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REEL FOOD'S HD WORKFLOW



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Cooking with HDV

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A unique workflow takes HDV CineFrame 24 to DVD

Producer Steve Kirsh had always thought that a cooking entertainment product like his *Good Cooking: The New Basics* with Jill Dupleix belonged on television, supplemented by DVD sales. But after meeting up with Steve Michelson, president and executive producer of Lobitos Creek Ranch (LCR), a San Francisco-based production studio, he flipped the equation.

About three years ago, Kirsh's Reel Food Entertainment went into business and shot some TV pilots that didn't get picked up. After Kirsh had met LCR's Michelson, however, the model for Reel Food fundamentally changed. They decided to create DVD and web-enabled content with high production values, shot in higher resolution, as their primary product. From there, properties go to cable TV and other media as more of a promotional effort rather than as a strict sales requirement.

"We started with DVD as the core product — it seemed like a simpler business model," Kirsh says. "Then we figured out a technical infrastructure and hooked up with the expertise to produce a truly interactive DVD experience that fuses cooking and culture. That left us with elements that can be repurposed for both domestic and international television, the Web, video-on-demand, and other places."

Michelson believed so strongly in the concept that he bought into Reel Food Entertainment and is now a part owner. Along the way, another leading video and interactive entertainment company, Creative Bubble of New York, joined as a partner. LCR and Creative Bubble then produced the debut DVD, which Reel Food trademarked under the name "CookDisc."

The first DVD — featuring world-famous chef Jill Dupleix — is meant to kick off a series of DVD-published titles with award-winning chefs/authors. It also includes a massive database of recipes, updating the cookbook concept for the interactive era. Discs offer cross-referenced indexes of recipes, ingredients, substitutions, wine pairings, menu planners, and web updates, for example.

As they launched the project, producers faced a web of decisions about production values, formats, workflow, and technical infrastructure. The team wanted a high-quality acquisition format that suited their subject matter — food — but that would also work within their economic model. Retaining maximum quality in the process of editing, and adding effects, and translating a 24p look to DVD were all priorities. The goal was to produce a truly interactive, informational disc that would appeal equally to television and computer viewers and encourage users to explore both dimensions. Finally, the team wanted to come away from the project with an archive of high-resolution assets that could be repurposed. This matrix of aesthetics, user experience, budget, and business plan led them on a path of technical exploration, ultimately yielding a unique product and workflow.

The HDV choice

The team decided to shoot the production film-style, using three Sony HVR-Z1U HDV cameras in combination with a proprietary flypack developed especially for this project. Michelson says HDV in CineFrame 24 mode lends itself to beautiful widescreen food pictures. The decision to go with HDV — specifically to achieve a full-resolution 24 frame progressive look via CineFrame — caused certain postproduction complications. Solving them led to a new workflow for authoring 1080 HDV CineFrame 24 at 480p while preserving the option for higher-resolution deliverables in the future.

While LCR worked out the video side of the equation, Creative Bubble approached its portion of the DVD in the same spirit of adventure and optimization, creating a unique Flash-based database for the ROM portion of the disc. The ROM includes Flash-encoded versions of the videos at reduced resolution, as well as a massive database and reference for all 120 recipes.

Expecting the product to enjoy a long shelf life, Kirsh insists these efforts to maintain high production values were absolutely necessary. Kirsh also believes that this project will provide a technology template for other similar products. (Producers expect to roll out the first CookDisc to specialty shops at the end of this year, with a wider release planned for spring 2006.)



Carl Levine, Creative Bubble's executive producer/principal (seated at right), supervises senior editor Jim Snarski (seated at left), and Steve Kirsh, founder of Reel Food Entertainment (standing), editing the "Using CookDisc" DVD-ROM segment in Creative Bubble's Avid Symphony editing suite.

The use of 1080 HDV CineFrame 24 source imagery, a multi-camera production, the sophisticated ROM section, and other bells and whistles ensure that producers will have strong future deliverables for the franchise, Michelson says. They also meet Kirsh's quality expectations and allow viewers, whether standard def or high def, to enjoy a superior viewing experience.



Designed with a long shelf life in mind, CookDisc features cross-referenced indexes of recipes, ingredients, substitutions, wine pairings, menu planners, and web updates, along with more traditional demonstrational cooking footage.

"DVD is the start, but we have made all deliverables at once," Michelson explains. "Viewers will see a 24p result, which is quite unusual for [a specialty-content DVD production]. Even at standard def, they will see something far clearer and more film-like than what we could have gotten using DVCAM at a lower cost. And all our materials exist at a native HDV frame size. For the DVD, it only gets reduced to SD as the very last step, and quality of the horizontal resolution is far better, with full bandwidth, original material."

LCR conducted a three-camera location shoot for the DVD's cooking segments, setting each camera for 16:9, anamorphic, nondrop frame recording using the CineFrame 24 option. "We shot with three cameras and got two hours' worth of finished content in three days, which is pretty much the standard amount of time you can spend for instructional content and still have it be cost-affordable," Michelson says.

"In this case, we used our three-camera flypack and monitor, which is designed to be completely mobile," he says. "But we can actually configure it to carry up to six cameras anywhere in the world, for other types of projects. In particular, this has great applications for health-and-fitness clients, corporate presentations — anything where you would prefer multiple cameras in an affordable way. In using the Sony [HVR-Z1U] cameras in combination with the flypack system, in my opinion, we have created a signature kind of approach for this sort of production."

For audio, LCR's team recorded multiple tracks both to camera tapes and to a Korg D1200 digital audio workstation. They captured Jill Dupleix's commentary in studio primarily through a Lectrosonic wireless mic, with a second track captured through a Schoeps boom mic. Later, in postproduction, those two tracks were mixed together, depending on Dupleix's movements in the kitchen, along with a third element: ambient sound captured using a table-top shotgun mic for "cooking noises" from countertops and the stove.

Michelson says the Korg workstation proved invaluable during the shoot, since playback could immediately confirm that acceptable sound had been captured without stopping to play back the timecode-synchronized camera tapes. Six tracks were captured on the three camera tapes, with one of them designated as the master synch track. The final mix was later created from those synched tape tracks at LCR using Apple's Soundtrack Pro within Final Cut Studio.

Overall, the HDV consumer price point was the right combination of cost and aesthetics, Michelson says. Further being able to output 1080 HDV CineFrame 24 footage as a 480p MPEG stream (tagged for 16:9) completed the picture for optimal delivery.

"The economics of DVD publishing drove all that," Michelson says. "Along with the demands of this genre's consumer audience for high production values."

The post workflow

LCR's Dan Newitt did the offline in SD on Final Cut Pro 5 using the Offline RT setting. Once picture was locked, the offline project was Media Managed to trim it down to only the elements being used in the cut.

When trying to capture the original 1080 CineFrame 24 HDV footage for the online, Newitt discovered that FCP would not automatically detect it. Instead, FCP would capture the material at native HDV 1080i. (Think of it like a telecine, though that's a bit of a simplification of the relationship between native HDV and CineFrame 24.) Newitt discovered that he could use Apple's Cinema Tools and restore the CineFrame 24 look (like inverse telecine). The Cinema Tools approach, while effective, was not practical because it would be a manual task that Newitt would have to run on all 900 files in the edit.

After further testing, Newitt decided to edit the online at native HDV 1080i, adding titles, transitions, and effects at native HDV. However, the team remained committed to getting the CineFrame 24 look of the shot footage onto the DVD. When it came time to export the MPEG streams for DVD authoring, Newitt encountered another difficulty.

The team tried first to do a software conversion direct from the FCP HDV timeline through Apple's Compressor automated batch-encoding tool that is part of Final Cut Pro 5 and DVD Studio Pro 4 — the authoring tool used by LCR on the project. When this did not produce the desired result, the team members decided to add a step. They would print the native HDV files directly to HDV tape from the timeline — a process they discovered was best done by creating uncompressed QuickTime files and outputting them to the HDV tape master.

"We used Apple's QMaster [2, a utility that is part of Compressor] running through the Tiger [OS X 4.2] operating system," Newitt says, adding that they took advantage of QMaster's distributed rendering feature to essentially build a cluster renderfarm. This offset the shock of rendering HDV after years of experience with DV. "The distributed rendering allowed us to put all our computers to work rendering at night without having to bring in a lot of additional hardware beyond what we already had."

Now the team was sitting on a 1080i HDV master with a final deliverable that needed to be 480p. It turned out that the best way to do the downconversion and MPEG encode — and regain the CineFrame 24 look — was in hardware. "[For the SD conversion], re-outputting the tape and re-capturing at standard definition [DigiBeta] using the downconvert feature in the [Sony HVR-M10U VTR] deck seemed to be the best approach," Newitt says.

Post house Media Link did the DigiBeta capture, then put it through a classic hardware encoding system — a Minerva Compressor C-250 with a Faroudja FFD Inverse Telecine detector, which produced a 480p MPEG stream and restored the CineFrame 24 characteristics of the shot footage. In the process, the encode was also tagged for 16:9 playback. (The MPEG file will play full frame on a 16:9 display or letterboxed on a 4:3 display.) The results of the Minerva encode were exactly the quality and look the team had envisioned when choosing to use the HDV cameras in their CineFrame 24 mode.

"There were two main motivations for the 24p encode," Newitt adds. "First, it meant 20 percent fewer frames to encode at the same data rate, meaning a corresponding increase in quality. And second, with progressive frames on the DVD, we had the best quality and compatibility with progressive playback systems."

ROM building

Meanwhile, while LCR was busy producing other parts of the DVD, Creative Bubble was dealing with the ambitious ROM section. The notion was to make the DVD a true "convergent product," as Carl Levine, a principal at Creative Bubble and the company's executive producer on the job, explains it.

By that, he means that the product should offer enough evolving multimedia capabilities to make it useful long after viewers have watched the more traditional parts of the disc. The hope is that consumers will have the CookDisc running on a web-enabled laptop in their kitchens while they cook, instantly accessing demos, recipes, hints, tips, ingredients, tutorials, and other types of multimedia guidance.

Creative Bubble molded the ROM portion into a sophisticated interactive program that can run on Macs and PCs for cooking and food aficionados. The company developed the approach primarily using a combination of four key tools — Flash MX 2004, Action Script 2, XML, and the Flash Video format.

"The XML fields are utilized to store and index recipes to let the program filter 110 different recipes in different ways — by theme, preparation time, degree of difficulty, ingredients, and other search criteria," Levine explains. "The CookDisc interface itself is very robust, and we did that using Flash MX 2004, providing a rich and intuitive environment to view recipes and itself is very robust, and we did that using Flash MX 2004, providing a rich and intuitive environment to view recipes and full-length videos, and then sharing them by email or Web, and being able to send them to cell phones, PDAs, and so on.

"I can't say for sure if anyone has ever used a Flash database on an educational DVD product in this way, but I haven't heard of it. It's a very new and interesting application for Flash."

After a great deal of R&D, testing, and debate about what form elements should take in the ROM section, Creative Bubble received print assets from Silverback Books, the company that publishes Dupleix's books, and all video material, such as the studio cooking elements and 12 self-contained video recipes, from Lobitos Creek Ranch. The company then built the database, added a DVCAM two-minute how-to video to support recipes and teach viewers about the CookDisc's functionality, created graphics for the how-to video in Adobe After Effects 6.5, and edited all that material in an Avid Symphony 5 system.

All video that plays out of the ROM section was compressed at Creative Bubble using Sorenson Squeeze compression software, and plays on the DVD in a 320x240 window, much like a multimedia or streaming video application.



LCR's Steve Michelson works with TD Ken Beckman (unseen) to operate the HDV flypack monitoring system used during the studio cooking shoot for CookDisc

Because there were so many disparate elements, however, the issue of how to collaborate with LCR, track those elements, and get everything approved efficiently proved challenging. Creative Bubble used its proprietary iApprove high-speed, Flash-based collaboration tool to track the project, Levine says.

"This was a bicoastal production, so iApprove came in handy," he says. "We've been using it for about five years for client approvals. It's essentially a project management tool, similar to an FTP site in some ways, but more user-friendly and intuitive because it is Flash-based and fully interactive.

"The client just gets a single email, and when they have their password, they get everything in one interactive location on the site, and they can also do live chat, put notes, contacts, pictures, and so forth in there. They can download clips and play them as MPEG-1 or stream them in Flash. So it gives us an easy way to keep track of different versions and refer back to previous versions and have it go through all the proper layers."

Putting it together

Eventually, a beta version of the ROM was built, tested, and tweaked, and sent on DVD to Lobitos Creek Ranch, which incorporated it into the final version of CookDisc. It's too early to determine if all the effort and the workflow template developed for the project will produce the desired return; CookDisc will hit store shelves between now and mid-2006. But Kirsh calls the effort worthwhile no matter how it ends up, because he's convinced CookDisc and its descendants will service "the interactive kitchens of the future."

"And, in any case, a multimedia product you can view on your TV, your PC or Mac, that you can use to help you make dinner — that's the best of a typical Food Network type show, or a cooking website, combined," Kirsh says. "But it goes further with the instructional features and additional tools. Keep in mind that DVD is the quickest-adopted technology ever, so the penetration is there. There are over 300 million players in the U.S. alone when you combine set tops and computers. People aren't using them just to watch movies anymore. They are watching less network TV, and with DVD, Tivo, and video-on-demand, they have new options. Now, it's all about doing things at your own pace. This kind of a product is geared toward that concept and that future. We just had to figure out how to do it first, that's all."



Creative Bubble's DVD-ROM interactive team in New York uses the company's proprietary iApprove online system to collaborate remotely with Lobitos Creek Ranch in San Francisco.