

Preservation Action Plan: Multimedia Formats

National Archives and Records Administration (NARA)

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Electronic Record or Digital Surrogate Types and Associated Formats

Multimedia formats are those that contain various forms of media--text, audio, and video. The most common multimedia formats are digital slide shows created using presentation software such as Microsoft PowerPoint or Apple Keynote. The key aspect of this format, however, is that the software that creates it has the ability to present information in multiple formats and therefore files may have characteristics not present in similar record types, such as containing audio and video.

Essential Characteristics of this Record Type

Appearance

Name	Definition	Function Description
Language	A language identifier specifying the natural language(s) used in the document	
Fonts	A list of fonts used in the document, and an indication of whether or not a font is embedded in a document. <ul style="list-style-type: none">• Typeface (Arial, Times New Roman, etc.)• Size (10 pt, 18 pt, etc.)• Pitch• Spacing• Emphasis (bold, italic, strikethrough, underline, etc.)	Stores the names of all fonts (embedded and non-embedded) used in a document to assist in rendering the content and identifying the documents with potential long-term preservation risks. There will always be a font in order to have text, however, there are other variables that determine whether a distinct font is a core characteristic. For example, where appearance is fixed, such as in a publication, then font is core.
Size	Size ratio (e.g. standard, widescreen)	Physical or virtual dimensions. These characteristics are conditional. If the appearance is important or information is lost with resizing then this must be maintained. However, if only the content ("words absent their

		formatting”) of the document is important, such as meeting minutes, then these dimensional characteristics are not core.
Layout Orientation	Orientation of the “pages,” e.g., portrait versus landscape.	Needed for understanding content and context of record.
Text Orientation	Orientation of the text, e.g., horizontal, vertical, custom axes	Needed for understanding content and context of record.
Color	<p>Identification of the use of color in text and layout elements, e.g. borders, boxes.</p> <ul style="list-style-type: none"> ● Hue: color family or name ● Saturation: purity or sharpness ● Brightness: shade or tint ● Contrast: range of optical density or tone 	Color is essential if it bears meaning and/or value, or if the appearance is fixed.
Annotations	Annotations included in the document.	
Tables	Includes content structured in a table feature, such as a dynamically generated table of contents.	A table is an arrangement of <u>data</u> in rows and columns, or possibly in a more complex structure. (Wikipedia)
Graphics	Images embedded in the document, or graphics created using a word processing graphics feature.	Used to point readers and viewers to particular information. They are also used to supplement text in an effort to aid readers in their understanding of a particular concept or make the concept more clear or interesting. (Wikipedia)
Outline	Includes content in an outline structure.	An outline, also called a hierarchical outline, is a list arranged to show hierarchical relationships and is a type of tree structure. An outline is used to present the main points or topics of a given subject. Each item in an outline may be

		divided into additional sub-items. (Wikipedia)
Transparency	The use of transparency features for graphics or text in the document.	
Layers	The presence of layered graphic elements in the document.	

Structure

Name	Definition	Function Description
Schema	<ul style="list-style-type: none"> ● Lists ● Arrays ● Models ● Trees ● Tables ● Linkage: connection between or within records. If connections exist, then they are core ● Template 	
Character Encoding	Encoding schema, e.g., US-ASCII, EBCDIC, UTF-8.	Required for the proper parsing and rendering of the record content.
Word Count	Total number of words in the document	Valuable for evaluating the completeness of the content after transformations, but can be highly variable between tools.
Character Count	Total number of characters in the document	Valuable for evaluating the completeness of the content after transformations, but can be highly variable between tools.
Line Count	Total number of lines in the document	Valuable for evaluating the completeness of the content after

		transformations, but can be highly variable between tools.
Paragraph Count	Total number of paragraphs in the document	Valuable for evaluating the completeness of the content after transformations, but can be highly variable between tools.
Table Count	Total number of tables in the document	Valuable for evaluating the completeness of the content after transformations, but can be highly variable between tools.
Graphics Count	Total number of graphics in the document	Valuable for evaluating the completeness of the content after transformations, but can be highly variable between tools.

Behavior

Name	Definition	Function Description
Macros and Linkages		Essential characteristics are currently dependent on the export format.
Audio	Sounds is an audio waveform that has been created to be heard during playback.	In multimedia formats, there may be audio associated with specific slides (e.g. voiceovers).
Animation		The two most common forms of animations (in presentations specifically) are slide-to-slide transitions and animations of text/images on a slide (source)

Context

Name	Definition	Function Description
Series	Identification of the document's inclusion in a series, and enumeration if present.	

Descriptive Metadata	Descriptive metadata embedded in the record file header.	Information contained within the record (intrinsic) that refers to the intellectual content of material and aids discovery of such materials, for example, Caption/Subject/Date/Event/Transaction can all add value to the record.
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Current NARA Transfer Guidance for this Record Type

Preferred formats:

- OpenDocument Presentation Format (ODP)
- Portable Document Format Archival (PDF/A-1)

Acceptable formats:

- Microsoft PowerPoint 1997-2007 Binary Format (PPT)
- Microsoft PowerPoint Office Open XML Format (PPTX)
- PDF/A-2

Current NARA Public Access/Reference Format(s) for this Record Type

This Plan references existing public access file formats for electronic records at NARA, determined with a survey of the available public access formats in the National Archives Catalog. These references do not represent recommended public access formats under NARA policies. They are intended for informational purposes only.

Reference Format: PDF, PPT, PPTX, ODP

Public Access Format: PDF, PPT, PPTX, ODP

Comments and Notes

Presentation formats are used to convey graphical information to audiences in the form of a slide show. Presentation formats are not acceptable for use as transfer containers for permanent digital still images.

Mathematica Notebook

NARA File Format ID: NF00246

Extension(s):

- nb

Documentation

- Notebooks are structured interactive documents that can contain text, graphics, sound, calculations, typeset expressions, and user interface elements.
- [Fileextensions.org link for NB \(Notebook\)](#)
- [Wolfram Language & System Documentation Center](#)
- [Wikipedia entry for Wolfram Mathematica](#)

Risk and Prioritization Analysis

Supply the Risk Level and Numeric Rating and the Prioritization Numeric Rating as generated with the Format Risk and Prioritization Matrix for this file format.

- Low Risk
- Moderate Risk
- High Risk
- 2 Numeric Risk Rating
- 6 Numeric Prioritization Rating

Proposed Preservation Plan

- Retain file format in its existing format.
- Transform file to a new format.
Selected Format: PDF
- Procure/develop tools to preserve, manage and provide access to records of this type in their existing form.
- Procure/develop tools to transform the format to the preferred normalized form.
- Provide Additional Information so that the record type remains understandable/usable over time.
- Explore Additional Options

Justification: Mathematica is proprietary software. It can be converted to a more sustainable format.

Preferred Processing and Transformation Tool(s)

- Mathematica is required to open the files. Files can then be saved to PDF.

Preferred Viewer/Access Software

- Adobe Acrobat Reader

Third Generation Partnership Project (3GPP)

NARA Format ID: NF00101

Extension(s):

- 3gpp

Documentation

- https://en.wikipedia.org/wiki/3GP_and_3G2
- https://web.archive.org/web/20091007071048/http://www.3gpp2.org/Public_html/specs/C.S0050-B_v1.0_070521.pdf
- <https://superuser.com/questions/988484/difference-between-3gp-files-and-amr-files>
- <https://fileinfo.com/extension/3gp>
- <https://www.lifewire.com/3gp-file-2619274>
- <https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificatonId=1444>

Risk and Prioritization Analysis

Low Risk

Moderate Risk

High Risk

38 Numeric Risk Rating

36 Numeric Prioritization Rating

Proposed Preservation Plan

Retain file format in its existing format.

Transform file to a new format.

Selected Format:

Procure/develop tools to preserve, manage and provide access to records of this type in their existing form.

Procure/develop tools to transform the format to the preferred normalized form.

Provide Additional Information so that the record type remains understandable/usable over time.

Explore Additional Options

Justification: The file format is well documented, ubiquitous, and there are open source tools available for transcoding.

Preferred Processing and Transformation Tool(s)

- FFMPEG

Preferred Viewer/Access Software

- VLC
- Real Player
- QuickTime

Computer Graphics Metafile Binary 1 (CGM)

NARA Format ID: NF00145

Extension(s)

- cgm

Documentation

- <http://www.nationalarchives.gov.uk/PRONOM/Format/proFormatSearch.aspx?status=detailReport&id=1048>
- <http://extension.nirsoft.net/cgm>
- https://en.wikipedia.org/wiki/Computer_Graphics_Metafile
- https://www.itl.nist.gov/div897/ctg/graphics/cgm_std.htm
- <https://www.fileformat.info/format/cgm/egff.htm>
- https://en.wikipedia.org/wiki/Vector_graphics
- <http://www.cgmopen.org/webcgm/editors.html>
- https://www.cgmlarson.com/CGM_FAQ.html#5
- <https://www.w3.org/TR/NOTE-cgm-970618>
- <http://extension.nirsoft.net/cgm>

Risk and Prioritization Analysis

- Low Risk
 - Moderate Risk
 - High Risk
- 2 Numeric Risk Rating
-6 Numeric Prioritization Rating

Proposed Preservation Plan

- Retain** file format in its existing format.
- Transform** file to a new format.
Selected Format:
- Procure/develop tools** to preserve, manage and provide access to records of this type in their existing form.
- Procure/develop tools** to transform the format to the preferred normalized form.
- Provide Additional Information** so that the record type remains understandable/usable over time.
- Explore Additional Options**

Justification: The file format is well documented, ubiquitous, and there are open source tools available for transcoding.

Preferred Processing and Transformation Tool(s)

- Paint

Preferred Viewer/Access Software

- Paint

File Format Name: RealMedia

NARA Format ID:

- NF00396
- NF00397 (RealMedia Shortcut)

Extension(s):

- ra
- rm
- ram (RealMedia Shortcut)

Documentation

- <https://wiki.multimedia.cx/index.php/RealMedia>
- https://www.helixcommunity.org/projects/common/2003/HCS_SDK_r5/htmfiles/rmff.htm

Risk and Prioritization Analysis

- Low Risk
- Moderate Risk
- High Risk

2	Numeric Risk Rating
18	Numeric Prioritization Rating

Proposed Preservation Plan

Recommended actions (more than one can be selected):

- Retain file format in its existing format.
- Transform file to a new format.
Selected Format: AVI for video, MP3 or WAV for audio
- Procure/develop tools to preserve, manage and provide access to records of this type in their existing form.
- Procure/develop tools to transform the format to the preferred normalized form.
- Provide Additional Information so that the record type remains understandable/usable over time.
- Explore Additional Options

Justification: The file format is well documented, ubiquitous, and there are open source tools available for transcoding. However, the format is proprietary, there are cross compatibility issues, which justifies the recommendation to transform to AVI where technically possible.

Preferred Processing and Transformation Tool(s)

Tools, in preferred order, to be used for processing and preservation actions.

- FFmpeg
- Wondershare
- Windows Media Player

Preferred Viewer/Access Software

Tools, in preferred order, to be used for viewing/accessing record type. Such tools could also potentially be considered for use in providing reference access to records of this type.

- Windows Media Player
- RealPlayer