



From Set to Screen:
Advances in Metrics and Color Management

HPA Technology Retreat 2017





\ ACADEMY COLOR ENCODING SYSTEM \

The Year in Review

\ ACESCentral.com \



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HPA 2016 - Review

- Making ACES adoption easier for certain colorists
 - ✓ Released ACEScct, a working space with a “toe”
- ACES Logo’d products – announcements soon
 - ✓ Logo’s granted: Cameras, Display, Software, more coming
- HDR – better Display Transforms for displays you can now purchase
 - ❑ Still working on it – more about this in a bit...



HPA 2016 - Review

- More education/training materials and courses
 - ◆ This turned out to be more work than we thought – a lot of direct production and presentation support
 - ✓ ACESCentral posts, seminars, master classes, additional training materials in development
- International standards: SMPTE 2065 series to ISO TC36
 - Work will be proposed at 2017 Plenary
- ACES Logo'd facilities and movies
 - Approach developed, specification in development
 - Facilities needed some time to port their pipelines



ACES in Production

- See <http://www.imdb.com> and <http://www.shotonwhat.com>



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WELCOME

TO



CENTRAL

THIS IS IT!

THE FILMMAKER'S PORTAL TO
EVERYTHING YOU NEED TO
KNOW ABOUT THE ACADEMY
COLOR ENCODING SYSTEM.

PLEASE CLICK [HERE](#) TO GET
STARTED.

ACES Archiving Standards Update

- *SMPTE 2065-5:2016: Mapping ACES Image Sequences into the MXF Generic Container - PUBLISHED*
- *SMPTE 2067-50: IMF App #5 ACES – nearing FCD ballot*
- *Reference software implementation in the Innovation Zone – see Dr. Wolfgang Ruppel if you missed it*



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Production Perspective

Annie Chang
VP Technology, Marvel Studios
Incoming ACES Project Co-Chair



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Why ACES?



- Eliminate proprietary LUTs & separate technical from creative transforms
- Multiple camera formats in one working space
- Scene-referred data (i.e., camera-native) in non-proprietary, highest fidelity format
- Consistent workflow for all shows – no one-offs
- Consistent deliveries from VFX vendors
- Standard archive file format



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Marvel's Experience



- Working with ACES on 5 movies
- Basically, it works:
 - Standardizes "viewing LUTs"
 - VFX vendors, title houses get consistent files
- Still some work to do:
 - Metadata transport: ACESclip
 - "Neutral grades" and show looks: LMT
 - Manufacturer implementations/Logo



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ACES is a “Thing”

- Smart people did a good job
- Needs refinement from actual users



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ACES for High Dynamic Range Content

Bill Mandel

VP Technology, Universal Pictures

ACES HDR/ODT Working Group Co-Chair



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HDR history at the studio...

- 5 years: HDR has been a prominent topic for the studios and MovieLabs since introduction through Dolby and the ITU WP 6C in early 2012.
- Useful toward preservation of creative intent and direction: Generation of a digital negative that embodies the creative intent of the filmmakers and an unrestricted dynamic range master is tremendously compelling for present day and future.
- Open technology: Work towards standards among the studios was assisted by the publically available ACES system, MPEG tools and other public software such as OpenColorIO, OpenImageIO and the x265 HEVC encoder - all of which facilitated initial and ongoing HDR experiments.



Benefits of ACES towards HDR

- Clear accessible implementation of industry-wide practices, agreements and standards that can be directly accessed across multiple tools that manage color.
- Robust color management system that envisions forward and reverse paths through it. Such management enables greater access to interchange and translation of rendered assets back into a color managed environment.
- Path to preserving creative intent and supporting a myriad of devices.
- Support forums and access to ACES developers and stewards helps to arbitrate questions between our users and the various systems and facilities we need to interoperate on a technical basis. (www.acescentral.com).



Current work with ACES

- HDR grading of catalog titles using multiple color grading systems at our on-lot post facility:
 - Working in a 1000 cd/m² (X300) environment with traditional grading systems that have implemented ACES and maintain the latest transforms.
 - Implementing an ADX-based input workflow from film and an inverse workflow for rendered elements.
- ACES workflows for production via camera testing, DI lab delivery requirements and internal management and tracking systems.
- Continued use of direct ACES system components to precede HDR standards work and to support investigation of new ODTs, EOTFs and further improvements of the system.



HDR/ODT working group

- Through feedback Academy work on HDR ODTs continues:
 - HDR/ODT working group co-chaired by Thad Beier (Dolby Laboratories) and Bill Mandel (NBCUniversal)
- Scope of work currently being defined based on end-user and studio feedback
 - Areas of exploration:
 - HDR ODT updates based on latest specs and devices
 - ODT code structure consistency, simplification and parameterization
 - ODT documentation
- We hope you visited the ACES booth at the the Innovation Zone!
- Otherwise reach out directly or through ACESCentral



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