To: RDA Steering Committee

From: Thomas Brenndorfer, Extent Working Group Chair

Subject: Discussion paper on the development of extent elements in RDA

Abstract

This discussion paper proposes tentative recommendations to rework RDA elements, string encoding schemes, and vocabularies related to recording the extent of manifestations and expressions.

One major change involves converting Manifestation: **extent of manifestation** into a superelement, with specific aspects covered by subelements, some of which will have subtype elements.

By applying string encoding schemes to construct values of Manifestation: **extent of manifestation** there will be increased flexibility and choice in displaying values, while also supporting legacy string encoding schemes for recording extent values.

New manifestation statement elements will be introduced to transcribe extent statements found on manifestations.

Current RDA value vocabularies, like RDA Carrier Extent Unit, will be dismantled, and their terms relocated to new RDA value vocabularies aligned with the specific aspects represented by the new elements.

Additionally, there will be a clear distinction made between carrier and content aspects of extent. Although minimal changes are expected for the expression extent elements, current instructions for extent of embodied content in manifestations will be addressed by new subelements of Manifestation: **extent of manifestation**.

Introduction

RSC/ExtentWG/2024/1/rev was circulated ahead of the July 2024 Meeting of the RSC and officially introduced to the community during the Public Session of that meeting. RSC/ExtentWG/2024/1/rev2 includes a point about current Policy Statements needing to accompany instructions if they are moved to Community Resources, as well as some small adjustments.

Background

Established in 2011, the ALA Task Force on Machine-Actionable Data Elements undertook an effort to develop new RDA elements for the extent of manifestations and expressions that were

more machine-actionable. After an initial discussion paper, 6JSC/ALA/17 (https://alair.ala.org/handle/11213/20040), further work culminated in 6JSC/ALA/Discussion5, *Machine-Actionable Data Elements for Measurements, Extent of Carrier, Pagination and Foliation, Dimensions, Extent of the Content, and Duration – Discussion Paper (2015)* (https://www.rdatoolkit.org/sites/default/files/rsc/6JSC-ALA-Discussion-5.pdf).

The ALA Task Force on Machine-Actionable Data Elements sought to accomplish two goals:

- allowing the machine to create a traditional text string from data supplied according to machine needs
- enabling a human-created string, which may be necessary if the information is too difficult for the machine to properly manipulate.

The 2015 ALA discussion paper on machine-actionable data elements continued to finetune a model for extent called Aspect-Unit-Quantity (AUQ). Under a high-level class called Measurement (which was to be associated with the all the resource entities), the ALA Task Force presented five sub-elements to be used to describe quantifications of aspects of resources:

Measurement Type (formerly Aspect)
Measurement Unit
Measurement Quantity
Part Measured
Measurement Qualifier

After the 2015 discussion paper, the 3R Project to develop the Official RDA Toolkit became a priority, with extent issues to be pursued after completion of the 3R Project.

The AUQ model was also incorporated in the LRM-E4-A2 Extent attribute for Manifestation, which states "The type of extent and the measurement unit may be given implicitly. The level of precision used in recording the quantification of the extent may vary." The recommendations in this discussion paper are consistent with LRM (https://www.ifla.org/wp-content/uploads/2019/05/assets/cataloguing/frbr-lrm/ifla-lrm-august-2017_rev201712.pdf).

At the 2018 RDA Steering Committee (RSC) meeting in Montreal, it was recognized that a major re-engineering of the extent elements will be required to implement the quantity/unit/aspect substructure outlined in 6JSC/ALA/Discussion/5.

At the 2019 RSC meeting in Santiago a decision was made to set up a working group to address the topic.

The Extent Working Group was set up as a task-and-finish group with an initial two-year term, 2022-2023, which was extended by one year.

The membership consists of:

- Thomas Brenndorfer, Canada, Chair
- Gordon Dunsire, UK
- Keith Knop, USA

- Liz O'Keefe, USA
- Mark Scharff, USA
- Alice Robinson, Switzerland
- Damian Iseminger, Technical Team Liaison Officer, ex officio

The Extent Working Group identified several key issues early in the mandate. The resolutions to those issues form the basis for the tentative recommendations proposed in this discussion paper. The discussion paper is not meant to be exhaustive in providing direction for how every instruction about extent is to be changed. Rather, the model described, with the examples given, should provide the basis for a proper evaluation of all the changes that need to be made to the RDA Toolkit.

Issues

The completed 3R project resulted in the Official RDA Toolkit which has new tools and approaches that could be applied to the reorganization of elements and instructions about extent.

The new tools and approaches include:

- manifestation statements
- superelements that combine the values of subelements
- the identification of string encoding schemes, and their movement to Community Resources
- RDA vocabulary encoding schemes integrated into the Toolkit

The Extent Working Group considered the idea of Measurement as its own class unnecessary. A determination was made that aspects of extent could be recorded through a few additional elements and by utilizing RDA's new structure and tools.

The idea of *quantity* (the Q in the AUQ model) as its own element was considered unworkable, as it could not have a domain of an existing RDA entity. Rather, a quantity can be included in the value for the extent element, along with a term for a unit.

The Extent Working Group determined that the quantity needed to be a whole number for a structured description, rounded up as needed. More precise dimensions would be recorded in notes, or a smaller unit could be used for a precise quantity that did not use a decimal point or fraction, such as for dimensions. For multiple dimensions recorded in an element, the same unit would also be recorded for each dimension as part of the single value for the element.

New manifestation statement elements could be created to transcribe statements about extent, as well as statements consisting of the numbering of sequences of subunits in the manifestation. More complex information about numbering of sequences can be recorded in a Manifestation: **note on manifestation**, which is already common practice.

To identify the necessary new RDA elements the Extent Working Group used a crucial criterion: distinguishing between carrier and content aspects. Introducing new elements for these aspects

will require establishing corresponding value vocabularies, with most terms sourced from the current RDA Carrier Extent Unit value vocabulary.

These were the important aspects and distinctions that would lead to new and reorganized elements for recording extent values:

- the total quantity of physical carrier units
- the quantification of parts for manifestations with multiple parts
- the total quantity of subunits that actually embody content
- statements about extent found on the manifestation
- statements about the numbering of sequences related to extent as found on the manifestation
- the overall dimensions of the manifestation
- the dimensions of embodied expressions
- the layout of embodied expressions
- the total quantity of each kind of embodied expression
- other quantifications of embodied content, such as image resolution
- extent values for containers issued with a manifestation, or supplied for a particular item
- the extent of expressions, such as duration
- the extent of collection manifestations, including storage space for collections
- notes to record additional or more precise details about extent of the carrier or content

These discernable aspects corresponded to the elements that needed to be created. But the Extent Working Group also perceived a need to combine them for display. Many current values of Manifestation: **extent of manifestation** consist of combinations of these aspects. The Extent Working Group recast the element Manifestation: **extent of manifestation** as a superelement, with values that could be constructed through a string encoding scheme. Many of the components of a constructed value would come from new subelements of Manifestation: **extent of manifestation**.

A demonstration site for a reworking of ISBD for Manifestation (ISBDM) provides an opportunity to examine similar approaches to extent values for manifestations -- https://www.iflastandards.info/ISBDM/.

In addition to manifestation statements and value vocabularies for extent, the ISBDM demonstration site provides this hierarchy of subelements for the superelement Manifestation: **extent of manifestation**:

Manifestation
     has extent of manifestation
          has extent of aggregated content
          has extent of embodied content
               has designation of number of sound channels
               has image resolution
               has number of sound channels
               has playing time

has reduction ratio
has extent of unit
has bibliographic format
has dimensions
has number of recording tracks
has extent of unitary structure

The superelement Manifestation: **extent of manifestation** can be used to record combinations of subelement values through a string encoding scheme.

The benefit of using string encoding schemes for this hierarchy of extent subelements and subtypes is that communities have the flexibility to develop their own string encoding schemes to construct values out of an aggregation of granular values from subelements for display purposes in their implementations of RDA.

ISBDM offers a new string encoding scheme order and syntax (https://www.iflastandards.info/ISBDM/docs/ves/ISBDMSES1023.html).

With the following order:

1. has extent of unitary structure
2. has extent of unit
3. has extent of aggregated content
4. has extent of embodied content

apply this template:

{has extent of unitary structure} + "(" + {has extent of unit} + "; " + {has extent of aggregated content} + " in " + {has extent of embodied content} + ")"

Example:

3 volumes (124 leaves; 150 photographs in 200 pages)

This new approach enables more flexibility for the display of multiple extent values, and it also provides a new direction for recording extent values, in that more granular subelements (along with manifestation statements and notes) can be recorded on their own, independent of a constructed value for Manifestation: **extent of manifestation**.

These are the elements covered by the scope of this discussion paper. Those that are new or changed are indicated:

Manifestation: **extent of manifestation** [significant changes]

Manifestation: **extent of unitary structure** [new subelement]

Manifestation: **extent of unit** [new subelement]

Manifestation: **tape configuration** [move element to be subtype of Extent of Unit; update and rename element]

Manifestation: **bibliographic format** [move element to be subtype of Extent of Unit]

Manifestation: **dimensions** [update instructions]

Manifestation: **extent of embodied content** [new subelement]

Manifestation: **dimensions of embodied content** [new element; picks up instructions for dimensions of still image and cartographic image, and dimensions of text blocks]

Manifestation: **configuration of playback channels** [move element to be subtype of Extent of Embodied Content; split element into elements for the designation and for the number of sound channels]

Manifestation: **reduction ratio** [new element]

Manifestation: **image resolution** [new element]

Manifestation: **extent of aggregated content** [new subelement]

Manifestation: **number of containers** [new subelement]

Manifestation: **dimensions of container** [new subelement]

Manifestation: **extent of storage space** [new subelement; applies only to collection manifestations]

Manifestation: **manifestation extent statement** [new element]

Manifestation: **manifestation numbering of extent statement** [new element]

Manifestation: **note on manifestation** [no change]

Expression: **extent of expression** [update definition]

Work: **extent of representative expression** [update definition to match Extent of Expression]

Expression: **duration** [no change]

Work: **duration of representative expression** [no change]

Impact of proposed changes on RDA

This discussion paper outlines approaches that utilize the infrastructure of the Official RDA Toolkit. These approaches include the use of manifestation statements, vocabulary encoding schemes, string encoding schemes, and superelements that aggregate other elements.

An overhaul is necessary for the current RDA value vocabularies for extent terms, along with some terms in the RDA Glossary. Specifically, the RDA Carrier Extent Unit value vocabulary

will need to be disassembled as it includes terms that pertain to different aspects of extent and currently combines content and carrier terms.

Certain cartographic terms will be affected, as well as the RDA Format of Notated Music value vocabulary which contributes values for units recorded in extent elements.

Expanding the Content Type value vocabulary to include new terms for expressions that are aggregated is a possibility. The Toolkit provides provisions for extending and refining content categories in the Toolkit (https://access.rdatoolkit.org/Guidance/Index?externalId=en-US_ala-f0c1362e-45fb-34e6-b62d-bb5b26fa169a).

The current RDA Illustrative Content value vocabulary, which is limited to augmentation aggregates, would overlap with a value vocabulary for all kinds of expressions that are aggregated. While this discussion paper explores these possibilities, it does not offer immediate solutions for these vocabularies concerning content categories.

Impact of proposed changes on legacy data

All legacy string encoding schemes still present in base RDA are anticipated to transition to the Community Resources section of the Toolkit. New string encoding schemes are expected to be controlled by cataloguing communities. Since numerous current extent instructions rely on string encoding schemes, this discussion paper offers a chance to merge the anticipated relocation of extent instructions to Community Resources with the incorporation of new extent elements and the overhaul of existing ones.

Policy statements associated with current instructions in Manifestation: **extent of manifestation** would need to be synchronized with the move of any of these instructions into Community Resources.

Impact of proposed changes on cataloguers

Cataloguing communities have an opportunity to depart from legacy practices by adopting more granular extent elements, thus promoting greater consistency and uniformity in recorded data. These granular extent elements, accompanied by structured descriptions, lay the foundation for enhanced machine-actionability.

Moreover, there is an opportunity to reconsider the string encoding schemes utilized for Manifestation: **extent of manifestation** and to employ more consistent templates to construct display values from a combination of more granular extent elements.

Impact of proposed changes on users

The changes in this discussion paper would lead to more consistent and more granular data in metadata description sets.

Presently, RDA's extent elements for Manifestation lack clear separation between content and carrier aspects. By allocating dedicated elements for measuring those aspects, resources can be compared more effectively. Introducing new manifestation statement elements for extent would

separate transcribed values for numbering from actual total units. These new elements for various extent aspects can enhance the user tasks of *identify* and *select*.

New and changed elements for extent of manifestations and expressions

Topics for further discussion and tentative recommendations are provided below for each new or changed element for extent. Feedback on these elements will form the basis for a proposal or proposals on these topics for the RDA Steering Committee to consider. Several changes to RDA value vocabularies and glossary terms also arise.

1. Manifestation: **extent of manifestation**

This element will need to be redefined as a superelement, as it would be used to aggregate data values from one or more subelements.

The current definition and scope for this element is: *A number and type of unit or subunit of a manifestation.*

An updated definition should be broad and convey the sense that it is a quantification of an aspect that is a physical characteristic. Suggested new definition:

> A quantification of a physical characteristic of a manifestation.

Four new subelements would reflect the broad categories for quantifiable physical characteristics of a manifestation:

> Manifestation: **extent of unitary structure**
>
> Manifestation: **extent of unit** [which covers dimensions among other aspects]
>
> Manifestation: **extent of embodied content**
>
> Manifestation: **extent of aggregated content**

Additional subelements would be needed for the extent of containers and collections:

> Manifestation: **number of containers**
>
> Manifestation: **dimensions of container**
>
> Manifestation: **extent of storage space** [applies only to collection manifestations]

Each of the subelements can be recorded on their own in the form of a structured description. Their values can be aggregated to record a value of Manifestation: **extent of manifestation** through a string encoding scheme which will be used to select, sequence, and punctuate values:

> Example of a single subelement:
>
> > Manifestation <**has extent of unitary structure**> 1 volume
>
> Example of an aggregated value:

Manifestation <**has extent of manifestation**> 1 booklet (2 photographs in 12 pages)

Maintaining backwards compatibility with current practice would entail using the superelement Manifestation: **extent of manifestation** and constructing a value with a particular string encoding scheme that is mapped to past practice.

The inclusion of data from manifestation extent statements (for example, the last numbered page of a sequence) could also be subject to a string encoding scheme to form part of Manifestation: **extent of manifestation** to accommodate legacy practices, but manifestation statements are otherwise kept distinct in this discussion paper.

> **1.1. RECOMMENDATION. Convert Manifestation: extent of manifestation to a superelement. Many current instructions will become string encoding schemes in Community Resources and other instructions will be moved to new subelements of Manifestation: extent of manifestation.**

The new subelements of Manifestation: **extent of manifestation** are described in more detail as follows.

2. Manifestation: **extent of unitary structure**

Suggested definition for this new element:

> A number of units of the same carrier of the manifestation.

This element corresponds to a value of Manifestation: **mode of issuance**. If the manifestation consists only of one unit of a carrier type then the quantity will be "1".

The plural form of a term is used when there is more than one unit. A manifestation may also consist of units from different carrier types. In both cases the value of Manifestation: **mode of issuance** is *multiple unit*.

The unit will be either an existing RDA Carrier Type term, or a more granular term. Many of these more granular terms are currently found in the RDA Carrier Extent Unit value vocabulary. Other terms are from other vocabularies in RDA or are common terms for units that appear in instructions and examples.

The current RDA Carrier Type value vocabulary would continue to be a source of terms but recorded as values with a quantity as a Manifestation: **extent of unitary structure**.

Examples:

> Manifestation <**has extent of unitary structure**> 10 videotape reels

> Manifestation <**has extent of unitary structure**> 1 online resource

Many appropriate terms that are more granular than the terms in RDA Carrier Type are found in RDA Carrier Extent Unit, which combines carrier and content terms. These carrier terms will need to be moved to form a new value vocabulary that focuses only on kinds of carriers.

ISBDM (https://www.iflastandards.info/ISBDM/docs/ves/1275.html - ISBDM Extent of Unitary Structure) provides a demonstration of values for terms more granular than Carrier Type terms. Some additional terms have been added to this list:

> activity card [card] > usually embodies text or still image
> coin [object]
> collage [sheet] > usually embodies still image
> diorama [object]
> exhibit [object]
> flash card [card]
> game [object]
> globe [object] > usually embodies a cartographic image
> jigsaw puzzle [sheet] > usually embodies a still image
> medal [object]
> mock-up [object]
> model [object]
> painting [sheet]
> postcard [card] > usually embodies text or still image
> poster [sheet] > may embody text or still image
> print [sheet] > embodies a still image
> sculpture [object] > embodies a three-dimensional image
> specimen [object]
> study print [sheet] > embodies still image; may be augmented by text
> toy [object]
> wall chart [sheet]
>
> additional terms to consider adding:
> choir book [volume] > embodies notated music; from current RDA Format of Notated
>   Music
> photographic print [sheet] > embodies a still image captured by a lens – a term made
>   distinct from "photograph" which is used for a kind of aggregated content (see
>   *Other Issues* at end of this discussion paper).
> sketchbook [volume] > embodies still images; from an example originally used for Extent
>   of still image
> table book [volume] > embodies notated music; from current RDA Format of Notated
>   Music
> piece [sheet or object]; intended for manipulation as a component of a game or puzzle
>   (this could be separated into "game piece" and "puzzle piece"). Recording the
>   number of pieces, such as in a jigsaw puzzle, may make sense as a value of

Manifestation: **extent of unit**, as that element is for the number of subunits that are available to embody content.

Qualifications, such as *various pieces* and *identical sets*, are phrases that could be used as part of a value of the superelement Manifestation: **extent of manifestation**, by applying a string encoding scheme, and would otherwise be covered as notes on manifestation.

Currently, RDA has provisions to record alternative terms as unstructured descriptions (https://access.rdatoolkit.org/en-US_ala-8754c7a9-c38c-3735-9cf9-865df717f81b/1f6a1be2-adb3-42f1-a95f-5d2a0e118056). Examples are "CD-ROM" or "Blu-ray disc", which are terms in common usage or trade names.

Examples:

Using RDA Carrier Type terms:

Manifestation <**has extent of unitary structure**> 2 volumes

Manifestation <**has extent of unitary structure**> 1 audio disc

Using alternatives [unstructured descriptions] to RDA Carrier Type terms:

Manifestation <**has extent of unitary structure**> 3 DVDs

Manifestation <**has extent of unitary structure**> 1 USB flash drive

Using vocabulary that is subset of current RDA Carrier Extent Unit value vocabulary

Manifestation <**has extent of unitary structure**> 1 globe

Manifestation <**has extent of unitary structure**> 10 specimens

Using vocabulary that originated in RDA Format of Notated Music value vocabulary

Manifestation <**has extent of unitary structure**> 1 choir book

Using vocabulary that originated in examples for extent of still image

Manifestation <**has extent of unitary structure**> 2 sketchbooks

2.1. RECOMMENDATION. Add Manifestation: extent of unitary structure as a subelement of Manifestation: extent of manifestation.

2.2. RECOMMENDATION. Create a new RDA Extent of Unitary value vocabulary Structure which includes appropriate terms moved from RDA Carrier Extent Unit.

3. Manifestation: **extent of unit**

This element is for recording the measurements or counts of those aspects that are available to embody content. The current element Manifestation: **dimensions** would be a subtype. This measurement includes components or characteristics that do not embody content.

Uses of the broader element Manifestation: **extent of unit** include:

1. Record the total length of a belt, film, tape, or wire of an applicable carrier type.
2. Record the total number of sheets that are bound in a volume or flipchart in terms of the number of leaves.
3. Record the value of a single dimension of a carrier, such as height of a volume. A value consisting of two or three dimensions is recorded with an element subtype Manifestation: **dimensions**.

Examples:

> manifestation <**has extent of unit**> 1000 feet
> *Physical length of a 35 mm film reel.*

> manifestation <**has extent of unit**> 28 cm
> *Height of a volume (more than one dimension recorded as element subtype Manifestation: **dimensions**).*

> manifestation <**has extent of unit**> 340 leaves
> *Total physical leaves of a volume.*

In this discussion paper, *leaves* are treated as physical subunits, whereas *pages* are treated as layout terms for embodied content. Even though *leaf* has a logical relationship to *page*, in that a leaf could consist of two pages of content, one on each side, treating *page* as a layout term for embodied content reflects the history of book production. For example, a *quarto* refers to a format of a book that results from four pages on each side of a sheet of paper. Once the sheet is folded and cut then the leaves emerge, with the content of the pages arranged in correct order on each side of the formed leaves. For a value of Manifestation: **extent of unit** of a volume, the quantity of leaves is recorded, whereas *pages* would be used in Manifestation: **extent of embodied content**, where the focus is on units that embody content.

Element subtypes of Manifestation: **extent of unit** would cover other quantifications of physical characteristics of a unit. This includes dimensions, where there are two or three quantities to consider, such as height x width. If there is only one measurement, such as for the length of a tape, then the broader element Manifestation: **extent of unit** is used.

Other current RDA elements that can be treated as subtypes are:

> Manifestation: **tape configuration**

> > This element is for recording the number of tracks on an audiotape (example: *12 track*). For clarity, the element should be renamed Manifestation: **number of recording tracks**, as the definition and scope would cover all relevant carriers,

such as: audio belt, audio cartridge, audio cylinder, audio disc, audio roll, audiocassette, or audio tape reel.

Manifestation: **bibliographic format**

This element is for recording a value that represents a number of how many times an original sheet was folded and then cut to become separate leaves. For example, *8vo* is a bibliographic format that consists of one or more leaves that are 1/8 of an original whole sheet.

The utility of treating Bibliographic Format as a subtype of Extent of Unit is that it is aligned with the number of leaves recorded to represent the number of sheets. The bibliographic format provides a value for the resulting proportion when a sheet is folded, which can also provide an indication of the approximate dimensions of a resulting book.

The current element Manifestation: **dimensions** would become a subtype of Manifestation: **extent of unit**. However, the current element Manifestation: **dimensions of still image** (a subtype of Dimensions) is properly understood as a measurement of the layout of content embodied in a manifestation, and so would be covered under the element Manifestation: **extent of embodied content**.

Manifestation: **dimensions**

Structured descriptions for values of Dimensions will consist of 2 or 3 whole numbers that measure 2 or 3 dimensions in the same unit of length. Fractions will be rounded to the nearest whole number. A note is recorded to give a more precise measurement if considered useful. A smaller unit may be used for more precise measurement using a whole number (mm instead of cm for example).

Diameters can be understood as two dimensions, height and width of the same measurement.

For different carriers there would be a stipulated order for the dimensions, separated by the symbol "x" and spaces. A diameter is considered a height x width with the same measurement. The length of a cylinder is considered a depth measurement.

Typical stipulated orders for dimensions for various carriers, which may be further specified for the housing format or storage medium format of each carrier type:

HEIGHT X WIDTH – for cards, sheets, volumes

LENGTH X HEIGHT – for cartridges, cassettes

DIAMETER – for reels, discs

DIAMETER X LENGTH – for cylinders

WIDTH X CIRCUMFERENCE – for belts

HEIGHT X WIDTH X DEPTH – for objects

Single values, such as the tape or film width (gauge), or the length of a roll, would be recorded as values of the broader element Manifestation: **extent of unit**.

3.1. RECOMMENDATION. Add Manifestation: <u>extent of unit</u> as a subelement of Manifestation: <u>extent of manifestation</u>.

3.2. RECOMMENDATION. Add Manifestation: <u>numbering of recording tracks</u> as an element subtype of Manifestation: extent of unit. Move the instructions for Manifestation: <u>tape configuration</u> to this element.

3.3. RECOMMENDATION. Move Manifestation: <u>bibliographic format</u> to become an element subtype of Manifestation: <u>extent of unit</u>.

3.4. RECOMMENDATION. Move Manifestation: <u>dimensions</u> to become an element subtype of Manifestation: <u>extent of unit</u>. Update the instructions to reflect the focus on structured descriptions for two to three dimensions.

4. Manifestation: <u>**extent of embodied content**</u>

While a unit of a manifestation may have its extent in terms of overall dimensions, there are situations where extent is limited only to the content embodied in the manifestation. In addition to dimensions of embodied images, content may also be characterized by the number of layout units that the content requires. Among these layout units are pages, columns, and frames, as applicable to the carrier type.

Suggested definition for this new element:

An extent of manifestation that is a measurement of the layout of content that is embodied in the manifestation.

A user task met by this element is *select*. As the focus is on the extent of actual content, not the physical characteristics of the manifestation overall, then this element provides information for a user to select the resource.

The playing time of an audiovisual resource conveys information about the extent of content, but this is currently recorded as a value of Expression: <u>**duration**</u>. Note that the ISBDM demonstration model presents playing time as a Manifestation element. For example, playing time may include the durations of aggregated content plus the gaps between content. This topic warrants further consideration in the follow-ups to this discussion paper.

Cumulative values for duration in a collection aggregate are recorded as a Work: <u>**duration of representative expression**</u> (https://access.rdatoolkit.org/en-US_ala-2c0b36c7-bd7c-30c1-aa03-7805693f072d/div_lxs_xxf_3lb).

A value vocabulary for Layout of Embodied Content can be developed.

There is an existing related RDA element, Manifestation: **layout**, which has a value vocabulary (https://access.rdatoolkit.org/VES/VES?externalId=en-US_rdaves_RDA_Layout).

Current definition of Manifestation: **layout**: *An arrangement of text, images, tactile notation, or other content in a manifestation*.

While the terms in the RDA Layout value vocabulary are not generally suitable as extent terms, some of them relate to the physical characteristics that are considered in quantification, such as "single sided" and "double sided", which refer to the sides of a sheet that have a layout of content.

A term, **tête-bêche** (back-to-back or dos-à-dos binding structure), would be useful to add to the RDA Layout value vocabulary, as it is a frequent occurrence with bilingual publications, and when two novels are issued in one volume, with each novel with its own front cover. This term would be useful in explanations of any quantification of the carrier's physical characteristics and extent of embodied content.

Several layout terms should be considered for the value vocabulary for Manifestation: **extent of embodied content**. Those terms with existing definitions will need to have revised definitions to fit the context of their placement in a new value vocabulary.

> **column**
>
> > Current definition: *A unit of extent that consists of one of two or more vertical sections of text appearing on the same page or leaf.*
> >
> > Suggested new definition:
> >
> > > A layout of embodied content where content is arranged in two or more vertical sections on a page, separated by vertical gutters.
>
> **frame** (used for carriers like film rolls, reels, etc.)
>
> > No current definition exists in RDA.
> >
> > Suggested new definition:
> >
> > > A layout of embodied content where content is arranged in two or more blocks, separated by horizontal or vertical gutters.
> >
> > The scope would limit this to the applicable carrier types.
>
> **page**
>
> > Current definition: *A unit of extent that consists of a single side of a leaf.*
> >
> > Suggested new definition:
> >
> > > A layout of embodied content where content is embodied on one side of a leaf or sheet.

A digital file would have an Extent of Unit in the form of the number of bytes of content. A standard symbol for unit of binary data can be used.

Example:

> Manifestation <**has extent of embodied content**> 912 KB

For various digital formats that embody images or otherwise present a particular layout the same Layout of Embodied Content value vocabulary can be used.

Example for an online resource:

> Manifestation <**has extent of embodied conten**t> 180 pages

For the dimensions of the pictorial area of a still image that is embodied, height x width is currently used.

Example for the dimensions of a single still image:

> Manifestation <**has extent of embodied content**> 33 x 25 cm

Values for dimensions of embodied content would also benefit from the focused treatment of its own element subtype:

> Manifestation <**has dimensions of embodied content**> 33 x 25 cm

Current instructions provide for recording the dimensions of text blocks when there is a significant difference between the text blocks and the dimensions of a volume.

Currently, the elements Manifestation: **dimensions of still image** and Manifestation: **dimensions of cartographic image** contain the instructions for the dimensions of the area of still images and cartographic images. These instructions should be moved to the new element Manifestation: **dimensions of embodied content**. Similar instructions for dimensions of text blocks in Manifestation: **dimensions** (see https://access.rdatoolkit.org/en-US_ala-cc95f0fd-c059-334d-b240-c7379e396c7d/div_eh5_2v3_z2b) should also be moved to Manifestation: **dimensions of embodied content**.

Several new possible element subtypes of Manifestation: **extent of embodied content** are detailed at ISBDM for demonstration purposes at https://www.iflastandards.info/ISBDM/docs/attributes/1277.html:

Recommended subtypes of Manifestation: **extent of embodied content**:

> Elements based upon the current RDA element Manifestation: **configuration of playback channels.**
>
> > This element could be broken down into two new elements, one element for the designation of the number of sound channels (with values such as "stereo" or "surround") and one element for the number of parallel sound channels used for

audio recordings. For example, five channel surround plus a subwoofer channel would be recorded as "6 channels."

New element labels based on the ISBDM demonstration:

Manifestation: **designation of number of sound channels**

Manifestation: **number of sound channels**

Manifestation: **reduction ratio**

This new element is for the magnification factor that is required to view content. For example, Manifestation <**has reduction ratio**> 150x.

Manifestation: **image resolution**

This new element would be for the density of the smallest logical pictorial unit used to compose image content, such as a pixel density of "300 DPI".

The ISBDM demonstration site also presents an element for playing time. This is covered by the existing RDA expression element, Expression: **duration**.

4.1. RECOMMENDATION. Add Manifestation: extent of embodied content as a subelement of Manifestation: extent of manifestation.

4.2. RECOMMENDATION. Add Manifestation: dimensions of embodied content as a subtype of Manifestation: extent of embodied content.

4.3. RECOMMENDATION. Add Manifestation: designation of sound channels as a subtype of Manifestation: extent of embodied content. This partly replaces Manifestation: configuration of playback channels.

4.4. RECOMMENDATION. Add Manifestation: number of sound channels as a subtype of Manifestation: extent of embodied content. This partly replaces Manifestation: configuration of playback channels.

4.5. RECOMMENDATION. Replace Manifestation: configuration of playback channels with Manifestation: designation of sound channels and Manifestation: number of sound channels.

4.6. RECOMMENDATION. Add Manifestation: reduction ratio as a subtype of Manifestation: extent of embodied content.

4.7. RECOMMENDATION. Add Manifestation: image resolution as a subtype of Manifestation: extent of embodied content.

4.8. RECOMMENDATION WITH OPTIONS. Create an RDA Layout of Embodied Content value vocabulary. Alternatively, expand the RDA Layout value vocabulary to include terms that could be used in Manifestation: extent of embodied content.

4.9. RECOMMENDATION. Add the terms *column*, *frame*, and *page* to a value vocabulary for layout of embodied content.

5. Manifestation: <u>**extent of aggregated content**</u>

Several values of RDA Carrier Extent Unit, such as *chart* and *drawing*, are better described as values for certain kinds of expressions. Terms from other vocabularies also correspond to kinds of expressions that are aggregated, such as *score* and *part* from the vocabulary RDA Format of Notated Music. Values from the current RDA Content Type value vocabulary can also be used for a value of a new subelement, Manifestation: <u>**extent of aggregated content**</u>.

These aggregated expressions may be found in a single unit of a manifestation, or span across multiple units, such as a map with other content on two sheets, or musical scores in two volumes.

Suggested definition for this new element:

> An extent of manifestation that is the number of expressions of the same kind that are embodied in the manifestation.

If the expressions of the same kind are uncounted, then a value would only be recorded as Content Type. This entails the extension and refinement of the Content Type value vocabulary. New values for Content Type can be created through extension (using the attributes form/genre, capture method, purpose, or subject), or through refinement of attributes such as character. In the suggested vocabulary list below, the Content Type value is in square brackets following the term. While the main recommendation is to create a new value vocabulary, RDA Extent of Aggregated Content, the possibility exists to expand the Content Type value vocabulary.

If the expressions are uncounted, a note can also be recorded about the embodied expressions in Manifestation: <u>**note on manifestation**</u>.

If a manifestation embodies only a single expression, then a Content Type value is recorded with an implicit "1" for quantity.

A separate value vocabulary, RDA Extent of Aggregated Content, can be developed. The following values are derived from the value vocabulary at https://www.iflastandards.info/ISBDM/docs/ves/1278.html (ISBDM Extent of aggregated content):

> **chart**
>> [still image] - a representation of data in graphic or tabular form.
>
> **diagram**
>> [still image] - a representation of numeric data, of an action or process.
>
> **drawing**
>> [still image] - composed of lines that represent the delineation of form.
>
> **icon**
>> [still image] - portrays a sacred entity and that is itself regarded as sacred.

map
> [cartographic image] - represents an area on the surface of the earth, another celestial body, or an imaginary place.

part
> [notated music]

performed dance
> [performed movement] - recorded in a live performance.

performed song
> [performed music] - recorded in a live performance.

photograph
> [still image] - captured by a lens.

profile
> [cartographic image]

radiograph
> [still image] - produced by radiation.

recorded song
> [performed music] - recorded in a studio.

remote-sensing image
> [cartographic image] - captured by a remote-sensing instrument.

score
> [notated music]

section
> [cartographic image] - represents a slice through the surface of the earth or some other celestial body.

spoken text
> [spoken word] - recitation of a text.

technical drawing
> [still image] - represents a cross section of an object or part of an object for use in an engineering or other technical context.

view
> [still image] - represents a landscape from an oblique point of view.
> Scope note: A bird's-eye view, panorama, panoramic drawing, worm's-eye view, etc., are included.

vocal score
> [notated music]

These terms for aggregated content are similar to the terms in the RDA Illustrative Content value vocabulary, and two values are the same: *map* and *photograph*.

The element Manifestation: **illustrative content** has a narrower scope: "Kinds of expression of image content that supplement the main expressions that are embodied by an augmentation aggregate". The broader element is Manifestation: **supplementary content**.

Applicable Content Type values for illustrative content are: "cartographic image", "cartographic moving image", "cartographic tactile image", "cartographic tactile three-dimensional form", "cartographic three-dimensional form", "three-dimensional moving image", "two-dimensional moving image", "tactile three-dimensional form", "three-dimensional form", "still image", or "tactile image"

Tables containing only words or numerical data are excluded.

coat of arms
> includes a full display of armorial bearings that consists of the escutcheon plus its adjuncts

facsimile
> an exact copy of an original, usually in the same dimensions as the original, especially of books, documents, prints, and drawings.
> Scope note:
> Today the original is often reproduced photographically or digitally; in the past, it was reproduced by engraving or other printmaking process.

form
> labeled areas for recording structured data to be input by specified persons for specific purposes, usually accompanied by prompts and guidance

genealogical table
> a table or diagram representing the lineage of a person or family

graph
> a diagram showing relative quantitative and qualitative aspects of a data set

illumination
> adornments, usually in one or more colours and applied by hand to an item using paint, ink, or metal foil

illustration
> a still image

map
> a representation, normally to scale and on a two-dimensional medium, of a selection of material or abstract features on, or in relation to, the surface of the earth, another celestial body, or an imaginary place
> - present in value vocabulary for Extent of aggregated content

photograph
> image created by light falling on a light-sensitive surface, usually photographic film or an electronic medium
> - present in value vocabulary for Extent of aggregated content

plan
> detailed drawing or diagram

portrait
> a representation of an individual or group of persons or animals that is intended to capture a known or supposed likeness, especially the face of the individual

sample

> an individual unit, segment, or small quantity taken as evidence of the quality or character of the entire group or lot

While the terms are generally given in singular or plural form, there is an instruction to record the number of illustrations if the number can be readily ascertained (https://access.rdatoolkit.org/en-US_ala-1https://access.rdatoolkit.org/en-US_ala-126a56dc-d07f-34bf-9e42-0bfa48a3e574/div_fr4_rls_tdb26a56dc-d07f-34bf-9e42-0bfa48a3e574/div_fr4_rls_tdb).

This makes a narrowly focused element just for the number of expressions that are image content in an augmentation aggregate redundant when there is a possibility for another element to record the presence and number of any kind of aggregated expressions.

This suggests the possibility of soft deprecating the element Manifestation: **illustrative content** in favour of Manifestation: **extent of aggregated content** for quantifications and Expression: **content type** for uncounted illustrations or for manifestations with a single expression. However, there is utility in having a separate element to indicate just the presence of image content through a value vocabulary, or through codes or identifiers for kinds of images so that systems can filter search results to those resources that included augmentation content in the form of illustrations.

Maintaining Manifestation: **illustrative content** should also then entail ongoing overlap in value vocabularies, as what changes with this element is that the described content is augmentation content.

This parallel use of values would already be incorporated into the use of the new element Manifestation: **extent of aggregated content**, as the values used would also come from the value vocabulary for Content Type.

Comparing some scenarios:

> Expression <**has content type**> cartographic image
> *[for a single map on a sheet]*

> Manifestation <**has extent of aggregated content**> 2 maps
> *[for a quantification of maps that are the primary expressions]*

> Manifestation <**has illustrative content**> 2 maps
> *[for maps that augment primary expressions]*

While the definition for Manifestation: **illustrative content** entails only kinds of expressions that supplement the main expressions, the use of this element has extended into describing primary content that is illustrative, such as values for "illustrations" and "maps" when describing an atlas. Recording information about amalgamated content, such as images used in graphic novels and picture books, would entail the use of an element broader than Illustrative Content that indicates the kinds of illustrative content present.

In the element page for Manifestation: **illustrative content**, there is an editorial issue. The Prerecording instruction to "Record the nature of the primary content of an expression as Work: **nature of content**." In turn, Work: **nature of content** is soft-deprecated in favour of Work: **category of work**. Some classes or genres of work already entail a requirement for illustrative content, such as *Picture books*, *Graphic novels*, and *Atlases*.

The term *atlas* appears in the current RDA Carrier Extent Unit value vocabulary, and this is problematic, as the term is better suited as a genre term.

Correspondingly, for an atlas, it would not make sense to say "maps" are supplementary to the primary content. Rather, it would be sufficient to indicate only the presence of maps as a kind of illustrative content through a value of Expression: **content type**, and, if useful, the quantity of embodied maps with Manifestation: **extent of aggregated content**.

> **5.1. RECOMMENDATION. Add Manifestation: extent of aggregated content as a subelement of Manifestation: extent of manifestation.**

> **5.2. RECOMMENDATION WITH OPTIONS. Create a value vocabulary for RDA Extent of Aggregated Content, which will include applicable terms moved from RDA Carrier Extent Unit and RDA Format of Notated Music. Alternatively, expand the RDA Content Type value vocabulary to include terms that could be used in Manifestation: extent of embodied content.**

6. Containers

Several current RDA instructions are about recording the number of container units or providing dimensions for containers that accompany the primary carrier units.

Containers are physically separable from the carrier of the content. (Current definition: *A housing that is physically separable from the carrier being housed*). Containers may contain information about the primary carriers and the embodied content, and so can be treated as a source of information.

There are several use cases for recording the number and dimensions of containers in their own elements. Containers would not count as "units" for a value of Manifestation: **mode of issuance**. A separate value vocabulary for containers should be developed, with two existing terms that would immediately be moved to the new value vocabulary: *case* and *portfolio*.

Because containers are not "units" instructions and definitions for new extent elements for containers should not refer to "units". The new elements should still become subelements of Manifestation: **extent of manifestation**. The recommended new definition of Manifestation: **extent of manifestation** removes references to units and refers only to "physical characteristics": A quantification of a physical characteristic of a manifestation.

As containers also apply to collections, a full treatment of the extent of collection manifestations will need to cover storage space in addition to containers. Instructions for recording storage space are currently in the Official RDA Toolkit under Manifestation: **extent of manifestation**. A new element for the extent of storage space of a collection is warranted. This discussion paper

will not cover extent of storage space in any detail, as that would only entail the transfer of the current instructions to this new element.

Three new subelements for the superelement Manifestation: **extent of manifestation** would account for all current data being recorded about containers and storage space:

> Manifestation: **extent of manifestation**
>
> > Manifestation: **number of containers**
> >
> > Manifestation: **dimensions of container**
> >
> > Manifestation: **extent of storage space**

Containers issued with a manifestation versus containers supplied for an item

A distinction should be made between containers which are issued with the manifestation and containers that are supplied to house individual items.

When describing containers issued with a manifestation, including a collection manifestation, all of the following elements should be used, along with Manifestation: **note on manifestation**:

> Manifestation: **number of containers**
>
> Manifestation: **dimensions of container**
>
> Manifestation: **extent of storage space**

By contrast, the information about containers that are supplied for items can be recorded as a value of Item: **note on item**. The elements Item: **note on extent of item** and Item: **note on dimensions of item** are soft deprecated in favour of Item: **note on item**. An instruction to use a note for describing the extent of containers that are not issued with a resource is in DCRMR (Descriptive Cataloging of Rare Materials (RDA Edition)): https://bsc.rbms.info/DCRMR/phys-desc/Dimensions/#62437-containers.

However, when describing containers provided for collection manifestations, manifestation elements, not item elements, should be used for recording the extent of containers.

The collections model and containers

The Official RDA Toolkit currently refers to the extent of collections in terms of "number of items, containers, or volumes". Those three aspects need to be separated out. Containers should be treated separately from "items" and "volumes."

The element Manifestation: **extent of unitary structure** would be applicable to recording the number of volumes or units of any carrier type in a collection manifestation.

In some situations, it may be useful to describe the number and dimensions of containers used for a collection manifestation. RDA's collections model is for situations where items are brought together, and even sometimes physically combined and bound together, to form a collection manifestation. The elements Item: **holding of** and Item: **bound with** can be used for describing individual items in a collection.

For example, an album that houses photographs would be considered a container of a collection manifestation. The album is physically separable from the carriers of the content, which makes the album a container.

The album would be recorded as a value for Manifestation: **number of containers** because the manifestation being described is the collection manifestation. In this case, the album is analogous to a container "issued" with a manifestation, as distinct from a container "supplied" for a particular item. By comparison, if the container was supplied for a published item, a value of "1 album" would be recorded in a Note on Item. In this case, the collection manifestation is being described, and the container could be deemed an intrinsic part of the collection manifestation. The number of photographic prints would also be recorded as an extent of unitary structure.

Example of aggregated value:

> Manifestation <**has extent of manifestation**> 1 album (20 photographic prints)

The elements involved for this collection manifestation:

> Manifestation <**has extent of unitary structure**> 20 photographic prints
> Manifestation <**has number of containers**> 1 album
> *The term "photographic prints" is used as a value for extent of unitary structure, as opposed to "photographs" which is in the vocabulary for extent of aggregated content.*

In a variation on this, items that are bound to form a collection manifestation result in a carrier for the collection manifestation that is a *volume*. It would not be considered a container of a collection manifestation because it is not physically separable from the original carriers of the items.

Example of aggregated value:

> Manifestation <**has extent of manifestation**> 3 volumes (183 items)

The elements involved for this collection manifestation:

> Manifestation <**has extent of unitary structure**> 3 volumes
> Manifestation <**has note on manifestation**> 183 items
> *In this example, "183 items" is a note on manifestation as the value refers to the original 183 items, each of which can be said to have a "holding" relationship to the new collection manifestation, which consists of the items bound into three volumes. The items would also have "bound with" relationships to each other.*

Comparing an album and a sketchbook

An *album* supplied to house photographs can be considered a container for a collection. As a container, it is separable from the carriers of the content. By comparison, a *sketchbook* has content that is infixed, embedded, or encoded directly onto the carrier. Therefore, a sketchbook cannot be treated as a container, but as a carrier to which content has been added. As such, the sketchbook would be described as a *volume*. In contrast to an album, the sketchbook with added content would not form a collection manifestation.

New value vocabulary: RDA Container Terms

Two terms are in the current RDA Carrier Extent Unit value vocabulary that are for containers, whether issued with the resource or supplied afterwards: *case* and *portfolio*.

A *container* is defined as: "a housing that is physically separable from the carrier being housed."

A separate RDA value vocabulary would be useful for container terms. These terms would describe containers issued with a resource but are not carriers of content themselves (even though they may present information about the resource). The terms would also be used for containers supplied to house individual items, which is information recorded in the element Item: **note on item**.

String encoding schemes to record extent of manifestation would distinguish containers from carriers, as in these examples:

> Manifestation <**has extent of manifestation**> 1 portfolio (40 prints)

> The elements involved for this collection manifestation:
> > Manifestation <**has number of containers**> 1 portfolio
> > Manifestation <**has extent of unitary structure**> 40 prints

> Manifestation <**has extent of manifestation**> 1 model ; 16 x 32 x 3 cm, in case 17 x 24 x 6 cm

> The elements involved for this manifestation:
> > Manifestation <**has extent of unitary structure**> 1 model
> > Manifestation <**has dimensions**> 16 x 32 x 3 cm
> > Manifestation <**has number of containers**> 1 case
> > Manifestation <**has dimensions of container**> 17 x 24 x 6 cm

Numerous terms are already in use for types of containers, and the following list covers common situations:

> Current RDA Carrier Extent Unit terms that provide values for a separate value vocabulary for types of containers:

> > case
> > portfolio

> Additional terms appearing in current definitions, instructions, and examples of values, as well as covering some other typical situations:

> > album
> > box
> > bradded folder [trade name Duo-Tang, or, a folder with fasteners]
> > container

cover [example: "folded in cover 21 x 10 cm" for dimensions of outer cover in which a folded map is kept]

folder

ring binder

sleeve

6.1. RECOMMENDATION. Add Manifestation: <u>number of containers</u> as a subelement of Manifestation: <u>extent of manifestation</u>.

6.2. RECOMMENDATION. Add Manifestation: <u>dimensions of containers</u> as a subelement of Manifestation: <u>extent of manifestation</u>.

6.3. RECOMMENDATION. Add Manifestation: <u>extent of storage space</u> as a subelement of Manifestation: <u>extent of manifestation</u>. This element will only be used for collection manifestations.

6.4. RECOMMENDATION. Create an RDA Container Type value vocabulary for case, portfolio, and other terms commonly used for containers.

7. Manifestation statements for extent

Manifestation: **<u>manifestation extent statement</u>**

Manifestations may carry information about the extent of the manifestation or the extent of embodied expressions.

Several examples for manifestation extent statements are found in the demonstration site for ISBDM on this page: https://www.iflastandards.info/ISBDM/docs/statements/1280.html.

Example:

Manifestation <**<u>has manifestation extent statement</u>**> Feature run time: 1hr 34mins approx.

The RDA manifestation extent statement would be used to record statements of quantifications of the characteristics of the manifestation, as well as any expressions. For example, the manifestation extent statement may contain information about playing time, which would include a value that is recorded in Expression: **<u>duration</u>**, a subtype of Expression: **<u>extent of expression</u>**.

Suggested definition for this new element:

A manifestation statement about a quantification of aspects of the manifestation or aspects of embodied expressions.

Manifestation: **<u>manifestation numbering of extent statement</u>**

Recording sequences of pages, leaves, etc., has involved transcribing the last number of each sequence, along with an applicable unit for what has been numbered:

543 pages

iv, 323 pages

55 leaves

In a few cases, the sequence is recorded with first and last number appearing in the sequence:

a-d pages

323-583 leaves

Because the focus is on exact transcription of the last number in a sequence, and occasionally the first number in a sequence, these values can be considered as manifestation statements. There is some similarity to the values recorded for Manifestation: **manifestation designation of sequence statement**, which has a focus on first and last alphanumeric or chronological designations.

Manifestation statements have options to use different transcription guidelines. Dedicated transcription guidelines for transcribing the numbering of extent are warranted, in part to accommodate legacy practices for transcribing the numbering of sequences. These guidelines would cover additions to the transcribed values, such as separators like a comma, or a dash between the first and last number in a sequence. Instructions in the transcription guidelines would cover the existing practices to indicate the kind of sequence ("page" "leaf" "plate", in the appropriate language). These additions are like a "wrapper" around the transcribed values in the manifestation statements.

RDA's guidelines on normalized transcription permit several similar adjustments, such as transliteration or repeating a word that is meant to be read twice.

Normalized transcription has options to:

- add equivalent forms of a numeral to a transcribed value: tome III [3]
- substitute a numeral for a number expressed in words
- transcribe an ordinal number as a numeral and indicate that they are ordinal
- omit, modify, and add punctuation for clarity
- omit or replace symbols by another symbol or sign of punctuation that can be reproduced by available facilities

A dedicated manifestation statement element, separate from Manifestation: **manifestation extent statement**, would be useful, particularly if a dedicated transcription guideline can be applied. Here are some examples where punctuation is used in the transcribing of sets of numbers, and a term added:

3, 23, 4 pages

ix, 243 pages

27 pages, 300 leaves

This element for a distinct separate manifestation statement can be called Manifestation: **manifestation numbering of extent statement**. The terms added would be appropriate terms that clearly indicate what kind of numbered sequence is being recorded.

Elements related to Manifestation: <u>manifestation numbering of extent statement</u>
Complex details about the numbering would be recorded as a Manifestation: **note on manifestation**.

Related instructions in RDA are for values that depend on the numbering of sequences to provide information about the position of a part within the manifestation. These values are typically recorded as a Manifestation: **note on manifestation**.

Examples applicable to instructions at **Location of a part within a larger manifestation** (https://access.rdatoolkit.org/en-US_ala-8754c7a9-c38c-3735-9cf9-865df717f81b/p_omg_qcz_xdb):

> pages 210-450
> *Position and an indication of extent conveyed by the numbering of the sequence of this part.*

> on side 2 of 1 videodisc
> *The position is indicated by the numbering of the sides appearing on the videodisc.*

> on reel 1 of 2 film reels
> *The numbering on each film reel provides the location of the part being described.*

The values in these examples use numbering that appears on the manifestation. The transcription guidelines for numbering of extent could be used for the part of the note about the numbering to provide consistency in the results of all transcription of that information.

Recording a manifestation statement for the numbering of carrier units can provide confirmation for the exact quantification used in physical extent elements like Manifestation: **extent of unitary structure**.

Some instructions require recording the sequence of numbered or unnumbered leaves or pages if they are referred to in a note. Example at https://access.rdatoolkit.org/en-US_ala-8754c7a9-c38c-3735-9cf9-865df717f81b/div_gnw_v5c_1fb, where the condition is a note has been recorded that refers to an unnumbered sequence of plates.

Other elements that utilize the numbering of sequences include Manifestation: **supplementary content**.

Example:

> Manifestation <**has supplementary content**> Bibliography: pages 859-910.

Examples showing location and numbering of extent of bibliography:

> Manifestation <**has manifestation numbering of extent statement**> 158 pages

Manifestation <**has supplementary content**> Includes bibliographical references (pages 147-156).

Manifestation <**has extent of unitary structure**> 1 online resource
Manifestation <**has manifestation numbering of extent statement**> 229 pages
Manifestation <**has supplementary content**> Includes bibliographical references (pages 203-214) and index.

Comparing elements

If the focus is on recording the actual number of leaves then the element Manifestation: **extent of unit** is applicable. If counting all the pages that have content, then the element Manifestation: **extent of embodied content** is applicable. Among the layout units for Extent of Embodied Content are: pages, columns, and frames.

Comparing elements:

Manifestation <**has manifestation numbering of extent statement**> iv, 233 pages
This value is a manifestation statement about the numbering of each sequence of pages.

Manifestation <**has extent of unit**> 124 leaves
This value represents the total physical units in terms of leaves that constitute the manifestation.

Manifestation <**has extent of embodied content**> 237 pages
This value represents the layout used to carry content in terms of the total number of pages of content.

7.1. RECOMMENDATION. Add a new manifestation statement element: Manifestation: manifestation extent statement.

7.2. RECOMMENDATION. Add a new manifestation statement element: Manifestation: manifestation numbering of extent statement.

7.3. RECOMMENDATION: Add a new set of RDA transcription guidelines "Guidelines on transcription of numbering of extent." The guidelines will be derived from the current instructions in Manifestation: extent of manifestation related to transcribing the numbering of sequences of pages, leaves, etc.

8. Manifestation: **note on manifestation**

A note on manifestation will be used for all notes related to Manifestation extent elements, including the new manifestation statement elements.

8.1. RECOMMENDATION. Review instructions and examples that may need to be added to Manifestation: note on manifestation after reworking the other extent of manifestation elements.

9. Expression: **extent of expression**

The current RDA definition of Expression: **extent of expression** reflects language from the AUQ model and so should be updated.

Current definition: *A type, number, and measurement unit that quantify an aspect of the extent of an expression.*

A new definition should be similar to the recommended definition of Manifestation: **extent of manifestation**. Suggested new definition:

> A quantification of an aspect of the extent of an expression.
>
> **9.1. RECOMMENDATION. Update the definition of Expression: <u>extent of expression</u> to parallel the definition of Manifestation: <u>extent of manifestation</u>.**

10. Work: **extent of representative expression**

The definition should be updated to match Expression: extent of expression.

Current definition: *A type, number, and measurement unit that quantify an aspect of the extent of a representative expression of a work.*

Suggested new definition:

> A quantification of an aspect of the extent of a representative expression.
>
> **10.1. RECOMMENDATION. Update the definition of Work: <u>extent of representative expression</u>.**

11. Expression: **duration**

> **11.1. RECOMMENDATION. No change to Expression: <u>duration</u> is recommended.**

12. Work: **duration of representative expression**

> **12.1. RECOMMENDATION. No change to Work: <u>duration of representative expression</u> is recommended.**

13. Other issues

13.1. Atlas

Atlas is a current term in RDA Carrier Extent Unit, with a problematic definition: "A unit of extent that is a volume of maps or other cartographic content with or without descriptive text."

The recording of the extent of atlases has included cases where an atlas spans multiple volumes, as in "1 atlas (2 volumes)" so there is a conflict with the definition that references a unit of only "a volume."

The term *atlas* does not fit into value vocabularies for carrier units or for kinds of individual aggregated expressions. The term is better suited as a genre term for an aggregating work of cartographic expressions.

Conveying the information that there is more than "1 atlas" being described requires consideration of the entity boundaries for a work. The option for a significant difference in the expressions aggregated by an aggregating work is to "record a new instance of Work for the aggregating work" (https://access.rdatoolkit.org/en-US_ala-c3e1fff8-0a79-35c6-bee1-39b6b4c9ed35/div_lzh_2wg_3mb).

> *13.1. RECOMMENDATION. Remove atlas from the value vocabularies for extent in RDA.*

13.2. Vocabulary terms related to sheets and leaves

A distinction should be made between *leaf* and *page*, where *leaf* is a unit of extent of a physical characteristic of a manifestation, while *page* is a term applied to a layout (or expected layout if blank) of content on one side of a sheet or leaf.

Binding sheets to form a volume can involve the folding and cutting of sheets to form physical leaves.

Sheets can also be folded into multiple physical panels. There are instructions to count the number of panels (with or without content) on one side of a sheet.

Example from Manifestation: **extent of manifestation** (https://access.rdatoolkit.org/en-US_ala-8754c7a9-c38c-3735-9cf9-865df717f81b/div_tzf_mrs_ydb):

> 1 folded sheet (16 panels)

A single sheet may also be folded, and it is the design of the layout that determines if the term *page* should be used to quantify the extent of embodied content.

The content layout on a sheet or leaf may also be represented as *columns*. For recording the extent of embodied content on a sheet or leaf, the dimensions may also be recorded for a text block or pictorial area. The term *page* may also be used for the extent of embodied content in a computer or online resource carrier type, such as content in a PDF file format.

Units of extent that arise from physical characteristics, independent of content, in these cases are represented by the terms *sheet*, *leaf*, and *panel*.

The terms *page* and *column* are among those that would be in a new value vocabulary for Layout of Embodied Content.

With this distinction, the following definitions can be analyzed to identify recommended improvements.

13.2.1. sheet

Current definition: *A carrier type that consists of a flat, thin piece of paper, plastic, etc.*

This definition reflects the physicality of the carrier type.

> *13.2.1. RECOMMENDATION. No change to the definition of sheet is recommended.*

13.2.2. folded sheet

Current definition: *A unit of extent that consists of a sheet designed to be read in pages when folded.*

This definition presupposes a content type (text to be read), which is too limiting. Sheets are folded to have a layout of embodied content in terms of pages. Sheets can also be folded in particular ways, forming two leaves, or several panels, and these are physical characteristics independent of content ("leaves" and "panels" are units for Manifestation: **extent of unit**). Page layout may appear on either side of a leaf or a panel. A sheet only folded for storage would not be sufficient to meet the definition of "folded sheet", as there also needs to be an intended layout design for pages when folded. The term *folded sheet* should be moved to the value vocabulary for Extent of Unitary Structure to be among those terms based on the carrier type *sheet*.

Suggested new definition:

> A unit of extent of unitary structure that is a sheet designed to have a layout of embodied content in pages when folded.

> *13.2.2. RECOMMENDATION. Update the definition of folded sheet and move the term to the new RDA Extent of Unitary Structure value vocabulary.*

13.2.3. gathering

Current definition: *One or more pairs of leaves that form a distinctive unit for binding purposes. A gathering may consist of a folded sheet, a fraction of a folded sheet, or several folded sheets tucked inside one another.*

This term is consistent with the value vocabulary for RDA Bibliographic Format, which are terms for the proportional relationship between original sheets, often folded and cut, to form leaves. If Manifestation: **bibliographic unit** becomes a subtype of Manifestation: **extent of unit**, then that supports the close connection between sheets and leaves, with leaves derived from the folding and cutting of sheets.

The total number of leaves resulting from sheets that are folded and cut results in a value for the total extent of a volume or flipchart.

Example of the total number of leaves in a volume:

> Manifestation <**has extent of unit**> 348 leaves

Prior to being bound, the 384 leaves formed a distinctive unit as a *gathering*.

> **13.2.3. RECOMMENDATION. No change to the definition of gathering is recommended.**

13.2.4. leaf

Current definition: *A unit of extent that consists of a single bound or fastened sheet as a subunit of a volume; each leaf consists of two pages, one on each side, either or both of which may be blank.*

This definition, with the phrase "a unit of extent," reflects its placement in the current RDA Carrier Extent Unit value vocabulary. As *leaf* is not a value for Manifestation: **extent of unitary structure**, but rather used as a value for Manifestation: **extent of unit**. A leaf is not equivalent to a carrier type, but is rather a subunit of a volume.

The definition is also too narrow, since leaves can form from a folded sheet, which involves no binding or fastening. A sheet folded once can produce two leaves. In addition, if *pages* are defined as units of embodied content while *leaves* derive from a single sheet, multiple leaves can arise after a single sheet is folded and cut several times before binding to display the content on the pages in the correct order. There are some variations on leaves (see *double leaf*) and the current definition does not allow for exceptions.

Suggested new definition:

> A physical unit that derives from a single sheet; each leaf is a subunit of a volume and may embody content on two pages, one on each side.

> **13.2.4. RECOMMENDATION. Update the definition of leaf and remove the term from value vocabularies in RDA for carrier extent units. The term leaf will remain as a glossary term and used as a value for Manifestation: <u>extent of unit</u>.**

13.2.5. double leaf

Current definition: *A leaf of double size relative to the rest of a manifestation or item, folded in half at the fore-edge or top edge, with the fold uncut and no printing inside the fold, and typically bound at the inner margin.*

This variation of a leaf is for a sheet that was double size and bound folded in half to match the size of the other leaves.

> **13.2.5. RECOMMENDATION. No change to the definition of double leaf is recommended.**

13.2.6 folded leaf

A folded leaf may also be a unit of extent to describe and record in a value of Manifestation: **extent of unit** for a volume. Like a folded sheet, a folded leaf needs to be unfolded to access the embodied content with a layout in pages. *Folded leaf* is not defined currently, but its definition would combine the definitions of *leaf* and *folded sheet*.

Suggested definition:

> A physical unit that derives from a single sheet; each folded leaf is a subunit of a volume and is designed to have a layout of embodied content in pages when folded.

13.2.6 RECOMMENDATION. Add folded leaf to the glossary, treating the term like a folded sheet, but bound in a volume.

13.2.7. updating loose-leaf

Current definition: *A manifestation of an integrating work that consists of one or more base volumes updated by separate pages that are inserted, removed, or substituted.*

This definition for this category of manifestation refers to "pages" when it should refer to "leaves," which are the things that are physically inserted, removed, or substituted. Leaves are sheets, or result from the folding and cutting of sheets, and are intended to be bound or fastened in a volume or flipchart.

Suggested new definition:

> A manifestation of an integrating work that consists of one or more base volumes updated by separate **leaves** that are inserted, removed, or substituted.

13.2.7. RECOMMENDATION. Update the definition of updating loose-leaf.

13.2.8. panel

No current definition exists in RDA.

This term has been used for the results that arise when a sheet is folded more than once. If a sheet is folded once, it forms two leaves. If a sheet is folded twice, accordion-style, then it forms three panels on each side. If the sheet is folded more times the number of panels is recorded by counting the physical sections that appear on one side of the sheet because of the folding. This topic was previously discussed in the JSC Minutes of the March 2009 meeting (5JSC/M/266-283 -- https://www.rdatoolkit.org/archivedsite/docs/5m266-283.pdf). If multiple sheets folded into panels are bound or fastened then the manifestation is treated as a volume.

The current practice is to count the number of physical panels on one side of a sheet, including blank panels and panels with content. Numbered panels or counting panels with content results in values in terms of the number of *pages*.

As a result, the number of panels is a value treated like the number of leaves, as a value of Manifestation: **extent of unit**. Details are recorded as a Manifestation: **note on manifestation**, such as describing the value recorded for Manifestation: **manifestation numbering of extent statement**, which may use pages as the units for the numbering, even though the pages result from a sheet folded accordion-style with numbered panels.

Example:

> Manifestation <**has extent of unitary structure**> 1 folded sheet
> Manifestation <**has extent of unit**> 3 panels
> Manifestation <**has extent of embodied content**> 6 pages
> *All panels on both sides have content, with the unit for extent of embodied content being the layout term "page". There are six pages of embodied content.*

Manifestation <**has manifestation numbering of extent statement**> 5 pages
The panels on each side are numbered "1" to "5". The term "pages" is chosen to use in the manifestation extent of numbering statement.

Suggested new definition:

A physical unit that derives from a single sheet folded at least two times; each panel is a subunit of the sheet and may embody content on each side.

13.2.8. RECOMMENDATION. Add panel to the glossary, treating the term similar to leaf as a unit of extent derived from a sheet that has been folded.

13.2.9. plate
Current definition: *A leaf, usually containing illustrative content, that does not form part of either the preliminary or the main sequence of pages or leaves.*

While *plate* is defined as a *leaf*, the term is usually found in the phrases *pages of plates* or *leaves of plates*.

Because *plate* is defined within the context of a sequence of pages or leaves, its main use would be as a unit value added to indicate a sequence in Manifestation: **manifestation numbering of extent statement** or in a note. Plates would be added in for the total number of leaves for a value for Manifestation: **extent of unit**.

13.2.9. RECOMMENDATION. No change to the definition of plate is recommended.

13.2.10. page
Current definition: *A unit of extent that consists of a single side of a leaf.*

Move this term to the value vocabulary for Layout of Embodied Content (either a new value vocabulary or the existing RDA Layout value vocabulary).

Suggested new definition:

A layout of embodied content where content is embodied on one side of a leaf or sheet.

For a sheet prior to folding and cutting there may be multiple intended pages laid out on each side. Folding the sheet to form leaves or panels will align pages to either side of a leaf or panel.

13.2.10. RECOMMENDATION. Move the term page to a value vocabulary for layout of embodied content and update the definition.

13.2.11. column
Current definition: *A unit of extent that consists of one of two or more vertical sections of text appearing on the same page or leaf.*

Move this term to the value vocabulary for Layout of Embodied Content (either a new value vocabulary or the existing RDA Layout value vocabulary).

Suggested new definition:

> A layout of embodied content where content is arranged in two or more vertical sections, separated by vertical gutters.

> **13.2.11. RECOMMENDATION. Move the term column to a value vocabulary for layout of embodied content and update the definition.**

13.3 Photographic print vs photograph

Current two definitions:

1. *An illustrative content that consists of an image created by light falling on a light-sensitive surface, usually photographic film or an electronic medium.*
2. *A unit of extent that consists of an image captured by a lens and carried on the surface of a sheet. This term applies to still images.*

The first definition is for a term of Illustrative Content. That usage of the term "photograph" will depend on future decisions for the element Manifestation: **<u>illustrative content</u>**.

The second definition is for "a unit of extent", but there are two new value vocabularies (Extent of Unitary Structure and Extent of Aggregated Content) that require a distinction for how "photograph" is used as a unit of extent.

The following terms and definitions are recommended, and replace the second definition for "photograph" in the RDA Glossary:

photographic print – add to the new Extent of Unitary Structure value vocabulary

> Suggested new definition:

> > A unit of extent of unitary structure that is a sheet on which an image is captured by a lens.

photograph – add to the new Extent of Aggregated Content value vocabulary

> Suggested new definition:

> > A unit of extent of aggregated content that is a still image that is captured by a lens.

> **13.3. RECOMMENDATION. Add the new term photographic print to the Extent of Unitary Structure value vocabulary and add the term photograph to the Extent of Aggregated Content value vocabulary. The use of the term photograph in Illustrative Content will require a future decision for that value vocabulary for the kinds of expressions embodied in augmentation aggregates.**

14. Reorganization of current RDA value vocabularies

Several new value vocabularies have been introduced in this discussion paper. Many terms are sourced in the current value vocabularies RDA Carrier Extent Unit and RDA Format of Notated

Music. Once the new vocabularies are set up the previous value vocabularies can be reviewed or removed.

> **14.1. RECOMMENDATION. Remove RDA Carrier Extent Unit value vocabulary from the Toolkit after decisions are made for each current term.**

> **14.2. RECOMMENDATION. Review RDA Format of Notated Music value vocabulary from the Toolkit after decisions are made for each existing term. Terms linked to other extent vocabularies will include a scope note for manifestations embodying notated music.**

Summary of Recommendations

1.1. RECOMMENDATION. Convert Manifestation: extent of manifestation to a superelement. Many current instructions will become string encoding schemes in Community Resources and other instructions will be moved to new subelements of Manifestation: extent of manifestation.

2.1. RECOMMENDATION. Add Manifestation: extent of unitary structure as a subelement of Manifestation: extent of manifestation.

2.2. RECOMMENDATION. Create a new RDA Extent of Unitary value vocabulary Structure which includes appropriate terms moved from RDA Carrier Extent Unit.

3.1. RECOMMENDATION. Add Manifestation: extent of unit as a subelement of Manifestation: extent of manifestation.

3.2. RECOMMENDATION. Add Manifestation: numbering of recording tracks as an element subtype of Manifestation: extent of unit. Move the instructions for Manifestation: tape configuration to this element.

3.3. RECOMMENDATION. Move Manifestation: bibliographic format to become an element subtype of Manifestation: extent of unit.

3.4. RECOMMENDATION. Move Manifestation: dimensions to become an element subtype of Manifestation: extent of unit. Update the instructions to reflect the focus on structured descriptions for two to three dimensions.

4.1. RECOMMENDATION. Add Manifestation: extent of embodied content as a subelement of Manifestation: extent of manifestation.

4.2. RECOMMENDATION. Add Manifestation: dimensions of embodied content as a subtype of Manifestation: extent of embodied content.

4.3. RECOMMENDATION. Add Manifestation: designation of sound channels as a subtype of Manifestation: extent of embodied content. This partly replaces Manifestation: configuration of playback channels.

4.4. RECOMMENDATION. Add Manifestation: number of sound channels as a subtype of Manifestation: extent of embodied content. This partly replaces Manifestation: configuration of playback channels.

4.5. RECOMMENDATION. Replace Manifestation: configuration of playback channels with Manifestation: designation of sound channels and Manifestation: number of sound channels.

4.6. RECOMMENDATION. Add Manifestation: reduction ratio as a subtype of Manifestation: extent of embodied content.

4.7. RECOMMENDATION. Add Manifestation: image resolution as a subtype of Manifestation: extent of embodied content.

4.8. RECOMMENDATION WITH OPTIONS. Create an RDA Layout of Embodied Content value vocabulary. Alternatively, expand the RDA Layout value vocabulary to include terms that could be used in Manifestation: extent of embodied content.

4.9. RECOMMENDATION. Add the terms column, frame, and page to a value vocabulary for layout of embodied content.

5.1. RECOMMENDATION. Add Manifestation: extent of aggregated content as a subelement of Manifestation: extent of manifestation.

5.2. RECOMMENDATION WITH OPTIONS. Create a value vocabulary for RDA Extent of Aggregated Content, which will include applicable terms moved from RDA Carrier Extent Unit and RDA Format of Notated Music. Alternatively, expand the RDA Content Type value vocabulary to include terms that could be used in Manifestation: extent of embodied content.

6.1. RECOMMENDATION. Add Manifestation: number of containers as a subelement of Manifestation: extent of manifestation.

6.2. RECOMMENDATION. Add Manifestation: dimensions of containers as a subelement of Manifestation: extent of manifestation.

6.3. RECOMMENDATION. Add Manifestation: extent of storage space as a subelement of Manifestation: extent of manifestation. This element will only be used for collection manifestations.

6.4. RECOMMENDATION. Create an RDA Container Type value vocabulary for case, portfolio, and other terms commonly used for containers.

7.1. RECOMMENDATION. Add a new manifestation statement element: Manifestation: manifestation extent statement.

7.2. RECOMMENDATION. Add a new manifestation statement element: Manifestation: manifestation numbering of extent statement.

7.3. RECOMMENDATION: Add a new set of RDA transcription guidelines "Guidelines on transcription of numbering of extent." The guidelines will be derived from the current instructions in Manifestation: extent of manifestation related to transcribing the numbering of sequences of pages, leaves, etc.

8.1. RECOMMENDATION. Review instructions and examples that may need to be added to Manifestation: note on manifestation after reworking the other extent of manifestation elements.

9.1. RECOMMENDATION. Update the definition of Expression: extent of expression to parallel the definition of Manifestation: extent of manifestation.

10.1. RECOMMENDATION. Update the definition of Work: extent of representative expression.

11.1. RECOMMENDATION. No change to Expression: duration is recommended.

12.1. RECOMMENDATION. No change to Work: duration of representative expression is recommended.

13.1. RECOMMENDATION. Remove atlas from the value vocabularies for extent in RDA.

13.2.1. RECOMMENDATION. No change to the definition of sheet is recommended.

13.2.2. RECOMMENDATION. Update the definition of folded sheet and move the term to the new RDA Extent of Unitary Structure value vocabulary.

13.2.3. RECOMMENDATION. No change to the definition of gathering is recommended.

13.2.4. RECOMMENDATION. Update the definition of leaf and remove the term from value vocabularies in RDA for carrier extent units. The term leaf will remain as a glossary term and used as a value for Manifestation: extent of unit.

13.2.5. RECOMMENDATION. No change to the definition of double leaf is recommended.

13.2.6 RECOMMENDATION. Add folded leaf to the glossary, treating the term like a folded sheet, but bound in a volume.

13.2.7. RECOMMENDATION. Update the definition of updating loose-leaf.

13.2.8. RECOMMENDATION. Add panel to the glossary, treating the term similar to leaf as a unit of extent derived from a sheet that has been folded.

13.2.9. RECOMMENDATION. No change to the definition of plate is recommended.

13.2.10. RECOMMENDATION. Move the term page to a value vocabulary for layout of embodied content and update the definition.

13.2.11. RECOMMENDATION. Move the term column to a value vocabulary for layout of embodied content and update the definition.

13.3. RECOMMENDATION. Add the new term photographic print to the Extent of Unitary Structure value vocabulary and add the term photograph to the Extent of Aggregated Content value vocabulary. The use of the term photograph in Illustrative Content will require a future decision for that value vocabulary for the kinds of expressions embodied in augmentation aggregates.

14.1. RECOMMENDATION. Remove RDA Carrier Extent Unit value vocabulary from the Toolkit after decisions are made for each current term.

14.2. RECOMMENDATION. Review RDA Format of Notated Music value vocabulary from the Toolkit after decisions are made for each existing term. Terms linked to other extent vocabularies will include a scope note for manifestations embodying notated music.