MOVIE MACHINE

THE ART AND TECHNOLOGY OF DIGITAL FILMMAKING

ISSUE 5 - SEPTEMBER 2013

MONTHLY ROUNDUP OF NEWS AND TECHNOLOGY FOR DIGITAL FILMMAKERS

BUMPER IBC 2013 ISSUE * SONY PXW-Z100 * COMMENTS ON 4K

MOVIE MACHINE
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Photos: Ellen Young

WELCOME TO MOVIE MACHINE MAGAZINE ISSUE 5

IBC 2013... THE 4K

Wandering the halls of IBC 2013, the big thing which stood out more than anything else to me was 4K. Not on every stand, and certainly many other formats and camera systems being shown, however, 4K was everywhere!

This rush towards higher resolution is the hot topic of discussion at the moment. Do we need it? Do we want it? It's certainly good for cinema, however, does anyone need 4K in the home.

These are some of the comments I've heard from the non-believers and skeptics. Whereas the supporters of 4K (and beyond) are very keen to get on with working with this latest technological development - and many are already working in 4K.

So where does that leave HD and 2K, the bastions of strength that feed content to the masses in today's market. This is where it all gets a bit murky with different opinions of what will take place.

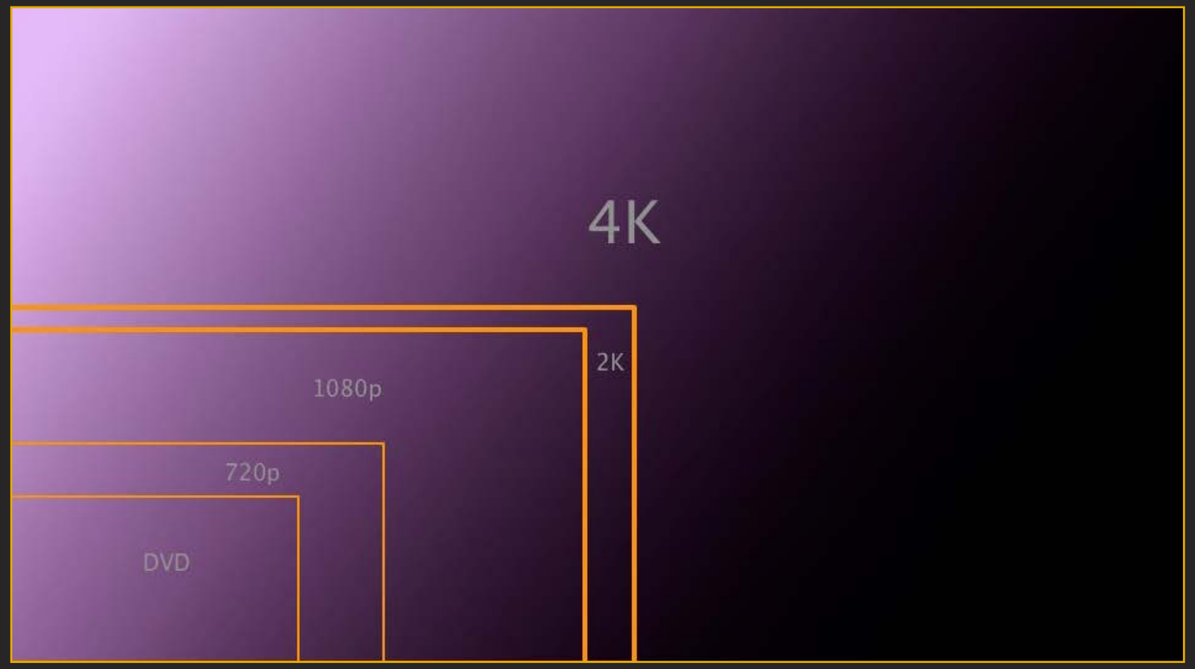
Some say it will be a transition similar to SD to HD. In 5 years time most of the market will have shifted to 4K and there will still be HD and 2K content out there, however, the dominant format will be 4K.

THE 4K IS UNSTOPPABLE

Others say, that the quality of the established formats, HD and 2K is so good already and there is still plenty of room for these formats to grow. 4K is expensive to buy into; there is no way the lesser resolution formats are going to shrink in their dominance. Yes we will have 4K, but we will also have plenty of 2K and good ol' fashioned 1920 x 1080 HD for a long time to come.

The fact is we don't know. There are economic pressures, creative pressures, and a generation of content producers who will decide what format they produce content with. The recent experience of 3D shows that the camera companies and software providers can dream up all the beautiful solutions they like - it is the market that will decide which technologies are adopted.

One thing for sure, from all indications, is that 4K is unstoppable and coming at us like a date with destiny. That doesn't mean were all going to suddenly become 4K producers.



IT MEANS THAT THERE WILL THE HIGHER RESOLUTION CAMERAS AND WORKFLOW SITTING ALONGSIDE THE ESTABLISHED HD AND 2K FORMATS. WHAT AN AMAZING SITUATION OR US ALL TO ENJOY. I NEVER WOULD HAVE DREAMED IT WOULD BE SO GOOD.

HD, 2K, 4K and beyond. The world of digital cinematography and post production is there for everyone to access and each format offers pros and cons which we must all decide between. Choose your format, pick your camera, shoot, cut it up and distribute. That's digital filmmaking in the 21st century.

LATEST MOVIES, SEPTEMBER 2013

JAMES TONKIN: DAVINCI RESOLVE 10

WATCH THE VIDEO >>

James Tonkin provides a close look at DaVinci Resolve 10's new functionality and features and the workflow with the Blackmagic Design cameras. DaVinci Resolve 10 is a major upgrade that includes new features for integrating the workflows of multiple different software products used in the film and television industry. DaVinci Resolve 10 has upgraded on set tools, upgraded editing features, support for OpenFX plug-ins as well as new tools for delivering final project masters to cinemas.

KILLER BLADE: ATOMOS SAMURAI BLADE 10 BIT 4:2:2 RECORDER

WATCH THE VIDEO >>

A look at the Atomos, Samurai Blade, which operates as a fantastic viewing monitor and also as a ProRes or DNxHD recorder. This bumps up the quality of your camera to broadcast standard at the same time giving you an accurate display for colour rendition. This is a very desirable product.

MADE IN ENGLAND - FILMED WITH THE BLACKMAGIC POCKET CINEMA CAMERA

WATCH THE VIDEO >>

Footage filmed with the Blackmagic Pocket Cinema Camera using 2 lenses: Nikon 70-180F4.5/5.6 Macro; Nikon 80-200m F2.8D. This series of clips shows the quality this camera produces using ProRes for recording, and also demonstrates the 2.8 crop factor which takes place when using lenses designed for 35mm still photography. The results are very impressive, particularly with the macro shots.

HORSING AROUND - A FEW SHOTS WITH THE BLACKMAGIC POCKET CINEMA CAMERA

WATCH THE VIDEO >>

My first shoot with the Blackmagic Pocket Camera and this turns out to be a run and gun style shoot. I go to a field where horses are often grazing in the open. Luck is with me. The horses unload from vehicles and run around the field kicking and bucking, All the action is filmed with one lens which is a Nikon 14mm. Conversion factor of 2.8 makes this lens equivalent to 40mm in 35mm photography.

ARRI AMIRA: THE NEW DOCUMENTARY-STYLE CAMERA

ARRI proudly introduces AMIRA, a versatile documentary-style camera that combines exceptional image quality and affordable CFast 2.0 workflows with an ergonomic design optimized for single-operator use and extended shoulder-mounted operation. Ready to pick up and shoot straight out of the camera bag, AMIRA is hardy enough to take anywhere and features in-camera grading with preloaded looks based on 3D LUTs, as well as 200 fps slow motion.

Throughout its long history ARRI has offered film and program makers a range of diverse cameras suited to different production tasks; common to them all, however, has been the promise of creative liberation through functional, user-friendly design. AMIRA represents a seamless continuation of this tradition. It will sit alongside other camera offerings from ARRI, perfectly answering the needs of certain types of camera professional and certain types of production.

ALEXA IMAGE QUALITY UP TO 200 FPS

AMIRA features the same sensor and exceptional image quality as the ARRI ALEXA, recording superior HD 1080 or 2K pictures that are suitable for any distribution format. With a dynamic range of more than 14 stops, low noise levels, subtle highlight handling, natural color rendering, breathtaking skin tones and speeds of up to 200 fps, AMIRA will deliver beautiful, life-like images in any situation.

AMIRA records Rec 709 or Log C images using ProRes LT, 422, 422HQ or 444 codecs. By recording to in-camera CFast 2.0 flash memory cards with super-quick data rates, the route into postproduction is made as simple as possible. CFast 2.0 is an open format, easily accessible to anyone and delivering a fantastic price-performance ratio through incredible transfer speeds, long recording times and compatibility with standard IT tools. Costs per GB are brought right down and higher-than-broadcast-quality image pipelines are made available even to low budget productions.

Single-user ergonomics and perfect shoulder balance

AMIRA boots up quickly and can be used straight out of the bag by a single user, with no setting up, no rigging and no delays. In the time it takes to lift the camera to an operators shoulder, it will be ready to record, making AMIRA perfect for run-and-gun shoots where the action is unpredictable and the camerawork responsive. Integrated, motorized ND filters as well as zebra and false color tools aid exposure control, while an advanced peaking function makes accurate focusing easy and swift.

Access to switches and configurable user buttons is quick and intuitive. An innovative multi-viewfinder makes life even easier for the single user by combining a high resolution OLED eyepiece with a fold-away LCD monitor that displays a live image when the eyepiece is not in use and also provides full access to camera functions, without AMIRA having to be removed from the operators shoulder. Flexible multi-channel audio options are accessed from the camera right side, again minimizing disturbance to the operator.

COST-EFFICIENT IN-CAMERA GRADING

In todays environment of cut budgets and shortened schedules, many television productions do not have the luxury of spending time finessing a look in postproduction. AMIRA is unique in that it comes with a number of preloaded 3D LUT-based looks that can be applied on set during the shoot. Alternatively, productions can custom-build their own 3D LUTs in external grading systems, load them into the camera during prep, and even modify them in-camera while filming. With 3D LUTs, literally any look that can be imagined can be created, giving cinematographers and directors a greater degree of creative control on fast-moving productions, while keeping postproduction costs down for producers.

ARRI PRODUCT QUALITY RUGGED AND RELIABLE

Like all ARRI products, AMIRA is designed to be a safe, longterm investment and built to withstand the rigors of life on a professional set. With a solid internal skeleton that guarantees camera and lens stability, AMIRA is a highly durable product constructed of the strongest possible materials. Sealed electronics provide top-level protection against humidity and dust, while an integrated thermal core results in highly efficient cooling. Productions can take AMIRA anywhere, from jungles and deserts to snow-capped mountain tops, sure in the knowledge that it will not let them down.

ABOUT ARRI:

With headquarters located in Munich, Germany, Arnold and Richter Cine Technik (A&R) was founded in 1917 and is the world's largest manufacturer and distributor of motion picture camera, digital intermediate (DI) and lighting equipment. The ARRI Group comprises a global network of subsidiaries, agents and representatives that covers every facet of the film industry: design; engineering; production; equipment rental; turnkey lighting solutions; postproduction; laboratory services; visual effects; and film sales. Manufactured products include the ubiquitous ALEXA digital camera system; Master Anamorphic lenses; L-Series LED and M-Series HMI lights; Pro Camera Accessories; and ARRISCAN archive technologies. The Academy of Motion Picture Arts and Sciences has recognized ARRIs engineers and their technical contributions with 18 Scientific and Engineering Awards.

BLACKMAGIC DESIGN ANNOUNCES DAVINCI RESOLVE 10 PUBLIC BETA IS AVAILABLE NOW

DaVinci Resolve 10 is a major upgrade that includes new features for integrating the workflows of multiple different software products used in the film and television industry. DaVinci Resolve 10 has upgraded on set tools, upgraded editing features, support for OpenFX plug ins as well as new tools for delivering final project masters to cinemas. Other changes include the addition of Ultra HD resolutions and additional GPU support on the free of charge DaVinci Resolve Lite edition.

DaVinci Resolve 10 has been developed to simplify the integration of different software tools used in the film and television industry, allowing timelines to be moved into and out of DaVinci Resolve and other edit software such as Final Cut Pro, Avid and Premiere Pro.

As workflows have changed, more post production is now started on set during the shoot. Lighting and other aspects of the shoot are also often verified based on color correction checks and DaVinci Resolve 10 has new powerful tools to manage this process. The new Resolve Live feature allows color grading direct from the video input live with full creative power such as primaries, secondaries, power windows, custom curves and more. Grades can be stored and then relinked when the camera files are loaded.

Blackmagicdesign

DaVinci Resolve 10 includes enhanced editing features and allows online finishing of edits performed in other popular editing software. This means multiple users can submit scenes in large complex jobs from the applications they prefer to use, and DaVinci Resolve 10 can finish online from the original camera RAW files for dramatically better quality than would be available when finishing in a standard NLE software package. If any scene needs additional editing, it can be moved back to the NLE software letting editors use the tools they love.

New editing features include full multi track editing with 16 channels of audio per clip and unlimited video and audio tracks in the timeline. Audio can be synced or trimmed and dragged independently to the timeline. Other new editing features include extensive ripple, roll, slide and slip clip trimming support which display dynamically on the timeline and viewer. The viewer also allows split screen display to show in and out points of adjacent clips.

A good example of the online editing process is when an edit has been completed in Final Cut Pro X that includes mixed frame rates, mixed media types, multiple audio tracks and even color corrections. DaVinci Resolve 10 will support import of that project via XML and will online it including full translation of all these elements while rendering the master from the original RAW camera files. This means that Final Cut Pro X editors can use DaVinci Resolve 10 as the tool to online their work for cinema release and generate the Digital Cinema Package file directly from the camera RAW files.

Editing in DaVinci Resolve 10 also includes a powerful title tool with static, lower third, scroll and crawl titles with multiple fonts, size, drop shadow and XY positioning. Timelines in DaVinci Resolve 10 also include the support of compound clips with multiple elements including multiple video and audio tracks. Also, DaVinci Resolve 10 can be used for stereoscopic 3D projects with full support for left and right eye clips in the media pool and the edit timeline. Using timecode and reel name, DaVinci Resolve 10 will automatically associate the left and right eye of the stereoscopic clips.

Color correction features have been upgraded in DaVinci Resolve 10, including support for industry standard OpenFX plug ins with an unlimited number of plug ins per clip. There are now unlimited power windows per corrector node and the new Gradient PowerWindow lets colorists quickly add a gradient across the image. Other new color correction features include copy and paste of tracking data, motion effects including spatial and temporal noise reduction and motion blur effects.

For project delivery, DaVinci Resolve 10 includes full audio track visibility in the deliver window timeline as well as EasyDCP integration so users can render directly from their project timeline into a Digital Cinema Package for release to theaters. Because DaVinci Resolve 10 allows rendering from the camera RAW file directly to the Digital Cinema Package files in the highest quality 32 bit float, there is simply no better quality possible for a cinema release master. Customers simply need to purchase a license from EasyDCP to enable this feature.

DaVinci Resolve 10 also supports additional media types and continues to be the industry leader in file based workflows because it operates with virtually all video file types available. New formats include JPEG 2000 decoding and encoding, AVI clip decoding, playback and more.

"We are extremely excited to have this public beta of DaVinci Resolve 10 ready for download from the Blackmagic Design web site, said Grant Petty, CEO, Blackmagic Design. This is an important update for all DaVinci Resolve customers and dramatically boosts the ease of workflow in the television industry. This new public beta is available for high end DaVinci Resolve systems as well as the exciting free of charge DaVinci Resolve Lite edition which now includes support for UHD timelines and rendering. This is an exciting moment for DaVinci Resolve because its the biggest update to a DaVinci product line in 30 years!"

PANASONIC UNVEILS FIRST AVC-ULTRA HANDHELD CAMERA RECORDER AJ-PX270 AT IBC '13

Panasonic Professional Camera Solutions announces its first P2 HDhandheld camera recorder with integrated AVC-ULTRA recording, the AJ-PX270. With inherent support for the AVC-ULTRA family, the camera recorder offers a wide range of choice between recording bit rates. The handheld features two built-in microP2 card slots with simultaneous recording functionality, a newly designed multipurpose compact zoom lens and wireless workflow options.

THE AJ-PX270

The AJ-PX270 covers both low-bit rate and high-bit rate recording thanks to its inherent support for the AVC-ULTRA codec family. In addition to the established AVC-Intra100, the camera has AVC-LongG, which is designed for applications where file size is critical and enables long recording times. With the AVC-LongG codec, it becomes possible to record four times longer than with AVC-Intra100 on the same memory space thanks to the smaller file size. AVC-LongG enables long 1920×1080 10bit 4:2:2 broadcast quality recording, which is supported by the cameras newly developed high-sensitivity and low-noise 1/3 type 3MOS sensors. Furthermore, the handheld optionally supports AVC-Intra200 that enables master level recording.

The handhelds two built-in microP2 card slots offer ultimate low cost operation. Panasonic microP2 card technology features the same reliability of P2 cards and can be used without an adapter in the AJ-PX270. Simultaneous recording to the two memory cards is also possible for backup purposes. The PX270s newly designed built-in compact 22x zoom lens covers a broad range of shooting angles from 28mm wide to 616mm tele. The lens three rings (Cam-type zoom, Focus, Iris) offer the comfortable manual control experienced with exchangeable lenses, but without the need for actual lens changes.

WIRELESS

The camera recorder features a Wireless LAN function via an optional Wireless LAN dongle and supports the existing Panasonic live uplink solutions. Dongle support for wireless workflow over a mobile 3G/4G/LTE network is also scheduled for the near future. Thanks to these wireless features, users of the AJ-PX270 can easily uplink low-bit rate proxy data and full quality broadcast content. The handheld cameras network function makes the production workflow more efficient and accelerates the broadcasting workflow from shooting to on-air.

Panasonics first integrated AVC-ULTRA handheld will be launched in spring 2014 with a RRP to be confirmed.

PANASONIC AJ-PX270 KEY FEATURES

- A newly designed, compact, 22x zoom lens covers from wide 28 mm to tele 616 mm.
- Three manual operation lens rings — zoom, focus and iris.
- New 1/3 type 3MOS image sensors achieve high sensitivity, low noise and 1920 x 1080 Full-HD resolution.
- Wide Range of Recording Bit Rates: AVC-ULTRA*1 Codec Family
- AVC-LongG50/25 and AVC-Intra100/50 codecs are provided as standard features. AVC- LongG50/25 codecs achieve 10 bit/4:2:2 image quality at a data rate of approximately 50/25 Mbps.
- Optional AVC-Intra200 codec for visually lossless images that approach uncompressed master quality.
- Low-bit-rate AVC-Proxy*2 for network use.
- Two microP2 Card Slots
- Two microP2 card slots enable the ultimate cost-effective operation. The microP2 card, with the same reliability as the P2 card, can be used without an adapter.
- Simultaneous recording enables safe, secure backup recording onto two media cards.

ATOMOS SAMURAI BLADE UPDATED WITH ADVANCED AUDIO FEATURES

Atomos, the creator of the award-winning camera mounted recorders Ninja-2 and Samurai, and the pocket-sized Connect converters, have shown the newly shipping Samurai Blade at IBC 2013. The latest software, AtomOS 5.03, is now available for Samurai Blade with new advanced audio features.

"We are proud to continue to offer new features for free to existing customers with our latest addition of advanced audio level meters and audio delay adjustments. We've worked hard to make sure the meters have smooth, accurate color with proper VU ballistics." said Jeromy Young CEO and co-founder of Atomos. "With over 20,000 devices sold, the convergence of high quality recording, monitoring, playback and editing devices has really taken off and Atomos are committed to revolutionising production."

The new AtomOS, Version 5.03 for the Samurai Blade includes new features to the audio level meters. All 14 audio channels now have large meters on the audio page and peak and average levels with digital clipping indicator, and VU ballistics is available. The new audio metre is accurate from -30 to 0 dB (dBFS) and shown with -18dB and -20dB alignment levels marked and 2 or 14 channels are viewable on the monitor page (option found in Menu/ Display). There is also frame accurate audio delay option which adjusts to any digital or analog Audio delays (option found in Audio page).

Like its Ninja-2 and Samurai predecessors, Samurai Blade allows the recording of pristine, 10-bit images straight from the camera sensor directly to inexpensive HDD or SSD drives, captured using the Apple ProRes or Avid DNxHD codec. It also includes tri-level focus peaking, zebra, false color and blue-only monitoring. The Samurai Blade includes a stunning 1280 × 720 IPS touchscreen with gamma, brightness and contrast control, and full waveform monitor functionality including vectorscope and RGB/luma parade

No engineer's tool box would be complete without an Atomos Connect and Atomos recently released Connect 2.05 Updater for all Connect and Connect AC converters. The new update includes HDMI Record Triggering to support new Sony Specification and improved RGB to YUV Colour Space Conversion Accuracy.

Atomos has now shipped a staggering 20,000 field recorders worldwide and the Ninja-2 and Samurai recorders have broken new ground in production by combining recording, monitoring and playback all in one easy to operate, portable device.

Also on show and directly targeted at Broadcast and ProAV markets, is the Ronin portable recorder, monitor and deck. The Ronin is building a strong user base live events and ENG markets.

'We choose the Atomos HDR because it's for us the best solution for the price.' Said Yann Figuet, Production Director at FREE LENS based in Luxembourg who used Atomos Ronin for SBS Australia's recent coverage of the Tour de France 2013.

Ronin is a rack-mountable solution for both fixed-facility and on-location production, based on the Samurai design. Like the Samurai, it can operate on location with battery or DC power, but it has AC power built-in, standard HD/SD-SDI BNC connectors and balanced XLR inputs and outputs.

Atomos products are sold through local resellers; all prices exclude HDD/SDD storage:

- Ninja-2: US $695
- Samurai Blade: US $1,295
- Ronin: US $1,995
- Connect H2S/S2H: US $295 each
- Connect-AC H2S/S2H: US $295 each

ATOMOS ANNOUNCE SPYDER COLOR CALIBRATION AT IBC 2013

Atomos, the creator of the award-winning camera mounted recorders Ninja-2 and Samurai and the pocket-sized Connect converters, have shown a pre-release version of the new Atomos Spyder at IBC 2013. Developed in partnership with Datacolor, Atomos have released the world's first field monitor and recorder color calibration tool making available one click color calibration anytime, anywhere while recording.

"We believe color accuracy and calibration is the most important issue facing today's professional productions. Being able to trust the colors on a monitor while setting up the shot with RGB, Luma Parade and Vectorscope tools means perfect results every time and professionals spending far less time color correcting in post." Jeromy Young, CEO and Founder of Atomos. "We've teamed up with Datacolor to develop a calibration solution that users can trust and saves editors substantial time in post."

Developed in partnership with New Jersey based Datacolor, the Atomos Spyder gives Samurai Blade one button color calibration normally only found on high end monitors.

The Atomos Spyder has initially been developed for the Samurai Blade with implementation on other Atomos recorders available soon.

The Samurai Blade includes the world leading 5" SuperAtom IPS, 1280 × 720 IPS 325PPI touchscreen. Like its Ninja-2 and Samurai predecessors, Samurai Blade allows the recording of pristine, 10-bit images straight from the camera sensor directly to inexpensive HDD or SSD drives, captured using the Apple ProRes or Avid DNxHD codec.

ATOMOS SPYDER FEATURES:

- Extreme precision 7 sensor calibration
- USB to LANC serial control unit included for automatic calibration.
- Calibrate to 6500K ITU-Rec709 white point with delta-E better than 2 down to 20% grey
- User adjustments of lift, gain and gamma per channel after initial calibration
- Can be used as a standard calibration unit for any monitor or computer (provided Datacolor software is purchased from their website).

NEWS IN BRIEF...

GOPRO STUDIO 2.0 FOR MAC & PC: A POWERFUL TOOL FOR GOPRO USERS

GoPro Studio software, for Mac and PC, enables professionals and consumers to trim and mix clips, adjust video playback speed, add titles, music, and audio tracks to their GoPro footage. This is not just a consumer app. This can also be used for organising and treating GoPro footage for professional use. It is worth watching the GoPro video to see all the features.

READ THE FULL STORY >

TOOLSONAIR ANNOUNCES INTEGRATION WITH ADOBE CREATIVE CLOUD

ToolsOnAir has announced the integration of just:in multi, its powerful multi-channel capture and ingest solution for broadcast video professionals, with the latest versions of Adobe® Premiere® Pro CC and Adobe Prelude® CC. A part of ToolsOnAir's Broadcast Suite for the Apple Macintosh, just:in multi offers an innovative, multi-channel ingest solution that includes a host of features essential in today's fast-paced video production environment.

READ THE FULL STORY >

TELESTREAM ANNOUNCES MAJOR WIRECAST 5 RELEASE

Telestream®, the leading provider of digital media tools and workflow solutions, today announced a major upgrade for its Wirecast® live streaming production software. Wirecast 5 adds enhanced encoding and playback options; a new, more efficient user interface (UI); high-quality screen capture; and more flexible input/output integrations for easier, high-quality live streaming.

READ THE FULL STORY >

PANASONIC PRESENTS ITS WIDE RANGE OF NEW PROFESSIONAL CAMERA SOLUTIONS AT IBC '13

Panasonic Professional Camera Solutions is present at IBC 13 with a wide range of innovating professional camera solutions. The diversity of the new camera technology on display is set to speak to a diverse group of broadcast professionals. Panasonic is showing 4K technology, its first AVC-ULTRA handheld camera and cloud-based wireless workflow implementations.

READ THE FULL STORY >

SOUND DEVICES SHOWCASES INCREASED FUNCTIONALITY OF PIX 260I PRODUCTION VIDEO RECORDERS AT IBC 2013

At IBC 2013, Sound Devices, specialists in portable audio and video products for field production, introduces the newest functionality for the PIX 260i Production Video Recorder (Hall 8, Stand 8.D74). PIX 260i seamlessly replaces tape-based video decks in production and post-production environments and its latest firmware, version 1.03, brings increased functionality to the end-user.

READ THE FULL STORY >

PROFESSIONAL VIDEO EDITORS SPOKE, AUTODESK LISTENED

Autodesk, Inc. (NASDAQ:ADSK) announced Autodesk Smoke 2013 Extension 1 professional video editing software is expected to be available beginning May 29, 2013. As part of the product roadmap and influenced by extensive feedback from editors, the release will feature numerous enhancements to help improve functionality, add flexibility and increase speed.

READ THE FULL STORY >

AVID UNVEILS STATE-OF-THE-ART S6 CONTROL SURFACE THAT REDEFINES SOUND RECORDING, MIXING, AND EDITING

Avid have unveiled a major new addition to its industry leading family of control surfaces for sound recording, mixing and editing, further extending its leadership in the space. Avid S6 is designed for audio professionals in the most demanding production environments, delivering the performance needed to complete projects faster while producing the best sounding mixes. In addition, S6 provides mixing professionals with a state-of-the-art solution that easily scales to meet their current and future challenges.

READ THE FULL STORY >

SONNET ANNOUNCES ECHO EXPRESS SE II TWO-SLOT THUNDERBOLT-TO- PCIE® EXPANSION CHASSIS AND UPCOMING SUPPORT FOR THUNDERBOLT 2

The new two-slot Thunderbolt 2-to-PCIe expansion chassis enables the use of a wide variety of high-performance PCI Express® (PCIe) cards originally designed for use in desktop computers with any Mac® computer with a Thunderbolt port. Accommodating cards up to 7.75 inches long, the Echo Express SE II supports nearly every Thunderbolt- compatible PCIe card on the market, including double-width cards (PCIe card plus daughter card).

READ THE FULL STORY >

AUTODESK UNVEILS MAYA LT FOR INDIE AND MOBILE GAME DEVELOPERS STARTING AT $50 A MONTH

Autodesk, Inc. has introduced Autodesk Maya LT 2014, a new 3D modeling and animation tool tailored for independent and mobile game developers. Available immediately and compatible with certain industry-standard game engines, Maya LT draws inspiration from award-winning Autodesk Maya software to bring an intuitive, affordable new toolset for the creation of professional-grade 3D mobile, PC and web-based game assets.

READ THE FULL STORY >

AUTODESK DELIVERS MORE FLEXIBLE, PAY AS YOU GO ACCESS TO DESIGN, ENGINEERING AND ENTERTAINMENT CREATION TOOLS

Autodesk, Inc. customers will now be able to pay as they go for all of the company's latest Design and Creation Suites, Autodesk 3ds Max, Autodesk Maya, and the new Autodesk Maya LT. For the first time, customers can purchase access to a range of Autodesk desktop software on a monthly, quarterly or annual basis, in addition to traditional licenses, broadly expanding choices in how to access and pay for Autodesk software.

READ THE FULL STORY >

NEWS IN BRIEF...

TELESTREAM LAUNCHES POST PRODUCER AT IBC 2013

Telestream has announced a major new product to be launched at the International Broadcasters Convention (IBC) in Amsterdam this September. Post Producer is a post-production and delivery engine that automates repetitive production processes, which would otherwise tie up editors and NLE workstations.

READ THE FULL STORY >

AJA RELEASES TRUZOOM FOR REALTIME 4K TO HD REGION-OF-INTEREST WORKFLOWS

AJA Video Systems has announced TruZoom delivering high-quality region-of-interest (ROI) workflows from 4K and UltraHD video. The TruZoom software and external joystick controller drives AJAs Corvid Ultra professional video I/O platfrom. TruZoom allows customers to scale any 16:9 region within 4K frames to HD in realtime, making it ideal for sports broadcast, live event production, professional AV, and digital film.

READ THE FULL STORY >

AJA RELEASES NEW MINI-CONVERTERS AT 2013 IBC

AJA Video Systems announced V2Digital, V2Analog, HD10A-Plus and 4K2HD, new additions to its range of compact, high-quality Mini-Converters. Each new Mini-Converter offers new features and capabilities for analog and digital workflows across SD, HD, UltraHD (UHD) and 4K.

READ THE FULL STORY >

AJA PREVIEWS IO 4K WITH THUNDERBOLT 2 AT IBC 2013

AJA Video Systems will be presenting a technology preview of the new Io 4K, an evolution of its popular devices for professional video I/O, now updated and customized for Thunderbolt 2 technology and 4K workflows. Io 4K connects to any Thunderbolt 2-enabled device such as the new Mac Pro, and offers an additional Thunderbolt 2 port for daisy- chaining other peripherals such as high-resolution displays and high-capacity storage.

READ THE FULL STORY >

BLACKMAGIC DESIGN ANNOUNCES NEW HYPERDECK STUDIO MODELS

Blackmagic Design has announced HyperDeck Studio 2 and HyperDeck Studio Pro 2, new models of its popular broadcast disk recorders. HyperDeck Studio 2 is available now for US $995 and HyperDeck Studio Pro 2 is available now for US$1,995.The new HyperDeck Studio 2 and HyperDeck Studio Pro 2 models include an attractive new machined metal design that provides a robust and professional looking product that better matches the design look of other rack mount products.

READ THE FULL STORY >

BLACKMAGIC DESIGN ANNOUNCES SMARTSCOPE DUO 4K

Blackmagic Design has announced SmartScope Duo 4K, an updated model of its SmartScope Duo that now includes 6G-SDI for Ultra HD support. SmartScope Duo 4K is a unique dual rack monitor that allows a range of broadcast accurate waveform monitoring on 2 large 8 inch LCD screens of any SD, HD and Ultra HD video source. SmartScope Duo 4K replaces the previous SmartScope Duo model and is available now for only US$995.

READ THE FULL STORY >

BLACKMAGIC DESIGN ANNOUNCES 3 NEW MINI CONVERTERS WITH 6G-SDI FOR ULTRA HD WORKFLOWS

Blackmagic Design has announced three new models of Mini Converter designed to ease the transition into Ultra HD workflows and to allow lower cost Ultra HD studios to be built. These new models are fully compatible with SD, HD and Ultra HD equipment and automatically switch between video formats. The new Mini Converter Optical Fiber 4K, Mini Converter SDI to HDMI 4K and the Mini Converter SDI Multiplex 4K will retail for US $495 each.

READ THE FULL STORY >

BLACKMAGIC DESIGN ANNOUNCES NEW DESKTOP VIDEO 10

Blackmagic Design has announced Desktop Video 10, a major new software update for its UltraStudio 4K and DeckLink 4K Extreme capture and playback products that replaces all processing with a wholly new design. This new software update allows for innovative features such as simultaneous capture and playback and will be available in October free of charge.

READ THE FULL STORY >

BLACKMAGIC DESIGN ANNOUNCES ATEM 1 M/E PRODUCTION STUDIO 4K

Blackmagic Design has announced ATEM 1 M/E Production Studio 4K, a new extremely advanced Ultra HD live production switcher with 6G-SDI technology for only US$2,495. ATEM 1 M/E Production Studio 4K model will provide customers with added features such as 10 independent 6G-SDI inputs each with frame sync, built in DVE with zoom, scale and rotate, 4 upstream chroma keyers, 3 independent aux outputs with front panel control and a larger media pool that holds both still frame graphics as well as motion video clips.

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BLACKMAGIC DESIGN ANNOUNCES NEW APPLE PRORES FORMATS FOR HYPERDECK STUDIO PRO!

Blackmagic Design has announced the immediate availability of HyperDeck Software Update 4.0, a new update for the HyperDeck Studio Pro broadcast recorder. This update adds support for additional Apple ProRes file formats, ProRes 422, ProRes 422 (LT) and ProRes (Proxy).

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SONY PXW-Z100 - FIRST IMPRESSIONS FROM MATT DAVIS

Corporate Filmmaker Matt Davis and Editor/ Motion Graphics expert Alex Gollner give their first impressions of the Sony PXW Z100 camcorder - an all-in-one camcorder that shoots 4K and UltraHD video, in addition to 10 Bit 4:2:2 HD in Sony's new acquisition format XAVC.

The PXW-Z100 is Sony's affordable entry-point to 4K and includes a lot of new technologies and features in a compact, reassuringly familiar package. Whilst the market is still weighing up 4K, the Z100 brings it into the reach of a far wider professional audience.

It sounds a little familiar when I think back: Long, long ago, in a time before HD...

Sony launched the HVR-Z1E – a remarkable camcorder that brought HD to the corporate, event and videography market. You could record HDV, but finding a method to play it back could be tricky – HD screens were hard to come by. We found that the HDV had some tricks up its sleeve: it could make great Standard Definition video, by shrinking blocky colour pixels you could achieve chromate, and we could make 720p video for playback on computer screens – the corporate world was introduced to HD through PowerPoint. At the same time, we got FireWire, SD features like anamorphic 16:9, in-camcorder down convert of HDV rushes so we could file away our HDV masters and continue to work in the comfort and safety of DV.

THE Z1 IS DEAD – LONG LIVE THE Z100

I feel the same way about the PXW-Z100 as I did about the Z1. It brings many new exciting technologies that seem to be ready for the long term. It certainly challenges my current workflow in the same way HDV did back then, and its headline feature – 4K – is deservedly the centre of attention at launch. Well look at what 4K can bring to the videography market, but we also need to introduce the alphabet soup of new abbreviations and acronyms that accompany the camcorder. There are some features borrowed from its bigger brethren that are new to this class of camcorder and present intriguing opportunities to the corporate and industrial market.

There's one thing that this review isn't able to provide in its first iteration – a review of the actual video. Sadly, this review was based around an early prototype and whilst many of the functions were up and running, the picture quality had been dialed back to allow debugging.

"THE PXW-Z100 INTRODUCES 10 BIT 4:2:2 RECORDING ON-BOARD. "

It would be unfair to show the images I shot with its beta software, but I saw enough to be very enthused with the power of 4K. As time goes on, more and more examples of both 4K and 4K down sampled to 1080p will appear, but the first few samples have been impressive.

So, to start at the beginning, we need to establish whether the PXW-Z100 is suitable as a videographers tool. By videography, I refer to people who generally edit what they shoot, who tend to work alone or in a 2 person team, with a balance of Run & Gun, formal and lit interviews or pack shots, and voxpop or candid style filming. They mostly need to get a wide range of shots and lots of coverage in a short space of time. Generally speaking, videographers cannot control their environment and must make do in terms of lighting, sound and even camcorder placement.

Because of the amount of rushes a videographer generates, and that most finished work is destined for the web or PowerPoint rather than the cinema or broadcast TV, there's a preference for a compressed video encoding system, but the flexibility to use less compression and more colour resolution is certainly appreciated – especially when using chromakey or covering events with very strong coloured lighting setups (theatrical, music, event).

Videographers want a neat, compact camcorder that doesn't consume lots of batteries or require the juggling of expensive media; something that can be pulled from a bag and be shooting in seconds; something that doesn't have frighteningly shallow depth of field but can still generate a good quality image. So that's a long, drawn out way of saying you're probably not going to shoot a feature film or big TV drama on the Z100. The F5, F55 and F65 mop up that end of the market. You're probably not going to find this the ideal camcorder for traditional Electronic News Gathering, high end documentary or sports coverage – though I'm sure it will be used in those categories usually given to Sony's PMW and PDW range of camcorders. Beyond videography, the PXW-Z100 is great for independent documentary, and will crop up on general production too.

EXCITING HIGH END FEATURES

Well cover these in detail later – but as a taster – the PXW-Z100 introduces 10 bit 4:2:2 recording on-board. This is true 10 bit, not a padded out 8 bit signal. It has an HD-SDI port that interfaces it with professional video equipment. It has timecode in and out – allowing jam sync of multiple camcorders. The PXW-Z100 has an interface for a WiFi dongle – the Z100 can be controlled from a smart phone or tablet through a browser. And it has HDMI-2 which caters for 4K output at up to 60 frames per second (and capable of 32 audio channels apparently).

"THE Z1 IS DEAD – LONG LIVE THE Z100."

FIRST IMPRESSIONS: THE CAMCORDER

On first sight, the PXW-Z100 is superficially similar in size and feel to the HXR-NX5E – the same 3 ring 20x lens, the same flip-out LCD panel that reveals transport controls and the traditional fixed handy grip with zoom rocker and focus magnify button. However, there's a little more heft to the PXW-Z100 – around 2.5kg without battery, 2.8kg with an NP-F970 battery installed. Of course, there's a lot more going on inside the camcorder, and for the first time on a camcorder this size, there's a ventilation grille and fan on its right flank. I see no controls for the fan in the System Setup menu, but its very quiet.

A quick nose-to-tail tour starts with the lens – when fitted to the PXW-Z100, it offers f1.6 at 4.1mm (wide) which reduces to f3.4 at 82mm (telephoto). The iris closes after f11, and whilst I can only guess at this stage, the sweet spot will be around f4 and the dangers of diffraction could kick in after f8.

The lens is capped by the newest variation of the traditional Sony lens hood and built in lens cap – or double flap actuated by a little lever to the left. Its a bit more generous than the PMW-EX1Rs, too. Its a simple thing, but it works so well. The hood is a bayonet fit, with simple button push unlock, to reveal the 20x lens – a lot less fiddly than my EX1R, which is encouraging when using 72mm screw in filters such as a polariser.

The PXW-Z100 has a 1/2.3 sensor – and that can be a little confusing, I'm sure many peoples first reaction is that that sounds bigger than half inch! Alas not, its slightly smaller. It sits between the traditional 1/3 sensor and the half inch sensors of the PMW range. If you're used to the EX1 or PMW200/300, you'll need to move a little further back and zoom in to achieve a Depth of Field effect. But this also means that you're getting slightly more angle of view at the wide end (just a little bit less than the EX3).

"MULTIPLE CAMCORDERS CAN BE SPREAD AROUND A LARGE VENUE AND CONTROLLED FROM A SINGLE POINT."

Between the lens and sensor are 3 Neutral Density filters (with an off setting) providing 1/4 (2 stops), 1/16 (4 stops) and 1/64 (6 stops) brightness reduction. If you need more, you can use up to -6dB of negative gain but this can clip shadow detail.

Moving round the camcorder to the right hand side, there's a fixed handgrip that puts the heel of your hand comfortably under the base of the camcorder nearer the centre of gravity. This is far easier to hold at eye level if you're not into bodybuilding, but tends to discourage you from holding the camcorder at chest height – probably a good thing. To either side of the zoom rocker are the Focus Magnify and Iris Push Auto buttons. Noticeably absent is a last shot review button. However, the camcorder does not have to switch into a Media mode to review clips, so quick (if not instant) review is possible.

Theres a LANC compatible socket that interfaces with pan-bar controllers for Zoom, Push-auto focus and rec start/stop. Interestingly, there's the traditional thumb-operated Power On/Off thumb switch with a little latch. It was interesting as the latch prevented the camcorder from being inadvertently switched on, but allowed it to be switched off regardless of the latch. I found this out whilst filming in a busy crowd, and it wasn't just irritating, it could lose you the money shot.

Behind the handgrip is a large ventilation grille with a fan drawing warm air out of the camcorder. It's on all the time, but its quiet and shouldn't cause too much problems even in quiet room interviews. Its worth checking that this grille doesn't get blocked by any camcorder rain covers, and that you offer the camcorder some extra protection outdoors and in dusty environments.

Underneath the grille is a DC power input that supplies 12 volts at 2.5 amps to the camcorder. This is a great fail-safe for times when you should be running off mains all day but for some reason the power disappears. I'm sure many PXW-Z100s will be recording conferences and theatre productions, some possibly unmanned (where a battery wouldn't quite last the shoot). Powering the camcorder from the mains is fine, but I've known – I've WATCHED delegates unplug your camcorder so they could charge their phone or laptop. The camcorder switches to battery without a blink.

THE REAR OF THE PXW-Z100 IS EXCITING

Below the Electronic Viewfinder – much the same as many similar models – is a headphone switch for choosing channels to monitor, and below that, an interface for the WiFi dongle.

Yes, this camcorder acts as a little wifi base station (so its not connecting to the internet, you connect to the camcorder). Each camcorder will have its own unique ID, so in keeping with the Sony F5 and much like other Wifi camcorder controls, you can connect to many devices, one at a time, with one device (laptop, smartphone or tablet). Or you can have a browsing device per camcorder in a multi-camcorder setup – why Because it provides you with a remote Camcorder Control Unit for each camcorder so you can tweak each camcorders exposure, colour balance and so on remotely (as you vision mix, for example).

Branching momentarily to the bottom right are two more ports that make this camcorder extremely interesting for multi-camcorder live switching and post event edits. The 3G HD-SDI port outputs 4:2:2 10 bit images at up to 60fps at 1080p. HD-SDI uses co-axial cable thats ubiquitous in broadcast video applications, and can run 100 meters or more from camcorder to base – with repeater boxes, it can go much further. HDMI cables don't like more than 10 meters. So, multiple camcorders can be spread around a large venue and controlled from a single point.

Your multiple PXW-Z100 recordings (which can be 4K) can be synchronised along with other video and audio recordings with the Time Code port, where the camcorder listens to a time code source, synchronises to it, and continues on at frame accuracy whilst you jam the Time Code sync into additional camcorders and sound recorders. At edit time, each recording (video and audio) is frame accurately locked making their synchronisation effortless. You can also use Time Code slates – or even a tablet with a TC adaptor to label shots with frame accuracy when shooting with other camcorder systems and Broadcast WAV audio recorders (which also include Time Code).

Above these is a panel door revealing the HDMI 2.0 slot, which will be the main 4K output, but can happily drive an HD monitor, and the PXW-Z100 can down convert 4K to HD through this port. In theory, it could drive an HD set at 60p (HDMI 1.3 tops out at 1080p30), but I haven't been able to test this. Another function I've not been able to test is whether the HDMI output will drive an external recorder such as the Atomos Ninja. It will certainly provide a clean high quality picture, but Sony introduced Time Code and rec start/stop to HDMI with version 1.4, so that a recorder such as the Ninja senses when the camcorder is recording internally and drops into record its self with an identical time code. As such devices can record edit ready material onto cheap spinning disks, conference and presentation records needn't eat up expensive media.

"YES, THIS CAMCORDER ACTS AS A LITTLE WIFI BASE STATION."

Next to the HDMI is the Utility SDHC slot. This will capture the entire setup of the camcorder via the System menu, and save up to 64 versions of your setup. Of course, what this means is that you're not using a few pots to store Picture Profiles in, you have up to 64 states to choose from. At time of writing, this option is greyed out, so I can't report whether setups can be named or not (I hope so!).

Above that is a surprise: the very traditional and somewhat quaint yellow, white, red analogue composite video output. It can truly be said that all your bases are covered. I'm ashamed to admit that there have been occasions where hi-tech fails, and good old RCA Phono saves the day. I hope you don't have to open this door.

Passing briefly over the battery compartment, it snugly consumes an NP-F970 battery and even when running beta software I was impressed by how it didn't consume huge gobs of power. There's lots of processing, a complex chip to feed, and of course that fan – and heat is consumed energy. 3 or 4 NP-F970s should hopefully see you through a day.

And then to the media bay on the left. Behind the half-glazed door lays 3 media slots and 2 USB slots.

Of course, the main attraction is the two XQD slots. The XQD format is lining up to take over from where Compact Flash (almost 20 years old) leaves off. The XQD format has rapidly ramped up to a transfer rate of around 125 Mbytes (1 Gigabit) per second double that of most SDHC cards. However, even these Type H cards aren't quite up to the demands of 4K, so the recommendation for the PXW-Z100 is the Type S cards at 180 Mbytes per second. Of course XQD increases maximum capacity beyond the 2GB limit of existing formats.

When you're creating data at 600 Mbps (4K at 60p gives you 10 minutes on a 64 GB card), you need to readjust your horizons for storage.

Card capacity brings up an important point – the PXW-Z100 employs the same codec and recording formats as the F5 and F55. Not a cut down budget version, not a reduced fat version, but the full-on heavy-duty format. Check through the figures in the table and whilst the numbers look a bit scary, they're impressive too. I've found that converting these files to ProRes actually doubles the file size without adding anything appreciable to the quality judging by the detail in my Waveform Monitor, Vectorscope and diligent eyeballing.

THE DIFFERENT FLAVOURS OF XAVC

XAVC refers to a family of compression types that Sony will be rolling out.

It's based on the very highest set of the H.264 system, specifically to handle 4K and HD and how to handle 10 bit and extended colorimetry that goes beyond Rec 709 into Digital Cinema Initiative P3 territory.

It comes in many flavours that can cope with low and high quality, low and high bit rates, low and high processing power – at either end. Its not one fixed format, but a matrix of resolutions, data rates, frame rates and bit depths, all stored in the Media Exchange Format (MXF) wrapper which enables a wide range of Non Linear Editing systems to see and manage the video.

So there's two types of encoder pattern: theres intra frame (every frame is its own entity) and inter-frame (one big keyframe, followed by just the changes per frame). Intra frame provides great quality, and is easy to edit if you have the bandwidth, but it creates very large files. Inter frame (or LongGOP) is much more space efficient, but somewhat harder for computers to edit.

Then there's bit depth: we've mostly been used to 8 bits 256 (or less!) steps to describe tonality from low to high – per channel in RGB. 10 bit is our new goal, using 1024 steps from dark to light in each channel. 10 bits means well see virtually no banding in skies and still water, or around subtly lit walls. It also provides more data to work with for grading the video in post.

Finally, there's colour resolution – XAVC provides 4:2:2 where colour is merely half the resolution of the luminance or black and white information, plenty enough for rich colours and demanding situations like chromakey. The less demanding consumer variant is known as XAVC S – this uses the familiar 4:2:0 colour resolution, where colour info is a quarter of the luminance info – good enough for most things that dont have to be retransmitted over and over again. So XAVC caters for resolution (4K DCI, Quad HD, HD, SD), Temporal compression (I-frame and longGOP) and colour resolution (4:2:2 and 4:2:0). The lower end (longGOP, 4:2:0, 8 bit) is labelled XAVC S and this is wrapped in an MP4 file container.

Note that the PXW-Z100 will have the LongGOP mode in addition to intra frame via a future firmware (free) upgrade.

Next to the upper XQD slot is an SDHC slot. At launch, this wont be enabled, but its planned to provide AVCHD recording which is one of the most used recording formats today. If you need to shoot for a client who can't take QXD or XAVC, this is an ideal compatibility solution.

Note that there is no interlace. There is no interlacing in 4K, and this camcorder will not record interlaced video (notwithstanding the AVCHD update of course). That's what the 50/60p mode is for.

THE FAMILIAR LEFT PANEL

It operates exactly like every other Sony Professional Camcorder I've used, with a 3-way gain switch, White balance split with 2 memories and a preset and an adjacent white-set button, and the trinity buttons – Gain, White Balance and Shutter which toggle between manual and auto control. There is also the useful panic switch that puts all exposure controls into automatic. Focus can be switched from auto to manual, with a push auto function – whilst in manual mode, push and hold as the camcorder lens auto-focuses; release to hold that in manual mode. I find this far more useful than full auto as like most other systems, this camcorder prefers to focus on backgrounds if left to its own devices.

It's easy to select both audio channels of your recording mapped through to only one microphone – with channel 2 reduced in sensitivity a little – just in case the audio gets a little too loud and you can't ride the levels like a sound engineer would.

The Audio panel is protected from the mad scrabblings of the cameraman by a little door that ensures knobs aren't moved inadvertently. Like the FS100, each channel can be selected from the built- in mic, XLR-1 or XLR2 (mic/line and phantom power switching are controlled from a panel beside the sockets). Therefore, it's easy to select both audio channels of your recording mapped through to only one microphone – with channel 2 reduced in sensitivity a little – just in case the audio gets a little too loud and you can't ride the levels like a sound engineer would. This is a critical feature for videographers working solo, as over modulated audio is ugly and unfixable.

There is an audio limiter to duck the levels that may overload, but if you're working too fast it's easy to forget and sometimes hard to hear if the limiter is on, giving your audio a pumped sound. Use with caution.

Other assignable options include toggling markers (safe areas and aspect guides), steadyshot, bars and S&Q Mode.

Above that are six assignable buttons – the latter three have been labeled Zebra, Peaking and Thumbnail, probably best to keep those.

SLOW AND QUICK IN 4K

The PXW-Z100 will record 60 frames per second in 4K (when set to NTSC region), but of course not all productions will suit 60fps

Therefore the camcorder has a Slow and Quick mode that provides both slow motion (by over cranking – shooting more frames than required) and speeded up motion (by under cranking – shooting less frames than required) and ensuring they're played back at the desired rate. Furthermore, you can shoot down to 1 frame per second for time-lapse shots.

However, the slowest shutter speed is 1/25th, so one can't create the slow shutter time-lapse effects. Well chalk that one up to hopefully changed in a future upgrade.

The S&Q frame rate is set via a menu rather than the side roller control, but if you're constantly using time-lapse or slow motion, its quick to toggle it on and off.

The viewfinder panel opens in traditional book fashion, revealing the transport controls and a few other key functions.

There is no media mode as such. To view previously shot clips, simply press the thumbnail button. Whilst navigating, each clip can be played, inspected or deleted. The lower part of the display provides info on resolution, frame rate, duration and name. It's worth noting that HD and 4K files, at NTSC and PAL rates, all sit happily together in the Thumbnail view. Your 60fps S&Q 4K shot to play back at 24p will be as accessible as the 25p interview at 1080p.

The LCD panel has a high resolution, which means the information density has gone up too. There's a lot of info around the edge in small type, and whilst a lot of information is there, it's been rearranged. Its often the little things that can upset you – Timecode/ Duration panel has moved from top right to bottom left, for example. But at least we have a Shot Duration display that has been missing from many videography camcorders.

Zebras – the hatched display that highlight a certain brightness range – are a vital exposure aid. There are two different patterns that can be set to refer to two different brightness levels. Choose one, the other, or both. Traditionally, the main zebra pattern is set to 60-70 for skin but this doesn't really take skin colour into consideration. Most people use zebras at 100% to know everything above that is burned out (with a little wriggle room).

In general, the amount of information is sometimes hard to take in at a glance, and the audio meters, whilst pretty and discrete, may frustrate a sound engineer trying to find 18dB on it. Luckily we have the Status View – scroll through 6 pages of clearly presented data on your camcorder. Page 2 offers lovely large audio meters with helpful reminders about the reference level set for microphones (some quiet ones need help, louder ones can be dialled back – remember to use the reference level with your sound level knobs in the middle to adjust your microphone levels first – dont just turn a quiet mic up to 10!)

Other pages display your media usage, button assignments, camcorder settings, system settings and video outputs.

PAINTING BY NUMBERS

The menu system has been rationalised, so between Camcorder and Audio, we now have a Paint menu.

This is where the Picture Profile controls have moved to. Instead of a number of picture profiles, each camcorder setup has its own profile, so switching profiles can also switch button preferences, system setups and so on.

There's Black Gamma control too, for opening up shadows. Traditionally, this has been at the cost of slightly noisier blacks – but checking these finer details must wait until the software is complete.

A Colour Matrix section provides control over general spread of hue and saturation, and if you need to use multiple PXW-Z100s live on a regular basis, you can fine-tune each one to match them all.

The camcorders white balance controls don't provide a quick non-menu way to dial in a colour temperature, so one needs to use the Preset setting and change it via the Camcorders Paint menu. Currently, the settings go from 3,200 to 15,000 Kelvin – hopefully well see the lower number change. Filming in the theatre (where coloured light can mess up an ATW or white balance) often uses dimmed lamps, and many domestic lighting setups will be more like 2,900 Kelvin. A low of 2,200 Kelvin would be a more useful point to start.

There are no CineGammas on the PXW-Z100 – instead, we have 6 Standard gammas (including a Rec709 setting) and the two Sony CineTone settings. CineTone is more about providing a rich contrast and deep shadows in the original recording rather than grading in post. They haven't been especially popular in the videography world, as the main theme has been in highlight compression.

A knee control is provided, so you can select at what point the highlights are compressed (from 75 to 109), and by how much. A well set knee can tame bright skies and harsh highlights, but too much knee in the wrong place can make a very artificial looking image, so test early and test often.

Detail – the electronic sharpening that helps add crispness to an image can be dialled up and down. If youre able to do sharpening in the post production phase, its best done there but for faster turnaround you can dial in detail to your taste and application.

TIME OF DAY

There are two methods of generating Time Code if you're not jamming sync from an external source: regenerate from the last shot, or free run from a preset. But curiously, the most useful form of timecode to a videographer is missing: Clock. In other words, set the time code to the time of day, accurately set from the camcorders internal clock. The workaround is to set the preset to the current time, but I've noticed that this method doesn't stick so if you want time of day code, you need to regularly check the setting and change the preset when necessary.

CLOSE TO THE EDIT

So you've wrapped on your shoot, your cards are full. There's a variety of resolutions and frame rates on your card. What happens next, delightfully, its all pretty straightforward. The most popular edit platforms are all ready for XAVC. Vegas, Avid, Premiere Pro, FCP-X and Edius Pro are ready to import XAVC and pretty soon can write to XAVC too. I'm an FCPX editor, which is already set for XAVC import after a recent update. I can report that it was remarkably easy to ingest footage both by plugging the camcorder into my edit system via USB, and by using a cheap 3rd party XQD USB3 reader.

Data storage is a major issue. Editing 4:2:2 10 bit HD is easy. Just like ProRes. However, 4K was a lot more challenging. I'm a Mac based editor, and 4K needs a high performance Thunderbolt drive, preferably SSD. A FireWire 800 drive, even at 7200rpm, is not going to work nicely. I could do simple cuts and dissolves edits, at 4K on SSD through Thunderbolt, but if I wanted to do 4K multicam, this may take a while for computers to catch up. For downconverts, it all felt like the early days of HDV to DV. Its four times the info, things take four times as long. You don't want to be applying FilmConvert and Magic Bullet Looks to 4K rushes, and if you do this to a 4K final grade, take the weekend off. But it IS worth it.

THE HARDWARE IN CONCLUSION

The PXW-Z100 is a solid, compact camcorder that fits the hand well for a wide range of shooting positions, and will happily shoot on a tripod with LANC control.

Its a tried and trusted formula. What stands it apart is what's inside.

4K aside, its straddling two types of videographer. The absence of a histogram in the viewfinder, a Time of Day timecode generator and CineGammas will put off some videographers who have come to rely on these aids on every shoot, but they are well served by the PMW line.

But for the rest of us, there are phenomenal benefits (and well come to 4K in a minute.)

The HD-SDI and Timecode, combined with WiFi control, make it an intriguing camcorder for live multi camcorder setups, especially in the webcast and online video markets. The 10 bit 4:2:2 recording format promises that it will work well for chromakey and removes the risk of ugly web encodes due to 8 bit banding.

AND NOW WE CAN, FINALLY, ADDRESS 4K IT'S COMING.

4K isn't a marketing device to create planned obsolescence, its a reaction to convergence between big screen and small screen, cinema and data. Most UK HD setups, in theory, can't show the difference between 720p and 1080p but whilst 4K is just starting to spread into the consumer realm, it is in the corporate, event and industrial sector – precisely the market where the Z100 is focused – where many first 4K applications exist.

4K isn't just about filling your peripheral vision. 4K may be supplying additional resolution invisible to a standard view but necessary for a close view. Research shows that when your horizontal angle of view exceeds 100 degrees, you tend to fall in to the picture to the extent that it can have an impact on motion sickness. 4K can show a huge amount of information around a perfectly acceptable HD image in the centre think of hang-outs, enhanced TV, combining social media with live events, immersive experiences or any video you wanted to zoom into.

Shoot in a format that will future-proof your work – when filming once-in-a-lifetime event, or when gaining unique access to a person or situation, filming at 4K ensures ease of future use.

Even before you own your first 4K display, 4K can revolutionise your workflow right now. Shoot wide in 4K, crop in post: this trick saves many difficult videographer interview sessions.

Often a one taker, how do you cut an 8 minute interview to 90 seconds without jump cuts? Maybe there's no chance for cutaways. Simply shoot a medium shot and crop in to a close up at an appropriate moment, using the change in shot size as an excuse to edit.

Shoot in 4K to create video that works as 16:9, 4:3 (tablet), 3:4 (vertical tablet) – curiously, videography faces more aspect ratios, not less. My specialism is in Event & Experience Marketing (from conferences and trade shows to installations) and projector blending technology such as Spider and Dataton Watchout call for very wide aspect ratios as three to seven screens are merged horizontally, or over a 360 degree wrap around experience.

Downsample 4K to HD for incredible detailed pictures – just like HDV made very nice SD, 4K makes beautiful HD.

Downsample 4K to HD for very high quality keying, as the 4:2:2 capture becomes the equivalent of 4:4:4:4

Shoot in a format that will future-proof your work – when filming once-in-a-lifetime event, or when gaining unique access to a person or situation, filming at 4K ensures ease of future use.

Explore the realms of Beyond-HD screens – creating a close up and almost tactile experience. Video can become as rich and as detailed as a photograph within a book. Rather than being presented with a little postage stamp view, or the feeling of a film clip, 4K at 60p can feel like a window into reality, even when held on your lap or propped up at a café table.

4K isn't just about long form or narrative film, nor is it only good for visual spectaculars or intense music video experiences – the leap forward in clarity, the ability to allow viewers to pinch and zoom within a video, creates new uses within training and education, science and technology.

For me, that's the point of the PXW-Z100: you're buying a good, solid videographers camcorder – and you're also buying the fast track into the world of 4K.

COMMENTS ON 4K!

Markus Dürr, Product Manager, Camera Systems, Arri

With 4K being the red hot subject on everyone's lips at IBC, we spoke to a range of influential people, some of the smartest minds in the industry, to get a sense for where 4K sits at the moment and where we may be heading. Definitely some interesting and opposing views on this latest wave of technology.

Let us begin with comments from Arri. Arri has been at the centre of film production for close to 100 years and has successfully moved from film to digital cinematography. The Arri Alexa - a 2K digital cinema camera has become an accepted standard for cinema production. Markus Dürr, Product Manager, Camera Systems, Arri, explains that it isn't all about resolution that makes a beautiful image.

"YES, SKYFALL WAS EVEN UP-RES'D TO 4K"

RY: The Alexa is a 2K camera and the new Amira is a 2K camera and there's a lot of 4K cameras and even going beyond. Is it about whether it's 2K or 4K, or is it about how you've built the image and what you've done with it. Talk to me about that.

MD: Yeah, you tell it. I mean it's not about the spatial resolution or whether it's 2K or 4K, it's about the image quality and that is what I think Alexa is really a great product for great image quality, and whether it's 2K or 4K, that doesn't make a big difference.

RY: OK. I'm sure there's others that would argue against that but I'll just –

MD: Of course, and I'm sure but that is our standpoint, and the feedback from the customers, if you look at the movies which are shot in Alexa they kind of support our statement that it's not about spatial resolution. There are other factors which make an image quality, the dynamic range for example a very important part of that, skin tones, how you render skin tones, natural colour separation, all that stuff, all that combined together, that makes the image quality, and the spatial resolution is one part of that, but only one part.

RY: Well I totally get it and I was told Skyfall was shot on Alexa, and that's a beautiful-looking film on the big screen.

MD: Yes, Skyfall was even up-res'd to 4K and was then show on 4K and that looked fantastic!

RY: OK. I have long believed that it's not whether you're 2K or 4K, it's what the pictures are like, and even 1920x1080 shot beautifully can look fantastic, and I think people do get caught up in the numbers.

MD: Yeah, look at Life of Pi, that has been shot in HD. Very successful visually, very impressive movie shot on HD. That tells you a lot about how important spatial resolution is, and tells a lot about how overall image quality, how important that is.

RY: Wonderful. Great to speak to you Marcus, I'm so happy that I've got this information, and this is one to watch, this is a big deal, I'm impressed.

MD: Thank you very much. Thank you.

RY: Cheers.

Jeromy Young - CEO, Atomos

I first met Jeromy Young when the Ninja was a concept and the Samurai wasn't even conceived. I was immediately taken by Jeromy's enthusiasm for high quality 10-bit recording and raising the quality potential available to the video community. Atomos have since changed the industry by making ProRes and DNxHD recordable onto affordable media. The latest product, the Samurai Blade, is a huge step forward once again, enabling calibrated monitoring with high quality recording on location. Jeromy looks forward to 4K, however, declares, for the moment, there's a lot of life left in HD.

JY: 4K's coming and the bandwidth for that is off the charts. We're pushing ourselves to make sure we can do that - you can see a lot of camera makers are struggling with that. They're getting bigger and bigger cameras because the 4K stuff is difficult to keep cool, there's a lot of heat, there's a lot of electronic movement of data and of images which makes it difficult to process.

RY: Where do you see the industry going in terms of 4K. My feeling is that we're going to have a tiered structure of HD, 2K and 4K and then obviously there will be a few standards beyond which may take a while to get locked down. I think the whole HD format is going to be with us a very long time and obviously 2K and 4K for cinema but where does 2K and 4K fit in with normal people's lives. I know they're saying we're going to have 4K and 2K televisions in our home's but do you think people are going to want that and need that?

JY: It depends how much they can convince the consumer that they really need that new TV. I know that my parents, for example, only bought a flat panel HD TV last year. So they're not going to upgrade to a 4K TV for probably another 10 years. And that's the kind of level of the average Joe that will determine the pick up of it.

I do think that it will move a little bit faster than HD - this is just my opinion. A little bit faster than HD because HD took a long time to have all its ducks in a row: monitoring, editing, cameras, recording - to have all of that ready took a long time. 4K it's coming all at once. And so that infrastructure will be there I think within the next 6 months to a year and I've said it in the press that I believe there's 20 new cameras coming out before or at NAB - we've already seen 5 from Sony and Panasonic. Once that gets picked up by the masses - which I think will happen in the next 1 - 2 years, then you'll see a much more fluid movement towards 4K.

HD is here to stay - you're right. We're seeing massive boom - we don't record 4K. And the reason we don't is because there's no - and there still aren't - not the number of cameras to make it viable for us to support. And just like HD everyone was talking about HD for a long time, but they hit record on their DV or Digibeta every day for 5 years and then they decided to go HD.

RY: I remember hearing about HD when I was like 8 years old. It took like 20 years before HD actually got into our homes. There were CRT HD monitors, they were so expensive. No- one was ever going to be able to afford that technology on a mass-market level. It was always going to be something niche for the highest end - but now HD is everywhere. So it will be interesting to see if coming of 4K does accelerate as you're saying.

JY: I think it will but I don't think we'll get to the current HD level - I think you're right, for 5 years. We'll see a big pickup over that time, and it will be a necessary move, but you'll see UltraHD in the 3840 x 2160 or whatever it is. Just the 4 HDs put together. I think that will be mainstream, so I think you're categories, you should say: HD and Quad HD, let's call it, and then 2K and 4K. And I still think that delineation is "this is the masses and TV and general public." This is "cinema." And 2Ks been that for a long time. And all these cameras don't do 2K.

RY: When you see a movie like Skyfall, which was shot on Alexa, it's fantastic. And it's like...

JY: Do you really need any better than that?

RY: It's like people worrying about megapixels on their still cameras when we got over that a long time ago. Someone told me Life of Pi was shot at 1920 x 1080. How can that possibly be... and it looked so good! So what are we getting at: 2K, 4K, 1920 x 1080, how much does it matter?

JY: Well I think there's 2 categories of people again. I think the masses will go with what they're being told and what companies are trying to sell, because that's just general human nature, no matter which industry you're in. And I think the craftsman will use the tools which they believe are best for what they do. And I don't think that is a 4K camera right now.

RY: Don't get me wrong, I'm not at all disinterested in 4K, I'm just questioning what is going on.

JY: And you can see our position. We haven't made a 4K recorder. We could of. But who would I sell it to and for what camera today? We'll go for 4K when there's 20 or more cameras that we can connect to, that makes business sense 'cause there's a big customer base to go after.

RY: Well without doubt the next year, 2 years is going to be a very exciting time!

JY: Yeah - exactly! And we're gonna be right in the thick of it.

Stuart Ashton,
Director of Blackmagic Design EMEA

Stuart Ashton is Director of Blackmagic Design EMEA. He is incredibly knowledgeable about the Blackmagic product line and the overall state of the video production scene.

Without doubt Blackmagic are a company on the cutting edge of technology. Already they have 4K capable vision mixers in their Atem range, 4K IO devices, they have announced the Blackmagic Production Camera which will shoot 4K content. This company has 4K as part of their plan for providing solutions to the video community. This is what Stuart has to say about emerging 4K technology:

"WE CAN'T STOP IT. IT'S HERE."

RY: Stuart, I'm particularly interested to hear your views on what 4K means in the marketplace, because obviously 4K is a fantastic format for big-screen projection; do we need it on our 40-50 inch televisions?

SA: Well I think you just made the point there, on large screen. I think that when we start to talk about Ultra HD and the 4K workflow there has to be an understanding that 4K actually is here already. You look at the consumer TV companies like Samsung, LG, area already producing Ultra HD TVs. You look at the fact that in the live events market in AV, Ultra HD is already a very prominent part of that because when you're at a concert or a festival and you're stood at the back and you're looking at those giant jumbo screens, what those AV guys are doing is sticking 4K images up there. So there's certainly a place at the moment for Ultra HD. I think what we now are starting to hear about is that the broadcasters are talking more about this as a path that they want to go. They trialled obviously things like 3D a couple of years ago, and felt that that was not necessarily something that was mass-market or something that offered a competitive advantage. I think that what they're looking at now with Ultra HD is that that is absolutely the next transitional stage from where SD went to HD and now HD is Ultra HD. So we're getting a lot of questions asked to us about Ultra HD workflow. At the moment it may be not for everybody. There are certainly people out in the market that are quite happy with HD and are more bothered about delivering HD content, but there is definitely a lot of people out there who are talking about Ultra HD as well.

RY: And do you think that we're going to end up in a situation where basically it went from SD to HD and there's very little SD around now. Of course it does get used in broadcasting, it's got its area, but it's certainly not in the prime of its life is the best way to say it. Do you think in another three to five years HD is going to go that way, or will we end up with a tiered structure where there's still loads of HD, loads of 2K, loads of 4K and then possibly up to 6K and 8K beyond?

SA: It's very hard to say, Rick. I think when you look at the way the industry has really developed over the last few years, it's very difficult to say, 'OK, well this is where we're going.' We see all of these bumps in the road and changes to what we do and I think that one minute we're focussed on one thing and then the next minute we're doing something completely different. I think that HD today is something that we're very happy with, I think you speak to a lot of people about HD delivery, I sincerely don't think that people are rushing around to go, 'I absolutely want that next thing.' I think that HD is around for a long time. I think that when you look across the regions and you look across globally there are still many, many countries around the world that are still making the transition from SD to HD, so the way this works is almost in a tidal wave. You've got the front-runners, the countries and the people that really want new technology, and then behind that you've got a lot of people still catching up. When you start to look at the content and the HD delivery of content, I think that we're going to still see that for three to four years, certainly.

RY: I think so as well, but I also think, whether you want 4K, whether you couldn't care less, whether you're excited about it, whether you think it's just a marketing spiel, I think it's unstoppable. It doesn't matter what the opinion is, the industry will drive this forward. This isn't 3D, which just didn't appeal to a lot of people. People will be fine with 4K, consumers will look at it and they'll watch it and they'll think it's great – or they might not have much of an opinion but they're not going to be put off it – so my point is it's unstoppable, whatever your opinion might be.

SA: Well I think when you look at say our 4K camera, when you actually look at the Production Camera 4K and you look at the edge definition now on a 4K image, because you're working with more pixels you're actually getting almost like a three- dimensionality to an image. I think that when you look at 3D it was very much about focussing in one particular place, and it was almost quite unsociable, it wasn't the sort of thing that your whole family sat around wearing glasses. It was something that you wore for a special reason – it was that special film or you were computer-gaming and you wanted to really get inside the game. I think that if you're looking at 4K because there's no requirement for glasses but you have that increased resolution, you're getting that extra definition which gives that, as I say, an element of three- dimensionality anyway.

We can't stop it. It's here. It's going to happen. I think it's something that people will either choose to do now or people will hold off and do in a few months or a few years time, but I think that that's the way the industry is going and I think that's something that's here to stay.

RY: It's totally exciting because you guys are bringing out a 4K camera that we can afford. The 4K cameras that are out there from other manufacturers, you've got to spend a lot of money to get them. What you guys have made possible puts us in the position that we can actually step in, if you want to try it you can do it without breaking the bank. If you want to wait a bit, those options are there.

SA: You've also got to look at the fact that we're very heavily involved in things like 6 gig SDI to be able to transmit those Ultra HD signals across a single cable. That was also a barrier before we thought well, how can we broadcast this around? How can we move this across distances? Well it has to be done across four cables or two cables. But now with 6 gig SDI we can now do that across one cable. We're announcing things like convertors at the show where you can take a single SDI cable in and then transmit that across optical fibre, which now means that you can send 4K not only over 50 metres but you can send it over many kilometres. So there's all of these things that now need to be addressed. If we're going to take Ultra HD seriously, if we're going to talk about switching Ultra HD live, recording Ultra HD, acquiring Ultra HD, then we need all of the manufacturers to start providing the solutions in which our customers and our users can really start to become creative with. And that's what we're trying to address as a manufacturer. We believe heavily in it. We feel like we've got a lot of solutions in that area and I think that as this becomes more accessible to most, we'll see more of an uptake and we'll see this happening much quicker.

RY: And from the point of view of what Blackmagic is doing, you believe in it, as you just said, and yet you're catering to all of the levels, which is great. You've got a Pocket Camera – 1920x1080, you've got the Cinema Camera 2.5K and then your Production Camera at 4K, so all the bases are covered.

SA: One of our philosophies has always been the openness and the flexibility. I think that you've got to always look at when you're moving forward with technology that you don't forget the people who are not ready to go there just yet. So when you look at our Switchers they're SD/ HD/Ultra HD compatible, and I think it's important that you've got to expect people to make steps slower than other people. So we have to keep our minds open as manufacturers, we have to always look at the latest technology but we always have to make sure that we're in touch with what our customers want.

RY: Fantastic. Stuart, great to get your thoughts. Thank you.

SA: Thanks very much.

"BUT NOW WITH 6 GIG SDI WE CAN NOW DO THAT ACROSS ONE CABLE."

Kevin Louden
Product Manager Telestream

Telestream are a giant in the world of encoding and distribution. Their technologies are used throughout the industry to encode, transcode, and get content in front of audiences. My own experience with Telestream is with Episode, a software encoder which, in my work, is like having a standards converter built into my Mac. I have yet to find another encoder which lets me move files between as many formats as Episode supports, with the speed and quality which Episode provides. This is essential software!

Kevin Louden, Product Manager at Telestream, gives his views on the 4K situation.

RY: Speaking to Kevin Louden from Telestream. Kevin, great to talk to you again.

KL: Good to see you again.

RY: Thank you. OK, I want to talk to you about 4K, this wave of 4K that's being thrust upon us all.
What are your thoughts about this?

KL: Thrust upon us <laughs>? Some of us may want it.

<Laughter>

RY: The manufacturers are definitely pushing this, the camera manufacturers, the screen manufacturers. And what are your thoughts about 4K, obviously if you're going to put it on a cinema screen 4K is a wonderful thing, but do consumers want it, and do producers that are not producing for cinema need it?

KL: I think that there's certainly a lot of speculation and talk about whether it's relevant to the average person sitting in their living room watching their even 50 or 60 inch television, whether they could make a difference and whether they care. I don't know either way, to me, I think the closer you get to the camera, so in the production and post-production, the more I think it makes sense. For me, as a former cameraman, the higher you can acquire something the better resolution you get, the better fidelity and the longer that content is going to be useful. Because of course resolution, as we've seen, keeps going up and up and up, you know the more legs it's going to have so when eventually it does make sense for the average person to have in their living room and they want it, it's there, so if you acquire now you'll have it, if not you're stuck with something that's too small for the screen. To look at it like when everything used to be acquired before digital film and high quality tape everything was on film, so aren't we so lucky that things that Seinfield and I Love Lucy and Cheers, multi-camera stage comedies and dramas, were shot on 35mm film, so now they were able to make a wonderful transition from SD to HD because they had that high quality master. It's the same thing with 4K, you shoot in 4K today, when you need 4K for delivery years from now you'll have it. So it makes more sense I think closer to the camera.

RY: That does make a lot of sense, but we're talking about big-budget things, everything you've mentioned there is something that's got money and does want to be persevered. For corporate video producers, for the vast number of camera people out there that are not shooting something on the scale of Friends, Seinfield or Avatar or whatever, do we want 4K, do we want the hassle, do we want the increased cost and where is it going to take us?

KL: Right and there's probably a scale of must to don't care that goes right along with that. So the purpose of the content, the budgetary requirements or restraints of the content and the production, the end medium, how it's going to be viewed and looked, the longevity of the content, you know, is this timely content, is it only going to be good for a couple of years, is this something that could be relevant for 30, 50, 100 years? Those are all going to make a factor in how do I want to acquire this; how long is this content going to be relevant and important and wanted and desired, whether it's commercial content or not? It could be strictly archival, it's a documentary, it's combat correspondent footage, is that going to be… isn't it great that they shot things in World War 1 and World War 2 on 35mm film.

"EVERYTHING HAS TO CHANGE"

RY: But for a lot of people, the business case isn't there at this stage.

KL: I don't think so, absolutely not. I think that if it doesn't make financial sense, either for money or for the content, the need of the distribution and the content, it doesn't matter, you know? 1080p is fantastic.

RY: On another level, all these opinions don't actually mean a whole lot, because I think it's an unstoppable wave, I think this is not 3D, we talked about this before we began the interview. 3D brought a tremendous amount of workflow… challenges is the word, it was expensive, it was difficult and it didn't really catch on 'cause no one cared. I don't think the transition to 4K is going to be painful; it might cost more money, but in workflow we're doing what we've already done just with better quality.

KL: I agree with you, I think the contrast between going from 2D to 3D and then everything has to change, the cameras are different, post-production is totally different, the distribution, the viewing mechanism is so different from just a change in resolution. You know, it's still a flat linear, you're not dealing with parallax and all those crazy things that were in 3D. The transition is much more natural, much more intuitive; it's a bigger frame, as opposed to a whole different medium.

RY: One cinematographer said, 'The problem with 4K is that it's like an artist doing a painting and you can see the brush strokes, and we don't wanna see the brush strokes, we wanna see the painting.'

KL: It's funny you say that 'cause we were talking just yesterday about 4K, 4K for broadcasts especially, not or single camera dramas or digital cinema or things like that, but just for ordinary… like the news, right? You look at the newscasters today that are on HD news broadcasts, they're like porcelain, as opposed to the kind of craggy newsman of yester-world, you know? Now you've got these beautiful… 'cause they have to, they have to, the HD screen, it shows everything.

RY: OK another question which is connected to all this but separate: I've never fully understood why we had 1920x1080 and then we have 2K, less than 10% increase in resolution and a whole different format. It's like 2K is cinema, 1920x1080 is broadcast and yet surely 1920x1080 would look good on a cinema screen when it's only a few lines less?

KL: Absolutely, yeah, well I think that's really… it's a broadcast filmmaking thing, you know, filmmakers work in a certain set of resolutions and frame sizes and broadcast worked up in another one. I think that's all it is, it's just a different school, different schools.

RY: And when you look at ARRI Alexa, and there's been so many beautiful movies done on the Alexa, including Skyfall, the James Bond movie, and that's a 2K movie and Alexa shoots 2K, it's not 4K. And I spoke to the people from ARRI and they said to me, 'It's not all about resolution, it's about what the sensor does and the tonality and the dynamic range.'

KL: Absolutely, yeah and there's been a lot of discussion about that and is it necessarily more pixels that we need? Fidelity and contrast and how do we get those things to be higher definition; how do we get the dynamic range of our broadcasts or web or whatever things? So I totally agree with whoever you were talking to from ARRI.

But what I don't agree with is increase frame rates though, I'm not a big fan of that. That's just me personally. There's a lot of say well, 'Maybe for higher definition we need a higher definition temporal resolution, 48 frames per second, 60, 100, 150?' They were showing in the other hall there. I don't know. Call me old-fashioned, I like 24, 25.

RY: Did you see the 150 frames?

KL: I did yeah.

RY: What was it like? I've never heard of such a high frame rate other than for high-speed work.

KL: They had like someone juggling, you know? It's wonderful, it does a really nice high fidelity capture of the action and… I'm a drama person, I'm a film person and to me there's a longstanding tradition of acquiring at a certain frame rate and cinematographers and directors use that as an artistic tool. You move the camera in a particular way to actually use things like motion blur as a storytelling element, so when you change the frame rate it's a whole different language, and like I said, call me old-fashioned, I like that.

RY: If there was a big push towards increased frame rates and everything was suddenly 50p or even higher, they'll be plug-ins, they'll be people giving all the means in the world to bring it back to 24.

KL: Well right, or introduce motion blur simulation, maybe yeah, I'm sure they would.

RY: I've spoken to other film makers and they... obviously there's different points of view as there is with everything, but what you said, a lot of people, 24p that's what they want, they don't want more frames. Silky smooth is not necessarily better, a bit of grit, a big of grunge... like scars in fine leather, that means a lot.

KL: Yeah, I mean I know that there's very respectable filmmakers, leaders in the industry, who would disagree and think that greater temporal resolution is the way to go. For me it's a matter of taste. I guess I would humbly agree to disagree <chuckles> with such titans of the industry.

RY: It's fine, it's all opinions and there's so many choices and there's different ways to do it, and there'll be wonderful top-end filmmakers as we're talking that want 50 frames a second, want 6K, want 8K, whatever it can go to, and there's others that are just at the same high level that don't want anything more than 24p and probably want something like 2K, which isn't going to show as many blemishes as 4K or beyond.

KL: Yeah I'm sure filmmakers, once they start working with those frame rates, will start to utilise that as a storytelling... they'll learn the language of it and the texture and the feel of it and will be able to use it to create compelling storytelling as they work with it, so again ... I have grey hair.

RY: Now we're at the point where this stuff is just coming out, and I do think it's an unstoppable wave, whatever everyone's opinions are, because the transition isn't going to be as difficult as it has been with some other major jumps.

KL: Oh yeah, absolutely I think so and everything is kind of coming together to ensure, I don't know, that that happens. All the camera manufacturers are out there, they've got the product ready, all the way down through editorial systems, broadcast systems and now we've got HEVC sliding right in there enabling that over-the-top IPTV web delivery. The screen manufacturer is there, the televisions, projectors for the home, retina displays, all that, it's all sort of there ready for it – whether people will notice or not, I don't know, but all the tools and things like that that we need are there to do it.

KL: I wonder if there's another aspect of it that I just thought of as we were talking. You know how digital video and DV, even at the beginning it sort of opened up fantastic opportunities for new people to create content where barriers were there just in acquisition of gear and technology. It enabled a whole wider group of storytellers to tell stories and to distribute content and now we have all this wonderful technology for distribution. Storytellers can create content and distribute it directly to their audience. The wonderful opportunity is there. So I wonder if it'll now, as it did with television and broadcast, will open up new opportunities for storytellers in cinema, to allow more storytellers to create cinematic experiences. I mean 2K, certainly yeah, you don't need 4K to do it, we have the tools to do it now but it would allow them to work at those resolutions again so that it future-proofs maybe that content and, like you said, the price- points continue to go down as the resolution goes up. So maybe it will allow more storytellers to create wonderful stories for us to enjoy.

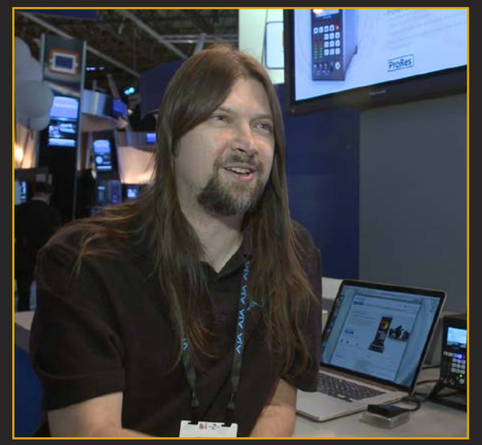
RY: For the big screen .

KL: For the big screen, right, where they couldn't before.

RY: Kevin, wonderful insights, it's great to hear what you've got to say. Thank you.

KL: Thank you. That was a good conversation.

"I'M SURE FILMMAKERS, ONCE THEY START WORKING WITH THOSE FRAME RATES, WILL START TO UTILISE THAT AS A STORYTELLING..."



Jon Thorn - Product Manager, AJA Video Systems

When Jon Thorn speaks we listen. He is one of those guys that understands the production process and is deeply knowledgable about producing content to the highest levels. I've interviewed Jon several times. This interview, about the impact 4K, is revealing and explains just why we need 4K, the benefits, and also why this increase in resolution is for more than just the big screen.

RY: Speaking to Jon Thorn from AJA. Jon, wonderful to speak to you again.

JT: Yep, nice to see you.

RY: Thank you. OK. 4K, it's unstoppable, I would like to say it's coming but it's not just coming, it is already with us. 4K is obviously wonderful for the big screen; do we need it in the home and why do we need it in the home?

JT: I think the big thing is a lot of people have a misconception that there's no real benefit in the home but the reality is even on a 32 inch screen which we would tend to sit closer to, it's very apparent the difference in resolution between that and HD. Just the other day someone was in the booth and they were looking at the two and they were like, 'Oh, I can see the sparkles form the snow,' individual flakes of snow and little pieces of things that on HD you simply couldn't see. In other words, if you're going to have that high a quality of resolution, it would be nice to enjoy it. A lot of people think you're going to need this monstrously large screen, but it depends on how far away from the screen you are that you're going to perceive the difference. So arguably when you're closer to something like a 32 inch screen, it's very apparent. If you're talking about a bigger screen, most homes people want to put 55 inch screens in, it's still apparent on that. If you walked around the show you'd see examples from LG, Samsung, Sony, and it's very obvious to me anyhow that the higher resolution equates to a much better picture.

RY: And how do you see it going? Do you think that we are going to see this in the home, give it two years from now, maybe three years? Do you think we'll see a big uptake? Is it almost going from SD to HD a generation later?

JT: That's actually my analogy is that this is like the equivalent of when we went from SD to HD. We had a big jump in picture quality. Some people don't think it's that big a jump. I think that's 'cause they haven't really seen much high-quality content, and in particular you have all the major broadcasters already starting to look at ways to do ultra-high-definition broadcast. You already have some experiments in Europe so it's only a matter of time. And I think from a consumer standpoint HD TV has been around long enough, and when I say long enough nowadays it's like ten years is your maximum lifespan for technology, so you can expect that it's been close to ten years since the HD started to take over and ultra-high-def 4K is really the next stepping stone for resolution.

RY: And do you think that 1920x1080, our HD format, is going to be around in five years?

Obviously it's not going to all disappear but is its life going to be on the way out?

JT: Well I think what you're going to see is the same thing we saw with HD, which was when we went from SD to HD there were several years where SD was very prevalent, and in some cases there are still devices that you want to down-convert and send a signal to and I think you'll see the same thing with Ultra HD, 4K, but the difference, the critical difference is that for broadcast you're literally talking about not some strange number factor, quad-HD so to speak, is literally that, four quadrants, and because it's exponential difference, not something that would be hard to scale, it's easy to scale, from quad-HD to 1920x1080, if you had 3840x2160 that's an easy conversion, unlike when we had SD which was a square, 4x3, right? When we had that, that was much more difficult. So now we have an easy transition and I think that's going to make a big difference. You're going to see a lot of HD monitoring and 4K feeds.

"THE FURTHER YOU BACKED UP THE PROJECTOR, THE WORSE IT LOOKED."

In fact at this show we introduced a convertor, a dedicated convertor that's 4K 2HD, because you might take transmission lines but you might not have a 4K monitor at some of your setups. Well you need a way to monitor it, so you could down-convert that to HD. It's going to be very similar to the transition period, until there's many, many more Ultra HD monitors. If you walked around this show, it's really been since CES, I went to CES, there were high-definition monitors of course everywhere but there were way more ultra-high-definition 4K monitors than we even expected. And of course that continued to NAB and then it continues here at IBC and undoubtedly by NAB, 2014, I think the majority of things will be in 4K.

RY: A lot of us are heavily invested in HD, which makes perfect sense, that's how we make our living. I've been told that 1920x1080 at 10 bit 4:2:2 will up-res really well to 2K and to 4K, but 1920x1080 at 8 bit falls apart. Do you have a comment on that?

JT: Well the big thing here is that resolution and colour specificity becomes more apparent the higher resolution, larger screen you get. In other words it's like the old analogy, if you projected Super8 onto a wall about the size of your hand it looked amazing. The further you backed up the projector, the worse it looked. It's the same idea. If you start with a small source it will look good small. The bigger you want to make that source, or the more you want to scale it up, it starts to not look as good and so with the 8 bit, especially 8 bit 4:2:0, when that scales up it just doesn't look very good. It looks OK on a smaller screen, but we're not really in a smaller screen experience anymore. Everyone's really starting to take home cinema pretty seriously.

RY: And people looking to buy into camera technology or upgrade camera technology, is it the right time to be moving up into 4K or have we still got a lot of life in the HD? What I'm getting at is no one's asking me for 4K production and other cameramen have said the same to me, so is it a good time, you can upgrade to 4K and then still shoot 1920x1080, or down-sample. Or is it worth just riding it out and seeing where this all goes?

JT: Well I think this is a distinct difference from say 3D for example, where we had a little mini- boom in 3D. I don't think it's the same thing. This is really a major effort by both set-top manufacturers, set-top boxes, cameras, edit systems, they're all making a movement to this in the very same way that we moved to HD, so I don't really think you can delay much longer and I think it's going to be more and more accessibly. Sony had two cameras they announced, one at a high-end consumer level and one at a low-prosumer level, they're very similar cameras and they do have some distinct differences, but that's a great example. Sony now has cameras that are anywhere from $4500 to $200,000 and everything in between that can do 4K and Ultra HD. I think when you start to see that and you start to actually see monitors and you see set-top boxes that are running HEVC, H265 encoding … I think there's no way to stop the tidal wave. It's basically what it boils down to. So you can certainly HD for several more years, but I think there's going to start to be an increased demand, and demand is opportunity, so if you're a videographer or a producer you want your content to have legs, and I think your best bet, much like when SD was still the broadcast standard, but if you started shooting in HD you could sell your content longer and to more people because as soon as they went to HD, they were very, very interested in having content and they wanted it to be HD quality, so …

RY: And where does this leave 2K?

JT: Well 2K is very interesting. It was essentially created for digital cinema, and of course 4K, we use that word very loosely. 4K is a reference point, could be 4096x2160, which is a distinction for the DCI spec, much like 2K was a distinction for the DCI spec. And then we have this reference to either quad-HD or Ultra HD which is 3840x2160. That will be the more common broadcast standard, that's what easily will be scaled down to 1920x1080 but the cinema will want to work… if you travel around and you go to enough places, certainly you'll see something and it will say projected in 4K at a local cinema. So that's already happening. If it was digital projection that used to be 2K. Now it's 4K. Even in a very small town that I live near with maybe 10,000 people, there are two screens with 4K projection. So that gives you an indication that even at a theatrical level you're going to see a lot more 4K projection.

RY: And what about looking beyond 6K, which is what RED is doing with their latest sensor, and 8K, which the F65, I don't know that they've enabled it yet but they're talking about it. I mean it's going to go on for ever this resolution game, and I'll throw into the same question that a well-known cinematographer said at one point, this was quoted to me, that his problem with 4K is it's like an artist doing a painting and you can see the brushstrokes, and you don't want to see the brushstrokes. So 6K, 8K, 4K, with so much detail, it can almost maybe take away something – or am I not looking at it in a sensible way?

JT: Well I think the funny thing, your comment about an artistic and impressionistic, I actually am in that camp but I think that when you have very high resolution the advantage is you decide what you would like to reveal to the audience. The difference when you have low resolution is you hope to just show the things to the audience you'd like to show to them. So I think we're reaching a point now where we finally could show the audience every detail, and now in a way you have more artistic control because you can decide, 'Well I don't want to show you that so I'll soften that slightly' and there's no penalty. The only thing that will be crisp and clear to you is the thing you decide, and I think that's really … the first inklings of that were the reliance on shallow depth of field that DSLRs went for. The resolution could be very sharp or it could be not very sharp but it really had a way to tell a story. Now we almost go the reverse. Now we have something where we can have extremely high detail across the entire image, and that may last for like a calendar year, and then there'll be this nice, happy medium where people will emulate what we've done for nearly 100 years with film, which of course won't be with us for another 100 years. So I just think we're reaching a point where it's like the greatest time to use new technology to make images. And in terms of 8K, you have to appreciate that 8K is a big initiative in Japan, in part because of NHK, and their task is to innovate. It doesn't mean that will become something that everyone uses. It just means that's their effort. They've already got 4K working so their idea is well, 4K's easy so I'm going to move on to the next thing, and while that's interesting I think that that's years and years and years away. 4K is definitely something if you walked around all these halls, we're talking about you saw distribution, preliminary broadcast efforts, monitors, set-top boxes, we have brand new capture cards, brand new convertors. It's really, I think it's here to stay.

RY: Do you think it will be a hard sell to get 4K in the homes? Obviously we're professionals, we love this industry, we love the technology, we're the ones that are going to be there, of course we are, even if it takes a little bit of time. It's going to be unstoppable that it will come into the homes, because they'll be broadcasting it eventually, there'll be devices that use it, but are consumers going to spend the money to buy it or are they only going to get it when it doesn't cost them that much more, because they just don't care?

JT: Well I think any of these things there's a natural spending cycle and I would argue that 3D might have done better had it fallen into what I would call the natural spending cycle. And by that I mean that when HD TV, when it first became really accessible to the mass public, at a price point they thought they could afford, 3D wasn't ready yet, and then it was roughly 2-3 years later when all the set manufacturers said, 'Oh … now we have 3D sets'. Well the money had already been spent by a lot of the people to buy the early HD TVs, so I think you have that cycle is about to come back around and so you're going to have a lot more interest in getting the next new, high-quality product. A lot of times it's no different than the automotive industry. You buy a car in 2006, you drive it for 6 to 7 years. That means that in 2013/2014 you say, 'Well … maybe I should get a new car.' Right? You don't get a new car every year, right? It's sort of the same problem. So once people have had their HD TVs for quite a while, it's not about them going bad, it's that they'll be motivated by the thing that's … if you go to a store, like for example if you're in Japan you can go to the Yodobashi, it's a big camera store, and they have a fabulous 4K set-up and you watch this giant Sony 4K television and it's amazing. And right next to it were very good HD sets, but you almost can't watch the HD anymore because you're spoiled – you've seen the 4K and you're like, 'Wow, that's what I want to watch!' So I think that's a very consumer-driven experience. The more the stores start to carry 4K sets and they have 4K content to show, the more the consumer will respond and say, 'Wow, that's what I would like to have!'

RY: OK, we will wrap this up but here's a question: I believe that there's 4K and there's 4K. Now that Sony camera, which is affordable, is not going to be the same as a high-end 4K camera. So where does affordable 4K sit in context with the more expensive 4K? I mean 4K was only seen as a cinema-type standard, but I'm not sure you could buy that Sony camera, however much it is, $5,000 or $6,000 or $6,500 and just stick it in a cinema screen. It comes down to the lenses and the processing and everything else, so is something like that going to be the HDV of the 4K world?

"IT'S GOING TO BE UNSTOPPABLE"

JT: Yeah, that's honestly my opinion. There are going to be tiers of any product that you would make. So for example I do think those are sort of replacements, so to speak, for HDV, so it's going to be event videographers, corporate video, they're going to rely on that type of camera. They want the resolution but they may not need that cinematic look, that dramatic look. Then you'll have another level beyond that, which is the much more, what I would call the bread- and-butter, most common need which is this wide spectrum, some commercial work, some fictional work in the independent world, still have the corporate, still have the event, that's the wide spectrum. And then you have what I call the rarefied air, the rarefied territory of very high-end production, and that's the sort of thing you see the F65 was used on the movie Oblivion, a Tom Cruise vehicle, and it looks amazing. And that's one tier of 4K for Sony and then they have F55 which falls into a very… you could use that for episodic television. Then you have things that are going to be used for again event-type videography.

RY: I thought SD to HD was such a big deal 'cause it was such a big difference in looking at the image quality, but I do wonder if going from HD to 4K is as big a jump, because HD looks so damn good to me! But maybe I haven't seen them side-by-side and you've already made the comment, so I'm voicing my opinion and you've already said what you think of that. But anyway, any last thoughts to wrap it up?

JT: No, I just think that you're living in a very interesting time where things move pretty quickly, and so unlike 3D where it was … how do I want to put this in a polite way … it was not for everyone, not everyone was interested. Almost everyone likes to see the best possible picture they can. The 3D was different because it was like an experience, so I don't equate 4K and Ultra HD with 3D. Some people think, 'Oh, it's just a trend.' I don't think it's a trend. I think everyone wants to see that. My final thought for you would be this is the greatest opportunity for us, because for the first time cinema, which will

"THINGS MOVE PRETTY QUICKLY…"

RY: I think we'll know that HD, 1920x1080 is really on the way out when every major production that all the broadcasters do is all done in 4K, and then we know that it's had its time.

JT: Yeah, I think the big movement starts usually in sports, because in sports even at this show we've got a thing we call TruZoom software that runs on our Corvid Ultra, and even though the broadcast is in HD, we take a 4K sized raster and we can zoom in to HD. So we're using the high resolution to produce something that if we zoomed in on HD we'd have sub-par quality at HD resolution. It's this hybrid period in our history. Just like when we went from SD to HD and I just feel like that's going to continue to grow.

be 4K, and your home experience, which can be 4K, will be the same. Before this that was never the case. So from a development and deployment standpoint, when you're distributing your content and even the internet is looking at 4K capability, that's a huge thing, that basically you're going to be able to take what was in the cinema and in your home, whether you get it over broadcast or streamed over the internet, could all come from the same resolution, and that's never happened before. That's always been a major stumbling point for technology in general.

RY: Great to speak to you, Jon. Thank you.

JT: Thank you.

Wayne Andrews is one of those guys who lives and breathes video technology. Over the years I have had many conversations with Wayne about new trends and directions for video producers. Wayne is a great source of information on where technology is headed and things to watch out for. His thoughts on 4K are warmly welcomed.

matrox

Wayne Andrew - Senior Product Manager, Matrox

RY: Alright, 4K, it is the thing that everybody's talking about, certainly at this show. Now I've got all sorts of different opinions from people. Some people can't wait for it, some people aren't even interested in it, but to me, from what I see, it's unstoppable. It's a format that's already been with us a long time but it's now becoming accessible to producers like myself. The big question is, do we need 4K in the home; why do we need 4K in the home; or is it more of a cinema thing for big screens? What are your thoughts?

WA: I strongly believe in the larger the screens get, we're going to need more pixel density, so we've got 55, 65, 75 inch TVs that we're sticking into our living rooms now. You throw standard def on that, it's just going to look horrendous. Even those sizes at 1080 are losing its fidelity, whereas 4K it just delivers the crisp, sharpness, as if you're sitting … for example, if it was a picture of a fall, autumn leaves changing colours and that, it's like you're sitting right there amongst the trees, it's like breath-taking. We're actually showing our 4K demo here and we're getting people stopping – the first time they're actually coming across an image in true 4K, full 4K not quad full HD, not to be confused with quad full HD or Ultra High Def, we're talking full 4K, which is 4096 pixels – and they're just stopping like they got caught in their tracks and they're just impressed in the image that they're seeing. Never seen that quality before.

RY: I think with 4K it's pretty much unstoppable, and for a few reasons. When we went from SD to HD there was a lot of issues and challenges we had to deal with, when we went from interlaced to progressive that took a bit of shifts in people's mind-sets, how to deal with it. When they brought 3D in a couple of years ago, two or three years ago, that was so difficult, it never really caught on and I don't think people really wanted it, but 4K is different. This is not difficult. We edit the same way we've always edited. We just need more processing power and bigger hard drives perhaps, 'cause more information, but it's not difficult, it's not going to turn our workflow upside down. It's just going to give us more.

WA: That statement that you just made about the storage is true when you're looking at formats such as DPX, which are large, large files especially as time grows no the file, but we've got nice contribution codecs now, such as ProRes or even Sony's XAVC, so these are low storage requirements, a little bit bigger … for example Sony XAVC goes up to 600 megabits, whereas DPX is 35 megs per frame, so you're getting quality of 4K in a contribution-level codec that doesn't really break the bank when you have to store it. And then producer and camera operators such as yourself can now shoot in 4K, use the full 4K image, either scale that all the way down on output for current 1080p deliveries or use a 1080p … let's say frame and then pan and scan with it and then you can use it and really bring the focus to a certain area of that 44K frame where you want it. You know exactly what I'm talking about – you're the creative dude!

RY: I understand it conceptually, of course. I even do it on HD where I have to punch into an image, but of course you can only go so far. I find I can get 50%, 40-50% out of HD and it still looks pretty good and you go further and it doesn't look so good. If you've got 4K and you go to 1080, as you said, you'll be able to go way in and still do some amazing things.

WA: Right, so just as a visualisation, Ultra High Def is actually 4 1080 pictures, by 3840, so 4K's just a little larger, 4096. So it's like four times the image, so 4 x 1080p's for example to give you that nice, crisp image, and then you have the plethora of pixels within 4K that really define the sharpness of the picture that we're immersing with, interacting with, being absorbed by. You just move right into it. I think there's people that

are watching this that have never seen 4K, the first time they see 4K they'll understand what I just meant by that. Actually I'm getting little goose-bumps, chicken-skin right now, thinking about it and talking about it. <Laughs>

RY: The thing I think though is there's 4K and there's 4K. I mean heavily compressed 4K, is that what we want, or do we need the full-blown bandwidth 4K?

WA: No, I actually believe that it's not … yeah, heavily compressed, but the codec is such … well, like all the algorithms and the compression techniques used within ProRes and XAVC for example are pristine. You can't tell the difference between DPX or … where we're stating is decoding, transfer speeds, again you don't need that huge storage, like fibre or whatever to be editing on DPX. You can finally have a contribution-level codec that we can injest, transfer, edit, rendering and deliver, and then the format of the client. Even all the way down to standard def 16x9. Imagine that, doing it, we call it punching in, you know, 1080, 720, 2K for that matter, all can be derivatives of 4K as a delivery format, so why not shoot in as high a resolution as possible and then tailor your delivery to your customer. Possibly later, in the future your customer will come back, you shot in 4K, now they want it 4K, now that it's mainstream. We're not on the cutting edge of technology.

But yeah, I can't get enough – I'm so enthusiastic and excited about 4K and where it's going to take us into new possibilities and realms and picture quality and story-telling. It's just where we're just about to have that realisation where everybody in the world should be having 4K. The Olympics that are coming in 2016 in Brazil are all being set up for 4K delivery, Japan's going to do the World Cup this coming summer 4K P60, so it's not something that … it's in the near future, it's here now, 4K. And with Sony's announcement last week of 4K cameras at 5K, it's now affordable, so the next time we go out and buy cameras, we should really consider 4K, even if customers are not demanding 4K. Get that fidelity right off from the beginning.

That's just my opinion. I'm not talking for Matrox – it's my opinion.

RY: Great. Where do you think 1920x1080 is going to be in three or four years from now?

WA: Where is standard def right now? So you know, there's some countries still broadcasting standard def, so I think that transition will move to 1080 and then will push it down to 4K and beyond, as we … you know, the size of that screen that's behind us, that's not on … thing, right? You can see 4K. It's all over here, all over the floor, everybody's at it, it's here, it's now, technology's being adapted really quickly. You think where the new Mac Pros are going to be able to screen through 4K no problem, HP on the PC side, Ivy Bridge is coming, 48-core systems. It's not beyond anybody's reach at this point. You can do it real-time 4K editing. I mean we've had a hard time doing real-time standard def 10 years ago, so … just leaps, the technology's going so fast, exponentially.

RY: OK, one more question, slightly different but still related. Something that's perplexed me, I don't really get it, is we have 1920x1080 and we have 2K, and it's like less than 10% different in size of the image. Why? Why do we have these formats? If 2K is good enough for a cinema screen, is 1920x1080 good enough for a cinema screen?

WA: It's aspect ratio, it boils down to the aspect ratio. The cinematographer's vision of the final product and the director's, 2K was the sweet-spot for them.

RY: OK, I get it. So the only way to do that with 1920x1080 is to crop it, whereas 2K gives it to you native.

WA: That's correct. Or you throw up the white bars to get 1:8:5 or whatever, but yeah, exactly.

RY: Thank you.

WA: You're very welcome Rick

"I'M SO ENTHUSIASTIC AND EXCITED ABOUT 4K "

I've had the pleasure of working with James Tonkin in the past, I've seen him present and demo several times, and find him to be a dedicated filmmaker who knows what he wants from technology and how to get it. James has worked with some of the biggest names in entertainment and it is is clear to see why - he's a filmmaker who has honed his craft using the tools available to him to an extraordinary level. James is excited about 4K.

James Tonkin - Director, Hangman Studios

RY: I'm speaking to James Tonkin, filmmaker from the UK. James, there's a big push in the industry towards 4K. It seems that manufacturers are coming out with cameras, there's several out already, more are coming out, and I have this battle in my mind. I've been speaking to other film makers about do we really need 4K, or is it for the 2% of the film-making population that are actually putting stuff on the big screen? Tell me what your thoughts are about the whole 4K situation?

JT: Well Rick, I'm one of those people that chases resolution. I love the idea of ultimately … put it like this, my favourite camera formats that I've seen have always boiled down to being IMAX style 70 mm print. I went and saw a 70 mm print of The Master and was blown away by the cinematography, so for me resolution is right up there, it's one of the things that I really, really want from a sensor. And yeah, I love the idea of 4K, 5K, 6K. With resolution it's giving us not only increased post options to be able to re-position shots and do things like that, but more importantly for me it's just giving us great detail and a look which I think is taking us closer to a 70mm print look.

RY: What is it about the look of 4K that would be different from 2K or 1920x1080? I know it's increased resolution but if you've got a sensor size that is Super 35, we're talking about the amount of pixels and the amount of information within that sensor size, so how does it affect the look?

JT: Well I think part of it is just the detail that you get, that's really it from the resolution and it's a naturally occurring detail that you're getting from resolution, you're not having to sharpen anything, you're not applying any post software artifacts to your image, you're getting it all from the source, from the sensor, and that's what I love about it.

RY: And what do you see happening within say two or three years, do you think 4K is going to be quite widespread and it's gonna be asked for by clients or do you think we're gonna have like a tiered structure where there's 1920x1080, 2K, 4K and beyond? Because it seems all these formats, they're certainly not going to go away as new ones come out; it's just what happens with the ones that exist.

JT: I think when you look at the integration of 4K you have to look at it in two respects, you have to look at it as an acquisition medium, and that's what I'm really behind. I like the idea that if I'm going to record something, if I'm fortunate to work with a seminal band and to record a seminal moment in their career, I want to preserve that in the best data and the best format I can. And because I don't have the luxury of shooting on Super 35 anymore or being able to shoot on IMAX, not that I ever had that chance, I think shooting with the highest resolution is going to preserve that footage throughout time. And that's really the benefit I see of acquiring the higher resolution; you're thinking about the future and the longevity.

The other side to 4K is how you're actually going to post the footage. And 4K doesn't just mean everything goes out at 4K; like we've been saying, you could acquire at 4K and then deliver it still at 1080. I think it's all about what's relevant for where you're actually delivering to and really to your clients' needs.

RY: So you're obviously someone that's very excited about 4K and beyond?

"CERTAINLY I'VE ALREADY PUT MY ORDER IN FOR A 6K UPGRADE"

JT: Completely yeah and beyond, definitely, I mean I shoot with different cameras, I shoot with a Sony FS700 which has always had a 4K inbuilt sensor and now has the option to actually realise that with external hardware recording options. I shoot with a RED Epic which shoots at 5K natively and certainly I've already put my order in for a 6K upgrade. And people think we're talking about 4K, why on earth would you need 6K already? But for me the whole idea, as I say, of acquiring at a higher resolution just protects the footage that I'm filming.

RY: Fantastic. Now what do you have to say about 1920x1080 compared to 2K? This is something in my mind that I've wrestled with for ages, there's less than 10% difference in image resolution, the image size, it's almost like why do we even have these two formats?

JT: That's really it Rick, it's just 2K I think is born more out of a cinema format and cinema sort of standard; 1920x1080 seemed to be more from a TV broadcast sort of format. And so as I understand it, I mean really I guess the question is: is 1920x1080 or 2K, is it good enough anymore? And of course, you know, it is, we can see that with cameras like the Alexa and the amount of information that, the filmicness that you get even recording straight to ProRes as 1920x1080. But, and I'm almost at contradiction to myself as well 'cause tonight … we've just looked at footage which was shot on 5K back-to-back with footage that was shot in 1920x1080 on the Blackmagic Pocket Camera, and on a 1080 timeline presented here in a room, they looked indistinguishable. I think the audience would probably agree with me hands down, it would be very hard for anybody to pinpoint what was a Blackmagic Pocket Camera footage over what was a RED 5K footage. So certainly there's still a place for 1920x1080 footage, but as I say, I really like the idea of preserving my footage for as long as possible and thinking about the longevity of it.

RY: Sure. It's an interesting situation about preserving it as long as possible because it's almost this never-ending catch-up game where we're always having to change our gear and step-up, whereas what's good enough today some will say is not good enough tomorrow and yet others say it makes no difference, it's what you do with the camera. And this is the dilemma.

JT: And you know what, you're 100% right, Rick, it's what you actually do. It doesn't matter if you have a 6K Dragon sensor, you could still make it look pretty bad, so it's all about the content that you actually produce at the end of the day.

RY: But me arguing against some of the thoughts I've been having is that, yes, maybe it doesn't matter if you use a 6K Dragon sensor and you don't use it right, but you do use it right and that's when it will shine, because you've got the increased resolution, you've got all that detail as you pointed out, and then used in the absolutely most brilliant way it will look absolutely wonderful.

JT: That's what we hope.

RY: OK, well James, any last thoughts?

JT: All I can say is I do, I salute manufacturers for pushing the industry forward and I think 1920x1080 isn't ever going to be a good enough replacement for film. That's it at the end of the day and I salute RED as a company and all the other companies who have been pushing the formats up, because we want something that really is going to be a gold master replacement for Super 35mm analogue film, and I think it's fair to say that pushing to 4K, 5K, these formats, that's what we're looking for as a replacement.

RY: Fantastic, wonderful to hear your thoughts. Thanks very much James.

JT: You're welcome.

Den Lennie - F-Stop Academy

I've had the pleasure of meeting and interviewing Den Lennie several times, and he is the sort of the filmmaker that I can completely relate to. Use to working on location and dealing with the pressures of producing content to a deadline, to a high standard, and to budget, Den works hard producing everything from high-end corporate videos, to music and other types of production. He also offers training products and bespoke courses through his company F-Stop Academy.

RY: Den I want to know what your thoughts are with the whole push towards 4K, because the manufacturers are coming out with more and more 4K cameras, it's as if it's unstoppable and yet I have my concerns as to how much we need it and what we're actually going to do with it; but I want to hear what you've got to say.

DL: Well I think it's a very, very important question just now. I have just recently purchased a Sony F5, and I think … we're in now what, September, and I think from January I started thinking about which route I wanted to go. I was an FS700 user, I liked the fact that I had a 4K upgrade path but the challenge for me was, I suppose, when I got my FS700 I was like well I'll keep half an eye on 4K just in case. When it came to buying the F5, the reason I went down that route was I do a lot of corporate work, high-end corporate work, and one of the jobs I did actually involved me having to bolt an Atomos Samurai because they wanted it to be BBC spec, and what I found during that shoot was the ergonomics of the package I was using, I had an external viewfinder, I had the external recorder, and it actually slowed me down; so I wanted to go back to a traditional camcorder. So at that point I realised I had to go RED Epic, F55, F5, maybe Canon C300, and I looked at them all in great detail, and the long and short of it, Rick, was that I went to Cinegear, I studied all these different options, I spoke to you about it, and I realised that we just don't need 4K in the market that I work in. I work in corporate video, high-end corporate video and the difference between buying an F5 and an F55 was quite a significant sum of money and I just simply couldn't justify that extra spend on something I'm probably not going to need and not going to use.

RY: What you're voicing is the same thing I'm hearing from many other people. This is not the same as having gone from SD to HD. That was such a big jump, enabled us to step into a new level of quality. I don't know what we need 4K for when we're not going to view it on big screens. If you were doing the most outrageously wonderful cinema production, of course it makes sense, but for the corporate work that I do, that you do, for web video, yeah, more is better but do we want to put ourselves in that sort of financial situation to get there?

DL: You're absolutely right, you know, and I think, I'm watching increasing amounts of content on Netflix and Apple TV. And I'm looking at 720p for the most part, streaming, and it looks great on my 46 inch Panasonic TV. If I'm consuming content on a laptop at high resolution … interestingly Alister Chapman did some tests recently with the R5 recorder on the Sony and I watched the actual 4K stuff on YouTube and I was looking at it going, 'I'm not really seeing anything. I'm not really seeing what the fuss is about.' With the greatest respect to Alister and what he was doing, but I was like I've yet to see 4K that blows me away, and I just think from a commercial perspective every penny we spend is a cost, so every piece of equipment we own is a cost that has to be an asset that returns on our investment. So I went down the route of the F5 because I wanted a camera that felt like a shoulder-mounted ENG camera but had, for me, a great range of recording options, with the option to go to 4K if I need to. I can just hire an AXS-R5 recorder for the day and shoot raw or actually grab a Blackmagic 4K camera and do the odd raw thing and 4K thing. I just … I thought long and hard about it and I just couldn't justify or see any situation where I'd find myself using it.

And you're right, the whole swap between SD and HD, there's a lot of people making that comparison, analogy, but when we first were looking to go HD to SD we thought well, we'll shoot HD and we'll pan and scan an SD image, because that'll give us camera movements. We never did it. It was a waste of time, and as a film-maker, as a photographer, as a cinematographer, frame it properly to begin with, think about your shots, that's what we're programmed to do, having done this for a very long time. So my

feeling was the F5 was the next level up from the F3, 'cause the only reason I didn't buy an F3 was that I didn't personally like the ergonomics. The F5 for me just seemed to be the right investment tool, multiple codecs, it's got an upgrade path if I need to go to 4K, but fundamentally I just can't see the fuss. And I've just spent a bit of time with Rodney Charters and he and I were talking at great length about this, and he was like, 'The Alexa's still 2K.'

RY: That's right.

DL: 'They shot Skyfall in 2K.' They created a 4K master, but … 2K is very, very good. And I'd rather see people learn to shoot really amazing 2K before they start worrying about 4K.

RY: But let me ask you, we're talking about 2K now, 1920x1080, 10% or less difference in size than 2K. Do we even need to go to 2K or can you do it as 1920x1080?

DL: I kind of regard the two as the same thing, 'cause it's so inconsequential, that difference, it's just literally a number.

RY: What do you think of the new Sony camera, the affordable 4K camera? I look at it and I wonder, is this a big deal or is it just a badge which says 4K?

DL: Do you know, I did some testing on the JVC 4K camera a few months ago, and it's great, but I was clearing my hard drive out recently and there's nearly a terabyte of data from one shoot. And this is the other thing about 4K – workflow, post-production workflow, transfer speeds, I've got, I think, about 24 terabytes of storage that I use for online editing. It's all full. I've done a couple of RED jobs, I did that 4K test on the JVC camera. I even did a couple of Blackmagic things and that's what took up a lot of data, and it's good to have that option when you need it, but what I like about the Sony F5 camera that I've gone for is it's got really nice balance of compressed formats, high quality – I mean I've just created 12 videos for a reseller in the UK and we shot everything at 100 megabits AVC, XAVC and that came in – I cut it all on my laptop on portable SSDs, rounded it out, everything, I cut ten videos last night in six hours, six or seven hours. You cannot do that when you're working in 4K. You cannot do that when you're working even in Raw. You just have to be really mindful that every camera and every format has its place, but please just…

I mean you and I are so on the same page about this, I hate to see aspiring film-makers particularly getting sucked into something because they think they should go and get into 4K. And there's a lot of talk online about it. Just take your time. It's not the big eureka. Get really good at shooting 1920x1080 and then if an opportunity arises, rent a 4K, or Blackmagic have got some really affordable 4K options. I just think it's a bit off, quite a bit off.

And it's very easy to buy gear. It's very, very easy to buy the gear on the promise of well, now that I've got this … and even someone in my position, who's been shooting for 20, 24 years who has a relatively successful online presence, a very successful online business teaching and producing content, I still had a very big decision to make spending £15,000.

RY: Yes of course.

DL: Because I had to make sure it was a business decision and I wasn't just being ruled by my desire to have a better camera. And that is something that is really tough to do. You have to be unemotional and make a business decision, and I just could not make that business decision to go to the 4K F55, so I stuck with the F5. I'm really pleased I did. It's already paying for itself.

RY: I know, but Den, you've done it in a very smart way. You have the option to go to 4K on the F5 if you choose to, so you haven't ruled that out.

DL: No

RY: Den, wonderful to talk to you, as always. I look forward to the next time.

DL: My pleasure.

"I'D RATHER SEE PEOPLE LEARN TO SHOOT REALLY AMAZING 2K BEFORE THEY START WORRYING ABOUT 4K."

Philip Hodgetts, President/CEO
Intelligent Assistance

Philip Hodgetts has been a friend for more than a decade and someone I respect greatly. He has one of the sharpest minds I have ever come up against, understands video production on a very deep level, and is someone who always has a delightfully different point of view to many others. Listening to Philip speak is like hearing words of wisdom well beyond the understanding of most technoheads!

RY: We're speaking to Philip Hodgetts; Philip Hodgetts is a veteran of the whole digital video scene. Philip. I want to talk to you about where we're at in the whole digital video scene. We've been through SD, we've been through digital video, we've been through HD, now it's moving to 2K and 4K. What do you think of the whole 2K and 4K thing? Do you think this is a really big evolution or do you think it's just trying to sell us a lot more big screens?

PH: I think there's always a push to sell us a lot more screens, a lot more production gear, a lot more editing gear, a lot more storage, because that's how the industry makes money. I mean there are those of us who produce and use these tools, but we've got to remember that the people who sell us the tools only make money when they sell us a tool, and if we keep using those tools for five, ten and fifteen years that's not good for their business. So they want us to buy more stuff and once we've bought HD we've got really the best quality that most people will ever need. Well, you can say that 2K is that point. So there's no real incentive to go up, and so we're pushed into 4K I believe mostly because the panel manufacturers in Japan are really in great trouble. You can check their financials; they're going broke. So they're pushing the 4K panels onto the public and to the producers, who are then in turn pushing 4K production, and it's going to try and drive us to that.

And I'm sure there are good reasons to do 4K. I mean 4K, over sampling at the source, even if you're going to go to HD as your distribution model, it's still a good thing. But is it essential? No. Is it something that's ever going to be in the home? Unlikely. Big 4K proponent Panasonic have got a graph on what the consumer take up will be. They expect, and this is an optimistic number, 3.5 per cent of households by 2017.

RY: To have 4K?

PH: To have 4K.

RY: That's not a very big number.

PH: It's not a very big number at all, and that's projected, that's still four years in the future! So the projected percentage next year is a rounding error.

RY: I want to talk a lot more about 4K but before we get there let's talk about 2K. I am totally perplexed as to why we have 1920x1080 and then another format which is less than 10 per cent increase in pixel count gives us 2K, and 2K is suitable for cinema and 1920x1080 is not a cinema format, it's for broadcast. Can you give me some comments on that?

PH: Well, they evolved in different paths really and that's why the distinction. 2K was a film scanning technology, it was what people decided was enough resolution to put up there on a huge screen in a cinema; almost all films released in the last five years have gone through a 2K digital intermediate. So what you're seeing on the screen is never more than 2K of resolution. The distinction changed, which was we went up through a video path from SD to HD, and they were multiples of the SD sizes when we went to HD and they didn't quite match the 2K size. But with modern scaling technology that ten per cent is irrelevant. You can scale it up to fill a screen. We have to remember they were DV films, films shot on DV in SD in 16:9 cropped in where you had even less resolution, and they were successful. It's not about pixels, it's about the people and the stories.

Nobody goes to a cinema and says oh, there were glorious pixels on the screen! I just saw the difference between 2K and 4K for the first time ever! No, people go to the cinema to be moved, to have a good time, to watch things blow up, to have a laugh, to sing along. That's why they go. They don't care about pixels. And if we've been successful with 2K in cinema for the last five years and nobody's complained about it, why are we pushing the costs up to 4K for no additional benefit to the consumer?

"WHY ARE WE PUSHING THE COSTS UP TO 4K FOR NO ADDITIONAL BENEFIT TO THE CONSUMER?"

RY: People would argue against that; they would say there is an additional benefit: it looks better.
What do you think; does it look a lot better?

PH: Only if you are close enough to a big enough screen, and to be close enough to a big enough screen is uncomfortably close to a way too big screen. There's a chart online that you can go to and see the exact resolution, but you'll be surprised how close to how big a screen you would need to be to see any benefit for 4K over 2K, and it would be something like a 20ft screen and within 10ft, and that's a big, uncomfortable place to be. At normal viewing distances the human eye doesn't even resolve HD on an average set in the lounge room at normal viewing distances. To see the full resolution of 1920x1080 you need a 50 inch set and you need to sit 10ft in front of it.

RY: So do you think we need 4K in the home?

PH: I think we need 4K in the home like we need a hole in the head, and that's a very solid no!

RY: Is 1920x1080 good enough for cinema production?

PH: Yes.

RY: Done right.

PH: Done right, and I mean the difference is not 1920x1080, the difference was between shot on film and scanned in, and shot on video, and those distinctions are blurring tremendously with digital cinema cameras, all sorts of cameras now look much more filmic; there are DSLRs which look much more filmic than any video camera I've ever seen. So if we're talking about 1920x1080 coming out of that stream, with a big sensor, with 23.98 or 25 frames per second, it's reproducing the other things about film. And lit like film, shot like film, these are the things that make it look like film, not that it's 2K or 1920x1080; that's pretty irrelevant. It's just some numbers. As I said, you can scale, with modern scaling you can scale 1920x1080 up to fill the 2K raster without any appreciable loss in quality. In fact, one of the distinctions between video and film has always been that video was accused of being too sharp. What we would do is we would knock the sharpness back to make it more filmic. So why are films going up to 4K and more sharpness? Because it's never been the thing that people went for, they never went to film for that reason anyway.

RY: What are they showing in the cinemas these days? Are there a lot of 4K cinemas or is there a few and a very vast proportion of 2K projectors that are being used in cinemas?

PH: There's a mix of 4K and 2K projectors. The projectors going in now are 4K capable. There is no 4K product. So regardless of whether you have a 2K or a 4K projector you're still showing 2K files. And unless the rare case where something has gone through a 4K digital intermediate and stayed in 4K, but even so mostly they go back to 2K for distribution simply to keep file size manageable.

RY: So what do you have to say about this new Sony camera that they're releasing for mere mortals to buy that's got a 4K badge on it? I mean I don't even think it's got a very large sensor in it and I'm looking at it and thinking, is this a big deal or is this a marketing spiel?

PH: Marketing spiel. Absolutely, plain and simple, this is a marketing spiel to sucker in people who think a big number is actually important. What is important is the way you write the script, the way you shoot it, the way you light it, the way you move the camera, the way you frame the shots, the way you edit those together, that's what's important. 2K, 4K, not important; in a consumer camera absolutely ludicrously ridiculous.

RY: I had a very good conversation with some of the people from ARRI the other day, and I actually said to them, 'Now the Alexa is a 2K camera; the new camera you're coming out with, the Amira, that's a 2K camera.' And I said, 'And yet there's all this talk about 4K,' and the words that came from the people at ARRI was similar to what you're saying: it's not about the numbers. From their point of view, I'm paraphrasing, but they said it's the tonality of the image; it's what you do with the images. It's the beauty of what they can do with their sensor and their technology.

PH: Yeah, it's really getting close to the limits of human visual perception, and in the home almost nobody's ever going to see a benefit from the extra expense and the extra space it's going to take up in the home and the power it's going to drain, all those things. There are lots of downsides and no advantages.

Well, you may want to edit this out but there are a lot of people are obsessed with size over all other parameters.

RY: Yes, of course. What about the fact that RED's doing the 6K sensor and there's the 8K for the F65, I don't believe it's there yet, but it'll be 8K capable. And when I asked the question what do I need 8K for, it always comes back that it's wonderful to crop into the image. And yeah, I'm sure it is, but that's part of the skill of making a film, that you frame it how you want it. It's nice to be able to crop in but do we need to invest vast resources into just getting that one thing?

PH: In other words you're saying that this is a sop to really bad directors of photography or directors who cannot make up their mind, and this is the worst thing we need in the industry, people who are going to take more and more time in post-production because what we're doing is we're moving production to post-production and we'll get really, really horrible productions. Because people are talking about, 'Oh, we're just going to do a wide shot and we'll crop in all of the angles we need.' The trouble is there aren't any angles. When you cut you don't cut from wide to close up from the same camera angle. It's like production 101. You need to have angles, you need to move the camera.

RY: Of course.

PH: One of the biggest differences between production for television and production for filmic distribution is the amount of camera move, because you generally have longer production cycles and more time to develop the scene. So this tends to be a little bit more camera dynamics in a film as opposed to a television program. It's about budget really.

RY: Regardless of what we think, 4K is coming because they're pushing it. We have to wait and see what the uptake is, but it's definitely on the way. It could go the way of 3D but I don't think so because the problem with 3D was not everybody liked it, whereas 4K, I don't think anyone's going to have a problem with it, they just might not care. But the fact that it's coming and they're pushing it, it will be with us. So where does that leave 1920x1080, 2K and 4K? What are we doing to do? We're going to have three standards that are all for different purposes?

PH: Here's what will happen, is that 95 per cent of production will be done in HD, 1 per cent will still be done in SD for another 5 years, and about 4 per cent will be done in 2K or higher. Look, I'm not going to argue that having higher resolution at the source is not a good thing; it is a good thing. Over-sampling at the source even if you're going to go to 1080 is still a good thing, but it doesn't justify the fact that we have to reinvest in everything. It's not 1080. A friend of mine likes to say it's really 4X, because it's four times the storage, four times the pixels, four times the bandwidth, all the way through the whole production chain, because it's effectively four 1080 signals wrapped together in Ultra HD.

RY: And a rubbish production is still going to be a rubbish production.

PH: And a rubbish production in 4K is going to be a rubbish production in 4K and a great production in SD is still going to be a great production. And you can make people cry with HD, SD and 4K. You can twist their emotions with any of these; it's not about the statistics. It's about what you do with it. It's about the story and the passion of what you want to do and how you influence people. That's what we're about as filmmakers and television producers, and all the other parts of the spectrum too. We're about conveying information or influencing people's emotions and none of that is about resolution.

"I THINK WE NEED 4K IN THE HOME LIKE WE NEED A HOLE IN THE HEAD, AND THAT'S A VERY SOLID NO!"

I would rather have higher dynamic range and more bit depth in the acquisition than more resolution. If we're going to put more in, let's put more bits, let's capture 10 bit or 12 bit instead of 8 bit. Let's capture at least 4:2:2 on everything instead of 4:2:0. Better still, let's capture 4:4:4. Let's use that four times bandwidth to get more signal that we can use in post- production, that we can use, to use the dynamics of the image to control those, again to the purposes of the filmmaker and for the purposes of effecting emotion. When you have that great dynamic range and the bit depth in the original, you have a lot more latitude to manipulate the image in post-production, in the colour correction phase or the digital intermediate phase. And that's what I would like to see. I couldn't care less about 4K. But give me at the high end, give me cameras that will give me 10 bit for 4K. I don't want 4,000 pixels, I want maybe 1920x1080 at 10 bit. That would've been 4:2:2; that would satisfy me way more, and give me benefits in post-production, than 4K ever will.

RY: It's very interesting you should say that. I've been told that the big deal that we have to worry about is not whether we shoot 1920x1080, 2K or 4K: it's that we shoot 10 bit which is just what you're saying. Because 10 bit 1920x1080 will scale beautiful to 2K or up res to 4K, whereas 8 bit falls apart, is what I've been told. So stay away from the 8 bit cameras and up your potential to 10 bit, which you can do with external recorders from Blackmagic, from AJA, from. Atomos. There are some staggering recorders out there and they're not that expensive and it will put you into that realm where you can fight it out with the big boys and not have to reinvest in everything.

PH: I mean I just have a very basic DSLR, it's left over from my production kit last year and I don't do a lot of production, it's not the main thing I do. But I just finished a simple little intro piece for a client and one of the things that...well, non-client, but friend, one of the simple things they said was that the pictures looked amazing. And they are, they're amazing for the money that I paid for this camera, given how long I've been in this industry and what I used to pay for much worse cameras, these are truly amazing. They have limitations, like it is 4:2:0, 8 bit. So really the colour you get from the camera is pretty much, within a little range, what you're going to have to live with, because you don't have a huge latitude to correct that. I can live with that because it's not my primary production. But if I was trying to produce for television or something I wanted to see on a bigger screen, then I would want the 10-bit bit-depth for all the reasons that we've talked about.

RY: I don't think what's going on now, going to 2K and 4K, is the same as we went from SD to HD. That was such a big jump, it made such a big difference, and that was...I mean there might have been similar comments at the time, do we need to do this? But it was a major move forward. But HD is already really good.

PH: And HD is already beyond where most people's perception lives. The number of people who are not industry who do not have a HD source on their HD TV, something like only 45 per cent of people in the United States who have a HD set have a HD source. And even I read on Facebook and on Twitter people saying, 'Well, I always would tune to the HD channel but my wife turns it back to the SD version of exactly the same channel because she prefers it.'

Back in the days of CRTs, if you remember back in the days of CRTs, if you go into the homes of people who aren't in the industry, that drove me crazy! They were out of colour balance, there were convergence issues all over the place, and the people in the homes don't want you touching their TV, don't want you changing it for the way their TV looks. And that's the sort of thing that the quality-focused people forget, is that not everybody is equally focused on the details of the quality; they just watch the program.

RY: Yes, of course. Take a guess, five years from now, are we going to be doing HD? Are we going to be doing 2K, 4K or are we going to be doing everything?

"I WOULD RATHER HAVE HIGHER DYNAMIC RANGE AND MORE BIT DEPTH IN THE ACQUISITION THAN MORE RESOLUTION"

"THE VAST MAJORITY OF PRODUCTION WILL STILL BE DONE IN HD"

PH: There'll be everything of course. There'll still be people producing in SD five years from now, although relatively few. The vast majority of production will still be done in HD, and the elite, tiny, maybe 5% of production at the top will be done in something greater than HD: 2K, 4K or higher.

RY: Fantastic. Philip, I love hearing what you've got to say because you're not trying to sell us anything.

PH: You need to go and check out www.intelligentassistance.com because I do have stuff to sell!

RY: Excellent. Anything else you want to say just to wrap up?

PH: This is the best time to be in production ever I think. It's still exciting, the tools are amazing.

What we can do now for such inexpensive investment is just incredible compared with 20 years ago when we entered the industry. Stuff that we do now on the desktop every single day could not be done for any amount of money, any budget in the world could not achieve what many do every day on a desktop. Tools like After Effects and Cinema 4D just open up creativity to anybody who's got that creative mind, and there are no barriers. Get yourself one of these, get yourself a laptop and some inexpensive editing software and start making stuff, because it's the most exciting time to be able to do that because anyone can do it. There's a budget level that can go to almost nothing to spend whatever anyone will let you spend. It's just an exciting time to be in production, and I love being part of that.

RY: I couldn't agree more. I second everything you've just said there and we'll keep a good eye on what's going on because the manufacturers obviously want to sell us stuff, but we're the ones that have to work in this industry and make money at the same time and not spend all our money on new kit.

PH: They would love you to spend all the money on new kit, but I agree completely; you need to make money from what you've got.

RY: Yeah. Fantastic, Philip. Wonderful to speak to you, I look forward to the next time.

PH: Thank you.

"I AGREE COMPLETELY; YOU NEED TO MAKE MONEY FROM WHAT YOU'VE GOT."

"Thanks to everyone who took part in this article - we can truly see there are very different viewpoints on what 4K means and to what level this new standard will infiltrate our lives. It is clear that 4K is going to be part of the production scene - in 6 months to a year we will know a whole lot more about this means; for the moment we can look forward to an exciting future with an equally exciting present to contend with now." Rick Young

UNTIL THE NEXT TIME...

BIGGEST UPDATE TO DAVINCI PRODUCT LINE IN 30 YEARS!

Now that all the dust has settled from IBC what stands out in my mind is that we can now download DaVinci Resolve 10 beta, for free. Resolve Lite, is also available in beta - so download this and when the official version is available you can then upgrade for free. Amazingly, Resolve Lite has now been upgraded so that it supports 2K and 4K. For my needs, this is perfect.

Rick Young
Editor: Movie Machine
Email: rick@rickyoung.com
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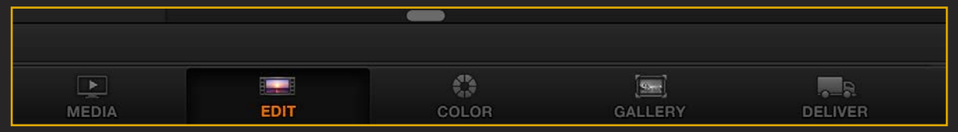
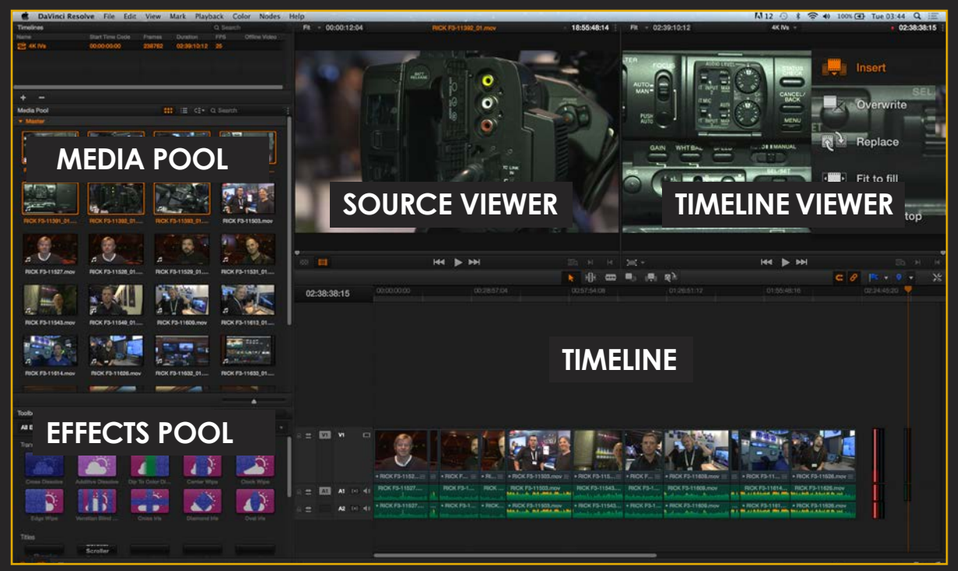
Media Production - Dreamshock Design
Copy Editor - Fiona Young

So why am I so hyped up about Resolve 10? Because I know what it can do! Check out the demo by James Tonkin at the IBC SuperMeet:
http://www.moviemachine.tv/video/james-tonkin-davinci-resolve-10/75038409/

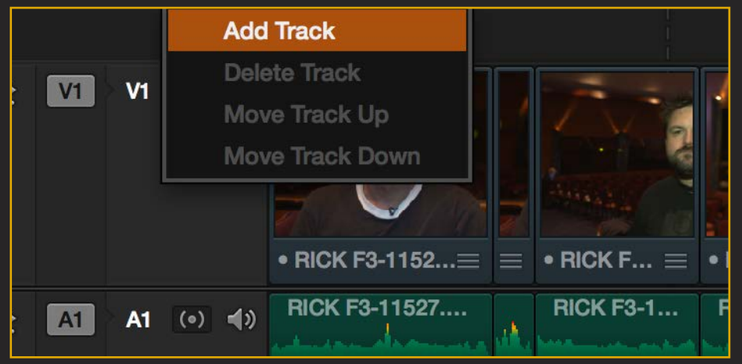
For me, the combination of online editor with full grading capabilities is like combining a film lab and optical printer inside of your cutting room. The 30 year old analogy may only work for us old timers who remember the days of chemicals and celluloid - regardless, the power to edit, to skillfully grade, use soft edge wipes to combine images, track areas within an image, perfrom simple or complex masking, matting, tracking, accurate checking of levels, these are all parts of post production process which make the difference between images that sit on the screen and images which rise to their full potential.



As I click through the Resolve 10 Beta, testing and exploring, it is clear to me that something extraordinary is unfolding.



Number one - already mentioned, but I've got to say it again - this software doesn't cost money, for the Lite version, and this Lite version offers a lot! As much as most of us will need.



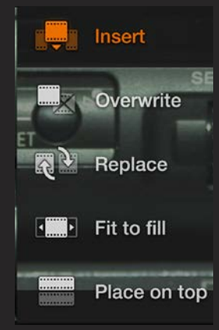
Resolve now features an editor - and a wonderfully familiar editor. It works like Final Cut Pro 7, it also feels like FCPX. Switch on the Inspector to access many controls such as Transform, Cropping and Retiming. There's skimming within source footage, a dual display for viewing footage - you even see a very familiar overlay when editing from Source Viewer into the Timeline - or you can drag clips straight to the Timeline if you choose.

Not only that - tracks and audio are switched on and off with familiar buttons. Welcome back the track based timeline!

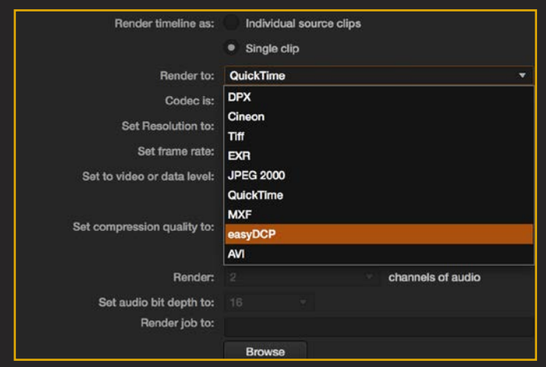
Intuitively I have been using most of my FCP7 shortcuts and they work! Undoubtedly there will be some relearning to do, however the transition so far is quite painless.

I have successfully exported a project from Final Cut Pro X via XML and opened this in Resolve. This means I can see my timeline which I created in FCPX within Resolve.

You can create DCPs out of Resolve. You do have to pay a license fee to Easy DCP to do this - however, pay your money and this provides a shortcut to creating 2K or even 4K files for cinema distribution.



Resolve 10 is at the heart of a strategy of Blackmagic Design to be a major force in post-production. What has been described as the "world's most advanced color grading system" is now available to all with the ability to edit content and truly output to the highest levels.



Both the full version and Lite version of Resolve 10 are now available in Beta and can be downloaded from the **Blackmagic Website.**

Note: If you choose to work with the Lite version, simply load the software onto your computer and you are ready to go with the ability to finish and output to various formats including HD, 2K and 4K. The paid for version of Resolve, which ships with the Blackmagic Cinema Camera, requires use of a dongle - making the Lite version even more appealing for those on the go. No dongle required to use the Lite version. If you don't need the high-end features of the full version, the Lite version will certainly be suitable to many.

In the words of James Tonkin, at the IBC SuperMeet in September, this is simply "Bonkers."

Until the next time. Rick