

Top 2024 Enterprise AR Trends To Watch

31st January 2024



As we ease out of the first month of 2024, we are now fully engaged in the new year. In the past 30 days, I've had an opportunity to learn from my peers, such as [Tom Emrich of Niantic \(trend watches on his newsletter\)](#) and the co-chair of the AREA Research Committee, [Samuel Neblett of Boeing](#), and to reflect on the projects in which I'm involved.

I've compressed my vague sense of hope and excitement down into a few enterprise AR trends I will be watching over the next 11 months. These are not predictions but significant areas of focus that I believe will drive innovation and the adoption of enterprise AR. I'm now officially keeping track of these trends to see where, how, and if they come about.

Please share these with your colleagues and your partners. Do you have evidence that either confirms or questions any of these trends in your companies? I hope you will share your evidence, feedback, and ideas with me at cperey@perey.com.

Artificial Intelligence

The convergence of AI and AR is the most significant and least surprising of the trends to watch in 2024. The signs are everywhere.



#1 Enterprises are beginning to internally test Generative AI (GenAI), including LLM lakes and private co-pilot solutions. Early adopters will increasingly combine these capabilities with AR tools. There are dozens of ways that the use of AI improves workflows and reduces the costs of enterprise AR. Well-positioned and programmed AI can extract relevant

content from corporate data sets for visualization. Here are a few examples of where and how GenAI could boost AR:

Using Digital Twins for baseline and AI for detecting and matching features in 3D environments (rare in 2023), we expect enterprises to expand their interest in and need for spatially-aware apps and services. For example, we will see a proliferation of AR-assisted Visual Positioning Services for navigation and risk detection based on 3D maps.

Combined with advances in hardware (see below), GenAI will permit the automatic generation of richer AR experiences for hundreds of use cases, including but not necessarily limited to 3D spatial maps. Multi-modal LLMs, an advanced type of AI that can understand and generate not just text but other types of data, such as images, audio, and possibly even video, are on the rise. These Multi-modal AI models incorporate previously captured scenes into new instructions. They will detect sounds from the environment and predict risks or propose the user to respond in specific ways without being programmed/coded in advance.

#2 AI and computer vision advancements could address concerns over privacy in data collection and handling. Privacy and sensitivity to security risks from the use of cameras and other sensors in the workplace continue to be obstacles to large-scale AR deployments. With AI, real-time image and feature detection, blurring, and obfuscation methods can be combined with AR displays (or their associated services and software) with lower cost and power. Enterprise AR solutions for protecting the privacy of things, places, and people (AR device users and those around them) with AI in the loop will proliferate in response to the need for compliance with corporate privacy policies as well as national and international regulations.

Hardware



#3 Aside from a few roles (e.g., architects or those viewing medical imagery), knowledge workers don't need to spend their time or money on large, virtual screens (aka Apple Vision Pro). Video see-through isn't a viable substitute for Optical see-through in the workplace, where employee tasks require hands-free AR and peripheral vision. Video quality issues, including distortion, fixed camera IPD, high ISO, low dynamic range, low camera resolution, and low frame rate, are

exceedingly difficult (think: high power use) to overcome. However, a lot of money will be invested, and marketing campaigns will make people try. Try though they will, the entire Video see-through headset push will not make a significant dent in reducing the optical see-through requirement for enterprise AR displays. I've heard repeatedly that any risk manager who would approve the use of video see-through XR displays for use in a production environment where risks are high is risking

their employment.

#4 Smaller, more powerful, and less power-consuming sensors will be more economical to deploy and manage. In addition to the lower cost of implementation and management of IoT, more specialized semiconductor solutions, especially those specialized in computer vision but also for processing audio and motion, are increasingly being added to AR display devices. Imagine sensors on the device detecting the user's need for corrective lenses and then generating the corrected version of the real world (enhanced with AR, of course) without the user's being aware or needing to wear two pairs of glasses. The improvements in display capabilities, combined with cheaper hardware distributed in the user's environment (think: intelligent spaces) and connected to AI in the display or on edge computing hardware, are making context awareness less expensive to acquire and more reliable. A deeper understanding of context translates to many of the other trends identified below.

#5 More companies will introduce lightweight, cheaper (and less capable) AR glasses to the market. Not all users need or want a full "computer" on their heads. There are more ways to add value than a helmet or a heavy and powerful wearable AR display. Some devices are offloading processing to tethered phones. Others offer wireless, monocular AR glasses to display only heads-up messages to users. We will also watch for the audio-only AR glasses segment to expand where voice prompts and AI-enabled audio responses satisfy the use case requirements.

UX

#6 New modes of interaction are beginning to complement/replace/displace the need for controllers and virtual keyboards. We are already starting to see more use of eye tracking, gaze, and natural gestures (e.g., pointing with better hand tracking) for inputs. Improvements in hand gesture tracking technologies will, in many cases, translate to lower cognitive loads and lower computational loads. Neural inputs using a headband or muscular signals via a wristband allow users to control all their digital devices using natural human interfaces. The user's tongue might even become a source of input. Also, look out for brain sensing with EMG.



#7 Similarly to #6, due to new and different sensors in devices, there will be developments in how users receive/perceive the digital data in context in the workplace. In addition to animations, video clips, still images, and text, we will see rapid experimentation and exciting opportunities to use spatial audio and to provide just-in-time instructions and information to users using combinations with other wearables (e.g., watches and smart garments).

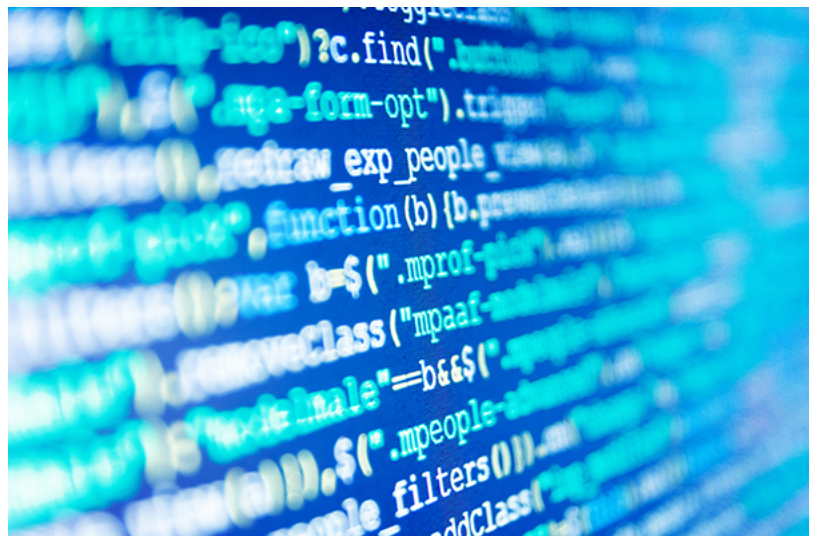


Infrastructure

#8 Private 5G networks, combined with 5G compatible hardware and cloud and edge computing, will permit richer experiences without heavier or power-consuming devices. While the verdict is still out on the cost-effectiveness of private 5G networks based on current implementations and use cases, they are gradually improving. There will be more 5G support in the next-generation AR displays. These core enabling technologies will lead to increased adoption of AR experience streaming and collaborative AR experiences.

#9 Security for AR experiences may be addressed in the network using improvements in off-device and automatic authentication of AR users and devices. Ensuring corporate cybersecurity is an enormous concern for all IT departments, and most AR devices are ill-equipped to meet all the requirements. Expertise in security risk reduction is not a core competency of most AR providers. Innovations to ensure high corporate data protection, privacy and reduce exposure from AR user intentional or inadvertent actions will come from network technology providers. They and their service provider customers have solutions that are emerging from research and will be tested in the near future.

Software



#10 Low-code/no-code will continue to gain traction with the assistance of AI. There are now dozens of low-code/no-code solutions available. The problems are figuring out which ones meet

the enterprise requirements, including but not limited to security concerns. While AI eats away at the need to manually code experiences, subject matter experts are becoming the authors of more and more custom experiences. The biggest winner from this trend will be medium-sized companies without the necessary engineering resources to meet all their AR use case needs. With the low-code/no-code options reaching greater maturity and ease of use, the need for dedicated and highly paid AR experience developers and tools with steep learning curves will diminish.

#11 Standards are increasingly relevant and, combined with the expanded support of open-source libraries, reduce the need to develop and maintain display-specific apps and content for delivering experiences across a range of AR devices. Although W3C WebXR continues to evolve slowly, the processing requirements for Web-based solutions are being increasingly met by the hardware in a broader range of AR display devices. The improvements in network infrastructure also make more edge processing possible. Using the Web to provide AR experience content is highly scalable and can be entirely deployed in a company's Intranet. Khronos Group's OpenXR is already widely adopted on AR hardware and, combined with support for glTF, is significantly simplifying the development of content creation platforms (fueling the no-code/low-code trend). We expect that other standards will be adopted for AR experiences.

#12 AR developers' skill sets and tools become more specialized, and the learning curves become steeper. On the one hand, AI and adopting standards simplify and accelerate the creation of AR experiences; they also introduce new risks. These are golden opportunities for specialization. AR developers and those with expertise in adjacent fields will increasingly have new offerings, such as deeper integrations with Learning Management systems, Enterprise Resource Planning, and Product Lifecycle Management platforms. Editing of AR experience recordings to preserve knowledge and accelerate its transfer will combine AR expertise with AI tools.

How Augmented Reality is helping Manufacturers Go Green

31st January 2024



We often debate the role of technology in the field of sustainability. There is no disputing the fact that new advances in technology have led to the use of more energy, which is obviously continuing to have a terrible impact on the environment.

However, new technology can also be advantageous in the fight against environmental problems like the loss of natural resources and climate change in other ways. It can offer newer, more efficient ways to solve existing problems. This can lead to more energy efficient solutions with lower carbon footprints. It can also help products be more durable, which means that they won't need to waste as many resources.

One of the new forms of technology that can help manufacturers improve sustainability is augmented reality.

In order for the computer to create this environment, it has to use many sensory modalities. Basically, your vision and hearing will be heightened since these are sharpened.

Augmented reality is also combined with artificial intelligence, and this has led to many breakthroughs in a wide range of fields.

AR has greatly improved manufacturing processes. It has made training a lot easier and faster, improved the performance of operators, enhanced throughput and other processes.

Companies that want to embrace sustainability should invest in the right augmented reality technology. Augmented reality can provide instructions for assembly processes, maintenance, machine setup change over and more. Thanks to these real time visuals, it helps to decrease the amount of time it takes to understand instructions improving workflow and productivity.

The author then goes on to explore the AR Benefits for Sustainable Companies in more detail which can be read on the original article.

1. Avoid wasting natural resources and energy building prototypes by enabling you to make products come to life
2. More energy and resource efficient processes
3. Makes complex processes simpler
4. Visualized workflow for simple troubleshooting
5. Lower cost

Augmented reality is certainly unprecedented in its ability to make processes much clearer and integrate data. This will help users to easily understand problems, fix them and even prevent them from happening.

Augmented Reality Helps Manufacturers Be Eco-Friendlier

There are a lot of new technological breakthroughs that can help drive sustainability. Augmented reality is one of them. These benefits will help manufacturers reduce their carbon footprint and compete against less environmentally friendly companies.

IDC Releases Whitepaper on “Embracing AR Technologies”

31st January 2024



The report, shared with *ARPost*, gives a by-the-numbers look at how hundreds of companies are using AR. It also predicts markets going forward and highlights some specific hardware and software options.

Accelerate Your Organization’s Digital Transformation

“Embracing Augmented Reality Technologies to Accelerate Your Organization’s Digital Transformation” was published by **IDC** and authored by IDC Group Vice President of Device and Consumer Research Tom Mainelli.

The paper was sponsored by **Lenovo** which has its own AR technology division, ThinkReality. Working on hardware and software for enterprise and education, this group has been interested in long-term trends and solutions for years.

“We think [XR] is a trend that’s going to stay and Lenovo feels like with the customer base that we already have we need to be a leader in this space, so there’s a lot of commitment in our teams to doing that,” Lenovo AR/VR Lead **Nathan Pettyjohn** told *ARPost* back in 2020.

The report talked about Lenovo ThinkReality solutions in particular, but was by no means an advertisement. The report was rich in insights and predictions backed up by data from a 2021 poll of over 400 enterprise companies with over 1,000 employees. All of these companies either have already employed AR technologies, or have at least started that ball rolling.

AR Technologies in a Post-COVID World

“The COVID-19 pandemic has accelerated the pace of digital transformation for companies around the world,” Mainelli wrote in the paper’s introduction. *“As the world slowly looks to move beyond lockdowns and quarantines, AR technologies will only become more embedded and important to many companies’ future success.”*

The paper goes on to present a sentiment that many were predicting this time a year ago: AR isn’t just a pandemic solution. XR bloomed during the pandemic out of necessity but the genie isn’t going back into the bottle. Work-from-home, distributed workforces, and hybrid meetings are all staying with us as we move into the “new normal”, and so is AR.

“IDC continues to forecast substantial growth in the coming years across all areas of AR, including hardware, software, and services. While many companies may initially balk at the perceived cost of entry, most realize that investments in AR pay for themselves,” wrote Mainelli. *“AR is no longer a technology that will manifest in a few years: it’s here today.”*

That growth could lead to \$45.6 billion in worldwide spending on AR technologies (AR hardware, software, and services) by 2025, according to the report. Further, that doesn’t include spending related to smartphones and tablets – which is still how many people experience AR.

How and Why Enterprises Use AR

That many companies start out using smartphones or mobile devices to get their feet wet in XR was only one of the gems uncovered in the survey. Depending on the AR technologies your company is using, this might sound archaic but even most AR glasses use (or can use) a standard mobile phone or tablet for their computing power.

This approach, used in enterprise as well as entertainment, cuts the cost of the headset for the end-user. It also allows the headsets to focus on display and audio while offloading the computing power to a nearby device. This makes the headsets lighter, comfier, and safer. One Lenovo device, made with Motorola and Verizon, even allows edge computing.

“One of the critical challenges around AR hardware has been the high cost coupled with the fact that most headsets could offer either a comfortable, lightweight form factor or high-end optics, but not both,” wrote Mainelli.

Here, the report started discussing Lenovo and ThinkReality hardware, which can pair with a laptop computer as well as a mobile device. While some enterprise tasks require more mobility than a laptop can easily afford, others don’t. Using XR devices as “virtual screens” is one of the swiftly rising use cases in enterprise (and entertainment).

Half of the survey respondents use AR technologies for employee training. Forty-eight percent use AR for videoconferencing and collaboration. Further, when asked what they saw as the top benefit to AR technologies, the most common answer was improving collaboration. So, it's no surprise that 80% expressed interest in virtual desktops - including 67% of healthcare respondents.

\$77 Billion Augmented Reality Market is Expected to Grow at a CAGR of over 29.8% During 2022-2028 - Vantage Market Research

31st January 2024



The primary driver is found to be rising adoption of IoT, the total Global Augmented Reality (AR) Market is estimated to reach USD 78.0 Billion by 2028.

The Market stood at a revenue of USD 16.3 Billion in 2021, and is expected to exhibit a Compound Annual Growth Rate (CAGR) of 29.8%.

Furthermore, the growing adoption of artificial intelligence and blockchain technology for risk analytics is also anticipated to augment the growth of the Global Augmented Reality (AR) Market, states Vantage Market Research.

The other Market Dynamics reported upon include increase in adoption of AR technology in healthcare sector to fuel global Augmented Reality market

The increasing adoption of AR technology is expected to fuel the growth of the Augmented Reality (AR) Market during the forecast period. Augmented reality has great potential in the healthcare

industry.

With this technology, healthcare can become more affordable and can be extent to millions of individuals. The technology can address health awareness, diagnosis, patient monitoring, patient care, disease outbreak and preventions, medical equipment upkeep and training, treatment and therapy planning, and lifestyle improvement.

Further, with augmented reality, medical professionals can get better at drawing blood, using a handheld scanner that projects over the skin and shows nurses and doctors where the veins are present in the bodies of patients. Thus, AR can be used for wide range of applications in the healthcare sector which has increased its overall demand across this industry.

The AREA does not sponsor such market research - for further details and to request a sample copy direct from the research organization please see the [original press release](#).

Development of an AR-based process management system The case of a natural gas power plant

31st January 2024



Since the beginning of the Industry 4.0 era, Augmented Reality (AR) has gained significant popularity. Especially in production industries, AR has proven itself as an innovative technology renovating traditional production activities, making operators more productive and helping companies to make savings in different expense items.

Despite these findings, its adoption rate is surprisingly low especially in production industries, due to various organizational and technical limitations. Various AR platforms have been proposed to eliminate this gap, however, there is still not a widely accepted framework for such a tool.

This research presents the reasons behind the low adoption rate of AR in production industries, and analyzes the existing AR frameworks. Based on the findings from these analyses and a conducted field study, a cloud-based AR framework, which provides tools for creating AR applications without

any coding and features for managing, monitoring and improving industrial processes is proposed.

The design and development phases are presented together with the evaluation of the platform in a real-world industrial scenario.

This work was supported by the Scientific Research Unit (BAP) of Istanbul Technical University under Grant number MGA-2018-41553; the Scientific and Technological Research Council of Turkey (TUBITAK TEYDEB) under Grant number 7170742.

Readers can find out more by [visiting the following link](#)

The Price of Drugs: Exploring New Realities in Pharma

31st January 2024



In response, large, mainline biotech firms like Pfizer and Novartis, smaller CMOs (contract manufacturing organizations), equipment manufacturers and others involved in the highly fragmented pharmaceutical sector are looking to emerging technologies to improve efficiency, speed up research and production, widen margins, and guarantee quality and safety.

The author describes what it takes to develop a drug and changes in Pharma, then goes on to discuss immersive wearable tech in pharma:

If you can't raise prices, then you need to cut costs elsewhere. For pharma companies, this means spending less time and money on R&D and going to market faster. As the drug pipeline shifts to meet demand for personalized medicine (targeted biologics), pharma companies are feeling the pressure to revamp their product lines, factories, and processes to become more streamlined and cost-efficient.

AR/VR for drug discovery

R&D spending in pharma has been rising parallel to the growing complexity of drug development, leading forward-thinking companies to explore AR/VR as a tool for discovering new drugs faster (and therefore cheaper). If VR-trained surgeons are able to complete procedures faster than non-VR trained surgeons, it follows that pharma researchers would innovate faster with VR than they currently can using computer graphics (CAD) and static models of molecules made of wooden balls and wires. Indeed, whether in the classroom or the lab, virtual reality is proving effective for visualizing and conveying difficult concepts while augmented reality can put interactive complex molecules into the scientist's real-world environment.

Wearing a VR headset, drug developers can step inside a molecule or compound to see how it responds to different stimuli and quickly simulate complex drug interactions. Wearing AR smart glasses or a mixed reality headset, researchers can manipulate molecules and chemical structures in space - folding, knotting, and changing the shape of the molecules right before their eyes - and tweak a drug's chemical makeup so it bonds to the protein in question, altering its function to the desired effect. AR/VR decreases the number of errors in the years-long process of drug discovery, which is essentially one of trial and error, by helping "drug hunters" iterate and improve (get to the right shape) faster. As a result, companies are able to develop better drugs with fewer side effects. Immersive tech can also improve collaboration among researchers around the world, eliminating barriers like distance and language by allowing two or more scientists to walk through the same chemical structure together from separate locations.

For manufacturing

Training and education

In other manufacturing sectors, augmented and virtual reality are allowing new workers to learn on the job without making mistakes as well as safely practice operating equipment before using a real machine. Likewise, AR/VR can significantly improve training outcomes for pharmaceutical workers. In addition to "practice runs" on complex pharmaceutical manufacturing equipment even before entering a facility; a process engineer wearing safety smart glasses can learn on the job while still meeting high levels of control and quality by accessing step-by-step instructions and other multimedia support for troubleshooting and repairing a machine right in her field of view or connecting via livestream to a remote expert for guidance and support. Operators and scientists can also use VR to learn the proper principles of aseptic technique and the proper procedures for different laboratory and production environments (ex. the specialized containment and personal protection requirements for HPAPIs). Beyond production, AR/VR can help explain new treatments to doctors and patients, and train nurses to administer a new drug or therapy.

Heads-up, hands-free information and documentation

In manufacturing in general, data from connected machines is unlocking the ability to perform predictive maintenance, saving manufacturers millions of dollars in downtime; so a systems engineer wearing smart glasses in a pharmaceutical plant could receive real-time, heads-up and hands-free notifications about, say, a location that will soon need replenishment or an instrument that's predicted to fail, allowing him to catch and address issues in advance, thereby improving efficiency, speeding up production, and lowering costs. Anywhere along the production cycle, digital information can be beamed in this way to augment an engineer's view and intuitively show him or her what to do. For instance, an engineer could use smart glasses to scan the QR code on a piece of equipment, automatically bringing up work instructions or an interactive diagram tailored to that

machine. Engineers could access batch records heads-up and hands-free and record values and videos via voice command, never needing to take their hands or attention away from a process. This is also an easy and effective method for audit readiness.

Remote support

All of this instant, hands-free access to information – presented heads-up and in context – is designed to enable users to work faster and more accurately, but it's not just the challenges of visualizing complex drugs and the use of incorrect, out-of-date paper procedures, manuals, and documentation that slow down time to market; the need to fly in specialists to a pharmaceutical facility when something goes wrong is another contributor to what has become a years-long, complicated, error-prone and unrewarding process. Immediate ROI and time saved can be had from adopting AR glasses for remote support, especially when users need vendor advice. With augmented reality software, the expert can even draw on the user's display to highlight specific buttons or connections and drop 3D arrows into her real-world environment in the facility.

Conclusion

The possibilities for AR/VR in the pharmaceutical sector are great and desperately needed. Pharma companies should be taking cues from other advanced manufacturing sectors, which are already seeing results in training, efficiency, quality insurance, and safety through the use of AR glasses and VR headsets. Of course, pharma is a sensitive industry, and new devices open up new opportunities for hackers to gain patient data and secret drug research. Any investments in emerging technologies must be accompanied by investments in cybersecurity.

Using Augmented Reality To Teach Real Construction

31st January 2024



Learning to make a dazzling technology practical

Augmented reality, or AR, is a way of adding digital elements to a live view, often by using the camera on a smartphone. While it's been available for years, it became popular with the creation of

social media tools such as Snapchat filters and mobile device games like Pokemon Go.

On the other hand, virtual reality, or VR, is an experience that seeks to place an individual in an entirely virtual world. This immersion is typically accomplished through the use of VR goggles or a headset.

Ayer says he was first introduced to augmented and virtual reality as an undergraduate architectural engineering student at Pennsylvania State University. He was working as a lab assistant managing the equipment when he says his interest took off.

“I got very dazzled by them,” says Ayer, who is a faculty member in the [School of Sustainable Engineering and the Built Environment](#), one of the seven Fulton Schools.

Out of a desire to utilize AR and VR technologies, he says he found himself seeking problems that would fit the tools instead of the other way around, which made it difficult to measure the technologies’ impact and success.

As he entered his master’s degree program, also at Pennsylvania State University, Ayer says he had to reevaluate how he was looking at technology and the role it plays both in a classroom and in the real world.

“Through grad school, and certainly when I got to ASU, the shift was pretty polar opposite: Don’t start with the technology, start with the human and the problem that the human has, and how that technology is supporting them,” Ayer says.

This perspective is something he attributes to a subtle comment made to him during his doctoral studies by a mentor and co-adviser, [Chimay Anumba](#), who is now at the University of Florida.

“In a very sort of understated way, I remember him just saying to me, ‘Sometimes when you have a hammer, the whole world looks like a nail,’” Ayer says.

Addressing the problems

Over the years, Ayer has come to identify two major challenges AR and VR technology can help students face when it comes to construction education and entering the workplace.

The first is visualizing design concepts from two-dimensional plans that represent a three-dimensional space.

“We take this 3D concept; we have this building around us. And the way we communicate that is we dumb it down to flat paper plans,” Ayer says. “Instead, we can give them augmented reality glasses with the idea of saying, let’s make it easy to understand the design. They just see the model show up almost like it was there, but it’s virtual.”

Ayer says once students can get past the dazzled phase, they can dial in and learn the underlying construction competencies they need to be successful on the job.

For example, Ayer says he conducted a study a few years ago aimed at helping students explore buildings as if they were the end-users, like a facilities manager tasked with keeping a building up and running. He says they gave one group of students an augmented reality setup and the other

group a computer setup. Both were given the same task of exploring the building to find flaws in the design. He says both groups could identify the flaws, but the group utilizing AR was able to come up with ways to improve the design and correct the flaws.

“The students using the computer setup, which was still a 3D model on the screen, knew something had to be considered, but couldn’t effectively articulate what about the design was problematic,” Ayer says.

Kieren McCord, a construction management doctoral student in the Fulton Schools, says while doing research with Ayer for her dissertation, she was inspired by the use of AR and the ability it gives students to visualize designs.

“Physical builds are a great way to learn, but they can be extremely cost-prohibitive to bring to a classroom. So, a virtual simulation can be a valuable, cost-effective alternative,” McCord says.

She says there are far fewer physical restraints on virtual environments, meaning if you can dream it, you can create it in a virtual environment.

The second challenge Ayer says he wants to improve is job site safety.

What makes people change behavior is when they see or experience a bad thing.

— Steven Ayer, associate professor of construction engineering

“We see a lot of times where we use very antiquated modes of teaching safety courses that are ‘chalk-and-talk’ lecture-style learning, which by almost any accounts have been ineffective, and, by empirical data on sites, still don’t stop injuries,” Ayer says.

“People from industry will say, ‘I didn’t care about safety until ...’ and they’ll tell you a story of when they saw someone hurt, or someone lost a life,” he says. “And when they’re the one that makes the phone call to the husband or wife saying, ‘Your spouse isn’t coming home today,’ it hits them.”

With that impactful moment in mind, Ayer says he sought to create an experience for students that balanced real-life decisions with the dangerous outcomes created by mistakes.

“What makes people change behavior is when they see or experience a bad thing,” Ayer says. “What we’re doing with virtual reality is putting students and even industry personnel into this environment. But, unlike most virtual reality training environments that give a report card when something goes unrecognized and they fail to identify the hazard, we will show them the impact of their decision.”

Ayer says showing the impact is accomplished through the use of slow-motion video or animations. In addition, the negative effects never impact the AR user, but another character within the virtual environment.

“The situation would be to see if we can have a virtual artificial stimulus, the VR experience, trigger a real psychological response,” Ayer says. “So, now students or industry professionals can say, ‘I didn’t care about safety until I had this really impactful training experience that didn’t actually harm anyone.’”

He says the biggest challenge is overcoming how students and industry professionals first react when they experience these technologies. Many people find it “cool,” he says, but this impression isn’t what he wants to see.

“What are the metrics you would track to know if this provided a return on investment, or saved lives, or reduce rework, or whatever the underlying value is? How we get them back to thinking about that can be a challenge,” Ayer says.

It’s a challenge that he’s willing to take on because he says technology is something that education and industry need to take seriously, as it can be the solution to several problems, not only in construction, but in society as a whole.

“I think in the future, as technology becomes more prevalent, the role the human plays may be more critical because we will be slightly more out of the loop in terms of decision-making tasks and that kind of thing,” Ayer says. “So getting the human to interact with those technologies really well, for the time that they do, will be even more critical.”

How is Augmented Reality used in the Construction Industry?

31st January 2024



R&D expenses in the construction industry are often substantially lower than those in other industries (it rarely goes higher than 1 percent of revenues). That might be another reason why it is losing ground in the digital age and lagging behind other industries in terms of integrating innovative technology.

According to MIT Technology Review, employing advancements in the field of augmented reality is one approach for the construction sector to enhance production quickly while ensuring long-term effects (AR).

Augmented Reality is a technology that augments actual environments on a mobile device screen

by superimposing digital material on top of them. Augmented Reality is built on real-world footprints and simply adds computer-generated data such as animation or three-dimensional objects to it rather than completely replacing any virtual experience.

Augmented Reality in Construction

Because of its capacity to give real-time information, augmented reality is being used in the construction sector to increase productivity, improve safety on building sites, maximize teamwork and collaboration, and time management, cost, and supplies.

There are many sub-processes in Construction where Augmented reality is of utmost importance. Some may be associated with Project planning whereas some may be associated with construction training. Whatever it may be, we'll be discussing every plausible steps in construction that requires AR.

Additionally Augmented reality is one of the most promising technologies of Industry revolution 4.0. So, it's important that we leverage the most important technology across every field so as to stay ahead.

The article then goes on to cover some of the processes in construction that require AR for better implementation. These are repeated below only in bullet point form. Readers may want to visit the article in full for an in depth explanation.

1. Planning of Projects
2. Team Efforts
3. Information of Projects
4. Training of Safety and Precaution
5. Measurement

The article then goes on to explore:

- Restrictions of Augmented Reality in Construction
- Successful Implementation of AR in Construction
- Future of Augmented Reality in Construction

Global Smart Augmented Reality (AR) Glasses Market to Reach 8.8 Million Units by

the Year 2026

31st January 2024



AR/VR smart glasses have the capability to improve and also take the place of current technology solutions in supply chains.

Organizations using AR wearable electronics are showing applications that result in improvements in productivity, efficiency, and also compliance.

The market is expected to gain from the developments in machine vision and AI and also analytics and big data. Object and face tracking enhancements, voice recognition and other capabilities will augment the adoption of AR and VR. The AR/VR smart glasses market is also expected to gain from the Industry 4.0 and the growing interest in AR/VR technology among gamers.

Also, the implementation of 5G technology and increasing digitization are likely to drive gains in the market.

Amid the COVID-19 crisis, the global market for Smart Augmented Reality (AR) Glasses estimated at 721 Thousand Units in the year 2022, is projected to reach a revised size of 8.8 Million Units by 2026, growing at a CAGR of 80.3% over the analysis period.

This and other trends are analyzed in the recent report which can be requested here >>

Global Smart Augmented Reality (AR) Glasses Market to Reach 8.8 Million Units by the Year 2026

UK enterprises look to 5G to alleviate Covid-19 business pressures - EY

31st January 2024



The EY Reimagining industry futures study revealed that 80% of respondents say the impact of the global health crisis is driving their interest in 5G, up from 62% in last year's study.

EY's study showed that 79% of respondents say supply chain disruption has galvanized their 5G pursuit, while 68% cite the focus on environmental, social and governance (ESG) issues. However, 40% are concerned that 5G and internet of things (IoT) vendors' current use cases do not meet their business resilience and continuity needs, and 51% do not think their sustainability goals are addressed by today's use cases.

Advanced 5G use cases featuring virtual or augmented reality are cited by just 22% of U.K. respondents as a key application, compared to 49% who favor process optimization.

Praveen Shankar, EY UK and Ireland technology, media and telecoms leader, said: "While the hype around how 5G low latency could power the metaverse or commercialize augmented reality continues to build, the study shows that the technology has moved out of its infancy, with enterprises' interest now fuelled by real-world challenges. This should be applauded, with 5G following the same innovation cycle of other transformative technologies. Sophisticated use cases will become important in time. More pressing, however, is the need for 5G providers to adapt their solutions to the practical demands of industry 4.0 today."

5G leads all other emerging technologies tracked in the study in terms of future spending intentions, with more than half (56%) of U.K. businesses planning to invest in 5G within the next three years.

However, despite this promising outlook in terms of future 5G adoption, enterprises are less confident than before that they can deploy 5G to the best of their ability. Only 18% are very confident that they can successfully implement 5G, down 4% compared to last year.

Adrian Baschnonga, EY global telecommunications lead analyst, said: "There are still fundamental anxieties around how 5G works alongside other emerging technologies. 5G providers should take this on board and adapt their customer discussions accordingly. By educating enterprises on how 5G can be harnessed by other emerging technologies, service providers can boost enterprise confidence in their 5G deployments."

The study further finds that 71% of U.K. enterprises are interested in using private networks to support implementation of 5G and IoT use cases, while 66% are interested in buying 5G through an intermediary.

EY's study also revealed that telecoms operators face a significant gap in terms of credibility. Only 13% of enterprises view them as digital transformation experts, down from 19% the previous year. Conversely, 33% trust network equipment vendors as favored digital transformation experts, up from 13% last year.

"Disruptive customer signals suggest that telcos' traditional relationships with enterprise customers are under pressure and more agile go-to-market strategies are essential in a 5G-IoT world. Telcos should take steps now to ensure that they can meet enterprise demand for private network deployments," Shankar added.