Jon Fauer, ASC www.fdtimes.com July 2016 Issue 76

FILM AND DIGITAL TIMES

Art, Technique, and Technology in Motion Picture Production Worldwide

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FILM AND DIGITAL TIMES

Art, Technique and Technology

Film and Digital Times is the guide to technique and technology, tools and how-tos for Cinematographers, Photographers, Directors, Producers, Studio Executives, Camera Assistants, Camera Operators, Grips, Gaffers, Crews, Rental Houses, and Manufacturers.

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Cover: Onboard the International Space Station, NASA astronaut Kjell Lindgren holds an IMAX-Canon C500-Codex camera with ARRI/ZEISS 12mm T1.3 Master Prime and fistful of lenses: Canon CN-E 15.5-47mm T2.8 Compact Cinema Zoom, Canon Cinema Prime CN-E 14mm T3.1 L F and CN-E24mm T1.5 L F used in filming "A Beautiful Planet." Photo courtesy of NASA.

This page, above: European Space Agency (ESA) astronaut Samantha Cristoforetti photographs earth from the Cupola onboard the International Space Station. Photo courtesy of NASA.

At left: NASA Commander Barry (Butch) Willmore on a spacewalk to repair the exterior of the International Space Station. It's almost 300° on the sun side of the space station and -275° in the shade. Photo courtesy of NASA.

NASA Commander Terry Virts with Canon 1D C at the window of the International Space Station's Cupola Observation Module. Photo onboard the International Space Station (ISS) courtesy of NASA.

The IMAX production *A Beautiful Planet* opened in theaters on April 29. One day earlier, I discussed its technique and technology with James Neihouse, ASC and Marsha Ivins, along with Tim Smith and Leigh Nofi of Canon. James was driving on I-95 in Florida. Marsha was at home in Houston, Texas.

Marsha Ivins, former NASA Astronaut who flew on five Space Shuttle missions, was a consultant on the film, coordinating with NASA and IMAX. Toni Myers wrote, produced and directed. Jennifer Lawrence narrated.

James Neihouse, with more than 30 IMAX film credits, trained the Astronauts in cinematography, as he has done on more than 25 other Shuttle and Space Station missions. As Variety wrote, "Short of putting Emmanuel Lubezki through Astronaut training, it's difficult to imagine more rapturously beautiful images of the Earth from orbit than those supplied by *A Beautiful Planet*, the latest collaboration between IMAX and NASA."

This was the first IMAX feature in space to use digital cameras: Canon EOS C500 4K Digital Cinema Camera and Canon EOS 1D C 4K DSLR. The cameras were delivered from Earth to the International Space Station (ISS) in September 2014 on an unmanned SpaceX Dragon. The Astronauts took turns as DPs: NASA Astronauts Terry Virts, Kjell Lindgren, Butch Wilmore, and Scott Kelly; European Space Agency Astronaut Samantha Cristoforetti; and Japan Aerospace Exploration Agency (JAXA) Astronaut Kimiya Yui.

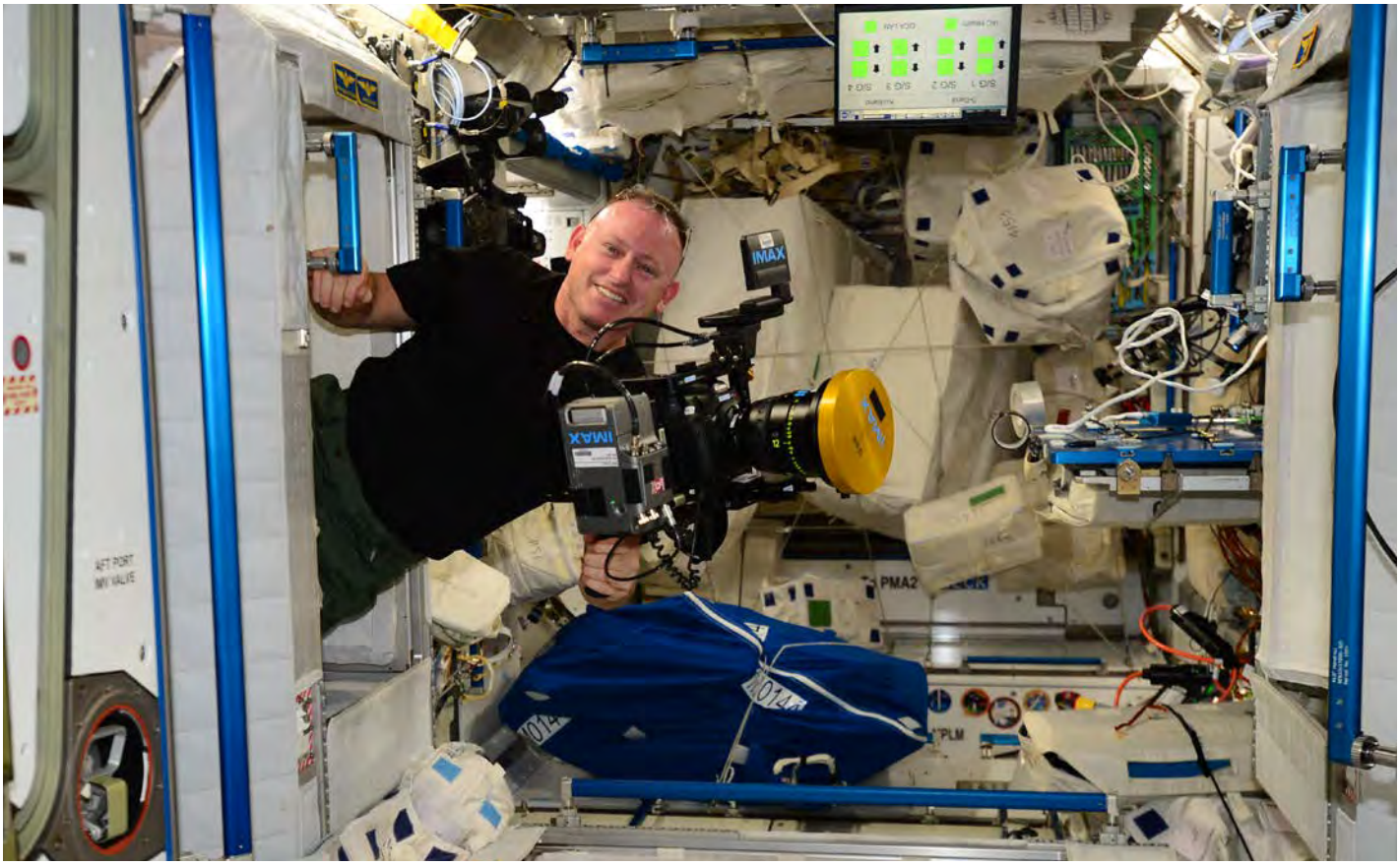
In the film, daily life aboard the ISS is punctuated by spectacular scenes: lightning storms, volcanoes, coral reefs, the Aurora Borealis dancing in breathtaking high resolution. Other images are ominous: glaringly bright city lights, drought, deforestation, and the effects of climate change worldwide.

Quick Technical summary: Three Canon EOS C500 4K Digital Cinema Camera and two EOS-1D C cameras were sent to the ISS. They were used one at a time. The C500 has a 16:9 S35, 8.85-megapixel (4096 x 2160) CMOS image sensor that records to internal CompactFlash cards and simultaneously outputs uncompressed RAW. RAW Data was recorded onto a Codex Onboard S Plus recorder. The Canon EOS-1D C Digital SLR camera has a 5208 x 3477 pixel CMOS sensor for Full Frame Stills, and also shoots motion JPEG compressed 4K video (4096 x 2160).

JON FAUER: Thanks for taking the time to join this conversation. Jim, please tell me about the camera equipment used on *A Beautiful Planet*, why you chose it, and how.

JAMES NEIHOUSE: When we first started this whole process, NASA told us we couldn't make the film...on film. "You're not going to be able to fly actual motion picture film," they said. "No more IMAX film because we don't have a Space Shuttle to fly up and back." (One 1200' roll of 65mm/15-perf IMAX motion picture film weighs 12 lb and runs a mere 90 seconds.) This time they would use the SpaceX Dragon to get things back and forth. So we had to pick digital cameras.

We started the search about four years ago—looking for something that would come close to what real IMAX looks like. We rounded up a bunch of the best cameras at the time and ultimately picked the Canon C500 because it looked best overall. It had un-



The first view in space of the the IMAX-Canon C500-Codex camera rig, with ARRI/ZEISS 12mm T1.3 Master Prime, after NASA Commander Barry (Butch) Wilmore assembled it for the first time. Photo courtesy NASA.

compressed 4K output and I felt that we needed every bit of data we could get from the camera to try to match IMAX. To record uncompressed RAW from the C500, we used the Codex S Plus onboard recorder.

We also picked the Canon EOS-1D C to use as a full frame still camera, with 5K resolution (5208 x 3477 effective pixels). Its full frame 1.5:1 aspect ratio came fairly close to the 1.44:1 IMAX aspect ratio, and has 16 bit color space. The 1D C was used to take multiple exposure image sequences that we converted to real time, 24 fps motion with secret sauces in post production. The other reason I picked the 1D C was that it had a 4K in-camera Motion JPEG video recording option. I felt it would be good to have a very small camera body that enabled us to get into tight places, even if it was compressed. So we had two Canon full motion systems. Above all, I wanted the Canon optics. I love the Canon glass—it is just beautiful.

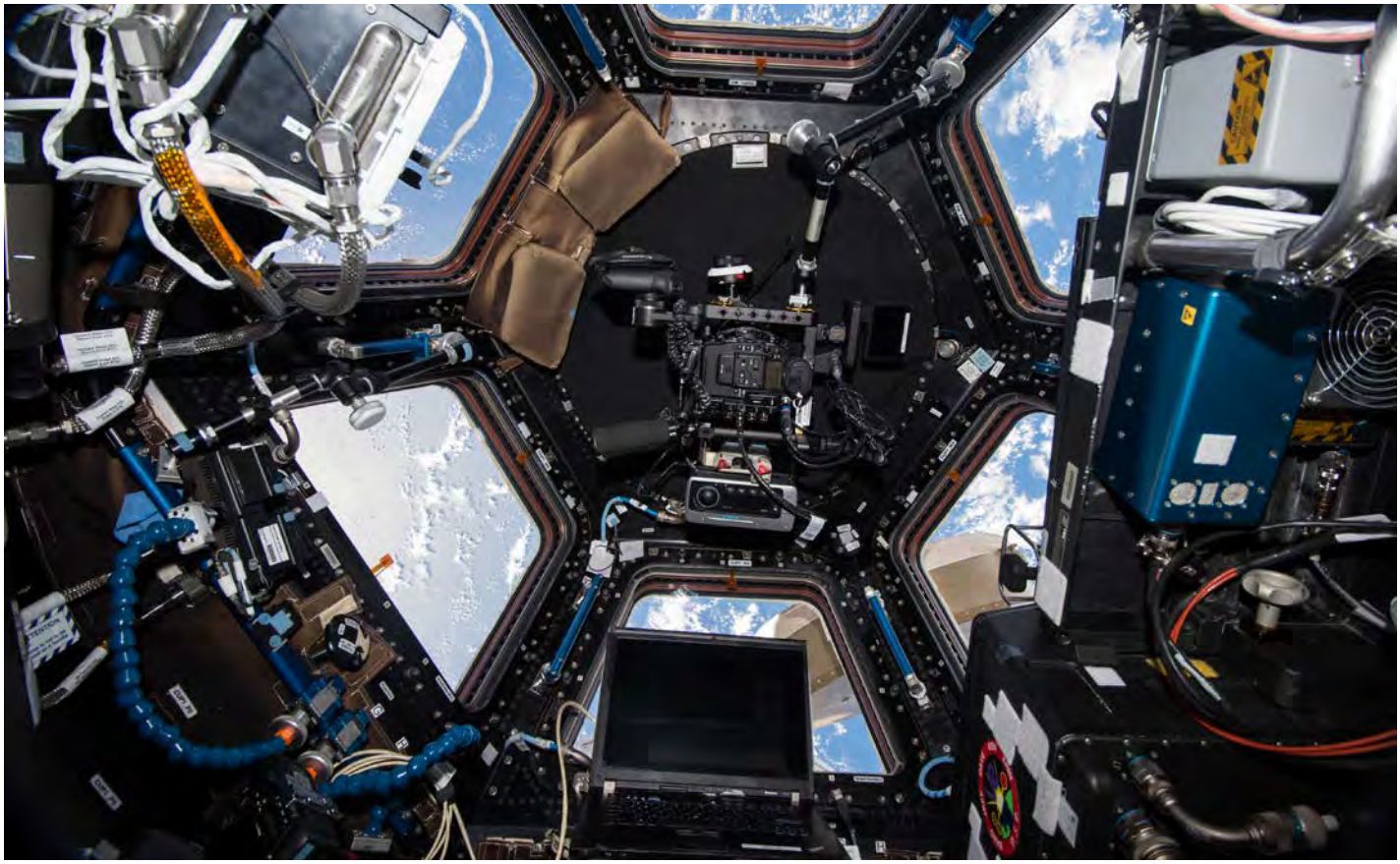
Marsha, I heard that you had to rework the plexi window that the Astronauts were shooting through. Can you tell us about that, please?

MARSHA: We started building the ISS in 2000, and we carried each module to be added to the ISS in the cargo bay of the Shuttle, one at a time. The Cupola was put on board in 2010. The Cupola is a module that consists of 7 windows—six circumferential and one nadir (center) window facing Earth. It has nice, lovely, optical glass that NASA then covered with cheap, non-optical Plexiglas in order to protect the real glass. Over the years that the module has been in space, the Plexiglas covers have been bumped and scratched. Because it's such a soft material, it is easily scratched and difficult to clean. When there's dirt and grime on it, and then you try to clean it, you basically scratch it more. Shooting any picture through one of those windows reveals all the scratches.

So, in order to save IMAX an arm and a leg in post-production costs trying to remove scratches digitally—many of which they probably couldn't have taken out anyway—we asked NASA if it would be possible to design and fly a new protection for the windows that allows you access to the real window for shooting. We had the NASA engineers basically design it: they told us the material, the thickness, the kind of fasteners that would be needed, what the opening should be, and so on. We had the thermal people bless it. We had everybody who would have done the NASA design get involved, but then we had IMAX build it. We had it certified as a piece of payload hardware, which was how we flew the cameras. We had it manifested to launch. Then we got the crew some time for installation. It's still in place. They continue shooting regular NASA stuff through it now.

When shooting through the Cupola, do you have to put something like a mattebox anti-reflection donut ring around the front of the lens?

MARSHA: All of the lenses that NASA allows on orbit, and that includes payload and regular NASA equipment, are protected with a bump shield on the front. That's a protective covering around the rim of the lens—so the metal of the lens doesn't actually ever touch a window. We also managed reflections with



IMAX C500 camera shooting through through the nadir window in the Cupola using a black fabric anti-reflective window shroud. Photo: NASA

a fabric shroud that basically covered the whole window. It had a hole in the center and the lens went through the hole and it blocked reflections. Part of the problem is that each window onboard the space station is actually four panes of glass, so any light coming through the window is going to bounce around in between those four panes of glass and you get a lot of reflections even if you think you have blocked your light off through that window. But that's standard procedure for NASA. We just built these things for our cameras, and now NASA owns them.

It sounds similar to what we might use here on Earth. Drape everything in Duvetyne and cut little holes for the lens.

JAMES: Much the same idea.

Tell me about the lenses that were used?

JAMES: We had an ARRI/ZEISS 12mm T1.3 Master Prime for the C500, with a PL mount. We also had the Canon CN-PL 15.5-47 T2.8 L S Compact Cinema Zoom in PL mount for that camera. We flew the Canon Cinema Prime CN-E 14mm T3.1 L F and CN-E24mm T1.5 L F in EF mount for the 1D C camera. We also put a Nikon adapter in the kit so that, if the need arose, they could use the older manual iris Nikon lenses that were already onboard.

How did the Astronauts determine exposure?

JAMES: For the 1D C, they would pretty much use the camera's internal meter…and…sorry, I just have to stop for gas. *(While refueling, James continued…)* I taught them how to evaluate exposure during training sessions. With the C500, we used the waveform monitor that's built into the camera system. We worked with Tim Smith a lot on figuring out the best exposure to retain the highlights and make sure we had enough light in the shadows.

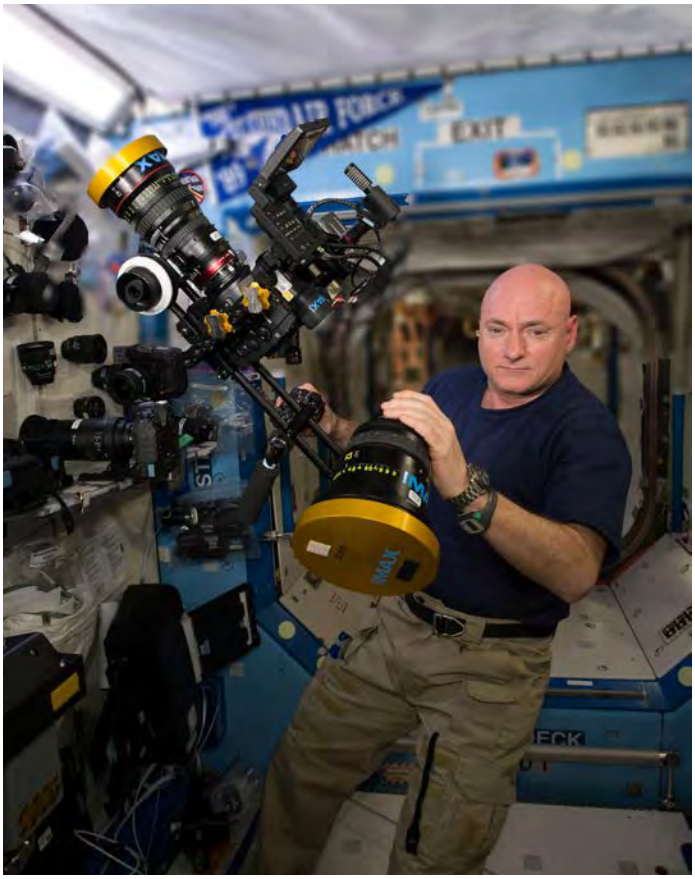
Did the Astronauts calculate their own exposures from the waveform monitor or did you control it from Earth?

JAMES: It was all done by them onboard. They would occasionally get in touch with us and ask for suggestions on difficult shots. But they had physical control of the lenses and the cameras all the time.

That leads to an interesting question. How do you teach Astronauts to be DPs? I imagine it's probably much harder to teach a DP to be an Astronaut.

JAMES: You give them a camera and once they learn the buttonology of the camera—where the record button is and how to get data out it, it's pretty much just letting them go through the training and shooting some test footage. We made suggestions for framing, scene length and lighting. They shot some test footage. We screened their tests in an IMAX theater and let them watch it. They learned quickly what was right and what was wrong. It was pretty clear on that big IMAX screen what didn't work well. Marsha's had experience as an Astronaut in space multiple times, so she can speak to the other end of that equation.

MARSHA: Part of what every Astronaut goes through in training is how to take pictures. But because it's not considered essential or critical to the mission, for the most part, some Astronauts take it very seriously and some don't. Everybody is given basic lessons: "Here's the end you shoot through and here is where the card goes in." Back in the olden days, it was also, "Here's where the film goes." Shooting with a camera for an IMAX movie, however,



NASA Astronaut Scott Kelly with C500, 15.5-47 T2.8 Zoom, and ARRI/ZEISS Master Prime 12mm. Photo: NASA.

requires a whole different level of training. What James and Toni Myers provided was the context of shooting pictures for an IMAX screen. Learning all that is like getting lessons in advanced photography. Greg Smith was our sound guy, and he spent a few hours with the crew talking about the basics of sound and then did the same kind of training that James did with the cameras. The Astronaut crew has to be the director, the cinematographer, photographer, gaffer, grip, and sound recordist. They also are the actors. So, they've got to take on all of those roles with very little training, and it's quite miraculous that it all happens.

I guess the Astronauts also worked as the DITs, camera assistants, production drivers, and craft services. Tell me more about the sound. Did you have external audio recorders?

JAMES: Years ago, it began with cassette tapes, then we moved to DAT, next to CF cards and on this flight we recorded straight into the C500 camera. We couldn't record audio directly onto the Codex when we were just doing sound. We'd record onto CF cards. The great thing about the C500 is that you could load CF cards in it, and simultaneously while the Codex records 4K RAW images, you could record proxies internally in the C500 at the same time with sound. They could transmit those proxies down to us a lot easier than getting the 4K material down, so that was how we kept track of what they were shooting. They recorded wild sound internally on the C500, without the RAW Codex. They would do a voice slate, "This is the sound of the toilet flushing"…or "This is the sound of the airlock closing" or "The sound of the helmet going on a space suit." I think we got a pretty amazing soundtrack and it comes across nicely in the new IMAX Theaters' 12.0 sound system.

If the IMAX aspect ratio is 1.44:1, how did you define the framelines?

JAMES: In post, we just shaved a few pixels off the sides from the 1D C camera's native 1:50 aspect ratio. That's one of the reasons we picked it, losing the least amount of resolution. On the C500, after seeing some of the first tests on the big screen, we made the choice not to blow it up to the full IMAX aspect ratio. All the scenes on the C500 are shot and exhibited in the native 16:9 aspect ratio, letterboxed.

Most people, I think, have never noticed that there's a difference. Mainly, the C500 was primarily used for interiors, inside the Space Station. The 1D C was primarily used for exteriors, shooting through the Cupola. Because you're changing environments so radically, I don't think anybody really notices the aspect ratio change.

What special preparations were needed for the cameras and lenses to work in space?

JAMES: There's really not much we did for the cameras. They all had to go through flight certification, making sure that the electronics didn't interfere with anything, that there were no sharp edges, nor any bad odors or gases coming out of them in a space environment. Some of the cables had to be wrapped in Teflon tape to prevent flammability. Marsha, what else did we do for certification?

MARSHA: You programmed out some functions of the Codex menu.

JAMES: Yes, we actually Astronaut-proofed the Codex Recorders so that they couldn't get into the menus and set things in odd ways. We also fixed it so they couldn't delete anything off the Capture Drives (Codex media). Codex was really nice in rewriting the user interface for us and included an extra selection for presets. We actually had three presets: normal 24 fps, slow speed and high speed. We didn't want the Astronauts to get deep into a menu situation that would require a lot of air to ground communication.

How did you manage data wrangling and get the data back to earth?

JAMES: Marsha's the data queen.

MARSHA: All digital imagery that comes down from the Space Station—whether it was ours, any other payload, or regular NASA stuff—comes down through the Ku band antennae on a 300 or 500 megabyte per second data stream. It's the same band that carries all communications, live video, audio—everything comes down on that pipeline. We basically just got in the queue. The crew is trained, when they take imagery, to take out the CF card, put it into an onboard laptop computer and transfer the imagery to whatever file they've been told to put it in. If it's coming down as earth observations, it goes into one file. If it's coming down as a payload, it goes into the payload file. There was an IMAX file in the payload's folder and the crew simply moved the imagery into there and walked away. There are three or four dozen laptop computers onboard. The crew can put their CF cards into any laptop they want and transfer the data. Then the ground downloads these files. We took our spot in line. When our stuff came down,

View of New Zealand from the ISS. Photo © 2016 IMAX Corp.

we were alerted because it was flagged as proprietary to IMAX and didn't get distributed anywhere. It went onto a server that had been setup between the Johnson Space Center Imagery Department and IMAX directly.

What about the Codex uncompressed material?

MARSHA: Codex uncompressed data was recorded onto Codex 512 gigabyte Capture Drives that are about the size of two smartphones stacked together. Those went up and down with SpaceX's Dragon vehicle, which is the only US spacecraft that can do an intact entry. Meaning it doesn't burn up when it comes down through the atmosphere. So any hardware that NASA needs to send up and down gets onto that particular vehicle. Finding room on it is a matter of priority, but our agreement with NASA said that our drives would go back and forth. Each time a Dragon arrived to the space station, the drives would be placed onboard and returned to Earth. James would pick them up and they'd go to Codex where they'd get dumped and looked at. And then they'd be "scrubbed," sent back to Houston, and then we'd send them on the next Dragon. We had 12 drives onboard and we had probably three or four in the up and down cycle at any one time. After Dragon had a problem where they lost a vehicle, one of our cameras was destroyed. We were sending up a replacement 1D C camera and no drives were on that flight. But that was the way home for the remaining drives at the end of our movie.

James and I went to Codex and we asked them how we could actually try to get that amount of data off of a hard drive—it's a significant amount of data—onto a laptop and then transmit it back to Earth. There was no straightforward procedure at the time. It required that we change an IP address on one of the onboard laptop computers. That's as significant as trying to move a solar array to a different module. It's a big deal. I gathered up all the people that had a say in the software, the people who did the transfers, and the people who handled onboard laptop computers and demonstrated that we could do it. And they demonstrated that it could be done. Then James asked, "Well, can they do it from the ground?" Good question. I asked and they said, "Yeah, we can do it from the ground. All the crew has to do is plug it in." And so that's what happened over about a six week period. I would sit in one of the back rooms in mission control at 3:00 or 4:00 in the morning with the console operator. The crew was told which drive to put in, and every couple of hours we'd call them and ask them to swap out the battery. We managed to bring down 1.5 terabytes of data. We brought down every bit of data on all of the remaining Codex hard drives without a single bit lost.

Recently, I believe Codex has come up with a transfer dock that you can just plug into a laptop now with new software. Perhaps you were partly responsible for those new products?

MARSHA: Any change in a space station laptop almost requires an act of Congress. The application may be simple, but the approval process would have been the same.

JAMES: And that wasn't available at the time we flew. NASA doesn't keep up with the latest computer operating systems. It takes a long time for one to get vetted well enough for them to change out. I think they just recently went to Windows 7.

I'm not quite sure I understand how the 1D C camera was used. It shot stills and you combined them into video sequences?

JAMES: That's correct. 99% of the Earth scenes were shot as image sequences of stills, four frames per second. They weren't just stitched together. They were carefully processed using sophisticated software that recreated the missing frames to create a 24 frame per second full motion sequence. We used all the resolution from the full frame sensor.

On the C500, what ISO and frame rate were you shooting at most of the time?

JAMES: Almost everything was shot at 850 ISO. I think the highest ISO we had on a few shots was 10,000. These were scenes with lightning at night and some interior sleeping sequences. The C500 frame rate was 24 fps.

Did the cameras come back to earth or are they still up there in the ISS?

MARSHA: The cameras have been destructively disposed of.

JAMES: All except one. It's signed and was shown at NAB.

The rest were disposed of? Why?

MARSHA: One body came home but we were unable to return any of the other hardware. We're waiting on the remaining Codex drives and CF cards that are slated to come home on the Space X Dragon that is currently docked at the space station. *(Since this interview, they have successfully received all of our remaining Codex hard drives and CF cards.)* Our last little bag of hardware, which has two camera bodies, two small lenses and a Codex, has been positioned inside the Orbital ATK Cygnus vehicle that will burn up on entry. So no, we were not able to bring any of those home. *(Marsha sent an update on June 22: "This was actually completed about 3 hours ago, so truly gone now for sure!")*

What about all those expensive lenses?

JAMES: Gone.

Ouch. Users and rental houses will cringe. But viewers of *A Beautiful Planet* will applaud the magnificent work in this production.

The C500 is secured to the wall with Magic Arms (formerly from Bogen, now Manfrotto). One end attaches to the ¼-20 thread on the camera and the other end fits into the "seat track" – a running set of rails to which the arms can be mounted anywhere in the ISS. Photo: NASA

ISS Expedition 42/43 crew: (Top L-R) Russian Federal Space Agency (RSA) Cosmonauts Anton Shkaplerov, Alexander Samoukutyaev, Elena Serova; (Bottom L-R) NASA Commander Terry Virts, European Space Agency (ESA) Astronaut Samantha Cristoforetti, NASA's Barry (Butch) Wilmore. Photo: NASA

Director of Photography/Astronaut Training Manager James Neihouse, Writer/Director Toni Myers and Commander Barry ("Butch") Wilmore during an IMAX camera training session at NASA's Johnson Space Center, Houston, Texas. Photo by Marsha Ivins © 2016 IMAX Corp.

View from ISS of Bahama reefs. Photo © 2016 IMAX Corp.

Canon C500 camera, Canon 15.5-47 T2.8 Zoom and Codex S Recorder. Photo: NASA

Marsha Ivins during her 5th Shuttle mission, STS-98, February 2001 with Zero-Gravity hair. Photo: NASA.


Cinematographer Akira Sako, JSC (L) and Director Yoshinari Nishikôri (R)

By Yasuaki Mitsuwa

Director Yoshinari Nishikôri and Cinematographer Akira Sako, JSC, recently completed the feature Tatara Samurai. *This interview took place at the Imagica head office in Tokyo after the first screening of the film in April.*

FILM AND DIGITAL TIMES JAPAN (FDTJ): Tell us about the film *Tatara Samurai*.

DIRECTOR YOSHINARI NISHIKÔRI (N): "Tatara" is a unique steelmaking method that uses a foot-operated bellows to forge Japanese swords. The process, which is called "Tatara-buki," has been employed for 1,000 years. I wanted to make a film about Tatara and it came true. The film is called *Tatara Samurai*. The story is set in Izumo, Japan during the 16th Century—a period of constant warfare. The main character is a young man who admires the Samurai, leaves his home village and discovers the importance of Tatara steel making. Izumo is the birthplace of many Japanese traditions, such as "Kabuki," "Sake," and "Sumo" wrestling. Tamahagane or Tatara steel in Japanese swords is only produced there. This is a story about the legacy of steel making.

I heard the film is based on an original story you wrote, Mr. Nishikôri. Why did you want to make a film about "Tatara"?

N: The Japanese sword is a great work of art and its material, Tatara steel, is the best steel in the world. Curiously enough, many foreign people know more about Japanese swords than we do. The sword smith who worked on our film said that Steven Spielberg came to visit him just to buy a Japanese sword. I am ashamed that I did not even know that a Japanese sword cannot be made without the traditional steel techniques that come from ancient times. Tatara steel is the purest steel even today. It cannot be produced by the latest high-tech computer-controlled furnace. Nobody knows why the ancient Japanese knew about such high technology. I would say that this should be one of seven wonders of the world, like how to build Pyramids.

When did your idea to shoot a film about Tatara first come up?

N: About five years ago. At that time, I felt there were some tendencies that "Analog is old-fashioned and outdated and Digital is everything." It was around the year 2011 when we had the Great East Japan Earthquake. Analog skills and techniques, such as intuitional judgement at the site, saved many human lives. This is one of the reasons I was attracted to the concept. Also, I was born and raised in Izumo and have heard many tales of old Japan. I found out that many expensive luxury foods in Tokyo are made by traditional methods. For example, we often pay more at barbecue restaurants where we have to cook by ourselves on a small portable stove with charcoal. Hand-made organic Miso (soybean paste) is more expensive in supermarkets. We can buy cheaper ones that are mass-produced and have better preservatives, but food additives for preservation are sometimes not good for one's health. I thought analog technologies could be better for people and "Tatara" is a good theme. Just then, I discusses with Sako-san (Cinematographer) about the advantages that film still has over digital. It's OK if people do not notice this, but it seems that too many are saying that digital is better than film without knowing the reason. We are in an age of many uncertainties. Somebody says something in the media, rumors are easily spread and turned into common knowledge, while truth may be ignored. I wanted to tell a story about the many good "analog" things in Japan through the film.

When did you decide to film "Tatara" on film?

N: It began at a meeting with HIRO, Executive Producer of the film and former leader of the Japanese band EXILE, a popular vocal and dance group in Japan consisting of 19 members. He loves movies and had always requested 35mm film when shooting his music videos. My previous film, "Konshin," was also shot on film. When we met, we were excited to talk about our next film and we agreed to do it on 35mm film.

But many features are shot on digital. What about Alexa?

N: I love to shoot beautiful natural scenery and I had many ideas about locations. I think this film has twice as many nature scenes as typical films. I was concerned about representing the sun, water and other natural scenes as beautifully in digital and was a bit frustrated. Sako-san agreed with me and we decided to go with film. Furthermore, many objects in the story, such as flames and swords, are analog things. Sako-san and I arrived at a conclusion: Tatara-buki is a technology of 1,000 years ago but is still state-of-the-art. Film is a technology invented 100 years ago but is also still the state-of-the-art. In addition to that, I have to thank HIRO, who led the project. Even though we know film is good, recently it is not easy to actually shoot a feature with it. However, he allowed us to go ahead and do it without hesitating. From that sense, we had an ideal environment to shoot on film.

Were all scenes shot on location? Are there any studio setups?

N: All the scenes were shot on location. Nothing was shot in a studio.

Were the village scenes an existing location in Shimane prefecture?

N: No. We built the village there as an outdoor set for the film—but it does not look like a set. There were many difficulties. We had to make everything from scratch. It took a lot of time, but we built a traditional forge in the village and really produced Tamahagane/Tatara steel. Buildings in the village were constructed by carpenters, plasterers and local craftspeople in Shimane. For example, the Kagura hall (a stage for traditional performing arts) was built without using any nails. All the costumes were made from hemp fabric based on historical background research.

Recently, many features only emphasize the story line. I regret this trend and want audiences to feel the atmosphere of each image. The dynamic and vivid pictures shot by Sako-san, who has much experience and expertise, are a testimony to shooting on film.

FDTJ: What were the challenges of shooting film on location?

Cinematographer Akira Sako, JSC (S): When I shoot on film, I do not have to think about unnecessary things and I can concentrate on my work. I do not have to play tricks and can just shoot things as straightforward as they are. I was able to reproduce and express the natural colors of flames, leaves and other elements using motion picture film. The sword smith told me that they are always checking the colors of the flames to adjust and control the temperature of the forge. In the digital world, bright areas can become overexposed at a certain level: for example, sparks of fire will be just white dots. We wanted to capture the natural color of the sparks and film's power of maintaining their original red color was great.

N: For me, the only issue was cost. I have shot all my features on film except for "Wasao." So I am used to it and I personally think film is more convenient than digital. I think it was the right choice to shoot on film to describe the existence of Japanese people from ancient times, who lived together with nature and with their "analog" sense that we all used to have.

What cameras and lenses did you use for the project? And how did you select them?

S: Our A and B cameras were Panavision Millennium XL. The C camera was an Arriflex 235, chosen because of its mobility. Lenses were C-series Anamorphic lenses and most scenes were shot with them. We rented a set and shared them among all three cameras. Also, we had an Angenieux 25-250 HR Anamorphic modified zoom lens. The Arriflex 235 was always ready for shooting nature scenes. The sun and clouds were always changing and never waited for us.

I think it is a worldwide trend that vintage lenses are popular and anamorphic shooting is in fashion. The same is true here. New lenses have better optical quality and provide us with sharp, crisp and nice images, but I prefer old lenses because of their unique "taste" and look, like bokeh and flare. My descriptions sound clumsy, but each lens has its own feeling. The Panavision C-series lenses were very popular. We also used one Panavision 50mm E-series prime, which we could not do without. All the indoor scenes were shot with prime lenses.

FDTJ: How did you establish the look of this movie?

S: I avoided using filters as much as possible. That is because I wanted to represent the colors and textures that the subject actually had—unaltered. Regarding the film stock, I tried to use Kodak Vision3 50D 5203 as much as I could. I wanted the least amount of grain and the most resolution. After all, there are only 4 kinds of color film negative available in the market now. I used all four. The 200T was for the beginning of the film, flashbacks and snow scenes. 500T was for night scenes and 250D was for scenes where I could not use 50D. If 250D was not enough, I shot

with 500T. Then I pushed 2 stops and compensated in the laboratory. The point is that I gave priority to the sensitivity. I had an impression that 500T can be pushed but granularity was not as good as I expected when I saw the tests. So I tried not to push it except for some scenes, such as the last scene with the children. Now, ASA 400-800 is quite normal with digital cameras. I thought the low sensitivity of film was something that would help us compete against digital cameras. I tried to make good use of low sensitivity (slower, lower ISO) and finer grain. Of course, I was particular about skin tones.

What difficulties did you encounter as Cinematographer?

S: The outdoor set was made just like a real village—we could even live there. However, we could not disassemble the buildings like a studio set. Therefore, we did not always have enough space to position our lights and we had to think of clever places to put them. It was not easy and we were alternating between joy and embarrassment. Camera angles and lighting placement was a bit awkward at times, but in the end we could capture a better sense of reality.

I was rather surprised to see how many of our crew had forgotten how to shoot on film. In the beginning, they did not work as smoothly or effectively as usual. Some had to be reminded about working in film and some were experiencing it for the first time. So I tried to have a good overview of the working crews and all the locations. Maybe this is only in Japan but filming lasts only 1 to 1.5 months, or can be just 2 weeks, for a typical project. We spent nearly 3 months on this feature. Almost all crews make a living by doing many 2 or 3-week projects one after another. Good assistants can learn a lot but so-so ones just keep doing simple routine work and let the time pass, even if something goes wrong. I could easily see whose skills and abilities were limited. We also had an aerial sequence. I thought it was common, but some assistants had never worked with a helicopter before. This was another surprise for me.

I guess they had trouble changing mags, loading and unloading different film emulsions at the beginning.

S: I think so too, as some of them were not used to it and did not know the exact procedure of changing magazines. They had to re-learn the process of loading film. I also talked to Nishikôri-san that shooting on film is similar to the tradition of sword-making. There is no manual or textbook showing how to make "Tamahagane." Luckily we have books for filming but the most important thing is practical experience on the set. We have to hand down expertise and skills to young people. It cannot be only with words. They must begin to understand with practice. For example, our experience of aerial shooting became relevant to the younger people once we all experienced it together. I am happy that we could hand down something to them.

On the set, the leading actor, Sho Aoyagi worked hard and well. Actors and actresses and crew all worked hard…and it was like a synergy effect.

We also shot a documentary about the sword smith in film. We met his apprentices. They were in their early twenties. There is a traditional apprenticeship system and they are not paid until they become full sword smiths. Although they get free meals, they have to work at a part time job to make a living, perhaps as a clerk in a convenience store. I would never have met them if I had not worked on this production. They participated as extras in the movie. I was pleased to know and meet these energetic young people. I do not think it is so common in other countries that young people have such hard training.

The sword fighting scenes are impressive in the movie. One was a long, single shot.

S: That was a sword fight in rain at night. A great deal of credit should go to the sword fight arranger, Yoshio Iizuka, who also works in Hollywood, and Naoki Kobayashi, who is an actor, performer, dancer, member of EXILE and also a leader of Sandaime J Soul Brothers. They acted really well in a short period of time. I think a scene with a single shot can be achieved with good performers. If they are not good, we have to split the scene into multiple shots and have more close-ups. So I was blessed with good performers. The director and the sword fight arranger also intended it to be a long, single take. I think the timing and length during the performance is more important and better than the timing made by editing. Recently, many features are edited too much. Ideally it is better to shoot the real performance with a long, single shot. I tried to do so in this feature.

Did you use a dolly on the long single shot of sword fight scene?

S: That was shot with a crane because the ground of the outdoor set was not flat and was bumpy. The village was located on a hill. It was also difficult for the crew to carry all the film equipment up to the village.

Do you want to keep shooting on film?

S: I would love to, if possible. I do not know which direction digital cameras will go, such as HDR and high resolution, but I also recognize the great capabilities of film. I want to tell everybody that film is another option. I will be more than happy if film becomes more popular again. I hate that I have no choice. I do not say film is superior to digital in every aspect. Film has some advantages and digital has other advantages. Needless to say, we must digitize films, since projection is DCP now. But I think film was the right and reasonable choice for our feature, a human drama set in nature, where both natural color and skin tone are important. I do not denounce digital shooting and I also shoot in digital.

I also worry when I hear some Japanese producers tell me things like, "Film is no longer produced" or "There is no laboratory in Japan" or "It is not possible to shoot on film now". These statements are not true. Even these producers should be able to have the choice of film or digital as recommended by their cinematographer. I hope that not only camera assistants but all crews will be able to continue to experience film shooting. I do not say it is easy but they should have the chance.

At the moment, "Tamahagane" is only produced in one place, in Izumo. Film is the same. Only Kodak manufactures film now. Once they stop, no doubt, it will be far more difficult to shoot on film, even if we wish. So we have to do our best. From that sense, I think the theme of our feature and film are quite similar. Not only in Japan but also in the world. Everybody in the industry has to work hard to hand down the culture of film to the next generation, including practical techniques and skills.

I will be glad if people who watch our movie might want to shoot on film next time, rather than telling me "Good job" or "It must be tough to shoot on film." I hope they acknowledge the power of film with this movie.

Lighting with Paint: Vintage 1876

Ernest Meissonier *Friedland.* ca. 1876. Metropolitan Museum of Art

James Tissot, *A Passing Storm.* 1876. Beaverbrook Art Gallery

Pierre-Auguste Renoir, *Bal du moulin de la Galette,* 1876. Musée d'Orsay

Édouard Manet, *Portrait of Stéphane Mallarmé.* 1876. Musée d'Orsay

The Pendulum of Styles

The following review was uncovered in the dusty archives at The Duchy of Grand Fenwick Cinematheque. Then, as now, style was a dialectic. Artists experimented. Tastes changed. Academies and the Establishment were challenged. In one year, 1876, we see a spate of styles. Bold artists attempted to distinguish themselves from their confrères. At the same time, the specter of still photography loomed. It was not only an artistic but also an economic challenge. How could an artist like Meissonier continue to justify fourteen years of work on one painting when a photographer like Gaspard-Félix Tournachon (Nadar) could ascend in a balloon and shoot aerial stills in one day?

The authenticity of this document cannot be validated...

1876. One hundred years have passed since the United States declared independence. Sixty-nine years have gone by since Napoleon defeated the Russian army at the Battle of Friedland. And on a fine day today, in 1876, American department store magnate Alexander T. Stewart has purchased Ernest Meissonier's *Friedland* painting, sight unseen, for the astronomical sum of $60,000.

It is understandable. Meissonier is the highest-paid artist in France. He specializes in painting scenes of action, adventure and romanticized battles. With an attention to detail that some call obsessive, and others will later see in Kubrick, Ernest Meissonier has been working on *Friedland* for fourteen years. He installed what he called a dolly in his vast garden near the Seine. Workmen pushed the dolly at breakneck speed as Meissonier perched handheld with a sketch pad to capture the precise details of horses galloping back and forth.

Friedland will surely inspire future artists with its attention to detail and 4K resolution. It's clear that Meissonier, who goes by the nickname "Chèvre" (goat) used a wide angle, 14mm Master Prime lens. "It's all about composition and detail," he says.

The same year, 1876, James Tissot (the former Jacques Joseph Tissot) paints his mistress and muse Kathleen Newton in *A Passing Storm*. Like Meissonier, Tissot is fabulously wealthy while his Impressionist friends are struggling. Tissot also favors a 4K canvas and fine detail. His lighting is golden, backlit, contrasty, HDR. The camera notes are difficult to decipher, but we think we can make out the words "25mm Summicron-C, no filter, Mole LED 3200K Tener with Rosco 1/2 CTO coming through window."

Enter Pierre-Auguste Renoir. "All our canvases, paints and brushes come from the same suppliers," he complains to colleagues one alcohol-drenched evening at The Café Guerbois. "Ever since that American, John Rand, invented metal paint tubes, all our images feel the same. They are too pristine, too perfect, too digital." Renoir longs for the good old days, when men were men, and painters ground their own pigments. Or, at least their assistants did.

"Zut alors," shouts Manet. "What we Impressionists should do is to removing the whitewashed coatings of our canvases. Make them vintage. Blunt our sharp paintbrushes so our once fine lines become blobs and blurry blotches of light. Search the flea markets for vintage palette knives. And above all, dapple the light."

Meissonier argues, "*Friedland* is a period piece, but I avoid the technical path to a vintage look." Tissot jumps in, "I prefer to avoid flares and glare to get a vintage air. I hope my lighting, composition and art direction tell the story." Plus ça change...

C’est Cannes

There are 15 film-themed murals on buildings around Cannes. The bus terminal by the harbor at Place Cornut-Gentille shows a DP with one hand on the wheels on top of an improbable crane, grips hoisting a trompe l’oeil within a trompe l’oeil, as well as Leonardo DiCaprio, Kate Winslet, Fred Astaire, Ginger Rogers, Charlie Chaplin, Jean-Paul Belmondo, Gérard Depardieu, Lauren Bacall, Humphrey Bogart, Robert Redford, Mickey and Minnie Mouse.

The rest of the stars are on the red carpet of the Cannes Film Festival Hall a few blocks away (next page).

On the Red Carpet, Cannes

The Projectionists of Cannes

Films at the Cannes Film Festival are assured the highest level of projection in the world. You may not like the films, but you will love the way they are presented. Although leading contenders for the Palme D'Or often run to posterior-numbing lengths (these are often directors cuts before purchased and shortening for distribution) at least one is assured that the exhibition on the huge screen in the Lumière Grand Theatre is perfect.

The reason for this, and in fact, in most theaters in France, is that they take cinema projection very seriously.

More than 2,000 films were screened during the 11 days at Cannes this year. 80 of the best projectionists from France handled the grueling schedule.

Supervising all of this is the CST — the French Center that supervises technical standards for Cinema. And the man in charge is Pierre-William Glenn, AFC.

A distinguished cinematographer with a list of credits that reads like the who's who of the New Wave and French Cinema, Pierre-William checks every film in every theater at Cannes in advance and attends all the main events to make sure everything runs perfectly.

On the second-to-last day, all the projectionists were treated to a lunch of oysters, seafood, Paella, and wine at the CST's pavilion on the pier. The best projectionist at Cannes was honored with an award. Great projection is still an art. If other festivals and all cinema owners understood this, the world would be their oyster.

Pierre-William Glenn, AFC (left) and Ian Troszinski, winning projectionist.

Above: Pierre-William Glenn, AFC and his oysters. Below: his favorite seafood restaurant in Cannes: Astoux et Brun at 41-43 Rue Felix Fauré.

Above: A favorite FDT lunch spot at Cannes—the Beach Restaurant and Buffet across from the Carlton Hotel.

Philippe Rousselot, ASC, AFC on *The Nice Guys*

The Nice Guys opened in Cannes on May 15 and in the US on May 20. It was one of two "first digital features" at the Festival. *Café Society* premiered at Cannes on May 11. That was the first digital motion picture for Director Woody Allen and Cinematographer Vittorio Storaro, ASC, AIC. Previously, Woody Allen directed 47 films on film. Storaro shot 58 films on film.

The Nice Guys was the first digital feature for Philippe Rousselot, ASC, AFC. He had done digital commercials, but not a full length digital film. Rousselot was previously in Cannes in 2013, receiving the first Pierre Angénieux ExcelLens Award for Cinematography.

JON FAUER: *The Nice Guys* looked superb. How did you choose this project, and how did they choose you?

This is my fourth film with Joel Silver, the Producer. He seems to appreciate my work, which is always very pleasant. He might have been part of my being hired. He sent me the script. I enjoyed it very much. It was well-crafted, funny, enjoyable and very entertaining. I had seen many films written by the Director, Shane Black—all really good.

Which films did you work on with Joel Silver?

Prior to *The Nice Guys*, I did *Sherlock Holmes* and *Sherlock Holmes: A Game of Shadows* (both directed by Guy Ritchie) and "*he Brave One*, (directed by Neil Jordan).

Tell us about the plot of T*he Nice Guys*.

It's a story of two men. One is a private eye (Ryan Gosling) and the other is a hired guy (Russell Crow). When you have a problem, you hire that kind of guy to solve the problem. An enforcer. By accident, they happen to wind up working on the same case which becomes much bigger than what they expected.

What style did you and Director Shane Black decide on? A 1970s look?

That was a question: should we make it look like a film from the 70s? My answer was, "I was working in the 70s, so what are we talking about? My style or somebody else's style? There were as many styles as there were DPs, filmmakers and directors in the 70s. So which one are you going we pick?" My second argument was: if you pick a film from the 70s, are you really going to entertain your audience with the way films were shot in the 70s? Obviously, I don't think that would be the case. My third point was that the sets, wardrobe, dialogue and the music would all be sufficient to evoke the 70s. You don't need to add lenses from the 70s or film techniques from the 70s to tell the audience that it takes place in the 70s. I don't think the camera has to mimic a period that most people have forgotten in terms of how films were lit at the time or how they were shot. So basically for me, it was taking the script, looking at what was happening in front of the camera and shooting it in the most visually efficient manner for the film to be enjoyable.

It's ironic that our present-day memories of historical looks, vintage lenses or equipment often are totally removed from how the images actually looked back then. It's our imagination, isn't it?

It's a total imagination and I think it's kind of a gimmick that might work for an audience of seasoned DPs or film buffs, but that's about it. I don't think an audience is interested in that. I've done those things when I was a DP in those years, but I nowadays I certainly don't want to do things we remember from the 70s, like zooming in and out for no possible reason on all kinds of shots. We don't do that anymore.

But you know what? In the 70s, the English had a way of shooting films. The Americans had a way of shooting films and I had a way of shooting films. And it was not a uniform style.

So how did you determine the style for this film and how would you describe it?

Efficient.

How so?

That's more and more my philosophy now, unless there's a real purpose that is embedded in the story and the script to go one way or the other. My view on cinematography is to pay attention to what is in front of your camera and reflect on that. Go with it rather than impose a style that is predetermined and may end up being out of whack most of the time. Sometimes I tell students, "Imagine the film you want to do. Imagine the image that you want to produce. Those are not bad things to do. But then you get on the set and it could be a sunny day. It could be raining. So don't lose your attention to what's happening at that very moment. Because that is the reality. That is what you have to deal with. Your imagination three months before might have been completely inappropriate.

You have to stay flexible?

Absolutely. We photograph a reality that's been given to us, even when we're on a sound stage. The reality is the set. It's costumes. It's makeup and actors. It's a director who also has ideas or desires to do things in a certain way. You must pay attention.

Does that influence your lighting?

At the time The Nice Guys took place, streets were very often lit

with sodium lamps. There were tungsten fixtures and fluorescent lights indoors. TV sets didn't look like the pure light that we have from them now. Things were different, so we had to take that into account. Also, it's a thriller. At times it's a comedy, but for a very good portion it's a thriller that does not necessarily go with convention.

You can be bold and invent things to get the atmosphere of the film. I would say it's flirting with convention but staying away from it. I don't know how else to express that. It's a question of contrast, color and mood. There is a very interesting scene in the film where you see an example. Russell Crowe has a serious problem with two guys who want to beat him up. Shane Black plays with the genre. He takes it upside down. The whole scene plays in the dark. And then, at one moment, in order to fool the two guys, the character played by Russell Crowe turns on the light. Usually the scene would have been written the other way around: punching people in the dark to confuse them. But he does exactly the opposite. That's interesting because then you have a very long scene that has to be played in semi-darkness. So you decide, okay, light comes from the windows. And the convention is usually a kind of bluish light that comes in through the window at night from street lights. But I played it completely the opposite way. I had very warm light coming through the window. There's a kind of playfulness that I sometimes like to go with by changing things in reverse.

You probably worked with practical lights as well.

Yes, many practical lights. There was a big party scene in a house on location with lots of people and no room for lights. You fill a room with a crowd, and you don't have room to put anything else there. So I played with the practicals, just changing the bulbs of the recessed lights in the ceiling. We had a very tight schedule and had to go rather fast. So I also was very concerned about being quick.

What about added lighting?

I used LED panels often because they were easy to hide. They were very convenient in many locations. We could sometimes just plug them into the wall outlets. It was a way of going much faster.

This was an anamorphic show?

Yes, I have a weakness for anamorphic.

I remember that. What lenses did you use?

We used the Panavision G series primes and the Angénieux Optimo 56-152mm A2S T4 Anamorphic zoom.

Did the primes and zoom match? Different generations and technologies?

I think they matched well.

When did you use the primes and when did you use the zoom?

That depended on the situation. I don't have a theory for that.

Since you said you want to work quickly or efficiently, does that mean you're using the zoom more often?

Sometimes. We shot with two cameras and sometimes we had to put the zoom on one camera and the prime on the other. The zoom is great because you put it on the camera, you don't ask questions, and you frame the shot. You adjust the framing a bit more or a bit less. But I'm not always completely crazy about using zooms, because I think you lose a certain discipline. I like films where you use only two prime lenses, because you get some consistency in your way of shooting if you limit yourself to a minimum number of lenses. It's not always the most efficient way to do it. At least it's nice to try, because you know certain shots done on the 75mm are not the same if you do the same shot on the 65mm. But sometimes it's politics that's really hard to maintain.

What do you mean by the politics?

It means that sometimes you have to adjust your way of thinking. For example, when you shoot on location you're always limited by the walls that you can't move. So if you decide at the beginning, "Okay, I'm going to do the film with only two or three lenses," you're stuck in a corner and you can't do anything. That's a problem. And even on a stage you don't want to necessarily move all the walls just to gain the equivalent of 10 millimeters so you can get your frame. That's what I mean. It's very difficult. But it's a nice concept in your head.

I don't want to be a fanatic about this theory. It's just a nice feeling. I remember a specific production. I've done two films with a French director I like very much, Bertrand Blier, and we used the 27mm and 150mm spherical primes. Sometimes other lenses, but rarely. It was very funny because after he rehearsed a scene we said, "Okay, let's look at it on the 27mm." And then the director said, "I'm not sure that's working. Let's try it on the 150mm." It went between these extremes, and opposites, and he always worked like that. It was very funny. I like the idea that there is this kind of consistency. But again, there are other more important things when you make a movie than the consistency of lenses. There are other factors to take care of.

Like the ever increasing awareness of budget and the pressure to work faster? Doesn't the zoom help you to work faster? As you said, to adjust the focal length by just a few millimeters rather than change lenses?

Yes, it does. But working faster is not so much a technical thing. I feel that to work fast, the best way is to make quick decisions. If you start pondering how you're going to shoot the scene and then wind up in doubt and worried about maybe missing something, then you lose confidence and you start reshooting the entire scene from all kinds of different angles. This is how you kill a schedule. If you shoot quickly, and I'm not saying it's easy, but shooting a film quickly means making the good decisions rapidly. It requires confidence which sometimes you don't deserve. With Shane Black, we made decisions very rapidly. It went extremely well, and I think the film is terrific.

Specifically on *The Nice Guys*, take us through the process of setting up a shot.

Shane blocks the action and then we discuss how we're going to shoot it. "Okay, we need this shot, that shot. We don't need that one." Breaking down the scene is a matter of figuring out the important aspects and making a little list of what we need to see in order to understand and enjoy the story. What do we need to see to make the shot or the scene funny or dramatic or interesting? I'm not saying you have to write this kind of thing on a piece of

paper. Once you've done that list, it's not brain surgery. You just look and see from which position you can achieve that list. Then you ask yourself, do you want to move the camera? Moving the camera is basically deciding how you can accelerate, slow down, intensify a shot, an idea or a purpose. In order to do that, you have to have a very good knowledge and understanding of the script. What I do most of the time during preparation is basically read the script and know as much about it as I can.

How much prep time did you have on this show: scouting, reading the script, making notes?

Probably six weeks. We started shooting around the end of October.

Do you make notes in the script? How do you prepare?

I make lists of specific problems. And then I make notes of what I think we should do along with all kinds of ideas. Most of these ideas, by the way, don't make it into the actually filming. As I said, you wake up in the morning, go on set, and realize that the beautiful, bright idea you had five weeks ago just doesn't work because the actors are doing something else. But it's nice to have at least a mental preparation because it's much easier to improvise if you have a solid base. Writing down ideas is not so much making a decision about exactly what you want to do. It's more about understanding the script and what is interesting in the story or the points that are to be made.

And then you are there on the day and say, "Okay, that was a silly idea. Here's a much better way to do it."

What can you tell us about the camera operating?

We used Steadicam when it was convenient, going around obstacles, walking and talking.

Will Arnot operated the A camera and did Steadicam. Tom Marvel was B camera operator, but when I use two cameras, I usually think of the cameras as being both completely A cameras. They're both equally important. Valentine Marvel was First Camera Assistant; I worked with her many times before and she is very good.

What cameras did you use?

ARRI Alexa XT cameras. This was the first feature that I shot on digital. I've been very reluctant all these years to use digital for a good reason. I didn't think it was very good for many years.

But now I have to admit that it's a good comparison to film. I hope I will shoot film again one day. I must say that the Alexa, and the speed of the Alexa, helped me a lot with the lighting.

Was there a noticeable difference in the way it looked compared to film?

It's funny because I had shot with the Alexa on commercials. It's not a camera that was totally foreign to me. But when I thought about shooting this feature with digital, I said "Okay, it's not going to look like film and when I get to the DI, I will have to do a lot of things. I'm going to add grain so it looks like film." And then I did the DI with a colorist I've been working with often in London. We finished and presented our work to the director and the producer. Everybody was happy. A couple of weeks later, I realized that I had forgotten to add grain. Since I had forgotten, perhaps I didn't need grain in the first place. To be honest, I don't think anyone is going to leave the cinema saying, "I can't take it—the image looks too digital."

It's different. But you know what? You don't do the same film twice with different media. I think for this film it's not going to hurt that it's digital.

How and why did you decide on digital for *The Nice Guys*?

I knew I could go faster with digital. And I just thought it was time for me to try it.

It's interesting that both your and Vittorio Storaro's first digital features are being presented at Cannes this year. Vittorio said that the time had come for him to make the passage from film to digital "because progress is something that we cannot stop or criticize from afar. I think it's time for us to embrace digital capture."

I think you can still find a good lab, but that means that you may see the dailies two days later. There's always a fear with film that it's not going to go well and it may be scratched. It's not that you can't make a film on film anymore, because it's been proven that a lot of people still do shoot on film. And why not? I hope I will still use film one of these days. But now studios are used to this digital process. The editors and the visual effects people are used to it. It's becoming a way of doing things.

Remember when oil paint replaced tempera pigments in the 1400s? I don't think there was a huge outcry back then.

What I'm a little bit nervous about is the tendency of cinematographers, and this goes for many professions, to only see their technique and their craft as the most important things in the process. For me, the most important thing in working on a film is trying to make it as good as possible.

I know it seems a little bit pretentious, but I don't care about my photography. If the film is good, my photography is good.

If my photography's brilliant and the film is bad, then I don't think my photography is brilliant. We are trying to make the film in the best artistic way possible, but I think cinematography is never better than the film itself. If it is, there's something wrong. I have to think about my cinematography as being the best possible way to achieve a good story. But we are not photographers. We are not painters. We're filmmakers.

And the camera is just a tool like your analogy of the oil versus tempera.

Exactly. I've done it. I've done painting with oil.

Are you still painting?

No. I tried to get back to it. I will get back to it. But I think I'm not old enough. I'll wait another 10 years. It's terribly hard. I was not very good at it, but I used to absolutely love it.

What do you do in your spare time now? Or you don't have any spare time?

I work in my garden in Brittany a little bit. I try to play the piano. And I hike a lot.

I have some spare time because I'm not piling up job after job. I need breaks between films so I do not lose the pleasure of doing them. That's very important.

Cannes and the Pierre Angénieux "Excellens" Award

Cannes officially aligns itself with stars and auteurs. Angenieux honors the Cinematography. Previous recipients of the lifetime achievement award named after company founder Pierre Angenieux have been Philippe Rousselot, ASC, AFC in 2013; Vilmos Zsigmond, ASC, HSC in 2014; and Roger A. Deakins, ASC, BSC in 2015. Peter Suschitzky, ASC received the Pierre Angénieux 2016 Excellens in Cinematography Award on May 20th 2016 at the Bunuel Theater in the Cannes Palais des Festivals.

The stairway to the heavens along the red carpet was illuminated by the strobes of 200 photographers and beautiful Lumio book lamps carried by the delegation. These were not the familiar cinematographic slabs of foamcore and bounced light known as book lights. Instead, they were pages of paper with a lovely, soft source of LEDs buried within, available from the MoMA Design Store.

On the Mouton Cadet Terrace high above of the Festival Hall and the mega-yachts below, guests mingled with stars, Angenieux suppliers, distributors, users, friends, cinematographers, rental houses, directors, and producers.

The ceremony unfolded in the Salle Bunuel Theatre two floors below. Peter was honored in speeches by festival director Thierry Frémaux, CST President and Cinematographer Pierre-William Glenn, Pierre Andurand, Alba Rohrwacher, Matteo Garrone, Juliette Binoche and Viggo Mortensen.

More than 50 employees of Angenieux made the trip from Saint-Héand to Cannes to attend the event.

Top, left: Matteo Garrone, Alba Rohrwacher, Peter Sushitzky, Juliette Binoche. Photo: Dominique Charriau.

Top, right: Pierre Andurand, Alba Rohrwacher, Peter Sushitzky, Matteo Garrone, Juliette Binoche. Photo: Pauline Maillet

Above, right: Peter Sushitzky and Valeria Golino, actress and member of the Jury at Cannes. Photo: Pauline Maillet

Left: Angénieux group at Cannes.

Angénieux “Excellens” Award, cont'd

Mouton Cadet Terrace atop the Festival Hall, overlooking the harbor.

Gerhard Baier, Pierre Andurand, Andreas Kaufmann (l-r)

Paulette Dumerc and Davy Terzian

Peter Suschitzky and Juliette Binoche

And on the Red Carpet...Edith Bertrand

Ronit and Amnon Band

Pierre-William Glenn, AFC; Vittorio Storaro, ASC, AIC, Richard Andry, AFC

Dominique Rouchon, Pierre and Linda Andurand, Sandra and Joerg Pohlman

Peter Suschitzky, ASC and the Angénieux "Excellens" Award

Peter Suschitzky ASC receiving an Angénieux Optimo 28-76 zoom lens,this year's Pierre Angénieux Excellens Award at Cannes. (L-R) Pierre Andurand, Peter Suschitzky, Alba Rohrwacher, Matteo Garrone, Juliette Binoche, Award Bearer, and Viggo Mortensen.

Peter Suschitzky, ASC was honored at the Cannes Film Festival on Friday, May 20 with the Pierre Angénieux "Excellens" in Cinematography Award. The following day, he conducted a cinematogaphy master class, moderated by Benjamin B at the Radisson Blu. Peter was born in London in 1941. He is the son of renowned cinematographer Wolfgang Suschitzky, who is now 103 years old. Peter was the cinematographer on more than 50 films, including most of David Cronenberg's films since 1988: *Naked Lunch* (1992), *Crash* (1996), *eXistenZ* (1999), *Spider* (2001), *A History of Violence* (2005), *Eastern Promises* (2007), *A Dangerous Method* (2011), *Cosmopolis* (2012), and *Maps to the Stars* (2014).

JON FAUER: Let's begin by talking about the Pierre Angenieux Award that you're receiving at Cannes.

PETER SUSCHITZKY: It's the fourth year that they will be giving an award to a cinematographer and they chose me. I don't know how it happened, exactly. But it's very flattering and exciting.

It's a lucky season for me because I just got the Italian film academy award, the "David di Donatello," for my work on *Tale of Tales* which has just opened in the States.

Please tell us about that film.

It is one of a kind. It's unlike any other film out there. It's taken from a series of folk tales that were collected in 18th century Naples. I think it was the first collection of fables published and it came to the attention of the Brothers Grimm some 50 years later. It's a conflation of several stories, with princesses, a king, a queen and a dragon: all the right elements for a folk tale.

Where did you shoot it?

We shot in many locations in Italy: Sicily and Puglia in the south, central Italy, Rome, Lazio and Tuscany. We went to some very beautiful, out of the way places.

What equipment did you use?

It was a rather difficult film for me because it was 100 percent Steadicam, the first time for me that an entire film was shot this way. We used an ARRI Alexa camera.

What did you use for lenses?

Almost all the shots were done using Panavision Primo prime lenses but we carried a zoom with us, an Angénieux, and we must have used it on two shots. On "After Earth" we used zooms a lot, particularly when the camera was on a crane, because that always gives greater flexibility. Whenever I think of a zoom I tend to automatically think Angénieux because they are amongst the best that you can find. I do, however, like the discipline which necessarily comes with the use of a prime lens and I have, with David Cronenberg, often used only one focal length lens for all shots on a movie: sometimes it was the 21mm, sometimes the 24mm, and other times the 27mm.

Is there more pressure lately from producers to work faster and therefore increasingly with zoom lenses?

I think that's generally true, yes. But, I'm a prime person. I like the discipline of working with primes and optically they seem to be a little bit better. Although the Angénieux zooms are superb and it's sometimes hard to tell the difference. I think they're the best I've used. Angénieux have a really good range of zooms. They have a very fast stop. But I generally wouldn't want to work wider open in T2.8 anyway.)

Let's talk about your career. How did you get started in film?

I'd have to go back to my childhood. I was surrounded by images. My father, Wolfgang Suschitzky, was both a photographer and a cinematographer. My father would give me bits of film and I built a toy cinema. I put a bit of film in a gap between two blocks at the back of my room, and put a flashlight behind it, and imagined myself in a cinema looking at a movie. My father also photographed us children a lot so I was very aware of cameras from an early age.

You went to film school?

I took photographs into my teenage years and I'm still taking photographs. My father encouraged me to study film and become a cinematographer because he could see that I had a certain talent for it. He suggested the film school in Paris. I already had some (the rudiments of) French because I'd studied it in school. I went to Paris and sat for the entrance exam and managed to get in. I wasn't a very good pupil. I was an impatient young man and wanted to start working and getting experience in film. I realized that I wouldn't actually learn a lot in film school, and that I could learn a lot more by working. So I left school after a year and started to work in films as a camera assistant. Since I was a very bad assistant, it seemed necessary (for the sanity of the DPs with whom I worked) for me to become a DP myself. I didn't spend long as an assistant and I was lucky to get my first job as DP in documentaries at the age of 21.

Why were you not a good assistant?

I can only imagine, looking back, that I wasn't totally interested in being an assistant. I wanted to be the one who decided what the film was going to look like. I think I must have invented a lot of mistakes that nobody had ever thought of.

What was your first documentary?

It was on the strength of my still photography that I was invited to become a cameraman in documentaries. I was engaged by a German TV company to make documentaries in Latin America and I spent a year in there as a one-man unit with a journalist. I did both camera and sound. I was using an Arriflex 16S.

How did you get into features?

Still being slightly restless, after a year I decided that I'd had enough of shooting reality. I was always interested in feature films. I went back to England in the hopes of getting a job in a studio as an assistant on movies. But I was very fortunate that didn't happen. Over the years, I had developed still negatives and printed them. I showed them to an editor friend of mine, Kevin Brownlow, who's now an expert on silent cinema. He said, "These are terrific. But I'm actually making a movie on weekends. And I need a cameraman. Would you like to help me?" And I said, yes. It was a fictional film, imagining Britain occupied by the German forces during the war. I did that for half a year, on weekends and sometimes during the week. It had a miniscule budget. We shot on short ends that Kevin managed to get from Stanley Kubrick's *Dr. Strangelove.*

Although that film was made for very little money, it was bought by United Artists and was shown in central London. It was like having a calling card. I could say, "I'm only 22 but I've shot a movie." I began to get work on short films and commercials. Finally, a young director who was about to make his second movie, was also looking for somebody to shoot it. He picked me. His name was Peter Watkins. It was called "Privilege." It was about a pop singer being manipulated for political reasons. From there, I was very lucky and didn't realize how lucky I was. Once I'd shot one film, I was off shooting another one. Albert Finney was doing his only movie as a director, and I shot that. It was called *Charlie Bubbles*. Then another one came along and it just didn't stop.

I was a very lucky young man. It was totally unheard of for a DP to be less than 35 or 40 years old in those days. It was a very hierarchical business. You had to pass through each stage of being a second assistant, a first assistant and then a camera operator before you got the break to be, if you were lucky, a Director of Photography.

Of the films you have shot, which are your favorites?

One has to be very lucky to shoot really good movies. I've been fortunate enough to have done a few movies that a lot of people liked and I liked them too, such as *The Rocky Horror Picture Show.* And the movies which I have shot with David Cronenberg. Then there is *Mars Attacks!* which I shot with Tim Burton.

Let's talk about the relation between the cinematographer and the director. You seem to be a repeat customer with some of these directors, so you must be doing something they enjoy.

The only long relationship I really had was with David Cronenberg. I shot two films with John Boorman but they were separated by 20 years, so it wasn't exactly a marriage. Whereas with David Cronenberg it was very much a professional marriage. It was a wonderful opportunity to develop a relationship with him and shoot so many films together. Each one presented a different challenge. Each was quite different from the previous one. I found them all very stimulating to work on. For me, the key is to be stimulated by the project regardless of whether it's going to be successful or not. I'm a firm believer in the importance of the context of what we cinematographers do. I think it's pointless to think that you can do beautiful work on a bad film. Perhaps you can do good work on a bad film but it's not going to have much meaning. Whereas if you do quite good work, maybe not great work, on a really good film, people will think you're great and at the same time you'll be stimulated. Actually I've found that I've done my best work on the most challenging films. Films which have been most stimulating to work on.

Are you pretty critical, when you read the script, whether you're going to do it or not?

Yes, I am. I would base the choice on the director, of course, and on the script. The script is really the backbone, the skeleton of the film. It's ultra important. I think it's possible to make a bad film out of a good script but I don't think it's possible to make a good film out of a bad script.

Take us through the process of how you prepare for a film, how the style or the "look" evolves.

I would always give a disappointing answer to that sort of question. In brief, I don't know. I absorb things into my soul, into my body and into my brain. I very rarely go into a film knowing exactly what I'm going to do. My personal method of working is very instinctive.


Photo: Pauline Maillet

Depends on the day, your mood, the available light conditions?

No, it depends on a slow build-up. It is a patchwork of information that I absorb from, first of all, the script. It might be also come from talking with the director. With David Cronenberg, I never used to talk much at all. It would depend on seeing the locations. Getting a feel for the actors. Looking at the wardrobe. A whole bunch of different stimuli that I need to receive. Just getting a general, vague feel for what I think the film might need from reading the script again. I try not to repeat myself. I try to do something slightly different. Not deliberately different but something that's appropriate to the film and comes naturally to me. I certainly would never start a film saying I'm going to use this filter or make it look like that movie or that painting. It comes instinctively and it's got to fall into place on the first day because the way you shoot the first few shots is going to be the way you continue to work. I don't have a self-conscious, calculated way of approaching a film.

Tell us about your approach to lighting. It is spontaneous. Of course, I have to prepare and order the equipment. I need flexibility and sufficient lighting for each location or set. That doesn't mean that I order more equipment than any one else! You can't afford to be totally spontaneous and you can't arrive with 10 trucks full of equipment. I have to make choices and know approximately what I need. I will start lighting and I will not be 100 percent sure what I'm going to do until I've finished. I don't make a totally concrete lighting plan. I can say approximately what I'm going to do and then I have to be able to do it in layers. I've tended to become more simple as I have evolved.

When you're shooting digital, does that affect the way you are lighting because of the higher ISO?

Yes, it gives me more flexibility. The first time I used digital cameras on a feature was on "Cosmopolis." 90 percent of it took place in a limousine. I knew ahead of time that it would be, in many ways, the most difficult picture I would ever do because there's so little room in a car to hide lamps. I was able to use little LED strips and the smallest incandescent light or a Dedo light as the main source. Bounced off a little white card hidden behind a seat. Things that I wouldn't have been able to do on film. Digital gave me tremendously flexibility. Compared to what we had on film at 100 ASA, it's very easy because you don't have to work the shadow areas to the extent that we had to in those days with slow film. It's much easier for the DP and you can see what it's going to look like straight away. If this means that some of the mystery and power of the DP has disappeared, the trade-off is one which I am prepared to accept.

If that was the toughest film you shot with Cronenberg, which was the most interesting?

They were all interesting. None were easy. I don't make life easy for myself because I'm very tough on myself and I'm always trying to do something that I haven't managed to do before, always pushing myself. Some of the most stimulating were "Crash" and *Naked Lunch*, I think. They were so unusual.

***Crash* couldn't have been easy.**

No, but I laughed every day, somehow. It was very tough and the night exteriors were shot in the beginning of winter in Toronto. It got very cold and unpleasant. But I knew I was shooting a fascinating movie, so I was very happy.

You worked with Juliette Binoche on *Cosmopolis*. Do you change the way you light different actresses and how do you make tests?

I try to do tests–at least half a day shooting with the actors who are going to be in the film. Of course, I want the women to look their best. It's always an instinct, is it not? I don't want to use special filters on the camera.

It's interesting that your family has three generations of cinematographers. Is it unusual to have such a long family history of cinematography as yours?

Yes, I think it is. I fell in love with cinema and being involved with telling stories when I was very young. My son Adam came on some of my movies as a trainee and took still photographs when he was a teenager. It seemed natural, although he did tell me when he was 16 that he wanted to become a war photographer. I strongly advised him against that.

What motivates you most?

The quality of the script is most important because I want to work on good projects. That's always been my ambition. I'm interested in many other things that I think have enriched my life and probably indirectly affected my work as a cinematographer. I love music, painting, literature, cooking and wine.

And still photography.

I brought out a book of photographs last year, "Naked Reflections." It's a collection of two types of photography. I've always done street photography. I stopped doing that about a dozen years ago. I decided to try something I could do at home. I gave myself the crazy challenge of doing black and white nude photography: crazy because many thousands of people have done it. My doubt was that I might not be able to find my own way of doing it. I hope I have. The book is available on at Amazon. You can see some of it on my website. (petersuschitzky.com)

In summary…

Whatever the technology and its advances, the fundamental thing in filmmaking remains the idea and the script. I like to feel free when I start a movie, unencumbered by too many preconceived ideas. I want to be able to react freely to what I see on the day, even if I have made plenty of preparations. I have always, since my childhood, been obsessed with the image.

La Semaine de la Critique à Cannes

La Semaine de la Critique is organized by the French Union of Film Critics, and for the past 55 years, has taken place during the Cannes Film Festival. Screenings take place in Espace Miramar, a musty theater next to the Martinez Hotel. It's not the glamorous red carpet and grand Festival Hall, but no matter. It's the place to see interesting films by up-and-coming filmmakers and emerging talent in features and short films.

Full-length features and documentaries must be the director's first or second film.

All films, including shorts, must have been completed within the 12 months prior to the Cannes Festival. They cannot have participated in any other festival, nor have been shown on the Internet, TV, or commercially released outside the country of origin.

Entry fees are reasonable and it's an excellent opportunity at exposure.

Sister companies CW Sonderoptic and Leica Camera partnered to sponsor the Leica Cine Discovery Prize at La Semaine de la Critique at Cannes. The Leica Cine Discovery Prize was awarded to the best short film of the 10 in competition. Director Wregas Bhanuteja of Indonesia won with his film *Prenjak (In the Year of Monkey)*.

Seth Emmons, Marketing Director for CW Sonderoptic, said, "*Prenjak* was a strong favorite with a cleverly simple story and straightforward, beautiful cinematography. Leica Camera and CW Sonderoptic jumped at the opportunity to sponsor the award when it came up. CW and Leica both appreciate and encourage new, young talent in both cinema and photography through multiple initiatives such as the Leica Akademie, international gallery exhibitions and other sponsorships.

We were proud to join La Semaine de la Critique and congratulate Wregas on his wonderful film."

The Nespresso Grand Prize went to *Mimosas* by Oliver Laxe. *Albüm,* by Mehmet Can Mertoğlu, won the France 4 Visionary Award. *L'Enfance d'Un Chef* by Antoine de Bary, was the Canal+ Short Film Winner.

Director Wregas Bhanuteja won the Leica Cine Discovery Prize for best short film at La Semaine de la Critique.

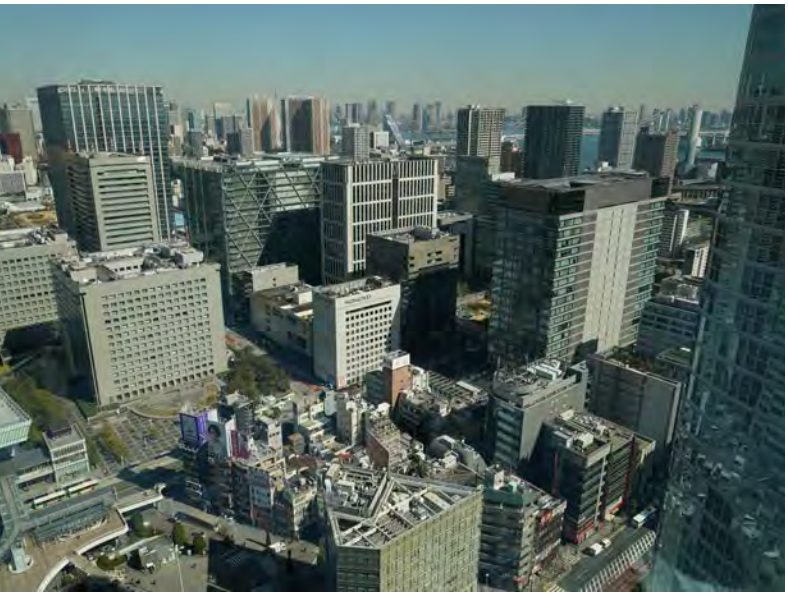
Leica and CW Sonderoptic at Cannes

Tommaso Vergallo, Dr. Andreas Kaufmann and Gerhard Baier (l-r) on the Croisette en route to La Semaine de la Critique's Award Ceremony.

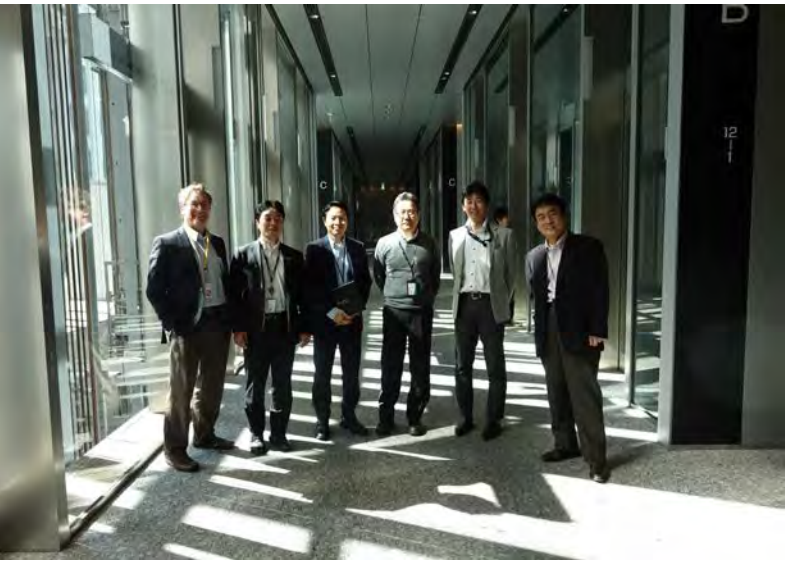
CW's Tommaso Vergallo on the beach with Guillaume Deffontaines, AFC (*Ma Loute*), Olivier Chambon, AFC (*Close Encounters with Vilmos Zsigmond*), testing Leica M with PL adapter and 40mm Summilux-C.

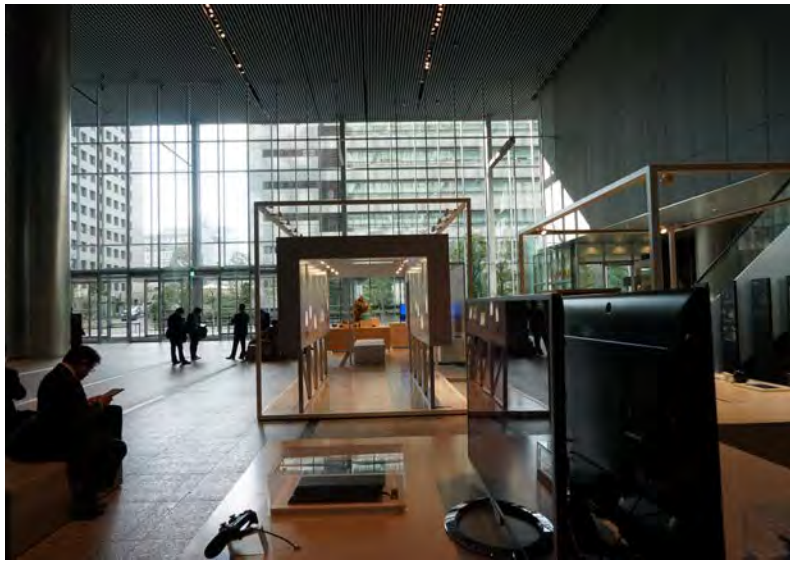
CW's Rainer Hercher and Seth Emmons at Leica's space in the Nespresso Plage pavilion, prior to the winners' party on Thursday evening, May 19.

Meeting the Designers and Planners at Sony



Shinagawa sits on the southeastern shore of Tokyo, just before you hit Tokyo Bay. It's a collection of modern highrise office towers housing many of the area's major corporations. The large building in the center (above) with the diamond patterned exoskeleton is Sony's Shinagawa Headquarters in Sony City. Peter Crithary, Sony's Manager for large sensor cameras (below, at left), recently took me along on a whirlwind tour to meet the designers, planners and teams working on the latest Sony products.





Our first meeting was with Motoyuki Ohtake, Distinguished Engineer in the Optical Design Department of Sony's Digital Imaging Group (below, left) and the Sony still camera and lens teams responsible for the innovative, highly successful, and ever-increasing a7 line of cameras, a6300, E-mount lenses, and the new G Master series of Full Frame lenses.

Our next "class" was an advanced lesson in the theory, design and construction of Sony's FS5 camera. It was introduced in September 2015. It is a minimum-sized, handheld, lightweight (less than 2 lb) cinema verité style Super35 digital cine camera. Its revolutionary, electronic, internal, continuously variable ND adjusts from clear to 7 stops, as demonstrated above.

The FS5 camera uses the popular Sony E-mount—the same system used by the a7 Full Frame, a6300 APS-C, and legacy NEX still cameras. Its 18mm flange depth accepts the vast range of E-mount lenses, and pretty much any other lens out there, thanks to readily available lens mount adapters. The design team explained the modular design, magnesium body, and the process of making many clay models to shape the ergonomic handgrip with built-in zoom rocker and function switches (below, right).

Jin Yamashita and Yutaka Okahashi (above, l-r) taught the next class: Advanced AXS-R7 Recording. Introduced at NAB 2016, it's the bigger brother of the AXS-R5 RAW Onboard Recorder for Sony F5 and F55 cameras. Jin explained, "The new AXS-R7 doubles 4K 16-bit RAW recording from 60 fps to 120 fps with the F55 camera. It has two card slots, is slightly larger than the R5, attaches more securely to the camera and is more robust."

"It was developed in response to requests from our customers," Peter Crithary added. "The docking attachment was strengthened to withstand more rugged production environments."

The R7 can cache up to 30 seconds, which is helpful for wildlife and action camera work. It is all-metal, dust and water resistant. The cooling vents are on the side, sealed, and separate from the electronics. It comes with a V-mount battery attachment. It will require Sony F5 and F55 firmware update V8.0.

Above: Size comparison of AXS-R7 (left) and AXS-R5 (right). Note, the R7 was a pre-production model at the time this photo was taken a couple of months ago.

Below: final production AXS-R7 model

Sony AXS-R7 X-OCN (Original Camera Negative) Recording

AXS-R7 Recorder on Sony F55 Camera

Cut to July 13. Stop the presses. Seriously huge news from the Shinagawa NDA whisper room can now be revealed. As many suspected, the R7 Recorder does a lot more than 4K RAW, full resolution 120p recording, and 30 second caching. Why else would it be larger than its older brother, the R5?

The big news is X-OCN.

In addition to 16-bit linear RAW, the AXS-R7 will record Sony's new 16-bit X-OCN format. X-OCN stands for e**X**tended tonal range **O**riginal **C**amera **N**egative. Think of it as a camera negative that comes in a smaller digital film can. Like RAW, it retains everything the sensor sees. Unlike RAW, it promises lower bit rates and greater ease of use.

What is X-OCN?

X-OCN is the AXS-R7 recording format that uses a new Sony algorithm specifically formulated for the F5 and F55 sensors. X-OCN produces file sizes much smaller than camera RAW, resulting in longer record times, faster file transfers and more economical postproduction—while retaining the quality of 16-bit linear encoding.

Sony's AXS-R7 records two versions of X-OCN: Standard and Light. They are both available in 2K and 4K, at frame rates of up to 120p. X-OCN ST (Standard) is visually indistinguishable from Sony's camera RAW. X-OCN LT (Light) is intended where lower data rates and smaller file sizes are desirable.

How do X-OCN and RAW differ?

RAW is unprocessed image sensor data. X-OCN is processed and optimized for the individual sensor qualities of the F5 and F55.

Sony F55 RAW is 16-bit linear. What is X-OCN?

X-OCN is also 16-bit. Of course, 16-bit color space exceeds what the human eye can distinguish.

Why do we like 16-bit?

It preserves the maximum latitude of the image sensor, offering the widest possibilities in post production—particularly 16-bit ACES and HDR color grading. (You can try this at home in Photoshop if you have 16-bit images by toggling Edit-Image Mode: 8-bit or 16-bit.)

Why did Sony create X-OCN?

Peter Crithary manned the midnight FDT tech support hotline with these answers.

"Quality. Sony tests concluded that X-OCN ST is visually indistinguishable from F55 RAW. This is no small achievement. X-OCN combines full 2K and 4K resolution with extraordinary color reproduction, well suited to Sony's S-Gamut 3. In particular, 16-bit scene linear tonal gradation retains the camera's full dynamic range, with far greater capacity for visual expression than 10-bit or 12-bit digital formats.

"Smaller files. X-OCN results in smaller file sizes than RAW. At the highest 4K picture quality, X-OCN ST has 40% longer recording time and roughly 30% shorter file transfer time than Sony's F55 RAW. The advantages for X-OCN LT are greater still: 142% longer recording time and roughly 59% shorter file transfer time. Furthermore, X-OCN is an appropriate recording format for HDR production since it keeps maximum dynamic range with smaller data size.

"Post flexibility. As with F55 RAW, X-OCN records metadata about your selection of ISO sensitivity, color temperature and so on. These choices are completely non-destructive and the full potential of the original sensor data is delivered into postproduction. The colorist and editor are empowered with far greater decision-making flexibility than is possible with even Log-encoded video."

What X-OCN resolutions and frame rates are supported?

The R7 Recorder supports 4K (4096 x 2160) and 2K (2048 x 1080) X-OCN recording, up to 120 frames per second. The same compression ratio is maintained at all frame rates; compression is not increased as fps rate increases.

What media records X-OCN?

You can use Sony AXS Memory A series S24 media (slim cards, blue trim, up to 2.4 Gbps write speed) in capacities of 256 GB, 512 GB and 1 TB. The new A series S48 media (slim cards, black trim, up to 4.8 Gbps write speed) is required for 4K 120p recording. (4K 120p is only available with PMW-F55 camera.)

The bit rates of 4K XAVC Class 480 (480 Mbps at 30p) and 4K X-OCN LT are about the same. How do they differ in look?

16-bit X-OCN LT delivers better tonal quality, in general, than 10-bit XAVC recording. XAVC Class 480 was developed to give an extra boost to picture quality with certain types of scenery. If you do not have an AXS-R5 or AXS-R7 recorder, you can still take advantage of a higher bit rate option for on-board recording. Also, if you want or need a smaller camera package (without R5 or R7), the new XAVC480 profile and level give you an additional option.

Can you do cache recording with X-OCN on the AXS-R7?

Yes. You get about 30 seconds of 4K 24p cache recording in X-OCN ST mode. Other cache recording times vary by frame rate and resolution.

What file wrapper does X-OCN use?

X-OCN format interleaves audio and video in a single, simple file. This is the same, standardized MXF data structure that Sony has used for XAVC, Sony RAW, SR File and MPEG HD formats.

Haluki Sadahiro, Panavision's Director of New Product Development (L) and Mike Dallatorre, Panavision's New Filmmaker Program Manager, preparing Sony F55 cameras and R7 recorders with new V.8 firmware and X-OCN for an unnamed Netflix 4K show.

Can the F5 and F55 record X-OCN onto internal SxS cards?

No. X-OCN is only available with the new AXS-R7 recorder and AXS A series memory cards.

What grading and post production software supports X-OCN?

Peter Crithary said, "Sony is in discussion with the alliance companies that support F55 RAW and the XAVC codec. Of course, actual support announcements will come from each individual vendor.

"Sony's RAW Viewer will be updated to support X-OCN when the AXS-R7 launches in September. RAW Viewer will support X-OCN playback and trimming of X-OCN files based on imported EDLs. RAW Viewer supports both Windows and Mac OS."

Off the record, it already looks like the major players are at work implementing X-OCN — including DaVinci Resolve, Baselight, Colorfront OSD and Sony Raw Viewer.

Comparison of X-OCN bit rates to Sony RAW and XAVC recording formats

	X-OCN ST (16 bit)	X OCN LT (16 bit)	F55 RAW (16 bit)	XAVC 4K Class 480 (10 bit	XAVC 4K Class 300 (10 bit)
23.98 fps	661 Mbps	389 Mbps	944 Mbps	384 Mbps	240 Mbps
25 fps	688 Mbps	406 Mbps	983 Mbps	400 Mbps	250 Mbps
29.97 fps	825 Mbps	486 Mbps	1178 Mbps	480 Mbps	300 Mbps
50 fps	1376 Mbps	811 Mbps	1966 Mbps	–	500 Mbps
60 fps	1650 Mbps	972 Mbps	2357 Mbps	–	600 Mbps
120 fps	3303 Mbps	1946 Mbps	4719 Mbps	–	–

There are two recording modes: X-OCN ST (Standard) and X-OCN LT (Light). Sony's tests reveal that X-OCN ST is visually indistinguishable from F55 RAW. But X-OCN ST captures 4K 24p at just 661 Mbps, a 30% reduction compared to F55 RAW.

X-OCN LT is intended where lower data rates and smaller file sizes are important, while it maintains powerful grading flexibility.

X-OCN LT records at 389 Mbps in 24p, a 59% savings over F55 RAW.

Sony AXS-R7 X-OCN, cont'd

AXS Series memory cards

New, slim AXS A Series memory cards (A1TS48 and A512S48) come in 1 TB and 512 GB. They are identified with black trim, and have data rates up to 4.8 Gigabits per second. Use these for longer record times and shooting 4K RAW 120 fps.

Existing A Series S24 cards (blue trim, 1 TB, 512 GB and 256 GB capacity) also fit the AXS-R7, but only record up to 60 fps 4K RAW.

Recording Format	Frame Rate	1 TB Cards AXS-A1T S24 AXS-A1T S48	512 GB Cards AXS-A512 S24 AXS-A512 S48	256 GB Card AXS-A256 S24
4K RAW	24 fps	120 min.	60 min.	30 min.
	60 fps	48 min.	24 min.	12 min.
F55 only	120 fps	22 min. (S48 only)	11 min. (S48 only)	n/a
4K X-OCN ST	24 fps	168 min.	84 min.	42 min.
	60 fps	66 min.	33 min.	16 min.
F55 only	120 fps	32 min. (S48 only)	16 min. (S48 only)	n/a
4K X-OCN LT	24 fps	284 min.	142 min.	71 min.
	60 fps	112 min.	56 min.	28 min.
F55 only	120 fps	54 min.	27 min.	13 min.
2K RAW	24 fps	480 min.	240 min.	120 min.
	60 fps	192 min.	96 min.	48 min.
	120 fps	96 min.	48 min.	24 min.
2K X-OCN ST	24 fps	666 min.	333 min.	166 min.
	60 fps	270 min.	135 min.	67 min.
	120 fps	136 min.	68 min.	34 min.
2K X-OCN LT	24 fps	1012 min.	506 min.	253 min.
	60 fps	414 min.	207 min.	103 min.
	120 fps	207 min.	103 min.	51 min.

AXS A Series S48 memory cards (black trim)

AXS A Series S24 memory cards (blue trim)

AXS-R7 Specifications

Power	11 V to 17 V DC
Watts	Approx. 28 W (4K 120 fps - on F55 only)
Operating temperature	0°C to 40°C (32°F to 104°F)
Operating humidity	20% to 90%
Storage temperature	-20°C to + 60°C (-4°F to 140°F)
Dimensions (W x H x D)	106 x 135 x 93 mm (4 1/4 x 5 3/8 x 3 3/4 in)

Weight	Approx. 1.2 kg (2 lb. 6.8 oz.)
Interface connector	144 pin, supplies power
DC IN connector	XLR 4-pin, male
DC OUT connector	Round type 4-pin, female
Battery connector	5-pin
Video	F55 RAW format, X-OCN format
Audio	Linear PCM (48 kHz / 24-bit), 4-channel

Canon Compact Servo 18-80 T4.4

Canon's Compact Servo 18-80mm T4.4 EF-mount zoom for Super 35 cine format is a new kind of hybrid lens. It combines attributes of 3 lines of Canon lenses: L-Series EF professional still photography lenses, Cinema Zooms with manual focus/iris/zoom barrels, and Cine-Servo zooms.

The 18-80 comes in an EF mount. It has optical image stabilization, something not often seen in cine lenses. Autofocus is compatible with EOS C300 Mark II and EOS C100 Mark II cameras. The optional servo handgrip is unique and very clever. It attaches with one screw. When removed, an electronic module containing the lens servo motors remains, along with its own redundant zoom rocker switch. The motors can be turned on or off. The advantage is that you don't have to recalibrate or worry about gears not meshing.

Canon's hybrid lens design combines image quality, ergonomics for video and cine, and an affordable price made possible by quantity production. The Canon Compact Servo 18-80mm Zoom Lens and ZSG-C10 accessory grip are scheduled to be available later in 2016 for a ridiculously low estimated retail price of $5,500 and $499 respectively. This is the first in a series of hybrid Compact-Servo cinematography lenses from Canon for handheld, shoulder, tripods or rigs.

Tetsushi Hibi & Yasunori Imaoka

Tetsushi Hibi (left) and Yasunori Imaoka (right) at NAB 2016.

Recently, I met with Tetsushi Hibi, Senior General Manager, Canon Optics R&D Center; Yasunori Imaoka, Group Executive, Canon Image Communication Products; Ryan Kamata, Sr Specialist, Canon USA Camera & Video Division (who also translated); and Leigh Nofi, Canon Manager of Public Relations, Corporate Communications Division.

JON FAUER: How did you come up with the concept for the new Canon Compact Servo 18-80mm T4.4 EF Zoom Lens?

YASUNORI IMAOKA: We noticed that cameras were becoming more compact—but the lenses remained the same large size. We wanted to make a zoom lens for motion picture that matched the form factor of these new cameras so that the entire acquisition system would become more compact and flexible.

We also saw the increased use of gimbal and rig stabilizers. So desired to make this lens suitable for every possible application: handheld, shoulder mounted, on rigs, gimbals, drones, remote heads, for feature, television, documentary and ENG style cinematography. We think this lens can do all that. It is the result of listening to feedback from our customers and understanding the potential need for such a lens.

We noticed that many people who use our cine cameras, or other cameras with similar form factors or price points, also use Canon EF lenses. Many requests from those users were for us to provide a motion picture specific lens with the functionality of EF zoom lenses, auto focus and image stabilization. They did not want to compromise on those functions. We incorporated those functions into the new product as well.

When did you first get the idea to create this lens?

IMAOKA: It was actually two years ago, at NAB. That's when we started discussing the idea.

Did somebody say something? What was the creative spark?

IMAOKA: During NAB 2014, we had a room set up for internal staff meetings in the hotel. Mr. Hibi and I were sitting at a table with Canon representatives from around the world. At that point, it was brought up that we needed this type of lens. That was pretty much the first time we started thinking about it. Then we did a lot of research, met many cinematographers and end-users, and discussed what would be best. We studied hard. That took some time. Then we began designing and developing the product. And

finally, two years from that day, we have come up with this exciting product and its hybrid concept.

Can you explain how it is a hybrid?

RYAN KAMATA: We basically have three different types of professional lenses: cinema, broadcast, and EF L Series still photography lenses. We wanted take the benefits from each of those professional lines and incorporate them into one lens. The result is the Compact Servo 18-80mm T4.4 EF zoom. For example, the benefits from the EF L still lenses are their auto functions and communication with the camera. From the cinema side, we have the manual control capabilities and gear pitch of the focus, iris and zoom barrels, as well as the form factor. From our broadcast lenses, we wanted to incorporate the servo capability. All these things have been incorporated into this one, single hybrid model. Of course, it's just one lens in a series, which means that we will come out with something else in the near future. We will try to incorporate the same functions and features into whatever lenses are going to follow.

Why hasn't this hybrid idea been done before?

IMAOKA: Perhaps the reason is that Canon may be unique in terms of already having a large variety of lenses, including the three categories already mentioned: EF still photography, Cinema and Broadcast style lenses. We gathered opinions from all types of customers who have used those lenses.

The new 18-80 lens has many of the same features as your higher-end zoom lenses that cost a lot more. How were you able to make it so inexpensively?

IMAOKA: That was also our hope. We think that we can sell many of them, compared to regular cinema lenses which are delivered in smaller quantities. The larger quantity lowers the overall cost of manufacturing and hence the price.

Mass production?

IMAOKA: Yes. Canon has many different EF lens models. We have a long history of building and manufacturing lenses. We know how to design and build them in a more cost-effective way without compromising the performance. Therefore, it's not just one thing, but a combination of many factors that made it possible for us to come out with such a cost-effective lens.

If a DP is buying your new hybrid 18-80 lens, are there any tradeoffs that the higher-end lenses might offer instead?

TETSUSHI HIBI: Two things: the zoom ratio, and the maximum T-stop.

Then it's true that each increase by one T-stop almost doubles the price of the lens?

HIBI: Exactly.

What about optical quality? Is there a difference between this and your high-end cinema zooms?

HIBI: It's the same high quality.

IMAOKA: We think that this lens has very, very high performance. At the same time, it is very cost effective.

Maybe you could charge more for it ***(laughs)*****.**

IMAOKA: I wish if we could do so. On the other hand, we want as many people as possible to experience this lens. The price obviously affects the number of people who can purchase it. We wanted everyone in the industry to have this lens because we believe in its capability.

Do you think it might hurt sales of the high-end cine zooms?

IMAOKA: I don't think that this lens will affect the higher-end cinema lens business because it has different capabilities. This lens is more appropriate for handheld and mobile applications. Our previous cinema lenses have higher specifications and PL-mount compatibility. This is just a different lens. I don't think that it would affect the PL lens business.

The 18-80 only comes in EF mount. Is it technically possible to replace the EF with a PL mount? Even if a third party did it?

IMAOKA: We think that it's very difficult to convert it with a PL mount. It's not impossible, but it would be a challenge. You'd lose lens data and some of the auto functions.

HIBI: Certainly, we will continue listening to what end-users tell us. We want people to experience the benefits of having the capability to communicate with the camera and utilize the auto functions. If there seems to be a need for other mounts, we can definitely consider it.

The EF mount offers lens data, aberration correction, electronic connections, power, stabilization, and auto focus. You don't have those in a PL mount.

HIBI: Correct.

Is this zoom based on your EF 24-105mm f/4L IS USM lens?

IMAOKA: No, this is an entirely new lens design from the whiteboard. It is completely different. We designed it specifically for the Super 35 format. It is totally different from the 24-105, which is Full Format. We wanted to make the 18-80 as compact as possible and, at the same time, high performance. So we had to start from scratch.

Does it have the same optical performance as the 24-105?

IMAOKA : Yes, it's actually as high as the 24-105, which is a very high performance lens. Its resolution is 4K. As you know, the front of the 24-105 extends when it is zoomed to telephoto. The 18-80 barrel remains fixed when you're zooming and focusing.

Would you please describe the design process? Were there various models and different focal lengths along the way?

HIBI: First, we established the concept of the lens. Then we did simulations to determine the best balance point, focal lengths, performance, weight and size. That's how we started the process.

IMAOKA: As for operability, we talked to end users as much as possible to get their feedback and to incorporate those ideas into the design concept. Then we worked on the details of the final version.

The removable servo hand grip is very unique. The main mechanism with handgrip comes off, leaving a module with the motors and a smaller zoom rocker on the lens. Can you describe how it works?

HIBI: From the beginning, versatility and mobility was the number one priority of the lens. We wanted to make it as flexible as possible. A permanently fixed servo unit is limiting, so the de-

tachable handgrip unit was one thing that we had in mind from the beginning. Some people want to relocate the grip unit elsewhere. Our new setup allows the user to choose from a variety of configurations, keeping the motors in one module and the controls in the other. Compactness was the number one concern. However, having a motor on the lens barrel normally would depart from the concept of a compact form factor. So, we had to make the drive unit as small and lightweight as possible so that it would not interfere with the size or balance of the lens.

Did the requirement a small motor affect optical and mechanical design? The mechanical assemblies could not be too stiff and the optical elements would have to move quickly and accurately.

HIBI: That was exactly the case. We had to apply many thoughts into one design concept.

The 18-80 is a Super35 format lens. What about the future? Canon is famous for Full Frame cameras and lenses. Are you considering Full Frame cine zooms with a similar design concept?

IMAOKA: If we design the lens to cover a larger image format, that means that the lens will become larger proportionally. Full frame coverage (24x36 mm) is about 50 percent larger than Super 35 (18x24 mm), which will make the lens larger and heavier. We have to think carefully about this so we don't depart too far from the compact design. Of course, if the demand for large format cine zooms increases, we will consider it. But it would require a different design. We call the 18-80 zoom a Compact Servo. If it's not compact, we can't call it Compact Servo anymore. That's the big challenge.

Speaking of full frame, do you think the high-end cinema industry is going full frame or not? I was quite surprised that we didn't see more new cameras at NAB.

IMAOKA: We hear comments that the movie industry might move forward with the larger sensor format. However, we're not yet at the point where we can make those decisions. We are carefully observing how the market transitions. Introducing the compact servo 18-80 was a higher priority because we saw the immediate demand for such a lens in the Super 35mm format. Once the market moves ahead with a larger sensor camera, certainly we would proceed and begin designing products. But at this point, we're not really sure. We're not at the point where we can say yes or no to that question.

At NAB 2016, we saw footage from the RED W8K Large Format camera that was introduced last year. It is shipping now. ***(editorial note: At Cine Gear 2016, Panavision introduced their 8K Millennium DXL Camera, with the same sensor.) Both will shoot Large Format 8K as well as Super 35mm 4K on the same camera. Another large format camera is very popular: the Alexa 65. It offers many choices of formats and lenses.***

KAMATA: How do you explain the interest in 65mm or Large Format?

I think it's the look of large format, the shallower depth of field, the wide choices of lenses, and resolution. It gives you the same shallow depth of field as anamorphic, but in a spherical format. I think the pendulum in cinema swings back and forth. Right now, maybe we're in an anamorphic phase, but historically it always swings back to spherical large format.

KAMATA: It's a creative process, with differentiations in approach and thoughts about the look.

Also at NAB, we saw a number of companies making full frame cine lenses by re-barreling existing still lenses. Full Frame lenses offer the flexibility to be used on a full frame sensor camera or a Super 35 camera.

KAMATA: Exactly, or even with a speed boost of a Full Frame lens adapted from Full Frame coverage to Super35.

Getting back to the 18-80, you said this is the first in a series. Would you care to comment on that?

IMAOKA: This is the first lens in the line, which means that we are considering the next ones in the near future. They haven't been announced yet, so I can't tell you the specifications, but we are trying to make them in different focal length ranges that make sense to complement the 18-80.

That's good. Now we've come to the point in the discussion where you usually ask me what I would like to see next from Canon. I think when we met in April 2014, I dreamed of a small 150- 600. You smiled. And a few months later you introduced the 50-1000.

IMAOKA: What is your dream lens now?

Well, you've made many of them. But I can keep dreaming. Some colleagues have asked if you could make a shorter version of the 50-1000? Make it a 25-500 zoom? It would be good for sports.

IMAOKA: Halving the focal length is a challenge in terms of maintaining the high quality of the optics. It would have to be a different design lens. What format would you like?

At this point in history, we might as well go Full Frame. Otto Nemenz recently said that he's so convinced that's the future, he's not going to buy many more Super 35mm lenses.

KAMATA: Yes. I keep hearing that from him too. Many times. Every time I go there.

Another dream lens would a cine version of your EF 11-24 full frame lens, no servo, for underwater housing and rigs. And T2.0. Could you do this?

KAMATA: We're Canon. We try to make the impossible possible.

IMAOKA: We try to give our customers products that let them see the impossible.

HIBI: Our motto in Japan is "to make it possible with Canon."

Leica Cine MacroLux +1 (x3)

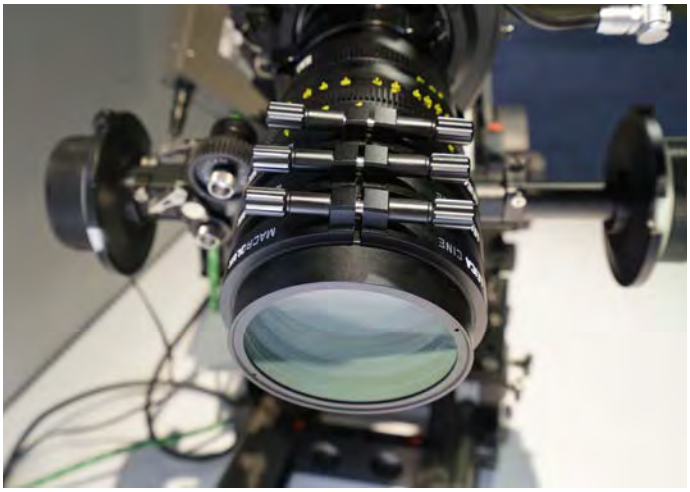
Dr. Aurelian Dodoc, Managing Director for Development and Production, with stacked MacroLux tabletop setup at NAB.

Leica Cine MacroLux +1 is no ordinary Diopter, as we saw at NAB. You could do the almost unthinkable: stack 3 of them together (to achieve +3) and still maintain great image quality. The MacroLux is a spherical doublet that exhibits no spherical aberrations, no color fringing, and almost no light loss. Its coatings are color matched to the rest of the Summilux-C and Summicron-C lens series.

The MacroLux clamps onto the front of 11 of the 12 Summilux-C lenses (all except the 135 Summilux-C) and 11 Summicron-C. That's because they all share the same front diameter: 95 mm. The MacroLux will also work on other lenses with 95 mm front diameters, like ARRI/ZEISS Ultra Primes (16 - 135), ZEISS Compact Zooms (28-80, 70-200) and ARRI/ZEISS Master Anamorphics (35 - 180).

The MacroLux is secured with a two-sided thumbscrew that lets you work from either side of the camera. Both the front and the rear are 95 mm diameter, letting you stack additional MacroLuxes for greater proximity and to use the same mattebox accessories.

www.cw-sonderoptic.com



Close Focus Distance Without and With MacroLux +1

	without	with	without	with
75mm Summicron-C:	2'7"	2'	.8 m	.6 m
100mm Summicron-C:	3'3"	2'	1.0 m	.62 m
135mm Summicron-C:	5'	2'6"	1.5 m	.75 m

Steadicam Workshop on the Queen Mary at Long Beach

Garrett Brown delivers his famous Moving Image presentation

Class photo on the deck of the Queen Mary

by Chris Fawcett, inventor of the Steadicam Fawcett Exovest. Photos by Nadiya Rodkina

Steadicam remains one of the strongest storytelling tools for cinematographers. There is no other way to move the camera that so closely replicates the human experience of vision. Its agility and ability to react instantly and move rapidly in space to control compositional elements is unrivaled.

The Tiffen and Steadicam Operators Association (SOA) Gold Workshops are an intensive 5½ day program teaching all elements of Steadicam operation. From physics and theory to hands-on practice, students learn the lore, tricks and politics of "getting the shot" from master operators with up to 40 years of experience.

Classes begin before breakfast with individual practice and continue long after dinner with lectures and demonstrations that cover every aspect of the art. Training starts with lighter rigs and quickly moves up to full-size production-ready Steadicam systems. The workshops are open to everyone–from experienced operators to novices, though some camera experience is recommended.

The students in the April workshop on the Queen Mary, which is docked in Long Beach, California, ranged from 18 to 70 years of age. Physical strength is not a factor—some of the strongest students are often the lightest in build.

Beginning with simple pass-by exercises, the workshop moves directly to actual location shots on day two. There's no better way to learn than on the job. All the great advantages of Steadicam are explored, with emphasis on the meaning and aesthetics of telling the story by moving the frame through space.

The Gold Steadicam workshops bring all 16 students up to a level from which they can train themselves to become masters in all elements of the art of Steadicam. It's a transformative experience that has launched many successful careers.

The instructors at the Spring 2016 Gold Steadicam Workshop were: Garrett Brown (Inventor of the Steadicam), Jerry Holway (Author of the Steadicam Operators Handbook), Chris Fawcett (Inventor of the Exovest), Kat Kallergis (New York Steadicam operator), Evan Barthelman (LA Steadicam operator), and Jay Kilroy (President of the Steadicam Operators Association).

Tiffen Steadicam workshop info: flysteadicam.tiffen.com

Steadicam inventor, Garrett Brown, fine tunes a student's operating form

Chris Fawcett gives Steadiseg instruction on the deck of the Queen Mary

Learning safety procedures with Chris Fawcett on the Chapman Titan Crane

Creative Solutions New York

Aldey Sanchez and Mark Pederson (L-R)

OMOD Command Module

The new Creative Solutions Showroom opened at 190 West Street in the Greenpoint neighborhood of Brooklyn, NY. It's run by Mark Pederson, Director of Technology / Co-Founder of Offhollyood and Aldey Sanchez, Director of Operations / Co-Founder. Creative Solutions NY is part of the Vitec Videocom Group of Companies, that includes Teradek, Paralinx, and SmallHD. CSNY will provide rentals and sales of motion picture equipment. There's also a Creative Solutions showroom in Los Angeles: CSLA.

The Vitec Group and its subsidiary Creative Solutions acquired the assets of Offhollywood in April. Offhollywood was founded in 2003 by Aldey and Mark. In addition to equipment rentals and production services, Offhollywood will continue to design and manufacture accessories for the RED camera system. These include HotLink and OMOD, a line of camera-back modules that provide RED cameras with video and power In/Out, color control, lens control, audio, timecode, and other wireless connections.

RED Digital Cinema President Jarred Land said, "Mark, Aldey and the Offhollywood team have been an important partner to RED since our inception. We are excited to see them take their next step by joining forces with the Vitec Group."

Nicol Verheem, CEO of Creative Solutions, said, "This acquisition reflects our vision of Creative Solutions as a laboratory for creative collaboration between industry pioneers and innovative engineering teams," Like CSLA on the West Coast, CSNY will outfit, educate and support filmmakers in the greater New York production community. Products from all Creative Solutions brands (OConnor, Anton Bauer, Sachtler, etc) will be sold and supported.
Photos by Mark Forman

Teradek Bolt


GDU Global Dynamics 40mm f/2.8 ruggedized lens with EF mount


Creative Solutions NY Open House on opening day

GDU Global Dynamics United tilt/swing plate shown at Open House

Blackmagic Design at NAB

Above Left: Dan May, President at Blackmagic Design.
Above right: Grant Petty, Blackmagic Design CEO.

Blackmagic had an astonishing number of announcements at NAB 2016. As he's done for the past several years, Dan May, President at Blackmagic Design, summarized and sorted it all out. Here's a whirlwind tour. In the 3 months that followed, DaVinci Resolve 12.5 is now ready to be downloaded and many software updates for most products have followed. For the latest, go to their support and download page: (blackmagicdesign.com/support). Here are Dan's comments edited from an interview we did:

DaVinci Resolve 12.5

A lot of things this year are the result of user feedback and user improvements. DaVinci Resolve 12.5 is largely a customer driven update. DaVinci was pretty well-established as a color grading software. As we moved into the editing space, we suddenly gained a huge footprint with many more new customers. That created a lot of feature requests. The reason we didn't make this a dot-zero (13.0) release was because we thought "Well, this isn't really like we've redone the entire architecture—instead it's a lot of requested refinements to make it better."

A big feature is Lens Distortion correction. For example, if your scene was shot with a GoPro where the image is wide-angle distorted, Resolve will go ahead and straighten it out. Basically it's looking at the image and stretching it to be in the right proportions. With ResolveFX we've added in some of the most popular effects that people requested. Previously, you could get some of them via plug-ins, but now they're directly in Resolve. They take advantage of the same speed Resolve support like GPU acceleration.

Resolve 12.5 has better noise reduction, which uses a multi-GPU accelerated algorithm to reduce noise while retaining detail. Fusion Connect is a feature where, if you're in Resolve, you can click on a clip and it will open in Fusion with a few nodes. And then when you're done, it imports the whole project directly back into Resolve. DaVinci Resolve is a free download from our website. There were hundreds of tweaks and additions, so it's a significant update and I encourage everyone to download and start working with it.

URSA Mini 4.6K

It's a great camera and people are really excited about it. They can be used in many different ways, from live production, for example with the new URSA Studio Viewfinder, to filmmaking. That's an unusual position for any camera to be able to have two strong identities in one body. We are continually updating the OS to include features like presets, user loadable LUTs, and changing the graphical interface so that, for example, you could be doing white balance while actually seeing the image.

We've been very fortunate that the images from all of our cameras are so good. The $995 Pocket Cinema Camera has a very different form factor and thus lends itself to very different uses, and while it might not have all the features that high-end cinema cameras are going to have, the image quality is still amazing. I've heard stories where Blackmagic cameras were put on a DaVinci timeline with and other high-end camera files, and the colorists

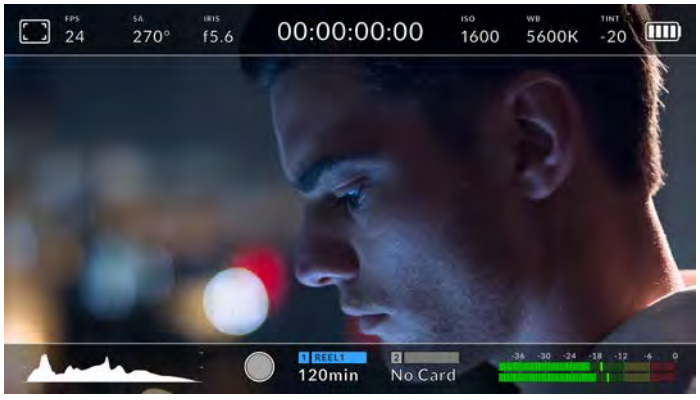
were asked to chose which was which. They got it right 50% of the time, because ultimately it's a beautiful image. It has great color science. For example, "Mad Max: Fury Road," had several Blackmagic Cinema Cameras around for some of the stunts and chase scenes—which was a good portion of the movie.

The URSA Mini 4.6K camera has a lot of legs and is going to find its way into a lot of different high end uses. But, of course, at a cost that a student filmmaker can actually acquire a camera like that and start using it. So it is very exciting.

Why there were delays in shipping the URSA Mini 4.6K

It was one of those tough lessons. Blackmagic has grown over the years and we came to NAB last year probably a little overeager. We had the prototypes. We knew that technically we could build the camera. We knew that we could make the sensor do what we want it to do, with 15 stops of dynamic range. And July 2015 comes around and that global shutter is just not working well enough for us. At some point we have to say that we could be working on this for another year and maybe never get the global shutter where we want it to be. Whom are we hurting more—ourselves or our customers? So we decided to ship the camera without the global shutter feature and get the camera into customers' hands. The camera is wonderful with a rolling shutter providing 15 stops of dynamic range. We had to swallow our pride and say that the global shutter is not a feature of the URSA Mini 4.6K camera anymore, but we still have a great global shutter product, the URSA Mini 4K camera.

Where the new URSA Mini camera OS comes from



Available later this year, the new URSA Mini camera OS features an updated User Interface and new features. The User Interface has been updated. A lot of them are the result of customer feedback. And some ideas come from us going out and using the cameras ourselves. I remember when that customer pointed out how it was frustrating to adjust a setting but not be able to see the resulting image on screen. I was able to understand it better when I tried it out myself. A lot of us come from the industry. Even though my job is to run Blackmagic USA, it wasn't until I actually started working with the cameras that I was able to understand why we needed to implement various features. Actually using our products does help us. It's also fun because a lot of us have come from that background and it helps us identify with what customers are seeing as well.

URSA Camera Viewfinder

Two hardware products that people are excited about are the URSA Studio Viewfinder and the Video Assist 4K. The funny thing with both of these products is that people come and instantly know what they are. We don't have to explain what a studio viewfinder is. They see it on the back of the camera and they immediately know that it makes the camera work as a studio camera.

It has an attractive form and function that users identify with. The URSA Studio Viewfinder has a bright 7" screen. As I mentioned earlier, the URSA Mini can be used for filmmaking or live events. Same body, same chassis, same sensor—and we're just basically outfitting it, with the URSA Studio Viewfinder for example, for different styles of production. That makes both the URSA Mini and URSA Studio Viewfinder very exciting products for us.

Blackmagic Design at NAB, cont'd

Video Assist 4K

As for our 7" Video Assist 4K, people had already identified the need for those types of products. Our Video Assist was already selling quite well. But some people like a bigger monitor, and many wanted Ultra HD capabilities.

The Video Assist 4K is able to record ProRes or DNxHD, not just for our cameras, but others as well. Some people will use these as a cost effective, high quality monitors and as recorders. If you're a DSLR user, you know that they are great still cameras but audio can be questionable and the compression is challenging.

The nice thing about the new Video Assist 4K is that it has mini XLR audio inputs with pre-amps and phantom power. It also has full sized BNC connectors and dual SD card slots for recording.

It will record UHD 4K and HD 10-bit 4:2:2 ProRes or DNxHD files simultaneously. There's a LANC control for record start/stop. For example, if I want to record RAW on my URSA Mini but then have a small ProRes proxy on the Video Assist 4K, I can have both recorded at the same time. That's another new feature on the Video Assist 4K; there's no LANC control on the regular Video Assist.

Blackmagic Duplicator 4K

Our Duplicator 4K is a rack-mount style unit with 25 SD card slots and an LCD preview screen.

You can daisy chain multiple Duplicator 4Ks if you want. Hit one button to record, and they all record. If you want to reformat all the cards you just hit format and it reformats all the cards together. It is an Ultra HD / HD H.265 recorder. What's funny is so many people wondered why no one has done this before.

Cintel

When we launched Cintel a year or two ago, we thought it was going to be great for all the archive footage in the world. But now, half of the Cintels we've sold have gone out to film people looking to do dailies of new film work.

One of the things that's been missing was the ability to read key code information from the actual film. This year we are showing a prototype of a key code reader and we're talking to those customers about what features they would like.

We shipped over 100 Cintel scanners in the last few months of 2016 and that's pretty impressive.

I think 50 percent of them are going to archival customers. A lot are being used for sports and university archives. The other 50% are going to film productions. They are shooting film but don't want to pay a lab for dailies. They are using the Cintel to do real time scans with files that can go over to a local Mac machine and they can have real time dailies being handed out to everyone at the end of the day. Having key code will help a lot with that.

Wrap-up

As Grant Petty said in his press conference, we appreciate the great support we get from our customers and the industry. It means that we can go off and build these products. We have a wonderful time building them and everyone at Blackmagic Design has worked very hard.

Panasonic VariCam LT

Kunihiko Miyagi, Director of Panasonic's Professional Video Unit

At NAB, Panasonic announced immediate availability of their VariCam LT 4K cinema camera. It has the same sensor as the VariCam 35. However, as the name implies, the LT is lighter, smaller, uni-body, and less expensive. The LT comes with an EF (Canon style) lens mount. The mount can be removed by the user and replaced with an optional PL mount.

To swap from EF to PL mount, loosen two Allen lock-screws and turn the lens mount ring counter-clockwise to remove it from the camera body. The new mount attaches by turning the ring clockwise and locking with the Allen screws. Flange depth is pre-calibrated by the metal mount to metal body flanges—but it's still a good idea to check it with a device like a Denz FDC-Multi.

The VariCam LT weighs less than 6 lb. Formats include 4K, UHD, 2K and HD, and is capable of HDR. It records Apple ProRes 4444 (up to 30p) and ProRes 422 HQ (up to 60p). HD recording and Panasonic's AVC-ULTRA family of advanced video codecs are also supported. New codecs introduced in the VariCam LT include AVC-Intra LT and AVC-Intra 2K-LT, both up to 240 fps in image crop mode.

VariCam LT has advanced color management capabilities and supports ACES. There's in-camera color grading, so you can record an ungraded 4K master with on-set grading metadata. V-LOOK is a new color processing feature that acts like a combination of V-Log and video for immediate recording without the need for intensive color grading.

There is one expressP2 card for all formats including high frame rate, HD, 2K, UHD and 4K recording. A 256 GB expressP2 card can record up to 90 minutes of 4K/4:2:2/23.98p content). RAW

output from SDI is planned to be supported by a firmware upgrade.

The control panel can be separated from the camera body for easy menu access. The magnesium body is durable and lightweight. Other features include power hot swap, IR shooting for extremely low-light capture above ISO 5000, 23.98 PsF output, and image presets as scene files.

The VariCam LT has internal ND filters (Clear, 0.6, 1.2, 1.8). The optional OLED EVF (Panasonic AU-VCVF10G) is so good that no camera should leave without one. There's optical zoom, Focus Assist, anamorphic lens de-squeeze, special REC functions (Pre-Rec, interval, one-shot), IP control via Panasonic's AK-HRP200 camera remote controller, and built-in GPS.

Connections: 3G-HD-SDI x 3 (SDI-OUT X 2 and VF), LAN, genlock in, time- code in/out, USB2.0 Host and USB2.0 Device (mini B), and three XLR inputs (one 5-pin, two 3- pin) to record four channels of 24-bit, 48KHz audio.

The VariCam LT, suggested list price $18,000, is a basic camera kit including the camera body, top handle, control panel and control panel mounting bracket. Add the EVF, and the package list price is $23,700.

Panasonic has a new adjustable shoulder mount with industry standard height to center of lens. The new handgrip has a dial to electronically control the apertures of EF lenses.

AJA at NAB

AJA CION

Nick Rashby, President of AJA, introduced a bunch of new products at NAB. Go to AJA's website for a full rundown. (aja.com)

Here is a sampling of a few and some scenarios on how they can be used.

There's a new v1.3 firmware for the CION, AJA's 4K/UHD and 2K/HD production camera that shoots edit-ready Apple ProRes files up to 4K 60 fps. AJA has announced that CION purchases made after April 18, 2016 will qualify for a complimentary Pak1000 drive (US MSRP $1,495) provided directly from AJA.

CION v1.3 free firmware update includes improved highlight handling and black detail in every gamma mode —resulting in greater dynamic range. And new gamma names (Standard, Expanded, Video and Cine modes) bring the various menu choices closer to industry standards.

Hi5-4K-Plus

Picture this. You're working in 4K or UHD with a camera or recorder that has SDI outputs. But your monitor only has HDMI 2.0 inputs—as do many of the newer, affordable UHD monitors. Most professional 4K cameras, recorders and systems use four SDI cables to carry the full resolution images. AJA Video System's new Hi5-4K-Plus is an easy-to-use converter.

The Hi5-4K-Plus inputs 4K and 4K/UHD Quad 3G-SDI, Quad 1.5G-SDI or Dual 3G-SDI (4:2:2/4:4:4 at 50/59.94/60p) signals and outputs them via HDMI 2.0 to the monitor. Up to 8-channels of embedded audio in the incoming SDI signal are carried into the HDMI output.

Typical 4K signals have a resolution of 4096x2160 pixels. UltraHD signals—and most consumer/prosumer monitors— are 3840x2160. This difference can bring your production to a grinding halt. AJA's Hi5-4K-Plus can compensate for these resolution differences, allowing UHD monitors to be used in 4K productions and vice versa.

If you're not working in 4K, Hi5-4K-Plus can still convert HD-SDI to HDMI. A single HD-SDI signal coming into the Hi5-4K will be sent out as an HD resolution HDMI signal, much like AJA's Hi5-3G Mini-Converter.

Output controls and status can be managed through the unit's mini USB connector with AJA's Mini-Config v2.15.0 software running on a Mac. The Hi5-4K run on 5-20VDC with its included universal power supply. US MSRP $69

U-TAP SDI (shown here(& U-TAP HDMI

U-TAP HDMI and U-TAP SDI are two AJA converter boxes that capture high quality HD/SD to a computer via its USB 3.0 connection. The U-TAP products are simple, cost-effective and portable plug-and-play capture devices that connect to OS X, Windows and Linux computers without requiring any additional software drivers. U-TAP works with software applications for video conferencing, streaming, traditional post-production and more.

Nick Rashby said, "U-TAP fits in the palm of your hand, and is incredibly useful in the field, on-set or at a studio. USB 3.0 connectivity provides a quick and easy way to pull SDI or HDMI sources for capture, with the convenient plug-and-play ease of not needing to install drivers or plug-ins."

US MSRP $345.00

AJA at NAB, cont'd

HA5-Fiber

Maximum cable length for running 4K over HDMI cable is about 30 feet. Fiber optic cable can run up to 6 miles.

AJA's HA5-Fiber converts an HDMI signal to 3G-SDI output over a single mode 1310 nm fiber optic cable (ST-style fiber connector). It attaches nicely onto the back of a camera by using Velcro or Gaffers Tape. Video and 8-channel audio can be carried by a single fiber optic cable—as mentioned earlier, up to 10km.

- HDMI to 3G-SDI over fiber
- Supports single mode 1310 nm fiber optic cable with ST transmitter
- Full HDMI input support including embedded audio
- 2-Channel RCA style analog audio (-10dBu nominal) input

No configuration necessary

US MSRP $695.

HELO

HELO is AJA's first standalone streaming product. It lets you stream and record H.264 content. HELO enables streaming of video signals directly to Web Content Delivery Networks (CDNs) while simultaneously recording either to an SD card, USB-connected drive or network-based storage. It has dedicated record and stream buttons for easy operation. There are both 3G-SDI and HDMI inputs and outputs to handle up to 1080p recording. A simple web-based UI allows easy configuration.

HELO encodes to very compatible H.264/MPEG-4 files for viewing on tablets, smartphones, desktops, and smart TVs—with no translation necessary.

2-Channel Stereo Audio can be encoded at up to 24-bit 48kHz at data rates ranging from 32kbps to 256kps in MPEG-4-LC, allowing you to make the most appropriate choice for your project's needs.

"Producers who stream content in any setting often need a separate recording of the source to hand off to clients or editorial, and HELO makes this easy with the ability to simultaneously stream and also record to SD cards, USB drives or network storage," said Nick Rashby, President, AJA Video Systems. "HELO is small, portable, and opens up a world of new streaming opportunities to our customers doing live events, webcasting, sports, corporate communications, production and post."

US MSRP $1295.

Ki Pro Ultra & Pak Adapt-eSATA

Also at NAB 2016, AJA introduced Pak-Adapt-eSATA to provide an eSATA port connection for the Ki Pro Ultra, to enable recording to external eSATA RAID arrays.

Firmware Update 1.2 for the Ki Pro Ultra includes the following enhancements:

- Inputs increased from 8 to 16 audio channels
- Support for closed captioning in 4K
- exFAT and HFS+ file format support
- 4K via 2 SDI connections instead of usual quad split (4)
- Monitor in Quad split or HD output, which is helpful for video village.
- Records XAVC internally
- Can also record simultaneously in ProRes

Ki Pro Ultra US MSRP $3,995. Pak-Adapt-eSATA US MSRP $99.

OConnor

OConnor has put together a terrific poster to help the often agonizing choice of which fluid head to support your camera package. The poster is going up in rental houses worldwide. In case you're on location in far-off places and FDTimes arrives before you can trek to a rental facility, here's a very brief crib sheet of which OConnor head might be best for your particular permutation of camera, lens, accessories, and shooting style.

OConnor 120EX at 50% counterbalance, with Panaflex Millenium XL2, Primo Zoom 24-275 T2.8, Focus, Exepiece extender with rod, SmallHD, Mattebox.

OConnor 2575D at 65% counterbalance, with ARRI Alexa, Angénieux 24-290 T2.8, OConnor CFF-1 Follow Focus, SmallHD monitors, Teradek, Anton Bauer onboard, Mattebox, Eyepiece leveler.

OConnor 2560 at 75% counterbalance with RED Dragon, ARRI/Fujinon Alura 45-250 T2.6, OConnor O-Focus, O-Grips, O-Box Mattebox, SmallHD, Paralinx Ace.

OConnor 1030D at 60% counterbalance, with Canon EOS C300 Mk II, Cinema EOS 35mm, SmallHD, Paralinx Ace, OConnor O-Focus, O-Grips, O-Box Mattebox, and O-Rig.
Photos by Danna Kinsky.

Matthews Infinity Arm

Matthews Studio Equipment's Infinity Arm, designed by Director/DP Sage Seb, was developed and manufactured by MSE.

It has fine serrations on the mating surfaces to prevent drooping after tightening the arm. Quick-release 360° rotatable and interchangeable ball ends let you quickly mount and detach accessories without having to unscrew things every time. Just hold the release button and pop the end off the arm.

Infinity Arm does all kinds of things: supporting cameras, lights, monitors, accessories, etc. CNC machined from 6061-T6 aluminum and stainless steel in the United States, it is strong and durable for long-life operation.

MSE's VP of Product Development and Marketing Tyler Phillips called it "The Leatherman of Cine Arms."

Schneider Xenon FF-Prime 18mm

Schneider-Kreuznach has added the eagerly-awaited 18mm prime to its set of FF-Primes.

The Xenon FF-Prime set consists of 18, 25, 35, 50, 75, 100 and 135 mm. They are all T2.1.

The mount is interchangeable for PL, EF (Canon) or F (Nikon).

The image diagonal is 45mm, which amply covers Full Frame (43.3mm).

The Xenon FF-Primes have the same external dimensions and weigh 2.6 lb. (except the 100mm which is 3.1 lb.) The iris has 14 blades and produces beautiful circular bokehs. The internal cam focus mechanism is constant volume, and breathing is minimized. The focus barrel has 300-degree rotation.

ZEISS Batis Full Frame E-Mount

This is the 3rd ZEISS Batis Full Frame E-mount Lens. The ZEISS Batis 2.8/18 (18mm f/2.8) is a super wide-angle lens for the Sony α system with E-mount (a7, a7R, a7S series).

Diagonal angular field of view is 99 degrees, and it has autofocus. The unique OLED display on the lens shows focus distance and depth of field. The ZEISS Batis 2.8/18 joins the ZEISS Batis 2/25 and ZEISS Batis 1.8/85.

This 18 mm lens has 11 optical elements in ten groups and has a retrofocus, ZEISS Distagon optical design. Four of the lens elements are aspheric on both sides and seven are made from special types of glass. The floating elements design provides high image performance from minimum object distance to infinity.

In addition to the ZEISS Batis range of lenses, there are two further ZEISS ranges for Sony E-mount cameras: the ZEISS Touit and the ZEISS Loxia.

The ZEISS Batis 2.8/18 lens will be available beginning May 2016. The suggested retail price is US$ 1,499 (excl. tax).

- Focal length 18 mm
- Aperture range f/2.8 – f/22
- Focusing range 0.25 m (9.8") – ∞
- Number of elements/groups 11/10
- Angular field, diag./horiz./vert. 99° / 90° / 67°
- Coverage at close range 227 x 340 mm (8.9 x 13.4")
- Filter thread M77 x 0.75
- Dimensions (with caps) 95 mm (3.7")
- Diameter of focusing ring 78 mm (3.1")
- Weight 330 g (0.74 lb)
- Camera mounts E-Mount

ZEISS Loxia, Milvus and Otus sets

Six Milvus manual focus Full Frame lenses come in ZE or ZF.2 mounts: 2.8/21mm, 2/35mm, 1.4/50mm, 1.4/85mm, Macro 2/50mm and Macro 2/100mm.

Three f/1.4 Otus manual focus Full Frame lenses come in ZE (Canon) or ZF.2 (Nikon) mounts: 1.4/28mm, 1.4/55mm and 1.4/85mm.

Three Loxia manual focus, Full Frame lenses come in E-mount: 2.8/21mm, 2/35mm and 2/50mm.

ZEISS Milvus lenses have a rubberized focus ring and all-metal barrel. They are protected against dust and spray. The metal lens shade is part of the product design and comes with the lenses. Milvus lenses support DSLR cameras' aperture priority, shutter priority, program and manual modes. They also send EXIF lens data to the camera (focal length, aperture, etc).

Milvus and Otus ZE (Canon style) mount lenses don't have an iris barrel: like most Canon EOS lenses, you control the aperture from the camera itself.

Milvus and Otus ZF.2 (Nikon style) mounts do have an iris ring that can be controlled mechanically. Milvus ZF.2 lenses can be de-clicked for stepless aperture control. Note that ZF.2 focus barrels rotate in traditional Nikon style: the opposite direction from Canon's. Flange focal depth of the Canon mount is 44 mm, and Nikon is 46.50 mm.

ZEISS Loxia lenses come in Sony E-mount, 18 mm flange depth. They have a manual iris ring, which can be de-clicked (like the Milvus) with a tool that is supplied with the lenses.

Panavision 8K Millenium DXL

Panavision had a big surprise at Cine Gear: the new Panavision 8K Millenium DXL Large Format Camera. The sensor size is the same as the RED VV 8K: 21.60 x 40.96 mm.

The camera is a collaboration between Panavision, Light Iron and RED. The result is a thoughtful, ergonomic, Panavised (in the best sense of the word) digital cinema camera. One of the big deals is the ability to record 8K RAW and 4K ProRes or Avid DNx files simultaneously.

Panavision's DXL Camera is smaller than many studio cameras, and weighs about 10 lb. It has dual main displays—on each side of the camera. Dual fans keep it cool. The custom cheeseplate has integrated electronics. The system is modular and doesn't need tools to attach and detach accessories. You can go quickly from studio to Steadicam or handheld mode with dovetails on the bottom, modular handles and cheeseplate mounting options.

It comes with the new Panavision mount for Primo 70 lenses, and will accommodate the entire line of Panavision large format optics, including the new T Series. Panavision adapters accommodate S35 and legacy 65mm lenses.

Specs (subject to change)

- Sensor: 16-bit, 35.5 Megapixel CMOS
- Maximum sensor size: 21.60 x 40.96 mm Large Format
- Max. diagonal: 46.31 mm, same as RED VV 8K
- Resolution of full sensor: 8192 x 4320 (8K)
- Region of Interest to 4.5K Anamorphic 18.9 x 22.68 mm
- Dynamic Range: 15 stops
- Max Frame Rate: 60 fps at 8K Full Frame (8192 x 4320), 75 fps at 8K 2.4:1 (8192 x 3456)
- Recording: 8K RAW, simultaneous 4K or 2K proxy (ProRes or DNx)
- Recording Media: SSD (up to 1 hour on a single magazine)
- File Type: .r3d (supported in RED SDK)
- Color Profile: Light Iron Color (compatible with all popular gamuts and transfer curves)
- Weight: 10 lbs.
- 6 independent video outputs
- Independent support of up to 6 1D LUTs or 4 3D LUTs
- Internally motorized Primo 70 lenses, wireless lens control
- Built in wireless timecode & genlock (Ambient Control Network)
- Dual menus (Operator side, Assistant side)

Servicevision 0.81x Wider Leicas

What is a rental house to do? You have Leica Summilux-C and Summicron-C lenses. But your cinematographers are pleading for ever wider focal lengths.

If you're Andres Valles (above), head of Servicevision with brother Alfredo in Barcelona, you build a clamp-on 0.81x wide angle adapter. It is extremely high quality. You know how to do this because you also manufacture the stellar Scorpiolens series of anamorphic primes and zooms.

The 0.81x Adapter clamps onto the front of Leica Summilux-C, Summicron-C, or other 95mm front diameter wide prime lenses. So: a 16mm Summilux-C is approximately equivalent to a 12mm. 18mm becomes a 14mm. 21mm becomes a 17mm. Images looked very sharp edge-to-edge and we didn't see any chromatic aberration.

Scorpio 138-405 T4.3 Anamorphic Zoom

Alfredo and Andres Valles, above, have a long history of obsession with building lenses. Alfredo was working as a mechanical engineer in Barcelona in the late 1970s. Andres was a DP. They decided to start a camera rental company and start building lenses. The company was Servicevision and their first product was the Servilens series of Nikon Macros, with a unique combination Mitchell, PL, and bayonet mount. More than thirty years later, the brothers Valles are still making lenses.

At NAB 2016, they presented the new Scorpio Zoom Anamorphic 2x 138-405 T4.3. It's a lightweight and small long range Anamorphic zoom designed to complement the Scorpiolens Anamorphic 2x prime lens series.

The 138-405 zoom has a 95 mm front diameter, the same as the rest of the series. All the Scorpio anamorphics work with 4x5.650 filters and matteboxes. There's no need to change to a 6.6x6.6 filter on the wider focal lengths.

138-405 T4.3 Anamorphic Zoom

- Quality, color, contrast and look match Scorpiolens Anamorphic 2x
- Small size and weight
- Almost no distortion or breathing
- Aperture T4.3 over entire zoom range
- 2x anamorphic squeeze
- No compression change in close focus
- Feet and meter focus scale built in
- Internal Focus
- PL mount
- Telecentric, multiaspheric design
- High resolution and contrast
- Uniform quality over the whole field of view
- Consistent optical performance across the whole zoom range

Specifications

- Zoom ratio: 3x
- Focal length: 138 – 405 mm
- Aperture: T4.3
- Close focus: 1.52 m / 5 ft
- Image diagonal: 31.14 mm diameter
- Front Diameter: 95 mm
- Length (Front to PL mount): 288 mm / 11.3 in
- Weight (approx.): 3.3 kg / 7.2 lb

Fujinon Lens Day in Hollywood

Tuesday May 24th was Fujinon Day in Hollywood, at the ASC Clubhouse. It was an afternoon and evening to learn about lens design, technology, applications and Fujinon's wide selection of PL mount zoom lenses. Workshops and panel discussions explored the creative, optical and budgetary considerations that are critical to modern optics design. Some of the topics, including objective and subjective differences, were:

- Flare
- Color
- Contrast
- Sharpness
- MTF
- Ramping
- Breathing
- Bokeh
- Resolution
- Pin Cushioning
- Barrel Distortion
- Field Flatness
- Chromatic Aberration
- Narcissism

The ASC Board Room was converted into a Lens Projection room by the team from Duclos Lenses, using the cool, bright, new Chrosziel MK6 LED lens projector. Fujinon Premier and Cabrio Series lenses were examined in a continuous rotation. It was an excellent opportunity for everyone to get a first-hand lesson on lens projection and what to look for. On a side note, lens projection is standard issue at all lens manufacturers and almost all rental houses to help judge lens quality, coverage, geometry and characteristics. It takes a practiced eye to use it well, confident in the experience of having viewed and compared many lenses. The Fujinon session enhanced that experience.

The Fujinon lenses viewed on projection and on cameras were:

Premier Series HK
- 14.5-45mm T2.0
- 18-85 T2.0
- 24-180 T2.6
- 75-400 T2.8

Cabrio Series ZK
- 14-35mm T2.9
- 19-90 T2.9
- 25-300 T3.5
- 85-300 T2.9

New Cabrio Series XK
- 20-120 T3.5 New

Fujinon's Chuck Lee said, "With today's digital cameras, the visual traits of lenses have become even more important in the design of imagery. Our goal with this event was to allow filmmakers to see for themselves the capabilities and characteristics of our lenses. Comments and questions were encouraged – we saw this as an educational endeavor, and a chance to talk about how the technical aspects of lens design relate to look and feel, rather than merely a chance to boast about our lenses."

Bill Bennett, ASC lit an interior scene and talked for nearly eight hours about the subtleties of lens characteristics as he cycled through the full line of Fujinon PL lenses. He said, ""Many of the attendees were very experienced cinematographers. Everybody makes judgments about lenses in their own way, so we just gave people the tools to take a good look."

The ASC Board Room was converted into a lens test lab by the team from Duclos Lenses, using the new Chrosziel MK6 LED lens projector.

Chuck Lee, Bill Bennett ASC, Matthew Duclos

Meanwhile, the large ASC clubhouse living room was turned into a studio.

Bill Bennett ASC "in the driver's seat."

The "PL MOUNT LENSES" Day at ASC Clubhouse.

Out on the ASC front lawn, the new 2/3" format UA80x9BESM (9-720mm) 4K/UHD zoom and the UA22x8BERD (8-176mm) ENG style zoom were demoed.

Cameras used in the setups included ARRI Alexas, Mini, Sony HDC-4300, F65, F55 and FS7. HDR Monitors were supplied by Dolby and Sony.

Fujinon zooms have been used on major motion pictures including Tomorrowland (Claudio Miranda, ASC), Avatar (Mauro Fiore, ASC), Jupiter Ascending (John Toll, ASC), Draft Day (Eric Steelberg, ASC), and many more. They are also widely used on television, documentary, independent, sports and corporate productions.

Matthew Duclos said, "This was not something you'd normally see outside of a dedicated service shop or rental house. It was nice to have an organization like ASC do this."

This article has been edited from text by Chuck Lee, David Heuring, with photos by George Leon for FDTimes.

Angénieux 44-440 Anamorphic Zoom

The Angénieux Optimo Anamorphic 44-440 mm T4.5 A2S Zoom was introduced at NAB 2016. It is Angénieux's third anamorphic zoom lens. Three years earlier, at NAB 2013, they unveiled their first anamorphic zoom: the Optimo 56-152 A2S T4.

The second anamorphic was announced at IBC 2014: the Optimo 30-72 A2S T4.

Like the others, this is a rear-anamorphic zoom. The bokeh are beautiful and the long focal length seems to enhance the effect.

The Optimo 44-440 A2S will be available as a dedicated anamorphic lens but will also be offered as a package system for customers such as rental houses, who can purchase an extra rear spherical optical group and complete set of focus, iris and zoom rings. The lens can then be converted back and forth between anamorphic and spherical.

Angénieux Optimo 44-440 Anamorphic Zoom

- Zoom Ratio: 10x
- Anamorphic Squeeze 2x
- Horizontal Focal Length: 44 - 440 mm
- Aperture: T4.5 (f/4)
- MOD: 4' 1" / 1.24 m
- Image Coverage: 28.8 mm diagonal (18.6 x 22 mm)
- Weight (approx.): 16.6 lb / 7.55 kg
- Length: 414 mm / 16. 3"
- Front Diameter: 136 mm
- Mounts: PL, PV mount available on request
- Metadata: /i Technology in both spherical and anamorphic configurations

Fujinon 20-120 T3.5 Cabrio XK Zoom

Fujinon introduced a new S35 format zoom lens at NAB. The Cabrio XK6x20 20-120 mm T3.5 zoom comes at an affordable price ($18,200.00). It's intended for customers asking for performance and affordability. In other words, if you can give up 1mm on the wide end and half a T-stop (the 19-90 is T2.9), then here's an alternative. 20 to 120mm is a classic, popular zoom range. This 5th member of the Cabrio line shares the same features as the rest of the family: detachable, auto-centering servo drive, flange focal distance adjustment, Macro, LDS and i/Technology compatible. The 20-120 has the familiar detachable Cabrio Servo Drive Unit with all its features: lens data, power, camera/recorder start/stop, servo/manual control, smooth zoom rocker, etc. Early reports from lens technicians at Hollywood camera rental houses are encouraging: the 20-120 is an optically excellent addition that nicely matches the rest of the Fujinon Cabrio line.

Fujinon Cabrio 20-120 (XK6x20) Zoom

• Zoom Ratio	6x
• Iris Range:	T3.5 - T22 — no ramping of exposure
• Format	Super 35
• Image coverage:	24.84 x 13.97 mm (28.5 mm diagonal)
• Mount:	PL
• Angular Field of View:	at 20 mm — 63 deg 41' x 38 deg 30'
16:9 Aspect Ratio	at 120 mm — 11 deg 49' x 6 deg 40'
• MOD (Close Focus):	1.1 m / 3' 7"
• Close Focus Coverage:	at 20 mm — 1109 x 624 mm
16:9 Aspect Ratio	at 120 mm — 182 x 102 mm
• Front Diameter:	114 mm
• Length:	239 mm
• Weight:	2.9 kg with servo handgrip, 2.4 kg without servo handgrip
• Gears	All 3 rings have industry .8 Metric gears

Cooke 35-140, 45-405 Anamorphic Zooms, 300 Prime

Les Zellan and Robert Howard with new Cooke 35-140

35-140 Cooke Anamorphic T3.1

The Cooke 35-140 mm 2x squeeze anamorphic zoom was unveiled at NAB 2016. It has a front anamorphic design, with familiar oval bokehs and Cooke Look to match the rest of the Cooke Anamorphic/i family.

Cooke 35-140 T3.1 Anamorphic/i Zoom

- MOD: Minimum Marked Object Distance: 3' 11" / 1.2 m
- Close Focus from Front of Lens: 2' 4" / 0.72 m
- Image diagonal: 33.54 mm
- Weight (approx): 22.6 lb / 10.3 kg
- Length from Front of Lens to Lens Mount: 17" / 430 mm
- Front diameter: 136 mm / 5.35"
- Mount: PL


Les Zellan and guests at the Cooke Annual NAB Dinner

45-405 Cooke Anamorphic T4.5 Prelimary Specs

A second Cooke Front Anamorphic long zoom was discussed at the Cooke NAB dinner. The following Preliminary specifications are subject to change, with more news coming later this year.

- T4.5-22, 9x zoom front anamorphic , 2x anamorphic squeeze
- Close focus measured from front of lens: 3'11"
- 6.1:1 magnification at close focus
- Color and contrast will match rest of Cooke Anamorphic series
- Weight: 25-26 lb / 11.3-11.7 kg. Length 21.2" / 537 mm
- Front diameter: 136 mm — same as 35-140 zoom
- Elliptical bokeh throughout the entire zoom range
- Depth of Field is the same as the Cooke anamorphic primes. Depth of Field Table listings are for Vertical DOF, which are more critical.

Carey Duffy with Cooke 300mm Anamorphic—shipping now

300mm Cooke Anamorphic T3.5


Thomas Greiser with Cooke 300mm Anamorphic

Vantage One T1.0

The new 120mm Vantage One T1 spherical prime lens is now available. This is the ninth focal length in the Vantage One wide aperture set. The Vantage One set now consists of: 17.5, 21, 25, 32, 40, 50, 65, 90 and 120 mm, all T1, and all close-focusing.

When first introduced at Micro Salon 2013 in Paris, Peter Martin described these lenses as having "multiple personalities." From T2 to T11, Vantage Ones have a look similar to most modern lenses. At T1.4, the look takes on a "more forgiving" and interesting quality. At T1 maximum aperture, Vantage One lenses open up a whole new world of extremely shallow depth of field, with a gentle, subtle, silky creaminess. Maybe a good way to describe the look is to remember the original Leica Noctilux 50 mm T1 lens circa 1976. Daniel Pearl, ASC described "the very shallow depth of field as a unique look with the very selective focus at T1."

Vantage One lenses are among the smallest cine lenses available. They are lightweight, close-focusing and have familiar, durable Vantage mechanics, with witness marks on the same plane as the scales for parallax-free focus-pulling.

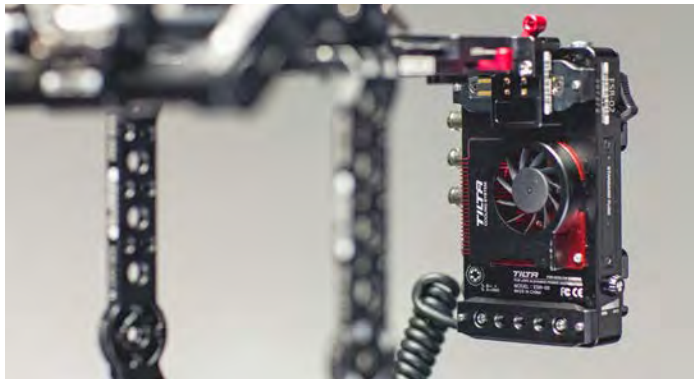
Vantage Film has the new 120mm T1 in their rental inventory. Keslow Camera and Camtec also have them. *Photo above by Keslow Camera.*

Focal Length	T Stop	Min Object Distance		Hor Angle of View	Weight		Front Diam	Length
mm	T	m	ft/in	degrees	kg	lb	mm	mm
17.5	T 1	0.25	10"	71.5°	1.9	4.2	110	152
21	T 1	0.25	10"	62.2°	1.8	4.0	110	142
25	T 1	0.25	10"	53.6°	1.6	3.5	110	124
32	T 1	0.25	10"	43.5°	1.5	3.3	110	126
40	T 1	0.34	1'2"	34.9°	1.5	3.3	110	126
50	T 1	0.34	1'2"	28°	1.6	3.5	110	124
65	T 1	0.34	1'2"	21.5°	1.6	3.5	110	124
90	T 1	0.5	1'8"	17.2°	2.0	4.4	128	142
120	T 1	0.75	2'6"	11.9°	3.8	8.4	156	174

Keslow-Tilta Alexa Mini Cage

Keslow Camera teamed up with Tilta Technology Co. to build the Tilta Cage custom rig for ARRI Alexa Mini Cameras. It comes in a variety of configurations for handheld, shoulder, gimbals, or studio.

- Extremely light weight. Without the intelligent battery pack, the Tilta cage is 2 pounds lighter than comparable rigs.
- For onboard or block batteries and allows hot swapping.
- Quick release dovetail for easy move from studio to handheld
- Adjustable front-to-back and side-to-side for balance
- Additional cooling fan with adjustable motor speed
- Built-in HD-SDI Distribution Amp
- Ready to accept Gold-Mount or V-Mount battery plates
- Integrated electronics / internal wiring for powering accessories from modular J-Boxes.
- Up to 10x 12V accessory power output ports
  - Battery Plate: 2x 3-pin Fischer R/S and 2x 2-pin Lemo
  - Top Plate J-Box: 2x 3-pin Fischer and 1x 2-pin Lemo
  - Handle J-Box: 2x 3-pin Fischer & 1x 2-pin Lemo



Teradek SPHERE

Above: Teradek NAB booth

Left: Teradek Sphere

Below: 4 HDMI inputs

Nicol Verheem, CEO of Creative Solutions, using an iPad to view 4 cameras from a VR rig, with controls for Saturation, Shadows, Midtones and Highlights, etc.

Teradek introduced Sphere at NAB. It lets you do real-time monitoring and live streaming of panoramic 360º video in HD.

Sphere is a hub for monitoring a stitched 360º VR quad HD stream wirelessly—without seeing yourself in the shot. It's like VR Video Assist. Sphere also can do live web streaming of 360º VR content to compatible online platforms.

Nicol Verheem, CEO of Creative Solutions, explained the need for an effective wireless monitoring system with the ability to share content live around the world. Nicol said "Our answer is Sphere, the world's smallest and most flexible system for wirelessly monitoring and live-streaming 360º video content."

Sphere is a thoughtful combination of hardware and software with a patent-pending video processing platform for iOS and OSX. By dynamically adjusting each camera's white balance, tint, exposure and lens distortion in real-time, Sphere can display and stream panoramic video that maintains a consistent look for every camera. On your next airplane flight, just look down the cabin and see how almost every monitor looks different. That's what a 360º panorama might look like without Sphere.

Sphere's stylish housing has 4 HDMI inputs. Its H.264 encoder compresses video up to 1080p30 at bit rates up to 10 Mbps. Sphere connects to a wireless access point via RJ45 cable to stream 4 compressed video feeds over dual band 2.4/5Ghz WiFi to as many as 3 iOS devices connected to the same network. Sphere's 4 compressed feeds are received on iOS devices. The companion Sphere iOS application stitches and processes the video into three formats:

- Panoramic 2D panoramic view — pan and zoom across all 4 video feeds stitched together into a panorama.
- Headset (Google Cardboard) mode
- Perspective ("motion control, magic window") mode — an immersive view where the video is processed into a virtual sphere. Turn or tilt the iOS device and the video follows.

For remote viewing, the Sphere app can be used to live stream to any compatible 360º online video platform, including Wowza and YouTube 360.

Creative Solutions: Teradek, Paralinx, SmallHD

Paralinx Tomahawk HD video transmitter, Anton Bauer Cine Battery

Teradek Bolt Receiver, SmallHD Monitor, OConnor 2575 Head

Paralinx ACE transmitters and receivers: up to 300 ft HD no latency

Teradek Bolt 600 Receiver. Transmitter range up to 600 ft.

SmallHD BigHD 17", 24" and 32" Production Monitors

SmallHD Production Monitors available as HDR or Studio monitors

SmallHD Production Monitors have rugged aluminum chassis, carrying handle, stand, and mounting rails for wireless receivers, batteries, etc.

Lytro Light Field Camera System

Report by Oli Laperal, Jr

A screening and demo of the Lytro Light Field prototype camera system was shown to a packed auditorium on April 17. The prototype camera has a 755 megapixel imager that is 500 mm (20 inches) wide. It's made from an array of hundreds of sensors with micro lenses. ISO is 200-800. The (massive) files are RAW, and the system comes with a server on set. The main attraction for the VFX world is compositing. Lytro eliminates the need for blue or green screen because it uses depth information (distance). This can save time in post. You can also reset focus, depth of field, frame rate, shutter angle, and geometry in post, among other things.

In a phone call shortly before NAB, Jason Rosenthal, CEO of Lytro and Jon Karafin, Head of Light Field Video at Lytro, explained that "Lytro Cinema defies traditional physics of on-set capture allowing filmmakers to capture shots that have been impossible up until now." They see the market for Lytro as high-end, big budget, VFX-driven productions that blend live action with computer generated images. Lytro can help achieve shots that would be considered too risky or too difficult to do conventionally.

The Lytro Light Field Camera System allows the following readjustments in post: Re-Focus. Change fps to creatively achieve the desired presence or absence of motion blur. Reset aperture to any value, even wide open to f/0.1. (No such physical lens exists in our world.) Change depth of field in post. Dial in a new shutter angle, even 720 degrees or 1,440 degrees—the equivalent of spanning several frames with the resulting exaggerated motion blur "comet" tails. Pan, tilt or track an entirely new angle in post. Relight the scene, or part of it, in post. Create an instant 3D detailed model with complete light properties, hologram, ray trace, alpha channel, reflectance, arbitrary bokeh, and software-defined lenses.

A standard film or digital camera captures a two-dimensional image, whereas a light field camera captures the full lighting properties in five dimensions. Standard cameras are single perspective, but this is multi-perspective because it captures a light field. The Lytro short film was directed by Robert Stromberg and the cinematographer was David Stump, ASC. Post production was done with The Foundry's modified Nuke software. Today, the Lytro camera is more than 10 feet long and weighs around 2,200 lb. It is mounted on a modified camera dolly with four struts for extra strength. Do not expect to see it floating on a Steadicam or flying on a drone anytime soon. Not just yet.

120 fps 4K HDR 3D

Director Ang Lee (*Crouching Tiger, Hidden Dragon*, *Brokeback Mountain*, *Life of Pi*) showed a work-in-progress 3D clip of his upcoming feature film *Billy Lynn's Long Halftime Walk*. For confidentiality, we had to check our cameras and cell phones with security guards. The stereo 3D dual Sony F65 camera 4K, HDR, 120 fps footage was exhibited with Christie's latest RGB laser projectors. The session was followed by a technical discussion with Ang Lee, Editor Tim Squyres, System Supervisor Ben Gervais, Stereographer Demetri Portelli, and Sony Executive Scot Barbour. Jon Fauer said it was the most impressive 3D he's seen.

VR and AR

Virtual Reality (VR) and Augmented Reality (AR) cameras and 3D viewing systems were everywhere at NAB. Among them were Nokia OZO, Kodak PixPro VR, Jaunt One VR, GoPro Omni, GoPro Odyssey, Radiant Images, Codex and more.

Stephan Schenk, ARRI Managing Director (above), heads the Camera Systems Business Unit. At ARRI's NAB press conference, he announced that the company had just acquired artemis camera stabilizers from Sachtler/Vitec.

A prototype of the artemis Trinity was shown at IBC 2015. It is a compact and lightweight two-axis gimbal head that attaches to a body-mounted camera stabilizer, along with monitor mount, joystick, battery module and a pendulum.

Curt O. Schaller, BVK developed Trinity with Dr. Roman Foltyn of FoMA Systems. Dr. Foltyn was the inventor of the Maxima gimbal stabilizer that is used in the Trinity.

Curt has joined ARRI as Product Manager of Camera Stabilizer Systems (CSS). The CSS product line currently consists of the artemis mechanical stabilizer systems, Trinity hybrid stabilizer systems, and Maxima electronic handheld stabilizers.

ARRI and FoMa have an exclusive sales agreement whereby all Maxima related products made by FoMa will be distributed worldwide by ARRI.

Curt, CSS, FoMa and company have development projects in the works focusing on deeper integration of stabilizer technology in ARRI products.

They were off to a very promising start judging by the crowds at the ARRI booth surrounding Curt, the Trinities on display and the Trinity camera operators "flying" across the show floor.

Curt O. Schaller, BVK and Jessica Lopez

Midsummer 2016 Storyboard

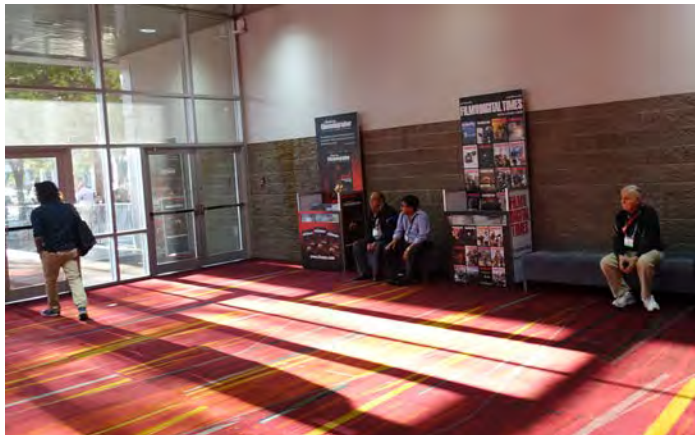
NAB - Cine Gear

Atomos Climbing wall at NAB
photo: Mark Forman

NAB, Cine Gear and Open House
Photos by Jon Fauer, Mark Forman
and George Leon

The annual running of the NABers commenced at 10 am on April 18, 2016

FDTimes Publication Kiosks in the lobby of Central Hall



FDTimes Photographer George Leon

Film and Digital Times Booth C10206: Larissa Stang, JF, Mark Forman

FDTimes Photographer Mark Forman

Elisabetta Cartoni with the new Cartoni Lambda 25 Head.

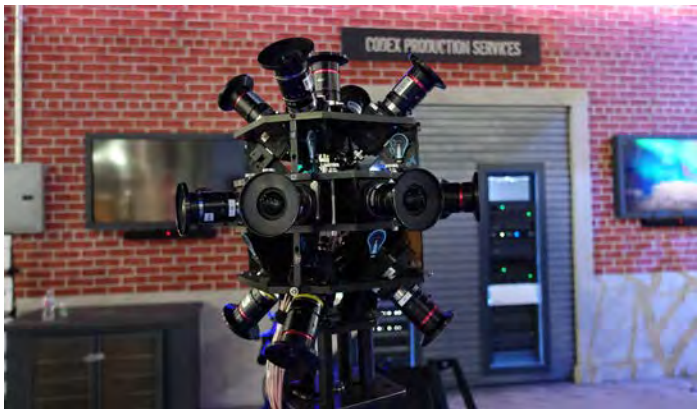
Lambda 25 Head is for cameras up to 25 kg (55 lb)

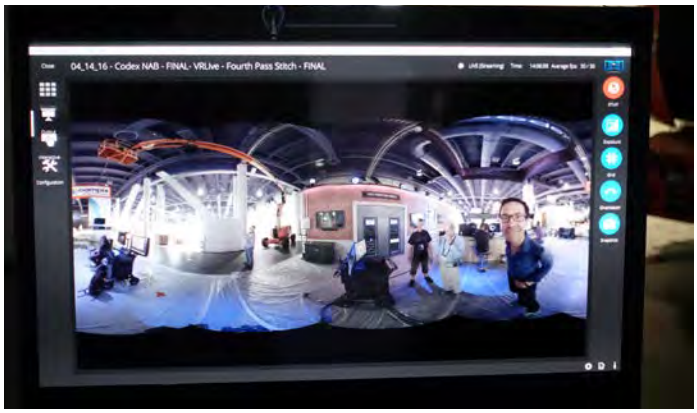
The Easyrig and Flowcine crews

Johan Hellsten new Easyrig Vario 5 Strong for cameras from 30-55 lb

Bokkelux prototype lens by a company called Bokkeh in Taiwan

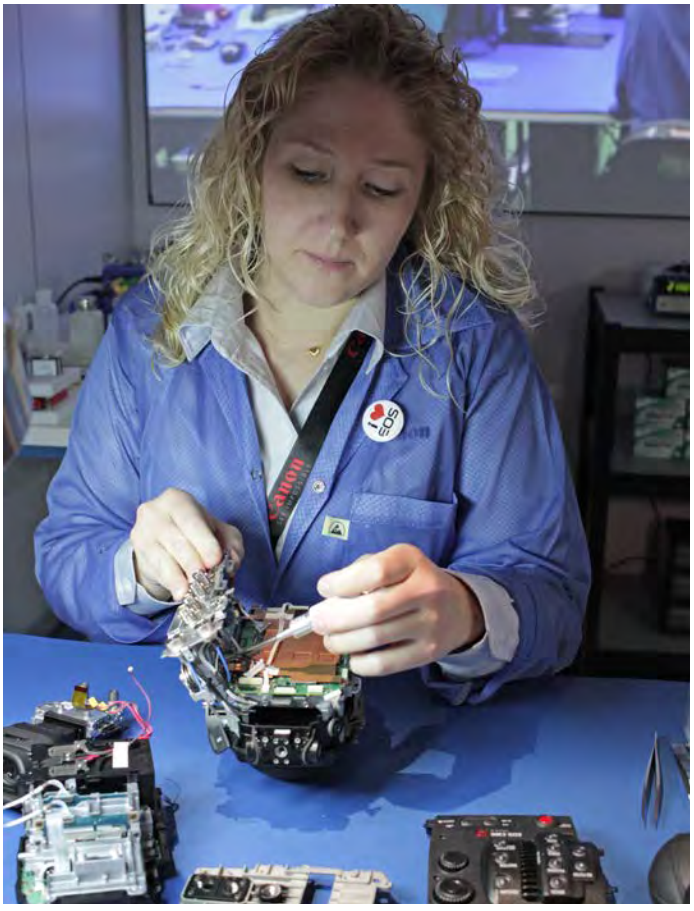
Kinemax 6K prototype from Kinefinity with Bokkelux Full Frame Lens





Codex- Radiant Images VR rig with 17 Codex Action Cameras: 360 degrees, 12-bit RAW files, C-mount lens. Jens Rumberg, Codex, at right.

Prototype Panavision 24mm T3.5 lens on an ARRI Alexa Mini on a Gryphon Dynamics Drone. It appears to be weather-protected, aerodynamic, and without moving parts or barrels on the outside.



Canon repair station at NAB

Fritz Gabriel Bauer, AAC and his EZ2 Easyfocus touch-screen controller

Rob Weinfurter, VP at Easyfocus and FGB with EZ2

IB/E Optics 150mm T2.9 Raptor Macro Full Frame lens. The other Raptors are 100 mm and 180 mm.

Klaus Eckerl, the "E" in IB/E Optics, with Raptor FF Macro 150mm at Band Pro's NAB booth. Band Pro is worldwide distributor of the lenses.

16x9inc Movcam accessories: wireless follow focus, handle, mattebox, power breakout box, with IB/E Optics Raptor FF Macro 180mm.

cmotion cvolution, Teradek COLR, Angneieux 44-440, Alexa

Brett Gillespie with Raptors

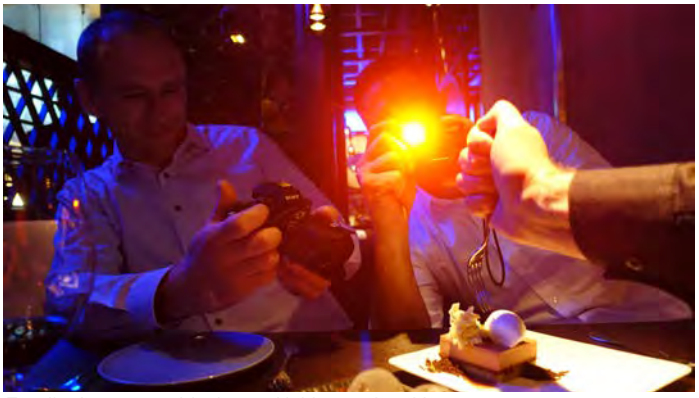
Amnon Band and Raptors.

Ekaterina Dorokhina and Armando Grottesi with Cinetech Italiana Capinera dolly (center). Band Pro distributes.

Alec Shapiro and Hiroshi Kiriyama with new Sony HDC-4800 4K 8x high frame rate camera system (up to 400 fps).

Cameras blazing at the Sony NAB Press Conference.

Christophe Casenave, Michael Schiehlen, Dr. Winfried Scherle—ZEISS



Foodies' cameras blazing at Hakkasan Las Vegas

Christian Tschida, Steve Tiffen, Erik Feichtinger

Robert Howard and Andrew Steele

Tama Berkeljon, MD of Outsight with Creamsource Sky: 1200W (equiv to 5K Tungsten) adjustable 2,200-15,000K and adjustable Green/Magenta.

Laura Kaufmann with Leica 135mm and 100mm Summicron-C lenses


Christian Skrein, Leica Board Member, with new 40mm Summicron-C


Sandra Marchitelli, Laura Kaufmann, Monika Nemenz, Otto Nemenz

Cool new Mole Tener LED. Do not attempt touching a tungsten 10K.


Pete Abel, Snehal Patel, Rich Abel, Richard Schleuning


Light engine inside Mole Tener LED (equiv 10K tungsten)

Niki Brockt with Bright Tangerine Titan Arm accessory holder


Bright Tangerine Gripper Filter Tray

Working prototype 8K Canon camera, first shown at Canon Expo NY in September 2015. The 8K Super35 Sensor (8192 x 4329) outputs 8K RAW with a native ISO around 400 up to 60 fps.

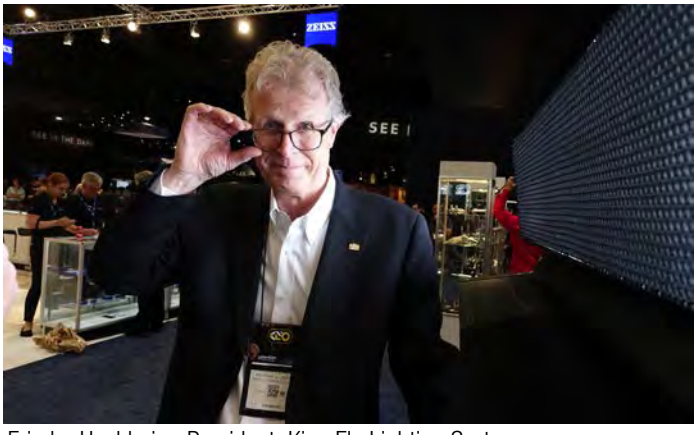
Four Convergent Design Odyssey 7Q Recorders are connected for 8K RAW capture. A 35.4 Megapixel still image can be saved from RAW.

The lens shown here is a CN-E 30-300mm T2.95-3.7 L S EF Mount Cinema Zoom Lens. Note the locking ring on the ruggedized EF Mount.

Canon C500 PL with Canon Cine-Servo 50-1000 T5.0-8.9 PL zoom

Canon's Tim Smith and James Neihouse, ASC

Scott Stueckle, Sales Manager of Kino Flo Lighting Systems



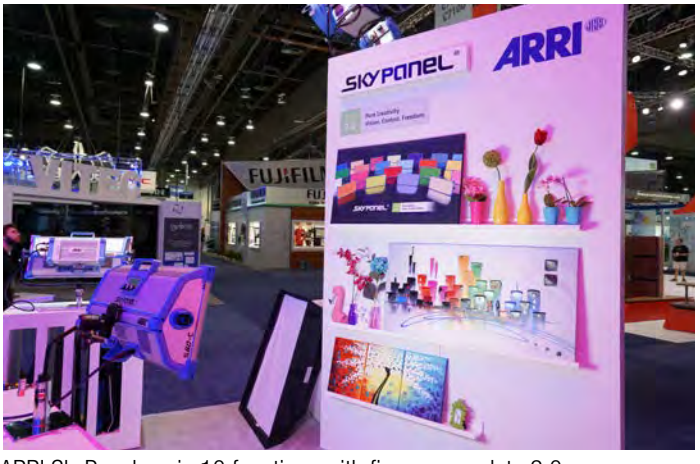
Frieder Hochheim, President, Kino Flo Lighting Systems

ARRI Alexa Mini with MVF-1 (Multi View Finder) is the same one that comes on Amira camera packages. The 3.2" LCD display swings out.

ARRI CCP-1 does the job of the MVF-1 — a 3.2" display for viewing and menu, but without the eyepiece. A popular accessory for Alexa Mini and Amira. The Universal Motor Controller UMC-4 is a wireless receiver for remote focus, iris and zoom control on any camera.

New ARRI ZEISS Master Anamorphic on Alexa SXT

Remote Control Unit RCU-4 for ALEXA cameras.



ARRI SkyPanels gain 10 functions with firmware update 2.0

ARRI WCU-1 hard-wired to EMC-1 ENG Motor Controller

Convergent Design calls their Apollo "A Production Studio in the palm of your hand to monitor, record, switch and play." It simultaneously records two 4K inputs or four HD inputs. Switching is done by tapping the touchscreen OLED display screen. It's based on Convergent Design's Odyssey 7Q+.

Panasonic VariCam LT with AK-HRP200 Camera Remote Controller

OffHollywood OMOD Command Module

Graeme Nattress with Hawk 65 Anamorphic 95mm lens on RED VV.

Mikael Lubtchansky, DP and FoolControl Creator, in the RED booth showing FoolControl iOS RED camera control via an iPad.

6 Blackmagic Duplicator 4K units stacked and daisy-chained

Blackmagic NAB booth

Howard Preston, Preston Cinema, and Kazuto Yamaki, Pres of Sigma

Matt Davis and Alanna Berkson in the Preston Cinema Booth

Preston Light Ranger 2

Les Zellan, Chairman of Cooke

Angénieux 44-440 Anamorphic zoom on ARRI Alexa.

Wonderful bokehs on the long end of the 44-440 Anamorphic.

Transvideo Titan HD 2 TX (transmitter) and Titan HD2 RX (receiver)

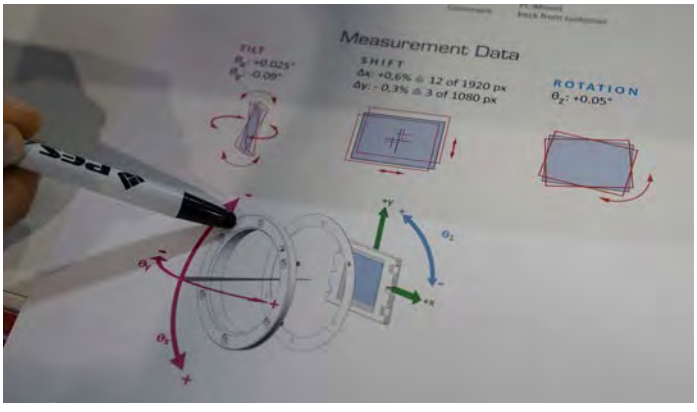
Transvideo StarliteHD (center) 5" 3G-SDI OLED Monitor

Transvideo StargateHD

Peter Denz, Christine Sailer, Christian Kiplinger and King Peter (KP)

King Peter accurately measures the image sensor's position in digital cameras: center, rotation around the optical axis, and any deviation of the chip relative to a perpendicular image plane.

KP Control Unit has a touchscreen UI and USB port



New Tiffen Filters: Black Soft/FX, Black Glimmerglass, Black Pearlescent, and more. Tiffen Variable Viewing Filter (contrast glass) — indexed 2-8 stops

Steadicam eVo — electronic stabilization, powered by Yuneec

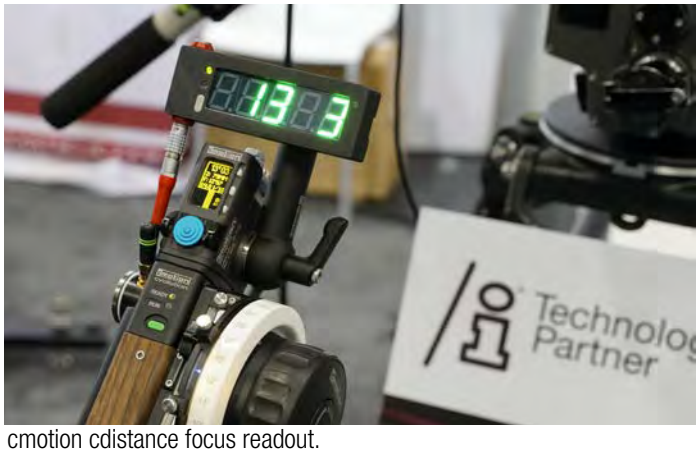
Chris Fawcett with Tiffen Steadicam eVo

Tiffen Steadicam Steadimate mates motorized gimbals to the Steadicam

Chris Fawcett wearing the Steadicam Fawcett Exovest that he designed, the Steadicam Archer2, and the Steadicam G-50x Arm

Left: Stephen Chappell, Christian Tschida, Erik Feichtinger, and Sebastien Lumme (camadeus). Erik, previously at CW Sonderoptic, is now Managing Director at cmotion. Above: cmotion cforce plus.

cmotion cdistance focus measuring device.



cmotion cdistance focus readout.

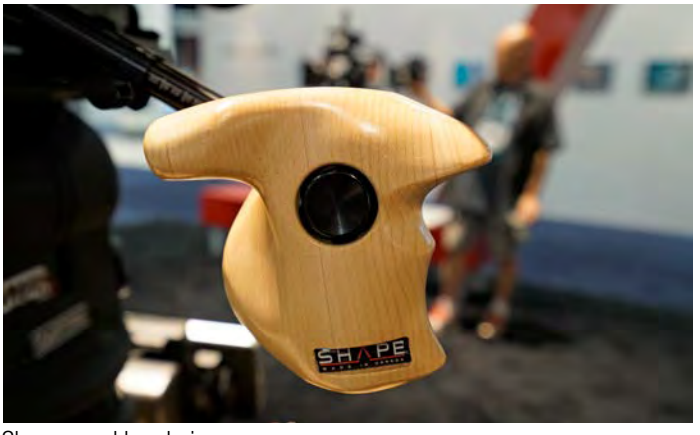
Vision Research Phantom VEO 640S has a 35mm 2.5K sensor, on-camera controls, CFast 2.0 media, weighs 5.6 lb (2.5kg) and is 5x5x5".

Phantom VEO 640 records up to 1400 fps at 2560 x 1600, 2500 fps at 1080p HD. With 72 GB of RAM at 1400 fps, record time is 8 secs.

Zacuto Gratical Eye Micro OLED 0.61" 1280 x 1024 EVF

Nico Marchand with prototype Shape gimbal stabilized rig

Shape Gimbal Handheld Small Body Camera Rig (2-axis: roll & tilt)



Shape wood handgrip

Warwick Hempleman; Joe Mikuljan, Jr; Jim Fisher; Frank Kay (L-R)

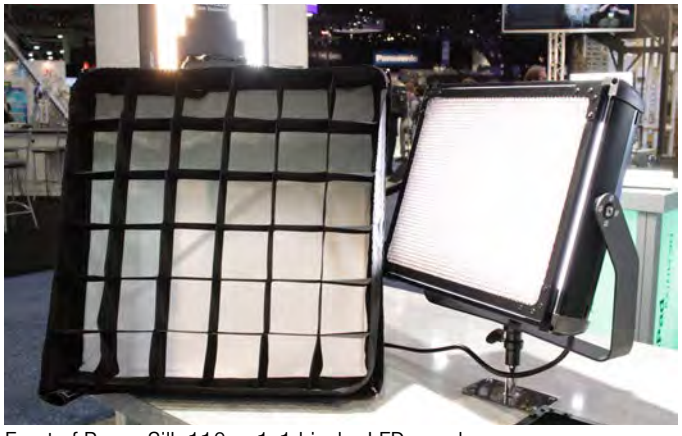
J. L. Fisher booth

Rob Krijnen and Bas Ladru with dueling Vocas Spiders. The Spider system is a lightweight, modular, configurable, compact handgrip and rig.

Martin Waitz and Verena Goetzner of Qinematiq, whose products are now distributed in the Americas by ZGC. Qinematiq's Image+ is a focus distance measuring device that uses its own real-time video image data to generate a 3D image map to determine focus of anything in the frame.

Anton Bauer Cine 150 14.4V 90Wh onboard battery

Anton Bauer area at NAB



Front of Rosco Silk 110, a 1x1 bicolor LED panel.

Rear of Rosco Silk 110, a 1x1 bicolor LED panel.

Benro MoveUp 8, 15 and 20 Jibs for cameras up to 44 lb / 20 kg

Benro MoveUp 15 travels 90" and supports cameras to 15 kg / 33 lb.

Ryan Schorman, pres. of Wooden Camera.

Wooden Camera's wooden handgrip

Int: Orca Bags

Ext: Orca Bags

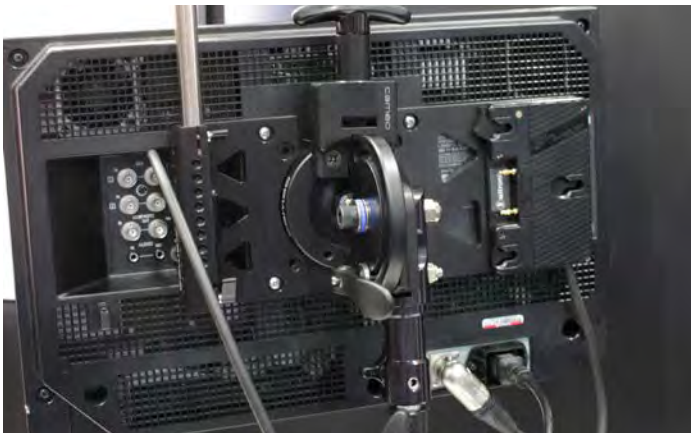
P+S Technik 35-70 CS T3.5 PL mount gront Anamorphic lens w/ 1.45x squeeze covers 18.3 x 36 mm format.

AbelCine at NAB

AbelCine's Cameo line of products

AbelCine Cameo Grip, with LANC, supports lightweight digital cameras

AbelCine Cameo VESA Mount for monitors up to 25"



Cameo VESA Mount

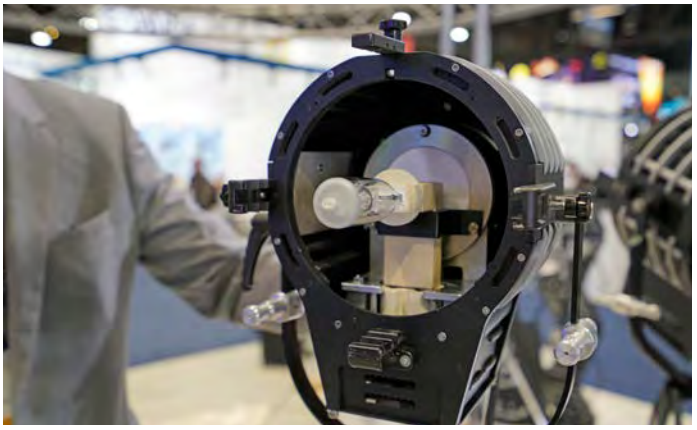
Rich Abel and Jesse Rosen of AbelCine (L-R)

Sony's Peter Crithary and AbelCine's Jeff Lee on stage

Litepanels Lykos Daylight and Bi-Color LED units draw 23 Watts, provide 1500 lux, measure 10.2 x 6 x 1.65" and weigh 1 lb

Litepanels Sola 9 — a Daylight LED with 9" Fresnel

Shotover U1, usually under a drone—mounted on a car



K5600 Lighting's Alpha 800 with horizontal bulb orientation

K5600 Alpha 800 with bulb in vertical orientation

K5600 "Kurve" parabolic umbrellas in 3', 4.5', and a 6' diameters. For light source, use a Joker HMI up to 1600W, tungsten to 2K, or strobes.

Ryan Smith with K5600 JoLeko 1600

AJA Booth at NAB

8K 60p Playback powered by 4 AJA KiProUltra and Keisoku Giken units

8K 60p Playback on a Sharp 85" 8K display


Nick Rashby, President of AJA


Andy Bellamy demonstrating AJA CION 4K Cameras


Andy Bellamy preparing action figures at AJA booth

Andrew Steele, President of EMIT and the great Steve Manios, Sr.

ZEISS booth at NAB


Arato Ogura changing an interchangeable lens mount

ZEISS Lensgear on Otus 1.4/85


ZEISS Lensgear on Otus 1.4/85 and Lensgear Mini

ZEISS Batis 2.8/18 on Sony a7 II

ZEISS Batis 2.8/18 Full Frame E-mount lens

ZEISS Batis 1.8/85 and Compact Prime CP.2 25mm T2.1

ZEISS Full Frame Compact Zoom 28-80 T2.9

Panavision Primo 70 set

Panavision Primo 70 14mm T3.1

Panavision T Series 35mm format Anamorphic AWZ 37-85 mm T2.8 Zoom

Panavision T Series 35mm format Anamorphic Primes

Panavision T Series 100mm T2.3 with PV mount on Alexa

Once upon a time, the original Panaflasher attached to the magazine and gently fogged the film. It was a gutsy, one-way process. The new Panaflasher 3 uses color LEDs in front of lens to "flash" and "grade" the image by using a touch-screen controller.

J.L. Fisher Open House

J.L. Fisher's Burbank headquarters were open all day on Saturday, May 14th for their 10th Annual Open House. The event included lectures and seminars presented by members of the SOC (Operators), ICG (Camera), Local 80 (Grips) and the ASC (DPs). Jim Fisher gave guided tours of the facility. *Photos by George Leon.*

Above: 1962 Model 8 Camera Dolly by James L. Fisher.

Above: Seminars. Below: Impeccable manufacturing area.

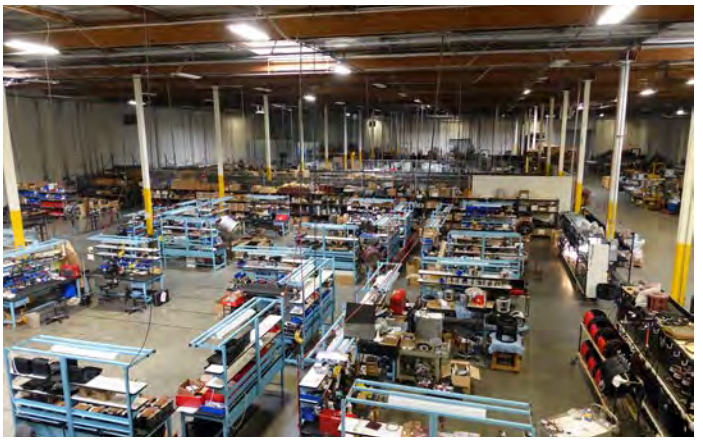
Mole-Richardson Open House

On Thursday, June 2nd, Mole-Richardson opened their doors for huge open house, BBQ and celebration of its beautiful new facilities. The new location in Pacoima combines corporate offices, manufacturing, showroom, Studio Depot store, museum and Larry's Mole Stage in one big building. It's an easy 15-minute drive from Burbank airport.

Larry Mole Parker (L) and Mike Parker (R) with a new Mole 1800 W Tener LED (comparable in output to a 10K tungsten Solarspot.

Masa Yasumoto, Executive VP of Sanwa — one of several hundred guests at the open house — trying out a 200W Vari-Mole LED.

Above: showroom. Below: warehouse.



Above: Mole-Richardson manufacturing. Below: new Studio Depot store.

Cine Gear 2016

Cine Gear Expo — June 3-4, 2016

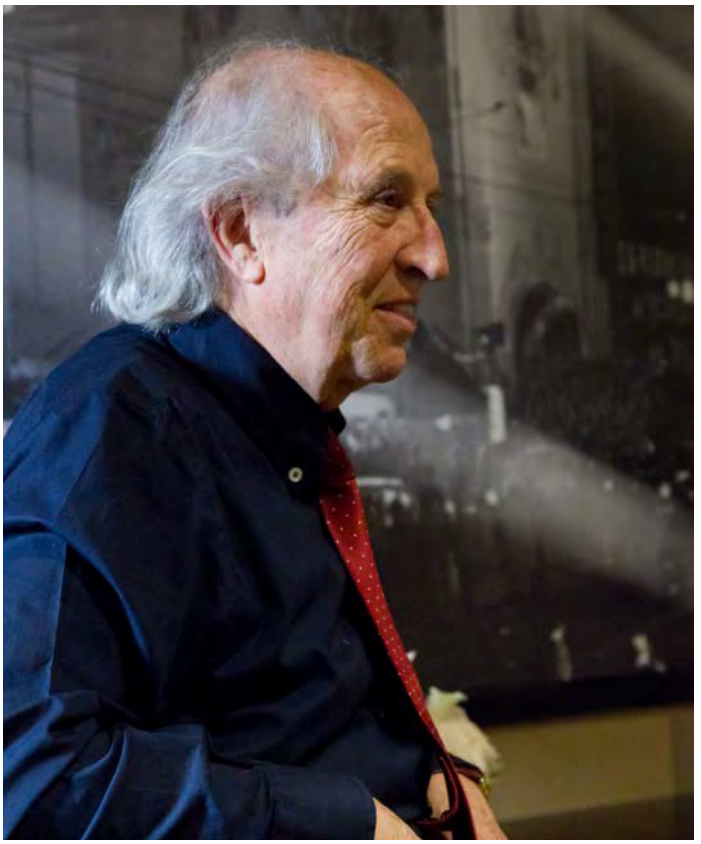
Nicole Ilaw and Thomas Mejia managing the FDTimes Booth


Nicole Ilaw is also a yoga instructor. Next year: yoga at FDTimes.

Shigeharu Miyahara (center), prominent Japanese DP and author

Vittorio Storaro, ASC, AIC and his cover on April 2016 FDTimes


Jon Fauer and Vittorio Storaro on stage in Paramount Theater


Vittorio discussing *Cafe Society* at Cine Gear Premiere. Appropriate shafts of light in background. Photo: George Leon

Cine Gear 2016, cont'd

Carlos Congote, Denny Clairmont, Tobias Keuthen

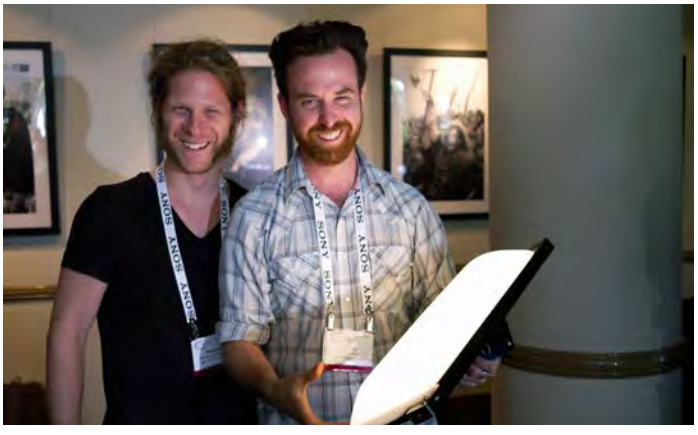

EXT. CINE GEAR - EARLY MORNING. Seth Emmons prepares


Bright Tangerine


Wooden Camera's Preston MDR-4 & iPhone holder for RED DSMC


Cinematography Electronics CineTape Measure and CineTape Air

Larry Barton and Vinson Soohoo — Cinematography Electronics


Jean de Montgrand and Kieran Crilly, DMG Lumière


DMG Lumiere LED Make-up lifght

Cine Gear 2016, cont'd

Hitomi Takada, key grip with Scorpio 45' crane and remote head

Hitomi Takada, key grip at Rocket Inc in Japan

At Servicevision: Alfredo Valles, Guillermo Navarro ASC, Andres Valles

Scorpio Anamorphic lenses

Hawk V-Lite 20 mm Anamorphic

Hawk 65 (Large Format) 60mm anamorphic lens on RED camera

Hawk V-Lite 1.3x squeeze Vintage'74 Anamorphic V-Lites

Hawk 1.3x squeeze 45mm T2.2 Anamorphic V-Lite

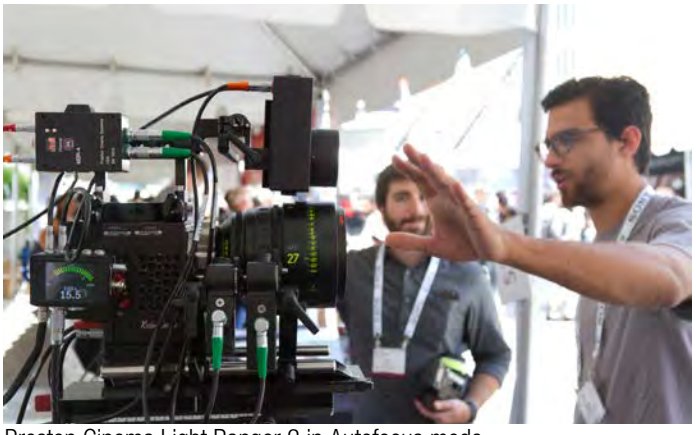
ARRI booth lit with SkyPanels above diffusion frame

Otto Nemenz, Monika Nemenz, Walter Trauninger, Alex Wengert, Fritz Heinzle, Joerg Pohlman

Rosco Silk, LitePad Vector and Rosco SoftDrop

Marianne Exbrayat and Noel Ilaw, Transvideo

Preston Cinema



Preston Cinema Light Ranger 2 in Autofocus mode

Clockwise fr left: Leticia de le Torre, Alanna Berkson, Kevin Aiach, Matt Davis. Above, right: Jon Fauer and Howard Preston.

Cine Gear 2016, cont'd

Dante Cecchin (PrimeCircle) with Leica SL, cage, PL mount, and Summicron-C 100mm. Above right: Mareike Feiling, Gerhard Baier, Osuma Tsukada.

Leica M classic full frame with prototype cine style 0.8 M gears

Close up of gears on Summilux-M lenses

Dante Cecchin, Gerhard Baier, Seth Emmons at Leica

Les Zellan in front of Cooke / ZGC booth

Anna Piffle, P+S Technik with 35-70 CS front anamorphic

Barry Russo with VariCam LT at Panasonic booth

VER aquired DPS Inc earlier this year. Their set at Cine Gear demonstrated DPS Cinema Enhanced Environments LED backdrop system.

Andy Shipsides (AbelCine)

Veydra Mini Prime set: 12, 16, 25, 35, 50, 85 T2.2. MFT, E, C-Mounts

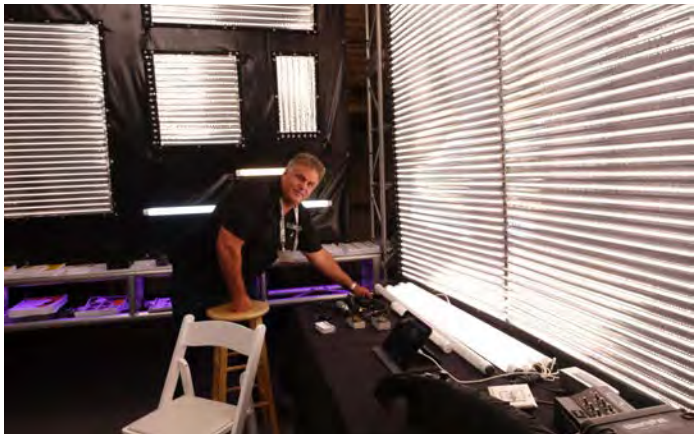
Celere 36mm Full Frame lens at AbelCine

Celere HS Full Frame cine lens

Terry Carey (Tiffen), Andy Subratie (Bright Tangerine)

Ed Phillips and Joe Dunton

Cine Gear 2016, cont'd



Peter Girolami, President of Sourcemaker Inc

Mole-Richardson from Tener LED to 100W Vari-Mole LED and lots more

Camilla Lim of Matthews Studio Equipment

Team Angie: Yasuhiko Mikami, Jean-Marc Bouchut, Paulette Dumerc, Eva Paryzka, Pierre Andurand, Dan Ikeda

Teradek Bolt and SmallHD monitor

Andrew Ng, Teradek

Howard Preston, Gerhard Baier, Rainer Hercher, Franz Wieser

Ronford's Jeff Lawrence (hiding), Ryan Glater, Rob Saunders (BSC Show)

Panavision team moments before opening of Cine Gear and big announcement of new 8K Millenium DXL Large Format Camera.

Crowds swarm the Panavision / Light Iron Booth

Panavision 100mm T2 Primo70 on DXL camera

Laurence Nunn at the Panalens Bar

The DXL (40mm flange depth mount) with PV adapter

Panavision 37-85mm anamorphic S35 format on DXL

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