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CODING OF MOVING PICTURES AND AUDIO

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Title	**Codec Parameter for the MPEG DASH MIME Type**
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1. Introduction

MPEG-DASH specifies the Media Presentation Description format for describing resources for adaptive streaming over HTTP. An MPD may describe media resources in the form of ISO Base Media files, MPEG-2 Transport Streams or other media formats. However, when a DASH application receives a link to an MPD, for example within an HTML web page, it has no knowledge of the media formats described in the MPD. It has to download the MPD possibly to realize that it cannot use it. In this contribution, we propose to define the "codec" parameters for the MPEG-DASH Mime Type.

2. Proposal

The HTML5 draft currently specifies a way to signal in a web page that alternative media resources are available. The HTML 5 browser will then select the most appropriate resource based on its MIME type/subtype, and possibly the codec parameter, as defined in RFC 6381, as follows:

```
<video>
<source src='video.mp4' type='video/mp4; codecs="avc1.42E01E, mp4a.40.2"'>
<source src='video.mp4' type='video/mp4; codecs="avc1.58A01E, mp4a.40.2"'>
<source src='video.mp4' type='video/mp4; codecs="avc1.4D401E, mp4a.40.2"'>
<source src='video.mp4' type='video/mp4; codecs="avc1.64001E, mp4a.40.2"'>
<source src='video.mp4' type='video/mp4; codecs="mp4v.20.8, mp4a.40.2"'>
<source src='video.mp4' type='video/mp4; codecs="mp4v.20.240, mp4a.40.2"'>
<source src='video.3gp' type='video/3gpp; codecs="mp4v.20.8, samr"'>
<source src='video.ogv' type='video/ogg; codecs="theora, vorbis"'>
<source src='video.ogv' type='video/ogg; codecs="theora, speex"'>
<source src='audio.ogg' type='audio/ogg; codecs=vorbis'>
<source src='audio.spx' type='audio/ogg; codecs=speex'>
<source src='audio.oga' type='audio/ogg; codecs=flac'>
<source src='video.ogv' type='video/ogg; codecs="dirac, vorbis"'>
```

```
</video>
```

RFC 6381 defines the codec parameter for container formats. An MPD is not per-se a container format, as the XML file does not contain the media data. However, it references the media data. In some scenarios, it may be undesirable to have to download the MPD to determine if any media at all referenced in that MPD can be played or not.

The MPD MIME Type defined in Annex C of the DASH standard defines the "profiles" parameter. This parameter can be used to distinguish if MP4 (resp. MPEG-2 TS) segments are used by looking for the presence of one of the `urn:mpeg:dash:profile:isoff-*:2011` values (resp. `urn:mpeg:dash:profile:mp2t-*:2011`), but it cannot be used when the Full profile is used. Additionally, this profile is optional. Besides, this parameter does not mention which codecs are used.

As a consequence, we propose to define the "codecs" parameter for the DASH MIME type as suggested by the RFC 6381. RFC 6381 indicates:

> "When the 'codecs' parameter is used, it MUST contain all codecs indicated by the content present in the body part. The 'codecs' parameter MUST NOT include any codecs that are not indicated by any media elements in the body part.
> In some cases, not all indicated codecs are absolutely required in order to render the content. Therefore, when a receiver does not support all listed codecs, special handling might be required. For example, the media element(s) could be examined in order to determine if an unsupported codec is actually required (e.g., there may be alternative tracks (such as English and Spanish audio), there may be timed text that can be dropped, etc.)."

We therefore propose to define the "codecs" parameter as follows:

C.3.2 The codecs parameter

Parameter name: `codecs`

Parameter value: The 'codecs' parameter is an optional parameter that indicates the comma-separated content of the codecs attributes used by all Adaptation Sets, Representations or Sub-Representations, where duplicates have been removed. The contents of this attribute shall conform to either the `pro-simple` or `pro-fancy` productions of RFC6381, Section 4.5.

example:
```
application/dash+xml;codecs="mp4a.0x40, mp4a.40.2, avc1.4d0228"
```

3. Conclusion

We recommend that MPEG adopts the proposal and modifies Annex C of the MPEG-DASH standard accordingly.