JTC 1 SC29 WG1 and WG11 Meetings:

October/November 2013 Geneva
January 2014   San Jose, California
March/April 2014   Valencia, Spain.
Forthcoming meetings: July 2014 Sapporo, Japan
         October 2014 Strasbourg, France
Note: WG1 and WG11 meetings co-located from October 2013—October 2014

Below are some brief notes on work in MPEG and JPEG that could be relevant to IEC TC100

1. MPEG news

1.1 ISO/IEC 14496-10 Advanced Video Coding

Several amendments will be integrated in a new edition including:

- "3D-AVC", which carries video texture of an AVC high profile compatible base view along with one or several depth maps and allows more efficient compression of additional views, such that the bit rate of either multiview or multiview-plus depth representations can be further decreased;
- "Multi-resolution frame compatible" (MFC), which enhances frame-compatible stereo formats to full resolution by encoding a very compact difference signal;
- "Additional colour space and tone mapping descriptors", which enables signalling of metadata as needed e.g. for wide-gamut chroma formats.

1.2 ISO/IEC 23008-1: MPEG Media Transport(MMT)

This standard enables the efficient delivery of emerging types of services in the heterogeneous environments such as: hybrid service or multiscreen service. MMT inherits the technical advantages of the widely used MPEG2-TS standard, such as a self-contained multiplexing structure, strict timing model and reference buffer model in the emerging IP environments while incorporating modern features such as the flexible splicing of content, name based access of data and AL-FEC (application layer forward error correction) enabling multiple Qualities of Service within one packet flow. It also supports the carriage of MPEG-DASH segments and MPD for uni-directional environments such as broadcasting.

1.3 HEVC verification test:

A formal subjective quality assessment verification test to assess the compression benefit of the High Efficiency Video Coding (HEVC) standard's first version (finalized in 2013 has been executed using a large variety of video material, ranging from wide-screen VGA resolution up to 4K. The material had not previously been used in optimizing HEVC's compression technology. Clear evidence was found that HEVC is able to achieve 50% bitrate savings and more, compared to the AVC High Profile. The results will be made publicly available in the report N14420, which can be found in the public documents section of the [MPEG website](#).

1.4 The 2nd edition of HEVC

The Range Extensions amendment, with technology allowing efficient compression of video content for colour sampling formats beyond 4:2:0 and up to 16 bits of

processing precision has been finalised. In particular, the lossless and near lossless range of visual quality is more efficiently compressed than is possible with the current version 1 technology. The amendment is integrated into he 2nd edition of HEVC, together with corrigendum items for version 1 of the specification

1.5   FTV (Free-viewpoint Television) Seminar
A public seminar on FTV will be held on 8th July 2014 during the [109th MPEG meeting in Sapporo](). The purpose of this seminar is to introduce MPEG's activity on FTV and to align its future standardization of FTV technologies with users and industry needs.

MPEG's current FTV standardization targets three very specific application scenarios:
· *Super Multiview Displays* where hundreds of very densely rendered views provide horizontal motion parallax for realistic 3D visualization, extracted from a dense or sparse set of input views/cameras in a circular or linear arrangement.
· *Integral Photography* where 3D video with both horizontal and vertical motion parallax are captured for realistic display.
· *Free Navigation* that allows the user to freely navigate or fly through the scene, not just along predefined pathways.
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1.6   Video Codec for browsers:
MPEG is working on a video coding standard for browsers under 'Type 1' licensing conditions (that include being worldwide, reasonable and non-discriminatory, and free of charge). This video codec for browsers will be formalized as ISO/IEC 14496-31 beginning with the Committee Draft of the standard that has been issued at the 108th MPEG meeting.   MPEG expects to complete the Final Draft International Standard in February 2015.

1.7   MPEG-H 3D Audio.
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). Key functionalities are a compact and bit-efficient representation of 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 provide a binaural experience over headphones. The technology supports content in multiple formats: channel-based, channels and objects (CO), and Higher Order Ambisonics (HOA) scene-based.

1.8   The Dynamic Range Control (DRC)
A DRC system provides comprehensive control to adapt the audio as appropriate for the particular content, the listening device, environment, and user preferences. The loudness control can be applied to meet regulatory requirements and to improve the user experience especially for content with large loudness variations. The CD is expected to become the ISO/IEC 23003 Part 4 standard in February 2015. The corresponding amendment to the ISO Base Media File Format (ISO/IEC 14496-12 Amd 4) that supports the dynamic range and loudness control on the system level progressed to CD status as well. The Dynamic Range Control tool will also be used in the upcoming MPEG-H 3D Audio standard.

1.9 New Color Font Technology Standard

In response to the Call for Proposal (CfP) on Open Font Format based color font technology three submissions were received each targeting specific environments. A standard harmonising the three proposed solutions (a technology that can provide color fonts by reusing an existing font engine; a solution adding tables for color fonts selection and a mathematical formula for complex text objects and a solution based on the Scalable Vector Graphics standard) will be developed.

1.10 Green Metadata,

This new specification defines metadata for helping reduce decoder power consumption and display power consumption. Clients can utilize such information to appropriately select operating voltage or clock frequencies for their chipsets, or the brightness of the backlights for the display to save power consumption. Green Metadata also provides metadata for the signaling and selection of DASH media units (segments) and for enabling the reduction of power consumption fortheir encoding. This work will be formally referenced as ISO/IEC 23001-11 and is expected to reach its final status by the end of this year.

Information technology — MPEG Systems Technologies — Part 11: Energy-Efficient Media Consumption (Green Metadata)
Scope

This part of ISO/IEC 23001 standard specifies metadata for energy-efficient decoding, encoding, presentation and selection of media.

The metadata for energy-efficient decoding specifies two sets of information: Complexity Metrics (CM) metadata and Decoding Operation Reduction Request (DOR-REQ) metadata. A decoder uses CM metadata to vary operating frequency and thus reduce decoder power consumption. In a point-to-point video conferencing application, the remote encoder uses the DOR-REQ metadata to modify the decoding complexity of the bitstream and thus reduce local decoder power consumption.

The metadata for energy-efficient encoding specifies a quality metric that is used by a decoder to reduce the quality loss from low-power encoding.

The metadata for energy-efficient presentation specifies RGB-component statistics and quality levels. A presentation subsystem uses this metadata to reduce power by adjusting display parameters, based on the statistics, to provide a desired quality level from those provided in the metadata.

The metadata for energy-efficient media selection specifies Decoder Operation Reduction Ratios (DOR-Ratios), RGB-component statistics and quality levels. The client in an adaptive streaming session uses this metadata to determine decoder and display power saving characteristics of available video-segment representations and to select the representation with the optimal quality for a given power-saving.

2. JPEG news

- Amendment 6 of its JPEG 2000 standard, ISO/IEC 15444-1 clarifies the usage of ICC profiles and color space conversions for image data that exceed a sample precision of eight bits per component. While the JPEG 2000 code stream could represent such data from its first release on, the specifications for color space conversions were not sufficiently descriptive for higher bit depths.
- JPEG is investigating an architectural framework to support Augmented Reality (AR) systems and to enable interoperability between AR systems and/or their

composing blocks. More particularly, JPEG will investigate how JPEG's coding standards, file formats and the JPSearch framework can be extended and deployed in order to facilitate AR applications. In Valencia JPEG approved the call for contributions of JPEG AR as contained in WG1N6673.

Note JTC 1 SC29 and SC24 work together on AR and there is a joint AHG between SC24 and SC29