DATE: June 9, 2015

TO: ALA/ALCTS/CaMMS/Committee on Cataloging: Description and Access (CC:DA)

FROM: OLAC (Kelley McGrath)

SUBJECT: Addition of new Chapter 3 elements for optical disc physical standard, optical disc recording method, and optical disc data type

BACKGROUND:

Online Audiovisual Catalogers (OLAC) would like to revisit the portion of our 2012 proposal (6JSC/ALA/16) that addresses describing characteristics of optical discs in RDA. Optical discs have three basic characteristics that are important for use and preservation, which we will refer to as physical standard, recording method and data type. RDA's lack of guidance for recording anything about the first two characteristics is an ongoing problem. RDA also conflates the third characteristic with file-level encoding descriptions. Misunderstandings about what these characteristics are and how they interrelate are common among catalogers. Omissions or inaccuracies in recording this information prevent users from identifying resources that are usable with the equipment that is available to them.

PROPOSED SOLUTION:

OLAC thinks that it is best for RDA to take a pragmatic approach to describing these optical disc characteristics. The instructions in RDA should be easy for catalogers without strong technical backgrounds to understand and apply. They should describe resources at a level that is useful and easily understood by end users and public services staff. Although the JSC previously expressed a preference for referencing external vocabularies for this type of information, we have been unable to identify an appropriate vocabulary, or even a relevant vocabulary, for the concepts described in this proposal. We have consulted with Alex Duryee of AVPreserve to improve the accuracy of our terminology and identify the best and simplest ways to meet our goals. To this end we propose the addition of elements that describe the primary physical aspects (Optical disc physical standard and Optical disc recording method) and the high-level data type (Optical disc data type) of optical discs. These omissions are more of a hindrance at a practical level than current problems with RDA's list of video encoding formats. This proposal only discusses digital encoding formats when they overlap with optical disc characteristics. We may, as resources allow, reexamine video encoding formats in the future.

We propose that only a short list of terms for formats that are currently in common use be maintained within the text of RDA. Less common or obsolete formats could be maintained, as needed, by other groups outside the core text of RDA. Shorter lists will be easier to maintain and should be sufficient for the needs of most general library collections. Therefore, we are proposing that HD-DVD and SVCD be removed. As discussed at the CC:DA meeting in June 2014, OLAC will maintain a somewhat longer list of terms that includes some obsolete formats. OLAC has created draft vocabularies for the proposed new elements, including the ones that we are not recommending for incorporation into the text of RDA, in the Metadata Registry Sandbox. These lists can be seen at

http://sandbox.metadataregistry.org/uri/opticalDiscPhysicalStandard

http://sandbox.metadataregistry.org/uri/opticalDiscRecordingMethod

http://sandbox.metadataregistry.org/uri/opticalDiscDataFormat

Optical disc physical standard (e.g., DVD, CD, Blu-ray)

The type of physical standard (e.g., DVD, CD, Blu-ray) is important because users need to have a device that will read that type of disc. Physical standard refers to a physical type of optical disc with pits and lands of a certain size arranged in a certain pattern that need to be read by a certain wavelength of laser.

It is important for RDA to include the common types of physical standards used for commercially-available optical discs. There are only three in widespread distribution today: CD, DVD, and Blu-ray. We have also included Wii U, which is the most common proprietary game disc format. A short list of the most common optical disc physical standards will be useful and accessible to the vast majority of catalogers, especially those who do not have a technical background. By using an open-ended list, additional disc types can be recorded as needed by institutions that collect more specialized or uncommon materials.

Optical disc recording method

The method of getting data on the disc (stamping or burning) and, to a lesser extent the specific type of recordable disc, such as CD-RW or DVD-R, are important because burned discs are less reliable. Older drives and players, in particular, may not read them and they deteriorate faster than stamped discs. This information is particularly important for public services staff trying to troubleshoot patron complaints and for assessing the preservation needs of a collection.

Note that the above two elements, taken together, provide enough information about a disc to map into the RDA/ONIX Framework. As all but the most exotic optical discs adhere to well-documented standards set forth by the ISO and ECMA, the RDA/ONIX mappings can be trivially derived from these two elements. For example, knowing that an optical disc is a burned CD-RW is sufficient to derive a complete set of RDA/ONIX physical characteristics - its FixationMethod (heating), FixationTool (780 nanometer laser), IntermediationMethod (780nm laser), etc.

For Optical disc recording method, we propose that the primary distinction be whether the disc is stamped or burned. This fundamental distinction is the most important for access, troubleshooting and preservation. In addition, it is not always practical to determine the specific type of burned or stamped disc.

> (1) stamped discs are mass-produced from glass masters and reliably play in all types of players supporting that disc standard

> (2) burned discs, or recordable discs, are discs where content is written with a laser on a layer of dye or metal alloy within the disc. In many cases, burned discs are easily identified by examination of the top and bottom of the disc.

There are many types of recordable discs. In many, but not all, cases, the type of recordable disc, such as DVD-R or CD-RW, is stated on the disc. DVD-R is the recordable disc most commonly encountered by libraries, but not all recordable discs are DVD-R. If the specific type of disc is known, we recommend that it also be recorded if it is thought important. The specific type of recordable disc often appears on the disc label or can usually be definitively determined with appropriate software, such as KProbe (http://www.k-probe.com/).

It was previously suggested on the CC:DA blog that this element could be incorporated as a subelement under production method. An alternative proposal for a Production Method for Optical Disc is presented in the questions section below.

Optical disc data type

Physical standard and recording method are characteristics of the physical disc as it is manufactured and are orthogonal to the content of the disc. Data type here refers to a very high-level division between formats that are (1) designed strictly to hold music or video data in a standard form that can be played on standalone player (which can be either a physical player or a software player on a computer) and (2) everything else (including music and video that is not in a format in the first category). There are three general categories of data type.

> (1) music (e.g., Compact Disc Digital Audio (CDDA or CD-DA) or DVD-audio)
>
>> These are data standards that allow music to be encoded on a disc in such a way that it can be played on dedicated players as well as on a personal computer
>
> (2) video (e.g., DVD-video, Video CD (VCD))
>
>> These are data standards that allow video to be encoded on a disc in such a way that it can be played on dedicated players as well as on a personal computer
>
> (3) data
>
>> This includes any kind of general data, such as documents of all sorts, multimedia programs, games, and music and video not designed for a standard player (e.g., Windows Media Audio (WMA), QuickTime video)

Part of the confusion about these terms stems from the fact that some types of content (e.g., CD Digital Audio, VCD, DVD-video) are associated with a specific type of optical disc physical standard. In these cases, the type of optical disc physical standard does not provide additional information. For example, a CD Digital Audio disc necessarily has CD as its physical standard. The data types that are associated with a specific type of optical disc physical standard happen to be the ones that are most commonly collected by libraries and this may obscure the need for separately identifying the optical disc physical standard. The need to identify the optical disc physical standard is more obvious in the case of data and multimedia programs or in the case of music and video formats that are not necessarily linked to a specific type of optical disc physical standard. For example, QuickTime videos or Windows Media Audio files could be recorded on CD, DVD, or Blu-ray discs.

Explicitly recording these categories also correlates with distinction that RDA makes between digital computer discs and digital audio or video discs, despite the fact that the underlying physical substrate for all of these is the same.

Additions to the Glossary

Definitions have been provided for all the new elements and terms. All the definitions are loosely based on Wikipedia.

Proposed new elements:

[To be numbered 3.x, 3.y and 3.z][1]

3.x   Optical Disc Physical Standard

3.x.1 Basic Instructions on Recording Optical Disc Physical Standard

3.x.1.1   Scope

Optical disc physical standard▼ is the set of technical specifications that describe the way that content is stored on and read from an optical disc, including storage capacity, laser wavelength used for reading the disc, and the size and arrangement of pits and lands on the disc.

3.x.1.2   Sources of Information

Use evidence presented by the resource itself (or on any accompanying material or container) as the basis for recording the optical disc physical standard. Take additional evidence from any source.

3.x.1.3   Recording Optical Physical Standard

Record the optical disc physical standard if it can be readily ascertained and is considered important for identification or selection. Use an appropriate term from the following list:

> Blu-ray Disc
> CD
> DVD
> SACD
> Wii U

If none of the terms in the list is appropriate, use another concise term to indicate the optical disc physical standard.

3.y   Optical Disc Recording Method

3.y.1 Basic Instructions on Recording Optical Disc Recording Method

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[1] Note: if the proposal is approved by CC:DA, we should recommend a placement or suggest a range where these new instructions might best belong.

3.y.1.1 Scope

Optical disc recording method▼ is the method used to record data on an optical disc.

3.y.1.2 Sources of Information

Use evidence presented by the resource itself (or on any accompanying material or container) as the basis for recording the optical disc recording method. Take additional evidence from any source.

3.y.1.3 Recording Optical Disc Recording Methods

Record the optical disc recording method if it can be readily ascertained and is considered important for identification or selection Use an appropriate term from the following list:

> burned disc
> stamped disc

Optional Addition
Record the specific type of burned disc, in addition to the term *burned disc*, if considered to be important for identification or selection. Use an appropriate term from the following list:

> BD-R
> BD-RE
> CD-R
> CD-RW
> DVD+R
> DVD+RW
> DVD-R
> DVD-RAM
> DVD-RW

If none of the terms in the list is appropriate or sufficiently specific, use another concise term to indicate the optical disc data recording type.

3.z Optical Disc Data Type

3.z.1 Basic Instructions on Recording Optical Disc Data Types

3.z.1.1 Scope

Optical disc data type▼ is the high-level description of the content stored on an optical disc. It provides information about the playback device required (e.g., CD Digital Audio player, DVD-Video player, game console) in order to access the content on the disc. It also provides information about the high-level classification of the content on the disc (e.g., audiovisual, audio, application data).

3.z.2 Sources of Information

Use evidence presented by the resource itself (or on any accompanying material or container) as the basis for recording the optical disc data type. Take additional evidence from any source.

3.z.3 Recording Optical Disc Data Types

Record the optical disc data type if it can be readily ascertained and is considered important for identification or selection. Record as many terms as are applicable to the resource being described.

Alternative

If the resource being described consists of more than one optical disc data type, record only

a) the optical disc data type that applies to the predominant part of the resource (if there is a predominant part)

or

b) the optical disc data types that apply to the most substantial parts of the resource (including the predominant part, if there is one).

Use one or more of the terms from the following list, as appropriate.

Blu-ray application data
Blu-ray audio
Blu-ray (video)
CD application data
CD audio
DVD application data
DVD-Audio

DVD-Video
SACD (audio)
VCD
Wii U application data

If none of the terms in the list is appropriate or sufficiently specific, use another concise term to indicate the optical disc data type.

Additional recommended changes:

3.19.3.3

We also suggest that the standards covered by optical disc data type be removed from the video and audio digital encoding format lists at 3.19.3.3 (Recording Encoding Format):

Audio encoding formats

CD audio

DAISY

DVD audio

MP3

RealAudio

SACD

WAV

[Data, image, spatial data, and text encoding formats unchanged]

Video encoding formats

Blu-ray

DVD video

HD-DVD

MPEG-4

QuickTime

RealVideo

~~SVCD~~

~~VCD~~

Windows media

Clean copy:

Audio encoding formats

DAISY

MP3

RealAudio

WAV

[Data, image, spatial data, and text encoding formats unchanged]

Video encoding formats

MPEG-4

QuickTime

RealVideo

Windows media

RDA Glossary

Proposed additions:

[All definitions are loosely based on Wikipedia.]

BD-R: Blu-ray Disc Recordable; a type of recordable Blu-ray Disc that can be written to only once.

BD-RE: Blu-ray Disc Recordable Erasable; a type of recordable Blu-ray Disc that can be repeatedly written to, erased, and re-recorded.

BD-ROM: For a type of stamped Blu-ray Disc, Stamped Disc ▼
For a Blu-ray Disc containing application data, Blu-ray Application Data

Blu-ray Application data: Data stored on a Blu-Ray Disc not designed for playback on a standalone audio and/or audiovisual player. This encompasses content designed for playback on a specific game console as well as content designed strictly for use on a personal computer.

Blu-ray Audio: A specification that standardizes the encoding and storage of audio content on a Blu-ray. Blu-ray Audio discs are designed for playback on standalone players as well as personal computers. Note that there is currently no single specification for Blu-ray Audio; instead, there are a number of competing formats that fall within this classification.

Blu-ray Disc: A physical standard for a plastic optical disc physical standard that is 1.2 mm thick and usually 120 mm in diameter, which was officially released in 2006. Blu-ray discs are read with a 405 nm diode blue laser at 36 Mbits/s (1×). Disc capacities are 25 GB for single-layer discs, 50 GB for double-layer discs, and the specification leaves room for more layers in the future.

Blu-ray Disc Recordable: BD-R ▼

Blu-ray Disc Recordable Erasable: BD-RE ▼

Blu-ray (Video): A specification that standardizes the encoding and storage of audiovisual content on a Blu-ray Disc. Blu-ray Video discs are designed for playback on standalone players as well as personal computers.

Burned Disc: A disc containing data that is encoded by a writing laser, usually in a disc drive, that targets a layer made of dye or a metal alloy on the disc. Use for both record once and rewriteable discs. Also known as duplicated, recorded, or recordable discs.

CD: a physical standard for a plastic optical disc that is 1.2 mm thick and usually 120 mm in diameter, which first became commercially available in October 1982. CDs are read with a 780 nm wavelength (infrared and red edge) semiconductor laser at 1200 Kb/s (1×). Disc capacity is typically up to 700 MB or 80 minutes of audio.

CD Application Data: Data stored on a CD not designed for playback on a standalone audio and/or audiovisual player. This encompasses content designed for playback on a specific game console as well as content designed strictly for use on a personal computer.

CD Audio: A standard (IEC 60908) published in 1980 for the physical layout and logical encoding of digital audio on compact discs. CD audio is designed for playback on standalone players as well as personal computers.

CD-DA: CD Audio▼

CD-R: Compact Disc-Recordable; a type of recordable CD that can be written to only once.

CD-ROM: For a type of stamped CD, Stamped Disc ▼
For a CD containing application data, CD Application Data

CD-RW: Compact Disc-ReWritable; a type of recordable CD that can be repeatedly written to, erased, and re-recorded.

Compact Disc: CD▼

Compact Disc Application Data: CD Application Data▼

Compact Disc Digital Audio: CD Audio▼

Compact Disc-Recordable: CD-R▼

Compact Disc-ReWritable: CD-RW▼

Digital Versatile Disc: DVD▼

Duplicated Disc: Burned Disc▼

DVD: A physical standard for a plastic optical disc physical standard that is 1.2 mm thick and usually 120 mm in diameter invented in 1995 and became commercially available in Japan in November 1996, the U.S. in March 1997, and later in other countries. DVDs are read with a 650 nm laser at 10.5 Mbit/s (1×). Disc capacities range from 4.7 GB (single-sided, single layer) to 17.08 GB (double-sided, double-layer).

DVD Application Data: Data stored on a DVD not designed for playback on a standalone audio and/or audiovisual player. This encompasses content designed for playback on a specific game console as well as content designed strictly for use on a personal computer.

DVD-Audio: A specification published by the DVD Forum that standardizes the encoding and storage of audio content on a DVD. DVD-Audio discs are designed for playback on standalone players as well as personal computers.

DVD+R: A type of burned DVD that can be written to only once.

DVD+RW: A type of burned DVD that can be repeatedly written to, erased, and re-recorded.

DVD-R: A type of burned DVD that can be written to only once.

DVD-RAM: DVD–Random Access Memory; a type of burned DVD that can be repeatedly written to, erased, and re-recorded.

DVD-Random Access Memory: DVD-RAM▼

DVD-ROM: For a type of stamped DVD, Stamped Disc ▼
For a DVD containing application data, DVD Application Data

DVD-RW: A type of burned DVD that can be repeatedly written to, erased, and re-recorded.

DVD-Video: A specification published by the DVD Forum in 1996 that standardizes the encoding and storage of audiovisual content on a DVD. DVD-Video discs are designed for playback on standalone players as well as personal computers.

Optical Disc Data Type: Optical disc data type▼ is the high-level description of the content stored on an optical disc. It provides information about the playback device required (e.g., CD Digital Audio player, DVD-Video player, game console,) in order to access the content on the disc. It also provides information about the high-level classification of the content on the disc (e.g., audiovisual, audio, application data).

Optical Disc Recording Method: The method used to record data on an optical disc.

Optical Disc Physical Standard: The set of technical specifications that describe the way content is stored on and read from an optical disc, including storage capacity, laser wavelength used for reading the disc, and the size and arrangement of pits and lands on the disc.

Prerecorded Disc: Stamped Disc▼

Pressed Disc: Stamped Disc▼

Recordable Disc: Burned Disc▼

Recorded Disc: Burned Disc▼

Replicated Disc: Stamped Disc▼

SACD: a physical standard for a plastic optical disc that is 1.2 mm thick and usually 120 mm in diameter, which first became commercially available in 1999. SACDs are read with a 650 nm wavelength. Disc capacity is typically up to 4.7 GB or 8.5 GB for dual-layer discs.

SACD (Audio): A standard published in 1999 for the physical layout and logical encoding of digital audio on SACD discs. SACD (audio) is designed for playback on standalone players as well as personal computers.

Super Audio Compact Disc: SACD ▼ SACD (audio)▼

Stamped Disc: A disc that is mass-produced by a machine that uses a glass mold and stamping process to produce pits and lands. These discs contain prerecorded content that is not recordable or writeable by the consumer. Also known as prerecorded, pressed, or replicated discs.

VCD: A standard published in 1993 for the physical layout and logical encoding of digital video on compact discs. VCDs are designed for playback on standalone players as well as personal computers.

Video Compact Disc: VCD ▼

Wii U: A physical standard for an optical disc used by Nintendo as the physical carrier for Wii U Application Data. This disc is designed strictly for playback in a Wii U game console.

Wii U Application Data: Data stored on a Wii U Disc designed for playback on a Nintendo Wii U game console.

Questions:

1. It was suggested on the RDA blog that Optical disc recording method could be re-framed as a subelement of 3.9 Production method. An alternative proposal implementing this suggestion may be found below. OLAC does not have a strong preference as to which approach is chosen. Recording method is somewhat different from the other production methods in that it is a characteristic of the disc even before any data is recorded on it. The language in the original proposal also incorporated phrases such as "if it can be readily ascertained and is considered important for identification," which are not found in the subelements of production, although those stipulations are probably implied. We have left some of that language below, but the instructions could be reworked to mimic the other production methods if that is thought preferable.

3.9.4 Production Method for Optical Disc

3.9.4.1 Scope

Production method for optical disc▼ is the method used to record data on an optical disc.

3.9.4.2 Sources of Information

Use evidence presented by the resource itself (or on any accompanying material or container) as the basis for recording the method used to record data on an optical disc. Take additional evidence from any source.

3.9.4.3 Recording Production Method for Optical Discs

For an optical disc, record the production method for optical discs if it can be readily ascertained and is considered important for identification or selection. Use an appropriate term from the following list:

> burned disc
> stamped disc

Optional Addition
Record the specific type of burned disc, in addition to the term *burned disc*, if considered to be important for identification or selection. Use an appropriate term from the following list:

> BD-R
> BD-RE
> CD-R
> CD-RW
> DVD+R
> DVD+RW
> DVD-R
> DVD-RAM
> DVD-RW

If none of the terms in the list is appropriate or sufficiently specific, use another concise term to indicate the production method for an optical disc.

EXAMPLE

> stamped disc

production method for a commercially-released Blu-ray Disc of a major motion picture

burned disc
production method for a commercially-released educational video on DVD

burned disc (CD-R)
production method for a personal CD with Word documents donated to an archive

Record details of production method for optical disc as instructed at 3.9.4.4.

3.9.4.4 Details of Production Method for Optical Disc

Record details of production method for optical disc▼ if considered important for identification or selection. For scope and sources of information, see 3.9.4.1 and 3.9.4.2.

In addition, a reference would be needed at under the exceptions at 3.9.1.3.

Optical discs. For the method of production for optical discs, see 3.9.4.