

DIGITAL SOUND TO PICTURE

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THE AMS WAY

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STUART NEVISON, DIRECTOR AMS

AMS delivered their first AudioFile Hard Disk based audio recording and editing system in November 1985.

Since then over 400 units have been installed world-wide and the features, facilities and mode of operation of AudioFile have changed significantly to allow it to better serve the needs of the video and film post production industry.

Experience and a growing understanding of the requirements for post production have led AMS to make a considerable Research and Development investment into upgrading AudioFile into a complete digital audio workstation offering a speed and flexibility of working previously unavailable.

With the first few companies now having taken delivery of both Logic 1 and Logic 2 dynamically automated digital mixers, the combination with AudioFile is producing a new and highly creative way of generating soundtracks for film and video.

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### DIGITAL SOUND TO PICTURE - THE AMS WAY

With the increasing number of hard disk systems appearing in the market-place and the growing number of articles appearing in the trade press, the awareness of individuals in terms of what to expect from such systems has risen significantly.

The division between hard disc based musical instruments, stereo editors and systems dedicated to working with picture is becoming clearer.

The main advantage of recording audio on Winchester hard disk rather than tape or sepmag for working to picture, is that the information can quickly and accurately be non-destructively edited and arranged to playback in a multi-track form. Any track can be advanced or retarded independently to achieve synchronisation of sound and picture - a task that is impossible with multitrack audio tape. A further valuable side effect of the inherent rapid random access capability of the hard disk, is that the locking together of a disk and a mechanical film or video transport is fast to work with compared to typical film/video transport locked by a synchroniser to a mechanical audio transport.

So, increased flexibility whilst at the same time offering a higher speed of operation is what all manufacturers of hard disk based systems are targeting - and any potential customer interested in such a system should satisfy himself that the system he chooses offers this above all else.

Fundamental features that are considered essential in providing speed and flexibility of operation have evolved during the development of AMS AudioFile and include:

a) Direct mono, stereo or multitrack audio recording/playback either without or against timecode.

b) Both analogue and digital record/playback capability with digital sampling selectable between 44.1kHz and 48kHz and a range of popular digital interfaces to permit direct digital transfer between the most popular professional and semi-professional digital recording and digital playback systems

c) Non destructive digital sample accurate editing, with implementation of full audio bandwidth reel-rock simulation for ease of edit point location.

d) Dedicated software for track laying of sound to picture with internal audio level, pan and crossfade control for each individual recorded event.

## Proceedings of the Institute of Acoustics

### DIGITAL SOUND TO PICTURE - THE AMS WAY

e) Sophisticated Cut and Splice editing for soundtrack repair with full assemble or insert recording capability.

f) TimeFlex. A real time compression/expansion software algorithm capable of allowing recorded sound to be expanded or compressed whilst maintaining original pitch in order to more easily make sound fit picture.

g) Internal time code reader and synchroniser permitting direct control from the AudioFile control surface of external video machines, dubbers or projectors.

h) Ability to accept 24/25/30 and drop frame timecode and integrate different standards in a single audio event list.

i) Automatic Dialogue Replacement (ADR) software providing external machine location and cycling with automatic multiple record drop-in/drop-out capability.

j) Automatic track laying of audio whilst under external control of a video editing system.

k) Automatic audio ripple-through to accommodate picture edits.

l) Digital Audio back-up/archiving via inexpensive Sony 701/601/F1 or R-DAT tape recorders or, more expensive but faster tape streamers or magneto optical re-writable discs.

m) An open hardware architecture to allow future system growth.

Whilst these are considered as important features that have grown out of suggestions from a broad cross-section of everyday AudioFile users, even having them all present in a system represents only a partial solution if they have not been designed to work harmoniously together.

The power of a hard disk system means that it should be able to be employed to perform any or all of the functions that are considered everyday requirements by those of us working with sound to picture.

Effects editing, dialogue editing, post synching, track laying and of course dialogue replacement or dubbing. Examples of individuals performing any or all of the above functions are easy to highlight. Work can range from ten second radio commercials to full length feature films.

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### DIGITAL SOUND TO PICTURE - THE AMS WAY

The one thing AudioFile can't do is mix and this single thing, up until very recently, has been the only thing preventing a complete project from being realised exclusively in the digital domain.

The question may well be asked, is it of value to keep a project digital throughout? The answer is complex!

There is no doubt that a hard disk system can do away with increase in noise and loss of audio bandwidth associated with continual overdubbing and copying on any magnetic tape based media. However, a good analogue desk should not result in any significant audio degradation.

Where the correct digital desk in conjunction with a hard disk system can really be of benefit is again highlighted in the original desire for getting involved with a disk system in the first place - speed and flexibility of operation.

With those initial two goals in mind the AMS series of Logic consoles have recently emerged. Not only are they completely digital, but they offer full dynamic automation control of every available function. What does this mean?

This means that sound effects, music, dialogue etc, once recorded, edited, synchronised via time code to picture on AudioFile, can finally be mixed to picture with dynamic changes to any control settings being memorised.

Fader automation systems have been around for quite some time and their benefit during mixing are well understood. If a mix is performed and any level adjustment on a single channel or more is deemed necessary - the automation can be put into update and manually the level can be corrected on the next pass, automatically writing the new information to the automation system.

How does Logic 1 improve on this? Not only has every function on Logic 1 got the ability to be updated and memorised, but positional information and velocity of all control knobs as well as faders are memorised by the automation system.

The functions that can be taken advantage of under this control include pan, auxiliary effects sends, 4 band fully parametric EQ per channel and full dynamics processing per channel. Finally each channel on Logic 1 can be chosen to be mono or stereo with line or mic input, pre or post fader monitoring and insert point selection. So how much more complicated than an

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### DIGITAL SOUND TO PICTURE - THE AMS WAY

analogue mixer is this new digital mixer? From the console appearance the mixer could be mistaken for an analogue mixer!

The advantages of such a system only begin with the dynamic automation. The combination of the power of this mixer and the fact that AMS AudioFile can actually be a 1000 track playback system provides for a system where any premix or submix can be recalled with no more than the pressing of a couple of keys. Where submixing of tracks has previously been a last resort approach when running out of tracks on tape - the fact that all the dynamic elements of any submix can always quickly be recalled for adjustment or update brings a new flexibility to mixing of audio on disc.

Even for the traditionalist who may initially find this latter approach uncomfortable there can be no denying the immediacy of appeal of an additional feature of the system. What is interesting is that this particular feature may even prove to be of greater interest to our colleagues who are purely interested in pictures.

The event list on AudioFile is very similar to the edit decision list used by video tape editors. Indeed, software developed for AudioFile allows audio to be automatically track-layed on AudioFile whilst under the control of certain video edit controllers. In a similar way that a vision scene can be cut from a video EDL when all vision edit decisions can be commanded to ripple and produce a new edit - AudioFile's audio event list can provide the same facility for all audio events. This is nothing new to AudioFile owners, however if the AudioFile in question is linked to a Logic 1 - then not only do all the audio events ripple up to match the picture in perfect synchronisation, but also the possibility exists for all the dynamic desk automation to ripple as well.

Every recorded event can have its own dynamic automation data locked to it and a virtually unlimited number of tracks can be slipped synchronously, or against each other, with unique dynamic mix automation information for each sound retained intact.

And the benefit of this to our colleague the picture producer or editor? Quite simply a creative change of heart that requires a picture edit, whether working with film or video tape, can be made right up to the end of a session without the problems of dubbing and mix engineers having to tear their hair out with cries of "back to the drawing board"!

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No longer do changes to picture necessarily result in knock-on delays to a project because of necessary and time consuming audio repair work.

But surely it is too expensive to incorporate every sound editor with an AudioFile and a digital mixer? The answer here is maybe, however the ability to have several AudioFiles together feeding edited audio or even edited and synched audio information to an AudioFile and Logic 1 combination already features high amongst the plans of a large number of existing AudioFile owners.