ISO/IEC JTC 1/SC 29/WG 03 N0659

**ISO/IEC JTC 1/SC 29/WG 03  
MPEG Systems   
Convenorship: KATS (Korea, Republic of)**

**Document type:** Output Document

**Title:** Technology under consideration for MPD writing guidelines based on ISOBMFF

**Status:** Approved

**Date of document:** 2022-07-27

**Source:** ISO/IEC JTC 1/SC 29/WG 03

**No. of pages:** 5 (with cover page)

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**Committee URL:** <https://isotc.iso.org/livelink/livelink/open/jtc1sc29wg3>

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**ISO/IEC JTC 1/SC 29/WG 03 MPEG SYSTEMS**

**ISO/IEC JTC 1/SC 29/WG 03 N0659**

**July 2022, Virtual**

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| **Title** | **Technology under consideration for MPD writing guidelines based on ISOBMFF** |
| **Source** | **WG 03, MPEG Systems** |
| **Status** | **Approved** |
| **Serial Number** | **21788** |

# Introduction

At the 139th MPEG meeting, DASH and FileFormat BoGs discussed draft technology to signal preselection in ISOBMFF and its mapping to DASH in a joint meeting (http://mpegx.int-evry.fr/software/MPEG/Systems/DASH/spec/-/issues/304).

This document captures contribution M60491, adjusted by agreed changes during the meeting in FF BoG.

**Associated resource to this document:**

* Slides as presented at 139th MPEG meeting.

## Nomenclature

In the following, we address elements and fields of the ISOBMFF structure by an XPath like syntax where boxes are addressed as elements and fields are addressed as attributes.

EXAMPLE:

The preselection\_tag field inside the PreselectionInformationBox box would be addressed as PreselectionInformationBox@preselection\_tag.

# Collected comments from MPEG139

## FI\_14-025

<http://mpegx.int-evry.fr/software/MPEG/Systems/FileFormat/isobmff/-/issues/112>

**Comment:**

In DASH, a preselection element or descriptor identifies a main Adaptation Set and partial Adaptation Sets. The following is unclear in the preselection design of ISOBMFF: Which file format metadata identifies tracks that belong to a single Adaptation Set? Do all the tracks with the same non-zero alternate\_group value belong to the same Adaptation Set? Or just a subset of them? If only a subset, which file format metadata is used to identify the subset? Which file format metadata identifies tracks that belong to the main Adaptation Set of a preselection? Which file format metadata identifies tracks that belong to a partial Adaptation Set of a preselection?

**Proposal:**

Amend the design, if needed, so that the responses to these questions are clear. Add informative text in the amendment to explain the operation of an MPD writer based on the file format metadata.

## US20-026

<http://mpegx.int-evry.fr/software/MPEG/Systems/FileFormat/isobmff/-/issues/113>

NOTE: When creating a Preselection Descriptor for an Adaptation Set in DASH MPD for tracks that have PreselectionGroupBox, track\_in\_movie flag equal to ‘0’ in TrackHeaderBox suggests the use of an Essential Property Descriptor and track\_in\_movie flag equal to ‘1’ in TrackHeaderBox suggests the use of a Supplementary Property Descriptor.

## m60278 [6.1][ISOBMFF] On Preselection Processing

<http://mpegx.int-evry.fr/software/MPEG/Systems/FileFormat/isobmff/-/issues/125#note_63609>

1. Add in the guidelines document of writing MPD based on ISOBMFF:

The value of Preselection@order is set according to segment\_order.

# Recommendations of the joint FF-DASH call

## (<http://mpegx.int-evry.fr/software/MPEG/Systems/DASH/spec/-/issues/304>)

a. To issue the ISOBMFF preselection mapping to DASH manifest as an exploration document in DASH outputs

b. AF to investigate how to create CMF presentation using ISOBMFF preselection.

c. After completion of b, DASH BoG to look into mapping CMF presentation+ preselection to DASH.

1. (informative)  
     
   DASH Manifest writing Guidelines based on ISOBMFF
   1. General

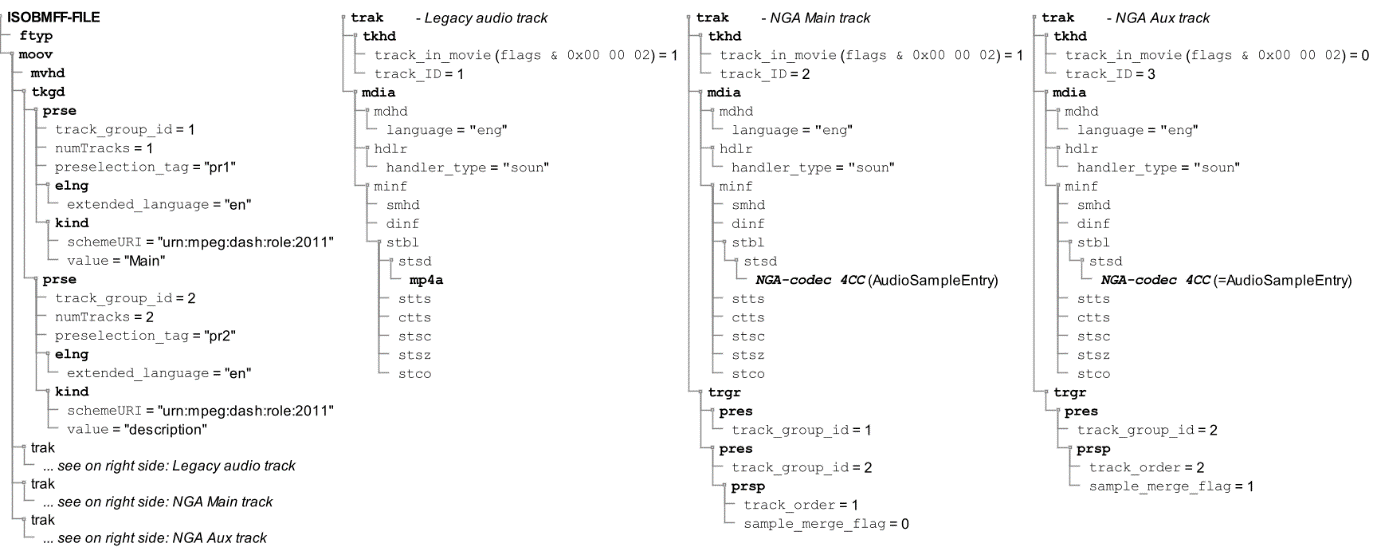
This annex provides guidelines on how to write ISO/IEC 23009-1 conformant manifest files from information available in ISOBMFF.

* 1. Guidelines for Preselections

A DASH packager operation can be described as:

* Each track in an ISOBMFF file yields an AdaptationSet/Representation or a AdaptationSet/Representation/ContentComponent if multi-track segments are used.
  + Manifest generators can set all properties of these elements as for tracks not containing preselection-related metadata (as previously done).
  + Those tracks that contain a PreselectionGroupBox should be referenced in the MPD by a preselection descriptor, with the @value being absent:
    - If the track\_in\_movie flag is set to ‘1’, a SupplementalProperty descriptor may be present
    - If the track\_in\_movie flag is set to ‘0’, an EssentialProperty descriptor shall be present
* For each instance of TrackGroupDescriptionBox/ PreselectionTrackGroupEntryBox a separate Preselection element shall be generated:
  + The Preselection@id attribute may be set to the PreselectionTrackGroupEntryBox@track\_group\_id
  + The Preselection@tag attribute shall be set to the PreselectionTrackGroupEntryBox@preselection\_tag
  + The child boxes within the PreselectionTrackGroupEntryBox define the following preselection element attributes and child elements:
    - The preselection@lang attribute shall bet set to ExtendedLanguageBox@extended\_language
    - The Role and Accessibility descriptors shall be generated based on the KindBox (a detailed mapping of the values is outside the scope of this document as this is application / DASH profile specific).
    - The AudioChannelConfiguration descriptor shall be generated based on the ChannelLayoutBox or AudioRenderingIndicationBox, or datatype specific information.
    - …
  + The mandatory Preselection@preselectionComponents attribute shall be generated based on all tracks containing a PreselectionGroupBox with the same track\_group\_id value.  
    The number of entries in this attribute shall match the value in the PreselectionTrackGroupEntryBox@num\_tracks field.  
    The order of entries in the Preselection@preselectionComponents list is determined by the track\_order field from all PreselectionProcessingBoxes of all tracks contributing to the preselection.
  + The value of the optional Preselection@order attribute is read from the PreselectionTrackGroupEntryBox@segment\_order field.
  1. Example

Considering the ISOBMFF box structure as outline by the following figure:



an MPEG-DASH Manifest fragment can be generated after demultiplexing this multi-track file into single-track segments:

<MPD>

<Period>

<AdaptationSet id="1" mimeType="audio/mp4" codecs="mp4a" />

<AdaptationSet id="2" mimeType="audio/mp4" codecs="<*NGA 4CC>*">

<SupplementalProperty id="urn:mpeg:dash:preselection:2016" />

</AdaptationSet>

<AdaptationSet id="3" mimeType="audio/mp4" codecs="<*NGA 4CC>*" />

<EssentialProperty id="urn:mpeg:dash:preselection:2016" />

</AdaptationSet>

<Preselection id="1" lang="en" preselectionComponents="2" tag="pr1"" codecs="<*NGA 4CC>*">

<Role schemeIdUri="urn:mpeg:dash:role:2011" value="main"/>

</Preselection>

<Preselection id="2" lang="en" preselectionComponents="2 3" tag="pr2"" codecs="<*NGA 4CC>*">

<Role schemeIdUri="urn:mpeg:dash:role:2011" value="alternate"/>

<Accessibility schemeIdUri="urn:mpeg:dash:role:2011" value="description"/>

</Preselection>

</MPD>

Note that generating a fully qualified 4-CC code for the AdaptationSet@codecs attribute requires reading the content of the AudioSampleEntry contained in the Sample description Box. The fragment above contains only that portion of the @codecs visible in the depicted structure.