XR TECHNOLOGY & MANUFACTURING

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 we 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 QUALITY, EFFICIENCY, AND SAFETY IN MANUFACTURING

XR is rapidly gaining traction in the manufacturing sector, where it allows engineers to practice various "what-if" scenarios in an immersive space - ultimately enhancing safety, delivering cost savings, and improving speed and accuracy. With respect to product design, VR improves manufacturers' approach to predictive analytics, helping find design flaws in a matter of minutes rather than months. AR is similarly improving engineers' speed and accuracy as they work on complex assembly projects, saving time and money.

MANUFACTURING QUALITY AND EFFICIENCY

Product Design

XR technology allows engineers and manufacturers to test for flaws and optimize designs at an early stage without having to develop countless costly prototypes. Immersive technologies can also help companies integrate expert feedback earlier in the design process and reduce time-to-market for new products. Mercedes-Benz partnered with Nvidia and utilizes a VR-enabled digital twin of one of their factories to facilitate a collaborative design process with specialists from around the world. The company also uses AR to help designers visualize how different parts will fit together during manufacturing and assembly.

Complex Assembly

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 aircraft manufacturing by 90% compared to traditional methods.

Streamlined Logistics

Immersive technology can help track and monitor products through an entire supply chain, accelerating delivery times and reducing manual data entry costs. AR can also help guide workers throughout a warehouse to ensure that the rights or products are selected and moved. TeamViewer and SAP have partnered to create TeamViewer Frontline AR which was shown to improve the pick rate between 10-15% and decrease error rates among logistics workers.

WORKER TRAINING AND SAFETY

Upskilling 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 have 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. 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.

Enhancing Worker Safety

Whether on the factory floor of a manufacturing plant, at a construction site, or on an offshore oil rig, safety is paramount. Introducing workers to new industrial environments with unfamiliar protocols and potentially dangerous equipment is often a recipe for injury. With XR applications, inexperienced personnel can be trained in low-risk environments without the need for expensive additional resources. What's more, by digitally simulating production processes, dangerous maneuvers can be identified in advance for even the most experienced individuals. Tyson Foods, where 89% of workers said they felt more prepared for their jobs after VR training, and Ford Motor Company, which reduced the injury rate for its more than 50,000 U.S. "industrial athletes" by 70% using VR training, are two major brands who have implemented VR solutions.