

## FILE-BASED WORKFLOW

Today's file-based acquisition technologies come in many forms and codecs. Consequently it is common to find acquisition tools ranging from GoPro to F65 on any one production. To effectively manage the various files and metadata created by these tools, it is important to use efficient software tools for data management and dailies creation. Ideally, the tool used for data management should do more than ingest files, sync audio, color dailies, and duplicate and transcode files for editorial applications. Best practice dictates that systems be used which "manage" data from set to post to ensure metadata continuity through finishing.

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### General File-Based Workflow Objectives

1. Safely ingest and manage camera original media
2. Maintain a database of all file activities and workflow preferences
3. Automatically sync sound
4. Apply and manage color looks and LUTs
5. Transcode for multiple delivery requirements
6. Archive files to LTO or other archival
7. Generate comprehensive reports based on metadata collection

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### Basic Objectives

#### 1. Safely Ingest and Manage Camera Original Media

Ingest camera original media, preferably to RAID6 persistent storage. This will provide the highest level of redundancy should a drive failure occur. As files are ingested an automatic checksum (a mathematical comparison of original to duplicate file) and verification procedure should be applied to ensure the duplicate files recorded to persistent storage are exact duplicates of the files being received. Checksum's should also be applied to any duplicate media, to ensure that duplicate files exported to VFX or to archival LTO are indeed exact copies to the original capture files.

#### 2. Maintain a Database: Log All File Activities, Workflow Preferences, and Project History

To effectively manage the data, the system should be capable of creating specific project metadata as defined by the project Data Manager or DIT. For example, metadata might identify media by shoot day, episode, scene & take, source device, etc. Tagging ingested media with metadata allows for more efficient tracking of files throughout the entire production/post process. This metadata should not only be embedded in file headers, but it should ideally follow the media via a mirrored project database. Assuming the database also records each file transaction, a running project record can be maintained. This practice also enhances media security by making it possible to generate comprehensive project histories and customizable reports, on demand.

#### 3. Automated Audio Sync

Automated audio syncing can be accomplished in a number of ways, but utilizing time-of-day time-code comparisons between associated picture and sound files is considered best. Should picture and sound references be disparate, the system operator should have the ability to manually slip the audio to proper sync offset. If the system records all transactions in a database, the database should automatically record any sync relationships, or offset adjustment, for immediate and future reference. In cases where no time code exists, the system should be capable of assigning new time code to the file, as metadata, and the system sync function should recognize that assigned time code going forward for transcoding and future sync requirements.

#### **4. Apply and Manage Color Looks**

Most on-set data management systems offer full RGB ASC CDL color control (e.g. lift, gamma, gain, and in some cases curves). The ability to save all color presets, color history, custom Color Decision List (CDL) "Looks," and imported Look Up Table (LUT) settings, as metadata, to a database, is highly preferred over systems that simply apply color Looks and LUTs to transcoded media. Having all color decisions recorded to a database as metadata ensures color decision made on-set, or in the dailies process, are not lost should metadata be stripped from file headers as media is ingested, altered, and exported from various processing platforms throughout the post and finishing process.

#### **5. Generate Comprehensive Reports**

Accurate reporting is a key organizational aspect of data management from acquisition to post. Utilizing data management tools that are capable of creating comprehensive reports from a database record is preferred. Otherwise reports must be generated by hand taking significant time, and possibly resulting in omissions or errors.

#### **6. Transcode for Multiple Delivery Requirements**

In most cases, more than one type of media will be required when transcoding original acquisition files for delivery to editorial and dailies viewing. Consequently, choosing a system that is capable of creating multiple forms of proxy media, simultaneously, is important. Systems capable of creating proxy media in the background while still ingesting new media for sync and color work maintain efficient throughput and enable the operator to keep up with production.

Media requirements may include multiples of any iteration of Avid DNX, ProRes, MPEG 4 H.264, MPEG 2, Quicktime, .dpx, Open EXR, and other files. The system may also be required to create viewing dailies for internet streaming or DVDs. Ideally, a operator should be capable of creating "circle take only" playlists and make custom audio channel assignments, and custom crop and burn-ins for each deliverable.

#### **7. Archive to LTO**

The final step of data management is archiving. LTO tape archiving is the most common form of long term data storage in use today. Its shelf life is projected at 15 to 30 years. The typical LTO-6 tape holds 2.5 TB of information. When creating LTO archive tapes, they should be verified by

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## **Additional Information**

### **3D Tools**

When working in Stereo 3D the need for efficient data management becomes twice as important as there is now twice as much data to manage. Choosing a data management tool that provides 3D media management with color and convergence controls is highly recommended. The selected system should be capable of creating 3D offline media or Hero Eye media for viewing and editing. It should also be capable of full quality real-time 3D render for viewing and color correction, and offer quality control functions.

### **Cameras in Common Use Today**

Arri Alexa and Arri 65, Canon C300, C500, 1D C & C100, RED Dragon, RED Epic, Sony F65, F55, F5, Panasonic Varicam, and all other cameras employing XDCam and Cineform formats.