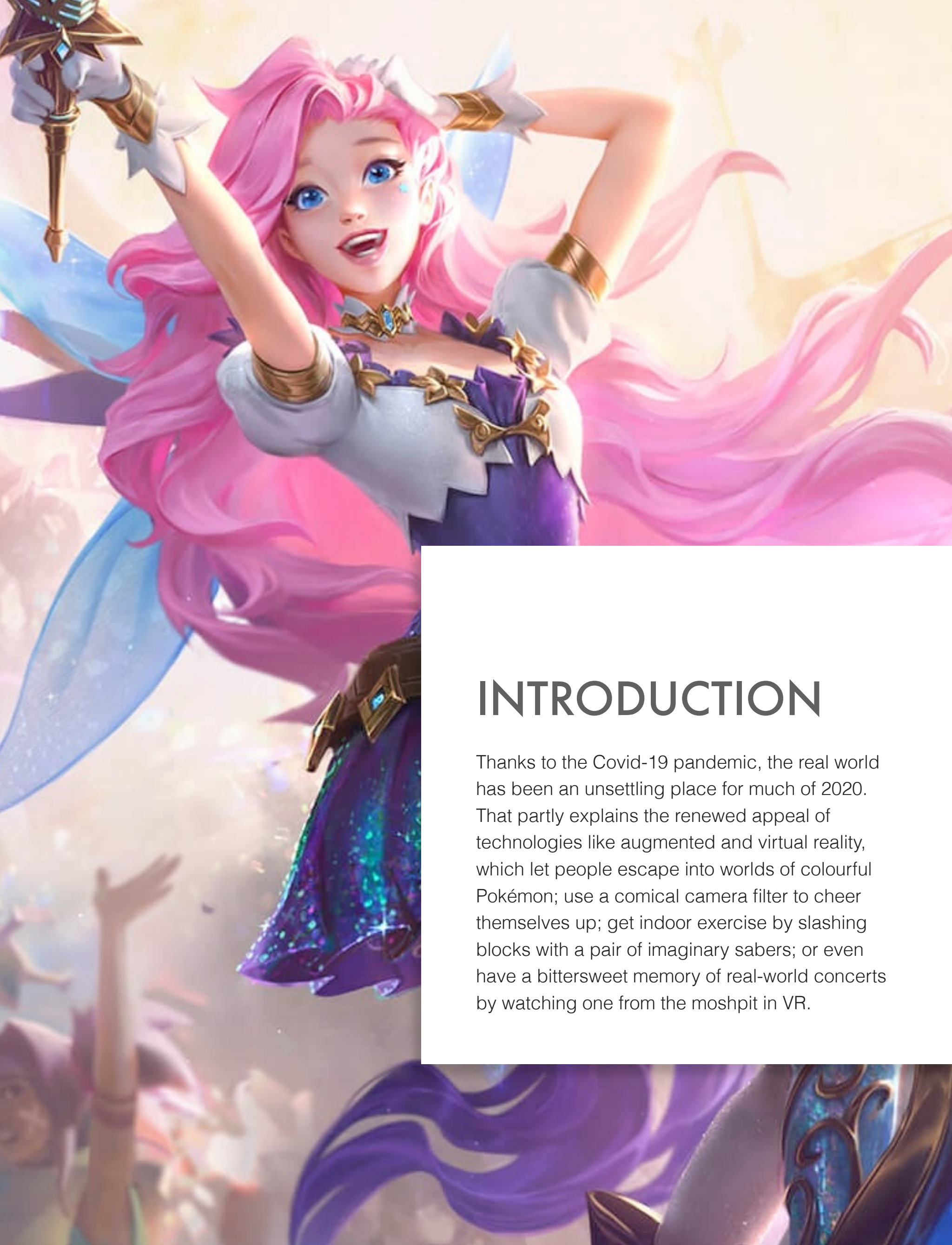




REALITY CHECK
AR, VR AND SR MEET
THE MUSIC INDUSTRY



INTRODUCTION

Thanks to the Covid-19 pandemic, the real world has been an unsettling place for much of 2020. That partly explains the renewed appeal of technologies like augmented and virtual reality, which let people escape into worlds of colourful Pokémon; use a comical camera filter to cheer themselves up; get indoor exercise by slashing blocks with a pair of imaginary sabers; or even have a bittersweet memory of real-world concerts by watching one from the moshpit in VR.



DEFINITIONS

Augmented Reality

Superimposes digital content and information on our view of the real world, be it through a smartphone screen or AR glasses.

Virtual Reality

Fully immerses us in virtual spaces, using our gaze and our hand gestures to interact with while wearing a virtual reality headset.

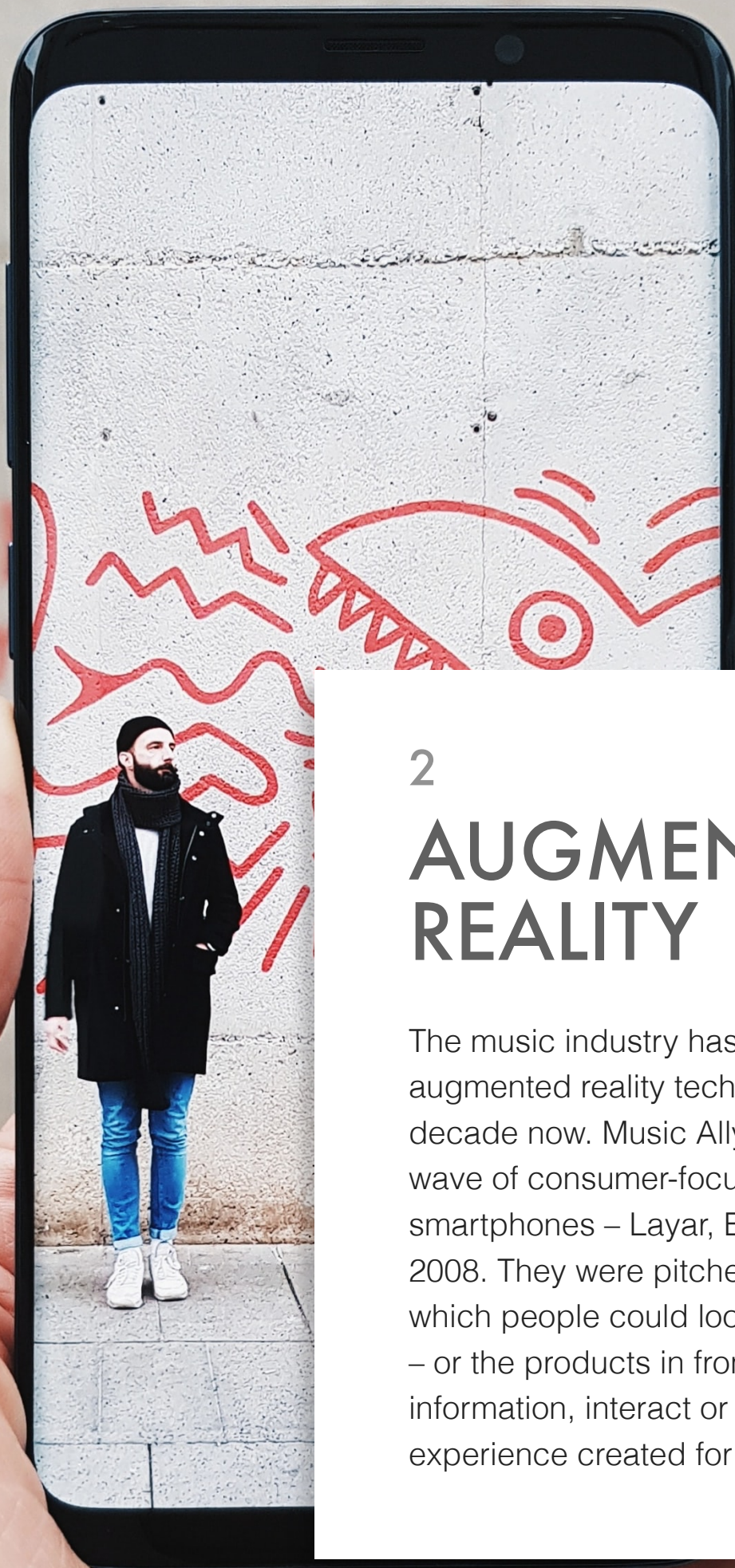
Synthetic Reality

For our purposes: virtual characters (avatars) coming into our real world – for example to be pop stars or influencers.

These technologies are more than just an escape, however: they are tools that artists and labels can use to create fun, engaging and sometimes even jaw-dropping new experiences for fans. Not just for the sake of the technology itself either, but in service of the music, and helping those artists to grow their audiences.

This report, which follows the BPI / Music Ally insight session that was held online on 3 December 2020, explores what's being done now with augmented reality (AR) and virtual reality (VR) by labels and artists, but also looks forward to what might come next, and what it will mean for our industry. There is also a third reality to think about: synthetic reality (SR), and the emerging space of avatar music stars, whether based on existing human artists, or created from scratch as computer-generated performers.

All three technologies and their uses are developing rapidly, and this report can only be a snapshot of what's happening as we near the end of 2020, and look ahead, hopefully, to a post-pandemic music business where physical concerts have returned, but also where new, exciting digital experiences will be created through collaborations between labels, artists, coders, animators and startups.



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AUGMENTED REALITY

The music industry has been experimenting with augmented reality technology for well over a decade now. Music Ally was writing about the first wave of consumer-focused AR apps for smartphones – Layar, Blippar and Junaio – from 2008. They were pitched as AR ‘browsers’ through which people could look at the world around them – or the products in front of them – and get more information, interact or just enjoy a digital experience created for that location or object.

Some of those experiences were music-related: one unofficial 'layer' created for Layar enabled fans to point their smartphones at the famous Abbey Road zebra crossing to see the Beatles (in cartoon form) walking across it. There were also official music marketing campaigns, such as Polydor's 'Exile on Your Street' for the Rolling Stones, also on Layar, where fans could digitally stick virtual posters to locations in the real world.

There was a flurry of music marketing experimentation using these apps and other AR technologies. [Dig into the Music Ally archives](#), and you'll find stories about Scouting For Girls popping out of KitKat chocolate bars for a live performance; Vanilla Ice launching an AR website for fans to use with their webcams; Rihanna jumping out of a tub of Nivea face cream; an AR-enabled tour programme for The Wanted; and Hatsune Miku playing a virtual gig next to an equally virtual (and tiny) Toyota car. Mastodon, meanwhile, used AR to let fans put their own faces on an album-cover sculpture that we described at the time as "part lion, part bird and part vintage UK children's-TV puppet Pob".

On the more serious side, Gorillaz launched an app for their run of gigs at The O2 venue in London, with fans able to point their smartphones to see lifesize 3D models of the band and the plastic beach from their recent album's artwork. The NOW 80 compilation had an AR activation, while Kylie Minogue and Justin Bieber were among the artists also launching their own AR apps.

It was an exciting time of experimentation, but not so much of success. The AR browser apps consolidated and ultimately disappeared, although the startup behind Junaio was acquired



by Apple in 2015, so its technology is now contributing to that company's (considerable) innovation around AR in its iOS software and developer tools. Few of the standalone AR apps for artists lingered long in the memory.

However, these apps were early precursors for later success stories. Snapchat introduced its 'lenses' feature in 2015, offering a way for people to take and share selfies and videos of themselves with digital effects including shooting animated hearts from their eyes, turning into a Terminator-style cyborg, and shouting rainbows.

It was an enormous hit with users, and has since become a standard feature in rival apps from Instagram and Facebook to TikTok.

Mobile game Pokémon Go followed in 2016, and also stood on the shoulders of more-niche apps that had gone before it. Its developer, Niantic, had made one of them: cult hit Ingress, which overlaid a game onto maps of the real world. The idea was adapted using the famous Pokémon game franchise, and the new game went on to be downloaded more than 10m times in its first week. It's still going strong now: 2020 has been the game's biggest year yet in terms of player spending – more than \$1bn by November according to app analytics company Sensor Tower – and the game has been installed more than 600m times overall since launch.

Snapchat, its rivals and Pokémon Go truly popularised augmented reality technology, with hundreds of millions of people using it – often without necessarily even knowing the term AR. Crucially, all they needed was the smartphone they already carried in their pockets.

The popularity of lenses, filters and camera effects in social apps has provided an exciting new platform for music marketing, thanks to the

creation tools launched by Snapchat (Lens Studio) and Facebook (Spark) for building these experiences. It's increasingly common for a new single or album release to be accompanied by a lens – often shown off by the artist themselves as it launches – with a clip of the music and a special effect for fans to use.



Pokémon Go hasn't had quite as direct an effect on music marketing, although it has inspired startups like British firm Landmrk to explore how its ideas can be adapted for location-based campaigns – sending fans on treasure hunts in the real world to unlock digital assets created for their favourite artist. As the world bounces back from Covid-19 and its lockdowns, there may be more scope for these kinds of AR campaign.

Mainstream AR is about smartphones, but there is work going on to explore

AR headsets too. Magic Leap raised a considerable amount of funding to make a device, and while sales were reportedly disappointing, the technology it developed is likely to find its way into future products. Including, perhaps, from the biggest tech companies of all. There have been consistent rumours that Apple is working on some kind of AR headset, after all..



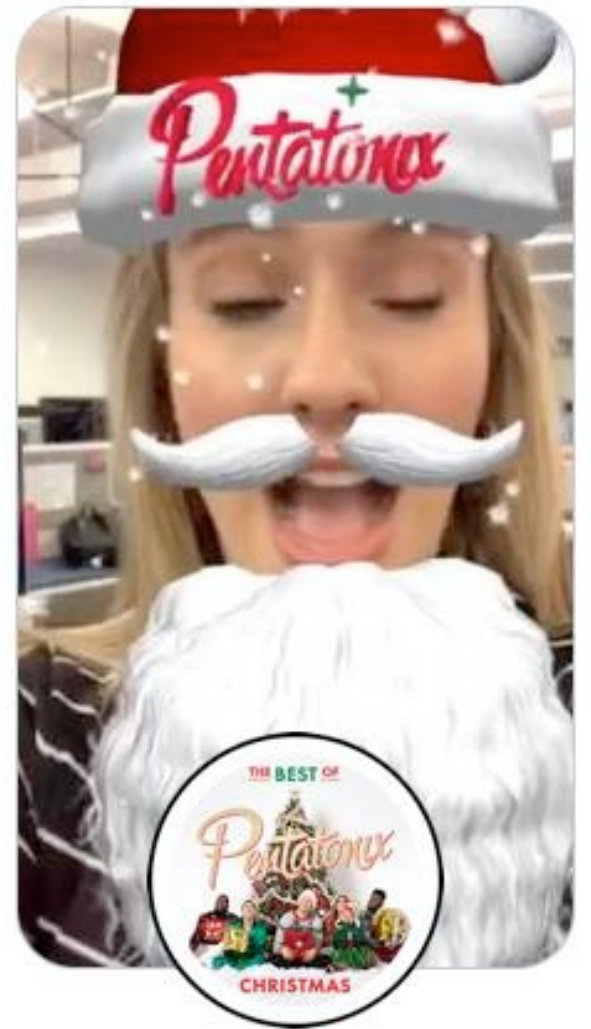
Snow

Michael Bublé  



Everyday is Xmas

Atlantic Records 



Pentatonix Xmas

RCA Records 



FOCUS ON SNAPCHAT

Snap debuted Snapchat's AR lenses feature in 2015, and then two years later launched its Lens Studio tool for people to create their own – labels included. At the recent BPI Reality Check event, Snap's manager of music strategy and programming, Manny Adler, explained how that strategy has developed.

“It's a platform where people can express themselves creatively through AR,” he said, adding that one of the main trends that Snap sees is these lenses becoming much more than fun special effects – think flappy dog tongues or dancing hotdogs – as they evolve into “a place of utility”. For example, a recent lens from

fashion brand Dior enabled people to virtually try on shoes in their own homes.

“It’s evolved from something that was initially silly to something that is more focused on utility, and that really brings a different type of value to augmented reality,” said Adler. Snap’s investment in machine learning technology for lenses was a key part of the Dior campaign, but he also pointed to its development of 2D and now 3D body tracking tech as opening up new possibilities for lens creators.

“You can literally move around in front of the camera, and these incredible AR experiences that are so high-quality and so creative track your movements,” he said. “Maybe you’re not the greatest dancer in the world, but all of a sudden with this, it looks incredible!”

What makes a great music lens? Adler said that it depends on the goals of the label and artist behind it. If the goal is to get fans to take an action – for example to stream new music – simple is best: “a very clean creative that focuses on the action you want them to take” as he put it. However, if it’s more about driving engagement, there is plenty of potential for more playful and interactive experiences.

“I tend to like those a lot more: it just sticks with me. An artist created a video game where you actually became a spaceship, and his song was playing in the background,” he said. That’s a reference to Dayglow’s recent Flappy Bird-inspired lens (pictured top right) where the fan has to open their mouth to make the spaceship fly upwards, and close it to let it drop.

“Without even realising it you’re listening to 35, 40 seconds of the song,” he said. “It’s almost a



Trojan horse that gets someone to hear a new song. I like it when an artist uses augmented reality to help someone discover their music, and really recontextualise it in a new way.”

Adler thinks that artists can both engage their core fans and reach new ones using lenses. When an artist is verified on Snapchat, any lenses they’ve launched are pinned to their profile, to help fans easily find and use them.

“At the same time, Snapchat is a communications tool. I can’t tell you how many times a friend has sent me a lens and I’ve discovered a new artist,” he said. “My favourite experience is when I find a new artist through

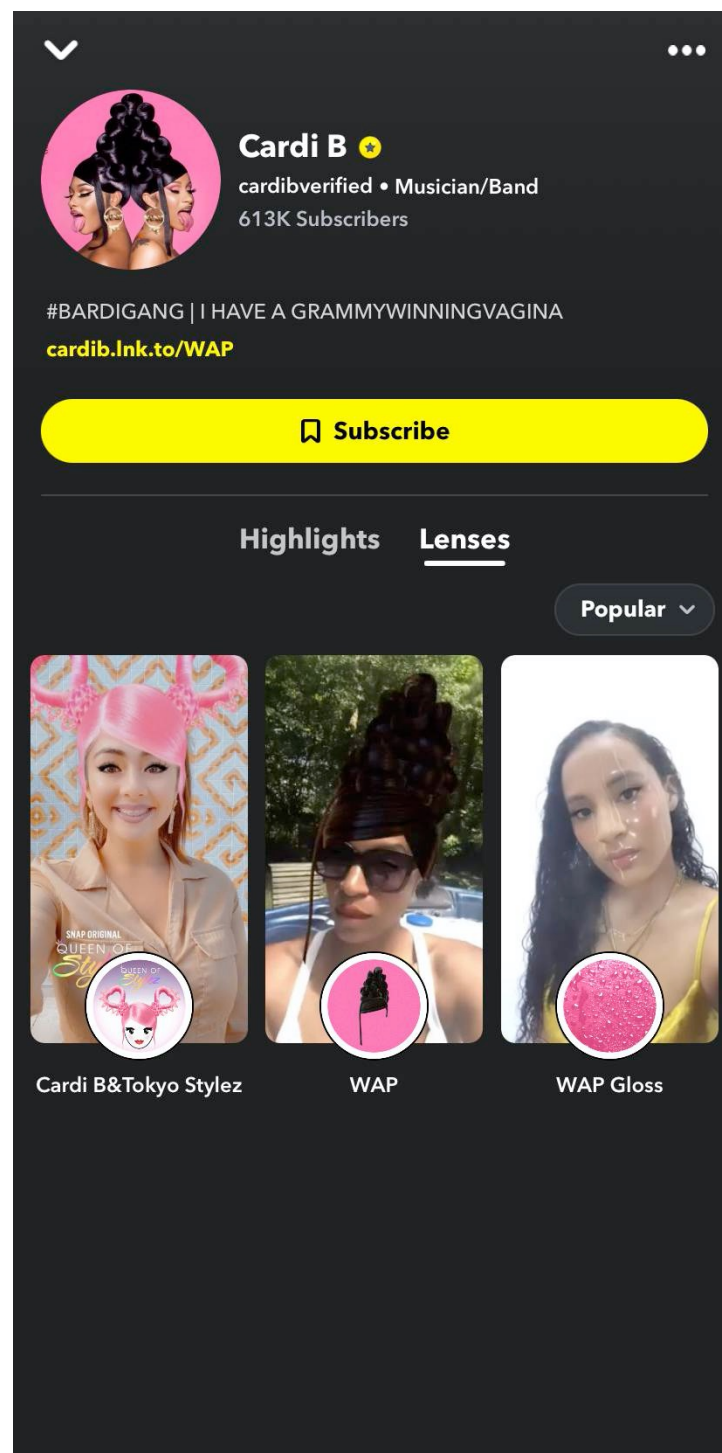
AR, because it is more comprehensive than just hearing a song without a visual component to it. And of course, the fact that it's interactive adds another layer of discovery to that."

Snap recently signed a series of licensing deals with music rightsholders, which has enabled it to launch a feature called 'Sounds on Snapchat' where people can add clips of commercial music to their snaps. Adler explained how it crosses over with Snapchat's lenses catalogue.

"Right now it's a playlist on the camera screen, and we're focused on discovery opportunities through that tool: new artists, new songs, that moment that just makes you want to send a song to a friend is what we're after," he said.

"But we have this giant library of previously created augmented reality: a face lens, or a world lens that totally changes the world around you... and you can combine those two products. That dog lens that was so popular a couple of years ago can now be paired with your favourite song. I think the possibilities are truly endless, especially when you think about how much our community is creating AR."

It is free to create and release a lens for Snapchat, and as Adler said, verified artists have



their lenses pinned to their profiles. However, Snapchat is also a commercial platform: labels can bolster their marketing campaigns by paying to turn their lenses into 'sponsored products' that reach a wider set of users.

"Every single day you have an opportunity to spend a small amount of money and reach people on the platform," said Adler. "I do believe that's still cost-effective for an artist of any size... You're not going to be locked out if you're not the biggest artist in the world."

Adler thinks there is a lot of potential still to unlock from this technology in the future, especially as artists start to engage with it as part of their creative process.

Part of that 'utility' experience might, for example, be "experiencing an album more deeply, being able to interact with each track in a unique way that really drives discovery, or potentially understanding deeper information about an album" he said.

"I continue to be shocked by the creativity of the community... and I think that in the future, especially small artists starting in their bedrooms, are going to be thinking 'lens is a way I'm actually going to get my music to people now'... It's such a flexible tool."



How To Be Lonely



Phoenix



GIRLS

LABELS TALK AR

“We’ve become a bit of an AR factory recently,” said Josh Saunders, head of Firepit Technology at Warner Music Group, during the recent Reality Check insight session, referring to his team’s work on a host of AR filters / lenses / camera effects for artists over the past few years.

Examples that he showed during the event included a Facebook campaign that enabled Slipknot fans to virtually wear the band’s famous masks (pictured above). Using photographs as reference, the team spent a day creating a detailed 3D model for each mask, to be deployed in the camera filter via Facebook’s Spark tool. Saunders noted that with the kind of full-body tracking



launched recently for Snapchat “we could do the full outfits: more than just the masks!” now.

Saunders also showed AR filters and lenses for artists including Anne-Marie, Clean Bandit, Ghetts and Rita Ora, as well as a basketball game for Nathan Dawe. Firepit is looking beyond the big social apps to also launch its standalone. Saunders showed one created for a Warner Music France artist, rapper Hamza, referencing his Moroccan heritage with a space that fans could walk around by holding their smartphone in the air – complete with looping spatial audio.

“The name of the game for using AR as a vehicle for artists and their artistry is going to be generating cut-through,” he said. “The AR filter market is already pretty saturated, and fans and artists will need more innovations. In order to get noticed among all the others, it’s important to have a unique selling point. The most important

and prize asset we have is, surprise surprise, the artist and the actual music! The stems, the spatial mix...”

Another major label that is making use of AR lenses, filters and camera effects is Universal Music Group, whose VP of digital marketing and innovation George Harb also joined the Reality Check event to outline some of the lessons UMG has learned from its campaigns.

One of those was for Sam Smith (pictured above) which saw the singer popping out of people’s phones in augmented reality to perform their latest single ‘Diamonds’. Rather than use an app, the campaign used web-based AR – fans visited a website on their phones to make it work – and volumetric capture technology to turn Smith’s performance into a 3D digital experience.

“It’s the first time I’ve done a full volumetric scan with an artist!” said Harb, noting that the



progression of smartphones in recent years means deploying this kind of technology is now much more possible. This was not just tech for tech's sake, however: it was a success.

“We had scans and activations of the campaign in the hundreds of thousands, and from our analysis it looks like we brought in a bunch of new fans who wanted to enjoy the experience, and hadn't [previously] interacted with Sam that much,” he added.

This first stage of the campaign required two smartphones to work, but a second phase is following it that frees the virtual Smith to dance up a storm in more locations. “You can track Sam to any surface and just point, and they'll appear,” he said. “It's amazing that you can do it so well now: a few years ago it was really difficult.”

Creating AR experiences that can be accessed in smartphones' web browsers is certainly on

Harb's agenda for future campaigns. “Web AR is great. It's definitely the future as far as I'm concerned,” he said. Harb was also keen to scotch the belief that these kinds of campaigns are prohibitively expensive for all bar the bigger artist marketing budgets.

“There are so many talented artists and AR creators out there who can create you something cost effectively,” he said. “We have done 700 [campaigns] in-house this year: it's very cost effective when it comes to building, but these are world-class, five-star experiences. It's about being a bit resourceful and creative.”

He also mirrored one of the pieces of advice offered by Snap's Manny Adler about AR music campaigns not needing to be super rich and complicated to succeed. “Sometimes the simplest experiences with the cleanest creative are the best and the most engaging...”



3

VIRTUAL REALITY

Virtual reality isn't a new technology: it has been talked about in theory for decades, and the first VR headset (of a sort) was a system called The Sword of Damocles, developed in 1968.

Meanwhile, companies like VPL Research generated a new wave of excitement in the 1980s with the first consumer VR headsets. While they did not catch on at the time, they paved the way for our current generation of hardware and software innovation.

That began in 2012 with a startup called Oculus VR, which raised more than \$2.4m on crowdfunding website Kickstarter to produce a headset called the Oculus Rift. Facebook CEO Mark Zuckerberg liked the product so much he bought the company, for \$2bn, two years later. Since then, the Oculus team has continued to develop its products within Facebook.

Its latest headset is the Oculus Quest 2, which unlike the first consumer devices is 'standalone' – it doesn't have to be connected to a computer or games console running its apps and games, but instead stores and runs them entirely on the headset. Its cheaper price (sub-£300) and growing catalogue of inventive software has been winning warm reviews. It has also gone some distance to pushing back against the wave of scepticism that met the first modern group of VR headsets – the Rift included.

“There was a lot of hype,” said Dave Haynes, director of Vive X at HTC, who follows the VR ecosystem closely as part of his job scouting innovative startups to invest in, at the Reality Check event. “It suffered from that hype. A lot was promised: analysts said ‘We’re going to be at 100 million headsets!’. That growth curve was there, but it was slower. In 2020, the market is now really there, and we’re onto a new generation of hardware.”

Haynes used to work at VR startup Wave, and remembered visiting major labels to give demos,



and having to spend 30 minutes setting up the room and system. “Now anybody can have a device on their desk, boot up within a matter of seconds, and be in a virtual space,” he said. “We’re now at that first tipping point where VR can be seen as a more mainstream device to target for experiences.”

The first music VR experiences – detailed in the next few pages – have tended to focus either on games, or on 360-degree filmed performances, with a choice of locations in the venue for the fan to watch from, turning their head to direct their gaze. Haynes said that he sees lots of scope to move on from the latter to something that is “actually really native to the medium... this is a complete blank canvas, so what works really well in this medium?”

Haynes also said that labels have been right to be cautious about investing in costly VR projects. “If you’re spending money you have to ask yourself what the return is, and that has been one of the challenges of VR,” he admitted. “[A label thinks] We could do this in AR and it’s going to reach five million people, or this in VR



and it's going to reach 10,000 people. That is a challenge.”

However, he sees startups like Wave as solving that challenge by turning their VR environments into production tools, as it recently did for The Weeknd.

“You might be able to do a concert and see it in VR, but if I can also broadcast that in 2D onto an artist’s Facebook page... being in VR is like being in the front seat or being backstage, so VR is going to be the best experience, but you’re not going to be excluding anyone. And if you can get that scale [it makes more sense for labels].”

Research firm Omdia recently published some new forecasts for the VR market, predicting that in 2020 6.4m consumer headsets will be sold, and that their owners will spend \$1.1bn on content this year alone. By 2025, it expects there to be 45m VR headsets being actively used globally, with their owners spending \$4bn on content that year.

If current trends continue, the lion’s share of that spending will be on games rather than purely musical VR experiences. However, those games will need soundtracks, so there will be sync opportunities for labels in this space. Also, some of the most popular VR games so far have been focused on music, like Beat Saber (profiled on the next page).

Haynes’s comments are a reminder that there is a bigger picture here too, however: that some of the technologies used to create VR experiences could be used as tools by the music industry and by individual artists and DJs alike to reach even larger audiences.

From concerts within games like Fortnite to DJ sets being broadcast from apps like Tribe XR (also profiled later in this section), these experiences will reach tens or even hundreds of millions of people watching on screens, even if the audience immersed in the action through VR headsets is smaller.



BEAT SABER

Developed by a small team in the Czech Republic, Beat Saber has become one of the most popular virtual reality games. It's a Guitar Hero-esque music rhythm game, except here players are slashing blocks in half by waving imaginary sabres, to a growing catalogue of music including licensed tracks from the likes of Green Day, Linkin Park, Panic At The Disco and BTS. The music is sold a la carte or as 'pack' bundles from the in-game store. By March 2020, the game had sold more than two million copies, and 10 million tracks. Meanwhile, its developer was acquired in November 2019... by Facebook! Music-driven games and fitness apps are a big use case for VR, explored in the BPI's previous insight session and report: [Feeling Good](#).



MELODYVR

Back in 2016, MelodyVR was being described as ‘the iTunes of VR’ with its plans to launch an app for VR headsets showcasing a range of concerts and music performances filmed in 360 degrees. Since then, the app has launched; the company has signed partnerships with a number of labels and artists; expanded onto smartphones for people who don’t own headsets; and inked a deal with Facebook. During 2020’s Covid-19 pandemic, meanwhile, the service continued to produce content filmed at its studios in the UK and US, including a performance by John Legend and an entirely-online Wireless Festival. It is ending 2020 with an ambitious merger with Napster, bringing VR and audio music streaming into the same service.



TRIBE XR

Part of 2020's cohort of startups in the Techstars Music accelerator, Tribe XR's virtual reality app is an educational tool teaching people to DJ – with a virtual set of decks. Lessons help them get to grips with the buttons and settings, including one-to-one tutorials with an instructor joining you in the app. However, Tribe XR isn't just about learning: it is also about performing. The app can also be used to livestream DJ sets to video platforms, with the VR environment adding some visual flair to the performance – at least compared to the usual bedroom or kitchen decks setting for such streams!



MIRO SHOT

Miro Shot describe themselves as an AR/VR band/collective, making and releasing music but also putting on spectacular live music events. Before the Covid-19 pandemic, this included physical concerts where the audience could put on mixed-reality headsets to experience the virtual experience.

“A parallel virtual concert, synchronised in real time,” is how Miro Shot’s Roman Rappak put it during his speech at the Reality Check event. With the physical side nixed for now, the technology was used this year for Miro Shot to go on a virtual tour, and thus still connect with their fans.



The group aren't just putting on their own events: they are building a platform for other artists to do the same, through a startup called Overview Ark, of which Rappak is CEO. It has built a virtual world designed for live music experiences, to deliver on what Miro Shot have learned. It's about much more than simply filming a performance in 360 degrees, as he explained at the event.

"They should be interactive: you should be able to move around the space and interact," he said. "They should also be social: you should be able to communicate with other people at the shows."

Overview Ark has been working with digital broadcaster Dash Radio on a series of events to prove the platform out. Early in December, Miro Shot played a concert that could be accessed through VR, on a PC or Mac, and via a livestream on Twitch. There were game-like branching narratives and mini quests, as well as contests, merchandise, interviews and live performances.

At the Reality Check event, Rappak talked enthusiastically about the convergence between the music and games industries, pointing out

that games now have "a reach and cultural significance that rivals rock'n'roll in the 1960s". Rather than seeing this as a threat, he sees it as something for music to embrace.

"The explosion of virtual concerts represents a massive convergence between the two industries," he said. "Games, like concerts, are all about the experience. Something that artists are instinctively good at creating... If you're in the music industry in 2020, your audience has just increased by potentially 2.5 billion [people]. The world is currently playing three billion hours a week of online games. It's pretty exciting that one of those hours might be spent at your show."

Overview Ark is keen to ensure that it's not just the biggest artists – like Travis Scott playing in Fortnite – who can benefit from this convergence. The company is determined to make sure its platform is open to a wide range of musicians – and to pay them fairly for their virtual performances. What he described as a "hybrid tour" for Miro Shot in mid-2021 will certainly be worth watching to see how this technology is evolving rapidly



SENSORIUM GALAXY

You can't explore Sensorium Galaxy yet, but it's coming in the first half of 2021. It's a social VR platform being built by startup Sensorium Corporation, which will include a number of content 'hubs'. The first, called Prism, will be focused on music. The second, Motion, will also have a musical link, as it will be focused on dance. Prism will host DJ sets from some big stars, with David Guetta, Armin van Buuren and Carl Cox among those already signed up by the company. "The artist has an avatar, and can enter the virtual world at any time from any place, and give a performance or DJ set," is how art director Sasha Tityanko explained it at the Reality Check event.



4

SYNTHETIC REALITY

Synthetic Reality is a term that still has many definitions. For this report, we are focusing on avatars – virtual humans – operating in our music world. As Water & Music founder Cherie Hu explained in her talk at the BPI Reality Check event, there are two trends within this: “artists and celebrities who extend their fame through avatars, and in the other direction, avatars with major tech and engineering operations behind them who then become celebrities from scratch”.



Miquela

She went on to explain that a growing number of celebrities are investing in avatar versions of themselves, working with a range of startups and games companies. Hu cited Travis Scott's performances in Fortnite; The Weeknd's partnership with Wave for a TikTok livestream; and Lil Nas X's performance within games platform Roblox as three examples.

Artist Poppy has also worked with an augmented reality startup called Jadu to create an avatar of herself that fans can dance alongside – a sign that SR often crosses over with AR and VR in its implementations – while Grimes has created an avatar called WarNymph in order to (in The Face's words earlier this year) “separate Grimes's digital persona from her humanity”.

“WarNymph is a survival mechanism for the world I'm living in now. When you exist in public, as more and more of us are doing these days,

you begin to lose yourself to this digital self,” she said in February. “I wanted to untether my digital self from my humanity. WarNymph can take on the burden of the new world.”

However, as Hu noted, this trend is bi-directional, and there are a growing number of virtual, entirely computer-generated influencers and artists being created by technology companies. Miquela is one of the most famous.

Created by a company called Brud, she first found fame on Instagram, where she now has more than 2.9 million followers. However, since 2017 Miquela has also been releasing music on streaming services: by December 2020 she had more than 518,000 monthly listeners on Spotify, so this is more than just a niche.

Avatar artists – with humans behind them actually making the music – aren't a new thing for the music industry, as fans of Gorillaz know



K/DA

well. Japanese avatar star Hatsune Miku – described as a ‘vocaloid’ – first emerged in 2007, and has since played arena-sized gigs with clever staging.

The live experience has also been important to another virtual artist, K/DA, a group developed by games publisher Riot Games.

It’s the maker of League of Legends, one of the most popular games used for esports (professional gaming), and has a history of creating its own digital music artists. In 2014 it launched a metal band called Pentakill, following it up with pop and hip-hop groups K/DA and True Damage.

K/DA, for example, includes four avatars who are voiced by real musicians – Madison Beer and Jaira Burns from the US, and Miyeon and Soyeon from Japanese pop group (G)I-dle. They made their debut at the 2018 League of Legends

World Championship event, with an impressive augmented reality (again: crossover!) performance that has since been watched more than 403m times on YouTube.

The group returned late this year with new music, and another performance at the LoL World Championship – an event that attracted a peak audience of nearly 46 million people online. This music is popular too: on Spotify, K/DA have more than four million monthly listeners.

There is more potential around this, and it could involve partnerships between the music and games industries.

“The video game industry will be an absolutely indispensable partner for the music industry. They have nailed a lot of these core elements down already, and proven it at scale,” said Hu.



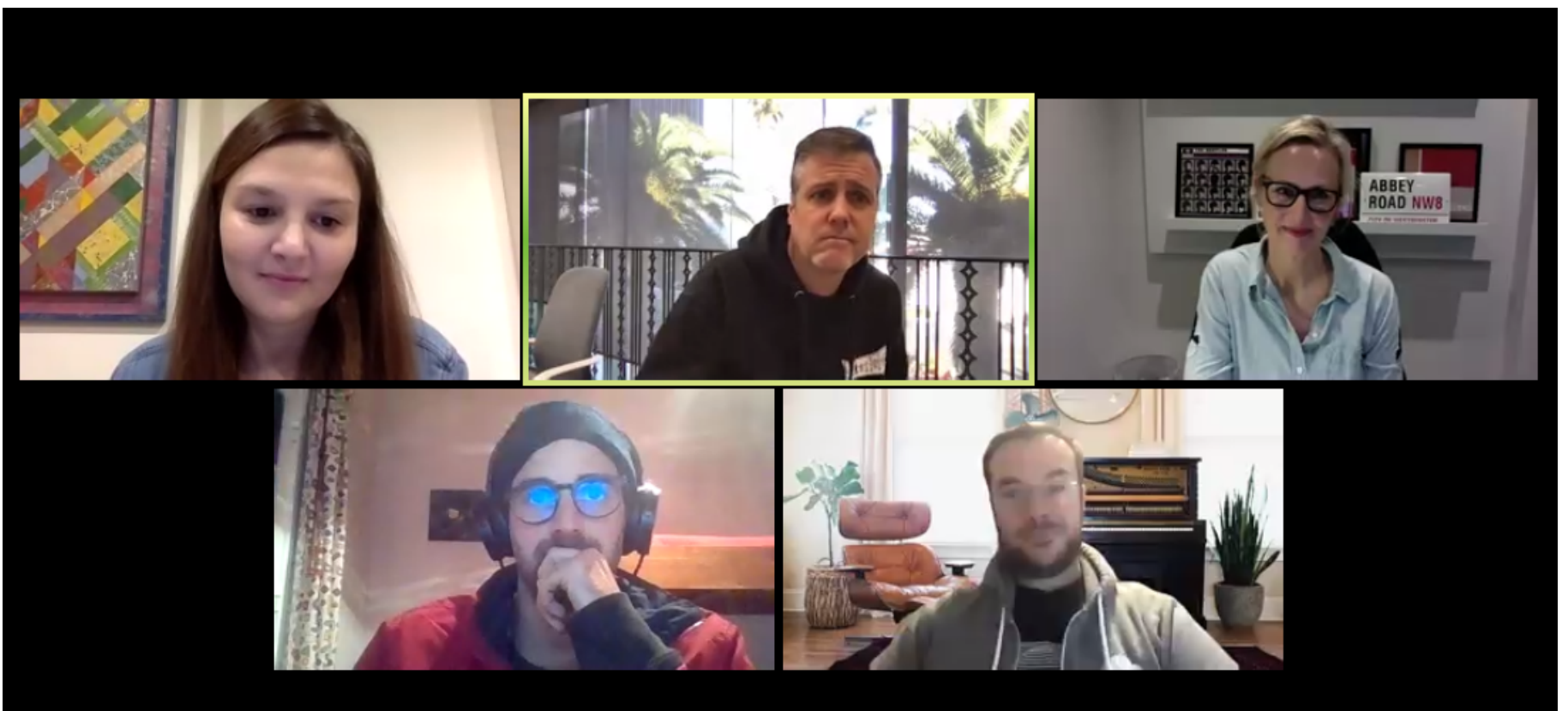
WHAT'S NEXT?



FUTURE REALITIES

The BPI's 'Reality Check' event concluded with a panel discussion of where the opportunities and challenges lie for the music industry around VR, AR and SR. HTC's Dave Haynes was joined by Isabel Garvey, Managing Director of Abbey Road Studios; Bob Moczydlowsky, Managing Director of Techstars Music; Tiago Correia, Director, Global Business Development at Warner Music Group; and panel moderator Casandra Strauss, Senior Special Projects Manager at the BPI.

The panel quickly focused on what's science fiction and what's genuinely useful in 2020, starting with augmented reality. "AR in the Minority Report sense of it is still structurally quite far away.



The Magic Leaps of this world have tried it, and it is pretty difficult,” said Garvey, whose studio held a hackathon in 2019 that included challenging developers to explore AR.

“However, our Apple iPhones now have LiDAR cameras [a technology whose benefits include better scanning for augmented reality applications] so from a creative perspective in the music industry, there are still lots of creative outlets in terms of tricks and experimentation and embracing the technology.”

Moczydlowsky agreed, and said that to make the most of AR, VR and SR labels need to take some risks. “You have to invest really widely, and you have to be prepared to do things that fail,” he said. “The culture of music and artist experimentation is trending in the right direction on that tip. It’s about being willing to be in a position where we’re putting experiences out for fans and supporting smaller companies with experiences that seem crazy... you can make tons and tons and tons of experiments, and learn.”

Haynes pointed out that while Magic Leap may not have been a success so far, that does not

mean game over for ambitious AR devices beyond smartphones.

“Look at Apple and Apple’s M&A [mergers and acquisitions] activity. That certainly points to them having a device. Maybe it’s 2022, but the big question is what form factor,” he said. “From an HTC perspective, there are a number of things in the lab. We’re big believers in having a mix, where you have a VR headset, but you’re able to allow ‘passthrough’ [a feature where the headset’s external cameras let the wearer see the real world around them] so you can work more in a mixed mode... those [VR and AR] devices start to blur and come into one, although probably not for another five years. When it does come, the world is going to be amazing!”

Haynes also suggested that a growing number of artists will be collaborating with 3D artists and developers who know their way around game engines like Unity and Unreal Engine, to make the most of the coming opportunities. Garvey warned that current music production interfaces within those tools are “very rudimentary: there’s a piece that needs to be fixed in there for that to run very smoothly”. Moczydlowsky said that one

of Techstars Music's recent startup alumni, Elastic Audio, is trying to do exactly that.

"This is happening for architecture, TV production, film production, corporate communications, real estate. These are not [just] music or entertainment production tools. These are *communication* production tools," he said.

Moczydlowsky also took the lead when the discussion turned to synthetic reality and avatar artists, although he saw it as a potential boon for flesh-and-blood musicians creating new, digital representations of themselves – which don't have to be realistic recreations.

"The way to think about this stuff: it's more about people having more chances and the ability to express themselves in different ways," he said. "A lot of the artists that I like personally are really good songwriters and/or really good instrumentalists, but are not necessarily incredible, amazing performers or personalities. The idea of being able to separate the personality and the 'vessel' from the talent and the creation [is exciting]."

Moczydlowsky also suggested that this technology allows true scale for artists, in terms of performing to fans around the world while not necessarily being physically in their country. "Things that allow scale and allow repetition and allow a really high quality, interactive, one of a kind performance to occur every hour of the day in every part of the planet," as he put it. "That's a

business opportunity that's never existed before in music. What are the tools underneath and the curation, narrative and storytelling that needs to go on top?"

"These are tools. It's almost creating new genres, new ways of doing things. It's democratising the whole environment," agreed Garvey. "This slightly weird blurred line of what's real and what's not real... is going to give us a huge creative opportunity around what an artist does, what filmmakers do.

It's not this frightening space that's going to kill the world we know. It's just going to augment it."

This technology can seem intimidating for musicians who haven't been immersed in it, although as Haynes pointed out, the next wave of young musicians may not have that problem: "the generation of musicians that spent most of their time in Fortnite for the last couple of years. What are they going to do?" he said.

Later, he suggested that labels should be asking that very question. "If it suits the label, I would really be thinking from an A&R perspective: who are the next generation of artists coming up who can ride this wave? Because I think we are just at the beginning of it."

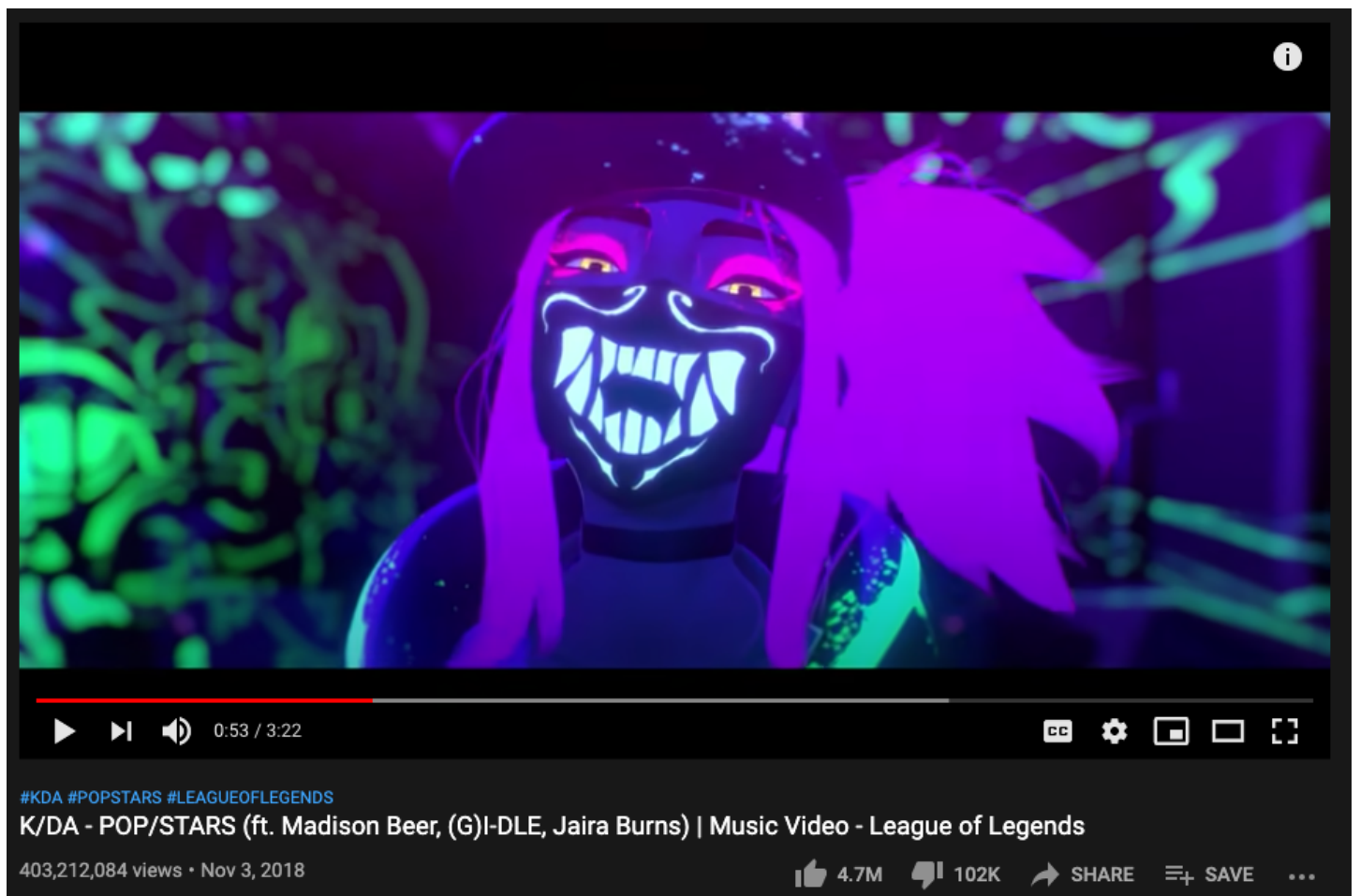
The conversation also turned to entirely synthetic artists, created as avatars. Correia pointed to the success that Riot Games has been having with K/DA and its other virtual groups as evidence that this is not a crazy idea at all.



“I don’t think they’re in the charts yet, but they’re not that far. Tot up the number of views that K/DA alone has garnered so far: that’s very impressive! That’s a success story that is already now, so it’s not far-fetched to think that in five years time, that’s going to be more developed and more common. What will K/DA be doing in five years time? What will their solo careers look like?” he said.

“In five years time, it’s [also] not that far-fetched to imagine that not only will you have synthetic artists which are powered by artists, but also potentially music either by synthetic artists or [human] artists which are in some way aided by the tools based on machine learning and synthesis,” he continued. “It just makes the role of an artist easier. It helps them in their creativity.”

The panel came back to the point that the possible futures of music in AR, VR and SR will only be reached via experimentation – and that means taking risks and accepting that some of them will not work. “As long as the end goal is to create a better fan experience or to bring an artist closer to their fanbase... I don’t think we can go wrong,” said Garvey, before adding a warning. “Be careful about doing things just to create headlines. Really believe in your creative vision.”



Moczydlowsky also had some blunt advice for anyone – startups, labels and artists alike – who is experimenting with these new realities.

“Nostalgia kills!” he said. “Any feeling of ‘don’t you miss this thing?’ or ‘wasn’t it so much better when?’ No! It wasn’t. It wasn’t better, it wasn’t greater. It’s better tomorrow!” he said.

“The world has changed. Consumers have power now in ways that are not going back. So for anybody who’s thinking about this [technology] or working with artists, or are artists... work on the next thing. Anything that goes backwards or revives something – if you can even sniff nostalgia anywhere around it – kill it. That’s my advice!”

The overall message, both from the panel and from the overall event, was that the new worlds and experiences being created using augmented, virtual and synthetic reality are ripe with potential for the music industry – and now is a great time to dive in and start learning how they can be put to use.



APPENDIX: 2020'S NEW REALITIES

 Columbia
Sportswear Company

Music Ally has covered a number of campaigns and technology stories in the fields of augmented, virtual and synthetic reality in 2020 so far. Here are the highlights from the year: a primer on developments to be aware of.

JANUARY

Rhino UK commissions WMG's Firepit Technology to create Instagram and Facebook AR filters based on the artwork for several **Pink Floyd** albums, so that fans can take snaps of them in their gardens, homes or wherever else they want. It follows a web-based AR campaign launched for the band by Sony Music in the US.

A startup called **Octi** raises \$12m of funding for its plans to create an augmented reality-powered social network, where people will be able to point their smartphone camera at friends to identify them (using facial recognition) and explore a 'floating belt' of digital items, including their favourite YouTube videos and Spotify tracks. Live Nation is one of the investors.

K-Pop music company YG Entertainment is one of the investors chipping in to a \$2.5m funding round for startup **AmazeVR**. It creates 'location-based VR' installations that people can visit to try VR without owning their own headset – for example in airport lounges. It has a catalogue of more than 450 films and experiences, including some focused on music.

Research firm **SuperData** publishes latest sales-figure estimates for the top VR headsets, claiming that in the final quarter of 2019 Sony's PlayStation VR and Facebook's Oculus Quest were the top sellers: with 338k and 318k units respectively that quarter.

FEBRUARY

Pearl Jam launch a web-based AR experience for fans called Super Blood Wolf Moon, ahead of a similarly-titled single. Fans visit the campaign site on their smartphones then point their device at the sky. Their camera tracks where the real moon is, then superimposes a red lunar eclipse while playing the band's new song.

VR startups investor **Tipatat Chennavasin** publishes research claiming that 106 virtual reality games have now made more than \$1m in sales, while seven have exceeded \$10m in revenue, and one has even pulled in \$100m.

MARCH

Having raised more than \$2.6bn of funding over eight rounds since 2014, AR headset maker **Magic Leap** is reported to be exploring options for a sale or selling a stake in the company. This, after reports in the media suggesting that the company's Magic Leap One headset has sold more poorly than expected.

Artist and producer **Timbaland** creates some brand new music for virtual reality game Beat Saber, as it passes the 2m sales milestone. His five tracks can be bought by players as part of a pack, debuting in the game as they launch on traditional streaming services too.

APRIL

Artist Travis Scott stars in the highest profile music event in **Fortnite** yet: a performance called 'Astronomical' that is repeated five times over the course of a weekend. More than 12.3 million players show up for the first performance. Alongside the event, players can spend the

game's V-Bucks currency on Scott-themed virtual items to play with – virtual merchandise.

Later that month, Fortnite gets a new mode called **Party Royale**, which ditches the shooting and building in favour of a virtual island where players can hang out. Or, as it turns out, watch musical performances at its 'Main Stage' venue.

Research firm **SuperData** offers a warning to the AR and VR industries by revising down its forecasts for 'XR' (AR, VR and mixed reality) hardware and software sales in 2020, as the Covid-19 pandemic takes hold. Its new prediction is that \$6.3bn will be spent in total, rather than the previous forecast of \$7.7bn.

Magic Leap signals a pivot away from consumer hardware and lays off “a number of employees” – reported to be half of its staff. “While our leadership team, board, and investors still believe in the long-term potential of our IP, the near-term revenue opportunities are currently concentrated on the enterprise side,” explains a statement from the company.

MAY

Polydor-signed artist **Gracey**'s new single 'Empty Love' is promoted using an inventive AR Instagram filter. It plays an instrumental passage from the track, and as the fan turns the volume up both audio and the camera feed are distorted. It was launched without fanfare as a way to tease Gracey's new music, but fans quickly cottoned on.

US startup **Supernatural** launches its virtual reality app to get people fit. Headset-clad users work out with the help of instructors and energetic rhythm games, with a catalogue of

music licensed from labels. The service costs \$19 a month as a subscription.

Finnish artist **JVG** holds a virtual reality gig in Senate Square in the country's capital Helsinki, which fans can watch from home and attend as avatars. The show is estimated to draw nearly 700,000 viewers, while nearly 150,000 create avatars to attend in (virtual) person. Other gigs with a virtual spin this month include Dutch DJ duo **W&W**, who stream from a purpose-built virtual world to more than one million fans on Facebook and Twitch, and British pair **Prospa**, who host an old-school rave from a virtual warehouse – complete with a queue to get in!

Apple makes its latest move into virtual reality by acquiring a company called NextVR, which has focused on broadcasting live sports and music events to viewers in headsets. The company has previously worked with Live Nation to explore the concerts side of that. Meanwhile, **Facebook** reveals that owners of its Oculus Quest VR headset have spent more than \$100m on games and applications in the year since it launched.

Former HTC boss Peter Chou launches a new startup called **XRSpace**, with its own VR headset and plans to build a virtual world called Manova for people to hang out in. There are also plans for music-focused spaces within this.

JUNE

With festivals cancelled due to Covid-19, some are exploring the digital world. The team behind Glastonbury's Shangri-La zone, for example, announce a VR event called **Lost Horizon** in partnership with VR startups Sansar and VRJam, with a host of dance luminaries set to play DJ sets. Top dance festival **Tomorrowland** also

unveils its plans for a virtual 'Around The World' event in July, in its own virtual world.

AR/VR/music collective **Miro Shot** (see earlier in this report) set off on a 'Virtual Worlds Tour' to promote their latest album. The band kick off the tour at the Cannes XR and Tribeca Film Festival's opening party, with plans to take it to three other virtual worlds: Sinespace, Microsoft's AltSpaceVR and a 'secret location' in July.

Snap launches a swathe of new features for **Snapchat**, including dedicated AR music lenses, describing them as "our new category of music lenses, so you can always find the perfect song to express yourself and send to friends in a snap". It's also revealed that TikTok rival Triller is using Snapchat's 'Camera Kit' tool to help its users find Snapchat lenses from musicians.

Virtual reality startup **Wave** raises a \$30m funding round from investors including music-tech fund Raised in Space, entrepreneur Scooter Braun and Twitch's co-founder Kevin Lin. The news comes as it launches a series of virtual concerts with artists including John Legend, and partnerships with WMG and Roc Nation.

Fellow startup **MelodyVR** confirms a deal with Live Nation to launch a series of concerts from London's O2 Academy Brixton, which can be watched in VR via a headset, or in 360 degrees on MelodyVR's smartphone app. It also reveals that its virtual replacement for the cancelled Wireless Festival in London drew more than 132,000 viewers.

UK-developed VR fitness game BoxVR rebrands as **FitXR** to match its developer's name, shortly after the company raises \$7.5m of funding. The app offers more than four hours of boxing

workouts, each accompanied by a music soundtrack from genres including pop, hip-hop, rock and electronic music. Later in the year it adds dancing workouts to the mix.

AUGUST

Riot Games' synthetic pop group **K/DA** return with a new track called 'The Baddest', ahead of a full EP release. The company says the group's sound is expanding beyond K-Pop, and that there will be a number of human artists collaborating on upcoming songs.

MelodyVR springs a surprise by announcing plans to merge with streaming service Napster, with an ultimate vision of a single service combining live performances shot for VR consumption with traditional music streaming, all paid for by a monthly subscription.

Another streaming service thinking about VR is Tidal, which buys \$7m of tokens issued by **Sensorium Corporation**, which is working on its Sensorium Galaxy social VR platform. Tidal says it will be holding live broadcasts within the world when it launches in 2021.

British band **Muse** reveal plans for 'Muse's Simulation Theory: Virtual Experience' – an experience created by startup Stageverse that blends 360-degree footage from the band's 2019 tour with a virtual concert venue for fans to explore, including buying virtual merchandise.

Disclosure celebrate the release of their new album 'Disclosure' with a virtual world created in Minecraft by agency Blockworks. Fans can visit three underground clubs as well as the kitchen of the band's Guy Lawrence, with the one-week

live version of the world evolving to match the album's environmental themes.

Linkin Park are revealed as the latest artist to get their own music pack in Beat Saber. It's one of the biggest yet, with 11 songs and 55 'beat maps' (designs for the game's levels) included. Those levels are a tunnel-like design with the band's logo prominently displayed.

SEPTEMBER

With the Oculus Quest headset acclaimed as a (nearly) mainstream breakthrough for VR, Facebook reveals a new model, the **Oculus Quest 2**. It's cheaper, lighter and more powerful, with a lineup of exclusive games to boot.

US company Trick 3D unveils an app called **AiR Show**, which promises to bring musicians to fans' homes using augmented reality. Its Android and iOS app will sell tickets to livestreams, with the twist being that the fans can then "pose and hang with the artists in augmented reality".

Within weeks, the app is acquired by a bigger AR firm, NexTech AR Solutions.

Everything Everything perform two live shows in VR world Sansar to celebrate the release of the British band's latest album 'Re-Animator'. It's a ticketed event, although the first song is also streamed on the band's Twitch channel, to entice fans to pay for the full concert.

Sensorium Corporation reveals its first big artist deal for its upcoming virtual world, with **David Guetta** signing up for a series of VR performances in 2021. He'll be playing within Sensorium Galaxy's 'Prism' hub, which will be devoted to music.

Riot Games debuts a new character called **Seraphine**, who is introduced to the world with Twitter, Instagram and SoundCloud accounts. On the latter, she releases a cover version of fellow virtual stars K/DA's first hit 'Pop/Stars'.

OCTOBER

British artist Dan Olsen works with a company called **Musion**, best known for its hologram-based concerts for Michael Jackson and Tupac Shakur. He uses its technology to play three songs from a recording studio in London, with his performance beamed in to a venue elsewhere in the city in hologram form.

Sam Smith's 'Diamonds' augmented reality campaign launches, created by digital agency Powster for label Capitol Records. Fans need two smartphones to make it work: by scanning an image, a virtual Smith pops up dancing on the second phone. It's tied in with his appearance on Spotify playlists.

Meanwhile, Snap's latest financial results reveal that **Snapchat** now has 249 million daily active users. The company talks about how popular its top AR lenses can get, saying that more than 1.5m of them have been created so far, while its recently-launched 'Anime Style' lens was engaged with 3bn times in its first week.

K/DA perform at the opening ceremony of the League of Legends World Championship in Shanghai, with a trademark spectacular AR performance blending the avatar group with human musicians. Riot Games later announces that the championship had a peak audience of 46 million viewers.

Elsewhere, **J Balvin** headlines Fortnite's Halloween-themed 'Afterlife Party' concert, performing in a virtual world created especially for the event. **Charli XCX**, meanwhile, kicks off a series of virtual music performances in Facebook's Oculus Venues app.

It is announced that Warner Music Group led a £500k pre-seed funding round for an intriguing startup called **Anything World**, whose technology promises to let people "create 3D worlds with your voice". WMG's Oana Ruxandra says that the startup "creates exciting new opportunities for our artists to express their creativity and engage with their fans through 3D worlds and objects".

A new K-Pop group called **Aespa** is unveiled, and it will include both human and avatar members. The group is introduced to fans via an interview with human member Karina and her virtual version 'æ-Karina'.

NOVEMBER

Independent British artist **RJ Thompson**'s new album 'Lifeline' has what's described as "the world's first ever-evolving AR designed album artwork". Fans who buy the album can download a companion app and point their camera at the artwork, which changes according to the time of day, year and weather. They can also unlock bonus content: from videos and demo recordings to sketches.

British artists KSI and Craig David are turned into holograms for an AR video campaign by lifestyle brand LadBible. It's web-based AR, so fans can visit a website on their smartphones and point their camera at the room or space around them to see KSI and David pop up and perform their

new track 'Really Love'. AR startup **HoloMe** is behind the campaign.

Kylie Minogue celebrates her new album 'Disco' with an Instagram campaign called 'Disco Spirit'. Available for one hour only, it is an AR performance of 'Real Groove' from the album, blending motion capture and special effects courtesy of Facebook's Spark AR tools. After the hour is up, fans can access a 'Disco Spirit' Instagram filter for their own sparkly snaps.

The creators of Japanese avatar star **Hatsune Miku** launch a Kickstarter campaign to fund an ambitious (and free to attend) online concert: 'Hatsune Miku Expo 2021 Online'. Within two days of launching, the crowdfunding campaign reaches its goal, and by early December it has raised nearly £380,000.

DECEMBER

Glass Animals launch an interactive Instagram filter using their track 'Heatwaves', based on the artwork from the band's latest album. The filter turns that artwork into a 3D background for the fans' photos or videos, but by tapping on the screen they can also add layers of audio from the track: starting with drums, then bass, synths and vocals.

Media company Complex can't hold its annual ComplexCon event due to Covid-19, so it takes it global with something called **ComplexLand**. It's a browser-based virtual world that people will be able to wander around, talk to NPCs (non-playing characters) and chat to other attendees, while checking out talks, performances and even merchandise.

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