



Is 5G What VR Has Been Waiting For?

The introduction of 5G - and the huge increase in bandwidth it offers - means that AR and VR devices will in time become much more mainstream and accessible to the public. The breaking wave opportunity for retailers is to adopt the fledgling technologies of AR and VR to bring their products directly into the user's home as they browse away on their smartphones. This will bring new dimensions to the shopping experience through both vision and sound. For example, tomorrow's 5G user will use their body avatar to try on the latest fashions, as their projected avatar walks the catwalk on their coffee table whilst listening to an immersive sound track AI sound designed especially for them. In this new world of immersive experiences, audio is set to play an even bigger role than it has in our online lives to date.

Advances in immersive experiences are starting to explore the potential of combining VR and AR into one experience to deliver a mixed reality experience. However currently both VR and AR as separate standalone entities are power and processing intensive, so running them concurrently limits what you can do. 5G will unlock this bottleneck resulting in this new 'mixed reality' experience, not suffering from the jolts and judders and disconnects that so often ruin our current smartphone streaming experience.

When you move from smartphones to dedicated VR and AR systems, the increased speeds and speed of response with 5G will allow linking other external devices into the 5G experience without those devices feeling as if they are not part of a seamless immersive experience.

For example, you are cycling with your AR 5G headset on. There will be almost no delay in linking data from your cycle – speed – power – safety warnings etc. into the augmented overlay of the road in front of you and the sounds on the attached earbuds. This real time information will seamlessly blend into the real world to enhance your performance, enjoyment and safety of your cycling experience. The



instant response of 5G will uphold this new mixed reality immersive world. No more stuttering, no more cracks in your experience.

For sound and the role it plays in completing an immersive experience, this speed of response is critical. Imagine you are in an AR or VR dance space. Your 5G headset places you with other dancers. The soundtrack links you and your avatars all together into a dance ensemble. The sound design is controlled by your hand gestures. With current 4G this could never work, as the speed of response to your hand gestures and the resulting changes to the sound design would lag behind. With 5G, the speed of response can be so fast as to allow a hand gesture from you to change the sound design in time with the pacing of the dance routine, as you and your ensemble change and develop the overall dance sequence.

This is the amazing new world that 5G promises. Where's the catch?

From the audio side, audio is the sense you only notice when its bad or not there. The often quoted saying from George Lucas was that sound was 50% of the film. For immersive realities, some argue that its more than 50%. We would argue that both spatially correct visual and spatially correct sound are essential for a fully coherent VR experience. The data restrictions of 4G have always compromised the sound far more than the visuals with many experiences offering 'immersive' sound when in reality the sound has been pulled back all the way to stereo to save on data. 5G throws that excuse out of the window opening the widow for applications with expert immersive sound, sound designed and spatially coherent to the visuals of AR and VR.

Will 5G have the same coverage or better than 4G? 5G signals don't travel as well as 4G so best coverage will need more transmitting masts which means that initial coverage will be centered in cities – especially in busy centers such as shopping malls and train stations. Rest assured though that in time 5G coverage will spread country wide it will just take time.

Is the future for 5G bright? It is not only bright but with the massive bandwidth enhancements it offers and the advances in VR, AR, AI, machine learning and above all the creativity it will unleash it promises to be blinding.