema is needed in order for everyone implementing a common metadata element set to do so in a consistent way. A schema is simply an XML file that contains the rules for what can and cannot reside in an XML data file. Schema files typically use the .xsd file name extension, while XML data files use the .xml extension. Schemas play several roles, including specifying the valid elements, sub-elements, and attributes as well as the values they can contain (either by data type or by providing a list of values). Schemas specify which elements are required and/or are repeatable. Furthermore, they control the structure by specifying which elements can be nested. When the data in an XML file conforms to the rules provided by a schema, that data is said to be valid.

At present, there are two versions of the VRA Core 4.0 XML schema, one *unrestricted* and one *restricted*. The *unrestricted* version imposes no restrictions on the values entered into any of the elements, sub-elements, or attributes, and may be useful for those who want to exchange legacy data that does not conform to the data value requirements in the *restricted* schema. It should be understood, though, that data exchanged in this manner may not interoperate well with data that meets the requirements of the *restricted* schema. The *restricted* version imposes restrictions on the data values entered into the *type* attributes (see VRA_Core4_Restricted_schema_type_values.pdf for a list of allowed values and their definitions.) This version may be more appropriate for those wishing to aggregate VRA Core data from multiple sources into a common repository or shared cataloging environment. As time passes and practice warrants, even more restrictive or community-profile-specific versions may evolve. Keep in mind that the restricted version of the schema is an extension of the unrestricted version and should be used in addition to rather than in place of it.

Purpose of the VRA Core 4.0 XML Schema

Many institutions store their data in relational or proprietary databases. Most will not have the capability or desire to store their data in XML. Even if your institution has the ability to store data in XML, the VRA Core 4.0 XML Schema would probably not be sufficient for this purpose because it does not support fully-enabled authority files and it is likely institutions would need to add additional elements, sub-elements and attributes for local needs.

The primary function of the VRA Core 4.0 XML Schema is to enable you to export information from your relational or proprietary database to XML for the purposes of sharing that data beyond your local system. Most commercial relational database software applications, such as Access and FileMaker Pro, now provide this export option either by writing export routines or by XSLT Stylesheet transformations.

Core 4.0 and CCO

As mentioned earlier, VRA Core 4.0 and CCO have affected a symbiotic relationship – a result of informing one another and working very well together as data element and data content standards. It should be noted, though, that they are not meant to mirror one another exactly. They were designed for different purposes, CCO for record creation and VRA Core 4.0 for record sharing. Therefore there are some differences that users should be made aware of. CCO focuses on descriptive metadata only. VRA Core, on the other hand, includes some administrative elements necessary for data aggregation and record sharing. Below is a chart identifying the correlations and differences between them.

Core 4.0 work record	CCO work record
WORK, COLLECTION, or IMAGE (administrative)	
WORK TYPE	WORK TYPE
TITLE	TITLE
MEASUREMENTS	MEASUREMENTS
MATERIAL	MATERIAL
TECHNIQUE	TECHNIQUE
AGENT	CREATOR
DATE	DATE
LOCATION	LOCATION
TEXTREF	
STYLE PERIOD	STYLE
CULTURAL CONTEXT	CULTURE
SUBJECT	SUBJECT
INSCRIPTION	INSCRIPTION
STATE EDITION	STATE AND EDITION
RELATION (administrative)	
DESCRIPTION	DESCRIPTION
SOURCE (administrative)	
RIGHTS (administrative)	
	CLASS

The CCO category CLASS is not included as an element in Core 4.0 because CLASS pertains to the local organizational context of a given collection or institution and is not necessarily meaningful in a shared environment. Some data values ordinarily found under CLASS are easily accommodated by Core elements such as WORK TYPE or STYLE PERIOD. Other class terms may be recorded in a local XML schema that uses a VRA XML record as it's "core."

Administrative elements found in the Core, but not in CCO, are important for record sharing. Explicitly identifying a record as being one of WORK, COLLECTION or IMAGE type and using the RELATION element will make it easier to maintain links between those records and to relate them to other records outside the local environment.

In CCO, work records are distinguished from image records implicitly through element naming. For example, CCO uses View Description, View Type, View Subject, and View Date as the descriptive elements for Image Records. VRA Core 4.0, on the other hand, maintains the same set of element

names regardless of record type (Collection, Work, or Image). However, the meanings of these elements are equivalent. See the chart below.

VRA Core 4.0 image record	CCO image record
TITLE	VIEW DESCRIPTION
TITLE *type*="generalView" or "partialView"	VIEW TYPE
SUBJECT	VIEW SUBJECT
DATE *type*="view"	VIEW DATE

Other administrative elements in VRA Core 4.0, such as SOURCE and RIGHTS, are important in an aggregated environment to help identify the original source for data and images and to clarify how those images can be used. In a Work Record, SOURCE identifies the source of information, usually a publication or web site, upon which cataloging information is based; in an Image Record, it identifies the publication, vendor, or photographer from which an image is derived.

RIGHTS, on the other hand, identifies the copyright status and the rights holder, if known, for a given work or image. Sometimes the cited source and the rights holder will be one and the same, but this will often not be the case. If the copyright status or rights holder is unknown, then the information contained in SOURCE may be a useful starting point to an end user in initiating a copyright investigation.

As digital assets are shared outside of the local environment in which they were created, rights metadata becomes important for supporting their effective management and re-use. Many institutions will have their own intellectual rights metadata strategies and the RIGHTS element, in and of itself, is not meant to replace those strategies. Rather, it can help inform institutions what rights information will need to be extracted from the local record and accompany a digital asset when it is shared.

Some institutions provide intellectual rights metadata at the collection level while others provide it at the level of the individual asset. Ideally, institutions should record and provide this information at the item level for the efficiency of the end user. But if this is not possible, a blanket rights statement can be applied to all items upon export.

Appendix 1: Related Data Standards (when online versions are available they are listed below)

Data element sets:

> Categories for the Description of Works of Art
> http://www.getty.edu/research/conducting_research/standards/cdwa/

Data content:

> Cataloging Cultural Objects: A Guide to Describing Cultural Works and Their Images/ editors, Murtha Baca…[et al.]. on behalf of the Visual Resources Association. Chicago : American Library Association, 2006. See also http://vraweb.org/ccoweb/cco/index.html

> Anglo-American cataloguing rules / prepared under the direction of the Joint Steering Committee for Revision of AACR, a committee of the American Library Association ... [et al.]. 2nd ed., 2002 revision. Ottawa : Canadian Library Association ; Chicago : American Library Association, 2002- (AACR2)

Data values:

> Library of Congress Subject Headings (LCSH)

> Library of Congress Thesaurus for Graphic Materials (LCTGM - Parts I and II)
> http://www.loc.gov/rr/print/tgm1/
> http://www.loc.gov/rr/print/tgm2/

> Getty Art and Architecture Thesaurus (AAT)
> http://www.getty.edu/research/conducting_research/vocabularies/aat/index.html

> Getty Thesaurus of Geographic Names (TGN)
> http://www.getty.edu/research/conducting_research/vocabularies/tgn/index.html

> Getty Union List of Artist Names (ULAN)
> http://www.getty.edu/research/conducting_research/vocabularies/ulan/index.html

> Getty Editorial Guidelines for ULAN: Appendix G: Nationalities and Places
> http://www.getty.edu/research/conducting_research/vocabularies/guidelines/ulan_4_7_appendix_g_nationality_place.pdf

Appendix 2: Recommended XML introductory resources

XML tutorial put out by w3Schools
http://www.w3schools.com/xml/default.asp

Eric Lease Morgan's Getting Started with XML
http://www.infomotions.com/musings/getting-started/

Help files within software programs– For example, in Access search for "XML for the uninitiated"

Gilmour, Rom. XML: a Guide for Librarians. LITA Guide #11. American Library Association, 2003.