

**117<sup>th</sup> MPEG Geneva, Switzerland, 16 - 20 January 2017, Meeting Report**  
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**1 MPEG Workshop 'Global Media Technology Standards for an Immersive Age'**

On 18 January 2017, MPEG hosted a workshop in Geneva, Switzerland, to discuss its roadmap for standardization activities. Industry Executives from various sectors talked about their views and thoughts on emerging media technologies, products and services. The workshop focused on Immersive Media; topics included the capture, distribution and consumption of novel immersive TV and media and services, Virtual and Augmented Reality, and more. The speakers laid out their needs for media standards, in particular MPEG standards, in the 2020 time frame.

In addition, MPEG representatives presented MPEG's ongoing work and 5-year plan. The talks and presentations were followed by a discussion on developments in media and standardization requirements, in which the audience participated. The workshop was attended by some 150 – 200 people.

**Workshop Program**

<b>16:00</b>	<a href="#"><i>Opening Address</i></a>	Leonardo Chiariglione, Convenor, MPEG
<b>16:10</b>	<a href="#"><i>MP20 Roadmap</i></a>	Rob Koenen; José Roberto Alvarez, MPEG
<b>16:25</b>	<a href="#"><i>DVB VR Study Mission Report</i></a>	David Wood, EBU
<b>16:45</b>	<a href="#"><i>Video formats for VR: A new opportunity to increase the content value... But what is missing today?</i></a>	Gilles Teniou, Orange
<b>17:05</b>	<a href="#"><i>Snapshot on VR services</i></a>	Ralf Schaefer, Technicolor
<b>17:25</b>	Break	
<b>17:40</b>	<a href="#"><i>Today's and future challenges with new forms of content like 360°, AR and VR</i></a>	Stefan Lederer, Bitmovin
<b>18:00</b>	<a href="#"><i>The Immersive Media Experience Age</i></a>	Massimo Bertolotti, Sky Italia
<b>18:20</b>	Discussion	All Speakers
<b>18:50</b>	Final Remarks, Conclusion	
<b>18:55</b>	End	

**Output Documents**

**16719 - MP20 Roadmap**

**16720 - Presentations of the MP20 Workshop on MPEG Roadmap**

**2 Media Orchestration (MORE)**

The media orchestration standard provides specification for the orchestration of media and metadata capture, processing and presentation across multiple devices. The functional components of the specification are (i) orchestration of media capture; (ii) orchestration of media presentation; and, (iii) orchestration of processing.

- i. Orchestration of media capture is about metadata and control in terms of which device captures what, when and how. What to capture is about device location, orientation and capture capabilities, e.g. zoom capabilities. When to capture is about synchronization with other devices, as well as start and stop of capture. How to capture is about frame rate,

resolution, microphone gain, white balance settings as well as codecs used, metadata delivered, and possible processing to be applied.

- ii. Orchestration of media presentation is about metadata and control in terms of which device presents what, when and how. What to present is about what media to retrieve and which parts of that media should be presented. When to present is about presentation synchronization with other devices. How to present is about where exactly to play out something (e.g. positioning of a media part in a screen, positioning of an audio object in a room, and possible processing to be applied).
- iii. Orchestration of processing is about metadata and control for applying processing to combinations of captured media and/or metadata. This includes single-media processing (e.g. media synchronization in case of transcoding), as well as processing of multiple media and/or metadata together (e.g. performing video stitching, changing arrangements of media in space and time, or automated editing and selection processes).

The specification also supports coordination of different applications through the definition of media orchestration session. The object is considered a coherent application context that oversees the capture and/or media rendering and/or media processing.

**qMedia::MMV contributed the following**

<a href="#">m40118</a>	MORE	Media Orchestration Component Instantiation, Orchestration Data and AV Patterns	Krishna Chandramouli, Panos Kudumakis, Ebroul Izquierdo	
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**Output Documents**

**N16644 - Request for subdivision of ISO/IEC 23001-13 Media Orchestration**

**N16645 - Text of ISO/IEC CD 23001-13 Media Orchestration**

**N16646 - Technologies under Consideration for ISO/IEC 23001-13 Media Orchestration**

**3 Point Cloud Compression**

A point cloud is defined as a set of points represented in a 3D space each with associated attributes, (e.g., color and material properties). Point clouds can be used to reconstruct an object or a scene as a composition of such points. They can be captured using multiple cameras and depth sensors in various setups and may be made up of thousands up to billions of points in order to realistically represent reconstructed scenes. However, in order to generate, process and store the huge amount of point clouds, they should be compressed using suitable technology.

Therefore, compression technologies are needed for lossy compression of point clouds for use in real-time communications. In addition, technology is sought for lossless point cloud compression in the context of dynamic mapping for autonomous driving, six Degrees of Freedom (6 DoF) virtual reality, cultural heritage applications, etc. The standard to be developed will address compression of geometry and attributes such as colors and reflectance, scalable/progressive coding, coding of sequences of point clouds captured over time, and random access to subsets of the point clouds. The acquisition of point clouds is outside of the scope of the standard.

A Call for Proposals (CfP) has been released requesting contributions on point cloud compression. Point cloud compression technologies will be evaluated based upon objective metrics. Results of these tests will be made public, taking into account that no direct identification of any of the contributors will be made (unless it is specifically requested or authorized by a contributor to be explicitly identified). Prior to having evaluated the results of the tests, no commitment to any course of action regarding the point cloud compression technology can be made. In addition, subjective evaluation of proposals will be performed by expert viewers.

The timeline of the CfP is presented in the following table.

Action	Date
Call for proposals	2017.01.31
Draft complementary PCC Test Material to be used during the evaluation	2017.01.31

Final complementary PCC Test Material to be used during the evaluation	2017.04.07
Submission deadline for registration	2017.10.02
Submission of testing material for subjective evaluation to the ftp site	2017.10.09
Submission of the completed objective evaluation spreadsheets to the ftp site	2017.10.09
Compilation of submitted data in a unique spreadsheet and submission as an input contribution	2017.10.17
Submission deadline for proposals documentation to be upload to WG11 web site	2017.10.18
Evaluation of responses	2017.10.22– 2017.10.27
The first working draft and test model	2017.10.27

## Output Documents

### N16732 - Call for Proposals for Point Cloud Compression

#### 4 To blockchain, or not blockchain?



US Digital Millennium Copyright Act & EU Electronic Commerce Directive aimed to revive the music industry, however, are currently under revision, with respect to: a) what changes are needed to guarantee fair and increased revenues returned to artists and rights holders; and, b) how these changes would result in improved standards for multi-territory licensing, timely payments, and overall more transparency.

In meantime, several key artists and musicians have turned their hopes for resolving these issues to technology and in particular, towards blockchain. Blockchain emerged in 2008 as the

technology that underpins bitcoin. It operates as a shared ledger, which continuously records transactions or information. Its database structure, where there is a timestamp on each entry and information linking it to previous blocks, makes it not only transparent but exceptionally difficult to tamper with.

Initiatives investigating blockchain have been launched in both sides of the Atlantic. In US, Open Music Initiative (OMI) has been launched by Berklee Institute for Creative Entrepreneurship, harnessing the MIT Media Lab's expertise in decentralized platforms, whose mission is: to promote and advance the development of open source standards and innovation related to music, to help assure proper compensation for all creators, performers and rights holders of music. Worth to be mentioned that OMI focus, wisely, set on a) new works rather than the vast legacy music catalogue, with the aim, that the same principles can be applied to the legacy music, retrospectively; and, b) on achieving interoperability among infrastructures, databases and systems so to be accessed, shared and exchanged by all stakeholders.

In Europe, one of blockchain's evangelists is the Grammy Award-winning UK singer, songwriter and producer Imogen Heap. She has launched a blockchain project, Mycelia. Although still in its foundational stages, she intends it to be an entire eco-system that utilises blockchain as a way to enact a complete shake up in the music industry. Mycelia's mission is to: a) empower a fair, sustainable and vibrant music industry ecosystem involving all online music interaction services; b) unlock the huge potential for creators and their music related metadata so an entirely new commercial marketplace may flourish; c) ensure all involved are paid and acknowledged fully; d) set commercial, ethical and technical standards in order to exponentially increase innovation for the music services of the future; and, e) connect the dots with all those involved in this shift from our current outdated music industry models, exploring new technological solutions to enliven and positively impact the music ecosystem.

However, blockchain is not quite ready yet and that's the dirty secret of blockchain. Much as the enthusiasm is growing, it is likely to be several years before we see blockchain rolled out in a wide-scale, mainstream capacity.

In this section a brief overview of the components needed for a fair trade music ecosystem, beyond blockchain, are described. MPEG-M/[MixRights: Fair Trade Music Ecosystem](#) recently presented at [Interactive Music Summit](#), Google Campus, London, 25 Nov. 2016, [Mycelia Weekend](#), Sonos Studios, London, 8-10 July 2016, [Sonar+D](#) in Barcelona, 16-18 June 2016 and [Interactive Music Hack-Fest](#), MAT Studios, QMUL, London, 11 June 2016. It features the following components and it is a mature test-bed for (a) value added services such as chords extraction and/or (b) blockchain integration and experimentation.

- **Identification** is a fundamental component of any music trade system. A song identifier can be random so long as it can also be discovered by alternate IDs such as ISRC and/or ISWC. MPEG-21 Digital Item Identification provides a simple and extensible way for facilitating alternate IDs through the elements: a) *Identifier*; and, b) *RelatedIdentifier*.
- **IM AF/ISO BMFF/STEMS/HTML5** editor/player for collaborative music creation & remixing, karaoke & chords, tagging & sharing in social nets & counting ... music citations!
- **MVCO Extensions** on Time-Segments and Multi-Track Audio has reached the stage of DAM at 116th MPEG Meeting, Chengdu (CN), Oct. 2016. It facilitates transparent IP rights management even when content reuse is involved with respect to permissions, obligations and prohibitions. It enables music navigation based on IP rights and ... co-author graphs!
- **DASH streaming of IM AF** is further enabling radio producers and DJs to schedule playlists for streaming to their radio stations and clubs, respectively, and perform live mixing for their audience. Thanks to MVCO artists could be paid straightaway, while they could even be notified when their tracks are scheduled for streaming, thus, enabling artists/fans interaction.
- **Monetisation** via [Express Play](#) and/or blockchain.

For further info please visit [MPEG Developments](#).

#### References

- [1] [“To blockchain, or not blockchain”](#), EPSRC: FAST IMPACT News & Hash#Ledger Daily, 20 Sept. 2016.