



# 2021 Immersive Technology Trends

The impact of 2020 on the way we work



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# Executive summary

# 63%

of surveyed companies used immersive technologies to navigate the challenges of COVID-19.

At the start of 2020, we asked more than a dozen industry experts to share their thoughts on how immersive technologies would be embraced. Cataloged in our report, [Top 2020 Trends: Enterprise AR & VR](#), all signs pointed to 2020 being a breakout year.

Then, the COVID-19 pandemic arrived.

With a sudden shift to remote work, office and facility shutdowns, and social distancing, it seemed like the promised breakout year would be lost. However, that was not the case – companies turned to these tools in droves in the face of unprecedented challenges. Unity research found that 63% of firms used immersive technologies such as real-time 3D, AR and VR to navigate the challenges of COVID-19.<sup>1</sup>

Many companies utilized the powers of AR/VR and real-time 3D to create immersive applications to connect employees for remote collaboration, replace events and exhibitions, and allow teams to work in offices, labs and sites from afar. Microsoft alone has seen a 13x increase in remote assistance usage on HoloLens 2 since January 2020 due the global health crisis.<sup>2</sup>

Volkswagen and Siemens are just two examples of companies who pivoted during the pandemic. [Volkswagen](#) responded to the cancellation of one of the industry's largest trade shows by launching its very first virtual motor show to exhibit new vehicle models. [Siemens](#) created a virtual simulation lab allowing employees and customers to continue collaborating in VR using a digital twin of their physical lab.

The accelerated adoption of real-time 3D and other immersive technologies comes as the need to stay resilient and support employees remotely grows more urgent. These trends are part of a greater push toward digital transformation: 75% of Fortune 500 CEOs are accelerating technology transformation in response to the pandemic.<sup>3</sup> These increased investments raise the question of whether this growth will continue in 2021 and beyond – and all signs point to yes.

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<sup>1</sup> Unity Technologies, "2020 Industrial Tech Trends survey," 130 Unity industrial customers, October 27–November 2, 2020.

<sup>2</sup> Sara Castellanos, "[Coronavirus Pandemic Brings New Use Cases for Augmented Reality](#)," The Wall Street Journal, May 29, 2020.

<sup>3</sup> Alan Murray (Chief Executive Officer, FORTUNE Media), "[Fortune 500 CEO survey: How are America's biggest companies dealing with the coronavirus pandemic?](#)," FORTUNE Media, May 14, 2020.

# 71%

of surveyed companies plan to accelerate their use of immersive technologies in 2021, due in part to COVID-19.

Unity research has found that 71% of companies plan to increase their use of immersive technologies in 2021.<sup>4</sup> As the majority of companies double down, industry experts are identifying several trends which will affect the use of immersive technologies in the next year and beyond.

Here are the major trends shaping the way we will work in 2021:

- **The use of mixed reality will expand to enable more human connections.**<sup>5</sup> Mixed reality has traditionally been used to aid in task completion, however the pandemic has sparked the need for tools that mimic human connection and proximity to create more productive work environments and collaboration.
- **Cross-functional collaboration across immersive media will grow.**<sup>6</sup> 2020 has seen more users looking for ways to collaborate remotely from multiple geographic locations, using media that mimic real life. Expect that to continue into 2021.
- **VR will prove even more useful in the workplace.**<sup>7</sup> The disruptions of COVID-19 have led many to look for creative ways to solve new and old problems across the workplace, such as keeping skills fresh, engaging learners without in-person training, improving employee productivity, and fostering collaboration and connection among teams. The accessibility of all-in-one or standalone devices provides a solution for bridging “gaps we didn’t think technology could solve,”<sup>8</sup> and these will maintain their traction in the future.

Read on to learn more about how 2020 has impacted the future of immersive technology.

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<sup>4</sup> Unity Technologies, “2020 Industrial Tech Trends survey,” 130 Unity industrial customers, October 27–November 2, 2020.

<sup>5</sup> Alice Bonasio, XR Consultant, [Tech Trends](#); Matt Fleckenstein, Senior Director of Mixed Reality, [Microsoft](#).

<sup>6</sup> Elizabeth Baron, Enterprise Solutions Executive, [Unity Technologies](#).

<sup>7,8</sup> Jill Campbell, Product Management Lead, FRL Enterprise, [Facebook](#).

Top 2021 Trends

# Top 2021 Immersive Technology Trends

Featuring contributions from

 **oculus** FOR BUSINESS

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HACKL**

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 **nvidia.**

 **Microsoft**

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**TECH  
TRENDS**

 **unity**

## VR proves new utility across all work scenarios

2020 has been an unprecedented year, causing companies to experience dramatic shifts in everything from what they work on to how they work.

This upheaval has caused unexpected creativity – looking for new ways to solve old, but now more pressing, problems. Problems like: How to feel like you’re with someone when you can’t be together in person? How to get more done across a globally remote team? How do you keep skills fresh and learners engaged without in-person training? Or how to ensure virtual team collaboration is engaged, healthy and interactive?

With the recent launch of Oculus Quest 2, we’ve broken the perception that VR is a niche, elite and unattainable technology. It’s for everyone – whether you’re using it for play or work. We’re seeing across a variety of industries that VR’s immersive power bridges many disconnects – from training to collaboration – and allows companies to be more connected, teams more productive, and training more effective, even when employees are distributed.

VR is changing mindsets. The more that companies are exposed to the benefits VR provides, the more it unlocks creative thinking about what’s possible. VR is now entering a new phase – one where it enables the future of work and is considered for gaps we didn’t think technology could solve before.



**Jill Campbell**  
Product Management Lead,  
FRL Enterprise

Facebook

[Learn more about  
Oculus for Business](#)



Image courtesy of Facebook Reality Labs



## Volumetric video will take off for training and upskilling the workforce




### Cathy Hackl

*Futurist and author of  
The Augmented Workforce*

Futures Intelligence Group

 @cathyhackl

 /cathyhackl

[Learn more about  
Cathy Hackl](#)

The pandemic has fast-tracked the need for virtual training and communication for many companies around the world. The problem is, traditional training videos and online courses don't translate as well as experiencing the training in real life and real-time. Volumetric video is one solution to overcome pain points caused by the sudden shift to remote work. Experiencing something in 3D with real-life physical movement is shown to increase viewers' retention of the information being taught. Volumetric video provides presence – where a person feels like they're actually in an environment or situation, even though it's virtual.

Companies can record employees, projects or scenarios in three dimensions with volumetric video, instead of digitally rebuilding them from scratch for virtual reality simulations. The digital video can be edited and manipulated to be viewed on everything from flat screens to virtual reality simulations. Volumetric video helps employees retain information better, no matter where they are located.

Volumetric video is already being used to train medical personnel on patient care and proper utilization of PPE during the pandemic. I expect this trend to continue to increase, since volumetric video allows the worker to see what a trainer is doing from every angle and better prepare for outcomes.

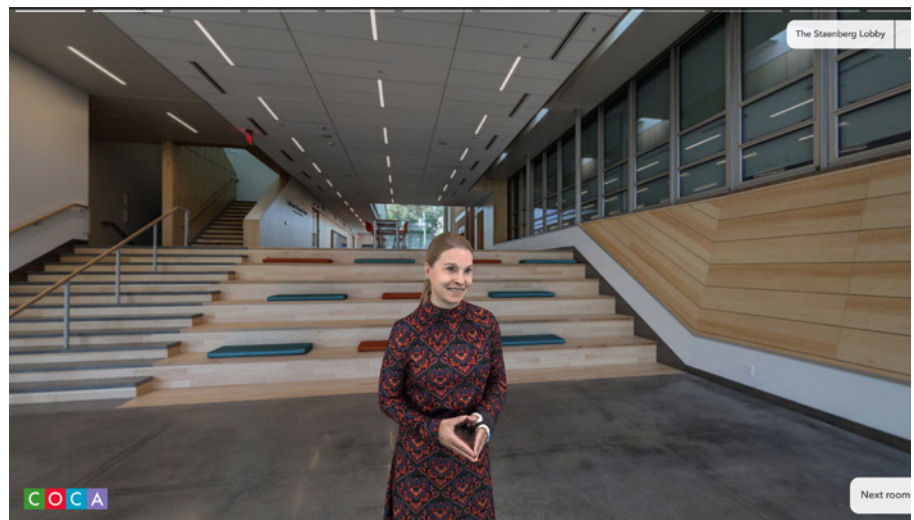


Image courtesy of [Avatar Dimension](#)



## 5G, Edge, and AI to unlock new dimensions of interactions for the XR experience



**Joe Pavitt**  
Master Inventor and  
Emerging Technology  
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IBM Research Europe

[Learn more about  
IBM Research Labs](#)

**We are seeing faster innovation with both communications (5G) and compute (Edge and AI) components.** Driven by an acceleration of research and investment over the past few years, it's created a fertile intersection of the perfect conditions for breakout technologies in XR. Specifically, we expect the maturity of vision AI to play a key role in automated and remote assistance use cases, as well as the technology enabling a richer XR environment, built into the real world.

**Further immersion and control with the use of AI-driven conversational interfaces.** With improving speech-to-text and natural language understanding AI, interaction with the digital XR domain will extend beyond the use of gestures and controllers and into the world of voice. The ability to ask questions of digital agents and the surrounding environment, and even to interact with and control the world through conversation, will further immerse users and provide a new dimension of interaction for the XR experience.

**Remote attendance through virtual reality.** This market was already on the rise pre-COVID, but now we can only see this accelerating. Being able to sit courtside at a basketball game, watch the latest blockbuster in a digital cinema with your friends, or join a crowd for the keynote at a major conference without leaving your home will become more popular throughout 2021 and beyond.

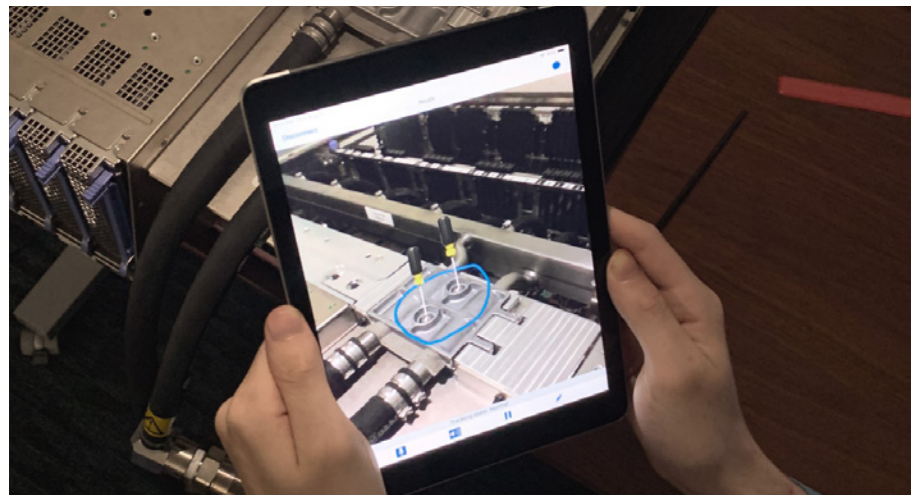


Image courtesy of IBM Research Europe






## The growth of mixed reality: Evolving from task completion to human connection and collaboration



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[Learn more about Microsoft HoloLens](#)

Over the past 18 months, we have seen the rapid adoption of mixed reality in enterprise. The primary use cases have centered on helping firstline workers in manufacturing, architecture/engineering/construction, healthcare, and retail to learn skills more quickly, complete tasks faster, and commit fewer errors. The ROI for firstline workers has been significant. We've seen 90% of touch labor eliminated, errors reduced to zero, and increased employee satisfaction.

We anticipate 2021 to be the year when mixed reality evolves beyond task completion and emerges as the ideal medium for human connection and collaboration in enterprise. With travel more difficult than ever and an increasingly remote workforce, there is a tremendous opportunity for more immersive collaboration, made possible by mixed reality, to replace the whiteboarding, brainstorming sessions and in-person design reviews that are at the core of our businesses. While computers will never fully replace the value of in-person connection and collaboration, look for mixed reality to enable us to take a huge leap forward in the coming year.



Image courtesy of Microsoft



## All-in-one devices continue to drive positive impact on XR

In 2020, we addressed three major trends in XR: 1) faster, more powerful graphics, with more tools for optimizing the graphics available to developers powered by NVIDIA RTX™ and Unity; 2) the coming of disaggregated graphics in driving mobile XR devices from the cloud, so-called “split rendering” using technologies like NVIDIA CloudXR™; and 3) deeper XR penetration within enterprises.

While these trends will continue well into the future, the major driver in 2021 will come from the profound impact that all-in-one (AIO) devices are having on the XR market. Powered by the ease of use and cost of the AIOs, an emergent trend of coupling AIOs with the increasing availability of edge computing via high-performance networks will fundamentally change “where” XR is served from. For instance, training applications requiring more realistic environments will move from on-headset computers to data center servers inside low-latency private networks. The tools enabling XR experiences to be driven from the data center will also enable the market to move more and more use cases to the cloud, including client walk-throughs of architectural designs and immersive retail experiences.



**Greg Jones**  
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NVIDIA

[Learn more about NVIDIA](#)





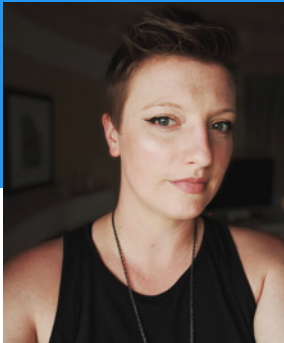
## Enhancing business resiliency with AR

2020 dramatically changed how companies work to keep their employees connected and safe. Lockdowns and social distancing mandates led to a rise in remote work, as well as an increased need for solutions to support this new normal. Augmented reality has emerged as a critical technology that enables this evolution, especially for frontline workers.

For example, AR remote assistance enables experts to connect with employees and customers in the field, helping them to collaborate and resolve issues, even at a distance. With annotations that stick to the physical world and enable more precise communication, these see-what-I-see video conferencing tools will continue to provide critical support for remote operations in 2021.

Additionally, 2D and 3D content presented through AR can transform employee training, reducing cognitive load and improving information retention to empower all employees to become experts. In 2021 and beyond, companies will look toward solutions that allow them to create these AR experiences simply and quickly, and in a way that can scale with their business needs.

Now more than ever, resiliency remains top of mind as companies look to accelerate digital transformation. Thriving in the new normal requires smart investments in technologies like AR that underpin these strategies and drive business impact.



**Sarah Reynolds**  
VP of Marketing, AR and IoT

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[Learn more about PTC](#)



Image courtesy of PTC



## Enterprise more broadly will acknowledge the value of immersive technologies

Adoption of immersive technologies differs wildly by industry. In an analysis of over 7.2 million American and British businesses, we found engineering and manufacturing organizations to be the most vocal about their use of immersive technologies. This makes sense when you consider that many of these businesses have been using such technologies since the early 2000s.

Despite this uptake, a number of other industries lag behind. 2020 has been a challenging year that disrupted many organizations, forcing transformations that would have taken years into a matter of months. As a result, in 2021 and beyond, we will see a wider range of businesses across numerous industries become more comfortable with emerging technologies such as immersive, that they would otherwise have left on the sideline until pressured to innovate.



**Jeremy Dalton**  
Head of AR/VR

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[Learn more about XR at PwC](#)



*Image courtesy of PwC*

# TECH TRENDS

## Reinventing personal interaction through technology

The scale of the economic and psychological devastation caused by the COVID-19 pandemic will remain with us for decades to come. When it comes to the ways in which we interact with one another – both personally and professionally – many of the changes that were brought by necessity, as measures to mitigate the spread of the coronavirus, will become permanent. These include the widespread acceptance of remote working practices, the curtailing of business travel and large-scale gatherings such as conferences, and the creation of ever more detailed virtual environments and avatars that will allow us to have meaningful interactions without the risks associated with close physical contact. Immersive technology effectively allows us to replicate the personal connection and sense of shared presence that most humans crave, and in years to come, the majority of those interactions will naturally migrate into XR platforms in one form or another.



**Alice Bonasio**  
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Tech Trends

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## Holistic immersive collaboration for cross-functional communication

Immersive realities provide probability spaces for enterprises to study any potential reality, or the art of the (im)possible, with a host of relevant data. These realities can be shared across a global, connected work team for collaborative decision making. The distinct advantage of comprehensive immersive reviews is that the outcomes are both data-driven and experiential. Storytelling with immersive XR can simultaneously bring a spreadsheet to life for an artist and bring a design to life for an engineer.

Often borne out of necessity during 2020, the use of XR for cross-functional immersive and collaborative reviews increased. Users located in multiple geographic locations, including home offices, participated in collaborative problem solving based on their definition of a digital twin.

Looking forward to continued adoption of immersive XR collaboration, innovation in XR will blur the distinction between physical and virtual with amazing realism and the persistent and natural interaction of real-time 3D data.



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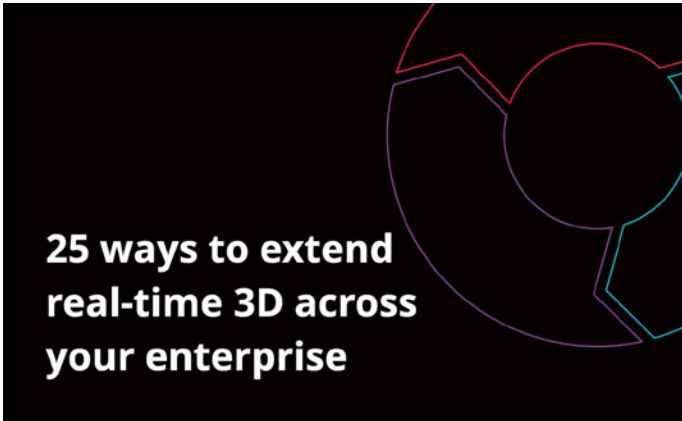


## Additional resources



WEB

### Real-time 3D technology in industry, explained



**25 ways to extend  
real-time 3D across  
your enterprise**

E-BOOK

### 25 ways to extend real-time 3D across your enterprise



[Automotive, Transportation & Manufacturing](#)