2019 HPA Tech Retreat Program (subject to possible change)

Monday, February 11

11:00 am - 4:00 pm Registration Open
1:00 pm - 6:00 pm HPA TR-X—eSports: Dropping the Mic on Center Stage

Tuesday, February 12

8:00 am - 6:30 pm Registration Open
9:00 am - 5:30 pm HPA Supersession: Next-Gen Workflows and Infrastructure
details to come but includes Tom Graham of Dolby on Dolby Vision from set to consumer, Tina Eckman of Dolby on Dolby Atmos from set to consumer, and Scott Kramer of Netflix on immersive sound from capture through post
5:30 pm - 8:00 pm Innovation Zone with Cocktails (dedicated demo time)

Wednesday, February 13

7:00 am - 7:00 pm Registration Open
7:30 am - 8:30 am Breakfast Roundtables

1. Saving large amounts of data at low costs, Meghan McClelland, Versity
2. Object storage and analytics/hybrid cloud, Erik Weaver, Western Digital
3. M&E cloud: challenges and solutions, Scott Jeschonek, Microsoft Azure
4. Immersive audio: separating fact from fiction, Ken Tankel, Linear Acoustic
5. Intra-file editing, John Harris, Cinedeck
6. HDMI 2.1 and DisplayPort, Pete Putman, ROAM Consulting
7. AI for film restoration, Alex Zhukov, Video Gorillas
8. Salesforce for Hollywood, Roger Vakharia, Salesforce
9. NABA, DPP, IMF, and content delivery, Chris Lennon, MediAnswers
10. IT challenges in the wake of a media merger, Kevin Scott, Signiant
11. Implementing IMF for broadcast & online: a DPP update, DPP & Mr MXF
12. Immediates: the value of dailies a day earlier, Hugh Calveley, Moxion
13. SFP-based SMPTE 2110 systems, Roy Folkman, Embrionix
14. Diverging strategies for media processing deployment, Max Denton, Telestream

8:30 am - 7:30 pm Innovation Zone open for appointments
See program below for dedicated Innovation Zone hours
8:30 am - 8:45 am Breathe
8:45 am - 8:55 am Welcome
Seth Hallen, HPA
8:55 am - 9:15 am Introduction & Technology Year in Review
Mark Schubin
9:15 am - 10:00 am Washington Update
Jim Burger, Thompson Coburn LLP
A lot has happened in the legislative/regulatory/legal world since last year. How does it affect you? Find out from our resident expert.
10:00 am - 10:30 am Deep Fakes

Moderator: Debra Kaufman, ETCentric
Marc Zorn, HBO
Ed Grogan, Department of Defense
Alex Zhukov, Video Gorillas

It might seem nice to be able to use actors long dead, but the concept of "fake news" takes a terrifying new turn with *deepfakes,* the term that Wikipedia describes as a portmanteau of "deep learning" and "fake." Although people have been manipulating images for centuries – long before the creation of Adobe Photoshop – the new AI-powered tools allow the creation of very convincing fake audio and video. We'll show examples of deep fakes, describe how they're created, and ask if and how content distributors can guard themselves from being purveyors of fake news.

10:30 am - 10:45 am Refreshment Break

10:45 am - 11:00 am The Netflix Media Database
Rohit Puri, Netflix

An optimized user interface, meaningful personalized recommendations, efficient streaming and a high-quality catalog of content are the principal factors that define the end-user Netflix experience. A myriad of business workflows of varying complexities come together to realize this experience. Under the covers, they use computationally expensive computer vision, audio processing and natural language processing based media analysis algorithms. These algorithms generate temporally and spatially dynamic metadata that is shared across the various use cases. The Netflix Media DataBase (NMDB) is a multi-tenant, data system that is used to persist this deeply technical metadata about various media assets at Netflix and that enables querying the same at scale. NMDB is built using the best practices of the Netflix micro-services framework. NMDB uses concepts from SMPTE IMF and ISO BMFF to efficiently model the media timeline across a vast category of use-cases, enabling a uniform search and mining interface. The "shared nothing" distributed database architecture allows NMDB to store large amounts of media timeline data, thus forming the backbone for various Netflix media processing systems.

11:00 am - 11:30 am AI Film Restoration at 12 Million Frames per Second
Alex Zhukov, Video Gorillas

11:30 am - noon Is More Media Made for Subways than for TV and Cinema? (And Does It Make More $$$?)
Andy Quested, BBC

noon - 1:58 pm Lunch (dedicated Innovation Zone time)

1:58 pm - 2:00 pm Quiz answer & announcements

2:00 pm - 2:30 pm Broadcasters Panel
Moderator: Matthew Goldman, MediaKind
Del Parks, Sinclair Broadcast Group
Skip Pizzi, National Association of Broadcasters
Dave Siegler, Cox Media Group and Pearl TV
Richard Friedel, FOX

2:30 pm - 2:50 pm CES Review
Peter Putman, ROAM Consulting

Once again, Pete Putman traveled to Las Vegas to see what's new in the world of consumer electronics.

2:50 pm - 3:15 pm 8K: Whoa! How'd We Get There So Quickly?

Peter Putman, ROAM Consulting

3:15 pm - 3:20 pm Issues with HDR Home Video Deliverables for Features
Josh Pines, Technicolor

3:20 pm - 3:35 pm Refreshment Break

3:35 pm - 5:20 pm HDR "Mini" Session

3:35 pm - 3:40 pm HDR Intro
Seth Hallen, Pixelogic

3:40 pm - 4:00 pm Ambient Light Compensation for HDR Presentation
Don Eklund, Sony Pictures Entertainment

4:00 pm - 4:20 pm 4K HDR in Anime
Haruka Miyagawa, Netflix

4:20 pm - 4:40 pm Pushing the Limits of Motion Appearance in HDR
Richard Miller, Pixelworks

4:40 pm - 5:20 pm Downstream Image Presentation Management for Consumer Displays
Moderator: Michael Chambliss, International Cinematographers Guild
Michael Keegan, Netflix
Annie Chang, UHD Alliance
Steven Poster, ASC, International Cinematographers Guild
Toshi Ogura, Sony

5:20 pm - 5:45 pm Solid Cinema Screens with Front Sound: Do They Work?
Julien Berry, Delair Studios

Direct-view displays bring high image quality in the cinema but suffer from low pixel fill factor which can lead to heavy moiré and aliasing patterns. Cinema projectors have a much better fill factor which avoids most of those issues even though some moiré effect can be produced due to the screen perforations needed for the audio. With the advent of high contrast, EDR, and soon HDR image quality in cinema, it was noticed that the screen perforations have an effect on the perceived brightness and contrast from the same image, though the effect has never been quantified since some perforations had always been needed for cinema audio. Now that high quality cinema audio system are available which are not requiring screen perforations, it appears necessary to quantify this effect.

In addition to luminance measurements, we are evaluating the perception of brightness in HDR using half-plain/half-perforated screens and two projectors, allowing projector power levels to be adjusted to achieve perceptible matches, therefore allowing the effect of perforations on brightness perception to be quantified. Contrast ratio measurement data will be provided and discussed as well.

5:45 pm - 6:00 pm What Just Happened? A Review of the Day by Jerry Pierce & Leon Silverman

6:00 pm - 7:30 pm Innovation Zone Open (dedicated demo time)

7:30 pm - 9:30 pm Welcome Dinner

Thursday, February 14

7:15 am - 5:30 pm Registration Open

7:30 am - 8:30 am Breakfast Roundtables

1. Scalable metadata, Meghan McClelland, Versity
2. Why object storage for M&E? Erik Weaver, Western Digital

3. M&E cloud: challenges and solutions, Scott Jeschonek, Microsoft Azure
4. Immersive audio: separating fact from fiction, Ken Tankel, Linear Acoustic
5. Intra-file editing, John Harris, Cinedeck
6. 8K: Really? Pete Putman, ROAM Consulting
7. Washington update follow-up, Jim Burger, Thompson Coburn
8. Salesforce for Hollywood, Roger Vakharia, Salesforce
9. Microservices and media –made for each other? Chris Lennon, MediAnswers & John Footen
10. Right sizing media services in the cloud, Ian Hamilton, Signiant
11. Implementing IMF for broadcast & online: a DPP update, DPP & Mr MXF
12. Immediates: the value of dailies a day earlier, Hugh Calveley, Moxion
13. SFP-based SMPTE 2110 systems, Roy Folkman, Embrionix
14. Diverging strategies for media processing deployment, Max Denton, Telestream

8:30 am - 2:00 pm Innovation Zone open for appointments.
See program below for dedicated Innovation Zone hours

8:30 am - 8:43 am Breathe

8:43 am - 8:45 am Quiz answer & announcements

8:45 am - 9:10 am A Study Comparing Synthetic Shutter and HFR for Judder Reduction
Ianik Beitzel, ARRI and Stuttgart Media University (HdM)
Aaron Kuder, ARRI and Stuttgart Media University (HdM)

9:10 am - 9:30 am Using Drones and Photogrammetry Techniques to Create Point Cloud Scenes
Eric Pohl, Singularity Imaging

Drone aerial photography may be used to create multiple geotagged images that are processed to create a 3D point cloud set of a ground scene. The point cloud may be used for production previsualization or background creation for videogames or VR/AR new-media products.

9:30 am - 10:15 am Remote and Mobile Production Panel
Moderator: Mark Chiolis, Mobile TV Group
Wolfgang Schram, PRG
Scott Rothenberg, NEP
Nick Garvin, Mobile TV Group

With a continuing appetite for content from viewers of all the major networks, as well as niche networks, streaming services, web, eGames/eSports, and venue and concert-tour events, the battle is on to make it possible to watch almost every sporting and entertainment event that takes place, all live as it is happening. Join these key members of the remote and mobile community talking about what's new for this area and what the workflows are behind the content production and delivery in today's fast-paced environments. Expect to hear about new REMI applications, IP workflows, AI, UHD/HDR, eGames, and eSports.

10:15 am - 10:30 am Refreshment Break

10:30 am - 11:00 am IMSC 1.1: A Single Subtitle and Caption Format for the Entertainment Chain
Pierre-Anthony Lemieux, Sandflow Consulting (supported by MovieLabs)
Dave Kneeland, Fox

IMSC is a W3C standard for worldwide subtitles/captions, and the result of an international collaboration. The initial version of IMSC (IMSC 1) was published in 2016, and has been widely adopted, including by SMPTE, MPEG, ATSC, and DVB. With the recent publication of IMSC 1.1, we now have the opportunity to converge on a single

subtitle/caption format across the entire entertainment chain, from authoring to consumer devices. IMSC 1.1 improves on IMSC 1 with support for HDR, advanced Japanese language features, and stereoscopic 3D. Learn about IMSC's history, capabilities, operational deployment, implementation experience, and roadmap -- and how to get involved.

11:00 am - 11:30 am ACESNext and the Academy Digital Source Master: Extensions, Enhancements, and a Standardized Deliverable
Andy Maltz, Academy of Motion Picture Arts & Sciences
Annie Chang, Universal Pictures

11:30 am - noon Mastering for Multiple Display and Surround Brightness Levels Using the Human Perceptual Model to Insure the Original Creative Intent Is Maintained
Bill Feightner, Colorfront

Maintaining a consistent creative look across today's many different cinema and home displays can be a big challenge, especially with the wide disparity in possible display brightness and contrast as well as the viewing environments or surrounds. It is not practical to have an individual creative session for every possible combination. Even if this were to be done, maintaining creative consistency would be very difficult at best.

By utilizing the knowledge of how the human visual system works, the perceptual model, processing source content to fit a given displays brightness and surround can be automatically applied while maintaining the original creative intent with little to no trimming.

noon - 1:58 pm Lunch and Final Innovation Zone Time (dedicated demo time)

1:58 pm - 2:00 pm Quiz answer & announcements

2:00 pm - 2:45 pm Cloud: Where Are We Now?
Moderator: Erik Weaver, Western Digital
Tim Claman, Avid
Jeff Kember, Google
Marco Rota, Microsoft

2:45 pm - 3:15 pm Digitizing Workflow - Leveraging Platforms for Success
Roger Vakharia, Salesforce

While the business of content creation hasn't changed much over time, the technology enabling processes around production, digital supply chain and marketing resource management among other areas have become increasingly complex. Enabling an agile, platform-based workflow can help in decreasing time and complexity but cost, scale and business sponsorship are often inhibitors in driving success. Driving efficiency at scale can be daunting but many media leaders have taken the plunge to drive agility across their business process. Join this discussion to learn best practices, integrations, workflows and techniques that successful companies have used to drive simplicity and rigor around their workflow and business process.

3:15 pm - 3:30 pm Refreshment Break

3:30 pm - 3:55 pm Leveraging Machine Learning in Image Processing
Rich Welsh, Sundog Media Toolkit

How to use AI (ML and DL networks) to perform "creative" tasks that are boring and humans spend time doing but don't want to (working real world examples included).

3:55 pm - 4:20 pm Leveraging AI in Post Production: Keeping Up with Growing Demands for More Content
Van Bedient, Adobe

Expectations for more and more content are continually increasing – yet staff sizes remain the same or only marginally bigger – how can advancements from machine learning help content creators? AI can be an incredible boon to remove repetitive tasks and tedious steps allowing humans to concentrate on the creative; ultimately AI can provide the one currency creatives yearn for more than anything else: Time.

4:20 pm - 5:20 pm Deploying Component-Based Workflows: Experiences from the Front Lines
Moderator: Pierre-Anthony Lemieux, Sandflow Consulting (supported by MovieLabs)

The content landscape is shifting, with an ever-expanding essence and metadata repertoire, viewing experiences, global content platforms and automated workflows. Component-based workflows and formats, such as the Interoperable Master Format (IMF) standard, are being deployed to meet the challenges brought by this shift. Come and join us for a first-hand account from those on the front-lines.

5:20 pm - 5:45 pm Content Rights, Royalties and Revenue Management via Blockchain
Adam Lesh, SingularDTV

The Blockchain Entertainment Economy: adding transparency, disintermediating the supply chain, and empowering content creators to own, manage and monetize their IP to create sustainable, personal and connected economies.

As we all know, rights and revenue (including royalties, residuals, etc.) management is a major pain point for content creators in the Entertainment Industry. As one recent producer put it: "The process is to cut a deal with a studio, make the movie, release the movie, file a lawsuit, resolve the lawsuit, and then get paid."

Tokens and smart contracts offer an elegant means to solve that problem. We will explore tokenomic models that do away with accounting opacity and streamline rights, royalties and revenue management thereby freeing content creators to do what they do best.

5:45 pm - 6:00 pm What Just Happened? A Review of the Day by Jerry Pierce & Leon Silverman

Friday, February 15

7:15 am - noon Registration Open

7:30 am - 8:30 am Breakfast Roundtables

1. Cloud-storage cost models and gateways, Meghan McClelland, Versity
2. IMF API for locating assets, Bruce Devlin, Mr MXF
3. Carrying on the Tradition: Karl Paulsen and Merrill Weiss Question One Another
4. Blockchain & entertainment: a deeper dive, Adam Lesh, SingularDTV

8:30 am - 8:43 am Breathe

8:43 am - 8:45 am Quiz answer & announcements

8:45 am - 9:10 am SMPTE Update
Barbara Lange, SMPTE

9:10 am - 9:30 am Beyond SMPTE Time Code: The TLX Project
Peter Symes

SMPTE Time Code, ST 12, was developed and standardized in the 1970s to support the emerging field of electronic editing. It has been, and continues to be, a robust standard; its application is almost universal in the media industry, and the standard has found use in other industries. However, ST 12 was developed using criteria and

restrictions that are not appropriate today, and it has many shortcomings in today's environment.

A new project in SMPTE, the Extensible Time Label (TLX) is gaining traction and appears to have the potential to meet a wide range of requirements. TLX is designed to be transport-agnostic and with a modern data structure. Key to the design is a structure of self-identifying TLX Items, each representing data and metadata for a particular attribute such as time or equipment identification, and TLX Profiles specifying requirements and/or constraints for each application. As the title indicates, the proposed standards will incorporate a mechanism for adding additional TLX Items and TLX Profiles as new applications emerge.

The work is still in the development phase, and we would like the opportunity to present the concepts to the HPA professionals and garner feedback and more application information.

9:30 am - 9:50 am Blindsided: the Game-Changers We Might Not See Coming
Mark Harrison, Digital Production Partnership

The number one company in the world for gaming revenue makes as much as Sony and Microsoft combined. It isn't American or Japanese. Marketeers project that by 2019, video advertising on out-of-home displays will be as important as their spending on TV. Meanwhile, a single US tech giant could buy every franchise of the top five US sports leagues. From its off-shore reserves. And still have $50 billion change.

We all know consumers like OTT video. But that's the least of it. There are trends in the digital economy that, if looked at globally, could have sudden, and profound, implications for the professional content creation industry.

In this eye-widening presentation, Mark Harrison steps outside the western-centric, professional-media industry perspective to join the technology, consumer, and media dots and ask: what could blindside us if we don't widen our point of view?

9:50 am - 10:15 am Interactive Storytelling: Choose What Happens Next
Andy Schuler, Netflix

Looking to experiment with non-linear storytelling, Netflix launched its first interactive episodes in 2017. Both in children's programming, the shows encouraged even the youngest of viewers to touch or click on their screens to control the trajectory of the story (think Choose Your Own Adventure books from the 1980's). This presentation delves into how we overcame some of the more interesting technical challenges of the project (i.e., mastering, encoding, streaming), how we utilized SMPTE IMF to streamline the process and why we need more formalized mastering practices for future projects.

10:15 am - 10:40 am HPA Engineering Excellence Award Winners
Moderator: Joachim Zell, EFILM
Joe Bogacz, Canon
Paul Saccone, Blackmagic Design
Lance Maurer, Cinnafilm
Michael Flathers, IBM
Dave Norman, Telestream

10:40 am - 10:55 am Refreshment Break (load up on treats before the post-retreat treat)

10:55 am - 11:15 am The Navajo Strategic Digital Plan
John Willkie, Luxio

11:15 am - 11:50 am Adapting to a COTS Hardware World

Moderator: Stan Moote, IABM
Paul Stechly, Applied Electronics
Thomas Burns, Dell
Mike Palmer, Masstech
Karl Paulsen, Diversified

There is no question that transitioning to off-the-shelf hardware is clearly one of the biggest topics on all sides of our industry, from manufacturers, software and service providers through to system integrators, facilities and users themselves. It's also incredibly uncomfortable.

Post-production was an early adopter of specialized workstations (e.g. SGI), and has now embraced a further migration up the stack to COTS hardware and IP networks, whether bare metal, virtualized, hybrid or fully cloud based.

As the industry deals with the global acceleration of formats, platforms and workflows, what are the limits of COTS hardware when software innovation is continually testing the limits of general purpose CPUs, GPUs and network protocols?

This presentation and panel will put the “hidden” issues on the table when it comes to using COTS hardware, from the point of view of users and facility operators as well as manufacturers, services and systems integrators.

11:50 am - 12:10 pm Academy Software Foundation: Enabling Cross-Industry Collaboration for Open Source Projects

David Morin, Academy Software Foundation

In August 2018, the Academy of Motion Picture Arts and Sciences and The Linux Foundation launched the Academy Software Foundation (ASWF) to provide a neutral forum 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. This presentation will explain why the Foundation was formed and how it plans to increase the quality and quantity of open source contributions by lowering the barrier to entry for developing and using open source software across the industry.

12:10 pm - 12:30 pm Blurring the Real and Digital Realms in Location Based Entertainment

Selma Sabera, Meow Wolf

Meow Wolf, a New Mexico location-based entertainment start-up, created the first true cross-reality sculpture that blurs the lines between the real and digital realms using Magic Leap. The DIY arts collective built a fully immersive large scale sculpture of an intergalactic mech, called "The Navigator," that uses a custom made control panel to control an experience in Magic Leap. When users sit on the mech, they are invited to explore a two star solar system with seven planets and solve a set of puzzles. The Navigator is intended to be a teaser for Meow Wolf's Denver exhibit and explores the use of spatial computing in location based entertainment.

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12:30 pm - 1:00-ish Post-Retreat Treat

Jerry’s Guide to Backpacking Photography - Nerd’s Edition

Jerry Pierce

How do you plan both backpacking and photography for a trek in the wilderness for 7+ days? Everything on your back and take GREAT pictures - all in under 40 pounds (food, shelter, camera, power supply, water, etc.).

1:00-ish - 1:02-ish Post-Post-Retreat Treat

The Earliest Idea for an Electronic Camera?

Mark Schubin

Newly discovered information moves the date for the earliest idea for a video camera back by seven years to an Australian 15-year-old.