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**INTERNATIONAL ORGANISATION FOR STANDARDISATION**

**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 N18544**

**Gothenburg, SE – July 2019**

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**Versatile Video Coding (VVC) Progresses to Committee Draft**

Gothenburg, Sweden – The 127th WG 11 (MPEG) meeting was held in Gothenburg, Sweden, 08-12 July 2019

**Versatile Video Coding (VVC) Progresses to Committee Draft**

The development of the next major generation of video coding standard has achieved excellent progress, such that WG11 (MPEG) has approved the consideration of the text for formal balloting in the ISO/IEC approval process (Committee Draft (CD)).

The new VVC standard (ISO/IEC 23090-3) will be applicable to a very broad range of applications. It will provide a substantial improvement in coding efficiency relative to existing standards and will also provide additional functionalities. The amount of improvement in coding efficiency that will be attained by the new standard has not yet been formally measured, but is expected to be quite substantial – e.g., *in the range of 35–60% bit rate reduction* relative to that obtained using High Efficiency Video Coding (HEVC; ISO/IEC 23008-2 | Rec. ITU-T H.265) for equivalent subjective video quality at picture resolutions such as 1080p HD or 4K or 8K UHD, either for standard dynamic range video or high dynamic range and wide color gamut content for levels of quality appropriate for use in consumer distribution services. The focus during the development of the standard has primarily been on *10-bit 4:2:0 content*, and *4:4:4 chroma format* will also be supported.

The VVC standard is being developed in the Joint Video Experts Team (JVET), a group established jointly by WG11 (MPEG) and the Video Coding Experts Group (VCEG) of ITU-T Study Group 16. The VVC standard is expected to be finalized in mid 2020. In addition to a text specification, the project also includes the development of *reference software*, a *conformance testing suite*, and a new standard ISO/IEC 23002-7 specifying *supplemental enhancement information messages for coded video bitstreams*. The approval process for ISO/IEC 23002-7 has also begun, with the issuance of a CD consideration ballot.

**Carriage of Point Cloud Data progresses to Committee Draft**

At its 127th meeting, WG11 (MPEG) has promoted the carriage of point cloud data (ISO/IEC 23090-10) to the Committee Draft stage, the first milestone of ISO standard development process. This standard is the first one introducing the support of volumetric media in the industry-famous ISO base media file format family of standards. This standard supports the carriage of point cloud data comprising individually encoded video bitstreams within multiple file format tracks in order to support the intrinsic nature of the point cloud compression (ISO/IEC 23090-5). Additionally, it also allows the carriage of point cloud data in one file format track for applications requiring multiplexed content (i.e., the video bitstream of multiple components is interleaved into one bitstream). This standard is expected to support efficient access and delivery of some portions of a point cloud object considering that in many cases that entire point cloud object may not be visible by the user depending on the viewing direction or location of the point cloud object relative to other objects. It is currently expected that the standard will reach its final milestone by the end of 2020.

**JPEG XS carriage in MPEG-2 TS promoted to
Final Draft Amendment of ISO/IEC 13818-1 7th edition**

At its 127th meeting, WG11 (MPEG) has extended ISO/IEC 13818-1 (MPEG-2 Systems) – in collaboration with WG1 (JPEG) – to support ISO/IEC 21122 (JPEG XS) in order to support industries using *still image compression technologies for broadcasting infrastructures*. The specification defines a JPEG XS elementary stream header and specifies how the JPEG XS video access unit (specified in ISO/IEC 21122-1) is put into a Packetized Elementary Stream (PES). Additionally, the specification also defines how the System Target Decoder (STD) model can be extended to support JPEG XS video elementary streams.

**Essential Video Coding (EVC) promoted to Committee Draft**

At its 127th meeting, WG11 (MPEG) promoted ISO/IEC 23094-1 Essential Video Coding (MPEG-5 EVC) to Committee Draft (CD). The goal of MPEG-5 EVC is to provide a standardized video coding solution to address business needs in some use cases, such as video streaming, where existing ISO video coding standards have not been as widely adopted as might be expected from their purely technical characteristics.

The MPEG-5 EVC standards includes a *baseline profile* that contains only technologies that are over 20 years old or are otherwise expected to be royalty-free. Additionally, a *main profile* adds a small number of additional tools, each providing significant performance gain. All main profile tools are capable of being individually switched off or individually switched over to a corresponding baseline tool. Organizations making proposals for the main profile have agreed to publish applicable licensing terms within two years of FDIS stage, either individually or as part of a patent pool.

**Genomic information representation – WG11 issues a joint call for proposals on genomic annotations in conjunction with ISO TC 276/WG 5**

The introduction of high-throughput DNA sequencing has led to the generation of large quantities of genomic sequencing data that have to be stored, transferred and analyzed. So far WG 11 (MPEG) and ISO TC 276/WG 5 have addressed the representation, compression and transport of genome sequencing data by developing the ISO/IEC 23092 standard series also known as MPEG-G. They provide a *file and transport format*, *compression technology*, *metadata specifications*, *protection support*, and *standard APIs* for the access of sequencing data in the native compressed format.

An important element in the effective usage of sequencing data is the association of the data with the results of the analysis and annotations that are generated by processing pipelines and analysts. At the moment such association happens as a separate step, standard and effective ways of linking data and meta information derived from sequencing data are not available.

At its 127th meeting, MPEG and ISO TC 276/WG 5 issued a joint Call for Proposals (CfP) addressing the solution of such problem. The call seeks submissions of technologies that can provide efficient representation and compression solutions for the processing of genomic annotation data.

Companies and organizations are invited to submit proposals in response to this call. Responses are expected to be submitted by the 8th January 2020 and will be evaluated during the 129th WG 11 (MPEG) meeting. Detailed information, including how to respond to the call for proposals, the requirements that have to be considered, and the test data to be used, is reported in the documents N18648, N18647, and N18649 available at the 127th meeting website (<http://mpeg.chiariglione.org/meetings/127>). For any further question 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).

**Common Media Application Format (CMAF) 2nd edition promoted to Final Draft International Standard**

The Common Media Application Format (CMAF) enables efficient encoding, storage, and delivery of digital media content (incl. audio, video, subtitles among others), which is key to scaling operations to support the rapid growth of video streaming over the internet. The CMAF standard is the result of widespread industry adoption of an application of MPEG technologies for adaptive video streaming over the Internet, and widespread industry participation in the MPEG process to standardize best practices within CMAF.

At its 127th meeting, MPEG reached FDIS stage on the 2nd edition of CMAF. This edition adds support for a number of specifications that were a result of significant industry interest. Those include *Advanced Audio Coding (AAC) multi-channel*, *MPEG-H 3D Audio*, *MPEG-D Unified Speech and Audio Coding (USAC)*, *Scalable High Efficiency Video Coding (SHVC)*, *IMSC 1.1* (TTML Profiles for Internet Media Subtitles and Captions, and additional HEVC video CMAF profiles and brands.

This edition also introduces CMAF supplemental data handling as well as new structural brands for CMAF that reflects the common practice of the significant deployment of CMAF in industry. Companies adopting CMAF technology will find the specifications introduced in the 2nd Edition particularly useful for further adoption and proliferation of CMAF in the market.

**Dynamic Adaptive Streaming over HTTP (DASH) 4th edition promoted to
Final Draft International Standard**

At its 127th meeting, WG11 (MPEG) promoted the 4th edition of Dynamic Adaptive Streaming over HTTP (DASH) – media presentation description and segment formats (ISO/IEC 23009-1) to Final Draft International Standard (FDIS). The 4th edition comprises the following highlight features: service description that is intended by the service provider on how the service is expected to be consumed; a method to indicate times corresponding to the production of associated media; a mechanism to signal DASH profiles and features, employed codec and format profiles; supported protection schemes present in the Media Presentation Description (MPD). It is expected that this edition will be published later this year.

**ISO/IEC 23005 (MPEG-V) 4th Edition – WG11 promotes the Fourth edition of two parts of “Media Context and Control” to the Final Draft International Standard (FDIS) stage**

At its 127th meeting, WG11 (MPEG) promoted the 4th edition of two parts of ISO/IEC 23005 (MPEG-V; Media Context and Control) standards to the Final Draft International Standard (FDIS). The new edition of ISO/IEC 23005-1 (architecture) enables ten new use cases, which can be grouped into four categories: *3D printing*, *olfactory information in virtual worlds*, *virtual panoramic vision in car*, and *adaptive sound handling*. The new edition of ISO/IEC 23005-7 (conformance and reference software) is updated to reflect the changes made by the introduction of new tools defined in other parts of ISO/IEC 23005. More information on MPEG-V and its parts 1-7 can be found at <https://mpeg.chiariglione.org/standards/mpeg-v>.

**How to contact WG 11 (MPEG), learn more, and find other MPEG facts**

To learn about [MPEG basics](http://mpeg.chiariglione.org/mpeg-basics), discover [how to participate](http://mpeg.chiariglione.org/who-we-are) in the committee, or find out more about the array of technologies developed or currently under development by WG 11 (MPEG), visit WG 11 (MPEG)’s home page at <https://mpeg.chiariglione.org/>. There you will find information publicly available from WG 11 (MPEG) experts past and present including tutorials, white papers, vision documents, short articles and requirements under consideration for new standards efforts. You can also find useful information in many public documents by using the search window including publicly available output documents of each meeting (note: some may have editing periods and in case of questions please contact Dr. Christian Timmerer).

Examples of tutorials that can be found there 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 [WG 11 (MPEG)’s standards](http://mpeg.chiariglione.org/standards) freely available. Press releases from previous WG 11 (MPEG) meetings are also available.

Journalists that wish to receive WG 11 (MPEG) Press Releases by email should contact Dr. Christian Timmerer at christian.timmerer@itec.uni-klu.ac.at or christian.timmerer@bitmovin.com or subscribe via <https://lists.aau.at/mailman/listinfo/mpeg-pr>. For timely updates follow us on Twitter (<https://twitter.com/mpeggroup>).

**Further Information**

Future WG 11 (MPEG) meetings are planned as follows:

No. 128, Geneva, CH, 07 – 11 October 2019

No. 129, Brussels, BE, 13 – 17 January 2020

No. 130, Alpbach, AT, 20 – 24 April 2020

No. 131, Geneva, CH, 29 June – 03 July 2020

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