**Appendix D1.5: Glossary**

A/D Converter (Analog to Digital Converter): ADC – A generic term for an analog to digital conversion device. This device measures (samples) an analog signal at specific intervals and converts those measurements for output into a digital audio file or as a digital stream. An ADAC (Analog to Digital Audio Converter) is a conversion unit specific to audio digitization. An ADVC (Analog to Digital Video Converter) is a conversion unit specific to video digitization.

Amplification: A process that increases the power level (loudness) of an audio signal. Although amplification technically refers to an increase in signal strength, amplification circuits (analog,) or processes (digital,) generally will modulate the signal strength either up or down.

Audio Signal: An electrical signal, which transmits a representation of varying sound pressure as voltage. This signal is used to transmit sound from one audio device to another.

Binder: Top layer of magnetic audiotape, which holds magnetic oxide particles (see Oxide Particles.)

Bit (Binary Digit): Smallest unit of digital information. A bit only has two values 0 and 1 (on/off.)

Bit depth: The number of bits used for each sample in a digital media file. The greater the bit depth used in digital media, the greater the potential accuracy of the digital audio. A larger bit depth allows for more numbers that can be used to describe the sample.

Bit Rate: A measure of how much digital information flows in a set amount of time in audio or video media. This measure depends upon the bit depth (bits per sample,) and frequency (samples per second.) An increase in either bit depth or frequency will increase the bit rate of digital media. Audio or video compression will lower the bitrate required for digital media.

Broadcast Wave Format (BWF/BWAV): A standard for storing digital audio data, developed by the European Broadcasting Union (EBU), which is an expansion of the Microsoft WAV audio standard. The BWF file expands upon the metadata embedding capabilities of standard WAV files. BWF files support PCM audio encoding and MPEG-1 audio encoding. Although the BWF standard allows for compressed audio files, compression should not be used in audio preservation applications.

Cassette Shell: Hard, plastic cover that encases the magnetic tape.

Clipping: The change in an audio signal waveform when the signal level exceeds the maximum voltage of any part of an audio system. Clipping manifests itself as the horizontal flattening (or clipping off) of the top a normally smooth waveform.

Decibel (dB): A unit used to measure the intensity or loudness of sound. The decibel scale is logarithmic and represents relative audio power rather than a linear representation of audio pressure.

Equalization: The emphasis or de-emphasis of audio based on frequency range(s). A common, and simple, implementation of equalization is the adjustment of Bass (low frequency) and Trebble (high frequency) ranges in consumer stereo equipment.

Flutter (see also WOW): Unwanted rapid variations in the mechanical speed of a media playback device. Such changes in playback speed cause unwanted variations in the frequency, and therefore pitch, of a resulting audio signal. Flutter is often caused by a rapidly vibrating component of a playback device or by tape rapidly sticking and slipping along a tape path due to friction.

Frequency: A measure of repetition of certain phenomena over a given period of time. In audio, "frequency" can either denotes the number of sound waves in a given duration (typically measured in Hz or kHz), or the number of samples recorded in a given duration for a digital audio file.

- Sound Frequency: "Frequency" as used to measure the occurrence of sound waves is commonly referred to as "pitch." As the speed of sound is constant "sound frequency" has a direct relationship to "sound wave length," and are sometimes used interchangeably. The frequency of a sound generally changes constantly over time. A sound where the frequency does not change would be called a "tone."
- Sample Frequency (see also Sample-Rate): "Frequency," as used to denote the occurrence of audio samples in a digital audio stream or file, is a setting rather than a measurement. The sample frequency of digital audio does not change. Frequency as a digital audio parameter instructs digital audio hardware to sample the analog audio signal at a specific rate, and instructs digital audio playback devices to play the samples at the proper rate.

Gain: The adjustment of the power level of an incoming audio signal (input) to a desired power level of the outgoing signal (output.)

Hertz (Hz): Unit used to measure frequency. One Hz is, by definition, one occurrence per second.

Hub(s) (Audio Cassette): Two plastic cylinders around which the audiotape is wound.

Inputs / Outputs: Ports of an audio device which either accept incoming audio signals from another device (e.g. microphone, amplifier or ADC) or send audio signals to another audio device (e.g. amplifier, ADC or speakers.)

Kilohertz (KHz): Unit used to measure frequency. One kHz is, by definition, one thousand occurrences per second.

Lossless Compression: Method of encoding digital audio, which reduces the storage requirements of the digital audio without altering or discarding any of the audio data.

Lossy Compression: Method of encoding digital audio, which reduces the storage requirements of the digital audio, and does not retain all of the original audio data. Lossy audio compression formats generally try to approximate the original audio content sacrificing a minimum of noticeable audio fidelity.

Monitor (audio): A monitor is a speaker, which is used to critically listen to an audio signal. Audio monitors will generally be designed or "tuned" for the audio task that is being monitored. When transferring sound recordings from one format to another a monitor should reproduce different audio frequencies with equal weight. Other tasks, such as editing will often emphasize low and high frequency ranges to mimic the settings on many portable music players.

Noise Reduction (NR): Reduces unwanted noise from recorded audio. Noise reduction systems that are built into audio cassette players are designed to filter (mask) high frequency hiss that is inherent to magnetic media. Noise reduction software is generally designed to sample a noise pattern, and then reduce that pattern from an overall audio signal.

Normalization: A process that either increases or decreases the level of an audio signal to match a predetermined level. This process is generally used to create a consistent sound level (loudness) across several audio recordings.

Oxide Particles: Small metallic particles, which are embedded in audiotape media.  These oxide particles can absorb and store varying levels of magnetic charge.

Pressure Pad: Small foam pad within a cassette shell, which presses the audiotape against a playback head Consistent contact between the tape and playback head is required for accurate sound reproduction.

Run Time (Cassette): The total amount of time that a cassette tape will be able to play or record at the standard tape speed (1 7/8 inches per second.)

Sample Rate (See also Frequency – Sample Frequency): The number of samples measured, per second of an analog audio signal. For preservation purposes this rate should be at least 48,000 samples per second (48 kHz.)

Schema: A schema, in this instance, is structured information useful for building a database or for sharing structured information on the Internet. Information is broken up into fields (e.g. Date) and paired with one of more value (e.g. 2012-05-02). Rules are applied to how information is structured; for dates YYYY-MM-DD

Tape Hiss: An unwanted high frequency noise that is inherent to magnetic media. Hiss is impossible to completely avoid in the recording process but various technologies can reduce the amount of hiss or de-emphasize the hiss in relation to the sound that is being recorded.

.WAV (Wave): Standard for storing digital audio developed by Microsoft and IBM. The WAV audio standard allows for digital audio data, with various sample rates, and sample bit depths to be stored with the required information to playback the audio. The WAV standard also allows for some metadata to be embedded into the file.

WOW (see also Flutter): An unwanted variation in the mechanical speed of a media playback device. WOW is a slow speed variation most often caused by geometric imperfections in either physical media or in the moving parts of a playback device.