



ISO/IEC JTC 1/SC 29 "Coding of audio, picture, multimedia and hypermedia information"

Secretariat: JISC

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Liaison Statement from SC 29/WG 01 to 3GPP SA WG 4 on JPEG Pleno Holography [SC 29/WG 01 N 90074]

Document type	Related content	Document date	Expected action
Project / Other		2021-02-09	INFO

Description

In accordance with Recommendation 81 at the 90th WG 01 Meeting, 2021-01-18/22, the SC 29 Secretariat sends this liaison statement to 3GPP SA WG 4. [Requested action: For SC 29's information]



ISO/IEC JTC1/SC29/WG1 N90074

90th Meeting – Online – 18-22 January 2021

**INTERNATIONAL ORGANISATION FOR
STANDARDISATION
ORGANISATION INTERNATIONALE DE NORMALISATION**

**ISO/IEC JTC 1/SC 29/WG1
(ITU-T SG16)**

Coding of Still Pictures

JBIG

Joint Bi-level Image
Photographic

Experts Group

JPEG

Joint

Experts Group

TITLE: Liaison Letter to 3GPP SA WG4 on JPEG Pleno
Holography

SOURCE: JPEG (ISO/IEC JTC 1/SC 29/WG 1)

PROJECT: JPEG PLENO

STATUS: -

**REQUESTED
ACTION:** SC29 to distribute

DISTRIBUTION: 3GPP SA WG4

Contact:

The ISO/IEC JTC1/SC29/WG1 (JPEG) Committee would like to make 3GPP SA WG4 aware of JPEG Pleno Holography, which is the first standardization effort aspiring to a versatile solution for efficient compression of holograms for a wide range of applications such as holographic microscopy, tomography, interferometry, printing and display and their associated hologram types. Key functionalities desired include support for both lossy and lossless coding, scalability, random access and integration within the JPEG Pleno system architecture, with the goal of supporting a royalty free baseline.

This standardization activity is embedded in a larger project called JPEG Pleno, which aims to provide a standard framework for representing new imaging modalities, such as light field, point cloud, and holographic imaging. Such imaging should be understood as light representations inspired by the plenoptic function, regardless of which model captured or created all or part of the content.

JPEG Pleno standard tools are designed together to consider their synergies and dependencies for the whole to be effectively greater than the sum of its parts. To fully exploit this holistic approach, JPEG Pleno is not just a set of efficient coding tools addressing compression efficiency. It is a representation framework understood as a fully integrated system for providing advanced functionality support for image manipulation, metadata, random access and interaction, and various file formats. In addition, it should offer privacy protection, ownership rights, and security.

Currently four parts of the JPEG Pleno standard (ISO/IEC 21794) have been defined:

- Part 1: Framework
- Part 2: Light Field Coding
- Part 3: Conformance Testing
- Part 4: Reference Software

Holograms can deliver realistic 3D viewing perception with no vergence-accommodation conflict. This is due to the fact that holography can acquire and reproduce the three-dimensional (3D) scene by representing both the amplitude and phase of light. Recently, digital holography has received considerable attention and has become popular in digital microscopy, tomography and interferometry. Moreover, holographic display and printing are attracting increasingly more interest. However, the size of digital holograms increases tremendously as their quality increases since the quality of digital holograms depends on their pixel pitch and resolution. Moreover, holographic content represents significantly different signal characteristics leading to the observation that classical coding solutions designed for natural image data fail to provide acceptable compression behaviour. Hence, efficient compression is necessary to realize holographic imaging services.



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A 3rd Draft Call for Proposals (CfP) on JPEG Pleno Holography has been issued as outcome of the 90th JPEG meeting, Online, 18-22 January, 2021. Submissions to the Call for Proposals are due 1 September, 2021.

Further information may be found on the JPEG Committee website:
<https://jpeg.org/jpegpleno/documentation.html>