VR VISION

Top 2022 VR/AR Trends: Enterprise AR & VR

15+ industry experts share why the emerging metaverse will be transformative for the XR industry

Executive Summary

The world has entered the metaverse officially, whether you want to thank Mark Zuckerberg or Facebook (Meta) directly, the term is here to stay and so are a lot of new trends and upcoming technologies. VR & AR will fundamentally change the way businesses and individuals interact, learn, and communicate with the world around them.

In this guide, we look to the people involved since day one in the latest and greatest in both software and hardware on both sides of the fence. We look at how technologies have progressed from wired VR headsets to the devices we have today – and we look ahead to where the future is going.

How soon will it be until "Ready Player One" the movie, becomes a reality? Will immersion pass the limits of human capabilities? From virtual and augmented mavens to mixed reality specialists, we have compiled an assortment of expertise that is sure to enlighten you as to what is next to come for our beloved Metaverse.

So strap on your VR headsets and sharpen your AR glasses because the future is coming faster than we know it, and you might miss it if you blink!

Lorne Fade

COO & Co-Founder
VR Vision Group

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The metaverse is a broad and ambiguous term, but it's exciting to think about where it's headed.

In the near term, as the metaverse travels through the hype cycle, we all need to focus on solving real problems for our customers with real solutions that are available today. The danger is that the hype leads to technology that is disconnected from customer needs and then that technology goes in search of a problem.

That said, I believe frontline workers are entitled to the latest in technology that can have a tangible impact on their productivity and safety. Oftentimes, the millions of white-collar deskless knowledge workers are prioritized even though the need and impact of the latest tech is larger with the frontline workers.

We see technology for different metaverse experiences on a broad XR spectrum. On the one end, full immersion and potentially full field-of-view obstruction with Virtual Reality (VR). On the other end, limited, need-to-know data is delivered only when needed with Assisted Reality on RealWear devices like RealWear Navigator 500.

We can all agree that factory and frontline workers should not be in a fully immersive environment without situational awareness like in "Ready Player One." Those workers are entitled to great tech that deftly balances productivity, convenience, and safety.

In the industrial world, there are two competing visions. One, a lights-out factory controlled by robots who in turn are controlled by AI or some operational director with a couple of joysticks managing a plant from across the world.

The alternate view is a world where humans are augmented by technology. They interact closely with the products they are building, and use technologies underlying the metaverse such as AI, wearables and IoT to empower and elevate themselves at their tasks and in turn manage, maintain, and create products and equipment.

I believe that this human-centric application of the metaverse maximizes the human potential, not replaces it, and is the right approach. This approach will enable societies to manage change as disparate technologies continually merge to create increasingly valuable services and can improve the life and the impact of our frontline workforce.

In summary, deploying practical metaverse solutions that are available today and which focus on empowering and elevating the frontline worker are the key to creating a human-centric future that will benefit both the companies and the frontline workers.

Rama Oruganti
Chief Product Officer, RealWear

realwear.com

Augmented Reality (AR)

Lenovo

I view enterprise Metaverse as spatial contextual awareness; the nexus of physical space, connected worker, and digital twin of the workplace. The breakthrough utility will be enabled by ubiquitous computing, accessed via extended reality (XR), and enhanced by artificial intelligence (AI).

Virtual reality (VR) enables learning via immersion and reduces the time for workers to achieve proficiency. As content creation and outcome metrics improve, efficacy and adoption will accelerate until VR is the prevailing technology for training, education, and skills development.

Seeking to extend experiential training into physical job functions (i.e. handling equipment controls or tools, movement around work areas), mixed reality (MR) will proliferate as quickly as HMDs incorporate low-latency passthrough optics. Concurrently, MR will make inroads into retail and customer/brand interactive experiences.

Allowing workers to complete tasks they've never before performed, augmented reality (AR) will become the preferred way to access work instructions derived from SOPs. Features such as spatial navigation, edge/surface detection, object recognition, and 3D visualization promise to make this a rich, interactive experience that can ultimately drive error rates near zero.

Ted Pierpont
Worldwide AR/VR Sales Leader ThinkReality

techtoday.lenovo.com/us/en/solutions/thinkreality
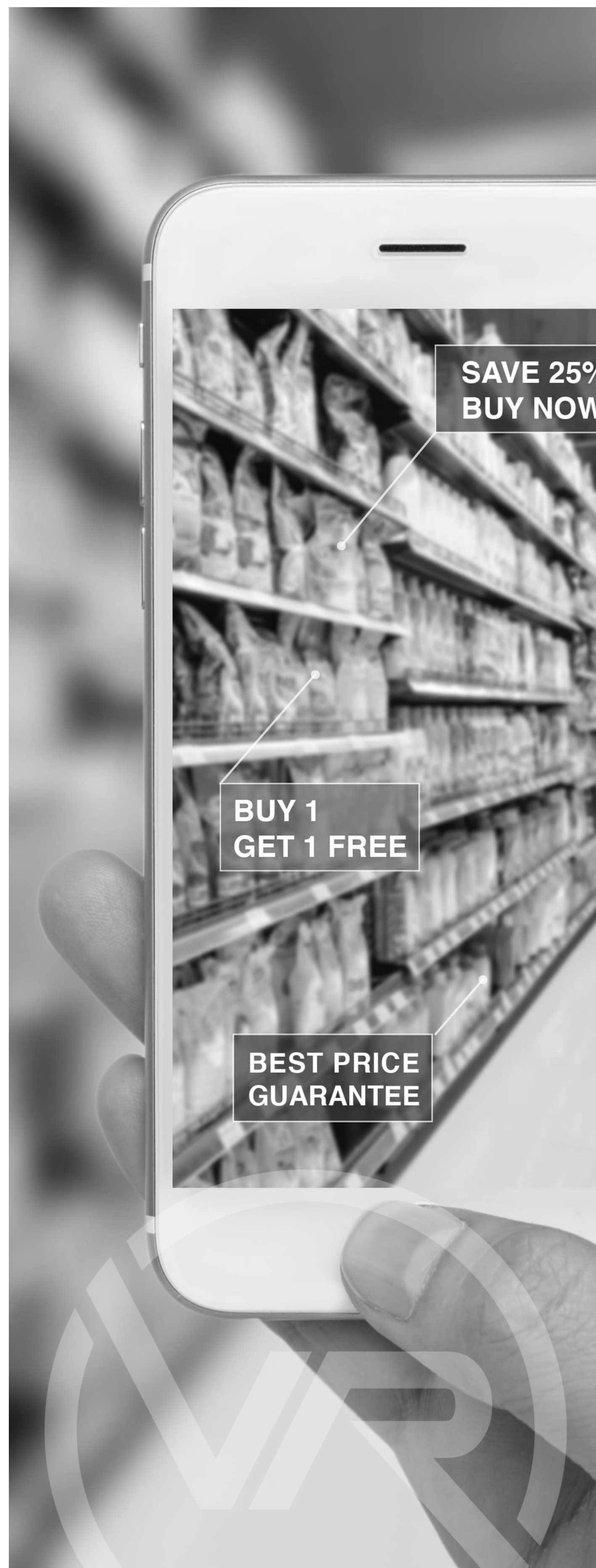
Augmented Reality (AR)
AR Insider

1. Metaverse mania dies down: When hyped-up visions of the metaverse don't arrive anytime soon, generalist media and punditry will move on to other shiny objects. Metaverse building blocks in AR and VR will continue to make meaningful strides, but you'll see fewer metaverse headlines in USA Today.

2. AR ad revenue approaches $3 billion: Driven by escalating interest from brand marketers and case-study validated efficacy, paid ad budgets will continue shifting to AR, such as sponsored lenses. $2.86 billion will be spent in 2022 on paid amplification (not counting creative production & software).

3. Visual search gains ground as mobile AR's Killer App: Though traction hasn't caught up with potential, visual search has all the makings for a killer app: utility, frequency, and high-intent monetization (like web search). It will also be accelerated by Google's drive to future-proof its core search business.

4. "Lite AR" becomes a near-term standard for marketable AR glasses: Given the design tradeoff for AR glasses (bulky and graphically-rich versus sleek and graphically lite), tech giants will see larger markets in the latter. The name of the game will be making up for a graphically-underpowered UX with things that are experientially meaningful (think: elegant integrations with other wearables). Fortunately, this is what Apple is good at...

5. Meta reaches 10 million Quests (1&2) in the market: Though well-exposed approximations have pegged Quest's installed base at 10M, our calculations indicate that this milestone still hasn't been reached. Specifically, the installed base stood at 7.36M at the beginning of the year. But it is on pace to break the 10M barrier – a magic number to initiate a flywheel effect says Zuckerberg – in the first half of 2022.

Mike Boland
Chief Analyst, ARtillery Intelligence

artillry.co/intelligence

Augmented Reality (AR)
SIGNIFY

By 2022, more than 70 billion devices will be connected to the internet, most of them wirelessly. This is placing wireless communication under increasing pressure. Put simply, the radio spectrum is becoming congested, with drop-off and latency on the increase. Added to this is the growing use of data-heavy XR (AR, VR, MR) devices. For example, Virtual Reality is increasingly adopting industry standards such as 4K video and six DoF...and all this content needs to be sent over wireless networks. What's more, there are more and more venues where RF wireless communication is not permitted due to security or safety. (Health, Government, Industry, Schools)

Trulifi by Signify is the perfect solution. It's a range of LiFi systems, providing fast, two-way wireless communication that's reliable, secure and has the lowest latency for the first hop. Trulifi offers a fast 250 Mbps connection that can guarantee the transmission of heavy data loads.

Trulifi also reduces cybersickness, since it offers ultra-low latency and uses light waves to communicate. Interception is not possible as with radio-based communications; data in the room stays in the room. And Trulifi is ideal in places where RF is not permitted or does not work.

As more devices connect, having a faster and safer wireless connection is key. Our systems plug and play into existing AR/VR/MR hardware to provide a true high-speed safe wireless connection for XR.

John Parsons
Augmented and Virtual Reality

signify.com/trulifi

Virtual Reality (VR)

HTC

- Multiple "Metaverse" Walled-Gardens Compete for Mindshare

- Enterprise use cases accelerate, drive massive demand growth

- The talent shortage in XR space fuels income explosion for devs/creators

- AI-driven assistants/NPCs enhance Metaverse social experience

- VR/AR devices hit next level fidelity and form factor

- Experience economy explodes via next-gen LBVR deployments

- Real-world pilots of Cloud XR starts to show their potential

- Several Metaverse Interoperability Standards Initiated

- The energy of the Metaverse term wanes, new buzzword replaces it

Alvin Wang Graylin
President @ HTC, Vice-Chair IVRA

vive.com/ca

PICO

Metaverse is an abstract idea with its roots in sci-fi and other popular culture. The technology to fully replicate the real world in a virtual environment is at least 20–30 years away. In the near future, we are seeing the results of COVID accelerating specific use-cases towards a totally redesigned virtual first approach.

Telemedicine, education, and remote collaboration all are at the vanguard of where the technology and commercial benefits merge into "killer app" propositions.

The hardware manufacturers also are working on immediate technology advances that should dramatically improve cost/comfort/ease of use issues to open mainstream markets, especially in gaming, fitness, and social viewing of traditional VOD content.

Leland Hedges
GM EMEA, Pico Interactive

pico-interactive.com

Virtual Reality (VR)

Motive

With renewed interest in VR and AR through the recent commercialization of the metaverse, we will likely see an increase in adoption both commercially and within businesses. This renewed interest is excellent news for the industry in exposure to new audiences and a revitalized look at innovation in its use.

I think we will see quite a bit of growth in natural language processing (NLP) in the virtual space. Voice interactions will allow organizations to improve traditional action-based experiences and transition to more soft-skill training opportunities. Leadership training, customer service, and crucial conversations are just a few options we will see soon in VR and AR.

Destery Hildenbrand
Senior Learning Experience Producer

motive.io

Foundry 45

2022 is all about the metaverse. Sounds exciting, doesn't it??

But...what exactly is the metaverse?

Good question. For me, it's the biggest question in the immersive technology space and likely will be for some time. We know that virtual spaces are likely to be a big part of the metaverse, but what will you do in those spaces?

Foundry 45 is a VR training company. Therefore, we view most new technologies through an immersive learning lens. What we are seeing today is that if a large company is not already in the VR training space, they are eager to dip their toes as the technology is viewed as an on-ramp to an eventual trip through the metaverse.

Dave Beck
Managing Partner, Foundry 45

foundry45.com/vr-training-solutions

Virtual Reality (VR)

PIXO

We've gotten past the question of "What is VR?" and have moved toward "How can I use VR in my company?" That is a good leap. More and more companies are incorporating Virtual, Augmented and Mixed Realities into their day-to-day processes, and our job is to educate companies on how to use XR in their employee training.

When talking to people, I hear a lot about how VR/AR/MR training is only for skilled labour, and while it is absolutely effective in that category, soft skills training is also extremely effective when done in those environments. The bottom line is: the future is in VR/AR/MR.

No matter what training your company is doing, VR/AR/MR will enhance it and help employees retain the information 4X more and use that education more effectively in their day-to-day work. Every industry is certainly moving toward that.

Sean Hurwitz
CEO, PIXO VR

pixovr.com
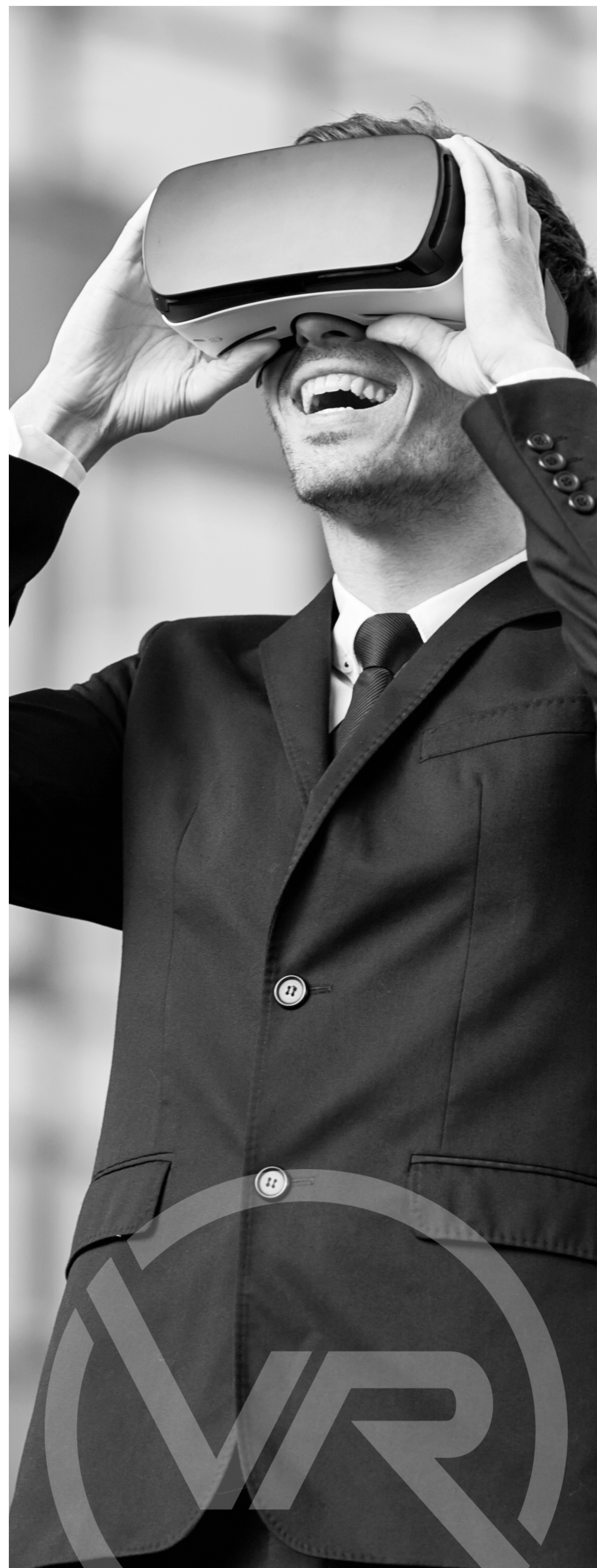
Virtual Reality (VR)
Modest Tree

As the industry considers XR technologies they are looking beyond singular use cases. XR is moving from an innovative project role to a strategic enabler and forming part of long-term strategy discussions in the boardroom.

XR has the potential to provide new business opportunities and efficiencies for organizations, including in the industrial workplace for design review, operational and maintenance training, and for frontline worker support.

We are seeing clients deploy XR technology to connect workers and to transform the way they deliver technical training. Many global industrial firms who are accustomed to in-person and classroom training and are now formulating strategies on how XR technologies, delivered on various platforms (mobile-AR, headset AR, VR) will evolve their delivery methods and business models. The use of XR across industry is transforming from an exploratory proof of concept to a strategy.

Businesses with technical training are accelerating immersive training adoption as a differentiator, deploying their training globally while providing the engaging training that is being demanded by the workforce.

Top concerns within the industry are in future-proofing investments in technology and security. To ensure investments and organizational efforts have a strong ROI, enterprises will need an infrastructure and software that enables them to scale. As part of the infrastructure, interoperability, security and leveraging data are key.

Interoperability of solutions becomes necessary to scale XR transformation and to fully incorporate technologies into the operations where they are most effective. Leveraging XR for business strategy begins with leveraging data. XR technologies need data as the foundation for their effective use.

It is imperative to deploy software systems with proven security measures to safeguard user data, interactions, and processes.

Companies that will thrive will focus on how XR solutions utilize data, work with different data structures, operate directly within the enterprise framework and ensure the security of data is considered and managed.

Emily Smits
CEO and Co-founder

modesttree.com

Virtual Reality (VR)
VR Vision

The future of VR/AR for 3D content creation will lead more towards cloud streaming technology such as cloud XR. Opening up the doors to create really high fidelity content without sacrificing any performance and restriction by hardware as well as the implementation of full haptic solutions for immersive experiences

Karan Sharma
Head of Environmental Design

VR has reached a fair growth in mainstream adoption and proven its value to create definitive experiences. The technology is at a level where it provides everything developers need to create and execute. What prevents the industry from growing is the overall identity of the headset, diminished by platforms and productization. Competition would greatly benefit the current state of VR. For now, I see the technology in an incubated state for exploring new and innovative ways to combine hardware and machine learning. The likes of which would make today's VR look like the last generation!

Wei Tin Yuen
Manager, SDK Architecture

We're past the wow factor of VR, especially in training for enterprise – it's time for execution. There are a lot of buzzwords going around, but the endgame is all about reaching the pinnacle of training solutions at a large scale. The only way for that to happen in most organizations is for virtual reality to consolidate into learning ecosystems, and to make deploying the technology as simple as possible for both trainers and trainees. We move closer to this objective each day, you can see that in the solutions available now compared to the past few years.

Alex Pryor
Director of Innovation

Virtual Reality (VR)
VR Vision

VR is a technology that has been around for the past 25+ years but took until the Oculus Rift DK1 to become more popularized and modern. With the release of the CV1 and the HTC Vive, it was brought into the hands of the above-average consumer, which pushed the technology forwards. If you follow the trends of the home phone to a smartphone, it took many years to get to the first smartphone, but once this happened there was an insane boom in the development of the technology and the innovation behind it. As more innovators drive VR forward, we will see an iPhone level of adoption by all companies and consumers. This will force innovators to innovate quicker and for enterprises to adopt the technology sooner than they anticipated. 2022 is a deciding year for VR that I know will launch a new wave of VR training across enterprise groups faster than all the combined 25+ years of its existence.

David Tucciarone
Director, Custom Development

In the next few years as platforms, hardware and applications continue to mature VR and AR technology will drift further apart. Organizations and consumers will better identify and more appropriately use the two in both work and entertainment. Businesses will increase their use of AR primarily through wearables for assisted work and VR for training. Consumers will be using VR for gaming, AR for entertainment and eCommerce. We'll also see an increase in the interoperability of traditional 2D PWA (Progressive Web App) to become available in VR/AR platforms, the Oculus Store has started to include apps such as Slack, Dropbox, Instagram and many more.

In the further future 10+ years, we can expect the emergence of what today is being called the Metaverse – this means a confluence of VR/AR/AI/Blockchain/5G and a series of other technologies. This future, although well marketed is by no means a sure thing and organizations looking to invest in the Metaverse today are advised to focus on the more mature building blocks of this upcoming convergence of tech than the concept as a whole.

For now, VR is transforming how organizations connect with their employees and train them in a more sustainable, scalable and immersive way. AR is enabling field workers an unprecedented level of connectivity and remote help. Consumers get to enjoy immersive VR games and experiences as well as a continued transition away from brick and mortar retail to digitally-enabled AR commerce.

Roni Cerga
CEO & Co-Founder

vrvisiongroup.com

Mixed Reality (XR)
Kronos Group

A. It is impossible to predict with certainty what form the metaverse will take in the longer term as it will be the result of a chaotic Darwinian process of selecting successful technologies, products, and experiences. But the inspiration to work towards the larger vision of a widely accessible, spatial successor to to-day's Web will create a 'wavefront' of short-term innovations and opportunities along the path to whatever form the metaverse takes.

B. Interoperability standards will be essential to deploy proven technologies used by the metaverse at a pervasive scale. Many standards organizations, including Khronos, have been working on metaverse-relevant standards for many years, and are now welcoming increased interest and participation as their value to the metaverse becomes increasingly apparent. These standard-ization initiatives are adding immediate value by solving clear and present interoperability issues being encountered today by metaverse practitioners.

C. There will be a single metaverse, just as there is a single World Wide Web, a connective foundation hosting a diversity of prod-ucts, environments, and experiences. Just like the Web, the open metaverse will be based on open standards. Connecting the wide variety of necessary underlying technologies into the metaverse will demand a constellation of open standards.

D. Portability of objects and avatars between different metaverse worlds will be enabled through cross-platform asset standards. Widely deployed standards such as glTF are actively upgrad-ing from '3D asset formats' that define an object's appearance through geometry, textures and animations, to 'metaverse asset formats' that add attributes and properties to define how an ob-ject behaves when placed within an environment.

E. The Khronos OpenXR standard for portable access to AR and VR headsets and devices has achieved widespread adoption, providing portable access to all major VR hardware. Originally focused primarily on VR use cases, OpenXR is now expanding its functionality to include advanced user interactions and spa-tial scene analysis for AR use cases that will be central to many metaverse applications.

Neil Trevett
Khronos Group President

khronos.org

Mixed Reality (XR)
The Glimpse Group

2022 is undoubtedly going to be the year that is defined by the hype surrounding the term, Metaverse. There's something positive to be said about some of that hype, after all, it's good to get people excited about the potential. However, some of the hype can also be quite misleading, building up expectations in the short term that will not materialize. A classic example of Amara's Law, in that we get over-excited in the short term and overlook the longer-term benefits.

Metaverse hype, however, has undoubtedly elevated immersive technology (XR) up the corporate agenda. A combination of COV-ID-induced remote working and the need to find better ways to collaborate and communicate means that corporations know they need to evolve, and immersive technology is one way to do so. I think 2022 will see these corporations tentatively assess and pilot immersive technology solutions, to then begin to roll out at scale in mid-2023. The year where we will see the first genuine blocks of what will become the Metaverse, slot into place.

James Watson
Chief Marketing Officer

theglimpsegroup.com

Skarred Ghost

Big trends I am seeing now:
Convergence of technologies: AR/VR/5G/AI/ML/blockchain are all growing together and their convergence will represent the next technological platform. XR is not growing in a vacuum, but it is operating with other technologies. I.e., Virtual XR Worlds are using the blockchain to implement ownership of digital assets; AI is making possible tracking and recognition technologies for XR glasses; 5G will make XR cloud rendering possible. And so on.

Hybridation of AR and VR. The big trend for VR headsets in 2022 is implementing RGB passthrough AR so that they can be both AR and VR devices. Lynx R-1, Meta Project Cambria, and the mysterious Apple headsets are all devices of this kind.

XR growth and slow entrance into the mainstream. Meta Quest 2 has sales numbers compared to the ones of the last Xbox. VR headset sales are growing a lot, especially in the US. AR glasses are still dedicated to the enterprise niche, but AR filters are popular among people of all ages. We can fairly say that XR technologies are not just a gadget for geeks anymore.

Antony Vitillo
AR/VR developer, Entrepreneur

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