Academy Software Foundation: Open Source Project Advancements

By David Morin, Carol Payne, Emily Olin, Scott Dyer, Matthew Low, Gary Oberbrunner, and Jonathan Stone

The Academy Software Foundation (ASWF) was created in 2018 by the Academy of Motion Picture Arts and Sciences and the Linux Foundation to provide a home for open source software developers in the motion picture and broader media industries to share resources and collaborate on technologies for image creation, visual effects, animation, and sound.

The past year has seen significant growth. The Foundation accepted two new projects: MoonRay, an open source production path-tracing renderer developed by DreamWorks Animation, and OpenPGL (Open Path Guiding Library), developed by Intel to let artists and developers use more realistic lighting when building and designing scenes and animations. These join 22 ASWF-hosted projects, including OpenEXR, OpenVDB, ACES, OpenColorIO, OpenTimelineIO, Open Shading Language, MaterialX, and more.

The Foundation also launched a new Wayland for Artists Working Group in conjunction with the Visual Effects Society's Technology Committee. As major Linux distributions replace X11 with Wayland, the group gives distributors, software vendors, and studios a neutral forum to examine the impact on artist workstations, from graphics tablets and window management to remote access, color management, and HDR displays.

The Machine Learning Working Group launched in 2025 to give ML experts across ASWF projects and member companies a space to share knowledge and incubate open source tools for production. The ML WG has spun up two new ASWF projects: Dailies Notes Assistant (DNA) and Rongotai Model Train Club (RMTC). DNA is working to streamline the dailies process by using AI to transcribe dailies meetings, analyze the content using an LLM, generate meaningful notes, and provide a plugin system to integrate into production tracking software. The Rongotai Model Train Club (RMTC), which began as an internal project at Wētā FX, simplifies the production and deployment of ML models and datasets by clearly tracking provenance and AI data usage during training and inference. It also provides flexible tooling that makes ML training and tracking more accessible for TDs, from managing model and dataset versions to bespoke models and show-specific use cases.

Below are updates on several open source projects at the ASWF. To learn more about other ASWF projects, please visit www.aswf.io.

ACES

Chair: Scott Dyer

ACES, the Academy Color Encoding System (ACES), continues to grow since joining the Foundation in August 2025. Originally developed and maintained by the Academy of Motion Picture Arts and Sciences, ACES provides an open source framework for color management and image interchange across the entire motion picture production life cycle, from production through visual effects, post-production, mastering, and presentation.

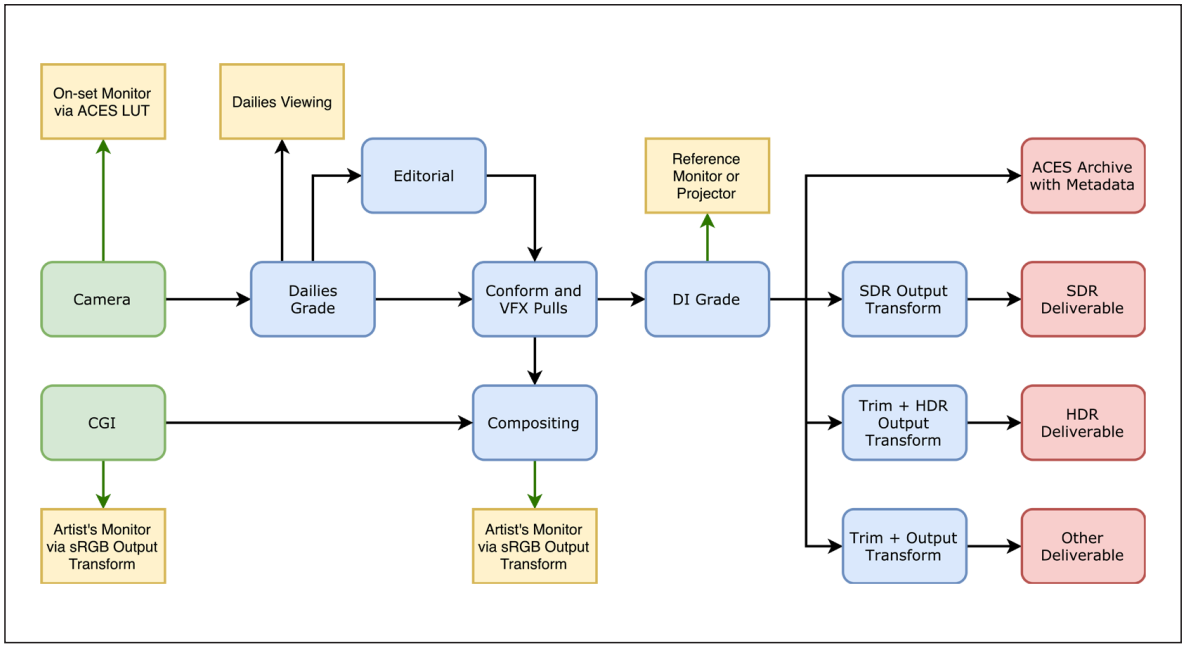
ACES continues to introduce tools to enhance its core capabilities and simplify adoption for software partners. The latest ACES update includes AMF tooling, contributed by Netflix in the form of Python packages, for parsing, manipulating, and validating ACES Metadata Files (AMFs). AMFs communicate color viewing pipelines seamlessly from look development through on-set, dailies, and VFX. AMF support continues to broaden across the industry: DaVinci Resolve 21 can now automatically link per-shot AMFs across a timeline, joining tools from FilmLight, Pomfort, Colorfront, and AJA. Input transforms for the latest cameras continue to be actively added.

The project is also gathering feedback on an optional Look Modification Transform (LMT) that offers a brighter, higher-contrast SDR rendering for computer graphics, games, and web viewing. Meanwhile, community contributions to the Color Transformation Language (CTL), the reference language for ACES transforms, have delivered roughly 25x faster CPU processing, a GPU path that is roughly 175x faster, and new debugging and testing tools, all currently in review.

On the standards side, the Technical Committee on Cinematography of the International Organization for Standardization (ISO), the group responsible for motion picture standards, has approved all six current ACES standards, which were developed in conjunction with SMPTE:

- SMPTE ST 2065-1: Academy Color Encoding Specification
- SMPTE ST 2065-2: Academy Printing Density (APD)—Spectral Responsivities, Reference Measurement Device and Spectral Calculation
- SMPTE ST 2065-3: Academy Density Exchange Encoding

1545-0279/26©2026SMPTE



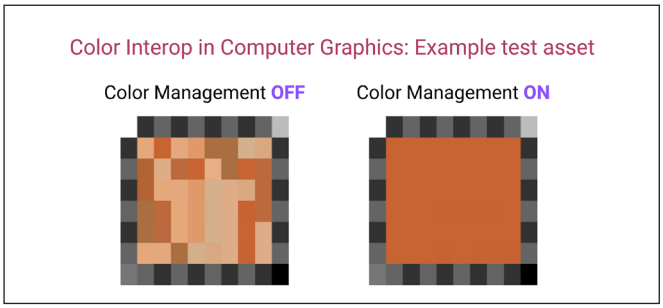
A sample workflow using ACES components.

(ADX)—Encoding Academy Printing Density (APD) Values
- SMPTE ST 2065-4: ACES Image Container File Layout
- SMPTE ST 2065-5: Material Exchange Format—Mapping ACES Image Sequences into the MXF Generic Container
- SMPTE ST 2067-50: Interoperable Master Format—Application #5 ACES

OpenColorIO & ASWF Color Interop Forum
Chair: Carol Payne

OpenColorIO (OCIO) is an industry standard for consistent color management across VFX and animation pipelines. OCIO's most recent release, v2.6, aligns with the 2027 VFX Reference Platform and adds support for the new SMPTE standard version of the Common LUT Format (CLF). It also introduces new API calls for the Color Interop ID, display and view aliases that let configuration authors rename without breaking existing assets, and a formal definition of HDR-compatible configurations to simplify integration with operating-system color management for HDR displays. Outside the core library, OCIO support landed in FFmpeg 8.1.

The ASWF Color Interop Forum was launched to encourage color space interoperability across industry projects through documentation, implementation guides, and recommendations. The Color Interop Forum has published baseline recommendations for both scene and display color space encodings, followed by the Color Interop ID specification, a stable string for identifying color spaces across configurations and libraries, and a recommendation for identifying the color space of OpenEXR files. The Forum's work is now cited in the Alliance for OpenUSD (AOUSD) core specification and the Khronos Group glTF Splat specification. Through the NanoColor working group, it is also developing color management guidance and test assets with OpenUSD and MaterialX contributors.



Color Interop in computer graphics.

Digital Production Example Library (DPEL)
Chair: Matthew Low

The Digital Production Example Library (DPEL) houses production-grade 3D scenes, footage, and other assets that demonstrate the scale and complexity of modern filmmaking. These assets are available free of charge to researchers and developers of open source and commercial tools.

Several major contributions arrived this year. Netflix Animation Studios released a Gaussian splat variant of its ALab scene, with the original PLY data, a derived OpenUSD version, source SDR and HDR renders, and COLMAP data. The splat asset was developed in coordination with the new UsdVol ParticleField schema from AOUSD and Apple.

In July, the American Society of Cinematographers (ASC) contributed StEM3-VP, the third iteration of its Standard Evaluation Material. Where StEM2 focused on HDR, high resolution, and wide color gamut, StEM3-VP targets LED volumes and in-camera visual effects, combining 2D and 3D assets from numerous studios with *Warped: Cyber-City*, a short film shot on a working virtual production stage at Amazon Studios in Los Angeles. StEM3-VP assets were downloaded more than 4,000 times in the first three months.



New StEM3-VP digital assets help cinematographers stress-test and evaluate LED volumes for virtual production.

OpenFX

Chair: Gary Oberbrunner

OpenFX, the open standard for visual effects plugins used by Nuke, Flame, DaVinci Resolve, Baselight, and many other hosts, released version 1.5.1 in November 2025, adding new GPU-render and thumbnail-render properties along with Windows build fixes. Version 1.6, which is nearly complete, has already merged Windows ARM64 plugin locations, parameter interpolation types, color-managed parameters built on OpenColorIO-based color support, Metal texture handles, support for flagging obsolete plugins, new C++ bindings (openfx-cpp), and a property metadata system.

Vendors are adopting these features ahead of the release: Boris FX Silhouette already ships the obsolete-plugins feature, and RE:Vision Effects ships the new parameter interpolation types. On the host side, Pomfort added OpenFX support to Livegrade Frontier, applying plugins to live camera signals in real time on set. The project is also working with OpenTimelineIO on a Conform extension for exchanging effects through OTIO, AAF, and FCPXML.



OpenFX overlay draw suite.

MaterialX and OpenPBR

Chair: Jonathan Stone

MaterialX is an open standard for the exchange of rich material and look-development content across applications and renderers. New updates this year include the addition of a Slang shader generator, flake effects for automotive paint,and retroreflective BSDFs. New assets includeMaterialX Teapot and Lion, contributed by NVIDIA. Available through DPEL, these are the first assets offering multi-layered MaterialX materials at this level of complexity. Working with the AOUSD Materials Working Group, the project also introduced formal scattering mathematics for its physically based shading nodes, a foundation for normative specifications in both MaterialX and OpenUSD. The project has had wide industry adoption, including RenderMan 27.3, OctaneRender 2026, and Nuke 17.0.



MaterialX Teapot and Lion.

OpenPBR is a subproject of MaterialX that provides an artist-friendly new open source shading model to facilitate interchange from one software package to another. OpenPBR 1.1.1 shipped in MaterialX this year, resolving feedback from new implementers, and OpenPBR 1.2 is now feature complete. Its headline additions are specular retroreflectivity, based on a newly published minimal retroreflective microfacet model, and specular haze, which captures smudged and hazy reflections without duplicating the specular parameter set. Looking beyond surfaces, Autodesk and SideFX are drafting OpenPBR Volume, a physically grounded, artist-friendly appearance model for volumetric effects. Industry adoption includes: SideFX brought OpenPBR Surface to all Houdini renderers; OTOY announced OpenPBR 1.2 support for Octane 2027; Blender plans full OpenPBR support in Blender 5.4; and NVIDIA previewed roughly 3,000 OpenPBR materials for release on Hugging Face.

1545-0279/26©2026SMPTE

Community Engagement

The ASWF's annual Open Source Forum provides an intimate setting for members and select guests to discuss emerging technologies and the challenges and opportunities for open-source software. The 2026 Forum, held at Netflix's Sunset Bronson Studios in Los Angeles, featured keynotes from Chad Nelson of OpenAI on creative workflows in the AI era and Tasia Miles of Meow Wolf on open source tools for immersive entertainment, along with sessions on Gaussian splatting in OpenUSD and responsible AI in production. Open Source Forum 2027 will be held on Feb. 18 in Los Angeles. Additional details are available at opensourceforum.aswf.io.

Open Source Days 2026, held July 19-20 in Los Angeles alongside SIGGRAPH, drew more than 500 in-person attendees. DreamWorks Animation CTO Bill Ballew gave the keynote on MoonRay's path from in-house renderer to open source, and project teams continued the conversation in Birds of a Feather sessions at SIGGRAPH the following day.

ASWF Membership

ASWF members, from studios and software vendors to cloud providers and universities, help set the direction of the open source tools the industry depends on. Premier, General, and Associate memberships give organizations a seat at the table in the Foundation's governance and a share in the engineering, continuous integration, and security infrastructure that every project relies on, without each company carrying those costs alone. Individuals don't need a membership to take part: anyone can join the ASWF Slack, attend open project meetings, and contribute code, documentation, or assets. Learn more about membership at www.aswf.io.

About the Authors


David Morin is the Executive Director of the Academy Software Foundation.


Carol Payne is the Founding Head of Color Science at Wizard. She also chairs the Academy Software Foundation's Technical Advisory Council (TAC) and OpenColorIO.


Emily Olin is Director of Marketing and Communications for the Academy Software Foundation at the Linux Foundation.


Scott Dyer is a senior imaging engineer at the Academy of Motion Picture Arts and Sciences and Chair of ACES.


Matthew Low is a principal engineer and Technical Lead at DreamWorks Animation and is the DPEL Chair.


Gary Oberbrunner is CEO of Dark Star Systems, Inc. and Chair of OpenFX.


Jonathan Stone is Lead Rendering Engineer in the Lucasfilm Advanced Development Group and is the lead developer of MaterialX.

A contribution received from the authors for the 2026 Progress Report.
Copyright © 2026 by SMPTE.

DOI: 10.5594/JMI.2026/HTLO7666
Date of publication: 15 November 2026