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.

It’s written, edited, and published by Jon Fauer, ASC, an award-winning Cinematographer and Director. He is the author of 14 bestselling books—over 120,000 in print—famous for their user-friendly way of explaining things. With inside-the-industry “secrets-of the-pros” information, Film and Digital Times is delivered to you by subscription or invitation, online or on paper. We don’t take ads and are supported by readers and sponsors.

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Along the way

This is the 100th Issue of Film and Digital Times. But who's counting? The number is 100 but the path is longer. Double or triple combined issues are mitigated by many special reports and overseas editions in French, Spanish, Portuguese, Korean, Chinese and Japanese.

The Film and Digital Times journey is marked or marred by waypoints of trials and errors in style, fonts, logo, page size, prose and layout. Thank you, patient readers, for your indulgence. The first issue of Film and Digital Times was a 16-page newsletter. Subscribers were scarce. Four intrepid sponsors agreed to come onboard: ARRI, Kodak, Sony, and J.L. Fisher. Eventually the word "sponsor" matured to "educational partner," reflecting the disparity between a sponsor's lonely banner flying at a film festival and an active partner whose shared knowledge and products became the source for essential information in these pages.

You may have heard how it all began. The story gets somewhat embellished with time.

This adventure was hatched on a cold day in November 2004. The industry's leading luminaries had gathered to talk about the latest tools and technology in film, digital acquisition and post. The meeting quickly devolved into a debate on how to keep current with all the latest stuff. It became clear there was no good way. A prominent professor criticized current channels of communication: magazines don't have how-to advice, the web is often full of flagrant promotion or unvetted sources, and Jon Fauer's camera books take way too long to come out. I sputtered some random excuses.

The next day, Saul Molina at the ASC called to ask when I planned to finish the ARRICAM BOOK 2nd Edition because the first edition was sold out. "But I'm only a year late, with all the changes and updates," I mumbled.

Day three: no sooner had a production-ready Arriflex 235 camera landed than emails demanded, "Have you done an ARRIFLEX 235 BOOK?" No. But did it really have to be a book? Could it be presented in episodic format, like a TV series?

Day four. A sailing regatta somewhere in New England. I think it was Newport, RI. My daughter Marlena and several hundred other kids were racing their Optimists—bathtub-sized starter sailboats—in the stormy, wet, cold and miserable North Atlantic waters. Meanwhile, their parents were peering through Canon lights and new lenses maybe every ten years. Video assist, a better follow-focus, an occasional camera, bigger trade shows usually consisted of incremental advances—a new video assist, a better follow-focus, an occasional camera, bigger lights and new lenses maybe every ten years.

What followed for FDTimes was a workflow of words. A TORRENT! The part-time 16-page newsletter evolved into a Tolstoy of technique and technology. Prose by the pound. The Proust of Production. The Dickens of Digital. New equipment was arriving at ever shorter intervals. It felt as if the consumer electronics industry, familiar with the obsolescence of products we just must have, just ever shorter intervals. It felt as if the consumer electronics industry, familiar with the obsolescence of products we just must have, just every ten years. What followed for FDTimes was a workflow of words. A TORRENT!

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When the Film and Digital Times expedition embarked, Film was what ran through the cameras on most features and commercials. The Digital part was mainly how you treated that film in post-production.

Fifteen years later, the Film in the masthead has sailed from origination to procedure. It's still filmmaking and it's still a film at a film festival even if it's being shot with digital cameras.

This 100th Edition is a quick-look picture book of the past hundred or so covers. It's a timeline of technique, technology, tools, lighting, art, style, factory tours, practical production, restaurants, life on location and diversions—with a diverse cast of characters and a cavalcade of companies. It's a fun reunion.

The problem with a retrospective is the selection process. Some things are left out, not deliberately, but simply by mistake. My apologies to those well-deserving companies, people and products who are missing.

Nevertheless, this collection of 100 editions will be edited and updated. Text will be added to summarize each issue. And yes, like most things episodic, there's inevitably a sequel.

Cover design by Marlena Fauer, out of Optis and into Architecture.
FILM AND DIGITAL TIMES

The how-to newsletter of high-end technique and technology in film, video and digital production

PREMIERE ISSUE

Secrets of the Pros

Here’s the first issue of our secrets-of-the-pros, nuts and bolts, how-to newsletter on techniques and tools, style and strategies, tips and trends for Cinematographers, Photographers, Videographers, Directors, Producers, Camera Assistants, Camera Operators, Grips, Gaffers, Crews, Rental Houses, Manufacturers and Students.

Stay on Top of the Biz

Inside-the-industry information for professionals from professionals, written by writers who shoot, direct, light, design, build, edit and work in the business.

We’ll talk about products and procedures in practical production—here’s the job at hand: how do we use these tools and techniques to get the results we want? How do we get an image, does it look good, what helps us get there, how does it work, and how did they do that?

Coming to you every two months, you can stay on top of the business and on top of new ideas. We’ll publish on paper since most stages and locations lack hotspots like Starbucks.

Fauer Books Episodically

Jon Fauer, ASC is an award-winning Director of Photography and Director who has written 10 best-selling books, famous for their user-friendly way of explaining things as if you’re right there on location with him. Over 120,000 of his books on cameras, cinematography, film and digital video have been printed.

Think of this bimonthly newsletter as Fauer’s 11th book—arriving a year early, with up-to-the-minute information brought to you in episodic format.

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Be sure to visit our companion website for updates, hot news, samples and examples, notes, archives and letters to the editor. (www.fdtimes.com)

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I’d like to welcome and thank our many new subscribers around the world.

This second issue of Film and Digital Times is sort of “a trip to Las Vegas and Burbank, with some production pit stops in between.”

What follows is a somewhat opinionated, regrettably not all-inclusive, storyboard-style description of equipment at NAB and Cine Gear that we thought was useful, innovative, new, refreshing, clever or helpful, and how it might be put to use in practical production.

Some of the equipment, seen before, has been redefined with new developments and added improvements. I only wish there had been more time to try everything out, that Cine Gear lasted a day longer, and that NAB went to different cities. My apologies to those well-deserving companies whose products I’ve overlooked. Please contact me if I left you out. (www.fdtimes.com)

Cine Gear Expo 2005

Cine Gear is a favorite show: fun venue, relaxed atmosphere, and the amount of new stuff per square foot is still stunning. The only thing I couldn’t find this year was the Red Bull and Vodka stand.

They should turn NAB over to the wonderful people who bring us Cine Gear: the food would be better, many exhibits would be outdoors, Pete Romano would provide mermaids, and Tiffen would have the Segway concession.

What’s Inside?

NY Cine Equipment Show

A new show is coming to the New York Hilton on September 20-21, 2005. Some industry notables are behind it, promising to give us a great show. (www.nyces.org)

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Stay on top of your art by subscribing to this bi-monthly newsletter. Order it from our website, by phone or through the ASC Bookstore. Many thanks.

– Jon Fauer, ASC

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SONY Z1 HDV Jumpstart

Here’s a camera less than 15 inches long, about 5 pounds, that shoots HDV images looking better than almost anything broadcast in standard definition today, and rivals much of what’s being sent out in HD. With a street price well under $5,000, the Z1 is a compelling introduction to High Definition and the transition from a 4:3 to a 16:9 world.

More than 20 million High Definition, flat panel televisions have been sold. Yet broadcasters, ad agencies and clients still seem to be twiddling their thumbs, waiting to see receipts from sales of HDTVs this Christmas season. It reminds me of Bill Gates wondering whether the internet might be a possibility, or Thomas Edison proclaiming movies a small, passing amusement.

Big HD TV sets will be selling at prices under $999 by year’s end. HD DVD will hit the consumer market in a few months. Sony’s Z1 may be the “killer ap” that’s jumpstarting this next big thing. It’s one of those breakthrough products that usher in a new format–what the PD150 did for DV and DVCAM a few years ago. What happens next? Lots of visionaries come up with unintended, different ways to use it.

The HDV format uses the same mini cassette as DV or DVCAM, and records at 25 megabits per second. Miraculously, the Z1 produces gorgeous 1080i HD 16:9 images (4 times as much picture information as 480i standard def), no simple feat considering the compression for HDV at 1080i is 22.4:1.

So here’s a camera now being used for news, sports, documentaries and independent shows. It has crossed the Atlantic to cover a major sailboat race, worked in the Arctic and Sahara. In the next pages, we’ll get started on how it works, how to use it, and why it’s an important tool to know about.
Who would have predicted, when film's big breakthrough was a postage stamp size display of images on a Kinetoscope, that 115 years later the big breakthrough would be almost the same size? Does the iPod Video spell the end of network, cable TV and commercials as we know them?

continued on page 3

D-20 at Sundance

Film and Digital Times is at Sundance from January 13 to 21, 2006 testing an Arriflex D-20. We’ll also be above it all, on the slopes of Deer Valley, handheld on skis, seeing how it behaves in snow, cold, and banging around in backpacks.

continued on page 3

Happy New Year

thanks sponsors, supporters and subscribers for making our first half year so successful.

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Higher Definition

It can take artist Astrid Preston (below) up to nine months to paint one of her luminous studies of leaves and landscapes. There’s a parallel in the way she transports images from a three-dimensional world onto a two-dimensional space, done with great attention to detail, color, composition, light, and above all, sharpness and resolution. We’re looking for tools and techniques as we hike the halls of NAB to achieve similar goals—moving images at higher definition to larger audiences on many platforms.

(continues on page 2)

1. Super 16 Exposed Film Area: 12.35 x 7.5 mm
2. 1.78 (16:9) Transmitted Area: 11.95 x 6.72 mm

Big surprise at NAB this year: a major reincarnation of Super 16 mm. There are new cameras, film stocks, lenses and post production tools.

In the years since Rune Ericson figured out how to get his money’s worth by putting image in an area previously occupied by a perf, filmmakers lucky enough to get theatrical release had to do optical blowups to 35mm.

The big idea in Super 16 is digital post. After shooting, your camera negative becomes a future-proof “digital archive.” It’s digital because you make digital dailies, edit and then decide to go on air, on the web, to DVD or theatrical. That’s where it really gets interesting: scan the negative, conform, correct, and “print” out with a laser to 35mm film—at resolutions unheard of just a few years ago.

(continues on page 3)

ASC & FDT

We’re including this NAB issue of Film and Digital Times with the April American Cinematographer magazine. The extra cost of printing and distribution has been made possible through the generosity of our sponsors.

Film and Digital Times continues to be an independent newsletter available bimonthly by subscription. You can order it from us or from the ASC. A portion of proceeds will be donated to the ASC for every subscription they process. Go online: www.theasc.com or call 800-448-0145 or 323-969-4344.
The Arriflex 416 was unwrapped in LA and at NAB. The latest Super16 camera from ARRI, it has a bright viewfinder like the 235, and is lighter than a 16SR. Like rotisserie chickens under glass, two cameras drew lots of attention at NAB. A “larger-than-2/3 inch-single-chip 2K, camera with 12 minutes uncompressed archival quality storage per magazine.” Each frame stores about 65 Megabytes of uncompressed data, so one roll holds the equivalent of about 1,123 Terabytes. Tracy Trotter holds a $1000 beautifully machined casting with serial number, representing a refundable reservation for a RED Volkscamera. Usually we’re used to seeing prototypes modeled out a block of wood, painted black. This definitely departs from normal camera marketing, but RED’s Jim Jannard is the unusual founder of Oakley Sunglasses, and an accomplished cinematographer.

Arriflex 416 coaxial mags will feed from the left side. Unlike 16SR. Like Aaton. Pre-production models should be ready this summer, and cameras may be ready by end of 2006, although deadlines in manufacturing don’t seem as rigid as in delivering films to theaters, printing this newsletter or showing up on set. Sony’s new 4:4:4 1080p CineAlta was the other interesting camera under glass at NAB. We heard a common epithet in many languages: “Baby Genesis.” It uses a similar on-board HDCAM SRW1 dockable deck. It has three 2/3 inch chips, and the B4 lens mount has been beefed up. Is there a Sony 35mm single chip camera coming?
Demise of the Video Store and Superstars

In Los Angeles, pundits can spot the latest social trends at the Venice boardwalk, having advance looks long ago of the latest in cool like razor scooters and razor cellphones.

In New York, Wall Street wizards probably predict our technological future by looking out the window. A year ago, within one block, we could see 4 drycleaners (one on each corner), 3 pizza parlors, 4 Chinese take-out restaurants, 3 Sushi bars, 3 delis, 4 saloons, and 3 video stores.

This year, Blockbuster and the video stores are gone, replaced by a 7-11 and two nail salons. What does mean? The answer is Netflix. No one understands why. It's so low-tech. But Netflix has an inventory of around 60,000 films, stocks almost every movie ever mastered to DVD, and rents about 40,000 of them every day. In these high-tech times, Netflix ships 700 million of those little red envelopes the old fashioned way, by US mail. The head of operations used to be a postmaster general.

Ubiquity and simplicity have prevailed over propinquity. In other words, if on-demand reminds you of programming the old VCR, and driving to Blockbuster is a hassle, and the standoff between Blu-Ray and HD DVD keeps you out of Best Buy, then the genius of Netflix is how low-tech and simple it is.

You go online, click on the DVDs you want, and they arrive a few days later. The ordering process is deliciously simple, and because the product is so cheap (a few cents in pressed plastic), they don’t even bother with fancy packaging. It’s cheaper to replace a cracked disk than send it in heavier cardboard.

And when the disk arrives, the quality is usually better than the compression, dropouts or dead spots we get in the usual pipelines.

Netflix has 39 warehouses near major cities around the country, and can usually get a DVD into your mailbox within two days. But in this age of iTunes, Movielink, Google and Comcast, Netflix seems like a steam engine from the Industrial Revolution. But look again. Movielink has only 1,500 films and Comcast delivers only 800.

Netflix is working on a download engine, and rumor has it they are also getting into production. But insiders speculate it could be a long time before this sneakernet anomaly is replaced by a logical, but elusive, alternative.

Superstars

Something that may be replaced sooner could be the Hollywood Superstar. Recent studies at major business schools confirm what most crew had long suspected and many rental houses had long grumbled about. “There is no statistical correlation between stars and success,” said a professor of economics and finance at Rutgers (reported in the New York Times, August 28, 2006).

An associate professor at Harvard Business School analyzed 500 films, and found that the 600 stars in them had no “discernible effect on the share price of the media companies that owned the movie studio, indicating that the participation of a star had no impact on the expected profitability of the studio.”

“Movies with stars are successful not because of the star, but because the star chooses projects that people tend to like,” said Arthur S. De Vany, professor emeritus of economics at the University of California, Irvine, who has written extensively about the economics of moviemaking. “It’s a movie that makes a star.”
Cinec, 18K/12K, Green Gaffers and Red Bull

The most powerful HMI on earth was creating almost biblical rays of light through the smoke-filled halls of Cinec in Munich, and sparked two interesting questions. Why do they still allow smoking—even France banned it? And why does the ARRIMAX use 18K or 12K bulbs—why on earth would you use a 12K bulb in a fixture that can hold an 18K? Isn’t that the gaffer equivalent of asking for a diet decaf Red Bull? A gutless alternative when you could have had twice the caffeine, twice the sugar, no bull (taurine is an amino acid).

Gaffer Sal Martorano has lectured me on similar lighting arithmetic, “Jon, a 5K is just a 10K with a double in it.” Meaning, when I change my mind and need more depth of field, or decide that the shot simply can’t be done without the dreaded speed-ramp from 24 to 96 fps, Sal wants to be covered practically.

The ARRIMax 12K/18K conundrum offers us the chance to do something for the environment. It now takes at least 30 giant trucks, almost the size of the Exxon Valdez, to haul equipment needed to shoot even the smallest indie movies. These are often remakes of scripts previously shot with one all-purpose Cinemobile whose right side was the electric department, left side was camera and grip, rear was for the generator, with room for cast and crew inside.

So here’s a way to make both your conscience and your producers happy. Whenever you use a 12K bulb instead of an 18K, you’re saving 6kW per hour. At current Long Island Power Authority rates, allegedly the highest in the country, that could save production enough money to buy a round of Red Bull for all. And just think how much less fuel has to be burned, and how much cooler the planet could be. However, be sure to defend having those extra 18K bulbs on hand, even if the producer whines about cost and refers to this article, when, to quote another Sal Martorano line, “the only thing left in the budget is profit.”
Sundance, Camerimage, Cooke and Coal

Tommy “the Cork” Corcoran, advisor to President Franklin D. Roosevelt, once said, “you can learn everything about a place by looking at its map.” He surely overlooked Sundance and Lodz.

Of course, the “real” Sundance is Redford’s resort on the other side of the mountains, south of Park City, with no crowds, high-adrenaline mountain biking and the best screening room in Utah.

And then we have Lodz, Poland. Two hours southeast of Warsaw, in the middle of nowhere, Lodz (pronounced “Woodge”) is host to the greatest annual cinematographer party and film festival on earth, Camerimage. (cont’d pg. 2)
2007 Sci-Tech Awards: The Envelopes Please

There are no envelopes at the Sci-Tech awards. Winners are known in advance. On February 10, 2007, Maggie Gyllenhaal presented the Academy of Motion Picture Arts and Sciences annual Scientific and Technical Achievement (Sci-Tech) Awards at the Beverly Wilshire Hotel. She began, “I fulfilled my college science requirement by taking earth science and dinosaurs” and navigated dense dialog on the distant teleprompter with tongue-twisters like “The new Brumicro densitometer, and its successor, the Brumagic MPST.”

She said, “I suspect this is a kind of joke you Sci-Tech guys like to play on an unassuming actress.” For an event about technology, the people who set up the far-off teleprompter would not have won any awards. It was probably the same company cited by Clint Eastwood a few weeks later when introducing Ennio Morricone for a special Oscar, “Should’ve worn my glasses.”

A recently shorn Josh Pines of Technicolor had the best line. On why film preservation is important, he said, “so future generations can see our movies—even if they are ‘Norbit.’”

Richard Edlund, ASC, below left, received the John A. Bonner Medal in appreciation of his service and dedication to the Academy. (More on pgs. 2-3). In this issue, we’ll learn about some of the winners, as well as the techniques and technology resulting from their work. Sci-Tech committees spend many hours researching nominations, but the true winners are all of us in studios, on location and at post facilities worldwide.

If there is another theme throughout, it may be food. I often think of NAB as 110,000 people in search of an elusive, edible lunch. For that, we eagerly await Cinegear, coming this June 22nd and 23rd to the Wadsworth Theatre and Grounds in LA, where the sun usually shines, the exhibits are wonderful, the setting is outside and the food is good.
Red, Green and Blue Revolution


Inside the Red Tent

First of all, I admit being caught with my pants down. I had no idea how good a compressed image could look, nor how an entire industry could be turned on its ear. We had been barking up the wrong uncompressed tree.

The Red Rebels’ Paradigm is the high-end digital SLR still camera, running at 24 fps. Ted Schilowitz of Red said, “We were building a movie camera, not a science project.” Digital SLR still cameras are single chip, mostly APC-C size (roughly Super 35mm format) and have become widely accepted while prices have dropped. Duh. Ted’s title, “Leader of the Rebellion,” is apt. I love these new titles. Michael Phillips, the star formerly known as Principal Product Designer of Avid, is now “Senior Evangelist.” Not to be outdone, John Johnston, star formerly known at Kodak, has just joined us at Film and Digital Times as “marketing guy.” lower case. But we digress.

Red set out to do what few dared, and exhibited it brilliantly. While almost everyone else was pursuing a grail of uncompressed data on expensive solid state magazines or massive, often refrigerator-sized storage arrays, Red delivered a manageable, beautiful, wavelet compressed 4K image using little on-board, off-the-shelf hard drives.

The stunning surprise was Red’s demo. A long line led to a red fabric tent. Working prototypes, displayed on either side, showed the results of 12 months since the first major flurry at last NAB. We knew it was going to be worth the wait when Otto Nemenz, Alex Wengert and Fritz Heinzle staggered out of the tent, dazed and amazed by the previous screening.

We were ushered into a small screening room. Jim Jannard, Head of Red, personally introduced what we were about to see, “Here’s a little something we shot in two days in New Zealand the other day.” Now, Jim has always been a passionate filmmaker.
iKinora

September 1896. The brothers Lumière patent the Kinora viewing machine in France. Herman Casler has previously patented the larger Mutoscope in America. Handheld, private, photographic “flip books,” Kinoras become wildly popular in England; about 2,000 are manufactured. Interchangeable one-minute “reels” consisting of about 850 black and white still photos can be rented or made to order.

September 2007. The iPhone eclipses Kinora. Apple sells 270,000 iPhones in the first two days after its introduction on June 29th. Previous record sales when iPod was introduced are exceeded by 700%.

continued page 2
May your holidays and New Year be filled with (f)light...and shadow.
Japan
Lighting with Paint
Banjin by Andrew Laszlo, ASC
Canon Vixia HF S10
Canon Tour
Camaras y Luces, Argentina
Tandem Receiver
Rendezvous Reverse
NAB2009 and After: A to Z

Angénieux
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OConnor
P+S TECHNIK
Panasonic
Petrol
Sachtler
Schneider
SONY
S:two
Steadicam
Tiffen
Transvideo
UniqOptics
Vantage Film
Vision Research
ZEISS
Lighting with Paint
1 Perf, 2 Perf, 3 Perf, 4...
2-Perf Aaton Penelope
ARRI BLUE One, Two, Three
Cooke Look 5/i, Panchro/i
Canon EOS 7D
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Kumamoto Castle, 3rd largest castle in Japan, built in 1607 on the southern island of Kyushu, was featured in Akira Kurosawa’s film Ran
EVERY FRAME A REMBRANDT

NAB REVIEW
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Photo: “Les Saisons” © Galatée Films / Marc Rebuttini
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New Cameras
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Panasonic+Codex Varicam Pure
ARRI Alexa SXT
Sony AXS-R7 Recorder

New Lenses, Lights, AKS
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IBC 2017

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Canon Sumire Primes
The Panasonic Lumix DC-S1H launches at the start of Cine Gear on May 31, 2019. This information did not arrive in time for the printing of our June 2019 FDTimes, and hence this supplement. The S1H is a full-frame, 36mm x 24mm sensor, 24p, 6K video camera “hiding” in the body of a DSLM. The shape makes it great as a grab camera, handheld, on rigs, gimbals, drones, or fully outfitted with a studio rig. It gets interesting when you want to capture video and not look like a filmmaker but rather a street photographer in search of Significant Moments.

The name is suggestive: “S” as in Specialized and “H” as in High Performance, High-End and Hybrid. The S1H is color-matched to the rest of the Panasonic VariCam line. It has a dynamic range of more than 14 stops. Best of all, there’s a full-frame, 3:2 (1.5:1) aspect ratio sensor. Panasonic, Sigma and Leica are partners in the L-Mount Alliance. That means there are many L-mount lenses ready now. And because the L-Mount has a flange focal depth of 20mm and an inside diameter of 51.6 mm, you can attach PL, LPL, PV and other lenses by using mechanical adapters.
Canon EOS C500 Mark II
Sony PXW-FX9
SIGMA fp Camera
ARRI ALEXA Mini LF
Sony 16-35mm T3.1 G
Panasonic LUMIX DC-S1H
SIGMA FF Classic Art Primes
Blackmagic Pocket Camera
ZEISS Supreme Prime 50mm
Elizabetta Cartoni, Cartoni CEO
Kazuto Yamaki, SIGMA CEO
Jarred Land on RED RANGER
Band Pro tests Optimo Primes
FUJIFILM GFX100, ALPA XO
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Teradek Bolt 4K MAX
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cmotion cvision
ZEISS Burbank
Tilta Armor Man 3
Transvideo Monitors
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Canon DP-V3120 4K Display
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Cover photo of Canon C500 Mark II and vintage K-35 by Jacob Niblett
Blackmagic Pocket Cinema Camera 6K
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Lawrence Sher ASC on Joker
ARRI Alexa 65

ZEISS Supreme Prime Radiance
Christophe Casenave & Dr. Ghost
Takuro Ishizaka JSC on Metamorphosis
Rodrigo Prieto ASC, AMC on R&R

Mirrorless Stills and Cine
The L-Mount Alliance
Leica SL2: 47 MP, 5K Full-Frame Cine
Panasonic S1H: 24.2 MP, 6K Full-Frame Cine
SIGMA fp: 24.6 MP, 4K 12-bit CinemaDNG RAW
fortissimo, pianissimo
Kazuto Yamaki and Mark Amir

Sony α7R IV E-mount
61 Megapixel Full-Frame
Blackmagic Pocket Cinema Camera 6K
Super35, 6K 12-bit Blackmagic RAW
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Technique and Technology, Art and Food in Motion Picture Production Worldwide

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fortissimo, pianissimo
Kazuto Yamaki and Mark Amir
Sony α 7R IV E-mount 61 Megapixel Full-Frame

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Photo of Claire Mathon AFC by Ariane Damain Vergallo
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- IMAGO
- AIC
- ICG
- Inter BEE
- AIRSTAR