

## ARSC TECHNICAL COMMITTEE:

# Test Method Order of Operations for Evaluation of Embedded Metadata Support and Handling in Audio Applications

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### IMPORTANT PRELIMINARY NOTE

This series of tests is designed to evaluate the practical functionality of audio applications with regard to metadata embedded in WAVE files. Each application has specific areas where this metadata may be displayed. Therefore, to accurately evaluate an application's ability to display embedded metadata it is crucial to ensure that these areas are identified within the application.

### TEST 1 OVERVIEW: Interoperability and Semantic Shifts

This evaluation will create a reference WAVE file, containing extensive embedded metadata including the bext, LIST-INFO, aXML, XMP and iXML chunks. As an additional point of reference and means of documentation, the populated chunks, fields, and values within the reference file will be documented in an Excel spreadsheet reference document.

The reference WAVE file will be opened in a number of software applications to evaluate which fields are displayed in the application's interface. In addition to this, any semantic shifts will be documented. Semantic shifts are defined, here, as occurring when an application displays a field's value using a field name which differs from the intent of the original field. As an example: if an application presented the LIST-INFO chunk field "itch" (the technician who digitized the audio) as a field labeled "artist," this would be considered a semantic shift.

### TEST 1: INTEROPERABILITY & SEMANTIC SHIFTS

**1. Download the zip file found at:**

**<[http://www.avpreserve.com/ARSC\\_BWF\\_Metadata\\_Test1.zip](http://www.avpreserve.com/ARSC_BWF_Metadata_Test1.zip)>. Verify the MD5 checksum hash value for this file (c163c97c1fc9074492cf1bf22e91aa28). This zip file contains a reference WAVE file, checksum document for the WAVE file, and a reference document. Extract these files to a logical location on your computer.**

**2. Generate an MD5 checksum for the supplied WAVE file and verify that it matches the checksum value in the provided checksum document.**

**3. If the checksum values match proceed to step #4. If the checksum values do not match, repeat steps #1 and #2. If it still does not match, email [chris@avpreserve.com](mailto:chris@avpreserve.com) and notify us of this issue.**

**4. Open the reference file (RF) in the application under test (AUT) and identify all locations**

within the AUT where bext, LIST-INFO, aXML, XMP and iXML metadata are displayed.

5. Open the Reference Document (RD) "ARSCRDBWFT1.xls".

6. Use the RD to document your findings in detail. Document the AUT manufacturer, application name, application version and build, and operating system. Also document any non-default preferences or application settings, which may influence the results of the test. (Note: for each AUT under evaluation, you will remit a discrete RD.)

7. Compare the metadata made accessible within the AUT and the RD. Document your findings, including information on:

- **Matching data:** Where a field name and value in the RD matches the same field and value in the AUT, type "MATCHING" into the 'Values' and 'Fields' columns of the RD spreadsheet template "ARSCRDBWFT1.xls".
- **Missing data:** Where a field name and/or value in the RD does not show up in the AUT, type "MISSING" into the 'Values' and 'Fields' columns of the RD spreadsheet template 'ARSCRDBWFT1'. If a field of metadata in a chunk is not displayed by the AUT, type "MISSING" into the 'Values' column and "NONE" into the 'Fields' column.
- **Differing Data:** Where some strange aberration has caused either the field name and/or value to become a different term or value than is embedded in the original test file.

Include as much detail as possible on navigating to where this data can be found in the AUT, in the last column, 'Comments on Differences.' For the sake of facility feel free to take screen shots of aberrations you may encounter, and save them with the following naming convention:

ARSCRDBWFT1\_[name of AUT]\_[YYYYMMDD]\_[two-letter chunk abbreviation]\_[original field name / original field value]\_shift.png

8. Save your RD as an Excel spreadsheet with the following naming convention:

ARSCRDBWFT1\_[name of AUT]\_[YYYYMMDD].xls

9. Email the WAVE file, Excel document and any screen shots to [chris@avpreserve.com](mailto:chris@avpreserve.com).

**Note:** A 'Field' refers to the defined area in an AUT or metadata chunk where data can be entered. In the BEXT chunk, "UMID" qualifies as a 'Field.' 'Values' populate these 'Fields' but will not strictly be numerical. In the BEXT chunk, "33333333-3333-3333-3333-333333333333" is the 'Value' for the 'Field' called "UMID." In the BEXT chunk, "Bext Coding History" is the 'Value' for the 'Field' called "Coding History." In the iXML metadata chunk, 'Fields' are presented in the RD using its XML tag.

## TEST 2 OVERVIEW: Persistence and Integrity Through Editing Operations

A four-part test, this evaluation considers how various applications handle embedded metadata when basic metadata and audio editing operations are performed and the file is saved. The first two sub-tests analyze the results of editing and adding embedded metadata and saving the file. The third sub-test analyzes the results of performing an audio edit and saving the file. The final sub-test analyzes the results of simply performing the “save as” function. The primary focus for evaluation in all tests will be identifying whether existing metadata persists unaltered.

### TEST 2: PERSISTENCE & INTEGRITY THROUGH EDITING OPERATIONS

1. Download the zip file found at:

<[http://www.avpreserve.com/ARSC\\_BWF\\_Metadata\\_Test2.zip](http://www.avpreserve.com/ARSC_BWF_Metadata_Test2.zip)>. Verify the MD5 checksum hash value for this file (83b2999283740a0230648cf77788e964). This zip file contains multiple reference WAVE files, a checksum document for each WAVE file, and a reference document. Extract these files to a logical location on your computer.

2. Generate an MD5 checksum for each supplied WAVE file and verify that they match the checksum values in the corresponding checksum document.

3. If the values match proceed to step #4. If the values do not match, repeat steps #1 and #2. If values still do not match, email [chris@avpreserve.com](mailto:chris@avpreserve.com) and notify us of this issue.

4. Open the Reference Document (RD) “ARSCRDBWFT2.xls”.

5. In the RD, document the AUT manufacturer, application name, application version and build, and operating system. Also document any non-default preferences or application settings, which may influence the results of the test.

### TEST 2A: IMPACT OF EDITING EXISTING CHUNKS

Note: If any of the chunks/fields below are not accessible or are not displayed, simply enter “NOT POSSIBLE” into the RD’s fields.

6. Open the file named “ARSCMetaTest2A\_LI.wav” in the AUT.

7. Edit one of the List-Info fields made available in the application.

8. Document the field changed (using the AUT’s ‘field’ name terminology), the original value, and the new value in the RD.

9. Save and close the file.

10. Open the file named “ARSCMetaTest2A\_BE.wav” in the AUT.

11. Edit one of the BEXT fields made available in the application.

12. Document the field changed (using the AUT's 'field' name terminology), the original value, and the new value in the RD.

13. Save and close the file.

14. Open the file named "ARSCMetaTest2A\_XM.wav" in the AUT.

15. Edit one of the XMP fields made available in the application.

16. Document the field changed (using the AUT's 'field' name terminology), the original value, and the new value in the RD.

17. Save and close the file.

18. Open the file named "ARSCMetaTest2A\_AX.wav" in the AUT.

19. Edit one of the aXML fields made available in the application.

20. Document the field changed (using the AUT's 'field' name terminology), the original value, and the new value in the RD.

21. Save and close the file.

22. Open the file named "ARSCMetaTest2A\_IX.wav" in the AUT.

23. Edit one of the iXML fields made available in the application.

24. Document the field changed (using the AUT's 'field' name terminology), the original value, and the new value in the RD.

25. Save and close the file.

### **TEST 2B: IMPACT ON EXISTING CHUNKS WHEN CREATING NEW CHUNKS**

Note: If any of the chunks/fields below are not accessible or are not displayed, simply enter "NOT POSSIBLE" into the RD's fields.

26. Open the file named "ARSCMetaTest2B\_LI.wav" in the AUT.

27. Enter data into a List-Info field of your choice.

28. Document the field and value entered in the RD.

29. Save and close the file.
30. Open the file named "ARSCMetaTest2B\_BE.wav" in the AUT.
31. Enter data into a BEXT field of your choice.
32. Document the field and value entered in the RD.
33. Save and close the file.
34. Open the file named "ARSCMetaTest2B\_XM.wav" in the AUT.
35. Enter data into an XMP field of your choice.
36. Document the field and value entered in the RD.
37. Save and close the file.
38. Open the file named "ARSCMetaTest2B\_AX.wav" in the AUT.
39. Enter data into an aXML field of your choice.
40. Document the field and value entered in the RD.
41. Save and close the file.
42. Open the file named "ARSCMetaTest2B\_IX.wav" in the AUT.
43. Enter data into an iXML field of your choice.
44. Document the field and value entered in the RD.
45. Save and close the file.
46. The GE.wav file is offered in order to test embedding metadata in other chunks not being directly evaluated in this study. For each test you would like to perform, create a copy of the GE.wav file, naming them "GE1.wav," "GE2.wav," and so on.
47. Open the file named "ARSCMetaTest2B\_GE.wav" in the AUT.
48. Enter data into a chunk made available in the application that is not List-Info, BEXT, XMP, aXML or iXML.

49. In the RD, document how you performed this action within the application, the field name(s) that you entered data into, and the value(s) entered.

50. Save and close the file.

**TEST 2C: IMPACT ON METADATA OF AUDIO-ONLY EDITING**

51. Open the file named "ARSCMetaTest2C.wav" in the AUT.

52. Delete 1 second between seconds 2 and 3.

53. Save and close the file.

**TEST 2D: IMPACT ON METADATA OF 'SAVE AS' FUNCTION**

51. Open the file named "ARSCMetaTest2D.wav" in the AUT.

52. Navigate to the 'Save As' selection in the application.

53. If format options are provided, choose BWF if it is presented as an option. If no format options are provided, select WAVE.

54. Save as "ARSCMetaTest2D1.wav" and close the file.

55. Document any other settings selected in performing the 'Save As' operation in the RD.

**TESTS 2A, 2B, 2C & 2D: REPORTING**

56. Save your Excel RD with the following naming convention:

ARSCRDBWFT2\_[name of AUT]\_[YYYYMMDD].xls

57. Generate Checksums for all of the audio files.

58. Create a zip file containing all audio files, checksum document(s), and the RD.

59. Email the zip file to [chris@avpreserve.com](mailto:chris@avpreserve.com).

### TEST 3 OVERVIEW: Persistence and Integrity Through Derivative Creation

This evaluation tests how various applications handle embedded metadata, when creating a derivative file from a WAVE file. Target derivative file formats to be tested include: MP3, FLAC, and WAVE.

**1. Download the zip file found at:**

**<[http://www.avpreserve.com/ARSC\\_BWF\\_Metadata\\_Test3.zip](http://www.avpreserve.com/ARSC_BWF_Metadata_Test3.zip)>. Verify the MD5 checksum hash value for this file (c384b98f675239609710d0b84137be33). This zip file contains multiple reference WAVE files, a checksum document for each WAVE file, and a reference document. Extract these files to a logical location on your computer.**

**2. Generate an MD5 checksum for each supplied WAVE file and verify that it matches the checksum value in the corresponding checksum document.**

**3. If the values match, proceed to step #4. If the values do not match, repeat steps #1 and #2. If it still does not match, email [chris@avpreserve.com](mailto:chris@avpreserve.com) and notify us of this issue.**

**4. Open the Reference Document (RD) "ARSCRDBWFT3.xls".**

**5. In the RD, document the AUT manufacturer, application name, application version and build, and operating system. Also document any non-default preferences or application settings, which may influence the results of the test.**

**6. Open the file named "ARSCMetaTest3\_MP.wav" in the AUT.**

**7. Generate an MP3 file named "ARSCMetaTest3\_MP1.mp3".**

**8. Document any settings selected, in performing the derivative creation operation, in the RD.**

**9. If you would like to change settings in the derivative creation process to identify implications of various settings, simply increment the filename: "...MP1.mp3" to "...MP2.mp3" and so on. Document any settings selected in performing the derivative creation operation in the RD.**

**10. Open the file named "ARSCMetaTest3\_FL.wav" in the AUT.**

**11. Generate a FLAC file named "ARSCMetaTest3\_FL1.flac".**

**12. Document any settings selected, in performing the derivative creation operation, in the RD.**

**13. If you would like to change settings in the derivative creation process to identify implications of various settings, simply increment the filename: "...FL1.flac" to "...FL2.flac" and so on. Document any settings selected, in performing the derivative creation operation, in the RD.**

14. Open the file named "ARSCMetaTest3\_WA.wav" in the AUT.
15. Generate a 16 bit, 44.1kHz file named "ARSCMetaTest3\_WA1.wav."
16. Document any settings selected, in performing the derivative creation operation, in the RD.
17. If you would like to change settings in the derivative creation process to identify implications of various settings, simply increment the filename: "...WA1.wav" to "...WA2.wav" and so on. Document any settings selected, in performing the derivative creation operation, in the RD.
18. Save your Excel RD spreadsheet with the following naming convention:  
ARSCRDBWFT3\_[name of AUT]\_[YYYYMMDD].xls
19. Generate Checksums for all of the audio files.
20. Create a zip file containing all audio files, checksum document(s) and the RD.
21. Email the zip file to [chris@avpreserve.com](mailto:chris@avpreserve.com).