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Title **Clarification of MPD to Initialization Segment and ContentComponent Use**
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1 Introduction

The W3C Media Resource In-band Tracks Community Group is currently working on the "Sourcing In-band Media Resource Tracks from Media Containers into HTML" specification [1] to define how a user agent should create track selection metadata from MPEG-2 TS, ISOBMFF and DASH content information. During this work, it appeared that the DASH Client Model as currently defined is unclear. This contribution proposes an update of this model.

Related to the work described above, metadata for media with multiple content components can be defined in the MPD using the ContentComponent and child elements. DASH does not define a mechanism for the DASH client to correlate the attributes of a ContentComponent and its children elements to the media track it is describing. This contribution proposes a new ContentComponent attribute so that this correlation can be done in a deterministic and interoperable manner in all DASH clients.

2 Update to the DASH client model

2.1 Background information and rationale

In typical DASH applications, the DASH client uses information both in the media container and in the MPD to create media component selection metadata that is passed to the application for the purpose of controlling the selection of media components for playback. This metadata may be complementary, duplicative or conflicting. For example, MPEG-2 TS and ISOBMFF containers have information that identifies "captions" media tracks. The <Role> descriptor can also be used in the MPD to describe a media component track as containing "captions" data [2].

The W3C "Sourcing In-band Media Resource Tracks from Media Containers into HTML" specification [1] defines how a user agent should create track selection metadata from MPEG-2 TS, ISOBMFF and DASH content information. A positive user experience would have the media component selection be consistent in both the case where, for example, the ISOBMFF media container is used and where the ISOBMFF media container is described by an MPD. This can be accomplished by the DASH client first using media container information in creating metadata and then using MPD information only to create metadata not created from media container information. It is important for interoperability that DASH clients create metadata in a

deterministic manner when presented with duplicate, and potentially, conflicting information in the media container and MPD. The community group currently proposes to define that the DASH client first uses media container information followed by MPD information in the creation of metadata.

2.2 Proposal

The following figure proposes additional information to Figure 2 – DASH Client Model in DASH section 4.2 [2] to illustrate the path of metadata in the MPD and segment data. It highlights the fact that Application indicates to the Access Engine which media need to be downloaded (media component selection) based on information (media component selection metadata) coming from both the Media Engine and the Access Engine (media component selection metadata). Additionally, although not as a result of this proposal, the inband information is added as possible information exchanged directly from the Media Engine to the Access Engine (e.g. inband event such as MPD updates, or subsegment information).

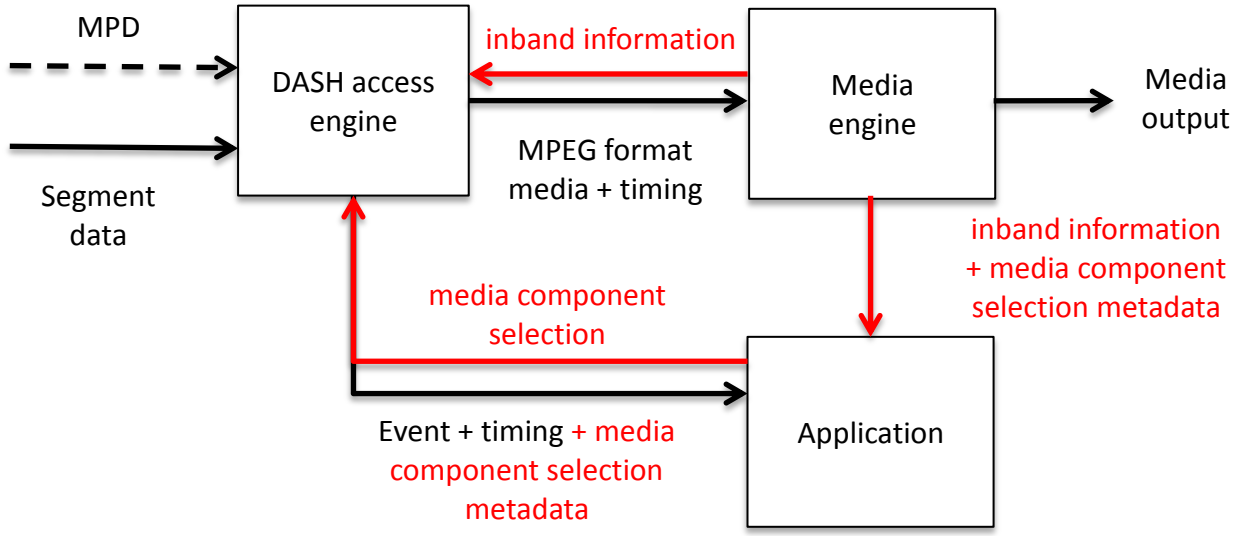

Figure 2 – DASH Client Model

The NOTE in subclause 7.1 is an informative note using the word SHALL, which is a normative term, therefore introducing a conflict in the context in which the text is provided (an informative note) and the text itself (containing a normative term SHALL). This proposal suggests that the text in the NOTE be provided without being stated in the context of an informative note.

3 Update to ContentComponent

The following update to "Table 6 – Semantics of ContentComponent element" in section 5.3.4.2 "Semantics" defines a new optional attribute @trackID that correlates the ContentComponent element with the media track described by the ContentComponent. Reuse of the existing ContentComponent @id attribute was considered but introducing the new @trackID would avoid conflicts where the current @id attribute is used in existing DASH content. If this is not a consideration then definition of the existing @id attribute could be replaced with that of the proposed @trackID.

Table 6 — Semantics of `ContentComponent` element

Element or Attribute Name	Use	Description
`ContentComponent`		description of a content component
`@id`	O	specifies an identifier for this media component. The attribute shall be unique in the scope of the containing Adaptation Set.
`@trackID`	O	shall be set to the value of the media component track identifier in the media segment (trackId in ISOBMFF segments and PID in MPEG-2 TS segments) described by this ContentComponent element.
`@lang`	O	same semantics as in Table 5 for `@lang` attribute
`@contentType`	O	same semantics as in Table 5 for `@contentType` attribute
`@par`	O	same semantics as in Table 5 for `@par` attribute.
`Accessibility`	0 … N	same semantics as in Table 5 for **`Accessibility`** element
`Role`	0 … N	same semantics as in Table 5 for **`Role`** element
`Rating`	0 … N	same semantics as in Table 5 for **`Rating`** element
`Viewpoint`	0 … N	same semantics as in Table 5 for **`Viewpoint`** element

Legend:
For attributes: M=Mandatory, O=Optional, OD=Optional with Default Value, CM=Conditionally Mandatory, F=Fixed.
For elements: <minOccurs>...<maxOccurs> (N=unbounded)
Elements are **`bold`**; attributes are non-bold and preceded with an @, List of elements and attributes is in ***italics bold*** referring to those taken from the Base type that has been extended by this type.

4 Conclusion

We recommend MPEG to amend the DASH specification [2] to include the proposed update to the DASH Client Model and to add the new ContentComponent @trackID attribute.

5 References

[1] http://dev.w3.org/html5/html-sourcing-inband-tracks/
[2] Text of ISO/IEC FDIS 23009-1 [2nd Edition] Information Technology – Dynamic adaptive streaming over HTTP (DASH) – Part 1: Media presentation description and segment formats [SC 29/WG 11 N 13687]