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University of Applied Sciences
Wiesbaden Rüsselsheim

INTRODUCING
IMF APPLICATION #5 “ACES”

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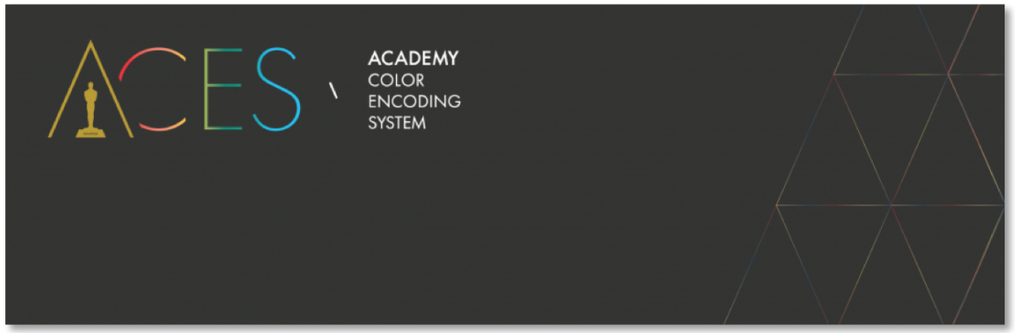
A PERFECT FIT !



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#ispeakimf

Picture Sources:
http://www.oscars.org/science-technology/sci-tech-projects/aces
http://www.imfug.com

MOTIVATION

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- Industry needs a data structure for **delivery and archiving of Final ACES Master file sets**, along with audio sound fields and timed text
- IMF provides a framework for the file-based exchange and archiving of content as “compositions”
  - The Composition Playlist, as a key element, serves as playlist for all assets of a composition
  - IMF has inherent versioning support
  - The “App concept” allows for extensions to support additional image containers
- **Combining ACES image encoding and IMF appears to be an ideal solution for the long-term archiving use case**
- **Proponents of the related SMPTE project include the Academy of Motion Picture Arts and Sciences and all major Hollywood studios**

OUTLINE OF IMF APP #5 ACES

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- Prerequisite: MXF wrapping of ACES image sequences
  - Available as SMPTE ST 2065-5:2016
  - Specifies wrapping of ACES image sequences into MXF and basic descriptive metadata

- IMF Application #5 ACES to be published as SMPTE ST 2067-50
  - Specifies ST 2065-5 MXF wrapping (frame wrapping mode only) the for Image Track Files
  - References ST 2067-2 IMF Core Constraints
  - References ST 2067-3 IMF Composition Playlist
  - Any frame rate is supported
  - Defines metadata structures (see next slides..)
  - Defines a Pixel Color Scheme for OPL (Output Profile List) processing

METADATA IN IMF APPLICATION #5 ACES

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- ACES files are usually presented by means of an Output Transform

- **The challenge: How to document the Output Transform used in Mastering for archiving?**
- **The solution in IMF Application #5:**
  1. ACES Authoring metadata
  2. Mastering Display metadata
  3. “Target Frames” – Essence frames rendered in a display-referred color space

METADATA IN APP #5
ACES AUTHORING METADATA

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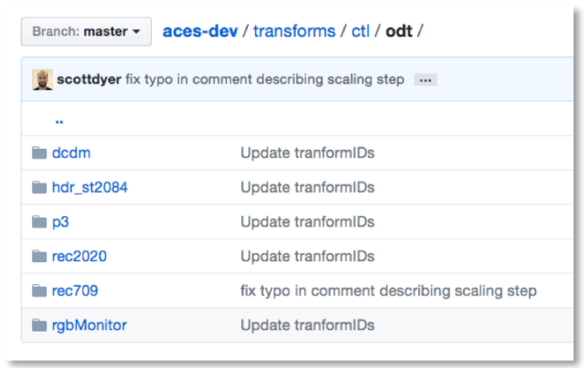
- `AcesAuthoringInformation` item
- Documents one or (in the general case) more ACES Output Transform paths used in Mastering

- May carry the Transform ID of an AMPAS published ODT, e.g. `ODT.Academy.P3D60_ST2084_1000nits.a1.0.3`



https://github.com/ampas/aces-dev/tree/master/transforms/ctl/odt

METADATA IN APP #5
MASTERING DISPLAY METADATA

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- Mastering Display metadata, as specified in ST 2086:2014, can be added to an App 5 package
- Includes the following items
  - ACES Mastering Display Primaries
  - ACES Mastering Display White Point Chromaticity
  - ACES Mastering Display Maximum Luminance
  - ACES Mastering Display Minimum Luminance
- Note: The ST 2086 metadata should specify the “real-world” display. Its capabilities may or may not be below those supported by the Output Transform

METADATA IN APP #5
TARGET FRAMES

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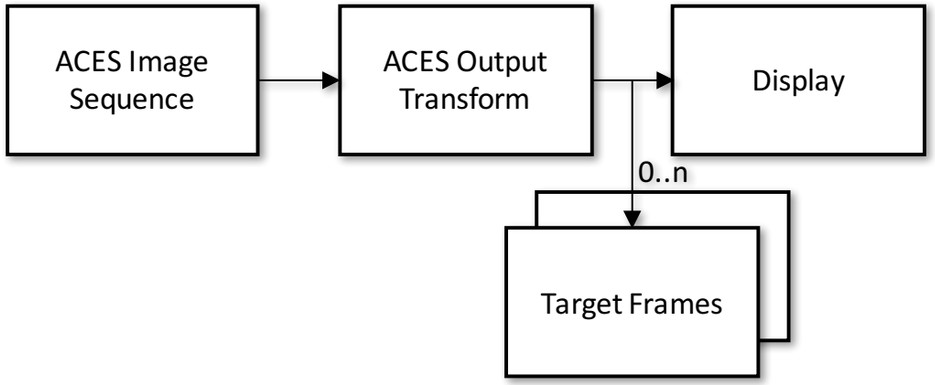
- Target Frames are provided to calibrate the IMF package “playback” display system and environment to match the original mastering display system and environment.



- Constrained PNG and TIFF supported as file formats
- Will be wrapped as Ancillary Resources
- If the Target Frames visually or mathematically match the rendered images obtained from a particular workflow, it gives a hint that the particular playback display system and environment recreates the artistic intent applied during the mastering process of the original ACES Image sequence.

IMF APPLICATION #5 ACES
NEXT STEPS – HOW YOU CAN GET INVOLVED!

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- SMPTE ST 2067-50 to be published soon.
- Follow-up activities
  - Plugfests
  - Open-source software
- Plugfests – how to get involved
  - Focus on compliance checking of Image track files
  - To be announced soon
  - We are looking forward to hearing from adopters and vendors!
- Open source software
  - ST 2065-5 wrapper / unwrapper
  - App#5 CPL preview