



Steps In Audio Post

An overview of what becomes of your sound.

When producing a film or video project, there are a number of sound elements that you may need over the life of the project. Here is a brief description of the steps that are likely to be involved. Projects that move through multiple frame rates may have additional steps. This description is centered on the Pro Tools digital audio workstation, which is the primary audio system used at DuArt.

Production sound

This is sound that is recorded when you shoot the project, often a 2 track format. Flash recorders are made by Sound Devices, Fostex, Sony, Tascam and others and often record to the .wav file format. Hard disk and random access formats include Deva, Fostex DVD, Aaton, and others. Varieties of tape formats include DAT, 1/4" tape, and video tape.

Sound editing during the picture edit

The production sound gets loaded into a non-linear editing system (NLE) such as Final Cut Pro, Avid, Premiere, and others. Some systems, notably Final Cut and Avid, are friendlier to later doing sound work in other systems, which in our case will be Pro Tools.

The production sound is typically one or two tracks; once in the NLE there are many more tracks available. This feature is useful for adding more sound and for organizing it to be mixed. In the old days, we tended to do minimal sound work in the picture editing system and then do a sound edit where effects and music were added. Today the sound edit often happens during a picture edit in the NLE or there can be a separate edit in Pro Tools depending upon the needs of the project. Documentaries and other less-complicated forms are frequently prepared in the NLE by the picture editor. Narrative features often have a separate sound edit in Pro Tools to allow for more involved dialogue, music, and effects work.

An edit that is properly prepared for mixing can be anywhere from a few tracks to a hundred or more. A typical track layout for documentaries uses between 10 and 24 tracks. Simple narrative features fall between 24 and 40 tracks. More complex projects requiring detailed sound design and 5.1 finishes will usually use more tracks.

OMF export

Let's say that you have 16 tracks of sound in your Final Cut Pro system. You've got 8 tracks of dialogue that have been arranged by scene and the kind of microphone used. There are 4 tracks of effects to add a bit of atmosphere and there are 4 tracks of music (2 stereo pairs). You've taken the sound work as far as you can in Final Cut and you want to give it to a person with a Pro Tools system to



make it better by mixing it. There is a way to transfer your existing sound work intact from Final Cut or Avid to Pro Tools called an OMF export. This means that if you have 16 tracks of audio in your picture edit, those same 16 tracks can be turned into a Pro Tools session, including the audio media. This is the fastest, simplest, and most efficient method of getting your sound into Pro Tools.

I cannot give you a click by click guide to doing an OMF export, as systems vary; you will have to consult your manuals for that. Here's an FAQ:

Can every NLE system do an OMF export?

No. The system must support OMF exports as part of the software. Final Cut Pro and Avid support OMF exporting as a standard feature. Higher end Avid systems can also import OMF's. Pro Tools supports OMF exports and imports, but you have to purchase a special software upgrade to make it work. If you are in doubt, consult the manufacturer of the NLE.

What is included in the OMF export?

Audio media on the timeline is included. Clip based gain and those little triangular rendered fades are included. Effects are not included. Picture is not included.

Are there any particulars to the OMF export that I should know?

Yes. If there is an option, exports should be type 2. Exports should be embedded, in which all of the audio media gets rendered into a big, fat file. The sample rate of the export should match the sample rate of the NLE, which is often 48 kHz. You should specify generous handles for the audio; let's say 300 frames, which are used to help smooth everything out in the mix. You should generally not process the sound in any way prior to mix; don't use equalizers, compressors, or other effects.

How do I get the OMF to the sound person?

Export the OMF to a hard drive and bring us the hard drive. You can also burn it to CD or DVD. We've also received OMF's by FTP, on ipods, and jump drives. Email and FTP may be more trouble than they're worth due to large file size.

Can the OMF get screwed up?

The OMF usually works well. When there are problems they are in one of two areas: the export was done improperly or there is some transfer issue, like the hard drive not mounting or the CD not being readable. Good practice means getting the OMF to your sound folks a few days in advance of the mix so that the export can be redone if necessary.

Are there any alternatives to the OMF?

Yes, there is also the AAF (Advanced Authoring Format), which is used now by Avid instead of the OMF. For audio it works pretty much the same way.



Sound editing in a Pro Tools system

Once we get the OMF, we can go to work in Pro Tools. It is possible to do more detailed dialogue work here as well as adding more sound effects: hard effects like doors slamming, phones ringing, and ambience effects. Pro Tools is great for additional sound design work. If the job is particularly detailed or complex, several Pro Tools systems may be utilized: one for dialogue, one for foleys, one for other effects, etc. The sound editors or the audio post production supervisor will usually figure out who gets what.

Music composition and editing

Somewhere in this process, music is either composed or edited. If a composer is creating original music, they will use their own recording system which may be Pro Tools or any other high-quality music recording system such as Logic, Cubase, Digital Performer, Nuendo, Cakewalk, or others.

Mix Preparation

All of the above types of audio – dialogue, music, and effects – make up the *sound elements* of the project. Once all of the sound elements have been recorded and edited, they must be organized for the mix. For many projects this means that all of the elements are put in a single Pro Tools session. To fit the tracks into the available Pro Tools system, some of the elements may be premixed into fewer tracks. Premixing can narrow the options during a mix, so it should be carefully considered. Premixing is very common in the area of composed music. The composer will often deliver completed stereo, 4 channel, or 5.1 mixes to be dropped into the mix session. The process of mix preparation can take anywhere from a couple of hours to several days depending upon the project.

The Mix

All prepared elements are now mixed. This means that all elements are equalized, balanced in volume, and overall volume is set. Effects such as reverbs, telephone, and TV futz are added. The final output format, be it mono, stereo, 5.1, or other, is set. The time required for mix is highly variable, depending upon the project. Short films for screening or festival purposes can sometimes be done in a few hours to a couple of days. Features can take from a few days to a week or more. Programs for broadcast can take from a couple of days to a week or more depending upon length and complexity.

Layback, file output, and print master

Upon completion of mix we will have sound with the proper number of channels: mono, stereo, LCRS, or 5.1, but it will not yet exist on the finished master tape or print. If you are making a video tape of some sort, be it NTSC, PAL, or HD, there must be a “layback” when the sound is recorded onto the final master tape. If there are multiple versions of the project, such as with text and without text, there will have to be multiple laybacks. If you are outputting your own master from Avid or Final Cut, we can render out mixed, continuous sound files for import back into your system. If you are making a 35mm print, there must be a “print master,” when a master audio tape or magneto optical disk is



made that will be used to shoot an optical track negative. If the format is stereo or LCRS, the format can be DAT, DA88, or MO disk. If the format is Dolby digital, there will be an MO disk. If the format is DTS digital, there will be a DA88. Laybacks and printmastering can take anywhere from a few hours to a day or more, depending upon the needs of the project and are considered to be mixing time.

Other sound elements

Once the mix is completed, there are a variety of additional output options. It is frequently desirable to have the final mix in the form of sound files; two files for stereo, four files for LCRS, six files for 5.1, etc. These elements are usually either AIFF or WAV files and can be copied to the client's hard drive. They can be imported into an NLE if additional outputs are done outside of the mixing room.

Mix stems, also called splits, are useful in the event that there will be trailers or alternate versions of the film made on an NLE system. Stems split out the various elements of the mix (dialogue, narration, effects and music) into separate tracks so that elements of the mix can be removed at will without going back into an expensive mix room. A stereo mix will call for six stems (mono dialogue, mono fx, fx left, fx right, music left, and music right). A 5.1 mix will call for 12 or more stems. Stems can be created after the mix is completed and usually takes two to four hours for a feature if the pre-mix elements have been prepared properly.

Music and Effects

Another output that may be needed is a Music and Effects track, also called an M&E. An M&E is needed when the original dialogue of the film is to be replaced with dubbed dialogue in another language. This may seem unusual, but many films are picked up for distribution in foreign countries first. Some M&E's are very simple, as in a documentary with narration. In this case, the narration track is turned off and the mix is output without narration, which will be re-recorded in the new language. In a documentary, it is not customary to dub dialogue for interviews; rather, they are subtitled. A narrative film is more complex. The original dialogue must be stripped out, which also removes any non-dialogue sound recorded in the production tracks such as footsteps, movement, etc. Ambience must be edited in to smooth out the holes and foleys (sound effects recorded in sync with the picture) must be recorded to make it all sound more normal once the foreign language is dubbed in. An M&E for a feature takes a week or so of editing, foley and mixing and can add significantly to the budget of a modest project. Once the M&E is created, it must be laid back to the final format. Clients sometimes wait to do the M&E until after the film is picked up by a distributor. Access to the original Pro Tools mix elements can make the M&E go faster, alternately you could start with mix stems and go from there.

With all of these types of sound output available, it may seem a bit overwhelming, but it may not be necessary to generate all of these elements at once. Producers who have not yet secured distribution for their project often start with just the mix and maybe a set of stems. If you have a distributor, they should provide you with a deliverable sheet that specifies what they will need from you. Your sound mixer should see the deliverable sheet.



Picture reference

Throughout the audio post process, the sound engineers will need a picture reference with sound. This is a Quicktime or tape that has been output from the picture editing system that contains the final cut of the picture, an output of the sound and time code. The picture reference is essential for the sound people to know what is going on in your system. For editing work, an offline output is acceptable; that is to say an output from the picture editing system. For mix, the final picture is greatly preferred. For video work this would be a master tape generated during an online session. If you are not doing a real online session, then it would be your final master tape. For a 35mm print, a telecine of the answer print is needed. If your 35mm print is from a tape to film we can use the 23.98 HD master.

The audio post process can be complex. It is highly recommended that the picture be completely finished and locked before starting the sound work. Prior to mix, have all visual elements completed; credits, titles, and anything else that the audience will see. This will save you time, aggravation, and money. It's not so much about keeping us, the post-house happy, it's about getting your project completed properly for the budget you have and avoiding costly surprises.

On the following page is a flow chart of possible audio post workflows. Note that there is more than one path to a finished product, and not every project needs every sound element.

