

#WhyESGMatters

The ESG impacts of Virtual Reality

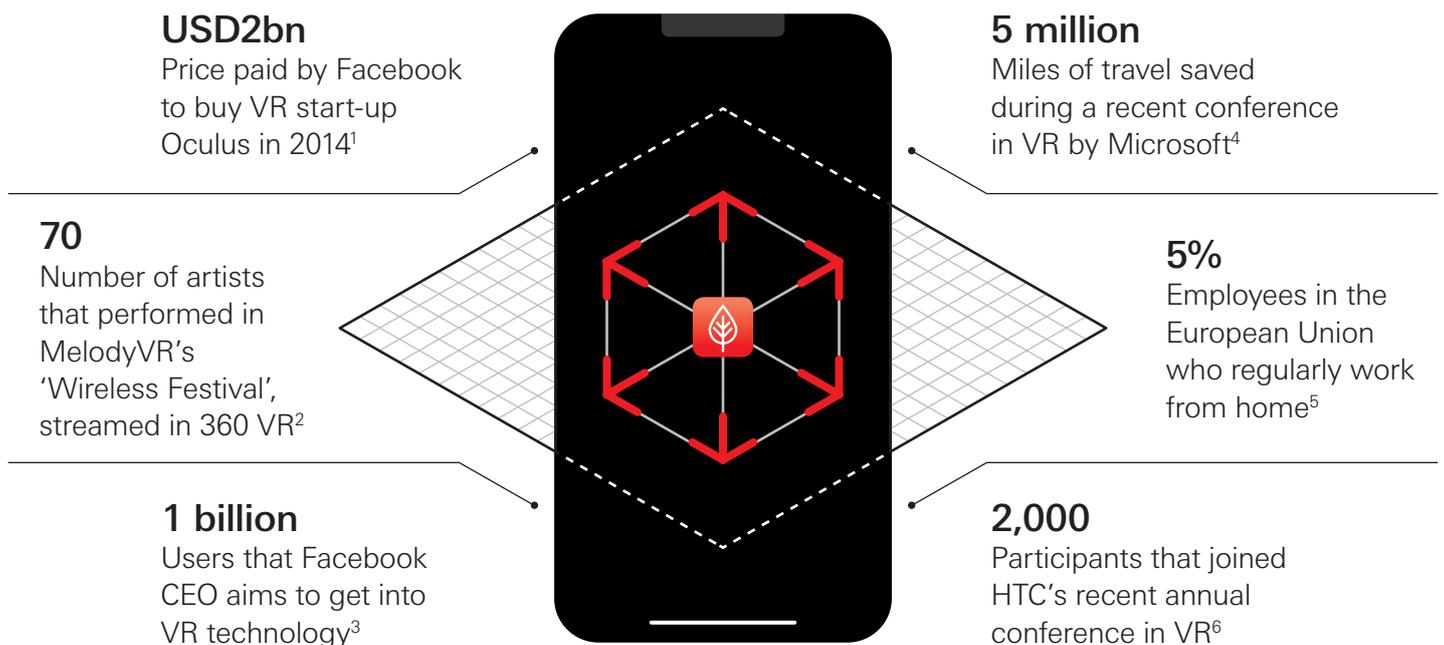


The ESG impacts of Virtual Reality

COVID-19 is increasingly acting as a catalyst for society to explore ways of functioning without physical movement. Virtual reality (VR) is key to this evolution, as it allows us to interact with others on a daily basis to work, educate and entertain, all from a remote location. This emerging technology also raises a number of environmental, social and governance (ESG) implications, from a reduction in travel, social inclusion and a power usage.

In this issue of #WhyESGMatters, we look at how the pandemic is providing a platform for virtual reality to thrive, we discuss a number of VR applications that could change the way we live in the years to come and we examine the related ESG implications of this technology.

Did you know?



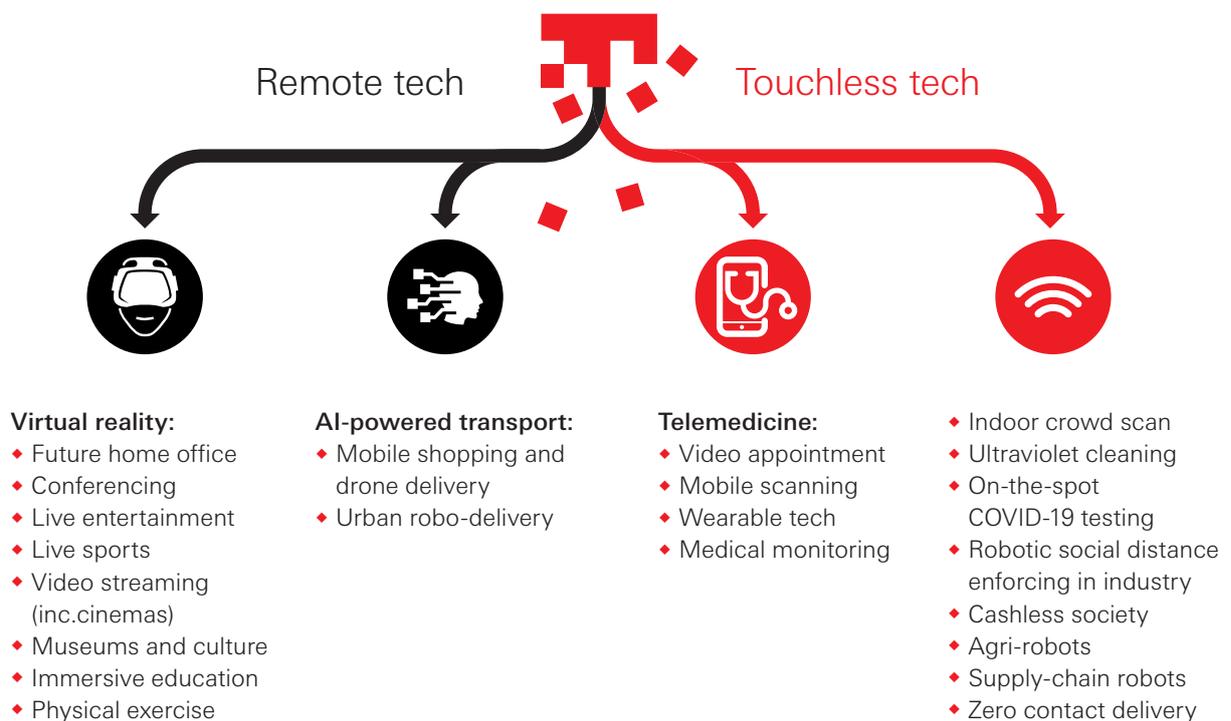
1. Facebook, March 2014
2. Morning Star, July 2020
3. BBC News, Oct 2017

4. Forbes, March 2020
5. Eurostat, April 2020
6. Morning Star, July 2020

1. The rise of Virtual Reality

The advent of decentralised technologies (see chart below) over the past few decades has meant that one could work, be educated, find entertainment, buy things, or have access to healthcare from anywhere in the world. The pandemic is accelerating these trends and we can see the possibility of these technologies becoming growth stories in the age of living with COVID-19.

Technologies from the future, today



What is VR?

One such decentralised technology is Virtual reality (VR), which we believe holds much promise to be the next mass commercialized platform for communication and interaction across large distances. VR will be used to build new worlds and replicate the sense of “presence”, of being somewhere else within these new digital realms. This may now seem more appealing to consumers to try than a few months ago, replacing physical visiting of places or seeing people.

VR could fundamentally change the way we work, educate and entertain ourselves. This technology would not have been possible without the rise of the internet but we propose that VR could be even bigger, in terms of how it affects our lives, how it may affect the way society is structured and the way the economy works.

2. VR applications showing glimpses of the future

We believe that VR technologies will be used to augment a whole set of industries such as work, travel, education and entertainment. They will be the next stage of evolution in a trend of doing activities virtually, but in a more immersive way that mimics reality better. We discuss a number of VR applications below which we think will grow over the coming decade:



Work/travel

Conferences from 2D to 3D: Companies have been utilizing VR technologies to host conferences, improving user experience from a simple 2D stream. Microsoft, for example, recently hosted an education summit in VR, with 170 speakers and 2,000 participants over six days. The company says this took 9,000 cars off the road and saved 5 million miles of travel compared with holding a physical conference.

The future home office: Small homes mean working from home (WFH) can be difficult, due to lack of space: VR can make this easier. Facebook's VR team recently showed how remote work might operate using VR by overlaying virtual screens on reality. The company's CEO Mark Zuckerberg says that "VR and augmented reality (AR) is all about giving people remote presence".⁷



Education

Immersive education: Online education for schools and universities had become the only way to continue the term during the pandemic, often through online lessons. We are beginning to see VR applications being designed for education too

and could be the next stage of remote or in-class education. In addition, there are VR platforms that hold lectures and talks, which could be useful for universities.



Entertainment

Live entertainment: Musicians including John Legend and David Guetta have used VR technology (through MelodyVR and Oculus venues) to broadcast live events over earlier this year. We believe that live entertainment streaming technology may well progress to become fully immersive over the coming decade, blending live-action and computer-generated imagery (CGI).

Going to the movies: According to a survey by Morning Consult, 52% of moviegoers say cinemas should change with the times and embrace digital premieres.⁸ This could bode well for the future of movies premiering in VR. Netflix and Amazon Video already have VR apps, while Paramount and Lionsgate have arrangements to show movies with VR companies. Content platform owners, such as Apple, could also get involved, especially if they release a VR headset.

Live arena and stadium sports: NextVR, a company recently acquired by Apple, has in the past used its technology to livestream sports such as NBA games from courtside into VR. During the FIFA Men's World Cup in 2018, a number of broadcasters such as the BBC streamed it in VR, making viewers feel like they were in the stadium. We think that VR live sports has potential to gain in popularity in a post pandemic world.

7. "Facebook teases a vision of remote work using augmented and virtual reality", The Verge, May 2020

8. "Moviegoers split over theatre owners' feud with Universal", Hollywood Reporter, May 2020

Example: a brief history of VR products by Facebook/Oculus*

Facebook is one example of a company investing into VR technology. In 2014 they bought the Kickstarter funded VR start-up Oculus VR for a reported USD2bn while Mark Zuckerberg has set a very ambitious goal of wanting to get a billion people into this new potentially paradigm-shifting platform. Since the acquisition Facebook has continued to make improvements to its hardware portfolio (through their Reality Labs subsidiary), the company recently announced a number of products in this direction (see Table 1).

Table 1: A brief history of VR products by Facebook/Oculus

VR headset	Release date	Comments
DK1 – Development kit 1	March 2013	The DK1 was meant as a developer kit for game makers who wanted to either port or create new native VR games.
DK2 – Development kit 2	July 2014	The DK2 went onto sell over a 100,000 units according to one of the founders of Oculus back in 2015. It was a ‘six degrees of freedom’ (6DoF) tethered headset which required a fairly high-end PC. It used a sensor attached to the PC to track the users head movements.
Oculus Rift (CV1) – Consumer version 1	March 2016	The Oculus Rift was the first consumer-ready VR headset by Facebook/Oculus. Like the DK2, it was also a tethered 6DOF headset which required a high-powered PC. The Rift started the trend of Oculus products which could be used via Facebook login details, beginning the integration of Oculus into Facebook.
Oculus Go	Consumer – May 2018 Enterprise – April 2019	The Oculus Go was the first VR headset that was easy for a novice to buy and use without any technical expertise or additional equipment. For the 2018 FIFA World Cup, one could download an app to watch the games in VR, from the perspective of a private box on the half-way line or behind the goal. One could see sports streaming as one of the potential big apps and experiences for VR in the future to take it mainstream.
Oculus Quest	Consumer – May 2019 Enterprise – April 2019	The Quest is the first fully wireless 6DoF headset by Oculus with inside-out tracking using 4 built-in cameras, meaning no external sensors required. It works in a seated position and also as standing room-scale device, with a virtual guardian letting you know the boundaries of the room. Quest has pass-through technology, which brings the real world into your headset. This mild form of augmented reality (AR) is used to set up the headset and warns the user when moving outside guardian region. The Quest is powered by Snapdragon 835 Mobile VR Platform. Developers can port their titles from the Rift to the Quest by optimising their graphics. Facebook’s Oculus for Business will provide bulk purchases and support of Quest devices starting in 2019.
Oculus Rift S	May 2019	The Rift S is the next iteration of the original Oculus Rift from the headset from 2016. It requires connection to a PC with a graphics processing unit (GPU). It is compatible with Oculus Rift titles but uses inside-out tracking like the Quest so that it requires no external sensors. Facebook partnered with Lenovo to manufacture the Rift S due their expertise in manufacturing Window Mixed Reality (WMR) headsets and the Lenovo Mirage Solo with Google.

Source: HSBC, Facebook/Oculus VR

*Not an exhaustive list. The information provided does not constitute investment advice, financial advice, trading advice, or any other sort of advice.

3. The ESG impacts of VR

As VR continues to emerge, it naturally raises a number of ESG implications, from a reduction in travel to social inclusion and an increase of power requirements from a growth of data and connectivity in society.



VR could help lower transport emissions

The most obvious advantage of the long-term VR success is the ability to eliminate or significantly reduce the need to commute or travel, the largest slice of our carbon footprint. Whilst not a perfect replacement, many in government, business, academia, and civil society may consider whether face-to-face meetings are absolutely necessary or whether they can be held virtually.



...and energy consumption

But whether that would mean less energy will be consumed in aggregate is questionable as VR server farms will still consume significant amounts of energy, but it is likely that our energy needs change substantially in a VR-driven world.



VR helps increase social inclusion

The more immersive VR becomes, the more “real” social interactions will seem. This will have implications for a number of industries. For example, entertainment activities (concerts, amusement parks etc.) will continue to exist – there will always be a premium price paid for the “real” thing – but it is possible that the many will be happy to “attend” or participate in an event from the comfort of their own home using VR technology.

VR is also likely to have a positive impact on the elderly by allowing them to participate in activities that otherwise would not have been possible, thus making them feel less isolated. Suppose an elderly individual is unable to venture outdoors for even something as simple as a walk, due to ill health. The outside world can be replicated in VR and experienced from the comfort of the home, easing the homebound isolation the elderly might otherwise experience.

4. Conclusion

VR technologies may have seemed a long way off in terms of widespread public adoption a few months ago, but the pandemic has given a platform for these technologies to flourish. Since VR is a newly emergent field that is significantly different to existing mediums in society, the extent of the social and health implications are still to be fully understood. This is uncharted territory for society. Today VR falls outside the regulations radar, but we believe this space could see more government oversight.

With the speed to development now quicker than ever, technologies that allow businesses and individuals to operate in a more socially-distant way should continue to be rolled out. The application of VR has already shown how we can possibly operate virtually such as in work, travel, education and entertainment, whilst the positive impact of VR on ESG will also play a crucial role in people’s investment decision makings.



Disclosure appendix

Additional disclosures

1. This report is dated as at 04 September 2020.
2. All market data included in this report are dated as at close 03 September 2020, unless a different date and/or a specific time of day is indicated in the report.
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