\ ACADEMY COLOR ENCODING SYSTEM \

ACESNext: Charting the Future of ACES

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Today's Topics

- What's Happened Over the Last Year?
- New Efforts
- ACES 1.0 Listening Tour Results
- ACESNext Next Steps

What's Happened Over the Last Year

- RAE Response
- ACES 1.1 Release
- Primer
- Quick Start Guides

Quick Start Guides

- Available
  - Overview
  - Workflow Sample
  - DIT
  - VFX
- Planned
  - Colorist
  - Cinematographer
  - Post Production Supervisor
  - Producer
  - Director
  - Facilities Engineer
  - Editor
  - Archivist

ACES

ACES Project Checklist

Visual Effects Supervisors / Artists

This checklist is intended to help you organize your first couple of ACES projects, after which this should be second nature for you. Many of these steps identify any ACES-specific questions you need to ask answers.

Getting Started

- As ever, communication is key. While ACES simplifi settings, there are still some decisions to be made. viewing the image at various stages, and thoroughly be assured. This is the primary issue that ACES aim every step, and for every collaborator.

File Formats

- Discuss who is doing the VFX pulls, and the format ACES2065-1 encoding or in the native color space the traditional 10-bit version should be avoided, as captured by modern digital cameras.
- The ACES standard for interchange is 16-bit uncom with the ***ACES Image Container*** flag set (defined b uncommon for facilities to use ACEScg for internal should be taken to ensure that ACEScg files are not ACES Image Container flag should never be set for for any external interchange.

Working with DI

- Test a round-trip back to DI and editorial, to ensure unaffected by the process, and exactly match those for editorial. Make sure that any plate normalization be removed in final renders. Simple ASC CDL type communicating on-set looks to VFX and DI.
- Communicate with the colorist / DIT / dailies colorist ensure you apply them in the intended color space. linear ACES2065-1 for CLF (Common LUT Format) Look Modification Transforms or LMTs). The same look identical in the mid-tones and highlights, so an immediately noticed, but the shadow handling will b so that work-in-progress renders drop seamlessly in
- Decide whether you are using LUTs which have the Device Transform or ODT) baked in or grade only L eliminates the ability to switch Output Transforms to LUTs will also eliminate the option to toggle the grad

Compositing

- Make sure you have access to all custom Input Transforms (sometimes called Input Device Transforms or IDTs) for cameras used on the show, and make sure you have them in a form that can be used in your compositing software.
- If you are using software such as Nuke, a move to ACES will not have a significant impact on the way you work. Nuke was designed from the ground up to work with linear image data – the same as ACES. However Nuke's legacy color management does not specify a working color space, and it simply linearizes the image data with its current primaries, and uses 1D display transforms with no tone-mapping for values above 1.0. Recent versions use Open Color IO (OCIO) for color management. OCIO has options to mimic Nuke's legacy approach, but also includes a pre-built configuration for ACES.
- Software such as After Effects is geared towards working in a display-referred way, where the actual pixel values sent to the screen are manipulated. Display device color management is provided via ICC profiles which compensate for the difference between a standard and the actual display in use, although many people disable this feature. Moving to ACES will therefore involve a slight change of mindset, working on scene-referred image data, and viewing the result through an ACES Output Transform. This can be implemented in After Effects using the free OCIO plugin from Fnordware. Besides the standardization of input and output transforms that ACES brings, there are many other noticeable benefits to moving to scene linear, such as more realistic focus and exposure changes, without the need for 'cheats'.

CGI

- Some 3D software (e.g. Cinema 4D) works internally in a high dynamic range linear way, but the software's viewport treats this image data as display linear, offering only simple 1D view transforms that clip values greater than 1.0. The software may provide a highlight compression slider, but it is likely to use an unspecified algorithm that does not match the tone mapping of ACES. This means that rendering to an EXR (which generally requires a ***linear sRGB*** IDT in comp or DI) will result in an ACES image that does not match what was seen in the viewport. This difference must be accounted for when lighting and texturing, and the tendency to alter the scene to make it 'look right' through the viewport's simple sRGB view transform should be avoided. The need to use LUTs or ICC profiles to preview the ACES look is discussed in this thread on ACES Central.

Simple sRGB Viewer LUT

ACES sRGB Output Transform

- HDRI environment captures should easily drop into an ACES pipeline, as they are already high dynamic range scene referred data. The only consideration is whether the primaries need to be mapped to ACEScg (AP1) primaries, to match the rendering color space. Texture libraries or your own SDR texture captures will also need to be converted to ACEScg. In this case a simple inverse sRGB transform plus a matrix should be sufficient, as textures should not contain image data above diffuse white.

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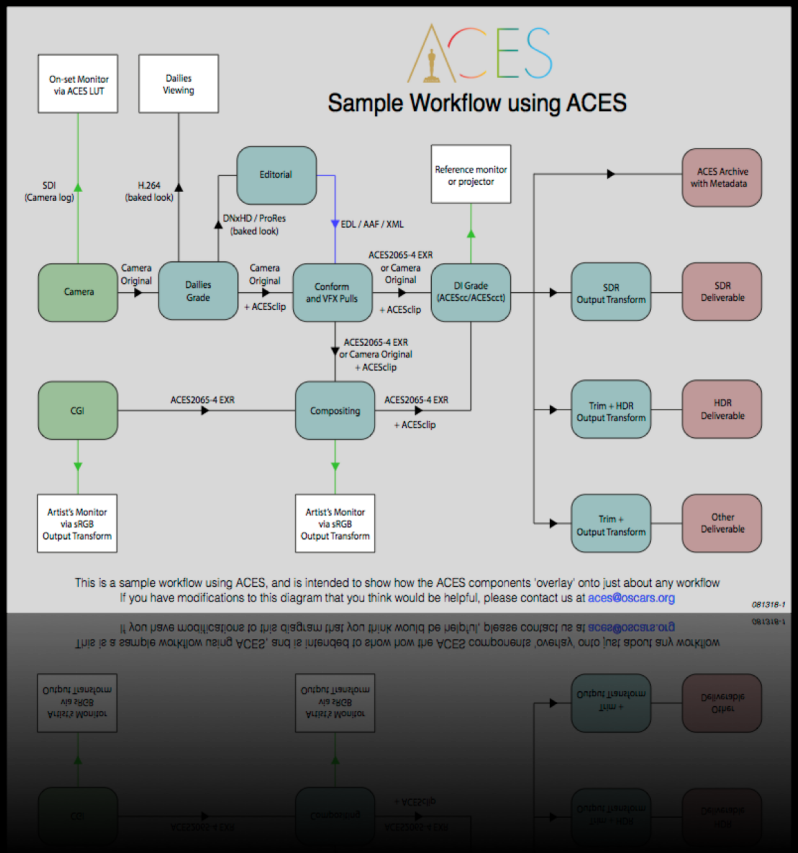
Quick Start Guides

- Get you started
- Point out pitfalls
- Share knowledge
- Open to feedback
- Being Translated
  - Japanese
  - Spanish
  - Chinese
  - Volunteers for others…



Quick Start Guides

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What's Happened Over the Last Year

- RAE Response
- ACES 1.1 Release
- Primer
- Quick Start Guides
- Listening Tour!

ACES Adoption

ACES Product Partners

Hardware and Software Companies that participate in the ACES Product Partner Program

https://aces.mp/productpartners

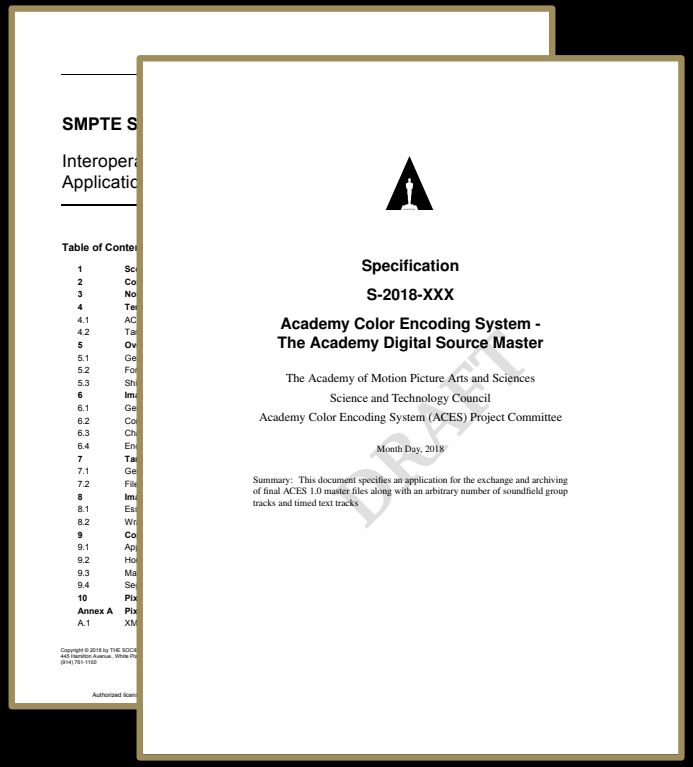
ACES Productions

Feature and TV shows that have used ACES

https://aces.mp/ACESshows

New Efforts

- Digital Source Master
  - ACES IMF Application #5
  - SMPTE ST2067-50
  - Academy Digital Source Master
- Academy Software Foundation
- And now, the moment you've been waiting for...



ASWF /* ACADEMY SOFTWARE FOUNDATION

www.aswf.io

ACES 1.0 Listening Tour Feedback

- 42 interviews with individuals or groups
  - Color/Image Scientists
  - Colorist
  - Content Owners
  - DITs
  - DPs
  - Manufacturers (Cameras, Software)
  - VFX Companies + RAE Paper
  - Other general users
  - Prior ACES Leadership
- Over 80 individuals (not including RAE authors and contributors)
- Nearly 450 comments to parse through
- 48 main points of feedback

ACES 1.0 Listening Tour Results

Top Ten (starting with the one with the most votes)

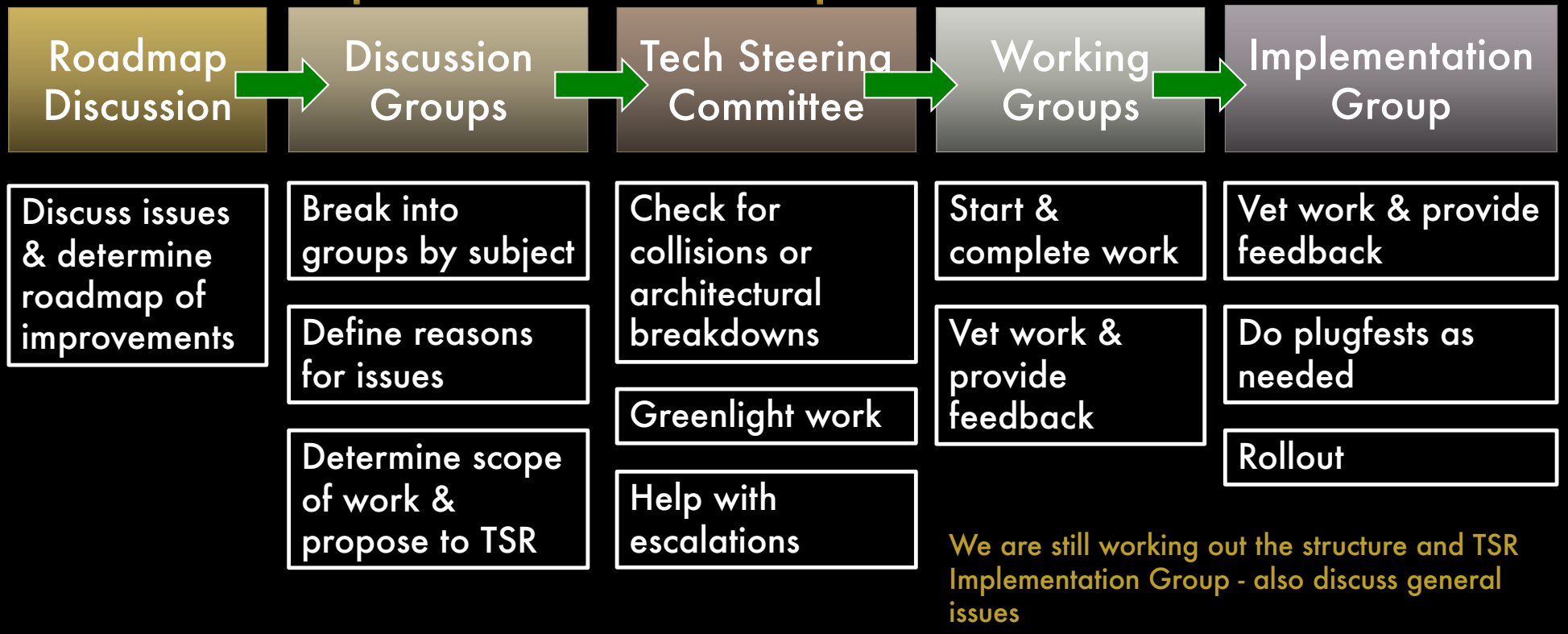
1. RRT needs to be invertible and separate the “look” from the RRT (put look in LMT)
2. ACESclip needs to be defined and implemented in tools
3. Need a way to exchange and archive LMTs; re-look at CLF and implement in all tools
4. Need to fix negative values issue (not just through an LMT)
5. CTL is good for prototyping and to define the intention, but because it’s not realtime, it isn’t viable in production; need to look other implementations
6. Allow for custom IDTs, including camera color gamut matching
7. Should be able to customize ODTs (including parametric) and publish them
8. Allow for color grading in non-ACES spaces (like the Original Camera Color Gamut and tonal curve). Must be able to document for archive
9. Should take a look at the AP0/AP1 gamuts including why AP1 red is outside of AP0, why AP1 does not equal 2020 and other issues
10. Remove modifiers from ODTs; make ODTs more like standard 709 and P3

ACES Next Process Going Forward

- Additional GoToMeeting call to present and discuss findings
- Formation of Discussion Groups and Virtual Working Groups
  - ACESclip VWG
  - CLF VWG
  - ACES Roadmap Discussion Group
- Governance
  - Work towards Open Source model
  - Formation of Technical Steering Committee

ACES Next Process Going Forward - Discussion

Chair Proposed Process – Up for Discussion!



We are still working out the structure and TSR Implementation Group - also discuss general issues

Want to Get Involved?

- Sign up on ACESCentral.com
- Sign up for alerts for specific discussion topics
  - CLF
  - ACESclip
  - Roadmap Discussion Group
- Volunteer for committee chair role
- Volunteer as a member for a committee
- ACESNext will only be successful if YOU help out!

Wrap Up Discussion

- Received feedback, proposed process & governance
- Start comments now!
- Manage from a process-standpoint, but not from an engineering standpoint
- We are committed to a process to allow people to contribute in a meaningfully way
- Effort is required – need to scope out the problems & risks
- Get involved!

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