

# DAI 575 Design of Virtual Worlds

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## Info Sheet: Sound in AXEL

### SOME BASIC INFORMATION

- In AXEL, multiple sound files can play simultaneously, each with its own volume, R/L pan volumes, and triggers.
- The Play Sound Reaction sounds can play simultaneously with sound from a digital video file.
- You can see the amplitude graph of the sound in the Sequence window.
- To hear a sound you have already attached to a sensor, reconnect it to the Time Sensor and then Play the Sequence OR add a second temporary link to the Time Sensor (at a different time) and then Play or drag the playback head to hear it.

### WHICH SOUND FILE FORMAT YOU ARE USING IS IMPORTANT

AXEL can use .wav, .mpeg/.mpg, .mp3 and .midi sound files with qualifications.

AXEL and .wav files: AXEL only uses the PCM (pulse code modulation) type .wav files because they are uncompressed. AXEL does its own compression when you publish the .axs AXEL stream file

If you are using SoundEdit16 to create or edit your sounds, note that "Save as" produces the correct format .wav file but that "Export" does not.

Converting file type: An easy way to do this in the 3Space Lab is to use the Sound Recorder accessory via Start > Programs > Accessories > Entertainment > Sound Recorder. You can open your sound file format, look at its File > Properties. Then, you can Save As another format.

### KEEP SOUND FILE SIZE TO A USABLE MINIMUM

Sound file size can greatly increase .axs stream file sizes and therefore download times (read the AXEL online manual section on download times). The parameters that determine the digital sound file size are duration, sample rate, bit depth, and compression. For reducing the file size of a given duration sound, the two most useful are sample rate and bit depth. When you change these parameters to reduce file size, be sure to listen to it to evaluate and always save your edited files in a different name than the original in order to retain your source file at its original resolution just as you would a scanned image.

Any sound editing program, e.g. Sound Forge or Sound Edit16, will offer control of these parameters. In the 3Space Lab, you can easily tune sample rate and bit depth using the Sound Recorder accessory via Start > Programs > Accessories > Entertainment > Sound Recorder. While in the Properties mode of Sound Recorder, note the button to the right of the Properties display that says Convert Now. Sound Recorder can also be used for simple mixing.

### MULTIPLE REACTIONS USING SAME SOUND?

When you create a Play Sound Reaction, the sound file is copied to the local "Sound" folder, i.e. closest to the .axel authoring file. If that folder does not exist, AXEL will create it. If you are using a single sound for more than one reaction (for the purpose of varying playback parameters, e.g. volume), you

can optimize stream file size and download time by simply referencing that sound file already copied to the Sound folder.

### **COMMON PROBLEM: INCONSISTENT SOUND PLAYBACK**

Problem: I have two .wav files that play fine on my system in IE Preview mode but that don't play in AXEL preview mode and don't play on the web site. What's going on?

If the play sound reaction is triggered by the time sensor, and the trigger happens before the sound has downloaded, then it won't get triggered (because that time has already passed). The reason it will play when using Preview in IE is that the sound is local and doesn't have to download. The reason it doesn't play in Preview in AXEL mode is because download simulation is on.

To fix this, you have a few choices:

- Don't stream the sound, meaning that it will be downloaded before time 0;
- Stream the sound, but make sure the time that it is triggered at is later than the time it takes to download;
- Stream the sound, change the time delay on the trigger to more than the time it takes to download;
- Connect the play sound reaction to a download sensor of the sound file (on download complete play sound)