



THE INTEGRATED TECHNOLOGY LANDSCAPE OF THE FUTURE AND THE SYNERGISTIC EFFECT OF IMMERSIVE TECHNOLOGIES.

As Congress prepares to develop a modern, sustainable American infrastructure for the next century, key considerations will include strengthening and enhancing American roads, bridges, and public transportation systems; investing in clean energy; transitioning to electric vehicles; climate-smart agriculture; efficient manufacturing; and upgrading buildings across the nation. In addition, lawmakers will need to think through how best to prepare America’s workforce for this renaissance. New jobs will be created, and workers will need to be upskilled and reskilled to meet the moment.

Immersive technology will play a vital role in America’s drive to Build Back Better, and it will undergird much of our advanced physical and digital infrastructure. Virtual, augmented, and mixed reality (collectively, immersive technology or “XR”) is helping industries across the spectrum become more innovative, more productive, and safer - and helping to train workers in myriad occupations from engineering and construction to manufacturing and farming. **What’s more, Immersive technologies are already delivering impressive cost savings. As Congress endeavors to find efficient and economical ways to bring America’s infrastructure into the 21st century immersive technology must be a factor.**



Virtual Reality

An immersive medium that replaces a user’s real surroundings with a simulated environment, such as a construction site, a subway system, a coastal flood plain, or an energy grid



Augmented Reality

Layers computer-generated imagery onto a user’s view of the real world, thus providing a composite view



Mixed Reality

Blends augmented and virtual reality, allowing users to experience simulated content within their physical worlds and to manipulate and interact with virtual elements in real time

Among the ways in which these groundbreaking technologies are being deployed today that directly impact and improve of our infrastructure are:

1. Reskilling and upskilling the American infrastructure workforce (eg. manufacturing, utilities, mechanics, agriculture, urban planning, etc.) through immersive and interactive virtual reality training simulations that are proving more impactful than typical classroom education.
For Example: [Duke Energy teams with ITS to offer customized virtual reality training programs for energy company workers nationwide](#)
2. Mitigating American worker exposure to harm through virtual simulations so that they can become familiar with their work environment in three dimensions before entering a potentially dangerous physical space.
For Example: [OSHA Training in Virtual Reality](#)
3. Streamlining and expediting prototyping and product development through VR and mixed reality technologies that enable geographically dispersed teams to collaborate, engineer and test products more rapidly and with less upfront expense in terms of time and materials.
For Example: [BMW Utilizes Augmented Reality in Its Vehicle Prototyping Work](#)
4. Empowering workers and technicians in telecommunications, agriculture, biotechnology, manufacturing and more, by connecting them to real-time assists from experts through augmented and mixed reality to improve in-field installation, service and repair of equipment.
For Example: [How Augmented Reality Strengthens Biotech Manufacturing](#)

Yet immersive technology is much greater than the sum of its parts. While XR provides extraordinary game-changing, sector-specific applications across the board, immersive technology will also serve as our next major computing platform, succeeding the laptop and smartphone to enable entirely new ways of working and collaborating. Immersive technology will pervade American industry as a foundational component of the new economy. **Over the course of the next decade, the physical and digital worlds will merge at an unprecedented scale. If we are to “future proof” our infrastructure we must embrace immersive technologies today.**

With America’s future in mind, we encourage Congress to include immersive technology in its infrastructure legislation in the following ways, among others:

AEC Feasibility Study: With roughly 98% of construction projects incurring cost overruns, there should be a federally mandated feasibility study of the use of immersive technology to provide cost-savings in federal infrastructure initiatives.

Research and Development Grants: If the U.S. is to lead the way in immersive technology, Congress should prioritize American innovation in this space as it allocates funding for 21st century infrastructure.

Workforce Training and Retraining Programs: Congress should include training in virtual reality and augmented reality to prepare new employees and reskill experienced veteran workers.

Safety Training Programs: Congress should fund virtual reality safety training programs as part of its overall effort to ensure worker safety as America begins to Build Back Better.

Infrastructure Projects: Congress should incentivize the use of immersive technology in the many projects that will contribute to America’s 21st century infrastructure. This investment will result in tremendous efficiencies and improved results.

Broadband Infrastructure: 5G will democratize the use of XR technology, ensuring that Americans from the inner cities to rural farmland are able to work together and capitalize on Americans’ vast ingenuity. Congress must expand broadband access to all communities.