

film postproduction

SPECIAL REPORT



Workflow innovations in film post prove it's not only possible to get more for less — but to make the job faster than ever

Chris David (left) and Leslie Shatz working on Lionsgate's "John Rambo" at Wildfire

Space-Time Continuum

By Debra Kaufman

Equip This!

Avid DNxHD36

Offline editing in high-definition is the Holy Grail, but the huge storage demands of uncompressed HD — 1.5GB per second — has made that economically impossible. Enter Avid's DNx36, which has compressed HD to make it affordable but still look much better than standard-def. How compressed? One hour of material uses 18GB of storage (as opposed to 90GB for one minute of uncompressed HD).

DNx36 solves other problems: At 24 fps, it offers a one-to-one relationship with the original film (or HD) material. That gets rid of the pesky "3:2 pulldown," time-consuming management as images move back and forth between video's 30 fps and film's 24.

The Avid's DNx36 offline cut also holds up nicely when projected on a 40-foot screen. "DNx36 has solved a lot of problems and not just for high-budget films," says Avid solutions manager Michael Phillips. Films that have used DNx36 include Paramount's 2008-slated "Iron Man," Fox Searchlight's current release "The Darjeeling Limited" and MGM/Weinstein Co.'s December release "The Great Debaters."



Cheaper, faster, better: The adage says you can only have two. But post house executives are aiming at a trifecta, putting new digital tools together to create workflows for maximum creative flexibility at lower costs. To stay on top, post houses often aid manufacturers in developing new tools that will give them a head start on mini-revolutions in how feature films are posted.

At least three nascent trends promise to dramatically impact the film post process going forward: the advent of Avid's DNx36, a low-storage, high-image-quality compression scheme for offline editing and screenings; the placement of DI suites adjacent to sound-mixing stages to streamline the final,

hectic post stage; and the beginnings of 3-D stereoscopic post tools for what some experts say will become an avalanche of new films.

DNx36 gets cost-conscious

What gives the sparkling-clear resolution of high-definition with the low storage requirements of a standard-definition format? The answer is Avid's DNx36 compression codec, which is now available for offline editing (*see sidebar above*).

Paramount's Jon Favreau-helmed "Iron Man," due out next May, was one of the first major feature films to take advantage of DNx36 HD, for offline editing and screen-

ings. "The creative decisions that can be made in editorial were greatly enhanced," says Marvel Entertainment senior vp postproduction Charlie Davis. "The quality of the image is such that you can see focus."

In the old days, Davis points out that he'd output an answer print and suddenly see a grip running a cable in the background. "Not only is it a much more pleasant editing experience to work with an image quality that's superior, but you're eliminating the technical issues," he says.

PostWorks' company Orbit Digital provided a DNx36 workflow for Fox Searchlight's "The Darjeeling Limited," and executive vp technology Joe Beirne notes the advantages are in the details when it comes to offline editing in a high-def format.

"Filmmakers used to walk into a preview or DI and be shocked, seeing continuity issues and subtler things that wouldn't show up until the film was virtually done," he says. "To be able to watch it in a more discriminating format earlier in the process, you're making fine-grained decisions based on the quality of the image, not just the quality of the performance."

Cost-effectiveness is another benefit of the Avid DNxHD36 format. L.A. Digital CEO Gary Migdal recounts his concern in helping "Iron Man" prepare for offline editing: "We had a twofold problem. We needed a better storage compression codec that would give this film production the image quality they needed but use the storage consumption of standard-def offline."

Uncompressed or lightly compressed HD requires so much storage that it quickly becomes too expensive. "The movie has

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3-D stereoscopic post: The tools

An innocent conversation about posting for 3-D stereoscopic images sparked the interest of Quantel's Milton Adamou, senior product specialist for film, post and DI. Quantel's Pablo has always had the ability to play back two 2K streams, perfect for posting the right and left eyes. What might happen with some 3-D-specific software? Quantel's Simon Rogers was the principal developer of a tool set that now empowers Pablo, iQ and Max with a 3-D stereoscopic toolbox. Chief among the tools is keyframable stereo convergence that can be adjusted on the fly, as well as the ability to work on both eyes simultaneously, in addition to a full set of editorial and effects.

Quantel is also launching "Sid," which combines features found in the bigger systems with the new 3-D tools. Sid is available in two configurations: Sid online for stereoscopic postproduction editing, effects and mastering and Sid VCM, an entry-level system for viewing, conform and mastering.

Assimilate, the company that puts out the Scratch DI system, also plays back two 2K streams and offers its array of post and DI tools for 3-D stereoscopic post. Assimilate first announced a partnership with Cobalt Entertainment aimed at 3-D filmmaking and, in August 2007, worked with 3ality on "U2 3D." Assimilate's 3-D post solution was also used on Disney's "Meet the Robinsons." It has also been widely reported that Assimilate is currently being used on set for New Line's upcoming 2008 feature "Journey 3-D."

In Living Color

The decision list is opening up the spectrum in post houses, but there still are shades of gray

The list, at long last, is done. Three years after then-American Society of Cinematographers president Richard Crudo sparked the idea of a codified standard list for exchanging color decisions across different platforms in the production and post pipeline, the DI subcommittee of the ASC's Technology Committee released its specs to the manufacturing and post world this past July.

Evidence of how that Color Decision List (CDL) is working can already be found at LaserPacific and Technicolor. LaserPacific's accurateIMAGE (aIM) service uses the CDL to pass the cinematographer's color decisions from production dailies, through the editorial process, to previews.

"Studio executives, directors, editors, everyone sees the same picture from the beginning of the process," explains vp and general manager of feature film services Glenn Kennel, a member of the CDL subcommittee.

Among the four films that have utilized aIM is New Line's forthcoming "Harold & Kumar 2," shot by current ASC president and cinematographer Daryn Okada.

"It's gratifying to see the ASC-CDL benefiting cinematographers in real-world applications such as its use in the LaserPacific aIM system," says Okada. "Digital dailies finally represent the cinematographer's artistic intent, and we can build from that look all the way to the big screen."

At Technicolor, vp imaging, research and development Josh Pines, who co-chaired the DI subcommittee with Post Logic Studios' senior colorist Lou Levinson, describes the Technicolor Printer Lights, an on-set color-correction tool that implements CDL. "We used it on-set for several movies that have done digital acquisition," says Pines. "Digital Printer Lights can also be used for film telecine dailies."

There are benefits, as well as limitations, to the CDL. "When calibration is being handled well, the CDL becomes a powerful piece of look management," Levinson says. "But the CDL is not a magical look-management tool that solves everyone's problems. It's a small but critical part of the problem."

The first step now that the CDL is codified is for manufacturers to incorporate it into their DI gear. "In the next six months to a year, vendors will implement it," Levinson predicts. "Over the course of the next year, they'll be proving that we got it mostly right, and in two years, it'll be an assumed fact."

But there are plenty of new issues related to look management left to tackle. First of all, the CDL doesn't cover windows (custom-defined areas of correction), secondary color correction or any other more exotic features.

And Pines points out another potential limitation: "The CDL empowers facilities like Technicolor and LaserPacific to make robust in-house systems," he says. "But that won't work between facilities, and that's the next thing we'll attack."

— Debra Kaufman

1 million feet of film, and when you start (editing) that at full HD resolution, that's a lot of storage — we could never do it," says Davis, who cites L.A. Digital and FotoKem as two facilities that got "Iron Man" up and running with DNx36.

At FotoKem, director of nonlinear operations and technology Jon Mauldin notes that Avid DNxHD36 also provides a one-to-one relationship with the original film material. Previously, a telecine transfer to video included managing the change in frame rates, and the hassle of moving back and forth between video and film's different frame rates was a time-consuming nuisance. "Assistants are saving a lot of time," says Mauldin, who reports that Lionsgate's "3:10 to Yuma" was among a handful of films that used the DNx36 workflow.

"It's a digital work print," says Beirne. "In the past, prepping for a screening, you'd have to shut down editing for a week and spend \$50,000 to \$100,000. Now you can edit to the last moment, do a little cleanup and watch it projected."

"This is one of the biggest advantages of the whole process," agrees FotoKem's Mauldin, who reports that they've actually screened films directly from the Avid hard drive. "People aren't distracted by the quality of the video anymore. They can pay attention to the content."

DI and sound cohabitate

A great idea came to fruition when Technicolor built its postproduction facility on the Sony lot. In collaboration with Sony president of postproduction Gary Marin, and colleagues Michael Kohut and Jimmy Honore, Technicolor placed its state-of-the-art Digital Intermediate suites adjacent to Sony's sound-mixing stages. "If a feature is getting a DI on the Sony lot and working on the sound in Burbank, a lot of time is lost getting back and forth," notes Technicolor Content Services president Ahmad Ouri. "It's 40 steps between the Sony sound-mixing stages and our first DI suite. The efficiencies are very clear."

Ouri points out that Sony's "Spider-Man 3," the first 4K DI that took advantage of the synergies at the Sony lot facility, also incorporated VFX from Imageworks, an additional efficiency.

Since Technicolor got this bright idea, a few other facilities have independently found their way to an identical solution. On the Warner Bros. lot, senior vp postproduction services Kim Waugh, who was in charge of audio, and motion picture imaging vp Bob Bailey, who had just opened up three DI suites, realized that they each held one half of a solution. Last year's "Poseidon" was when it all came together.

"It was the right project at the right time," Bailey says. "It gets crazy at the end of film post, and when you can walk 50 yards (between the DI and sound mix), you can add value to the picture."

"When you present options that make a lot of sense from a creative and geographic point of view, that's the 'Aha!' moment," agrees Waugh, who said that for last year's "Rescue Dawn," director Werner Herzog was "impressed by his ability to be at a boutique facility doing the sound and then walking 50 yards to the DI suite. Certain filmmakers really get it. It comes down to economics."

When sound mixers Chris David and Leslie Shatz bought sound-mixing facility Wilshire Stages, they renamed it Wildfire Studios and began renovating the entire facility. Shatz recalled director Stephen Sommers driving off at midnight following a 12-hour sound-mixing session to the DI suite on the other side of town. "I thought, 'Wow, these things should be under the same roof,'" Shatz remembers.

Based on a partnership with Hollywood Intermediate, Wildfire now also offers DI across the hall from sound mixing.

David, who reports that Lionsgate's 2008 release "John Rambo" is taking advantage of the side-by-side services, points out another advantage. "With access to the latest picture version on the server, we can have a much higher picture quality to mix to," he says. "Ordinarily, we get very grim, low-res videos to mix to, and it's hard

doing dialogue when you can't see what the lips are doing. We'll still have low picture quality initially, until the DI guys have made some progress, but this will help a lot."

3-D post's new dimensions

Vincent Pace knows 3-D, having developed 3-D stereoscopic cameras with director James Cameron for such films as 2003's "Ghosts of the Abyss 3-D" and the 2009-slated Fox release "Avatar." Small surprise then that Pace hosted Quantel's demonstrations of its Pablo with its 3-D stereoscopic capabilities (*see sidebar on page 2*).

"We've always been frustrated by the post pipeline, so now we're paying attention to blazing a trail through that path," says Pace, who bought the first Pablo with 3-D post features. "We've needed 3-D stability, and with Quantel serving it, we're partnering with them to show that there is a way to move from on-set 3-D acquisition to post efficiently. Jim and I designed 3-D cameras that could bend into the 2-D filmmaking world, and the post path has to do the same thing. Quantel is making that statement with Pablo."

FotoKem also has 3-D stereoscopic post capabilities with its two Quantel Pablos,

currently for use on special-venue and Imax films. "In the caveman days, you'd have to color correct and edit the right eye, then do the same thing for the left eye, and on the third day you'd converge the eyes, cook it all together and play it back," says Bill Schultz, senior vp and general manager of the digital film services division at FotoKem. "Quantel's solution takes a lot of the technical difficulties away. We can do color, editing for both left and right eyes and immediately see the 3-D effect. We're able to compress the schedule to a single day." ■

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