# INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

# ORGANISATION INTERNATIONALE DE NORMALISATION

# ISO/IEC/JTC 1/SC 29/WG 11

# CODING OF MOVING PICTURES AND AUDIO

**ISO/IEC JTC 1/SC 29/WG 11 N13651**

**August 2013 – Vienna, AT**

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| Source: | Convenor of MPEG  |  |
| Status: | Approved by WG11 |
| Subject: | MPEG Press Release |
| Date: | 2 August 2013 |

# MPEG selects technology for MPEG-H 3D audio standard

Vienna, AT − The 105th MPEG meeting was held in Vienna, AT, from 29 July to 2 August 2013**.**

**MPEG-H 3D Audio expected to reach Draft International Standard status July 2014**

At its 105th meeting, MPEG has selected technology for the MPEG-H 3D Audio standard (ISO/IEC 23008-3) based on responses submitted to the Call for Proposals that was previously issued in January 2013. The selected technology supports content in multiple formats: channel-based, channels and objects (C+O), and scene-based Higher Order Ambisonics (HOA). A total of seven submissions were reviewed: four based on C+O technology and three based on HOA.

The submissions were evaluated using a comprehensive set of subjective listening tests in which the resulting statistical analysis guided the selection. A submitted technology was selected for each of the C+O and HOA signal sets. At the highest bitrate of 1.2 Mb/s for the coding of a signal supporting a 22.2 loudspeaker configuration, both of the selected technologies have achieved excellent quality and are very close to true transparency, i.e. listeners cannot distinguish from a hidden reference. It is expected that the C+O and HOA technologies will be merged into a unified architecture during the standardization process.

MPEG commits to a short standardization timeline to produce Version 1 of MPEG-H 3D Audio that is focused on higher bitrates (e.g. 1.2 Mb/s to 256 kb/s) with the Committee Draft, Draft International Standard, and International Standard expected to be complete in March, 2014, July, 2014, January, 2015, respectively.

**Augmented Reality Application Format reaches FDIS status**

At the 105th MPEG meeting, MPEG's Application Format for Augmented Reality (ISO/IEC 23000-13) has reached FDIS status and will be soon published as an International Standard. The MPEG ARAF enables augmentation of the real world with synthetic media objects by combining multiple, existing standards within a single specific application format addressing certain industry needs. In particular, ARAF comprises three components referred to as scene, sensor/actuator, and media. The scene component is represented using a subset of MPEG-4 Part 11 (BIFS), the sensor/actuator component is defined within MPEG-V, and the media component may comprise various type of compressed (multi)media assets using different modalities and codecs. The target applications are including geo-location based services, image based object detection and tracking, mixed and augmented reality games and real-virtual interactive scenarios.

**MPEG evaluates response to Call for Proposals for royalty-free video coding standard**

In response to a Call for Proposals that MPEG had issued for the purpose of defining a video coding standard under Type 1 licensing terms, MPEG has received a submission for which formal subjective testing was also performed prior to this MPEG meeting. The results reveal that the underlying technology fulfills the expected compression capability, and further investigation suggests that the intended goals for the standard could be achieved. Therefore, a Working Draft has been issued to perform further study on the proposal and progression to the Committee Draft stage in the standardization process could be expected by our next meeting in November 2013. The standard is envisaged to reach Final Draft International Standard status in July 2014.

**MPEG issues CfP for User Description**

At the 105th MPEG meeting, MPEG has issued a Call for Proposals on MPEG User Description which is available in the public documents section at <http://mpeg.chiariglione.org/>. MPEG-UD facilitates the ability of service applications to make recommendations to individual users within a given context of the user. The CfP on MPEG UD will specify four formats to facilitate the generation of those recommendations, namely: User Description (UD), Context Description (CD), Service Description (SD), and finally a Recommendation Description (RD). The UD, CD, and SD are managed respectively by UD, CD, and SD managers, which then provide input to a recommendation engine. The output of the recommendation engine is the RD which is provided to the service application, facilitating the ability for a service application to provide customized recommendations for each user.

**MPEG continues progress toward energy-efficient media consumption (Green MPEG)**

In response to the Call for Proposals (CfP) on energy-efficient media consumption (Green MPEG) issued at the 104th MPEG meeting, five companies have provided technologies. Submissions include technologies such as:  codec dynamic voltage/frequency scaling, display adaptation, green adaptive streaming, interactive power saving requests and cross-segment decoding. These technologies have been evaluated at the 105th meeting and demonstrate that they facilitate the reduced consumption from encoding, decoding and presentation of media content without any degradation in the Quality of Experience (QoE). MPEG will continue to investigate these technologies and their synergies in its quest to provide interoperable solutions for energy-efficient media encoding, decoding and presentation.

**MPEG issues Call for Proposals for Program Level and Dynamic Range Control**

While MPEG has Dynamic Range Control (DRC) capability integrated with the MPEG-4 Advanced Audio Coding (AAC) profile coders, as in the AAC IMDCT-based multi-band DRC, it is interested in pursuing technology that could be more broadly applicable, be a significant advance with respect to AAC technology, and take into account recent developments in the field, including regulatory developments.

Therefore, at the 105th meeting, MPEG has issued a Call for Proposals for Program Level and Dynamic Range Control technology. Submissions are requested to compare the performance of proposed technology to that of the MPEG-4 AAC-based DRC technology. Submissions to the Call are due in October 2013 at the 106th meeting.

**ISO Base Media File Format supports timed text**

MPEG is pleased to announce the carriage of timed text in the ISO Base Media File Format standard which has been promoted to Final Draft International Standard (FDIS) status at the 105th MPEG meeting.  The new addition to the file format standard provides a standard mechanism for all applications of timed text and guidance to users for efficient carriage as well as design considerations. This work is in response to the needs of industries represented by the Society of Motion Picture and Television Engineers (SMPTE) and to requirements from the World Wide Web Consortium (W3C), and the Digital Entertainment Content Ecosystem (DECE). The carriage will be formally referenced as ISO/IEC 14496-12:2012 /15444-12:2012, AMD 2:2013 and 14496-30:2013. The amendment to Part 12 covers the basic syntax and semantics for a set of new text track types for a broad range of timed text formats. Part 30 provides specific guidance for two popular timed text format technologies defined by W3C - Timed Text Markup Language (TTML) and Web Video Text Tracks (WebVTT). This technology is used for the encoding of media subtitles and closed caption information, particularly for Internet delivered media, including a TTML derivative, and for SMPTE Timed Text.

**MPEG updates file format and MPEG-2 transport to support HEVC**

MPEG is also pleased to announce the completion of specifications for the carriage of HEVC video in MPEG-2 transport streams and for the storage of HEVC in the family of file formats. Both specifications follow the direction previously set by AVC for the carriage and storage of MPEG video.

Transport of HEVC will be specified in amendment 3 to the 4th edition of MPEG-2 systems (ISO/IEC 13818-1:2013), which will also be published as amendment 3 to Rec. ITU-T H.222.0 (2013). As MPEG-2 transport is widely used in many broadcast applications, timely completion of this standard (one meeting after HEVC was published) enables standards bodies such as DVB, ARIB and SCTE to adopt HEVC into their specifications quickly. The transport specification also includes support for implementation of HEVC layered-coding (temporal scalability) where multiple layers can be transmitted to receivers with different capabilities. With the limited use of program stream in current applications, program stream carriage is not specified.

Storage of HEVC is incorporated into a revision of the standard also used for the storage of AVC, ISO/IEC 14496-15, which has likewise been re-named to reflect its expanded scope, and now covers not only AVC and its family (SVC, and MVC) but also HEVC. Support is provided for the storage of streams, and setup information, in efficient ways, to enable the use of MP4, 3GPP, etc. files to carry HEVC in both standalone applications and in the context of other standards, such as DASH.

**Amendment to MPEG DASH is finalized**

At its 105th meeting, MPEG has finalized the first amendment to the ISO/IEC 23009-1 (MPEG-DASH) standard. This amendment adds support for event messages to DASH by providing the server with a mechanism to insert event messages either in the manifest files or in-band along with the media segments. Such event messages makes live streaming and ad-insertion application more efficient, robust and flexible.

Support of MPD anchors was also added in this amendment, which can be used to identify a specific point of play and be used, for instance, to pause streaming of a program in one device and continue the playback of it with another device.

MPEG has also finalized Part 2 of MPEG-DASH standard (ISO/IEC 23009-2), conformance files and reference software, which checks the compliancy of manifest and media segments. With this software, the content can be verified to comply to any of the defined MPEG-DASH profiles. This standard also includes a DASH reference client that demonstrates how an MPD is parsed and consequently the segments can be downloaded using HTTP protocol. This part also provides sample DASH client implementations.

Finally MPEG has finalized MPEG-DASH Part 3 (ISO/IEC 23009-3) providing a set of informative implementation guidelines for content authoring, client implementation and service deployment. These guidelines recommend best practices for adaptive content authoring for on-demand and live services, enabling trick modes in content authoring, sample client architecture, client timing model implementations, and sample deployment scenarios.

**Digging Deeper – How to Contact MPEG**

Communicating the large and sometimes complex array of technology that the MPEG Committee has developed is not a simple task. Experts, past and present, have contributed a series of tutorials and vision documents that explain each of these standards individually. The repository is growing with each meeting, so if something you are interested is not yet there, it may appear shortly – but you should also not hesitate to request it. You can start your MPEG adventure at <http://mpeg.chiariglione.org/>

**Further Information**

Future MPEG meetings are planned as follows:

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| No. 106 | Geneva | CH | 28 October – 1 November 2013 |
| No. 107 | San Jose, CA | USA | 13 – 17 January 2014 |
| No. 108 | Valencia | ES | 31 March – 04 April 2014 |
| No. 109 | Sapporo | JP | 07 – 11 July 2014 |

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The MPEG homepage also has links to other MPEG pages that are maintained by the MPEG subgroups. It also contains links to public documents that are freely available for download by those who are not MPEG members. Journalists that wish to receive MPEG Press Releases by email should contact Dr. Arianne T. Hinds at a.hinds@cablelabs.com