

Create Once, Deliver Often

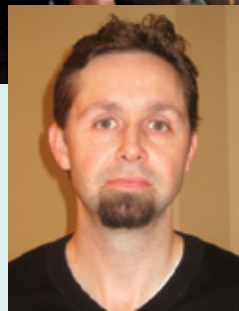
A variety of solutions abound. By Christine Bunish

It's routine for content creators today to ask post houses to take their TV programs, features or commercials and spin-off numerous deliverables for broadcast, Websites and Web portals, Video On Demand (VOD), social media and handheld devices. Repurposing assets for different platforms can be a complex process, however.

"There's no one perfect solution and file type for everyone," says Michael Rebel, manager of digital media operations at Modern VideoFilm. "No one file type will support every deliverable." While industry groups are striving for a standard, solutions currently vary.



Fotokem's NextLab Mobile is a dailies and asset management system that works well with a variety of formats.



Modern's Michael Rebel:
The studio, which works on TNT's *Franklin & Bash*, uses DPX files for its post production workflow.

MODERN VIDEOFILM

At Burbank's Modern VideoFilm (www.mvfilm.com) some TV programming clients not only require multiple deliverables within the post production process — such as proxy files for audio houses, captioning facilities, and executives, directors and DPs — but also need episodes quickly available on Web portals via Apple iTunes, Hulu and Netflix, and clips prepared for YouTube and social media sites, and versions created for international markets.

To turn clients' assets into multiple deliverables, Modern VideoFilm chooses uncompressed DPX files for its file-based post production workflow. "From uncompressed DPX files you can go to tape and create the major file types needed for most deliverables," says Michael Rebel. "DPX files are a good base to start from since there is no compression, and you can get to any deliverable, even if indirectly."

Typically, a DPX file serves as the mezzanine, or mastering, file stored in the digital library. Modern VideoFilm also makes a sub-master mezzanine file — a high-quality Apple ProRes 422 (HQ) file — to store for mastering and to meet immediate needs for VOD, Web portals and international deliverables.

The company employs an array of tools for the process. Digital Rapids' StreamZ and Transcode Manager are used to capture or transcode ProRes mezzanine files to client deliverables. Transcode Manager also transcodes ProRes files for the Web, converting ProRes to AVC H.264. "You get good quality-to-file size with that codec," says Rebel. iTunes works natively with ProRes files.

A versatile DVS Clipster converts DPX files to ProRes mezzanine files. DPX sequences can go straight to tape with Clipster and a Spect-Soft Rave DVR working directly off a StorNext SAN. In addition, the QC bay can control Clipster like a tape machine for quality-control checks of DPX sequences.

Other key components of the post workflow are Autodesk Smoke for editorial, Blackmagic Design's DaVinci Resolve for color correction and Autodesk Inferno for VFX. All run off the StorNext SAN. "The file-based world is changing so rapidly — it's very fluid," says Rebel. "These applications are constantly adding capabilities to support new needs."

Among the shows taking advantage of Modern VideoFilm's file-based workflow are *Desperate Housewives*, *Pretty Little Liars*, *The Lying Game*, *The Walking Dead*, *Sons of Anarchy*, *Torchwood* and *Franklin & Bash*.

DELUXE

The need for multiple deliverables is all about "the rise of choice," according to Gray Ainsworth, executive VP/GM, media services and

entertainment television at Burbank-based Deluxe (www.bydeluxe.com). "Customer demand is more and more dictating how content is made, distributed and consumed. Today, people tell content owners how and where they want to watch content and they, in turn, tell service providers how they want it delivered."

That has meant moving beyond the old model of getting a feature film into the theater or a show on television then warehousing it. "As the timeline of motion picture and TV consumption has matured, there's been more deliverables demanded — foreign versioning and pan-and-scan versions for television," he notes. "Then home entertainment came in and cable with hundreds of potential outlets all requiring slightly different deliverables. Recently, small-screen distribution has exploded in a variety of ways: Internet, cell phone, iPad, game boxes. We seem to be moving to a windowless world of simultaneous delivery on a multitude of devices." And that has resulted in "a massive increase in digital headaches and opportunities."

The headaches are spawned by a "Wild West" landscape of deliverable specs, the necessity for proper asset management, the need for sufficient storage and the issue of automation.

Price pressures also play a role: the expectation that "digital [post workflows] will be cheaper versus the need to be able to make expenditures in technology that enable us to respond" to changing customer demands, says Ainsworth. "We have to figure out new ways to work better and more efficiently with shorter turnaround times and less money."

He reminds us that, "More and more deliverables have been added in every stage of [a production's] life," with post production starting on the set for many projects. At that stage "some deliverables are transitory and some become components of the next stage with files being rendered to become part of the editorial and VFX process. Then editorial and VFX become part of making master deliverables: archival elements and a universal file or physical format for conducting all kinds of distribution activities."

To be nimble enough to meet customers' varied digital distribution specs, Deluxe taps a number of different tools, from proprietary transcoding packages to off-the-shelf solutions from Digital Rapids, Inlet and Harmonic. Deluxe has established a proprietary pipeline for moving content among its units as content moves through its various windows.

Although videotape remains "a pretty robust physical distribution medium, digital is still a work in progress" from a format standardization perspective, Ainsworth points out. "Some standards-making bodies are working on it: SMPTE, the ETC, the Academy. They seem to be getting closer to an acceptable format that can act as a true distribution or archival master. Once you get something that everyone can accept, you'll start to see the Wild West go away."

The rise of choice for consumers and the increased demands on post houses to "manage more of the life cycle of content on behalf of the owner" drives innovation, he notes. "Delivering more efficient workflows to accomplish what we need to do benefits everyone in the long run — the customer, the post vendor and the consumer."

CRAWFORD MEDIA SERVICES

At Atlanta's Crawford Media Services (www.crawford.com), senior editor/technical director Ron Heidt traces the evolution of deliverables for spots and TV programming from the era of tape dubs to today's "countless deliverables," many of them file-based and all with different specs.

On the TV programming front, the massive earthquake/tsunami/nuclear disaster that hit northern Japan last March and affected the supply chain for videotape stock has triggered a change in show deliverables. "The delivery format of choice had been HDCAM SR, but with that and other tape stocks hard to come by in the aftermath of the disaster,

is a huge growth part of our business," he notes. "Using our Web-based asset management system, we take clients' assets, convert them to a digital format for archiving and give them a way to manage those assets from anywhere. We're also focused on automated transcoding and delivery using tools such as Vantage and Rhozet, which allow for customized workflow solutions. Our approach is to provide various file delivery formats on-the-fly as companies ask for them. Once the desired transcodes are defined from the master we can automate the process to various deliverables."

Crawford delivers some reality TV shows and PBS programming to Hulu, YouTube and iTunes. Its *Great Museums* series for American Public Television from Echo Pictures has been delivered to Hulu and iTunes for the last four years. "Everyone has different requirements for slates and commercial blacks," says Heidt. "Hulu recently changed its requirements for how commercial blacks are put in."

The need to accommodate such changes to the final master has merged editorial and transcoding, in some cases. "One of our encoders also runs a Final Cut system so she can change blacks and slates in a QuickTime storage master with an editing program," Heidt reports. "If we could edit out blacks within the transcoding process, we'd do it, but those tools don't exist right now."

He believes that file-format standardization is nowhere in sight, so Crawford is "building a workflow to deliver any deliverable clients need to make."

TECHNICOLOR

Burbank-based Technicolor (www.technicolor.com) prides itself on being "agile and flexible" enough to react to constant changes in deliverable requirements, says VP of distribution services Jed Harmsen. "Intra-market specifications are changing day to day, and every so often there's a new avenue or app that content owners want to get to. You have to be able to traverse these paths with as much agility as possible."

Technicolor's own MediAffinity product is the "one-to-many management and workflow automation tool that takes assets from post, or that we've received from a post house, to the client's order for deliverables," says Harmsen. "MediAffinity automatically takes the source content and pushes it out to transcoding and transformation engines to create the deliverables."

Pre-existing or custom workflow templates outline delivery specs and the method by which to achieve them. "An order will come in,

MediAffinity will pull the source asset, transform it as needed, package it with the required metadata and push it to Apple, for example, then confirm its receipt and report back to the customer," he explains. "MediAffinity is designed for agility: If there's a new player in the market or a customer wants to deliver in some new way, we don't have to develop a new workflow. We just have to add a new output spec and delivery destination to the existing workflow template."

Deliverables encompass a wide breadth of platforms with feature films burned to DVD, versions produced for foreign-language subtitling and dubbing, and trailers pushed to Rotten Tomatoes and the social networks; TV programming needs HD and SD variants for Hulu and other VOD services. Customer to customer, "the end points are numerous as are the methods by which to push the assets," Harmsen says. "It becomes quite a complex network to manage." Technicolor leverages its Technical Production Network, "the pipe that interconnects all our locations," to move assets among its offices worldwide.

Harmsen reports that the major studios and some servicing entities are spearheading an effort to standardize a mezzanine file format. Currently, all mezzanine file formats "have pros and cons," he says. Some Technicolor clients give the company "a lot of latitude" to



The Memphis Grizzlies rely on AmberFin iCR.

select a mezzanine file format that's "as efficient and high quality as possible for their given project. We're doing a lot in ProRes 422 (HQ) and ProRes Quad Four (4444), but customers also really like to use an open source like JPEG 2000, a royalty-free codec. Others [follow] a file format from their workflows, like Cineform.

"While we champion the effort to try to standardize the mezzanine file format, we don't want to dictate how customers have to work," Harmsen says.

FOTOKEM

At Burbank's FotoKem (www.fotokem.com), senior VP Rand Gladden notes that while "most everyone has accepted the fact that file-



Deluxe's Gray Ainsworth: "More and more deliverables have been added in every stage of [a production's] life," starting on set for many projects.

networks began taking files," says Heidt. "We're delivering a CBS show we're working on now on the tape stock we have, but the network told us that they accept three or four different formats for file-based delivery.

"The fact that we finish most of our programming at 24p gives us a universal production format that makes it a lot easier to get to 1080i or 720p — something that's helpful with files as well as tape."

Crawford's roster of national, regional and local commercials are almost always delivered as files today, Heidt reports, even for trafficking systems such as DG, SpotGenie and Extreme Reach. "Few, if any, are on tape anymore. And we store all of our masters as files: We archive every spot or show as a file instead of on HDCAM SR or D-5."

Archiving formats vary depending on the post platform. Most editorial is performed on Avid systems and finished shows or spots are archived as QuickTimes within the Avid codec, typically DNxHD 175x, 10-bit 1080/24p. Content finished on Apple's Final Cut Pro is usually archived as ProRes 422 (HQ) files. "Traditionally, you store masters to give you the easiest way to get back out to another format once the deliverables have been decided," Heidt explains.

Transcoding is performed with Final Cut Studio's Compressor, Sorenson Squeeze, Telestream Vantage and FlipFactory, and Harmonic Rhozet.

"Archiving and storage of file-based media

based delivery [of content] is the proper solution going forward" the shortage of HDCAM SR tape stock following Japan's trio of disasters changed the dynamic. "It propelled the delivery of file elements for longform and shortform television into becoming a reality very quickly. Additionally, we have maintained a leading role in the creation of archive and delivery files from library content pushing out to platforms like Hulu and Netflix.

"Although the post production business tries to drive technology as much as it can, the industry itself is slow to change," he observes. "It generally requires a significant technology advancement or a disaster to push it in a new direction. We've all been testing file-based delivery for some time. Now we have to make it work. And we have."

Brian Drown, director of engineering at Keep Me Posted, a FotoKem company, reports that clients need an array of deliverables for broadcast, from Sony XDCAM i-frame-flavored MPEG-2 to MPEG-4, which takes lon-



Crawford works on the *Great Museums* series. They deliver to Hulu and iTunes.

ger to encode but produces a higher quality image for proponents such as DirecTV, and ProRes 422 (HQ), which has proved to be "a pretty robust file for acquisition and delivery."

With "no one common solution" for multiple deliverables, FotoKem provides a complete package of services to help clients meet their needs. "We have developed tools to use both in pre-production as well as the management of media from beginning to end, from acquisition to final distribution and archiving," says Gladden.

Tools include FotoKem's NextLAB Mobile

dailies and asset management system developed by FotoKem's in-house software team. This system is deployed on location as a mobile solution for production as well as in the cutting room to ingest data, process and sync, archive to LTO-5 tape and push out to the required file formats.

"Every time there's a new camera format we can easily integrate it into our software and establish a complete workflow for a full dailies and finishing process," adds Drown.

Typically, once creative editing has been completed and content arrives at FotoKem, an Avid-centric workflow is followed for "efficiency in editing, color correction and titling," says Gladden. "There's not a lot of transcoding from one platform to another, which takes time and can introduce problems."

FotoKem's Media Services Group employs an "all-flavors approach" to encoding software, adds Gladden, including Sorenson Squeeze, Digital Rapids' StreamZ, Harmonic Rhozet ProCoder, Final Cut Pro, Apple Compressor and many others.

Turnaround time for some deliverables has become increasingly critical. To meet the contracted demands of day-of-air episodic delivery for MPEG-based Netflix and QuickTime-based iTunes, FotoKem "conforms content to the end format needed, adds the required metadata and pushes it out via a private link to Netflix and Apple's proprietary delivery system literally within a two-hour window after receiving the order," reports Chauncy Cummings, director of technology in FotoKem's Media Services Group.

File-based delivery has allowed for international trailer work to meet requirements for day-and-date release, notes Gladden — something that wasn't possible in the era of film negatives and printing. "We've cut out a lot of steps with file-based delivery solutions. We can get a full-resolution trailer out to dozens of countries in a few hours as a Digital Cinema or DPX file." FotoKem's proprietary Web-based globalDATA software moves files quickly anywhere in the world for production and final distribution.

FotoKem still opts for a tiered storage system of production content, nearline

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Repurposing material for multiple platforms, areas

CULVER CITY — Issues involved in multiple platform delivery extend far beyond those related to just formatting programming for the various delivery specs required. Distribution of content today is a global enterprise. Whether you're talking about a TV show being posted online within hours after its initial airing or media that bypasses traditional broadcast channels altogether, the rapidly growing expectation is that programming will go out to an international audience concurrent to, or almost immediately after, its domestic premiere. Gone are the months-long windows to localize content with the appropriate subtitling necessary for every territory in the world.

SDI Media (www.sdimedia.com), headquartered here, has specialized in localizing content — dubbing, subtitling and otherwise repurposing theatrical and broadcast content for territories worldwide — for over 25 years. In order to accommodate client demand to repurpose material for multiple territories and the growing number of platforms within days, or even hours, the company has recently unveiled a new service, SDI SubStream. SDI's new service is designed to significantly streamline the process of delivering subtitled versions of content localized for multiple territories and in any number of formats — to online platforms more quickly and efficiently than has previously been possible.

SDI SubStream leverages SDI's proprietary subtitling systems and workflows, in conjunction with plug-in technology, to link to the online video player and directly reformat and display multiple subtitle streams across a single video file.

"Traditionally," SDI's CEO, Walter Schonfeld, explains, "when content was only being repurposed for television broadcast and there were significant windows to do the work, the program and the subtitling files would go to a post house which would have to generate separate versions of the show, complete with subtitle burn-ins, for each territory. Today, broadcasters want to post their material for catch-up TV, VOD, streaming and mobile devices, often within hours. It's not practical to "bake in" the subtitling information for every territory anymore, and even if it were, the costs of individual versioning make it impractical.

"By separating the show from the subtitle files," Schonfeld sums up, "SDI is able to significantly increase efficiency, compress schedules, avoid issues of versioning complexity, and vastly reduce the amount of actual media and manipulation necessary to publish content quickly throughout the world."

[*Cont. from 27*] storage and LTO-5 or even HDCAM SR offline storage. This tiered model allows content to be “quickly retrieved and back online for additional distribution at a later date,” says Cummings.

FotoKem has provided work for the feature *Contagion* and television’s *Homeland*, *New Girl*, *Californication* and *Necessary Roughness*.

MEMPHIS GRIZZLIES

In the broadcast department of the NBA’s Memphis Grizzlies (www.grizzlies.com), the need to produce multiple deliverables from assets is constantly increasing, according to director of broadcast operations Brett Smith. The department is responsible for producing content for in-arena shows, creating TV spots, producing features and special coverage for the team’s regional sports telecasts, packaging presentations for the sales and marketing group, and supplying all video content for the Grizzlies’ Websites.

Source and distribution formats run the gamut. Original content is acquired in 720p while highlights and feature feeds from the NBA come in as 1080i MPEG-2 files. Broadcast distribution is XDCAM HD, but in-arena displays are SD and then there’s Web content. Smith and his five colleagues, two of whom are producer/editors, have their hands full.

Despite those challenges, the process is surprisingly pain-free thanks to an AmberFin iCR system. The department originally turned to AmberFin when it was looking to transcode to its Avid Symphony and Nitris DS systems, and now an AmberFin iCR is the hub of its workflow, used for ingest, transcoding, review, SD-to-HD upconverts and soon lay off to archive.

Smith likes the ability to set up watch folders, which enable any files loading in the folders to automatically be output to a pre-determined file format. “You can have one for DNxHD, one for the Web, one for SD,” he says. “There’s no need to go back in and reset parameters and work with

individual files over and over again.”

During basketball season the department reviews low-resolution NBA game footage nightly and selects clips for possible use in future deliverables. “We choose highlights from a particular game and the NBA network then downloads them to our server. The location is actually an AmberFin watch folder, which automatically outputs the file formats needed and sends an e-mail when the job is done. By the time our editors come back in the next day, everything is done and waiting for them.” The system also speeds up the process of delivering post-game locker room interviews for the NBA Website. “We get an HD feed from the truck that goes directly to AmberFin. By the time the feed is finished encoding, it has already started uploading to the Website. We can complete eight interviews in under two hours,” Smith notes.

He credits the system’s ability to pre-build templates for AmberFin iCR to the specs of the end user or platform — 1080i MPEG-2, DNxHD, XDCAM and more. “I can grab an NBA 1080i MPEG-2 file and if I want it to become a DNxHD file or an XDCAM file I simply use the template I prebuilt,” he explains. “The system doesn’t care what file format it ingests. It just wants to know what you need to output.”

Smith is impressed by the system’s handling of slo-mo footage — something that’s ubiquitous in sports. “It’s less jittery than with other systems I’ve seen,” he says. “Our producer/editors are really quality oriented, and they had constantly complained about the look of slo-mo on the Internet. Now, they’re really happy with it.”

AmberFin iCR has proved to be invaluable to the Grizzlies’ broadcast department. “It’s been like having a couple more employees,” says Smith. “It reduces our production time; frees our producer/editors to produce and edit; works seamlessly with our existing Avid editing, storage and sports production workflow; and reduces the content-to-Web lag time we experienced in the past.”