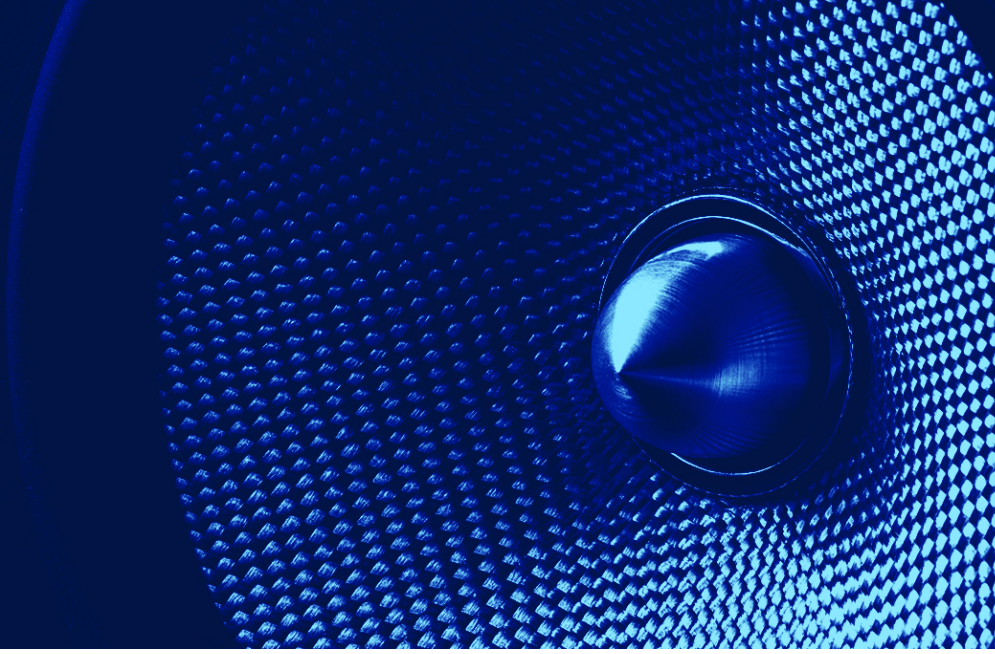

Music, tech and social media have all seen an evolution in the last decade

Music, tech and social media have all seen unprecedented change in the last decade.

This hasn't happened overnight but has certainly accelerated in the last few years with the growth in streaming services. Take Spotify for example - in 2016 its number of paid subscribers globally was 30 million but by 2019 it had more than tripled that figure to 100 million. Apple Music has a similar story, launching in 2015 and now boasting 60 million paid users globally.

Their rapid growth reflects a shift in consumers' expectations to be able to listen to music on whatever platform or device they want at any time they choose.

Platforms like YouTube Music, Soundcloud, Pandora and Tidal are also heavily used and you could argue that streaming platforms have become so ubiquitous they can now be broken down by use-case – e.g. extensive catalogue, independent artist discovery, passive listening or better audio quality.

All these platforms are built on algorithms and machine learning which work out the music preferences and listening habits of their users. This technology, combined with the algorithmically driven personalised user experience they offer, means that we have entered a new world of music discovery.

The major streaming platforms now do a great job of giving their users the music they want in the form of personalised, curated and branded playlists derived from the data the platforms collect and analyse of consumers' listening habits and music selection.

This is how streaming platforms such as Spotify, Apple Music, and Pandora build their vast metadata libraries. Additional data is imported from music cataloguing services like Billboard and TiVo, which include information

acquired from services like AMG, Muze, Rovi, and Veveo, which also power services like AllMusic.

But for all access to all this information, music services are afflicted by a data gap which impacts on how music cultures evolve and on the end user.

The problem & the opportunity

Digital technology has changed the landscape of music in irreversible ways. Not only legally and financially--but also in sound quality. In the shift to streaming, high-quality sound has suffered due to legacy systems and commoditized distribution.

In many ways, the quality of what people hear how well the playback reflects the original sound has taken a step back. To many expert ears, compressed music files produce a crackly, tinnier and thinner sound than music on CDs and certainly on vinyl. And to compete with other songs, tracks are engineered to be much louder as well. In one way, the music business has been the victim of its own technological success: the ease of loading songs onto a computer or an iPod has meant that a generation of fans has happily traded fidelity for portability and convenience. This is the obstacle the industry faces in any effort to create higher-quality and more expensive ways of listening.

Remember the days when people used to sit and listen to music, but the increased portability has altered the way people experience recorded music.

Listening to music in your lounge with surround sound was an activity. It is no longer consumed as an event that you pay attention to. Instead, music is often carried from place to place, played in the background while the consumer does something else; exercising, commuting, working or cooking dinner.

These days audio engineers are often enlisted to increase the overall volume of a recording rather than scrub tracks of aural blemishes. The million-dollar question is, can we assume digital technology is ruining music? Is there any way to reverse the trend away from high-quality sound?

The Solution

Taking into consideration current audio standards and the fact that they have not caught up with current equipment capabilities, using CompressionX compression, a proposed new format for audio transmission has been designed.

Our proposal for a new format will allow for the separation of instruments or groups of instruments (decided at stage of recording) so that play back can be selective about what instruments to hear including vocals.

Lossless audio compression is used to obtain the lowest possible bit rate while still retaining a perfect signal reconstruction at the decoder. Our CompressionX algorithm is capable of compressing hundreds of channels simultaneously so it would be possible for additional selectable information such as which speaker to play back each channel through.

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Meeting the Industry Need

It seems like every advance in digital music brings with it a debate about whether the latest format degrades quality in exchange for convenience. This was true when CDs first came onto the scene, and it's probably even more true today with MP3s and their digital audio brethren. We should not forget the advent of the gramophone in 1889 sparked debates over whether its sound quality was worse than Thomas Edison's phonograph.

It is certainly true that an MP3 file, by definition, is of lower quality than the original recording. The files that sit on the hard drives of recording studio engineers are massive several gigabytes apiece compared to the file consumers eventually download or stream. To get those MP3 file sizes down, the audio has to be compressed substantially. It's inevitable that some of the detail will get lost in the process.

Research suggests as an estimation, what we hear in most files today is only 5% of the data of the original recording. That may be a slight exaggeration, depending on how the files are encoded. Certainly, lower bit rate files (such as 128kbps MP3s) have a noticeably degraded quality to them, compared to a CD. But most sources have graduated to higher quality files now that broadband speeds allow for it. A standard track on iTunes is a 256kbps AAC file and premium Spotify subscribers can listen to many songs at 320kbps, which is about 22% of a CD track's bit rate.

By utilising the CompressionX consumers will be able to listen for the subtle and not-so-subtle changes that the lossy compression does not include.

Lossless compression reduces the size of the digital file without affecting the sound quality. You get the same sound quality as the original source, but it takes up less storage space on a CD, DVD, Blu-ray, hard drive or portable device. Examples of lossless compression include Dolby TrueHD and DTS Master Audio, found on Blu-ray, and Apple Lossless compression, used to convert CDs to compressed digital files.

Finally, lossless audio compression will play an important part in music distribution over the internet, DVD audio, digital audio archiving, and mixing. Because common lossless compression does a poor job of compressing audio streams, CompressionX will work across all audio, delivering sound closest to the finished master.

CompressionX, if adopted, would create a new universal standard when it comes to high-resolution audio.