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**Information technology — High
efficiency coding and media delivery
in heterogeneous environments —**

**Part 1:
MPEG media transport (MMT)**

**AMENDMENT 1: Use of MMT Data in
MPEG-H 3D Audio**

*Technologies de l'information — Codage à haute efficacité et livraison
des médias dans des environnements hétérogènes —*

Partie 1: Transport des médias MPEG

AMENDEMENT 1: Usage de données MMT dans MPEG-H 3D Audio



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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

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Information technology — High efficiency coding and media delivery in heterogeneous environments —

Part 1: MPEG media transport (MMT)

AMENDMENT 1: Use of MMT Data in MPEG-H 3D Audio

9.3.2.1, final paragraph

Add the following sentence at the end of the final paragraph.

If the PA message is acquired, MMT receiving entity can process the package. This PA message can be also delivered over MPEG-H 3D Audio stream as defined in ISO/IEC 23008-3:2016, 14.7. In this case, MMT receiving entity transacts as defined in Annex H of this document.

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Add a new Annex H.

Annex H (normative)

Transactions on system data carried over MPEG-H 3D Audio

H.1 General

MMT service provisioning is also possible for MMT-capable devices (MMT receiving entities such as TVs) which are connected to STB. Currently, many people are still watching their TVs which are connected to STB. However, this STB may not be able to support system protocols (e.g. MMT) or IP-based media data reception in many cases and it may be hard to provide enriched services because system data may not reach to TV.

In this environment, TV can utilize various metadata attached to media as a trigger point for more enriched services. Contents providers or service providers who feed content to TV screens through STB are able to pop up new additional contents or advertisements on the TV screen to improve user service satisfaction. This content can be provided through broadband access connected to TV as depicted in Figure H.1, if triggered in some way. For example, additional content such as baseball player statistics or a different view angle of the player can be presented on the TV screen while the user is watching the baseball game through STB on TV.

ISO/IEC 23008-3:2016, 14.7 provides such a tool to initiate the service on a TV connected to STB. Based on it, this annex describes the operation of the MMT system engine on system metadata (SysMetaPayload) carried over MPEG-H 3D Audio MHAS stream. An MMT receiving entity that has an MPEG-H 3D Audio decoder shall have the functionality to transact with system metadata which are extracted and delivered from the MPEG-H 3D Audio decoder.

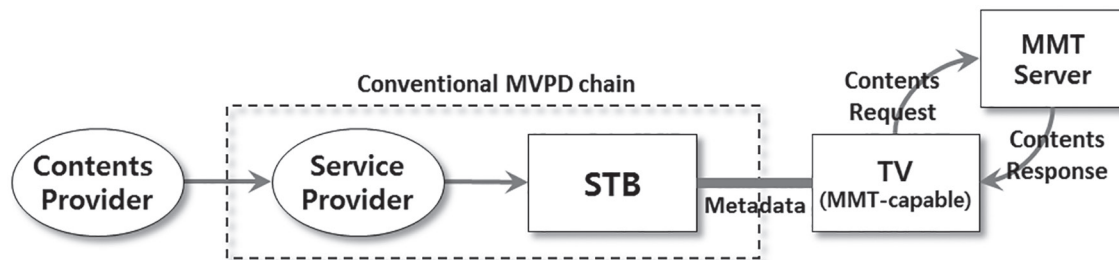


Figure H.1 — MMT service in conventional broadcast environment

H.2 Data type

The system metadata from the decoder shall be a URL to fetch a PA message or a CI document that will initiate the new media delivery from MMT sending entities. The URL length shall be within the range of 256 bytes and shall be UTF-8 encoded. The total bit rate associated with all packets of type **PACTYP_SYSMETA** to provide these information shall not be greater than 1 % of the audio bit rate, averaged over a 5 s time window, as specified in ISO/IEC 23008-3.

H.3 Security considerations

To make sure that only authorized MMT receiving entities are able to access the contents, an MMT sending entity should be able to authorize every individual request. For that purpose, URI Signing which is standardized in IETF URI Signing for CDN Interconnection (CDNI) Internet Draft shall be used.

H.4 MMT receiving entity operation

H.4.1 Data fetching

Figure H.2 shows the basic metadata processor architecture in a TV. The audio metadata processor receives actual metadata from the MPEG-H 3D Audio decoder and it is parsed at the metadata parser for operation.

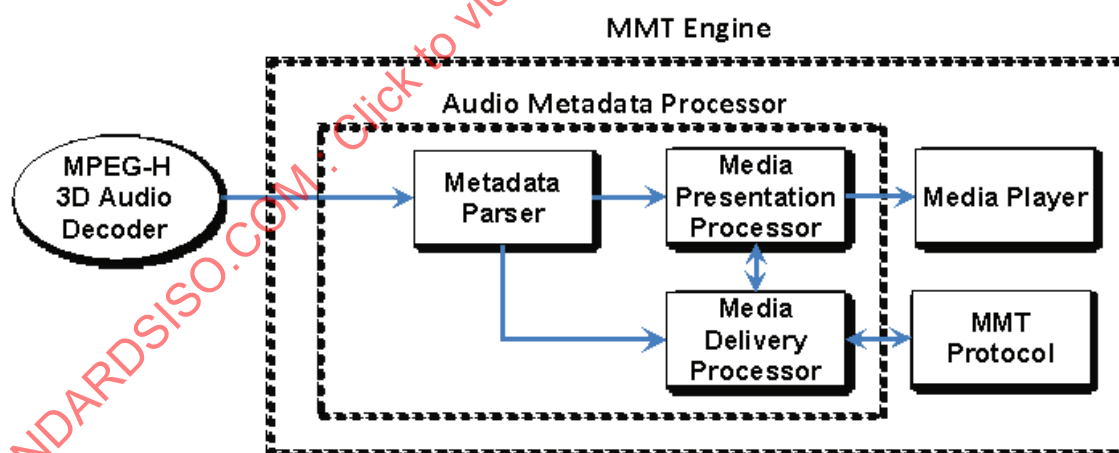


Figure H.2 — Architecture of metadata processor and its interface in a TV

The metadata described in sysData shall be a valid URL media source location to fetch media; the media delivery processor will query using the URL to acquire a PA signaling message as a root or CI document to initiate the MMT service. When the PA message is received, the MMT engine will parse it and extract all the subsequent signaling messages and assets based on it. When the MPEG CI document is received, it is delivered to the CI processing engine which is responsible for fetching the HTML5 file (and any other referenced files) and processing the CI information to control the presentation accordingly. The HTML5 file is typically parsed into a Document Object Model (DOM) tree and stored in memory. The CI