INTERNATIONAL STANDARD

ISO/IEC 23009-1

Information technology — Dynamic adaptive streaming over HTTP (DASH) —

Part 1:
Media presentation description and segment formats

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AMENDMENT 2: Spatial relationship description, generalized URL parameters and other extensions

Technologies de l'information — Diffusion en flux adaptatif dynamique sur HTTP (DASH) —

Partie 1: Description de la présentation et formats de remise des médias

AMENDEMENT 2: Description des relations spatiales, paramètres URL généralisés et autres extensions

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ISO/IEC 23009-1:2014/Amd 2:2015
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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Amendment 2 to ISO/IEC 23009-1:2015 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information Technology*, Subcommittee SC 29, *Coding of Audio, Picture, Multimedia and Hypermedia Information*.

Introduction

This amendment to ISO/IEC 23009-1 adds the ability for MPD authors to express:

- Spatial Relationship Description between Spatial Objects in the MPD;

- Flexible parameter insertions in URLs used to query Media Segments;

- Additional Role @values;

- Association between Representations

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Information Technology — Dynamic adaptive streaming over HTTP (DASH) — Part 1: Spatial Relationship Description, Generalized URL parameters and other extensions

In clause 2 "Normative references", add the following reference, in alphabetical order:

HTML 4.01 Specification, W3C Recommendation, 24 December1999

In clause 3.1 "Terms and definitions", add the following definitions in alphabetical order:

3.1.X
associated Representation
Representation which provides supplemental or descriptive information for at least one other Representation

3.1.X
Spatial Object
a media content component corresponding to a region in a coordinate system associated to this media content component

In clause 3.2 "Symbols and abbreviated terms", add the following term:

SRD   Spatial Relationship Description

In clause 4.7 "Schemes", Table 2, add the following identifiers:

Scheme Identifier	Clause in this part of ISO/IEC 23009	Informative description
`urn:mpeg:dash:srd:2014`	H.1	Scheme identifier for Spatial Relationship Description
`urn:mpeg:dash:urlparam:2014`	I.1	Scheme identifier for indicating usage of the flexible insertion of URL query parameters
`urn:mpeg:dash:audio-receiver-mix:2014`	5.8.5.7	Scheme identifier for receiver mix

In clause 5.3.5.1 "Overview", add :

"Associated Representations are described by a **Representation** element that contains an @associationId attribute and optionally an @associationType attribute. Associated Representations are Representations that provide information on their relationships with other Representations. As opposed to complementary Representations, the segments of an associated Representation may be optional for decoding

and/or presentation of the Representations identified by `@associationId`. They can be considered as supplementary or descriptive information, the type of the association being specified by the `@associationType` attribute"

In clause 5.3.5.2 "Representation Semantics", Table 7 – Semantics of Representation element, add:

`@associationId`	O	specifies all Representations the Representation is associated with in the decoding and/or presentation process as a whitespace-separated list of values of `Representation@id` attributes.
`@associationType`	O	specifies, as a whitespace separated list of values, the kind of association for each Representation the Representation has been associated with through the `@associationId` attribute. Values taken by this attribute are 4 character codes for track reference types registered in MP4 registration authority. This attribute shall not be present when `@associationId` is not present. When present, this attribute must have as many values as the number of identifiers declared in the `@associationId` attribute

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NOTE - `@associationId` and `@associationType` attributes can only be used between Representations that are not in the same Adaptation Sets.

ISO/IEC 23009-1:2014/Amd 2:2015
In clause 5.8.5.5 "DASH Role scheme", Table 22, add the following rows:
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3c1f32537927/iso-iec-23009-1-2014-amd-2-2015

`description`	Textual or audio media component containing a textual description (intended for audio synthesis) or an audio description describing a visual component
`sign`	Visual media component representing a sign-language interpretation of an audio component.
`metadata`	Media component containing information intended to be processed by application specific elements.
`enhanced-audio-intelligibility`	Audio component with improved intelligibility of the dialogue

In clause 5.8.5.5 "DASH Role scheme", in Table 22, add the following note:

> 4) Role descriptors with values such as "subtitle", "caption", "description", "sign" or "metadata" may be used to enable assignment of a "kind" value in HTML 5 applications for tracks exposed from a DASH MPD.

Add the following to the end of clause 5.8.5

5.8.5.7 Audio Receiver Mix

This clause defines a scheme for use in **EssentialProperty** or **SupplementaryProperty** to indicate that two audio Adaptation Sets need to be mixed by the media engine prior to playback.

The @schemeIdUri attribute identifying the scheme is urn:mpeg:dash:audio-receiver-mix:2014.

The @value attribute shall contain the value of the **AdaptationSet**@id attribute from an Adaptation Set with content type audio which the current Adaptation Set needs to be mixed with in order to provide complete audio experience.

An example of receiver mix, is the case where a single audio Adaptation Set provides music and effects – i.e., complete experience without dialogues, and one or more Adaptation Sets provide dialogues in different languages. In this case the dialogue Adaptation Sets will depend on music and effects Adaptation Set.

The mixing requirement is unidirectional – i.e., requirement of mixing Representation A with Representation B when A is selected does not imply that mixing the two is required if B is selected.

Add the following annexes:

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Annex H
(normative)

Spatial Relationship Description

H.1 Spatial Relationship Description (SRD) scheme

The SRD scheme allows Media Presentation Description authors to express spatial relationships between Spatial Objects. A Spatial Object is represented by either an Adaptation Set or a Sub-Representation. As an example, a spatial relationship may express that a video represents a spatial part of another full-frame video (e.g. a region of interest, or a tile).

The **SupplementalProperty** and/or **EssentialProperty** descriptors with @schemeIdUri equal to "urn:mpeg:dash:srd:2014" are used to provide spatial relationship information associated to the containing Spatial Object. SRD shall be contained exclusively in these two MPD elements (**AdaptationSet** and **SubRepresentation**).

To preserve the compatibility with legacy clients, MPD shall use **SupplementalProperty** and **EssentialProperty** in such a way that at least one Representation can be interpreted by legacy clients after discarding the element containing **EssentialProperty**.

NOTE – Sub-Representation level SRDs may be used to represent Spatial Objects in one Representation such as HEVC tiling streams. In that case, SRD descriptors may be present at Adaptation Set as well as Sub-Representation levels.

H.2 SRD @value syntax

The @value of the **SupplementalProperty** or **EssentialProperty** elements using the SRD scheme is a comma separated list of values for SRD parameters.

The source_id parameter provides a unique identifier, within the Period, for the source of the content. It implicitly defines a coordinate system associated to this source. This coordinate system uses an arbitrary origin (0; 0); the x-axis is oriented from left to right and the y-axis from top to bottom. All SRD sharing the same source_id value have the same origin and axes orientations. Spatial relationships for Spatial Objects using SRD with different source_id values are undefined.

For a given source_id value, a reference space is defined, corresponding to the rectangular region encompassing the entire source content, whose top-left corner is at the origin of the coordinate system. The total_width and total_height values in a SRD provide the size of this reference space expressed in arbitrary units.

NOTE – There may be no Spatial Object in the MPD that covers the entire source of the content, e.g. when the entire source content is represented by two separate videos.

The object_x and object_y parameters (respectively object_width and object_height) express 2D positions (respectively 2D sizes) of the associated Spatial Object in the coordinate system associated to the source. The values of the object_x, object_y, object_width, and object_height parameters are relative to the values of the total_width and total_height parameters, as defined above. Positions (object_x, object_y) and sizes (object_width, object_height) of SRDs sharing the same source_id value may be compared after taking into account the size of the reference space, i.e. after the object_x and object_width values are divided by the total_width value and the object_y and object_height values divided by the total_height value of their respective descriptors.