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Enabling Global Education

Joel E. Welch

Director of Education
SMPTE

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SMPTE 2020 – 10-12 November

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Five Reasons Why You Should Attend

1) Connect with Our Global Community. SMPTE 2020 will work for everyone across multiple time zones. A supplemental program will accommodate our colleagues in the Asia Pacific region.

2) Your conference – you won't miss a thing! You will have access for 30 days after the event to ALL live and on-demand content including technical sessions, trainings, keynotes, e-sports competitions, and more

3) Flexible and comfortable learning environment. Attend from the comfort and safety of your home or office leaving you with more energy to dedicate to the content that matters most to you.

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5) This year's theme: "Game On." spotlights the world of e-sports. A full day of programming will explore this convergence to understand both the unique and common requirements that make e-sports thrive.

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Virtual Course:
Understanding the Digital Cinema Package (DCP)

If you are a professional in media production, distribution, or mastering, you can leverage the Digital Cinema Package (DCP) to enable innovation, automation, and cost savings.

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- Summarize the technical and business advantages of implementing SMPTE DCPs
- Discuss the various file types and their functions in a SMPTE Digital Cinema Package
- Outline the SMPTE DCP mastering process
- Explain how the SMPTE DCP manages Timed Text
- Describe how the DCP helps overcome the challenges of international versioning
- List the necessary requirements global DCP distribution

Jack Watts
Jack is an independent media solutions consultant. London, UK.

Use code SMPTE50 for 50% off the cost of registration
Scan or visit smpte.org/dcp to learn more.

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Enabling Global Education

- Series of monthly 60- to 90-minute online, interactive webcasts covering a variety of technical topics
- Free professional development benefit for SMPTE members
- Sessions are recorded for member viewing convenience.

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Enabling Global Education

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  - If you do not have a microphone, please submit your questions via text
- SMPTE provides a PDF of select slides used during webcasts in exchange for your feedback
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ACES "101"

Standards-based Color Managed Workflows

SMPTE

SINCE 1916

September 17, 2020

ACES "101"

Standards-based Color Managed Workflows

Annie Chang

Carol Payne

Nick Shaw

Alex Forsythe

Joel E Welch
Moderator

Class Agenda

The basics

- What is color management?
- What is ACES?

ACES current and future states

- Development efforts and organization
- Logo and service provider program
- ACES community
- What about broadcast?

Wrap up

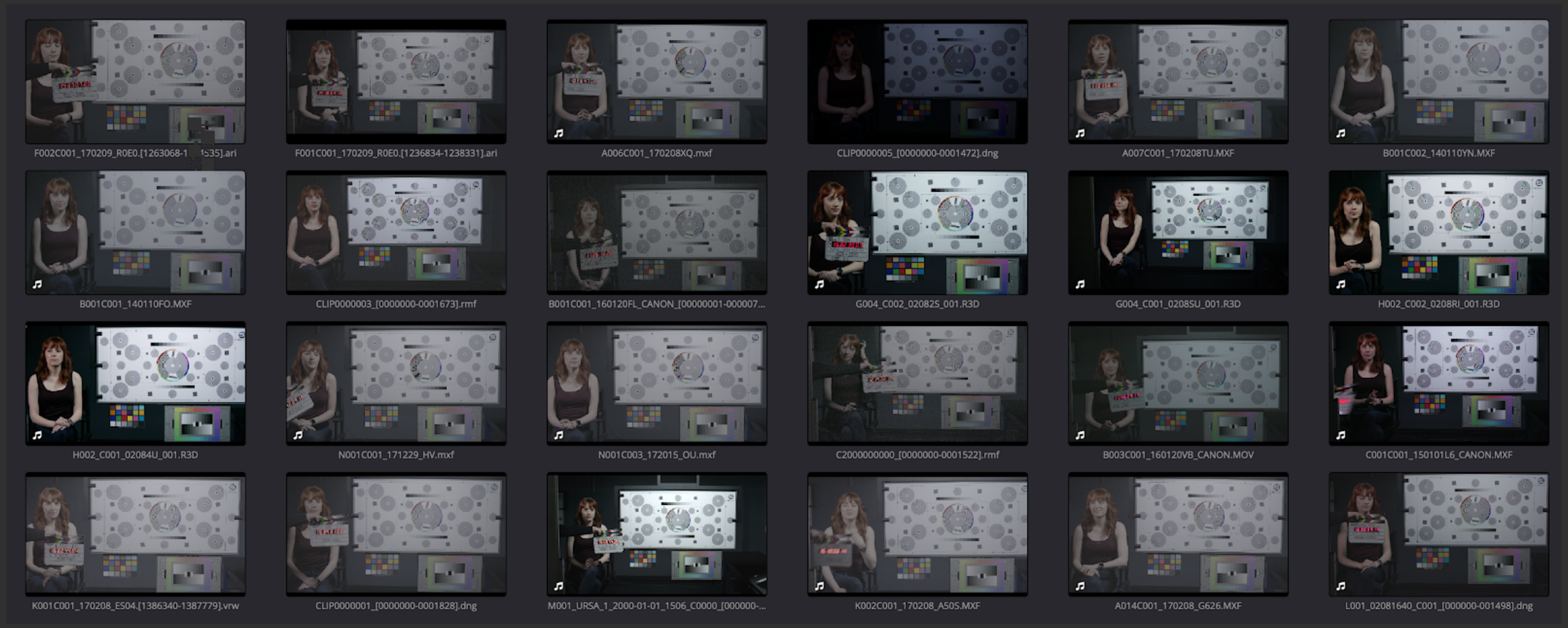
- Panel Discussion
- Questions

What is Color Management?

The goal

To keep all departments aligned to a **common vision**, by providing consistency in **image reproduction** and **creative intent**.

The problem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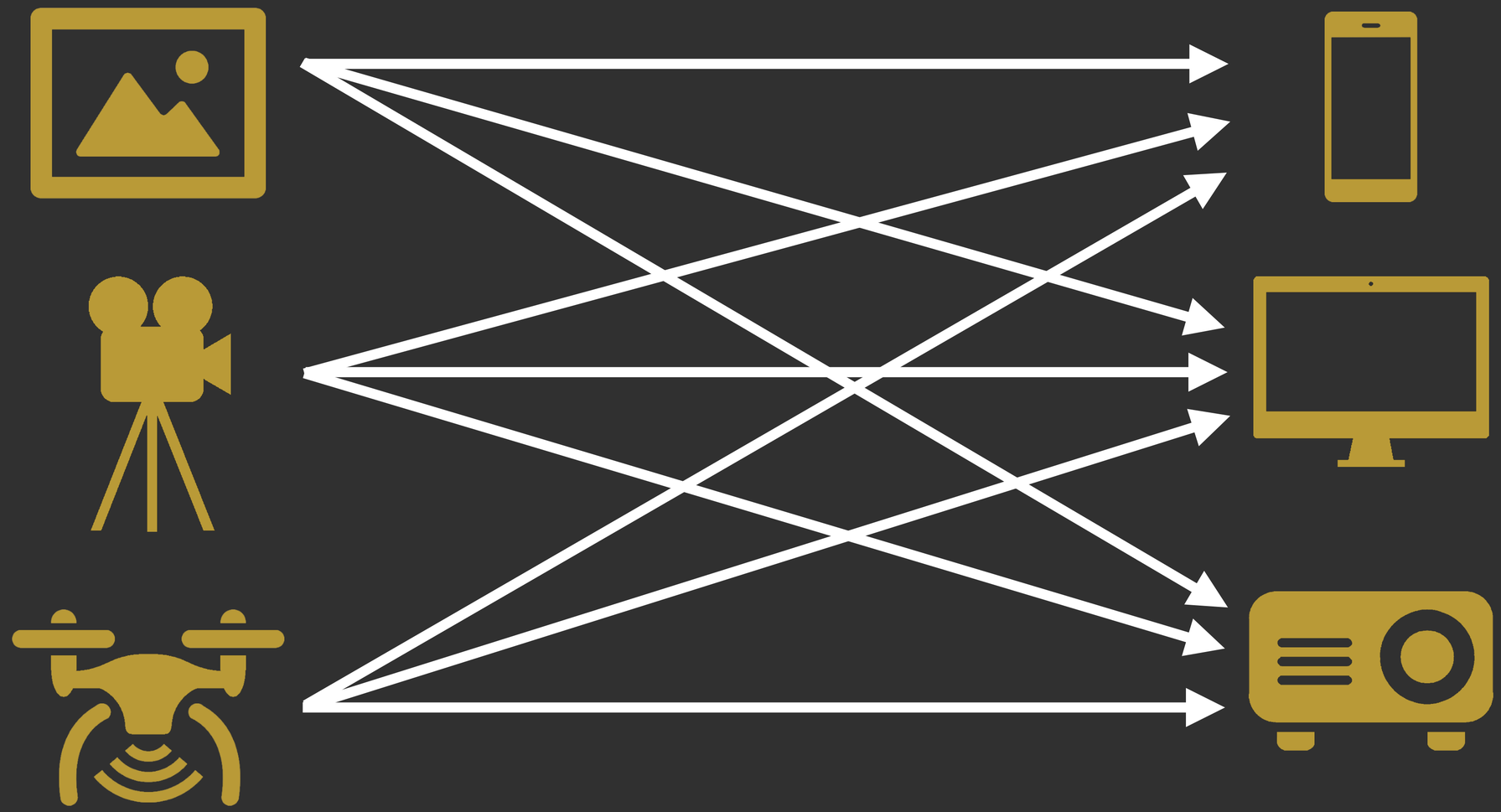
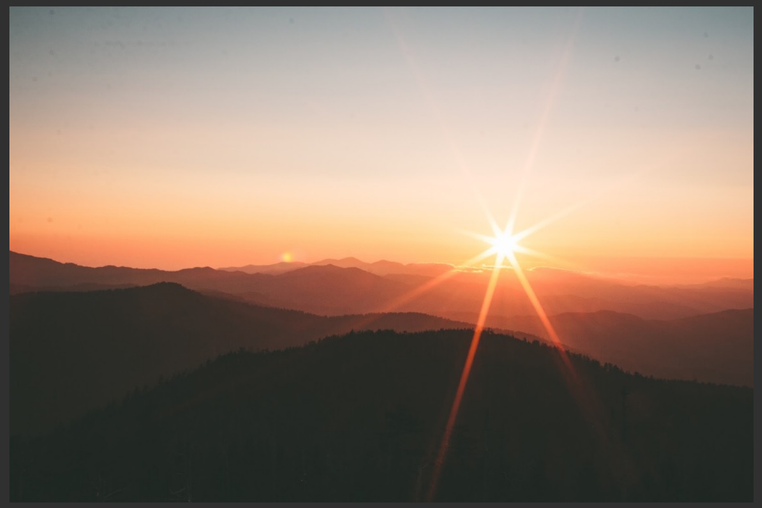
“Lost in LUTs”



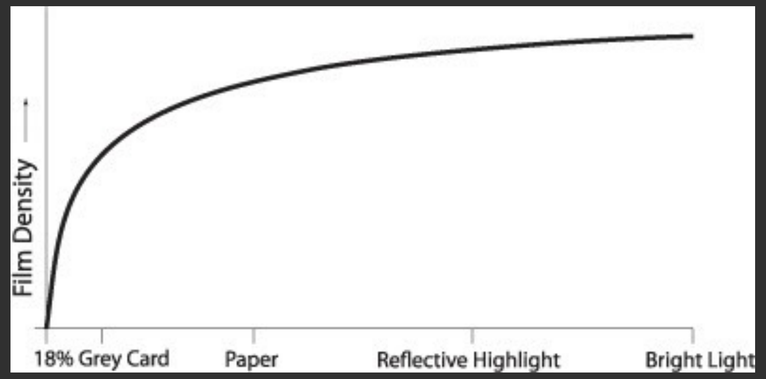
ACES

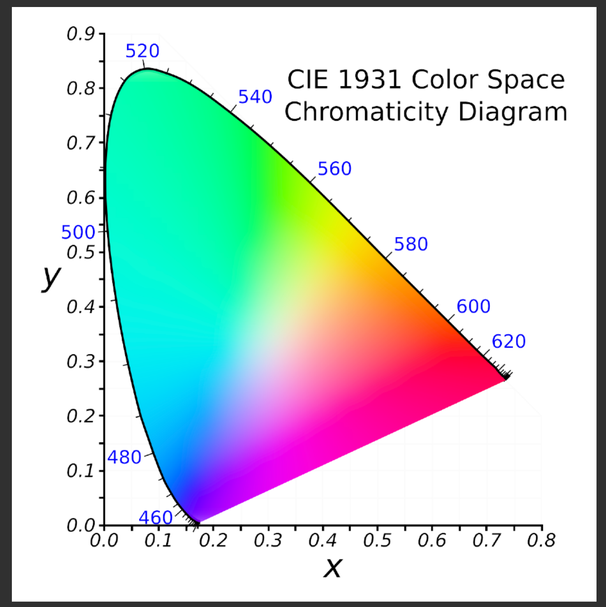
Capturing Images



Digital cinema cameras are capable of capturing very
high-fidelity information from the real world.

Image Containers

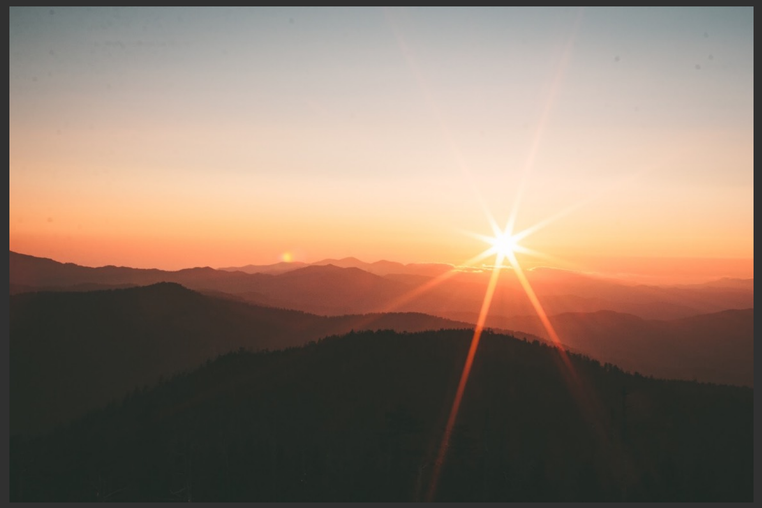




Utilizing wide-gamut colorspaces and high dynamic range.

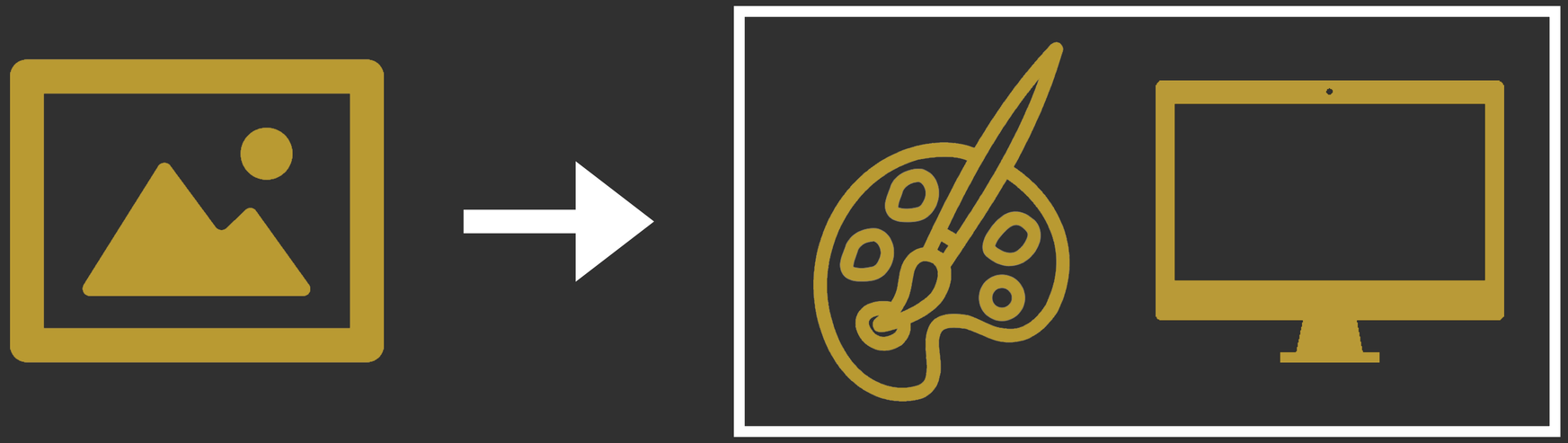
.exr, .dpx, .ari, .R3D, etc

Display Limitations



Display technology is not capable of reproducing
the color and dynamic range we can capture.

Display-Referred Workflow

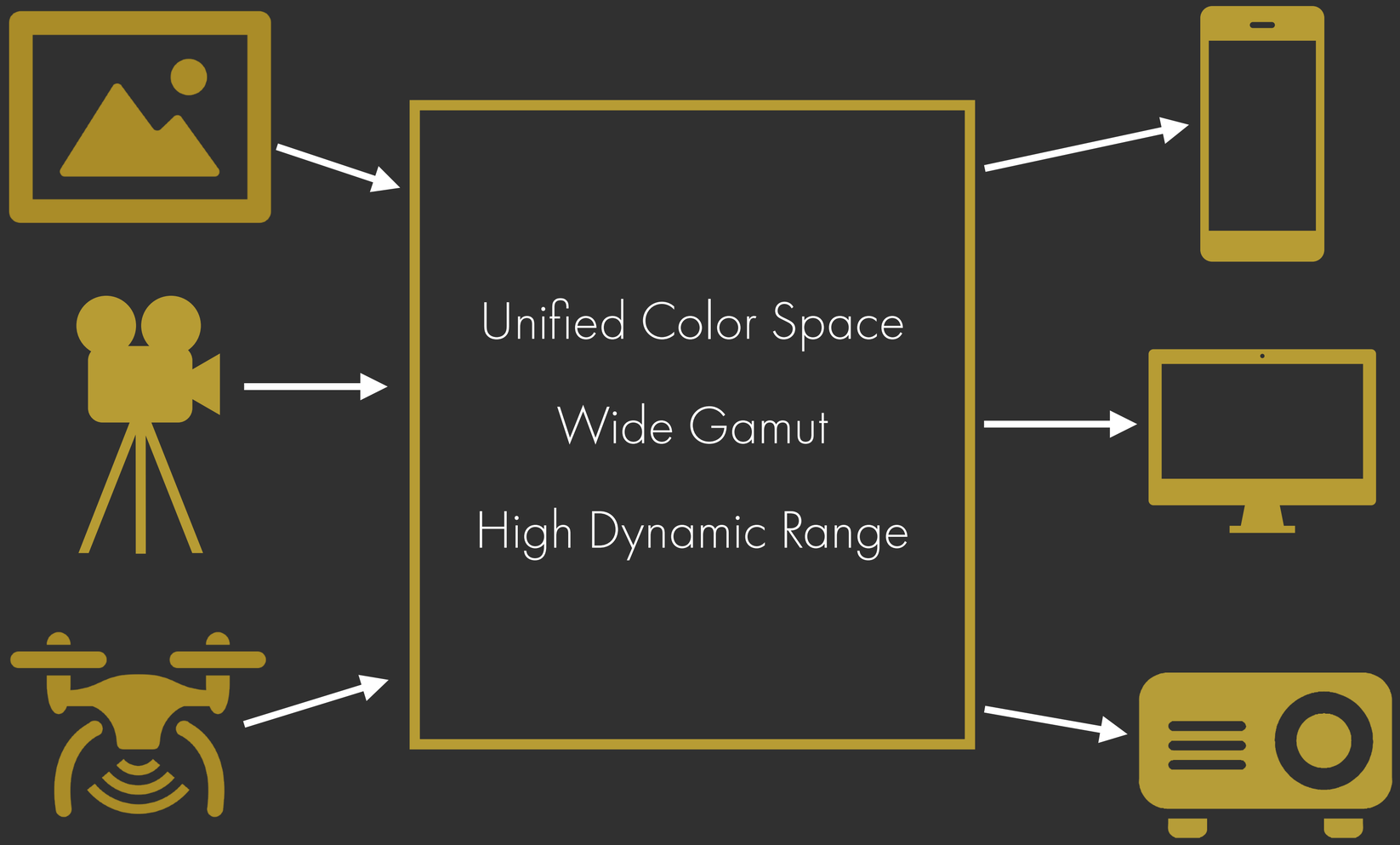


Results in color decisions **tied to a display.**

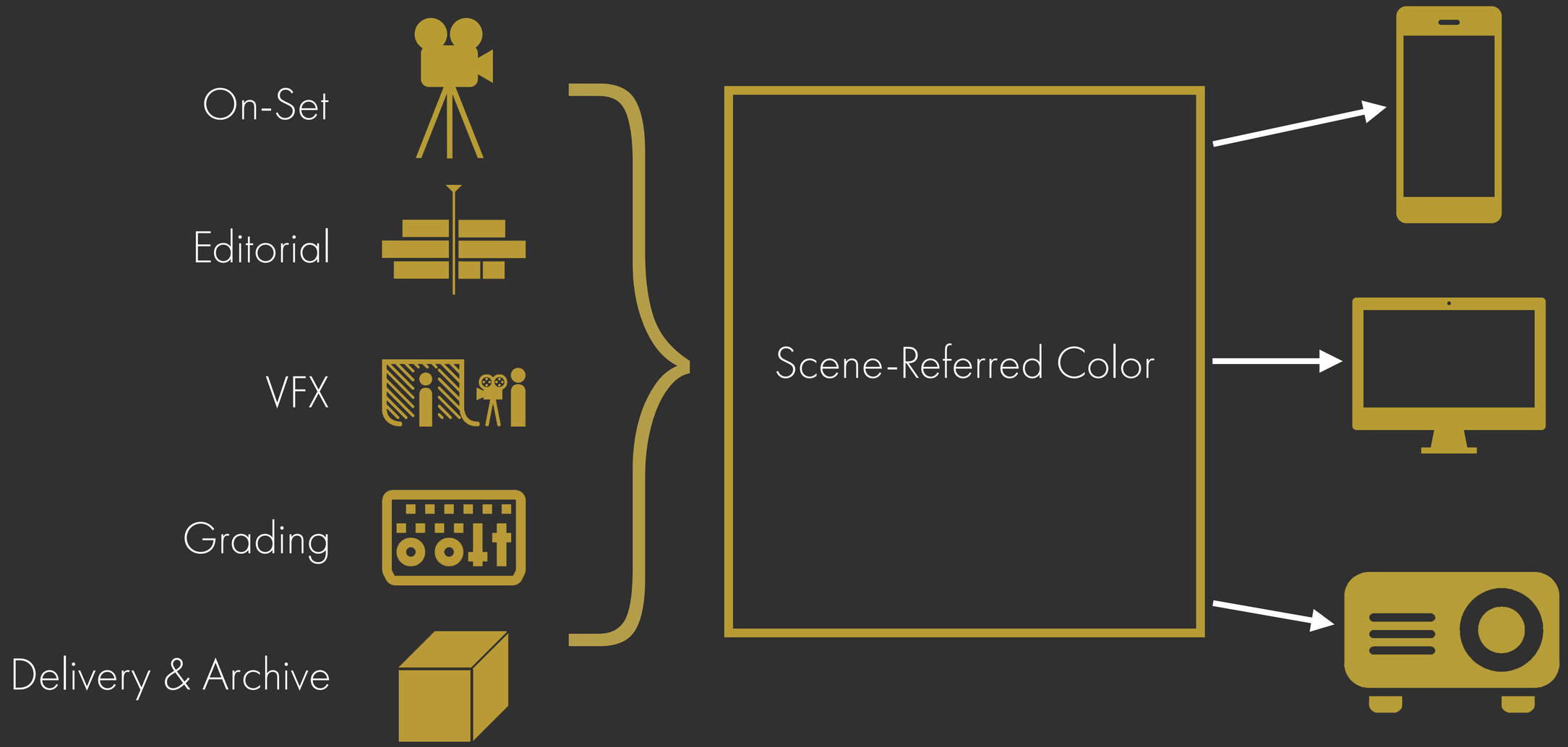
Scene-Referred Workflow

Adjust the **scene color** independent of the display.

Unique Sources & Outputs



Department Alignment



Goals of Color Management

Confidence for the creative

- Consistency in maintaining the look

Handle mixed image sources

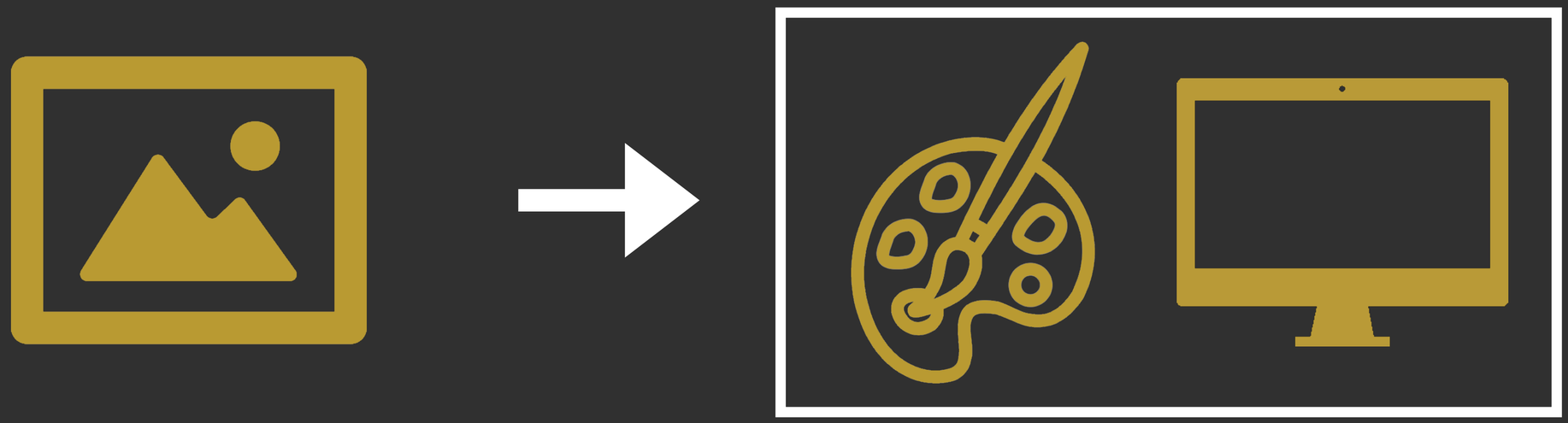
- Different cameras, CG material, graphics

Protect fidelity of image data

- Longevity of content

Questions?

Display-Referred Workflow



Scene-Referred Workflow

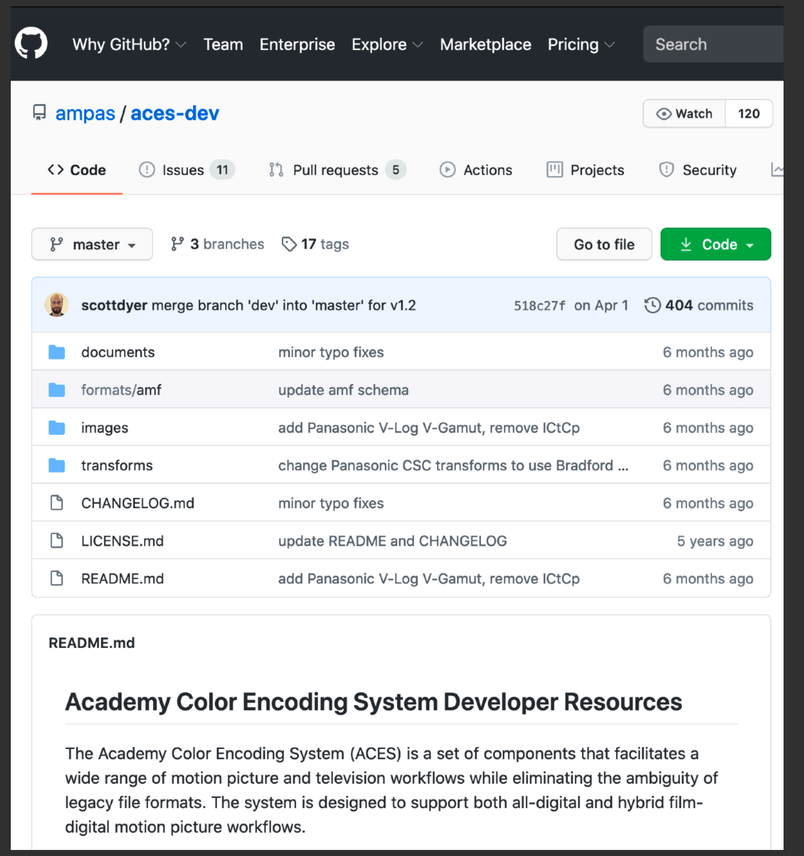
ACES is a standardized scene-referred approach

Open Source – https://github.com/ampas/aces-dev

Consistent across a range of applications

On-set, DI, Compositing, CGI

OpenColorIO (OCIO)



SMPTE Standards

ST 2065-1 – ACES core color encoding standard

ST 2065-2 – Academy Printing Density

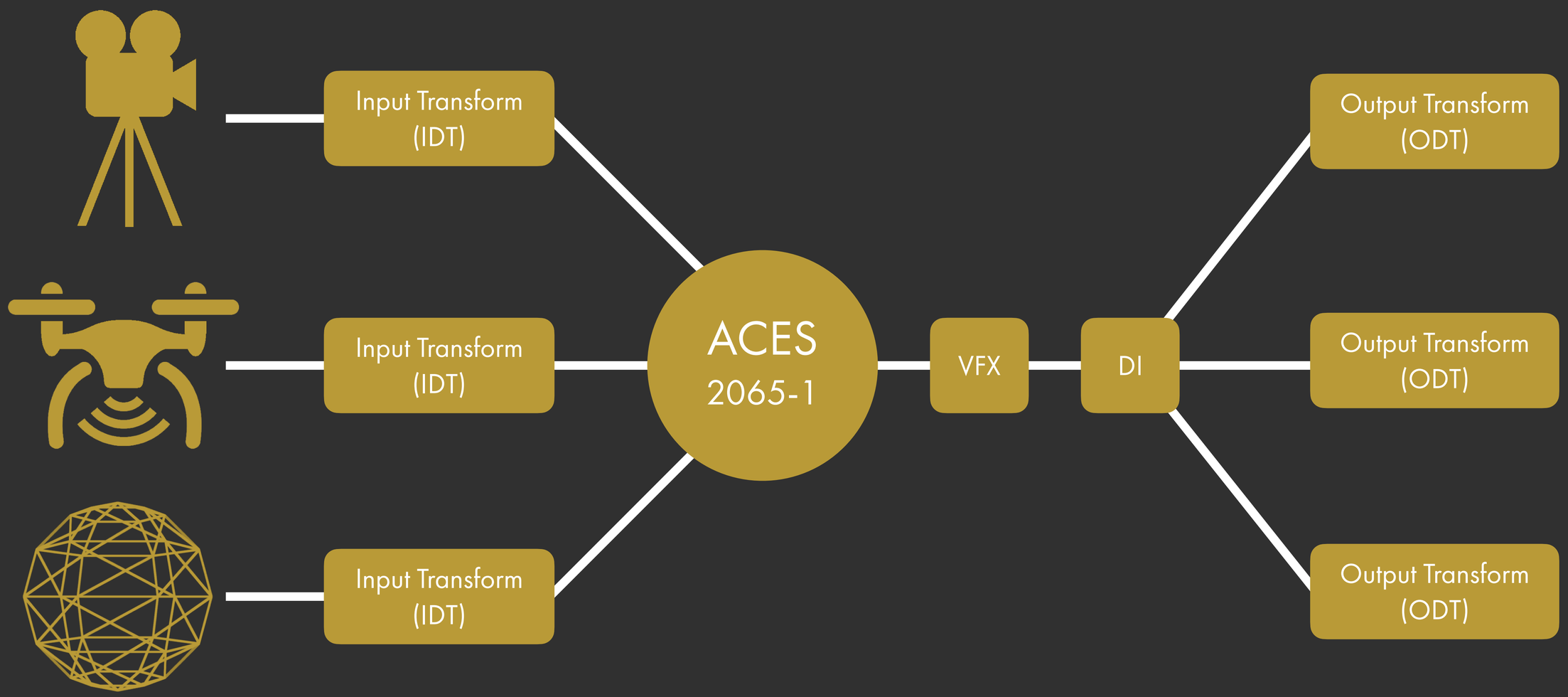
ST 2065-3 – Academy Density Exchange Encoding

ST 2065-4 – ACES Image Container File (EXR)

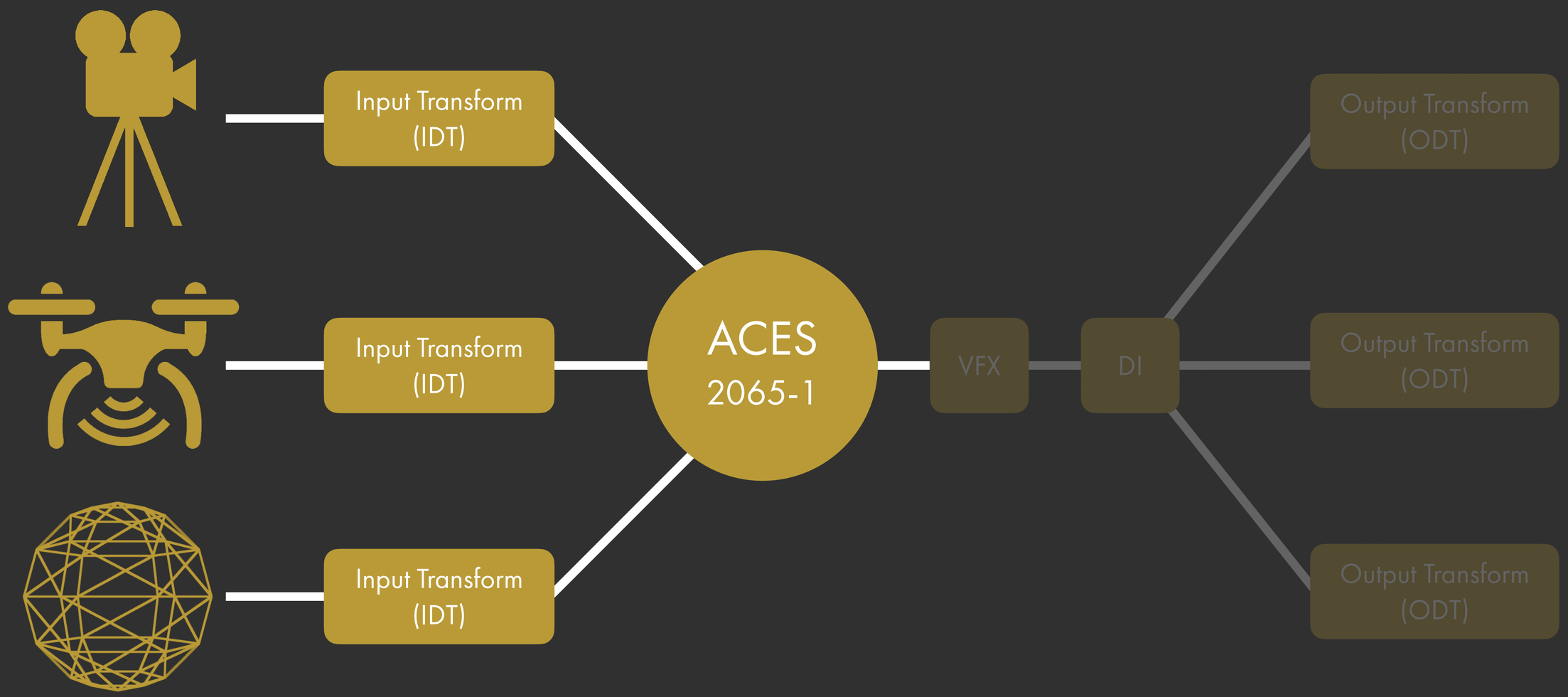
ST 2065-5 – MXF wrapped EXRs

ST 2067-50 – IMF App 5 for delivery and archive

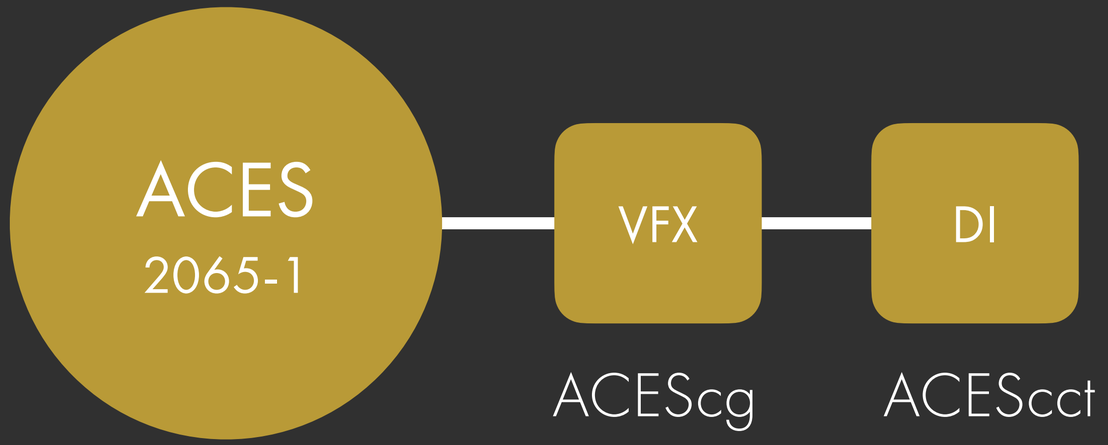
ACES Block diagram

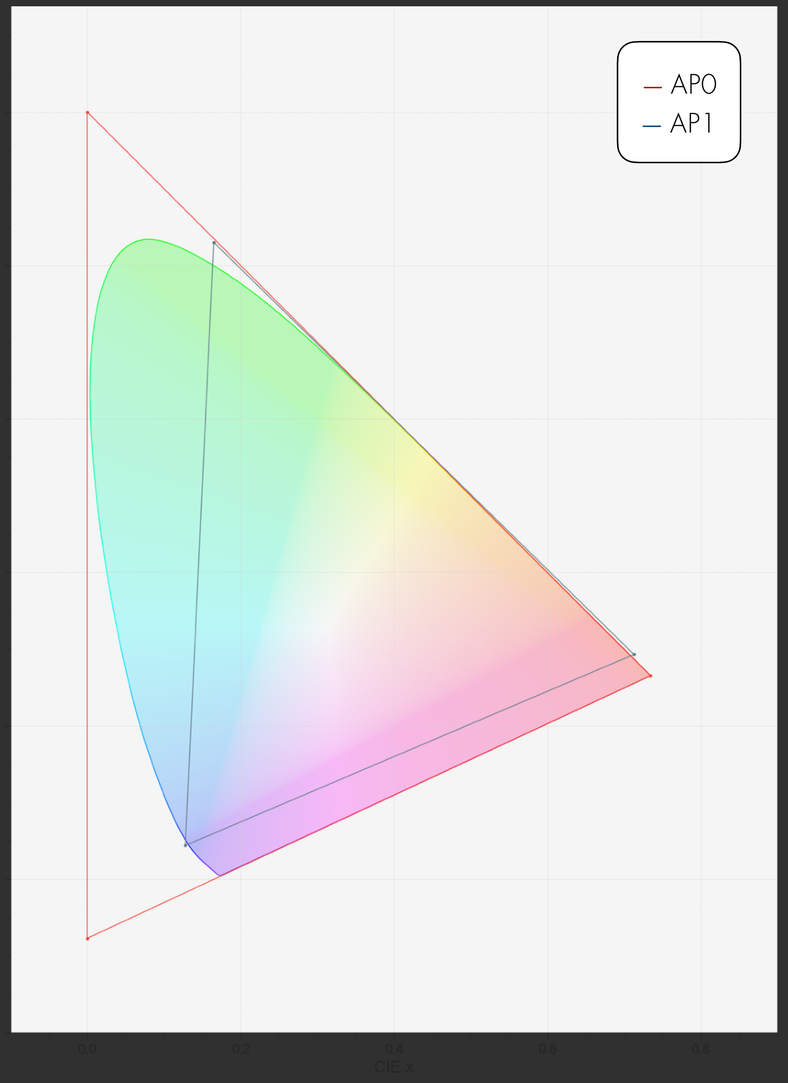


Input Transform

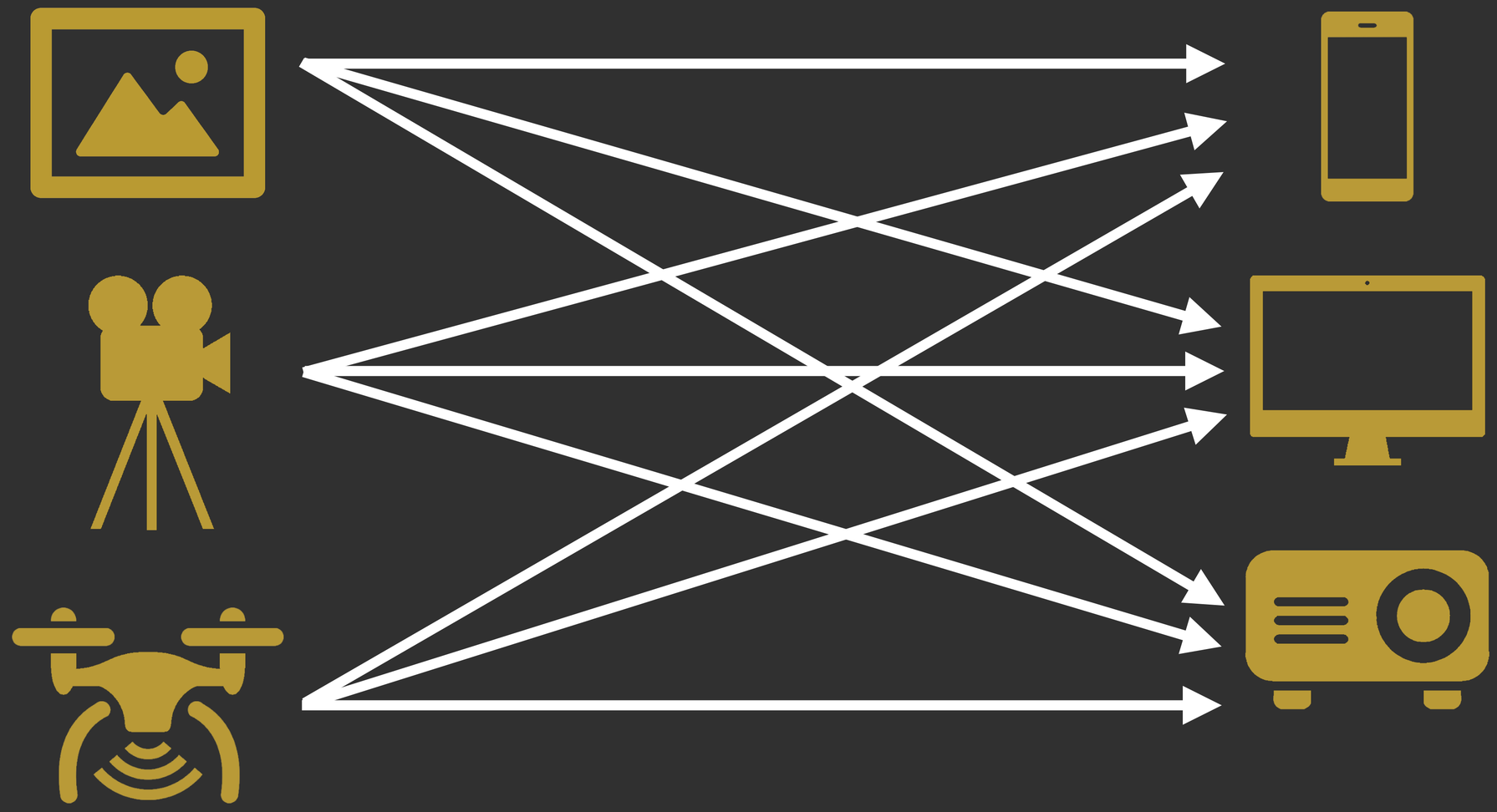


Working spaces

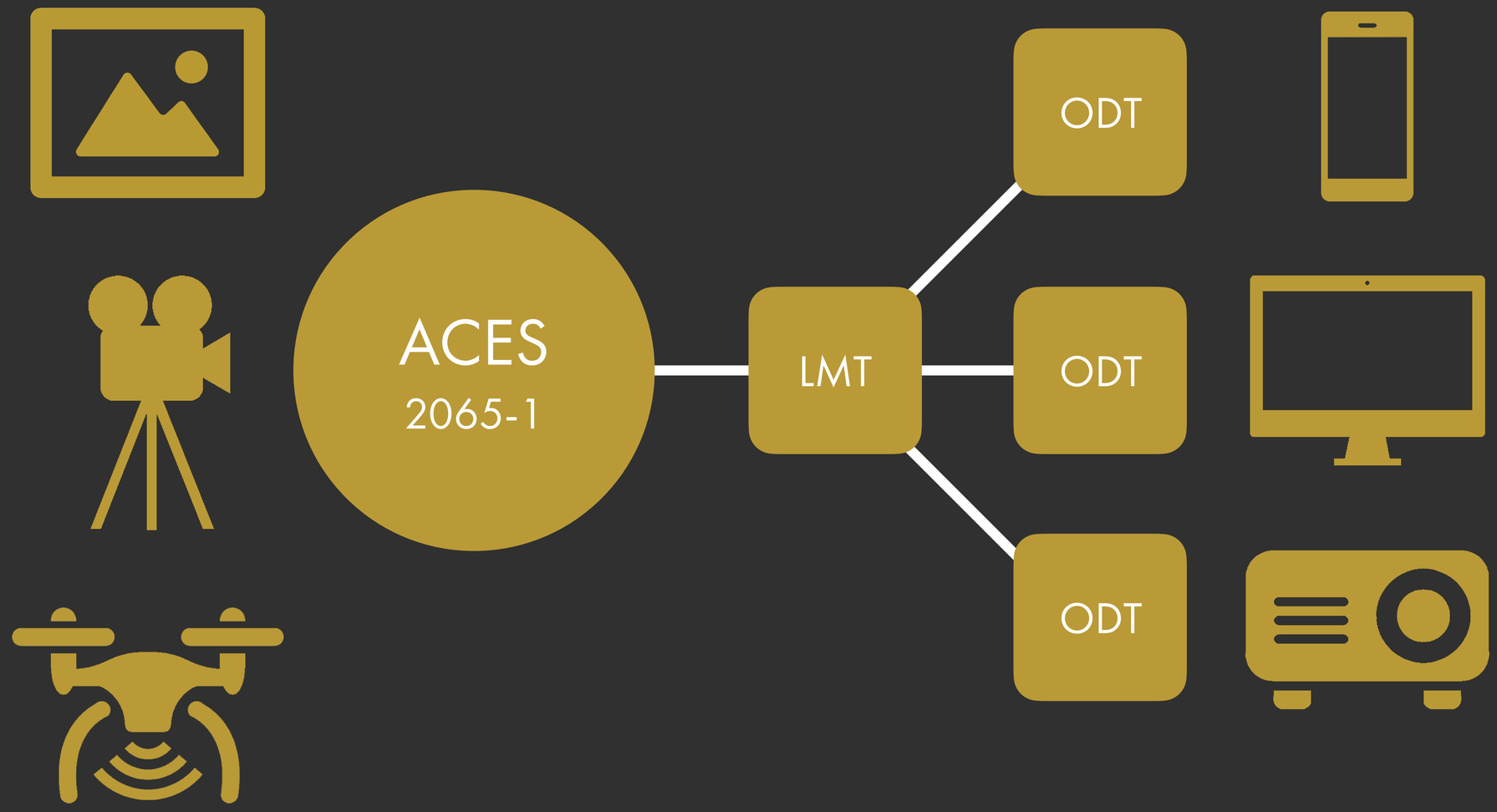




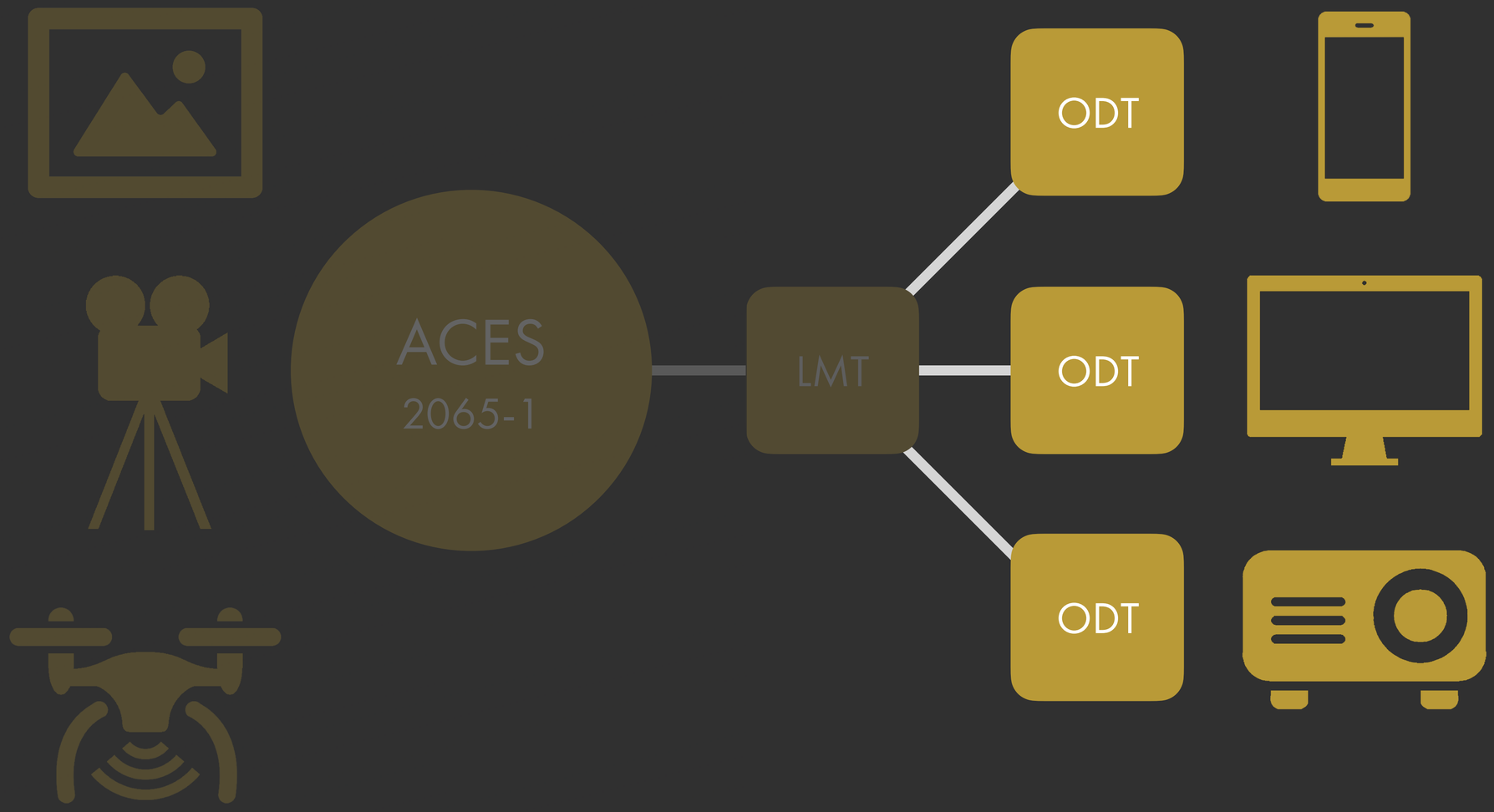
Plethora of LUTs



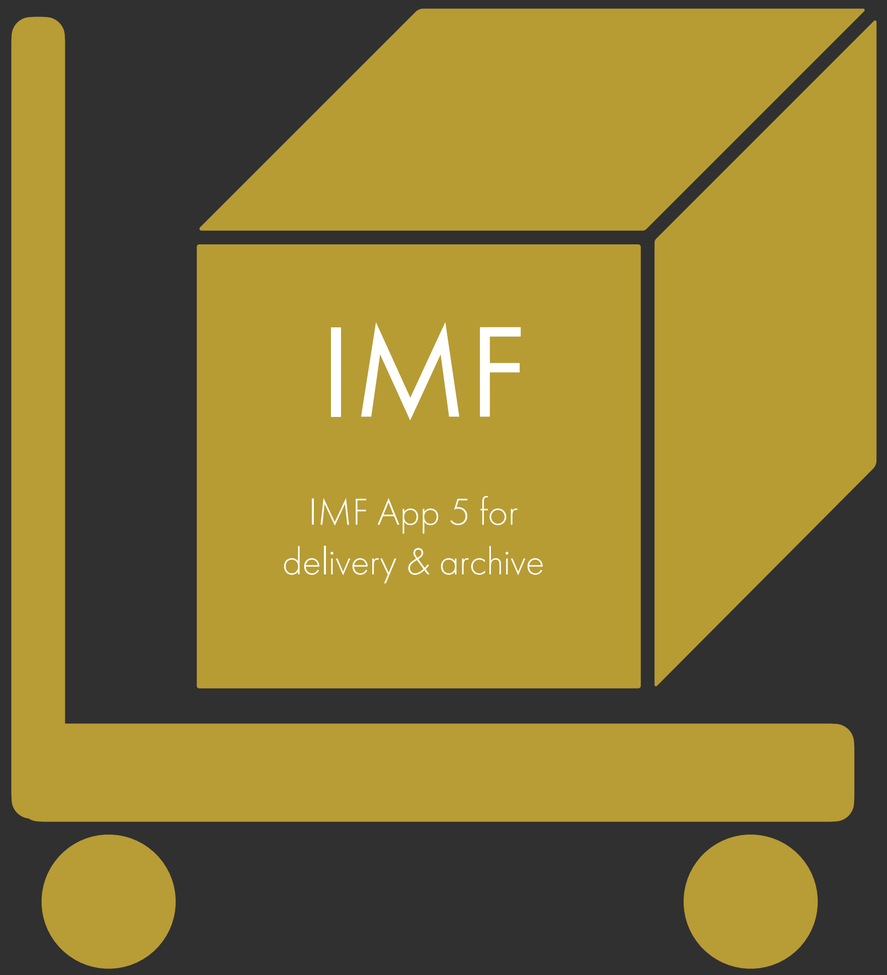
Look Transform



Output Transform



Delivery & Archive

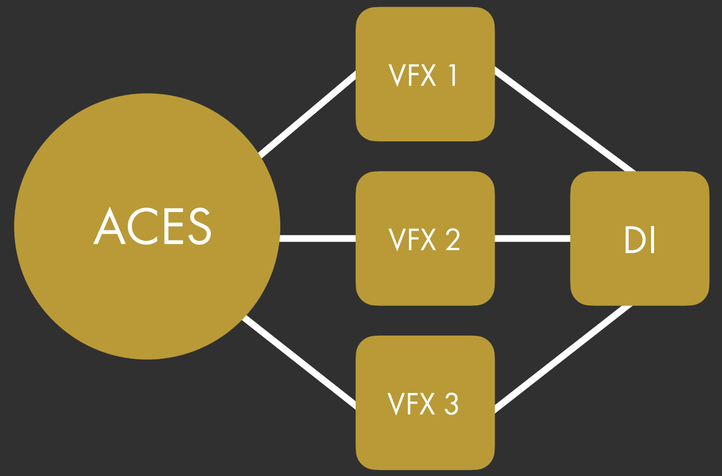


Who Benefits from ACES?

Productions that are **multi-camera** and **multi-vendor** can keep color and file formats **consistent** and **re-usable**

Studios that have **multiple productions** can get a **consistent** color pipeline and archive

Smaller productions such as documentaries and animations can **simplify color management** while maintaining the **widest dynamic range** in their images



Questions?

Current & Future States of ACES

ACES Development Process

Old process (leading up to ACES 1.0)

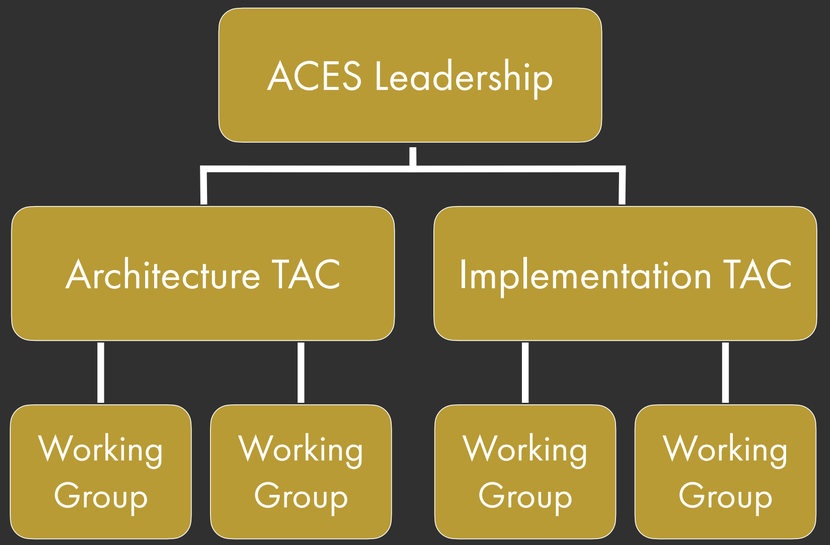
- Seemed like “Academy project” and not a “community project”
- Development process and decisions were not as easily accessible to implementers and end-users as desired

New Process (ACESNext)

- Give more oversight, development, test and implementation responsibility to the community of engineers, end-users and other stakeholders who rely on the system

New Organization

- Technical Advisory Councils (Architecture & Implementation)
- Working Groups



ACES Versions & Working Groups

Now: v1.2

- New version of Common LUT Format (CLF)
- ACES Metadata File (AMF) replaced ACESclip
- Other minor improvements

Next Year: v2.0

- High level goal is to “delight” the industry
- New, more “neutral” output transforms based on v1.1
- Robust gamut mapping
- Validation tools for CLF and AMF
- Better reference implementations, documentation and best practices
- Revisiting film: tools, test materials, input transforms
- Considering staged approach: e.g. ACES 2.0, 2.1, 2.2 …
  roll features out as they are ready

SMPTE Standards will be updated as needed

Implementation WGs
- ACES Metadata File
- Common LUT Format
- Input Transforms (IDT)

Architecture WGs
- Gamut Mapping

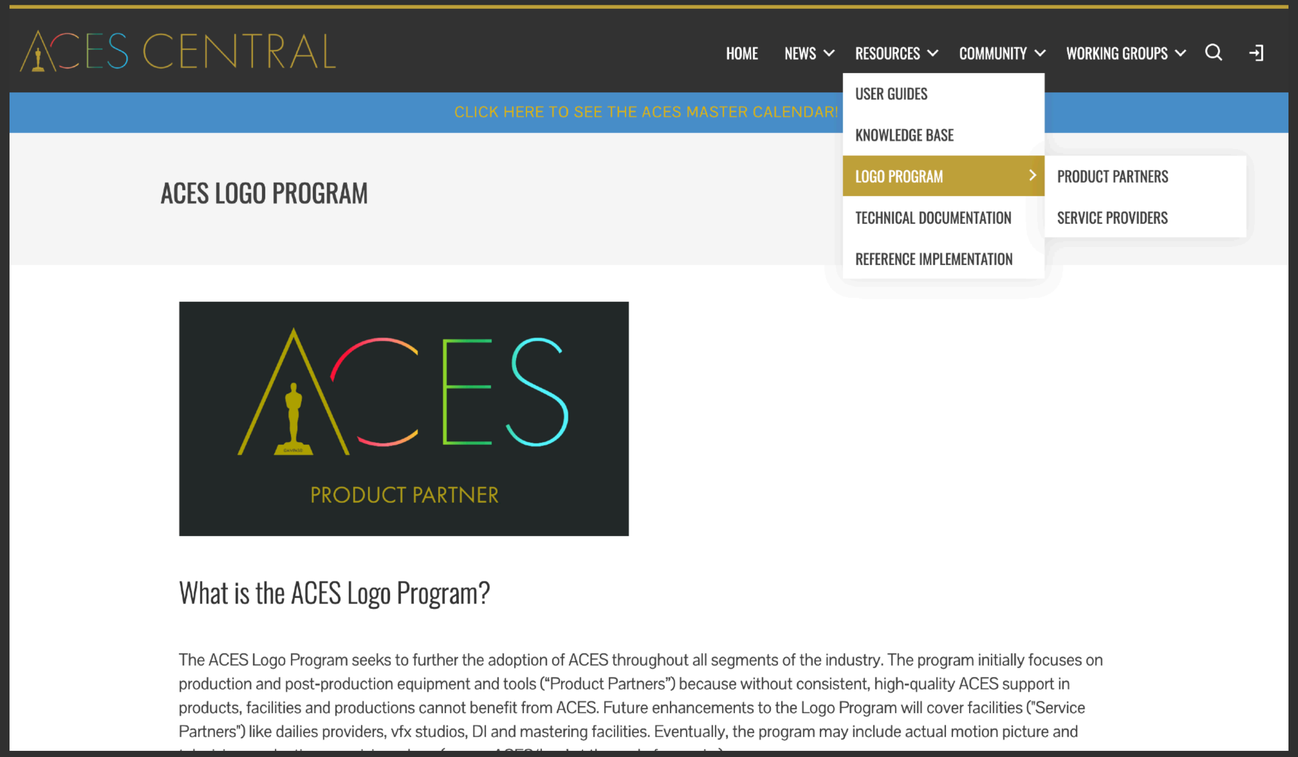
Coming Soon
- Output Transforms
- Compression (VFX)

ACES

ACES Logo Program

Product Partners - Hardware and Software manufacturers – 31 members

Service Provider Tier - for VFX, DI, Dailies and other vendors coming soon...



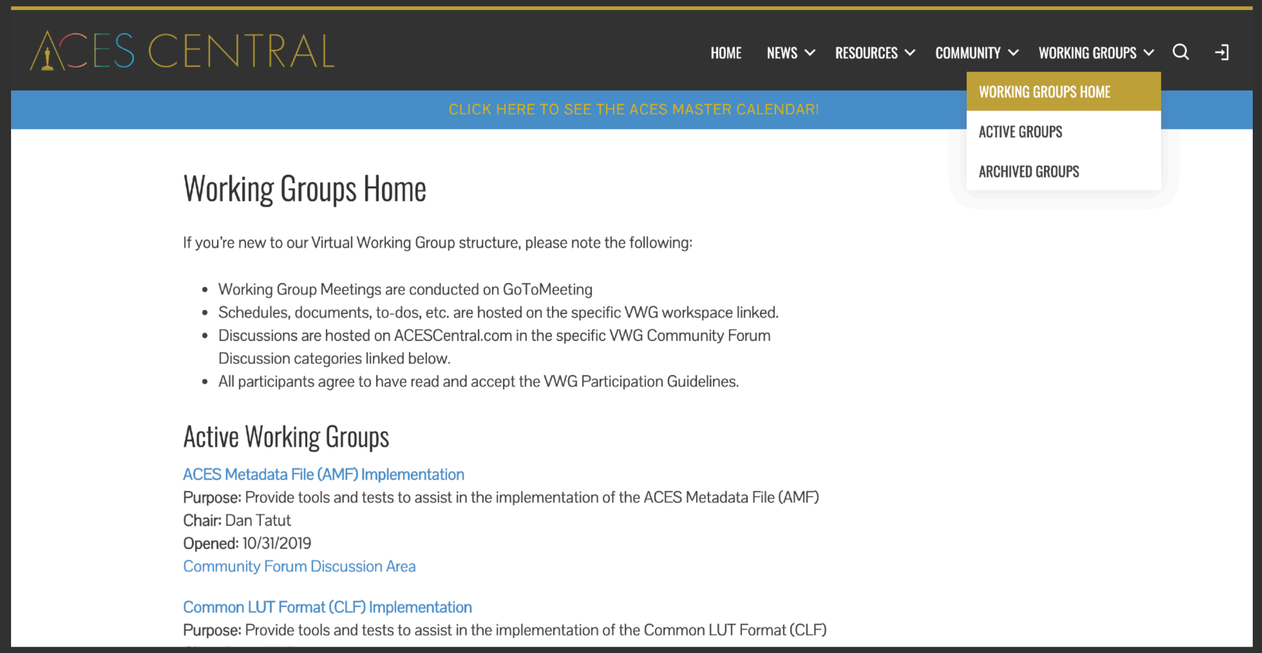
ACESCentral.com and Community

Discussion Forums

- Get help
- Give help
- Participate in Working Group discussions

Working Groups

- Get involved …
- Looking for new energy, programmers, etc.



Note about ACES and Broadcast

Scene-Referred Workflow

Episodic content ✓

Shoot and posted content ✓

Camera shaded content (Live) ?

Panel Discussion

Annie Chang

Carol Alynn Payne

Nick Shaw

Alex Forsythe

Joel E Welch

Moderator

Let’s continue this conversation!

ACESCentral.com

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