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**INTERNATIONAL ORGANIZATION FOR STANDARDIZATION**

**ORGANISATION INTERNATIONALE DE NORMALISATION**

**ISO/IEC JTC 1/SC 29/WG 2**

**MPEG TECHNICAL REQUIREMENTS**

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| **Title** | **Draft Encoder and Packager Synchronisation CfP** |
| **Source** | **WG 02, Requirements** |
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# Introduction

Encoder and packager synchronisation are key techniques that allow service providers to deploy stable and robust live video streaming systems. In the case of encoding CMAF, DASH and HLS content, often many representations need to be encoded in parallel. Thus, encoder synchronization allows for distributing workloads over multiple encoders and/or packagers and to provide redundant workflows. In typical workflows ABR encoders get an input signal that already has some timing information. The main goal is to be able to use this information and other information to encode tracks in parallel and in distributed workflows, both for video on demand and live cases.

Beyond the distributed and synchronized encoding for OTT workflows such as based on Common Media Application Format, also distributed storage of large collection of CMAF/DASH based assets is in scope. Such stored assets may possibly originate from redundant workflows with more than one synchronized encoder and packager.

The detailed requirements, use cases and architectures consider for encoder synchronization are provided in separate documents, namely for encoder & packager synchronization and storage this is [1].

This Call for Proposal is solliciting proposals to define encoder & packager synchronisation and asset storage framework that addresses the identified use cases and requirements [1]. It aims to be complementary to CMAF, DASH and other MPEG standards and facilitate more robust and efficient content encoding workflows for both live and on-demand cases. Also, cases that involve additional network or cloud-based processing are not pre-cluded.

# Scope

The Encoder and packager synchronization framework will define preferred ways of using and generating content based on existing MPEG standards such as Common Media Application Format, MPEG-DASH and potentially other standards (for final requirements and use cases see [1]).

The Encoder and packager synchronisation framework may also define and reference other metadata that can be carried in exisitng MPEG standards.

The encoder synchronisation and packager framework may also define some API’s and new message exchange formats for metatadata and inter-encoder syncrhonisation.

In addition, solutions for storing media assets at scale is sollicited, such assets may be generated by setups with synchronised encoders/packagers. Efficient storage with targetted use cases is therefore also in scope of this CfP.

# Timeline – To be revised

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| --- | --- |
| 2021/01/21 | Final Call for Proposals issued |
| 2022/04/10 | Registration deadline |
| 2022/04/17 | Deadline for submission of description of the proposals |
| 2022/04/25 | Evaluation of the proposals WD |
| 2023/04/XX | Final draft international standard may be anticipated |

# Submission Requirements

The valid proposal should include all listed items in this section as part of the submission.

The following items are required as part of the submission:

* A description of the encoder synchronisation framework and techniques for achieveing encoder and packager synchronization
* The specification of the interfaces and metadata
* A description of the data formats for media data and metadata usage
* Example workflows that depict the usage of the framework, e.g., to realize a selected set of use cases as use cases defined in [1]

Submissions that are incomplete or delivered late will not be considered.

## Input contribution

Each proposal must be described in an input contribution to the 137th MPEG meeting and should at least include the following elements:

1. A detailed technical description of the proposed technology.
2. A description of how the proposal fulfills the requirements and use cases as listed in the use cases and requirements document [2]**.**
3. A description of which parts of the proposed technology would be standardized by MPEG, preferably accompanied by draft specification text.

## Source code

* Proponents are encouraged (but not required) to allow MPEG members to have access, on a temporary or permanent basis, to their source code.
* Proponents are encouraged to submit a statement about the programming language in which the software is written, e.g., PHP, Node.js, or Python, and the platform(s) on which the binaries were compiled. Note that low-level programming optimizations such as assembly code/intrinsics and external compression libraries are discouraged.

Proponents are advised that, upon acceptance for further evaluation, it will be required that certain parts of any technology proposed to be made available in source code format to participants in the core experiments process and for potential inclusion in the prospective standard as reference software. When a particular technology is a candidate for further evaluation, commitment to providing such software is a condition of participation. The software shall produce comparable results to those submitted to the test. Additionally, submission of improvements (bug fixes, etc.) is encouraged.

# Evaluation Methods and Procedures

The proposals will be evaluated based on their fulfillment of the use cases and requirements. Each proposal shall be evaluated based on each use case and requirement in the use cases and requirements document [2]. An excel sheet for this evaluation will be provided as annex to this CfP.

# Participation fee

Participation in the CfP will not be associated with any fee.

# IPR

Proponents are advised that this call is being made subject to the patent policy of ISO/IEC and other established policies of the standardization organization. The persons named below as contacts can assist potential submitters in identifying the relevant policy information.

# Contacts

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# References

1. N0231, “Exploration on encoder and packager synchronization ISO/IEC JTC1/SC29/WG03 MPEG2021/N17502, May 2021, Online <https://www.mpegstandards.org/wp-content/uploads/mpeg_meetings/134_OnLine/w20293.zip>
2. MDS20702 Draft use cases and requirements for encoder and packager synchronisation WG 02 MPEG Technical requirements available: https://www.mpegstandards.org/wp-content/uploads/mpeg\_meetings/135\_OnLine/w20702.zip