

DR RIAAN STEYN | PRELIMINARY-EXPLANATORY & INSTRUCTIONAL DOCUMENT



Traxtudio® Holdings
Audio Forensic Practice
Introduction
Version 2.3

Table of Contents



PURPOSE OF THIS DOCUMENT	PAGE 2
DEFINITIONS AND TERMINOLOGY	PAGE 3
PREREQUISITES FOR INFORMATION AND AUDIO WHICH ARE TO BE SUBMITTED	PAGE 7
DETAILED INSTRUCTIONS TO NEW CLIENTS OF OUR PRACTICE	PAGE 9
SECTION TO BE COMPLETED (INCLUDING NDA)	ADDENDUM

Purpose of this document:

The purpose of this document is to introduce the reader to the scientific field of Audio Forensics. It attempts to define certain important terminology as they are used within the forensic field in a simple and understandable way. Furthermore, the document also provides a brief overview of the audio forensic procedures used by the Audio Forensic Practitioner (AFP) to evaluate the necessary audio files in order to provide a result. This procedural explanation will enable the reader to make an informed decision regarding the service he or she would need from this audio forensics practice. A non-disclosure agreement (NDA) also forms part of this document which are to be completed by the reader.

Compiled by Dr Riaan Steyn (PhD)

© 2024



Definitions and terminology

Audio Forensic Evidence:

The Audio Engineering Society (AES) defines audio forensic evidence as the scientific and engineering analysis of audio and acoustic evidence that is used in judicial inquiries. Audio forensic evidence can be used in court or other official venues.

Audio evidence can come from many sources, including *inter alia* emergency calls (any call centre recordings), voicemail recordings, telephone answering machines, cell phones, video cameras, and computer files.

(Voice) Exemplar:

A/n (voice) exemplar is a sample of someone's voice that is used to compare with the evidence (see previous definition) to determine if the person (in the evidence) is the same person (in the exemplar). In some cases the exemplar is an audio recording that is to be created by an AFP in a controlled (acoustic) environment – an audio forensic studio – and will be used as a comparison to the evidence for the purpose of identification.

The identity of the person's voice in the exemplar is known.



Definitions and terminology

Audio Forensic techniques and processes:

AFP's use a variety of techniques to assess the authenticity and reliability of audio recordings, including:

(Audio) Authentication (AA): This is one of the first steps in the forensic process and a prerequisite in establishing the originality and provenance of an audio recording. The following are *inter alia* different factors that comes into play when the AFP must determine the validity of such audio:

- **Consistency of the audio recorded signal;**
- **The noise floor of the latter.**

The two aforementioned factors are equally important when conducting AA.

(Forensic) Transcription:

Transcribing dialogue from the audio recording in question.

Reconstruction:

Reconstructing the timeline of an event or crime scene.



Definitions and terminology

Expert Witness Testimony:

“The expression ‘*expert witness*’ is ordinarily used to refer to a witness whose opinions, and the reasons on which they are based, are admissible in evidence in litigious matters, as his or her knowledge and experience in some or other subject matter or in a particular field, usually technical or scientific in nature, enables such a witness to draw inferences and form views in circumstances where a court or tribunal is unable to do so reliably, unless it receives assistance or guidance from someone with expertise on the relevant subject matter or in that particular field” (Colman 1970: 108).

Reverberation:

Reverberation is the persistence of sound after it's produced, caused by multiple reflections of sound waves off surfaces in a space. The reflections build up and decay gradually as the sound is absorbed by objects in the space. Too much reverberation can interfere with the perception of words.



Definitions and terminology

Signal-to-noise ratio (SNR):

SNR is a measurement that compares the strength of a desired signal to the amount of background noise: It is the ratio of signal power to noise power, and is expressed in decibels (dB). A ratio greater than 1:1 indicates more signal than noise, and a higher ratio indicates better signal quality.

Audio artefacts:

Audio artefacts are unwanted sounds that can be heard during playback and are either present in the original recording or are generated during the recording process.

Prerequisites for information and audio which are to be submitted

There are certain prerequisites for audio which are to be used during an audio forensic investigation. On TV, actors can make it look very easy to make almost inaudible audio sound crystal clear on a regular computer by opening a few plugins. In real life, the process is somewhat more difficult.

There are factors that make certain audio unsuitable for audio forensic use. The following section provides some guidelines of the prerequisites that the audio must meet before the audio is sent to our forensic practice, as well as other information required.



Chain of evidence (or custody) (COE/COC) and the importance thereof:

COE/COC is the process of collecting, handling, and preserving evidence in a legal case until it's presented in court. The chain of evidence is important because it establishes that the evidence is relevant to the crime and that a detailed record was kept during the investigation process.

Inadmissible or inadmissibility refers to unfit evidence in each legal action. Evidence that is not relevant, reliable, or obtained legally is inadmissible.

During the juridical process a defence lawyer can challenge the evidence or ask to have the evidence declared inadmissible by questioning whether the evidence presented at trial is the same evidence as what was collected at the scene of the crime (read: if the evidence was tampered with). A defence lawyer who successfully challenges the chain of custody can ask to have evidence declared inadmissible.



Detailed instructions to new clients of our practice

- Provide meticulously detailed instructions to the practice.
- This include (where applicable) *inter alia*
 - (a) all background information about the case,
 - (b) recording equipment used,
 - (c) suspicions and
 - (d) desired outcomes.
- An exact COC.
- The original, unedited audio in the original format. Please note that the audio quality must be of an acceptable standard in order for us to assist.
- All of the above mentioned are to be uploaded to a secure FTP. You can use www.wetransfer.com

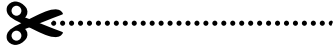
Audio-quality factors:

Audio quality is a significant contributing factor in audio forensics, as recordings can be compromised by a number of factors, including, but not limited to:

- **Noise:** Reverberation, background noise, telephone-band frequency limitations (with special reference to call centre recordings), as well as artefacts can all impact the quality of a recording.
- **Microphone placement:** If the microphone was not in an ideal location, the recording quality may be poor.
- **Signal-to-noise ratio:** A poor signal-to-noise ratio can impact the quality of the recording and our practice's ability to use the audio in the forensic investigation.

Other factors that may be considered regarding the evidence and exemplar audio samples which are to be used include:

- Whether the recording device was capable of recording the conversation
- Whether the device operator was competent
- Whether the recording is authentic
- Whether the recording has been altered
- Whether the recording has been preserved
- Whether the speakers are identifiable
- Whether the conversation was made voluntarily



Please complete the two sections below and return a copy along with the prerequisites mentioned in numbers 1 to 5 in the previous section.

Which service/s would you require from our practice?

(Indicate where applicable. Note: AA is compulsory in any investigation.)

Audio Authentication (AA)

Forensic Transcription

Voice Verification/Identification

Expert Witness Testimony

Please complete the following Non Disclosure Agreement (NDA).

NON-DISCLOSURE AGREEMENT (NDA)

between

FULL NAME AND ID NUMBER (of proxy, if applicable):

(hereinafter “the Client”)

And

**RIAA STEYN MUSIC CC T/A TRAXTUDIO
Registration Number: 2006/145584/23,
VAT: 4280302854,
Represented here by Dr Riaan Steyn,**

(“the Service Provider”)

(hereinafter “the Parties”)

- 1.It is recorded that the Service Provider is an ad hoc Service Provider for the Client.
- 2.The Service Provider confirm that he is able to perform the duties as described hereinafter (“the Purpose”) and the Parties have agreed to enter into a Non-Disclosure Agreement (“the NDA”) or confidentiality clauses for this Purpose.
- 3.The Client requires audio forensic services of the Service Provider (“the Purpose”) which are to be described in an official Quotation-document to be sent by the Service Provider to the Client prior to providing services.
- 4.In connection with the Purpose it will be necessary for certain Confidential Information to be provided by the Client to the Service Provider.
- 5.This Confidential Information means any information disclosed to the Service Provider for this Purpose.
- 6.The Service Provider specifically agrees not to disclose any Confidential Information to a third party and to protect it through the exercise of reasonable care. The Service Provider agrees to keep the Confidential Information in a secure environment, and not copy or use the Confidential Information except as it is reasonably necessary in connection with the Purpose.

7. Access to this Confidential Information is for the sole purpose of the Purpose and the Parties agrees that breach of confidentiality may result in sanctions, civil or criminal prosecutions against the Service Provider.

8. The foregoing obligations shall not apply to any information which is disclosed pursuant to a requirement or request by operation of law or by any court of competent jurisdiction, provided that the Party gives as much notice of such impending disclosure as is reasonably possible and provide the Client with all reasonable assistance in preventing and/or limiting such disclosure.

9. Notwithstanding the completion or non-completion of the Purpose, or the termination of Parties' involvement with it, this Agreement shall commence on the Signature Date and shall remain in force and effect ad infinitum unless replaced by another agreement concluded between the Client and the Service Provider.

SIGNED AT:

SIGNATURE DATE:

SIGNED BY:

The Client

The Service Provider





© 2024

Traxtudio® Audio Forensics

Traxtudio® Audio Forensics
is a subsidiary of Traxtudio®.

Traxtudio® is a registered trademark.

