MUSIC TODAY EUROPE
explains

THE FOLLY OF HD AUDIO | PART I

Why 44.1 kHz please your ears as much as 96 kHz.

Recently, there are a lot of big and popular music shops that promote music by using the term "HD Audio" This is to fool customers and to talk them into thinking "HD Audio" grants for a better music quality. This is the first of two articles explaining the folly of HD Audio.

This first article describes why "more kHz ≠ Better Music Quality". The second article will explain why 24Bit or 32Bit files don't offer a better music quality than 16Bit files (CD quality). We will show that "HD Audio" is a marketing gag to fool those who are not acquainted with the underlying concepts.

EXAMPLE: MOVING PICTURE

Before we dig deeper into the topic let us think of a good but analogous example. You all have already watched a movie. Actors act in the real, continuous, uninterrupted world. Their acting is being captured by film cameras. The result (a moving picture) can be reproduced and copies can be sold and watched all over the world. Movies are, so to say, an electronically portable theater play. However, the reproduction of the real world events is not continuous. Humans have noticed that one just needs about 15 serially connected still pictures to **perceive** a succession of contentual related still pictures as a natural continuous movement (although it is not continuous). Normally, films are being shot and shown with at about 24 still pictures per second. Some cameras offer the opportunity to capture 400 frames (or even more!) per second. One does not use this opportunity to produce films at 400 frames per second (fps) but to create fantastic slow motion scenes. The slowing down of the 400 fps again results in a 24 fps film. Because 24 fps are more than enough info for the **perception** of continuous events. The approach to use 24 fps (and not more) also saves storage: Every picture needs space.

What is the point? Imagine, a streaming platform tells you:

"From now on, we offer HD movies that are being shot and shown at 100 fps. This is an immense increase of quality."

No, it is not! The size of the films would be four times as big and the events shown in the films would not been perceived more lively, fluent or continuous. Our perception is simply limited and cannot automatically adjust to the technical "more, higher, faster".

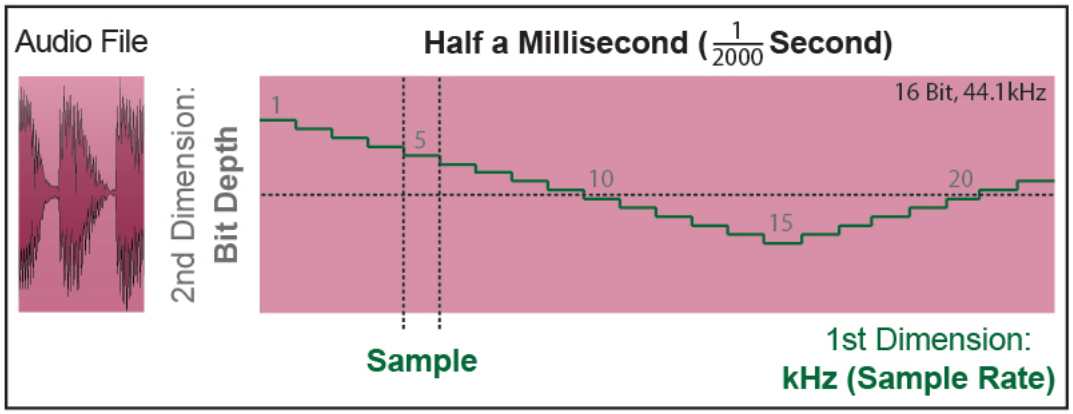
100 fps would hardly change your perception and would not result in better films, for better technique does not equal better content. But: 100 fps would be a marketing argument that would stimulate a whole new industry to produce devices that can capture and play back 100 fps.

BACK TO THE TOPIC: WHAT ARE "SAMPLE RATE" AND kHz?

So what is kHz? Just like in the film example above, real world sound events are not divided into small packets and then being delivered to your ears but real world sound events are continuous.

To digitally capture real world sound events, sound engineers record such sound events at a particular "Sample Rate": A computer turns the continuous real world sound events into a lot of digital packets that can be played back in succession. Just like in the film example above, one needs a particular number of serially connected audio packets in order to make the played back audio event sound smooth, continuous, and good.

kHz tells you how fine (or coarsely) an audio event is encoded. kHz tells you in how many packets - called "samples" - an audio event is being divided per second by the computer or how many packets are played back per second by an audio device. kHz is the unit of measure for the **sample rate**.



WHY AREN'T 44.100 SAMPLES PER SECOND ENOUGH?

During the last decades the industry promoted 44.1 kHz as "CD Quality". Most of the music you know is encoded in 44.1 kHz, that means: 44.100 samples per second. This is a lot of audio info to digest and it makes for a perfectly continuous, smooth, and good sound. We know you have not thought, lately:

"This Tina Turner song is amazing. If only they would have used more samples per second to avoid this gross sound!"

However, a lot of popular streaming portals have started to promote "HD Audio". On the one hand (the "other hand" will be explained in Part II) that means: Audio is not being streamed at 44.100 samples per second anymore but at 48.000 to 96.000 samples per second. Technically speaking, this is surely an improvement: For more samples grant for a finer technical encoding of sound events. That means: The ideal of "continuous sound" is being met better than before. But, musically speaking, no customer will probably be able to hear a difference. For the 44.1 kHz standard was not chosen as the lesser evil or as a compromise because no better option existed but was deemed to be great for almost fourty years because it is perceived as smooth, continuous and good! Just as our eyes are hardly able to perceive a difference between a film that is shown at 24 fps and a film that is shown at 100 fps, our ears and brains will hardly be able to distinguish between "smooth, continuous, and good sound" (CD Quality) and "smooth, continuous, and good sound" (HD Audio).

There are certain limitations regarding our perception and a "more, higher, faster" in a technical sphere does not automatically lead to an evolution regarding our senses.

Even the best engineers will not be able to distinguish a 44.1 kHz source from a 48 kHz source in a 1:1 comparison. Leave alone the phenomenon of Audio Voodoo.

TECHNICAL EVOLUTION IS NOT AN EVOLUTION OF MUSIC.

The **quality of music** is determined by the composition, the lyrics, the skills of the musicians, the emotions, the recording quality, the mixing and mastering process.

Yes: The producer should use 44100, 48000 or even 96000 samples per second while working on a song to ensure that the encoding and reproduction of the sound events are as good as possible. But: To claim that the increase of a technical number grants for a better music quality is a folly.

"HD Audio" cannot make a bad composition good; it cannot make a bad singer good; it cannot make a bad drummer good; it can neither fix a bad mix nor fix a bad recording. Please stop to believe that more sophisticated electronic devices result in better art.

What can "HD Audio" do for you? It can psychologically manipulate you and make you pay a monthly fee for access to music that has a nice technical data sheet that is hardly of any interest to you; access to music that can - despite the great data sheet - still sound as flat as a pancake (like EDM): Just because the responsible audio engineers haven't done a good job.

OUR CONCLUSION:

At the end of the day: The reason why you like music has nothing to do with the technical specs. A lot of recordings from the 60s have pretty bad technical specs - but these songs work and they are amazing just because the participating musicians have been able to capture their souls and to transport them to the listener.

When you listen to Rap music from the 80s, you don't say "*Shit. Just 16 kHz*" but *"Omg! This line is good!"*. The fact that the perceived sound is trashy maybe even makes the whole song more authentically - for originally, Rap was not produced in high class studios.

Our tip: Don't let you talk into believing that music is about technical specs. When paying monthly fees for listening to music: Pay for services and music that you love: Just because you like the compositions, the lyrics, the artists or the emotions that have been ingrained into the production.

OUTLOOK:

The second part of this series talks about the Bit Depth (2nd element of **HD Audio**) of audio files and why it matters in the recording process but is not important at all for any listener. MTE