XR ASSOCIATION

XR: THE TECHNOLOGY OF THE FUTURE—TODAY

WHAT IS THE XR ASSOCIATION?

The XR Association promotes the dynamic growth of the XR industry. We convene and educate policymakers, thought leaders, researchers, developers, civil society, and the public on XR's infinite potential and serve as the premiere resource for anyone interested in learning about the applications of immersive technologies. Our member companies are united in our mission to champion the responsible development and thoughtful advancement of XR solutions that foster positive societal outcomes. Let us help you explore the endless potential of XR.

WHAT IS XR TECHNOLOGY?

XR is an umbrella term encompassing virtual, augmented, and mixed reality technology as well as other forms of alternate, expanded, or immersive technology applications.

Virtual Reality (VR)

VR replaces or occludes a user's reality with a new virtual environment like a factory floor or replication of the solar system.

Augmented Reality (AR)

AR layers digital content onto a user's view of the real world, thus providing a composite view.

Mixed Reality (MR)

MR allows users to experience simulated content within their physical worlds and to manipulate and interact with virtual elements in real time.

XR is changing the way we learn, do business, and provide essential human services. By delivering efficiencies in manufacturing, enhancing workplace safety, accelerating learning and job training, providing risk-free first responder training, improving healthcare and medical services, and providing rich experiences to individuals living with disabilities, XR is poised to become a part of daily life for users across the globe. XR is the technology of the future—today.

XR IS IMPROVING HEALTHCARE

XR's use in healthcare is on the rise, from the operating room to medical classrooms, from pain management to mental health. Experts estimate the market for XR in healthcare could reach $19B by 2030. XR helps surgeons visualize organs, tumors, X-rays, and ultrasounds in real time and from multiple angles without diverting attention away from patients. Neurosurgeons at Johns Hopkins' have performed AR-guided spinal surgery by projecting images of the patient's internal anatomy such as bones and other tissue based on CT scans. XR is also being used to treat patients with dementia and PTSD, and physicians are exploring virtual reality technologies as an alternative to pain relieving prescriptions, including opioids. Learn more about XR's impact on healthcare in XRA's letter to the U.S. Food and Drug Administration.

XR IS IMPROVING QUALITY, EFFICIENCY, AND SAFETY IN MANUFACTURING

XR technology allows engineers and manufacturers to test for flaws and optimize designs at an early stage without having to develop countless costly prototypes. Technicians can use immersive technology to guide the manufacturing and assembly of complex hardware by digitally overlaying instructions and information about various parts onto the workspace. Lockheed Martin, the lead contractor for NASA's Orion spacecraft, used AR headsets to assemble parts of Orion's crew module adapter. Lockheed found that the use of AR reduced time spent on spacecraft manufacturing by 90% compared to traditional methods.

XR IS UPSKILLING WORKERS FOR THE 21ST-CENTURY ECONOMY

Rather than rely on a single skillset, workers are increasingly expected to upgrade their skills quickly and efficiently throughout their careers, particularly in industries where generations of technology outpace generations of workers. For instance, auto mechanics are being trained to service and maintain fully electric vehicles through VR. Engineering giant Bosch and auto giant Ford teamed up to develop applications where auto technicians use VR to "go inside" an electric vehicle, navigate through various modules as if they were walking through rooms, identify problems, and make repairs. And in the aerospace industry, Boeing is using VR to teach technicians highly specialized manufacturing tasks that historically just a handful of people knew how to do.

XR IS ENHANCING THE LIVES OF PEOPLE WITH DISABILITIES

Immersive technologies are broadening the realm of the possible for users with disabilities, making once-inconceivable experiences available to users with limited mobility, sensory impairments, and cognitive disabilities. Michigan State University and the University of Michigan developed a training tool called Social Cognitive and Affective Learning for Work, that can teach young adults with Autism Spectrum Disorder to communicate effectively with customers and colleagues in the workplace. AR is also providing blind and visually impaired users with a more unobtrusive and hands-free way to access the world around them. The XR industry is focused on ensuring XR technology is itself accessible. To that end, XRA published the "Accessibility & Inclusive Design in Immersive Experiences" Developers Guide — a set of best practices for platform and application developers on creating programs that can be enjoyed by all.

XR IS BOLSTERING PUBLIC SAFETY

XR is bolstering public safety across the spectrum, from emergency medical services to firefighting and law enforcement to disaster management. Often, public safety officials face environments that are difficult or dangerous to replicate in real life for training purposes. But first responders are leveraging immersive technology to replicate the challenges they will face in the field to better equip trainees. Northcentral Technical College in Wisconsin is using immersive technology to train firefighters on what protective equipment you need for different situations and how to assess and respond to scenarios. The training gives real-time and post-exercises feedback, so firefighters know how to improve their responses. Ohio State University has developed a program to train first responders to be prepared for mass casualty incidents such as a bombing. Participants learn how to practice SALT (sort, assess, life-saving interventions, treatment and/or transport) triage. The Los Angeles Police Department is using VR and a motion capture studio to train officers at the Police Academy on how to de-escalate police encounters Further, government agencies are exploring the unique advantages of VR-based training for disaster preparedness and response.