CONVENTION REPORT

INTERNATIONAL PRO AUDIO CONVENTION
AES DUBLIN2019

Dublin Convention Center
Dublin, Ireland

Program: March 20–23, 2019
Showcase: March 21–23, 2019

For the first time in its history, members of the Audio Engineering Society and visitors from around the world gathered in Dublin, Ireland, for the 146th AES Convention. The spacious and welcoming Convention Centre Dublin proved to be an excellent venue for an international meeting at the heart of Ireland's busy commercial, intellectual, and professional life. Cochaired by Enda Bates, Ben Kok, and Mariana Lopez, the Dublin convention was a resounding success, bringing together attendees from 47 countries to enjoy four days of activities that included some 200 educational and scientific opportunities.

"It was a pleasure to bring the AES convention to Dublin for the very first time," commented convention cochair and Dublin resident Enda Bates, "and an excellent way to kick off the formation of the new AES Ireland regional section in style. It was also great to see a more diverse range of presenters and topics, something which was specifically highlighted by many attendees as a welcome development."

AES president Nadja Wallaszkovits welcomes attendees to the Dublin convention.

Executive director Colleen Harper introduces herself and her plans for the Society.

OPENING CEREMONY AND AWARDS PRESENTATION

Opening the convention to a packed hall, current AES president Nadja Wallaszkovits thanked the convention cochairs and committee warmly for all the effort they had put in to bringing this event about. Nadja was particularly pleased to welcome Colleen Harper, the new AES executive director. "Not only do we have an exceptionally skilled and outstandingly capable person within our team, but for the first time in the history of the Audio Engineering Society we have a lady running our business as the executive director," she enthused.

Colleen Harper then took the stage to welcome everyone and to introduce herself and her work for the Society. "This is a very special, unique community," she said, "that I feel incredibly fortunate to now be a part of. I am excited that my previous experience will help me serve you, our members, and strengthen the foundation of this incredible Society so it can grow and expand in ways that stay true to the mission of AES, all the while connecting with and helping shape the current and future direction of our industry."

Returning to the podium and highlighting the importance of Dublin as a venue, Nadja Wallaszkovits pointed out that "On top of being a historical and cultural highlight, Dublin is also referred to as the Tech Capital of Europe, where all the most famous high-tech enterprises have settled their European headquarters. Dublin is where you will be able to meet the world's leading audio professionals at the 146th Audio Engineering Society Convention. Once again this outstanding international event will unite audio engineers, creative artists, scientists, and students with the dedicated fields of industry, by promoting advances in audio and disseminating new knowledge and research."

President Wallaszkovits thanked the convention cochairs, committee, and volunteers warmly for all the effort they had put in to bringing this event about. "We all know that AES conventions do not happen of their own accord," she said. "The organization of this exciting convention program is based on the tremendous energy and commitment of the convention committee, AES Headquarters office, as well as the numerous supporting persons within and around our team. This is partnered by the vital process of bringing together exhibitors and sponsors to create an exhibition for the latest audio technology and services. Thanks to the dedication of the volunteers involved, supported by a lot of hard work from headquarters staff and contractors, we are looking forward to a wonderful convention with an outstanding program."

Convention cochairs, from left, Ben Kok, Enda Bates, and Mariana Lopez add their welcomes to the assembled company.

The AES is particularly indebted to the following committee members for their hard work in putting together an outstanding event: Andrew Hines and Theodoros Zioutos (Facilities); Jamie Angus-Whiteoak and Róisín Loughran (Papers); Magdalena Piotrowska, Ana Monte and Jimmy Eadie (Tutorials and Workshops); Fiona Smyth (Technical Tours); Magdalena Piotrowska (Student & Career Events); Claudia Nader Jaime and Malachy Ronan (Student Volunteers Coordinators); Glenn Lorbecki (Professional Sound Expo).

Welcomes, introductions, and thanks from the convention cochairs included emphasis on diversity and inclusion—a primary theme throughout the organization of the event, driven by Mariana Lopez' challenge to the community to support and participate in the Society's initiatives. Lopez also moderated the Diversity and Inclusion Committee's Town Hall meeting the next day, proposing that questions about how the Society moves forward toward equality "are ultimately about who we are, and who we hope to be." The work of committee members and volunteers was fulsomely recognized by the chairs.

Announcing publications awards, AES Journal editor Bozena Kostek was pleased to present Best 2018 Journal Paper awards to two cowinners. Lode Vuegen, Peter Karsmakers, Bart Vanrumste, and Hugo Van Hamme were honored for their paper "Acoustic Event Classification Using Low-Resolution Multi-Label Non-Negative Matrix Deconvolution" (DOI: https://doi.org/10.17743/jaes.2018.0018), while Ramona Bomhardt, Isabel C. Patino Mejia, Andreas Zell, and Janina Fels were recognized for their paper "Required Measurement Accuracy of Head Dimensions for Modeling the Interaural Time Difference" (DOI: https://doi.org/10.17743/jaes.2018.0005).

The best peer-reviewed paper award at the convention was presented by papers cochairs Róisín Loughran and Jamie Angus-Whiteoak to Matteo Torcoli, Alex Freke-Morin, Jouni Paulus, Christian Simon, and Ben Shirley for their paper "Background Ducking to Produce Esthetically Pleasing Audio for TV with Clear Speech" (paper 10175), which is Open Access and therefore freely available to anyone from the AES E-Library. The Best Student Technical Paper winner was Shelley Ann McCarthy Buckingham and Malachy Ronan for the paper "Factors Contributing to Gender Imbalance in the Audio Industry" (paper 10159).

Exemplifying the best in audio engineering techniques and technologies, along with contributions to the Audio Engineering Society's mission, a distinguished slate of awards was offered by Awards Committee Chair Alex Case and AES President Nadja Wallaszkovits. The awards highlighted outstanding achievements and contributions in audio engineering application, technology, and to the Society, including the Board of Governors Award, Fellowship Award, and Silver Medal Award. The AES Board of Governors Award is given for outstanding contributions to the Audio Engineering Society. This year's recipients, for chairing recent AES conventions and conferences, included Paul Gallo (two awards), Toru Kamekawa, John Krivit, Valerie Tyler, Christian Uhle, and Yuko Watanabe. AES Fellowship Awards were presented for contributions to the advancement in or dissemination of knowledge of audio engineering or in the promotion of its application in practice. This year's recipients were Joel Brito, for advancing the audio industry in Brazil and Latin America through decades of broad contributions to the Society, and John Dawson, in recognition of his outstanding audio hardware design achievements and contributions to the AES over many years. The prestigious AES Silver Medal was presented to AES Fellow Jamie A. S. Angus-Whiteoak for a lifetime of important contributions to audio engineering and instruction, and for outstanding achievement in the field of audio engineering.

KEYNOTE

During a compelling keynote address, Stephania Serafin of Aalborg University in Denmark, gave the audience a whistle-stop tour of what she called sonic interactions for inclusion. It's an area, she said, that sits between interaction design and sound/music computing, and has been the topic of a European

Stephania Serafin explains sonic interaction.

Best Peer-Reviewed Paper Award presented to Matteo Torcoli and his colleagues.

Best Journal Paper Award 2018 presented to Ramona Bomhardt.

Best Student Paper Award presented to Shelley Ann McCarthy Buckingham.

Board of Governors Award presented to Paul Gallo.

Board of Governors Award presented to Toru Kamekawa.

Board of Governors Award presented to John Krivit.

Board of Governors Award presented to Valerie Tyler.

Board of Governors Award presented to Christian Uhle.

Board of Governors Award presented to Yuko Watanabe.

Fellowship Award presented to Joel Brito.

Fellowship Award presented to John Dawson.

The AES Silver Medal presented to Jamie Angus-Whiteoak

Alex Case chairs the awards presentation.

146TH CONVENTION AWARDS PRESENTATION

research project that ran from 2007–2011. Serafin looked at sonic interaction in virtual environments, as well as immersive technologies that could be used with some innovative interaction hardware. Users could, for example, experience a beautiful walk in the mountains on a walking machine without actually having to travel to such a region. Stefania also discussed a project on the social

training of children with autism that concentrated on natural interactions. Musical instruments were some of the best interfaces, it was found. In a project on augmented hearing, working with GN Resound and Sennheiser, natural sounds could be integrated with artificial cues. Work was also progressing on HRTFs On-demand for Binaural Audio (HOBA), based on image-guided pinna contour

extraction of appropriate HRTFs from a database. The idea was to enable good binaural sound everywhere and for everyone.

PSE AND PRODUCT SHOWCASE

AES Dublin attendees had the opportunity to learn from top-name engineers and producers presenting at this year's Professional Sound Expo, taking place inside the Product Showcase. Open to all AES badgeholders, the three-day expo offered a chance to explore the hardware and software on display at the convention and interact with professional audio manufacturers and distributors. Presentations featured audio networking, broadcast audio, postproduction/ sound for picture, and recording and production topics. Sponsoring partner brands included Genelec and Tieline with additional presentations by Lawo and Prism Sound.

Among the sessions were interesting repeat presentations on "Remote Production— Thoughts on the Evolution of Live Events Broadcasting," given by Patrick Warrington, senior director for technical business development for Lawo, and "Make the Most of Your Room" with Eric Horstmann of Genelec. Charlie Gawley of Tieline gave a number of renditions of the presentation "Mitigating Audio Packet Loss Over IP for Live Broadcast". On the Saturday Eric Horstmann treated listeners to "Immersive Audio Demystified" during which he explained many of the ins and outs of this complex topic. Complementing this, Diogo Goncalves of Sound Particles explained "3D Sound Design Techniques and Immersive Audio" to an attentive audience.

SPECIAL EVENTS

Among a number of attractive special events offered at the convention was a mixer party, sponsored by Tyrell, which took place on Thursday at 6pm in the Liffey B Hall, within the Product Showcase. Attendees had the chance to meet each other and catch up with old friends in a convivial atmosphere. Also in meet-and-greet vein was a Diversity and Inclusion Party on the following evening, which was held at The Brew Dock in central Dublin, and sponsored by iZotope. Before this on the Friday evening was a spatial electro-

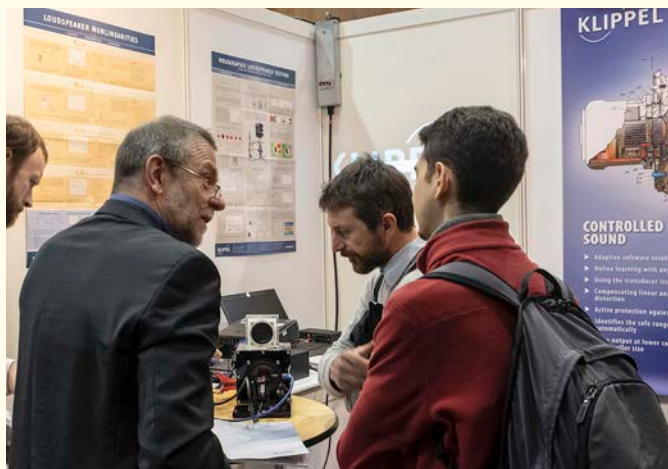Visitors check out the software and hardware on display at the convention

acoustic music concert featuring an octophonic loudspeaker array. The program included works by panelists on the workshop on Spatial Audio for Contemporary Music Performances and Theatre, including composers of the Spatial Music Collective.

The Richard Heyser Memorial Lecture is one of the main features of AES conventions, organized by the Technical Council and supported by a grant from the Heyser Foundation. At the 146th Convention the lecture was given by digital reverberation pioneer David Griesinger. David has drawn enthusiastic crowds for many of his talks at previous events, where vast amounts of information have usually been packed into a relatively short time. His ideas are always enlightening and sometimes controversial. Introducing the lecture, Technical Council Chair Steve Hutt said that there's probably no one that listens to recorded audio that hasn't experienced the essence of David Griesinger's contribution to the field. Griesinger's Heyser lecture was entitled "Learning to Listen," and described a few of his experiences working with artists and musicians that taught him to hear what makes their art work. "These experiences changed my life," said David, "and I hope that describing them will help others understand some of the amazing abilities of our ears and brains to detect, separate, and ultimately decode sonic information." Early on in his talk he suggested that attention is more important than intelligibility, also that "sound is not about microphones, speakers, or halls. What matters is, Does hearing the sound move your heart?" He went on to talk about many of his early investigations into things like tape distortion and sound quality from different types of microphones, pointing out the importance of pitch and phase representation in music. Headphones, he said, must be equalized individually for each listener at the eardrums so that the response matches that of a frontal loudspeaker, if you want frontal localization without head tracking, and correct timbre.

A lot of the later part of David's talk related to the quality of sound in concert halls. Much of his recent work has been related to the issue of how easy or difficult it is to localize individual sound sources in a reverberant field. His metric that relates to this is known as

David Griesinger (center) is presented with the Richard Heyser Memorial Lecture certificate by officers of the Technical Council, Jürgen Herre (left) and Steve Hutt (right).

LOC, and is intended to calculate nerve firings in the ears from a binaurally recorded signal, comparing those arising from continuous direct sound to those from reflections. The sound before 5–7 ms is considered to be direct sound, and that afterwards is treated as reflections. This differs considerably from standard metrics for "early" versus "late" sound, where 50–80 ms is commonly used for things like clarity metrics. Keeping this LOC value above 3 dB in a hall will generally result in it sounding good, as will maximizing the reverberant level at times greater than 160 ms when late reverberation is most audible.

TECHNICAL PROGRAM

The convention included a comprehensive program of workshops and tutorials in the fields of studio recording, live sound, networked audio, broadcast and streaming, music production, postproduction, game audio, spatial sound, audio for AR/VR/XR, product development, and more. Over thirty tutorials featured audio fundamentals and advanced concepts including recording and production case studies, spatial audio design and implementation, and the integration of new audio tools and technologies. Specific applications ranging from dance music production to recording an orchestra, car audio, signal processing, and beyond were also examined. There was an increased emphasis on creative practice compared with many previous conventions.

Examples of innovative tutorial sessions during the convention included "Dance Music Training—The Unregulated Industry and CPD—Analytical Listening Skills" with Alexandra Bartles and Rick Snoman. Electronic Dance music, they said, has grown into a multibillion dollar industry but the training remains unregulated. Students, it was suggested, find themselves working through a minefield of misinformation, learning and practicing misguided dogmas and not learning how to be innovative but instead how to copy. They discussed a code of practice developed by EMTAS.org,

Diversity and Inclusion Town Hall: from left, Jonathan Wyner, Agnieszka Roginska, Colleen Harper, Nadja Wallaszkovits, Cesar Lamschtein, Leslie Gaston-Bird, and Mariana Lopez

Panel on Integrating History into the Modern Audio Curriculum: from left, Mariana Lopez, Mark Drews, Scott Burgess, and Gabe Herman

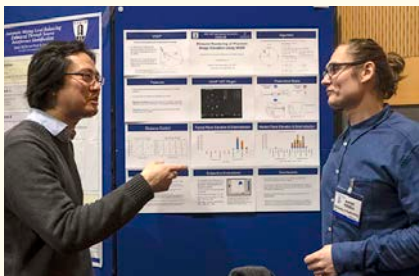Breaking Down the Studio Wall: Kevin Killen, left, and Alex Case

Panel for Metadata and Why Every Audio Engineer Needs to Understand It: from left, standing, Drew Waters, Buddy Judge, John Krivit, and Paul Jessop, seated, Lynne Earls and Helienne Lindvall

designed to address the need for improved educational standards. Ana Monte's "The Sound of War: Capturing Sounds in Conflict Zones" shared her experiences working on *Picturing War*, a Film Academy Baden-Wüttemberg student documentary directed by Konstantin Flemig. She and the production team followed journal-

ist and photographer Benjamin Hiller as he captured images of a YPJ all-female fighter unit, a refugee camp in Erbil, the Murambi Genocide Memorial in Rwanda, and Kurdish soldiers fighting in Northern Iraq.

Workshops included themes such as "Audio, Accessibility, and the Creative Industries," "Media Preservation and Recovery," "Mix It! Are There Best Mixing Practices?" A session entitled "Irish Innovators in Audio" hosted by AES past president Alex Case had Irish engineers

Poster presenters Hyunkook Lee (top) and Marques Hardin (bottom) explain their work.

From left, Colleen Harper, AES executive director, Nadja Wallaszkovits, AES President, Jamie Angus-Whiteoak, 146th papers cochair, and Leslie Gaston-Bird, Diversity and Inclusion Committee chair

and producers Kevin Killen, Brian Masterson, and Bill Whelan sharing the insights that have enabled them to find decades of success, even as the art, technology and industry changed continuously around them. "Video Creations for Music, Virtual Reality, Six Degrees of Freedom (6DoF) VR, and 3D Productions–Case Studies" was chaired by Tomasz Zernicki, during which professional audio engineers and musicians talked about their 360°, 3D, and ambient productions combining sound and vision. Panelists explained the process of making 3D audiovisual footage displayed in a 360° dome as well as spatial recordings of concert music. The workshop focused especially on the usage of spherical microphone arrays that enable the recording of an entire 3D sound scene as well as six degrees-of-freedom VR.

"For topics like cathedral acoustics and spatial electroacoustic music and education, there was a link between the technical program, off-site and special events," said convention cochair Ben Kok. "Overall, immersive/3D sound and spatial audio had a strong presence at the convention, covering both sonic capture as well as reproduction through loudspeakers or headphones."

A strong line-up of research papers and engineering briefs had been comprehensively reviewed under the guidance of the convention papers chairs. Loudspeakers,

Paper/Lectures: Kirsten Hermes (top) explains "Factors Influencing the Spectral Clarity of Vocals in Music Mixes," while Wolfgang Klippel introduces "Green Loudspeaker Design."

perception, DSP and machine learning were strong among the themes of presentations included in the program, with contributions also on spatial audio, MIR, audio and games, production and synthesis, and physical systems and circuits. In addition to the papers presentations in lecture sessions, a number of poster sessions had been organized, and poster presenters had an opportunity to give a short preview of their work during poster-introduction slots during the lecture sessions.

Engineering briefs tend to attract reports on late-breaking work, or work in progress, perhaps of a more practical nature, and there were some fascinating reports presented at the Dublin convention. Presentations included one on the design of a multi-zone control system in a vehicle cabin, from a group of Korean researchers, and another on a new approach to the design and delivery of critical acoustic facilities, from Jim Dunne of Smart Studio in Dublin.

TECHNICAL TOURS

On the Thursday of the convention a tour had been arranged to the Abbey Theatre, which is the national theater of Ireland. It was founded in 1904, as part of the Anglo-Irish literary revival by the poet and playwright W. B. Yeats and noted dramatist Lady Augusta Gregory. Since its foundation, the Abbey has been a significant icon, not just of Irish cultural and literary life, but also of the changing social and political landscape of Ireland. This was a backstage tour that took in the main auditorium and stage. It included a discussion of the technical aspects and challenges of the space, as well as a discussion on sound design over tea/coffee in the Abbey bar afterwards.

Some of Dublin's finest architecture—and acoustics—is reflected in its churches. Church acoustics are among the most fascinat-

This large group paused for a photo before leaving for the technical tour of Windmill Lane Studios.

ing and complex of listening spaces. A tour entitled "Church Acoustics and Sonic Heritage" included a workshop on sonic heritage and acoustic archiving in the 18th-century Chapel at Trinity College Dublin. Designed by Sir William Chambers, the chapel is a jewel of 18th-century architecture. It is of note that the earlier chapel in Trinity was built under the provostship of Narcissus Marsh, who coined the word "microphone."

On the Friday, attendees had a chance to visit the famous Windmill Lane Studios, founded in 1978. The studio quickly became synonymous with U2 and a cult icon. All of the band's early albums were recorded there. With a world-class audio production facility, Windmill Lane has been at the center of Dublin's music industry for forty years. The tour included a demo, walk, and talk of the state-of-the-art studios (featuring SSL G-Series and Neve VR Legend consoles, and 5.1 surround-sound system for postproduction and ADR), and "an excursion into a piece of recording history."

STUDENT EVENTS

During the Student Delegate Assembly on Day 4 of the convention, three candidates for the coming year's election for the Europe International Region vice chair were nominated. They were Shelley Ann McCarthy Buckingham, Kamila Pietrusińska and Krzysztof Kicior. Kamila Pietrusińska was the winner. Awards and prizes were presented for the Student Recording Competition categories and the Student Design Competition.

The immersive audio emphasis was continued into AES Dublin's innovative hands-on sessions, part of the Convention's dedicated student programming. Rebecca Stewart of Imperial College gave a master class on "Build a Wearable Binaural System with Bela." Bela, she said, is an ultralow latency embedded computer designed for audio applications. The session introduced how to build sensor circuits and program the Bela board with Pure Data, as well as how

Convention cochairs: from left, Enda Bates, Mariana Lopez, and Ben Kok

Papers chairs: Jamie Angus-Whiteoak, left, and Roisín Loughran

Workshops/tutorials chairs: from left, Jimmy Eadie, Ana Monte, and Magdalena Pietrowska, who was also the student and career events chair.

Professional Sound Expo chair: Glenn Lorbecki

AES THANKS THE 146TH CONVENTION COMMITTEE

Facilities chairs: Theodoros Zioutos, left, and Andrew Hines

Left, Malachy Ronan and Claudia Nader, who coordinated the student volunteers.

Top: Technical Council chaired by Steve Hutt, fifth from left.
Middle: Standards Meeting with Rich Cabot, left, and Bruce Olson.
Bottom: Publications Policy Committee meeting chaired by Josh Reiss.

Student events at the convention: top, Student Delegate Assembly members; middle, a bustling Education and Career Fair; bottom, a group of student competition winners.

basis of Ambisonics, and how this is put into practice using microphones and freely available, cross-platform production tools such as the DAW Reaper, the Facebook Spatial Workstation, and the ambiX plugin suite, when producing content for online platforms such as YouTube and Facebook.

The student program also included the bustling Education and Career fair and the student recording and design competitions. Student attendance was typically strong for AES Dublin, a harbinger of future Society leadership as evidenced by former student members who attended AES Dublin as professional members and participated in paper presentations and workshops, along with AES Dublin planning.

AES MEETINGS

The AES Standards Committee (AESSC) under the leadership of Bruce Olson and Richard Cabot is the organization responsible for conducting the AES Standards program. It develops and publishes a number of technical standards, information documents, and technical reports within the field of professional audio technology. Working groups with a fully international membership met at the convention, and are engaged in writing standards covering fields that include digital audio, networks and file transfer,

to render an interactive binaural audio scene and incorporate head-tracking. Enda Bates complemented this session with "Composing and Producing Spatial Audio for 360 Video Using Freeware Production Tools," during which he gave a hands-on tutorial with a particular focus on Ambisonics, and spatial audio production using DAWs. The session covered the theoretical

Thomas Sporer (left), Convention Policy Committee char, with David Scheirman, AES past president, and Colleen Harper, AES executive director.

acoustics, audio interconnections, and audio metadata.

The AES Technical Council has been described as the "CTO of the AES." Comprised of 20 expert committees overseeing audio disciplines such as spatial audio, audio for games, and audio for cinema, the AES technical committees bring the world's top experts together to chart a course for the future in each area. Many convention events (workshops, tutorials, etc.) are organized by TCs to stimulate activity and to educate the industry. Most of the TCs held meetings during the convention to discuss activities and to facilitate networking between experts. Coordinated by the AES Technical Council, the technical committees track trends in audio in order to recommend to the Society special papers sessions, workshops, standards, projects, publications,s and awards in their fields. The TC meetings were open to all convention registrants.

A slate of AES committee meetings also took place during the convention, to discuss policy on matters such as publications, conferences and conventions, and awards. The Board of Governors met on the final day (see photo below).

IN CONCLUSION

The Society owes a substantial debt of gratitude to the convention chairs and committee for the sterling work they put in to organizing the 146th Convention in Dublin. There is a vast amount of work that goes on behind the scenes, and for months before an event such as this, much of which happens without the awareness of those that attend. Much of that work is also voluntary, which is a testament to the loyalty and commitment of members of the Audio Engineering Society.

Editors note: papers from this convention can be downloaded from the AES E-Library at www.aes.org/e-lib. More convention photos are posted at http://www.aes.org/events/146/pictures/

The AES Board of Governors meets at the end of the convention.