

2015 NAB Show's Technology Summit on Cinema: SMPTE Program Highlighted the Future of Storytelling

FROM ADVANCES IN CONTENT CREATION, TO THE IMPACT OF VIRTUAL AND EVEN AUGMENTED REALITY—THE TSC PROVIDED THOSE IN ATTENDANCE WITH A CLEAR ROADMAP TO SUCCESS.

By Aimée Ricca



The road to the future of cinema is paved with a wealth of innovations that define the experience of what's to come. The 2015 NAB Show's Technology Summit on Cinema (TSC), produced in partnership with SMPTE, took participants on a journey of discovery focusing on the next-generation of technology. From 11-12 April, the two-day summit, titled *Building the Future of Storytelling*, looked ahead to the future, examining the impact that both art and science have on content and that will ultimately shape the future of cinema.

The program committee was chaired by SMPTE Fellow, Bill Hogan, who led the committee comprised of SMPTE Education Vice President Pat Griffiths, executive director of technology strategy in the office of the chief technology officer at Dolby Laboratories; Pete Ludé, a past SMPTE president, SMPTE Fellow and senior vice president at RealD; SMPTE Governor Richard Welsh, chief executive officer of Sundog Media Toolkit; and Jim Whittlesey, SMPTE Fellow and chief technology officer at Eikon Group. The esteemed committee succeeded in providing attendees with a clear roadmap to success, while exploring potentially disruptive innovations that could ultimately redefine the cinema experience.

How Successful Is the Digital Revolution and the Technology Future for Theaters?

This session, moderated by Bill Mead publisher of *Digital Cinema Today* with panelists SMPTE Past President Wendy Aylsworth, senior vice president of technology at Warner Bros.; David Pflagl, director of technical services at Carmike Cinemas; Timothy Reed, chief development officer at Alamo Drafthouse Cinemas; Sean Romano, vice president of operations for mastering at Deluxe Digital Cinema; and Steven Tsai, entertainment executive at Sony Pictures Entertainment got the TSC off to a lively start. The mix of panelists from the studio, exhibitor, as well as post-production side was well bal-

anced. Mead successfully led the discussion that examined the impact that all-digital distribution and projection have had on studios and theatrical exhibitors, as well as the costs and benefits of further technical advances.

Keynote: Leveraging New Technology to Preserve Creative Intent

The emergence of laser-illuminated projection systems and new digital cameras hold the promise of an enhanced cinema experience, notwithstanding the ability to continue to shoot on film. These new systems must still preserve the artistic intent as the top priority. In this keynote session, Carolyn Giardina of *The Holly-*



Bill Hogan



Richard Welsh



Wendy Aylsworth

wood Reporter engaged David Keighley, chief quality officer and executive vice president at IMAX Corporation and Jan Yarbrough, senior colorist at Warner Bros. and discovered the ways in which the industry may leverage enhanced technical capabilities, while ensuring preservation of the filmmaker's creative vision.

Keighley explained, "Powerful filmmakers who command a lot of respect from the studios can do pretty much whatever they want." He used J.J. Abrams and Christopher Nolan as examples of those who have free reign. Yarbrough added, "budget talks." He elaborated that in his experience, the majority of filmmakers do not enjoy that creative freedom—budgets cut into their latitude of creativity. When asked about production, Keighley admitted that most filmmakers are under budget constraints and do not have the opportunity to shoot their content in the format that they wish. He asserted, "the amount of 4K masters that we get to put on our screens, I think this year there will be one." Yarbrough noted that the visual effects (VFX) houses impact the creative intent as well, because few VFX houses will work in 4K; "many of them balk at the idea that they have to do it." Keighley brought up the challenge of up-converting 2K to 3D in 4K and noted that, to date, it has not been accomplished as far as he knows: "There has to be time and money to do that," Keighley said.

Giardina posed the question, "What are the pieces that we are missing and what needs to be done?" Yarbrough commended the Academy of Motion Picture Arts and Sciences (AMPAS) for The Academy Color Encoding System (ACES) as a "great technique" as well as the American Society of Cinematographers Color Decision List (ASC CDL). He explained that there is a need for standards dealing with screen brightness and bit-depth. Responding to Giardina's question on the dilemma faced in restoring library titles, Yarbrough explained that he must often guess the intent of the filmmaker, 50-60 years ago. "How do you handle that and make sure that you still have the creators intent of how it should look, yet demonstrate the new technology?" Yarbrough explained that it is a delicate balance that he approaches very carefully.

On the topic of exhibition, the role of new laser projectors was discussed. Keighley noted that very few cinemas still employ projectionists. He asked: "Who is maintaining that light level?" He declared his call-to-action is to "get our house in order with the 14 foot-lamberts that we all strived very hard to set 15 years ago." Keighley said he believes that "we've lost something,"—



Creative Intent Keynote: (L-R) Carolyn Giardina, David Keighley, and Jan Yarbrough.

projectionists that are passionate about the quality of the image projected on-screen. "We could do a lot better as a global community, but the cinema operators are going to say, 'who's going to pay for that?'" he said.

"We could get people back into the cinema, if we actually paid attention to the standards that we built 14 years ago."

In the final discussion on archiving and preservation and the "digital dilemma," Keighley explained, "that it's eleven times more expensive to archive on digital media than it is on film." He urged content creators to find the money in their budgets for film preservation, regardless of the medium. Yarbrough agreed that film is still the most reliable form of archiving. However, using a practical approach, he commented that digital is most accessible for budget conscious creators.

Both Keighley and Yarbrough agreed that one disadvantage of digital is that frames often become corrupt when stored digitally and may be lost forever without the redundancy of archive on film. Both panelists also agreed that the only exception, is the Digital Optical Technology System (DOTS), a non-magnetic data storage solution, which is said to last no less than 100 years.

The session concluded with questions from the audience. Visit: www.smpte.org/technology-summit-on-cinema, to view the session in its entirety.

The Academy Color Encoding System (ACES): A Digital Production Infrastructure Standard

Building on the creative intent keynote, this session explained that ACES is designed to be the digital production standard for motion picture image interchange, color management, and

long-term archiving. With more than ten years of industry-driven development, testing and standardization effort, the production-ready version—ACES 1.0—is now being integrated into motion picture and television production and post-production equipment. Andy Maltz, managing director of the Science and Technology Council at AMPAS described the science, engineering, and practical application necessary to understand and employ ACES for current and future productions. Maltz explained that from image capture through editing, VFX, mastering, exhibition, archiving, and future re-mastering, ACES enables a consistent color experience that preserves the creative vision of the content creator. It addresses and solves a number of significant production, post-production, and archiving problems that have resulted from the increasing variety of digital cameras and formats in use, along with the surge in the number of productions that rely on worldwide collaboration using shared digital image files.

The Academy is simultaneously launching the ACES Logo Program to encourage consistent, high-quality implementations of ACES concepts and technical specifications throughout the industry. Initially focused on production and post-production equipment such as cameras, color correctors, displays and visual effects and animation software, the Logo Program is the first step toward enabling facilities and productions to take full advantage of ACES benefits. There are currently 22 companies participating in the Logo Program. Maltz explained that ACES is already being employed in film and television productions, including such features as *The Lego Movie*."

First Look Preview of SMPTE's MOVING IMAGES Documentary

Entirely unique at the TSC this year was the first-look preview of SMPTE's very own docu-



Moving Image Filmmakers: (L-R) Aimée Ricca (associate producer), Bobby Hewitt (editor), Barbara Lange (co-executive producer), Howard Lukk (director/writer), Randall Dark (producer), Travis LaBella (director of photography), and Pat Griffis (SMPTTE Education Vice President).

mentary—the first for SMPTTE. Amazingly, in nearly 100 years of the Society's existence, it has never produced its own story.

The preview, edited by Bobby Hewitt, provided a brief glimpse into what will be the final feature length documentary to be released in coordination with SMPTTE's centennial next year.

The audience was captivated by the four-minute preview, featuring George Lucas; an interview with Mark Schubin, self-described engineer and explainer; and an actual working Kinetograph from the Malkames Camera Collection filmed in 4K by the director of photography, Travis LaBella. Pete Ludé, co-executive producer, Howard Lukk, writer and director, and Randall Dark, producer, with LaBella and Hewitt were on hand for a brief discussion after the preview. The team received an enthusiastic applause.

#LIFEWITHOUTSMPTTE

Pat Griffis announced an exciting new public awareness campaign designed to raise the profile of SMPTTE's contributions to the media and entertainment industry. The campaign, which kicked off at the TSC, premiered a 30-second public service announcement (PSA), demonstrating the value of SMPTTE Time Code. It shows what life would be like if SMPTTE Time Code went down, in the middle of an electronic dance music (EDM) party: The scene would be somewhat like a power outage. The public awareness initiative also features a social media component that will revolve around #LIFEWITHOUTSMPTTE on Twitter, Instagram, and Facebook. Griffis explained that Welsh had pro-



SMPTTE Education Vice President Pat Griffis announces #LIFEWITHOUTSMPTTE Public Awareness Campaign.

vided the original idea for the concept. Working with SMPTTE staff, the concept has been developed into the Society's first multichannel public awareness campaign. The #LIFEWITHOUTSMPTTE hashtag is a call to action that encourages participants to share photos, video clips, and social media posts that demonstrate what their lives would be like without SMPTTE standards. The SMPTTE Time Code PSA is the first in a series of short clips and can be viewed online at www.lifewithoutsmpte.org.

Keynote: Virtual Reality Coming to a Display Near You

Cinematic virtual reality (VR) goes beyond gaming and immerses the viewer in an entertainment experience in a way that was not possible until now. This medium impacts all aspects of filmmaking. David Cohen, senior editor of features at *Variety*, introduced the

concept of the VR, discussing an experience he had with the VR demonstration at a previous NAB Show with Ted Schilowitz, formerly of RED Digital Cinema. Schilowitz, now a futurist at 20th Century Fox and cinemavangelist at Barco, explained that the demonstration led to *Variety* putting together a VR package to cover the *Guardians of the Galaxy* red carpet for the publication. He stated that they collaborated with Jaunt VR to make it happen. He then introduced Arthur van Hoff, co-founder and chief technology officer at Jaunt.

"How do you define real?" van Hoff asked, further quoting the character Morpheus from the *Matrix*. He explained that the human eye is imperfect to begin with and that the brain is a virtual reality machine, pointing out that VR goes beyond our senses and it's our brain that really drives the VR experience.

"Mobile technology has pushed the limits very rapidly into a place where it has opened up the ability to do VR," van Hoff stated. The screen also requires a very high refresh rate and they had to wait for the advances that are currently available in mobile devices, he said.

van Hoff explained that "dozens and dozens" of VR headsets are now available, compared to only one or two just a few years ago. He discussed the recent features such as positional tracking that detects lateral motion and eye tracking, that various manufacturers can now access. He expounded on the ways in which manufacturers are leveraging headsets that can actually use mobile devices to create the VR experience, which he calls "cinematic VR."

"What we are all aiming for is not VR, its really the 'holodeck' experience," van Hoff said. He introduced the Microsoft HoloLens that is an augmented reality (AR) experience and explained that AR is significantly more difficult than VR. "In VR, you're blocking off the real world and as long as you do positional tracking correctly, you can get away with murder," he said. "In AR, if you place an object on my table over here, then I move my head, if that object is jumping around even a little bit, it completely destroys the illusion." In essence, AR requires extremely accurate head tracking. Additionally, rather than using a lens, it uses a half-mirrored screen: This way you can see half the real world and half the display.

van Hoff stated that VR affects many aspects of the entertainment and hospitality space, including the live concert, sports, travel, and film industries. In conclusion, he suggested that VR offers a lower cost alternative to consum-

ers, and has potential in advertising, news, and can also impact education via remote learning opportunities

Following the keynote, a lively Q&A session ensued, in which van Hoff was joined by Scott Brook, vice president of content at Jaunt VR with David Cohen moderating. To view this session in its entirety, visit: www.smpte.org/technology-summit-on-cinema.

Technicolor Pledges to The Next Century Fund

SMPTTE Executive Director, Barbara Lange, took the podium during the TSC to announce that Technicolor has pledged a contribution to The Next Century Fund of the SMPTTE Centennial Campaign. Lange introduced Vince Pizzica, senior executive vice president, corporate development and technology at Technicolor, who made a brief presentation. The Next Century Fund was originally announced in October 2014 at the SMPTTE Annual Technical Conference & Exhibition, with cornerstone pledges from The Walt Disney Company, Panasonic, and Dolby Laboratories. These companies have now begun to fulfill their commitments, allowing SMPTTE to begin investment in the initiatives outlined in the campaign plan. Technicolor's gift brings the campaign contribution total to nearly \$1.5 million.

More information about the SMPTTE Centennial and The Next Century Fund is available at <http://www.smpte100.org>.

DCP Update and Future Delivery Options: Satellite, Fiber, and Internet

This session featured John Hurst, co-founder and chief technology officer of CineCert LLC; Mark Waterston, vice president of business development and general manager at Cine-Active Solutions; John Wolski, vice president, exhibitor services at Deluxe Media Management; and Chris Witham, director of digital cinema at The Walt Disney Studios. Following a discussion of existing hard drive workflow, distribution of keys to enable digital cinema playback, and trailer and preshow advertising content distribution; the industry experts examined SMPTE Digital Cinema Packaging (SMPTE-DCP), recommended by the current Digital Cinema Initiatives (DCI) specification, and demonstrated its necessity in regard to captioning, object-based audio (such as Dolby Atmos), stereoscopic 3D, and high frame rates (HFR). The group also discussed SMPTE-DCP's support for higher bit rates, dynamic 3D subtitles, Material eXchange Format (MXF), fully encrypted subtitles, and auxiliary data.



John Hurst

Cinema and Virtual Reality: Perfect Together?

Continuing from the Keynote, *Virtual Reality—Coming to a Display Near You*, this session concluded the TSC program and provided attendees an inside look at the state-of-the-art of the immersive cinema experiences, while exploring the ways for future development. Welsh moderated the panel.

David McKimmie, post-production supervisor at 20th Century Fox, provided a very detailed account of the Barco Escape release of *Maze Runner*. Barco Escape is a three-screen experience that employs three projectors and three playback systems to create one image that wraps around the audience. McKimmie described how the system works and noted that the center screen is actually projected from a DCP, while the outer two screens are projected from a HD video file that color-matched to the center DCP.

Schilowitz demonstrated content that revealed some of the thinking behind the Barco Escape system, and audience reactions to the *Maze Runner* experience. Schilowitz added his own ideas, describing how the Barco Escape system takes cinema a step further into the

virtual/immersive experience. Joining McKimmie and Schilowitz, van Hoff and Brook returned to the stage to complete the panel that explored the future applications of VR and augmented reality AR within the theatrical environment.

Welsh posed the question, "Can VR and/or AR technologies and the cinema experience intersect?" The answer from the panel was "yes," although each panelist had a different view of the ways in which this could happen. One view offered that the VR experience recreates the theater, and that people, either in one room, or remotely, could establish the communal cinema experience. In either case, the participants would be able to view and interact with each other virtually, as well as the audience around them and enjoy a shared experience. Another view was the integration of AR into the cinema environment, although it was decided that this is much further away. The panelists agreed, however, that the general public is already in possession of the technology required for at least some sort of experience, in the shape of mobile devices. Even a fairly modest mobile device has enough capability to offer a VR experience, van Hoff pointed out.

Welsh questioned how far along are we in the journey, if the traditional cinema screen is the start, and the *Star Trek* 'holodeck' is the finishing point. van Hoff responded that the experience is much closer than we think, although he admitted that there is still some way to go. The panel noted that we are seeing a very rapid development of cinema that is now enabled by digital advances and information technology.



Cinema and Virtual Reality: Perfect Together? (L-R) David McKimmie, Ted Schilowitz, Arthur van Hoff, Scott Brook, and Richard Welsh.



Demonstration of Barco Escape system, Maze Runner.

Save the Date for 2016

This year's program further cemented the reputation of the TSC as a must-attend event for technologists, strategists, and content creators interested in where the future of the cinematic content is headed from creation to distribution.

Next year's TSC will be hot on the heels of CinemaCon. The TSC is scheduled for 16-17 April as part of the 2016 NAB Show at the Las Vegas Convention Center. Welsh will chair the program committee and he has already named his fellow committee members from this year, Hogan, Ludé, and Whittlesey; along with new additions Abi Corbin, director/writer; Christy King, chief operating officer at Levels Beyond; Cynthia Slavens, director of post-production at Pixar Animation Studios; and Chris Witham, director of digital cinema at The Walt Disney Studios to the program committee. Plans are now in motion to ensure a compelling and engaging program for SMPTE's Centennial year. Be sure to save the date, 16-17 April 2016, for this must-attend event.

SMPTE Members Honored at the 2015 NAB Show

SMPTE Past President Wendy Aylsworth, senior vice president of technology at Warner Brothers, and SMPTE Fellow Dave Siegler, vice president of technical operations at Cox Media Group, were presented with 2015 Technology Leadership Awards from *Broadcasting & Cable*. SMPTE Western Region Governor Sara Kudrle was also named a 2015 Technology Woman to Watch honoree by *TVNewsCheck*.

At the NAB Technology Luncheon several SMPTE members were honored: SMPTE Fellow Richard Friedel, was honored with the NAB Engineering Achievement Award. SMPTE Executive Vice President Matthew Goldman as well SMPTE member Lukasz Litwic, were honored along with their Ericsson colleagues, Olie Bauman and Philip White with the Best Paper Award for *Implications of High Dynamic Range on the Broadcast Chain for HD and Ultra-HD Content*.

The IABM celebrates outstanding achievement in the industry and honored the following SMPTE sustaining members with 2015 Game Changer Awards, during a reception held at the NAB Show: Elemental for test quality control and monitoring, Quantum for system automation and control, BLT Italia srl for post production, and Nexidia for services.

Student Social Event

Students from all over the globe were invited to the SMPTE booth for a social mixer while

interacting with SMPTE members, including SMPTE Board members and Directors, who got to know the students while discussing their work in sound, digital cinema, cameras, broadcasting, and manufacturing. Rohde & Schwarz, Netflix, and GoPro sponsored the event.

During the event students were reminded that they may receive their first year of SMPTE membership free-of-charge with the "Student Membership Challenge." Through a challenge grant established in 2012 by SMPTE Membership Vice President William C. Miller, the Society has been able to sponsor more than 650 student memberships.

Additionally, SMPTE leadership reminded the group that SMPTE has issued a call for papers for the SMPTE Student Paper Award and would be accepting applications for the Louis F. Wolf Jr. Memorial Scholarship, through 18 May. The Society also announced plans for a Student Film Festival, in collaboration with the Hollywood Professional Alliance® (HPA®), to take place at the SMPTE 2015 Annual Technical Conference & Exhibition in Hollywood, California.

More information about all student initiatives is online: <http://www.smpte.org/students>.

Photos - unless otherwise noted: Robb Cohen Photography, courtesy of NAB.



Students and staff at the SMPTE booth during the Student Social.

Photo: Courtesy Keith Graham, SMPTE San Francisco Section Chair