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CODING OF MOVING PICTURES AND AUDIO

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MPEG issues Genomic Information Compression and Storage joint Call for Proposals in conjunction with ISO/TC 276/WG 5

Geneva, Switzerland – The 115th MPEG meeting was held in Geneva, Switzerland, from 30 May – 3 June 2016

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While routine deoxyribonucleic acid (*DNA) sequencing* in the *doctor's office* is still many years away, some large medical centers have begun to use sequencing to identify cancer and other diseases. The introduction of high-throughput DNA sequencing has led to the generation of large quantities of genomic data and related information that have to be stored, transferred, and analyzed. To handle these massive amounts of genomic data, technologies are developed for their compression. These methods and underlying data formats need to be consistently standardized for their effective application to ensure interoperability between computer systems and databases. At its 115th meeting, MPEG issued a Call for Proposals (CfP) for Genomic Information Compression and Storage in conjunction with the working group for standardization of data processing and integration of the ISO Technical Committee for biotechnology standards (ISO/TC 276/WG5). The call seeks submissions of technologies that can provide efficient compression of genomic data and metadata for storage and processing applications.

Companies and organizations are invited to submit proposals in response to this call. Responses are expected to be submitted by the 12th October 2016, and will be evaluated during the weekend prior to the 116th MPEG meeting (17–21 October 2016). Detailed information, including how to respond to the CfP, is available as document N16320 at the 115th MPEG meeting Web site (http://mpeg.chiariglione.org/meetings/115). For any questions about the call, test conditions, required software, or test sequences please contact: Joern Ostermann, MPEG Requirements Group Chair (ostermann@tnt.uni-hannover.de) or Martin Golebiewski, Convenor ISO/TC 276/WG 5 (martin.golebiewski@h-its.org).

Plug-in free decoding of 3D objects within Web browsers

In order to enable efficient representation, download and use of 3D graphics in Web browser, MPEG extended its suite of 3D graphics standards. Printing material and 3D graphics coding for Web browsers – also referred to as Web3DCoding (ISO/IEC 14496-16:2011/Amd. 3) – has reached the final milestone of Final Draft Amendment (FDAM) at this MPEG meeting and will be soon published as an International Standard. Web3DCoding extends the usage of the already existing MPEG 3D mesh codecs to the world of Web browsers. 3D objects are compressed by this codec and encapsulated in a 3D scene described using the GL Transmission Format (glTF).

The Web3DCoding tools are implemented in JavaScript and the data representation uses well supported formats, they are natively understood by most Web browsers and, thus, making the decoding of 3D objects possible without any additional plug-in or tool. Tests were performed successfully on large objects with different types of attributes such as normals, color-per-vertex, and texture.

MPEG-H 3D Audio AMD 3 reaches FDAM status

At the 115th MPEG meeting, MPEG-H 3D Audio Amendment 3 progressed to Final Draft Amendment status. This text will progress to Amendment at the October MPEG meeting and be published late in 2016. MPEG expects that a Second Edition of MPEG-H 3D Audio, incorporating the base text and Amendment 3, will be available late in 2016.

MPEG-H 3D Audio supports a highly immersive audio experience for loudspeakers placed in a 3-dimensional configuration (e.g., high, mid, and low for front, side, and surround), and supports content in multiple formats: channels (C), channels and objects (C+O), and scene-based Higher Order Ambisonics (HOA).

Key functionalities are a compact and bit-efficient representation of immersive, multi-channel audio programs, and the ability to flexibly render audio content to an arbitrary number of loudspeakers with an arbitrary configuration, as well as providing a binaural experience over headphones. Extensive support for meta-data in the bit stream and the user interface provides for a rich, interactive control of the presentation of the audio program.

MPEG-H 3D Audio Amendment 3 adds technology that increases coding efficiency and also adds features that will be of great use to the broadcast industry and defines the Low Complexity Profile for using that technology. Key compression technologies focus on intermediate bit rates of 128 kb/s to 256 kb/s for immersive signals. Key features include advanced loudness control, layered coding for HOA-based content, and the ability to interoperate with ITU-R standardized BW64 (Broadcast WAV 64) and ADM (Audio Definition Model) metadata.

Common Media Application Format for Dynamic Adaptive Streaming Applications

At its 115th meeting, MPEG has reached the first milestone for the Common Media Application Format (CMAF). The CMAF standard will set a clear standard for a format optimized for large scale delivery of a single encrypted, adaptable multimedia presentation to a wide range of devices. The format is compatible with a variety of adaptive streaming, broadcast, download, and storage delivery methods including MPEG-DASH and MMT.

The segmented media format, which has been widely adopted for Internet content delivery using MPEG-DASH, Web browsers, and commercial services such as Netflix and YouTube, is derived from the ISO Base Media File Format, using MPEG codecs, Common Encryption, etc. The same

components have already been widely adopted and specified by many other standards developing organizations and industry consortia, but the absence of a common media format, or minor differences in practice, means that slightly different media files must often be prepared for the same content. The industry will greatly benefit from a common format, embodied in an MPEG standard, to improve interoperability and distribution efficiency.

CMAF will define a standard for encoding and decoding of segmented media. While CMAF defines only the media format, CMAF segments can be used in environments that support adaptive bitrate streaming using HTTP(S) and any presentation description, such as the MPEG-DASH MPD, the Smooth Streaming manifest, and the HTTP Live Streaming (HLS) manifest (m3u8). MPEG's CMAF specification is addressing the most common use cases and defining a few CMAF profiles that would help industry and consortia to reference this specification and avoid fragmentation of media formats.

Some of the major use cases for CMAF include over-the-top (OTT) adaptive bitrate streaming, broadcast/multicast streaming, hybrid network streaming of live content, download of streaming files for local playback, and server-side and client-side ad insertion.

4th edition of AVC/HEVC file format

MPEG is pleased to announce completion of its work to support layered and tiled HEVC coding in files based on the ISO base media file format, including MP4, in an expected 4th edition of ISO/IEC 14496-15. This flexible support enables layered and tiled coding for content that is transmitted or stored in this format. In particular, experts believe that the tiling support may become increasingly important as video gets larger and more immersive, and by enabling the selection of the desired visual area of a larger video both the decoding complexity and data transfer rates can be managed.

On the ISO base media file format ISO/IEC 14496-12, we note a milestone with pleasure: the progenitor of ISO base media file format was first documented in 1991, and as such, the format is celebrating 25 years of vigorous life in active use and development, with the most recent 18 years as an MPEG international standard.

How to contact MPEG, learn more, and find other MPEG facts

To learn about MPEG basics, discover how to participate in the committee, or find out more about the array of technologies developed or currently under development by MPEG, visit MPEG's home page at http://mpeg.chiariglione.org. There you will find information publicly available from MPEG experts past and present including tutorials, white papers, vision documents, and requirements under consideration for new standards efforts. You can also find useful information in many public documents by using the search window].

Examples of tutorials that can be found on the MPEG homepage include tutorials for: High Efficiency Video Coding, Advanced Audio Coding, Universal Speech and Audio Coding, and DASH to name a few. A rich repository of white papers can also be found and continues to grow. You can find these papers and tutorials for many of MPEG's standards freely available. Press releases from previous MPEG meetings are also available. Journalists that wish to receive MPEG Press Releases by email should contact Dr. Christian Timmerer at christian.timmerer@itec.uni-klu.ac.at or christian.timmerer@bitmovin.com.

Further Information

Future MPEG meetings are planned as follows:

No. 116, Chengdu, CN, 17 – 21 October 2016
No. 117, Geneva, CH, 16 – 20 January, 2017
No. 118, Hobart, AU, 03 – 07 April, 2017
No. 119, Torino, IT, 17 – 21 July, 2017
No. 120, Macau, CN, 23 – 27 October 2017

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