2022 SMPTE Summit Offers Fresh Diversity of Programming in Dynamic Return to In-Person Format

The SMPTE Media Technology Summit has evolved from a hub mainly for engineers and technologists into a space for welcoming professionals from across the media and entertainment (M&E) landscape—a place where they can learn about and explore all the latest opportunities emerging. Whether a veteran or a newcomer, anyone who attended the 2022 SMPTE Summit—held from 24 to 27 October in the Loews Hollywood Hotel—was able to experience an even wider range of ideas and perspectives, thanks to a whole new method for sourcing speaking proposals.

For the first time, the Society did not organize its conference presentations by topic. Prospective presenters were free to submit a much broader range of topical papers for peer-review rather than being restricted to specific subject areas. As a result, not only was the subject matter covered more diverse, but so were the people who came to speak or attend the four-day conference for the first time. And now, with the annual event returning to in-person attendance, there were a lot of fresh and familiar faces to see, more special experiences to share, and a wider range of topics to explore.

"This year, there were new participants who had never been to the SMPTE Media Technology Summit before, especially from groups that maybe didn't even have any idea that SMPTE existed or just didn't see how it applied to them," said Kari Grubin, project director for SMPTE Rapid Industry Solutions (RIS) On-Set Virtual Production (OSVP). "These new participants and the change in the structure provided the conference with different avenues for people to be able to learn and enjoy the content."

This article offers an overview of the major topics covered throughout the conference's 40-plus technical sessions and its 20 other sessions on specific areas of interest. It will also describe some of the event's other key highlights.

Virtual Production

The SMPTE Summit officially brought the Society's first year of focus on virtual production to a close—with much more to come. Spearheaded by the 2022 IBC Show in Amsterdam and followed later by a presentation at the SMPTE+ On-Set Virtual Production Foundations event, the focus on virtual production has helped industry professionals discover how their colleagues are solving common next-generation challenges.

A SMPTE member for over a decade and a regular speaker since

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Panel discussion: "Translating from the Art Department to the Virtual Stage — VAD in Action." Panelists L-R: Jeremy Hochman, Megapixel; Kathryn Brillhart, cinematographer; Erik "Wolfie" Wolford, cinematographer; Kristen Turnipseed, Lux Machina; and Daniel Warner, Brompton.

2013, Kari Grubin has been the project director for SMPTE RIS OSVP for nearly two years. Tasked with understanding the needs of new and existing ecosystem partners and providing support, she surveyed over 30 companies and individuals about the pain points they were experiencing around virtual production. Her data led to the official launch of the advisory group in the summer of 2021, which has since built programs on two main points of need: education and training, as well as interoperability.

The first day of the SMPTE Summit was devoted primarily to the rapid growth in virtual production solutions. Alongside David Long, education co-chair for SMPTE RIS OSVP, Grubin welcomed attendees and closed out the sessions by discussing the advisory group's next plans. Three of the sessions in particular were critical in demonstrating how technical tools are managed and leveraged on-set to support a team's entire creative vision.

Following up on the basic components discussed at the prior SMPTE+ event, "Translating from the Art Department to the Virtual Stage—VAD in Action" explored how to create assets for realtime rendering and move them from the workstation to an LED volume. Experts from companies like Halon, Perforce, The Third Floor, and Orbital Virtual Studios discussed ways of leveraging VAD tools to ensure success throughout the entire pipeline, from virtual scouting, to previz, to lighting and blocking. By the end of the panel, attendees learned how to follow a comprehensive decision tree and appropriate application processes for deploying assets, choosing between plates and original graphic elements, optimizing characters and digital twins, and confirming ideal virtual environments.

Another session, "Supporting the LED Stage—Practical Walkthrough of Volume Control Tools" showed how critical it is for the Volume Control Technology team to interact successfully with their tools. Addy Ghani, vice president of virtual production at Disguise, brought together other experts from organizations like ARRI and Planar Systems Inc., to walk through the specific tools being used by the team in what he calls "mission control." These tools help organize graphic assets, direct system controls and assets to the LED walls, and ensure that the playback is as smooth as possible, regardless of whether the type of captured content is scripted or broadcast. Experts prepared the audience for nearly everything that can happen before they go on set, demonstrating in-person how several components can create an adequate space for the creative process.

The final session showed how to leverage the technical opportunities of an LED volume stage while navigating potential obstacles during the image capture process. Industry leaders like Megapixel, Brompton, and Lux Machina explored how to prepare practically for various aspects of production, including ways that the in-camera visual effects process is different from a traditional set or green screen environment. From choices for cameras, lenses, lighting, camera tracking, and monitoring to final-esthetic decisions like volume architecture, pixel pitch, and color space, the speakers helped the audience anticipate what tradeoffs they will have to make when they build their own LED volume stage tech stack.

Following lunch, the first 150 people to register for the SMPTE Summit were able to sign up for exclusive field trips to see the LED stages of three virtual production studios. The studios aligned their specific learning programs with each of the three previous segments, as follows:

- **Orbital Virtual Studios**, "The Virtual Art Department in Action"
- **XR Studios**, "Cinematography and New Creative Capture Workflows"
- **Disguise Studio**, "Volume Control Tools on the LED Stage"

Each studio offered a completely different stack of equipment that was built to their specific needs, from the LED backwalls and ceilings to the servers, tracking

Keynote speaker Anna Herruzo

Discussion on "Leading Edge Technologies and the Effects on Creative Choices. "Panelists included Marc Zorn, Danielle Costa, Marvel Studios; David Stump, cinematographer; Kylee Pena, SMPTE Hollywood Region Governor; Joachim Zell, Barco; Belinda Merritt, pixitmedia; Bruce Markoe, MAX; Josh Limor, Paramount Global.

systems, cameras, and render clusters. Regardless of which one of the three studios the participants had attended, they saw how broad the use cases for these tools can be and how each component of the LED stage can be swapped for their own creative projects.

"We heard amazing responses from the people who got to see what happens on a day-to-day basis with these new technologies," said Grubin. "And it wouldn't matter if it was virtual production or anything else, you don't realize there are so many people who do not have access to that information. There were industry veterans who came back with amazing comments like, 'Wow, this was so useful.' That sentiment was shared by people across the board who attended the conference, because this isn't cookie-cutter and one-size-fits-all—virtual production is very flexible in the way that the technology gets used and how things are put together. It really put it in perspective."

Art and Technology Combined

For a highly technical audience like SMPTE, discussions of art are a welcome opportunity to explore the many creative aspects of the industry. The keynote address for the 2022 SMPTE Summit and a few other sessions brought this opportunity to the forefront.

Ana Herruzo, who holds a doctorate in architectural communication and is an associate professor at Arizona State University, gave the keynote address at the SMPTE Summit. In "Enhancing Creative Disciplines Through Emerging Computational Media Tools," Herruzo showed how technological innovation and emerging media arts can enhance each other. She argued that advances in computer science and technology have allowed people to explore and innovate in designing interactive and immersive media projects, thereby creating unique digital experiences. However, Herruzo also stressed how important it is to remain aware of potential ethical incursions that may occur when using new computational tools like artificial intelligence, which could extract and analyze user information ambiguously and thus lead to privacy issues and biased treatment of users. Her presentation ended by demonstrating how the industry can begin to discuss and reflect upon these challenges.

"I received wonderful feedback from the audience after the presentation, and their takeaways were surprising," said Herruzo. "Some mentioned how they would love to start working on creative projects, and others how they enjoyed unique examples of bringing media outside the entertainment industry by using engineering and computational tools for artistic or architectural projects. This just shows how creative disciplines are fast evolving into cross-disciplinary practices that are no longer isolated from scientific or technological tools."

Another session—chaired by Adam Lesh, founder of the Maker Foundry—discussed the convergence among video games, movies, and TV in an emerging Web3 ecosystem. While the prospect of true content ownership under Web3

opens new possibilities, experts in this session explored how some necessary standards could ensure true interoperability and composability across the metaverse. Particularly, the development of Web3 may pose challenges for Studio IP, but the metaverse also opens new and exciting opportunities to engage with consumers and encourage them to promote their IP.

Perhaps, the most well-visited and popular session on the art and technology topic was "SMPTE Hollywood Section Media Innovation: A Discussion of Leading Edge Technologies and the Effects on Creative Choices." In this highly interactive event, representatives from Marvel Studios, IMAX, Paramount Global, and others took questions from the audience and talked candidly about new media technologies within Hollywood moviemaking. Clips and short demonstrations on secondary media advances such as gaming, virtual reality, small-screen and mobile viewing, online experiences, social media, and second-screen viewing also helped provoke in-depth discussions on how they will influence the industry's craft, creative choices, and long-term vision.

Audio Engineering

The focus on audio engineering will always be an essential topic for the M&E industry. In "AES Partner Program: Audio Networking and Control Applications in Today's Production Environment," experts talked about new standards in the audio engineering world, including how AES standards overlap with SMPTE standards and work together. Attendees got a first-ever preview of the new AES70 21 standard for managing stream connections and how it is usable with either AES67 for audio streaming or its sibling SMPTE ST 2110-30.

The presentation showed how other AES media protocols like SMPTE ST 2110 and SMPTE ST 2059 are now actively applied to both wide-area and cloud applications. The companion AES70 standards suite also defines a scalable control-protocol architecture for professional media networks by detailing open control architecture for the audio application of networks. Attendees got insights into why network control and communication is such a hot topic.

Artificial Intelligence/Machine Learning

Sessions on artificial intelligence and machine learning also enlightened audiences on how emerging technologies can shape M&E. Yves Bergquist, the director of AI and neuroscience in media at the University of Southern California's Entertainment Technology Center (ETC), gave an illuminating presentation on "AI Ethics in Media." The session was based on a paper published in May that represented research performed by ETC and SMPTE's Joint Task Force for Artificial Intelligence in Media. As the media industry's very first primer on AI ethics, the paper and the resulting presentation laid out a concrete framework for considering and implementing ethical principles in AI development.

Another notable session was led by engineers from Walt Disney Studios, Microsoft, Warner Bros. Discovery, and Universal Pictures. The four representatives introduced attendees to the exciting machine-learning applications being explored in the M&E industry. These applications can not only archive and store digital media, but also create a conversational, virtual AI character that will automatically generate responses.

Environmental Sustainability

Concern for the environment has been growing across the industry. The SMPTE Summit hosted discussions on this important issue with the goal of promoting ideas and technologies that will help build a better planet for generations to come.

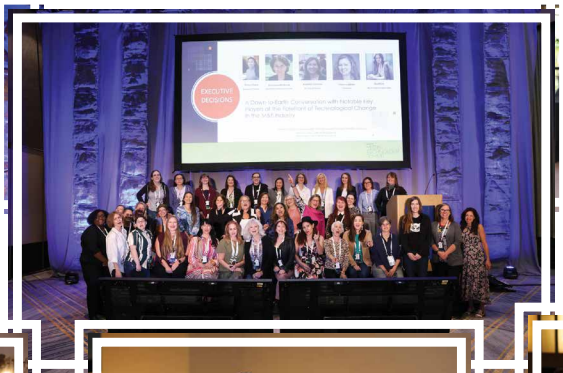
In the session "Sustainability in Media Tech Is Happening, but Work Still Needs to Be Done," several experts discussed the many ways in which the M&E industry can collaborate more efficiently to ensure more sustainable, energy-preserving practices.

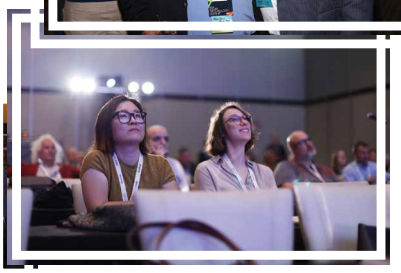
One study by Cassidy Phillips, VP of networking solutions at Imagine Communications and one of the panelists, showed how moving production to SMPTE ST 2110 with COTS IP core can save substantial money and equipment by reducing overall energy consumption. Specifically, the maximum load of a 512 × 512 SDI core produces around 9 kW/h, whereas the maximum load of a > 512 × 512 COTS IP core produces around 3.6 kW/h. Over seven years, this means that the COTS IP core saves over 323 MW—a striking discovery that had not been previously discussed at a conference.

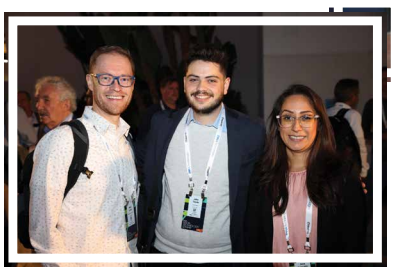
Because the SMPTE ST 2110 alternative to SDI also takes a faster, more direct pathway in the production workflow, its integration with COTS IP means less power consumption, and rack space, saving energy and space. As Phillips noted, the SMPTE ST 2110 with COTS IP infrastructure simplifies carbon neutrality for facilities while still providing the same live production experience as legacy SDI.

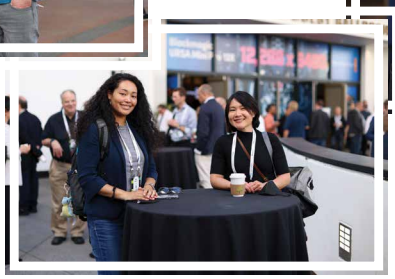
Additionally, Thomas Edwards, principal solutions architect for global accounts at Amazon Web Services (AWS), presented "Media and Entertainment Sustainability on the Cloud." Edwards noted that while M&E companies are committing further to the development of sustainable businesses for employees, customers, and communities, they also want to use cloud computing tech to improve and reinvent their operations. These technologies include such IT resources as the on-demand delivery of computer power, databases, storage, and applications that are accessible over the internet with pay-as-you-go pricing. Edwards showed that these dual interests can work in

Scenes from the Summit









tandem because establishing more efficient business practices in the cloud can also increase the drive toward sustainability.

In his presentation, Edwards analyzed what AWS calls the "shared responsibility model"—a framework in which cloud providers take responsibility for optimizing the cloud's infrastructure and energy consumption while M&E companies take responsibility for using sustainable workloads and resources within the cloud.

Major Partner Presentations

Society is built solely from its collaboration with industry leaders. So, naturally, SMPTE cannot forget the massive contributions made by its other major partners this year.

The Motion Picture Association (MPA) announced changes to its Trusted Partner Network (TPN) that will become active in Q1 2022. In short, TPN is an initiative to raise awareness about content security for vendors with Walt Disney Studios Motion Pictures, Paramount Pictures Corporation, Netflix Studios, Universal City Studios, Sony Pictures Entertainment, and Warner Bros. Discovery as its members. The changes to the newly launched and expanded program include a massive overhaul of the existing best practices to include cloud security; a new technology platform and membership model; assessments for applications and cloud technologies; the ability for service providers to self-report non-TPN security status; and an upgraded, adaptable approach to meeting the various security risk profiles intrinsic to the M&E industry. In doing so, MPA has collaborated with the Cloud Security Alliance (CSA) and multiple assessing, content-owning, and vending companies to recognize and represent all points of view.

Additionally, J. David Hoffman, business development manager for the Americas at Blackmagic Design, presented what amounted to a state-of-affairs address for the media industry. In "New Hybrid Workflows in the Age of Volumes," Hoffman argued that the once-separate workflows for broadcast and cinema have converged over time, particularly with the cross-utilization of cinema cameras and broadcast tools like switchers and routers. This convergence has created a simple production setup for use in new hybrid workflows—a setup that Hoffman demonstrated to allay the audience's concerns about needing to invent new tools, raise budgets, and increase support labor.

"Basically, we don't need to reinvent the wheel here," Hoffman said. "Some of the people who've never worked in a broadcast environment need to understand that some situations have been solved, and that we are already setting up these micro broadcast facilities. And even then, industry veterans need to understand that broadcast facilities no longer get built and stand for 20 years like they used to."

The Society would like to thank Hoffman for presenting at the SMPTE Summit and Blackmagic overall for sponsoring the whole event, assisting in other events over these many years, and always providing necessary, top-notch equipment.

"SMPTE is changing the way that they're approaching the market," Hoffman said. "For a relatively young company like Blackmagic, SMPTE gives us opportunities to present our gear, message, and efforts as a professional-grade company while standing on the same stage with long-established brands. It's a neutral zone for all of us to come together, have conversations, and find time to work on things together."

Special Events: Fellows Luncheon, Women in Post, Awards Gala

Returning to in-person attendance meant that everyone could once again enjoy the many mainstays of the SMPTE Summit.

The Fellows Luncheon recognized and celebrated 12 new SMPTE Fellows for lending their continued expertise to the growth of motion picture, television, and other related industries. The attainment of the outstanding Fellow title sets these honorees apart from other engineers or executives within M&E.

On Wednesday, a 60-minute panel celebrated female executives working in post-production by hosting an open, down-to-earth conversation with notable key players at the forefront of technological change in the M&E Industry. Presented by the Hollywood Professional Association's (HPA) Women in Post (WIP) program and SMPTE Hollywood, the panel was moderated by Annie Chang, VP of creative technologies at Universal Pictures, and included Emmanuele Borde, executive vice president, Post Media Center, Sony Pictures Entertainment; Paulette Pantoja, CEO, Blu Digital Group; Theresa Miller, CIO and executive vice president, Lionsgate; Melody Hildebrandt, president, Blockchain Creative Labs; and Belinda Merritt, director of sales and marketing, North America, pixitmedia. The next day, a 90-minute Hollywood Professional Association Women in Post Luncheon was held at the American Society of Cinematographers (ASC) clubhouse.

Finally, the Awards Gala and a poolside afterparty on Thursday officially closed out the SMPTE Summit. Honorary Membership, the Society's highest accolade, was conferred upon filmmaker Ang Lee and long-time industry consultant Charles Jablonski. The title recognizes individuals who have performed distinguished service in the advancement of engineering in motion pictures, television, or in the allied arts and sciences.

Lee has extensively pioneered innovation in the deployment of new technologies to enhance theatrical storytelling. Particularly, Lee's use of advanced technologies—such as 3D and higher frame rates in the films *Life of Pi*, *Billy Lynn's Long Halftime Walk*, and *Gemini*

Scenes from the Awards Gala

Man—exemplify his creative use of new technologies to draw viewers further into the story and the characters' emotional states.

As a Fellow and recognized leader of SMPTE, Jablonski has served in a variety of Section and Board roles—especially as president from 1999 to 2000—and continues to champion the education of the entertainment industry and provide support to those entering the industry. For decades, he has pushed the state-of-the-art in entertainment production and distribution, as well as his service to the education and mentorship of young entertainment engineers. He has played key roles in establishing the use of new technologies at the Olympics, in transitioning television operations and transmission from analog to digital processes, and in working with start-ups to advance and enhance the quality of content for the consumer experience.

"What I was most excited about is recognizing these people who have put in 40, maybe 50 years of their life into this industry," said Renard Jenkins, the Society's president starting January 2023. "A lot of times, we as engineers or creative technologists are more introverted; we sit in the back of the room, we get the work done, but we don't always get the recognition for the things that we do. The Awards Gala, for me, is about recognizing the unsung heroes."

Monica Brighton, the recipient of the 2021 Louis F. Wolf Jr. Memorial Scholarship Award and a graduate student at Toronto Metropolitan University, hosted the Awards Gala and likewise spoke about the importance of the event.

"At the end of the online version of the ceremony last year, I got asked to host, and I thought they were joking," said Brighton. "It was such an honor to be asked to host, and I honestly didn't believe them. It means so much to feel like you are part of something bigger outside of your hometown, to be recognized on an international scale."

Conclusion

As one conference commences, another slowly takes shape. The diversity of the topics for the 2022 SMPTE Summit was unlike anything seen in the years before, and SMPTE thanked everyone who attended and all experts who participated.

In 2023 SMPTE welcomes a new group of leaders whose vision and energy will drive the next event. Jaclyn Pytlarz will serve as the new chair for the SMPTE Board of Editors, while Iris Wu, founder of Ambidio, and Zandra Clarke, Broadcast Transmission Specialist III at Warner Bros. Discovery, will serve as the 2023 SMPTE Summit program co-chairs.