

**Where XR Made an
Impact This Year**



2023

XR Association (XRA)

STATE OF THE INDUSTRY REPORT



A MESSAGE FROM XRA CEO LIZ HYMAN

As the industry navigated the ups and downs of “hype cycle 2023”, we at XRA never lost sight of the hard work of transitioning to a new computing platform. This will be a platform where emerging technologies converge to transform our digital interactions into immersive experiences forever impacting the way we work, learn, play and communicate with one another.

XRA membership continues to reflect the steady growth of the XR industry at large. In 2023 XRA expanded to include more than 50 member companies. This growth is a testament to the dynamic community we've cultivated, representing companies at the forefront of virtual, augmented, and mixed reality.

Our community's contributions and dedication to deepening understanding and awareness of XR technologies were evident in our participation in over 30 events and campaigns—a remarkable 15% increase from the previous year. At major gatherings such as CES, SXSW EDU, AWE, and The Economist Metaverse Summit, XRA emerged as the preeminent voice advocating for responsible development and the thoughtful advancement of XR.

We also engaged in three international advocacy trips to promote XR, as well as multiple meetings with policymakers here in the U.S. It is vital that while the steady growth and innovation of XR continues we use this time wisely. Conversations with industry, civil society, and thought leaders around the functionality and impact of immersive technology should be – and are – as mature as the conversations that take place around mobile technology and the World Wide Web.

This year's successes demonstrate our commitment to fostering dialogue and engaging with a wide array of experts and industry players from the curious to the engaged. As we look ahead to 2024, our commitment to advancing XR technologies remains unwavering. I am excited about the possibilities that lie ahead and eager to collaborate with each of you in the coming year.

XRA BY THE NUMBERS (2023)

30+ Speaking Events and Major Conferences

45+ Engagements with Members of Congress and Government Agencies Pushing Policy Forward

- **12+ Engagements with EU and UK Policymakers Elevating XR**

2 Public Comments Submitted in the U.S. and EU

9 Podcast Episodes

- **4 Education Centered (XR In the Classroom)**
- **4 Policy Centered (Reality Check)**

36 Member Milestones, Including:

- **3 Member Committees (Communications, Policy, Health & Inclusion)**
- **4 Working Groups (Education, Standards, Accessibility, and as of February 2023 Healthcare)**
- **2 Developers Council Speaker Series**
- **4 Metaverse, Standards, Interoperability, and Governance Meetings**
- **15 New Members in 2023**
 - 1 Executive Member (Magic Leap)**
 - 1 Allied Partner (King & Spalding)**
 - 13 Associate Members**
- **8 Future of XR Advisory Council (XRAC) Meetings**



IMPORTANT MILESTONES AND MEMBER ACTIVITIES

In 2023 the XR Association (XRA) continued to grow, surpassing 50 members. XRA represents the full ecosystem of the XR industry, from headset manufacturers, technology platforms, component and peripheral companies, to enterprise solution providers and corporate end-users. Within the past year, the association has seen continued growth and innovation in immersive technology, and our members are at the forefront of that growth and innovation.

MEMBER HIGHLIGHTS



Meta builds technologies that help people connect, find communities, and grow businesses.

- [Launched the First Mass-Market Mixed Reality Headset](#)
- [Launched the Next Generation of Ray-Ban Meta Smart Glasses](#)
- [Introduced New Parent-Managed Meta Accounts for Families](#)
- [Meta Horizon Worlds Begins Expansion to Mobile and Web](#)
- [Meta Collaborated with 15 US Universities Teaching Using VR](#)
- [Celebrated Meta Connect 2023, the 10th Anniversary of Connect](#)
- [Partnered with Peacock to enable streaming of current movies, hit TV shows and live Sports in VRMeta Quest](#)
- [Expanded partnership with NBA and WNBA to enable users to get a Front Row Seat to NBA Games on Meta Quest](#)



Magic Leap is pioneering a wearable augmented reality platform to amplify enterprise productivity.

- [SentiAR Announces Second FDA Clearance for CommandEP Interface Utilizing Magic Leap 2 Platform](#)
- [Magic Leap Announces Magic Leap 2 is TAA compliant](#)
- [New Features on Magic Leap 2 Empower Developers and Enhance Enterprise AR Solutions](#)
- [Magic Leap collaborates with NVIDIA to advance digital twins for enterprise](#)
- [Unveiling the Future of Driving: Mercedes-Benz Vision One-Eleven Concept Car Uses Magic Leap 2](#)
- [Audi, Magic Leap Launch Activesphere Concept UI](#)

MEMBER HIGHLIGHTS (CONT)



Google AR & VR (augmented reality and virtual reality, respectively) is the Google department that brings real life to the virtual plane, and vice versa.

- [Google Introduces Geospatial Creator, a tool that helps anyone easily visualize, design, and publish world-anchored immersive content](#)
- [Google Celebrates "SPACE INVADERS" 45th anniversary with "SPACE INVADERS: World Defense," an immersive game powered by AR](#)
- [Your Google Maps Experience Is About to Get More Immersive](#)

SONY

Sony Group Corporation is a leading provider of audio/video electronics and information technology products for the consumer and professional markets.

- [Launched PlayStation VR2](#)
- [Launched Access controller for PS5, an all-new accessibility controller kit](#)
- [Launched PS Portal, PlayStation's first Remote Play dedicated device](#)
- [Revealed new PS5 Design](#)
- [Achieved 40 million PS5 Console Sales](#)
- [Launched PlayStation Productions, bringing beloved video game IPs to TV](#)



HaptX is a leading haptics company that brings a realistic touch to virtual reality for the first time with HaptX Gloves.

- [World premiere of multi-user haptics](#)
- [Nominated for AWE Auggie Award: Best Collaboration Tool](#)
- [Collaboration with retail giant Lowe's and a team of creative technologists from Lowe's Innovation Labs to develop Infinite Kitchen Touch prototype and consumer research project References](#)
- [Collaboration with U.S. DOE contractor CNS to advance the use of training simulation technologies. Working with Oak Ridge Enhanced Technology & Training Center to develop a glovebox operator training simulation prototype for Y-12 National Security Complex References](#)
- [Collaboration with Sanctuary AI to enable the human operators who pilot Sanctuary's humanoid robot to feel the objects being handled](#)
- [Collaboration with Komatsu Global and Arizona State University's Meteor Studio to develop new mining safety training simulations that incorporates haptic feedback and delivers a memorable learning experience](#)

MEMBER HIGHLIGHTS (CONT)



HTC is a leading innovator in connected technologies and XR solutions for consumers and businesses across multiple industries.

- [Launched new modular XR headset, VIVE XR Elite, at CES 2023](#)
- [Worked with Nord Space Aps, XRHealth, and NASA to configure a VIVE Focus 3 headset for use in space, and sent one to the ISS on a resupply mission](#)
- [Launched Mars FIZTrack, a new accessory for our popular virtual production system VIVE Mars CamTrack, at NAB 2023](#)
- [Partnered with MyndVR to deploy XR Elite into senior care facilities in Michigan for physical therapy, occupational therapy, speech therapy, and reminiscence therapy](#)
- [HTC VIVE partnered with DeepSig to incorporate their AI solution into our Private 5G system, REIGN CORE, to improve signal efficiency](#)



MediView helps advance human health with intuitive augmented reality, remote collaboration and evidence-based clinical insights.

- [Received FDA 510\(k\) Clearance for XR90 Augmented Reality-Based Visualization and Navigation Platform](#)
- [Empowered Carle Illinois College of Medicine at the University of Illinois Urbana-Champaign to become first med school in the world to integrate an augmented reality-based hologram system in its programs](#)
- [Named a startup to watch in Cleveland 2023 by Purpose Jobs](#)



Schell Games is a full-service game design and development company that creates video games and interactive experiences for education and entertainment.

- [Launched Out of Scale: A Kurzgesagt Adventure in partnership with Kurzgesagt](#)
- [Schell Games designated as a GamesIndustry.US Best Place to Work for the third consecutive year](#)



GameDriver enables developers, testers and producers of video games, AR, and VR, to automate functional testing; improving time to market, test coverage and overall quality and revenue.

- [Introduced support for multiple popular XR technologies such as SteamVR, Meta Quest \(OVR\) and WebGL](#)
- [Launched support for Unity](#)
- [Launched support for Unreal Engine, HoloLens 2 and Oculus VR](#)

MEMBER HIGHLIGHTS (CONT)



VoxelSensors is at the forefront of 3D perception, providing cutting-edge sensors and solutions for seamless integration of the physical and digital worlds.

- [Raised €5 million in seed funding to develop 3D sensor](#)
- [Earned praise for innovative VoxelSensor technology](#)
- [Debuted Switching Pixels Active Event Sensor solution for 3D Perception](#)
- [Participated in the Horizon Europe SPEAR project in AI and Robotics](#)
- [Started research program SPECTRE with The Vrije Universiteit Brussel's Department of Electronics and Informatics \(ETRO\) and VUB BruBotics](#)



Mynd Immersive is creating a new genre of engaging and therapeutic experiences in Virtual Reality specifically designed for our dynamic and aging population.

- [Partnered with Stanford in Groundbreaking Study that indicated VR Can Enhance Relationships Between Caregivers and the Aging Population](#)
- [Expanded Use of Immersive VR for Veterans Homes Through BVL Grant](#)
- [Deployed VR Headsets in Partnership with Select Rehabilitation](#)
- [Featured for expanding Use of VR for Hospice Care](#)
- [Partnered with Stage Access Team to Bring Classical Music and Performances to Virtual Reality Therapy for Older Adults](#)
- [Became First VR Product to be Covered By Medicare Advantage](#)



Transfr is building classroom-to-career pathways for workers and job upskilling by leveraging VR to provide workforce training courses and simulations.

- [Launched Career Exploration 2.0 provides immersive learning opportunities to guide learners from the classroom to meaningful careers.](#)
- [Launched Virtual Healthcare Clinic, Transfr is building career pathways for millions of current and future healthcare professionals through immersive technologies.](#)



Qualcomm Technologies is accelerating the future of extended reality (XR) with our Snapdragon® XR technologies.

- [Qualcomm launches its next-gen chips for XR and AR platforms](#)
- [Qualcomm sets launch window for its next-gen XR chip](#)
- [XR Industry Giants Team up to Save Key Developer Tool](#)
- [Qualcomm lines up 7 global telecom operators to support XR devices with Snapdragon Spaces](#)
- [Qualcomm touts open XR developer ecosystem for Snapdragon Spaces](#)

MEMBER HIGHLIGHTS (CONT)



CreatorUp is a scalable, creative content studio with access using AI-enabled teams to produce digital content.

- Teamed up with Paramount to produce CBS News KPIX Bay Area series, one of the most viewed 360VR cinematic news series covering local issues.
- Featured in national news for our project that helped dementia caregivers via a program with Santa Clara University that has moved to its second stage of 360VR lessons



Oberon Technologies is a strategic consultant, expert systems integrator, and innovative software solution provider.

- Secured several VR related patents enabling unique enhancements to VR Training experience for commercial use cases
- Introduced new training offerings for the Gas Utilities industry.
- Perspective featured in Industrial Safety & Hygiene News
- Perspective featured in Energy Oil & Gas magazine (Pages 14-16).



Virti is a technology company based in Bristol, England, specializing in the use of virtual and augmented reality combined with artificial intelligence for training purposes.

- Partnered with HTC VIVE Medical VR team to conduct 85 workshops in the Asia-Pacific (APAC) region, which have trained 2,500 medical professionals and students, who in turn, have used Virti to create 183 different simulations and counting
- Partnered with the University of Texas Medical Branch's Health Education Center to pilot an immersive education program, which so far has trained about 1,000 students from across five schools within the university system
- Partnered with Weill Cornell, a teaching hospital, to experiment with virtual avatars, powered by generative artificial intelligence (AI) to provide realistic soft skills training
- Partnered with Amazon to pilot an onboarding program for Fulfillment Center Managers to overwhelmingly positive results
- Launched two very well-received research reports

MEMBER HIGHLIGHTS (CONT)



CaptiveAR is a 360° customer experience provider deploying Industry-Leading solutions in XR, Blockchain, Metaverse, NFT and Digital Experience Management.

- [Presented our latest developments in ground personnel aviation training at the National Business Aircraft Association conference in Las Vegas](#)
- [Using GenAI, and WebAR, created the first AR Consultant, Capti-AI, to help us get closer to our clients providing them an intuitive way to learn more about AR/VR technologies](#)



Cognitive3D is a platform that records, measures, aggregates, and analyzes data from VR, AR and MR experiences.

- [Introduced massive SceneExplorer Update, improving and revamping user experience](#)
- [Released transformative Dashboard 3.0: update, updating classic dashboard with more intuitive design and powerful features](#)
- [Released Cognitive 3D on Unity Asset Store, bringing our cutting-edge analytics solution to an even broader audience](#)



Providing customized XR-based end-to-end solutions for corporates across.

- [Partnered with Eaton Inc. to train and test electrical engineers](#)
- [Partnered with Bascom Palmer Eye Institute, University of Miami to simulate strabismus corrective surgery](#)



Be More Colorful produces real-world virtual reality experiences to help solve big workforce development problems.

- [Selected as Yass Prize Semifinalists & Parents Choice Award Finalists](#)
- [Partnership with North Dakota Career and Technical Education allows all public and private middle schools and high schools in North Dakota to access CareerViewXR at no cost](#)
- [Be More Colorful Joins Elite Nationwide Cohort Through Setda Emerging Partners Program](#)



BlInfoSec community to Safety, Security, and Privacy centric experiences in the Virtual World, and determining shortfalls in XR Technologies.

- [Launched OWASP, a nonprofit foundation that works to improve the security of software](#)

MEMBER HIGHLIGHTS (CONT)

PRAXIS LABS

Praxis Labs is an immersive learning company that equips learners of all levels with core leadership skills that foster more equitable, inclusive, and valuable companies.

- [Launched Pivotal Practice, a generative AI-fueled immersive learning tool](#)



Unity is a cross-platform game engine that provides a comprehensive set of software solutions to create, run and monetize interactive, real-time 2D and 3D content.

- [Launched support for creating spatial experiences on the visionOS platform for Apple Vision Pro](#)
- [Celebrated 60% of Meta Quest 3 mixed reality enhanced titles being made with Unity](#)
- [Celebrated more than 50% of PS VR2 launch window titles being made with Unity](#)
- [Introduced mixed reality development tools for Meta Quest 3](#)
- [Introduced Unity Industry, a tool to support industrial developers](#)

BIG ROCK CREATIVE

Big Rock Creative is an award-winning XR experience company creating groundbreaking experiences for global clients.

- [Partnered with Eaton Inc. to train and test electrical engineers](#)
- [Partnered with Bascom Palmer Eye Institute, University of Miami to simulate strabismus corrective surgery](#)

TALESPIN

Talespin's immersive learning platform powers talent development and skills mobility for the future of work

- [Talespin Launches Groundbreaking Extended Reality Learning App On Meta Quest](#)
- [Capability Group and Talespin Collaborate to Bring Immersive Learning Solutions to APAC Region](#)
- [Lenovo and Talespin Create Real ROI with Immersive Learning](#)
- [Talespin Releases AI-powered, Web-Accessible No-Code Creator Platform](#)
- [Talespin and Pearson Usher in the Future of Work With Ambitious Storyworld](#)
- [Talespin Selected as One of 50 Best Startups to Work For in Los Angeles 2023](#)
- [LG Nova Selects Companies, and Entrepreneurs for Second Annual Mission for the Future Program](#)

Kapeer Corporation

Kapeer Corporation is a learning, design, and technology company that supports the design of XR solutions to prepare a skilled and qualified workforce.

- [Launched a Job Pop! series with East Tennessee PBS](#)

INDUSTRY AT LARGE

The global market for XR continues to grow, reaching more than **\$31 billion** in 2023 and is expected to surpass **\$100 billion** by 2026. In addition to the advances made by XRA member companies, 2023 saw new entrants into the XR space and continued adoption of XR across industries from healthcare and manufacturing to education and civil and diplomatic services. Some notable examples from across the industry and the globe include:

- [Apple Introduces the Apple Vision Pro: Apple's first spatial computer](#)
- [FCC greenlights superfast Wi-Fi tethering for AR and VR headsets](#)
- [Abu Dhabi launches virtual reality Yas Island tours](#)
- [Hong Kong International Airport, the first international airport in Greater China to unveil its First-ever HKIA Metaverse](#)

Europe

- [Siemens Invests €1bn in Erlangen Industrial Metaverse Hub](#)
- [Swedish Red Cross Democratizes First Aid with Warpin VR Trainer](#)
- [CREAL announces 2024 availability of its light field AR solution](#)
- [Vodafone creates augmented reality app for Audi customers](#)
- [NATO Typhoon Fighter Jet Pilots Get Augmented Reality Upgrade](#)

SOCIAL IMPACT

XR technology has also demonstrated potential as a force for social change, particularly due to its ability to provide users with unique perspectives through immersive experiences. The following includes a snapshot of how companies and nonprofits leverage AR/VR for philanthropy:



Hope for Haiti's VR app transports users to a virtual environment modeled off one of their partner schools in rural Haiti.

- [Hope for Haiti joins Webinar on XR and Social Impact](#)
- [A Conversation with Sarah Porter](#)

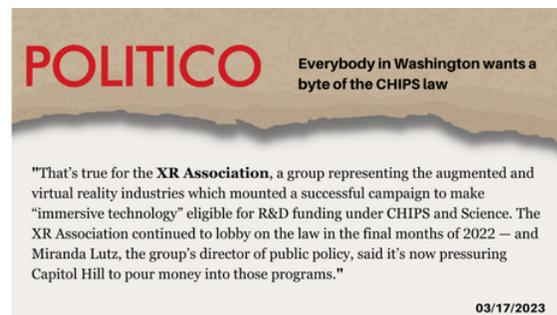


Creating innovative, cost-effective, and evidence-based programs to extend clinical resources for recovery through the use of XR technologies.

- [Healing with a headset: Virtual Reality shows promise in treating substance use disorders](#)
- [Feasibility of Virtual Reality-Delivered Transcending Self Therapy in Veterans Undergoing Residential Substance Use Treatment](#)
- [A VA program assists in substance use disorder treatment](#)

MEDIA ATTENTION

"XRA received 80 media hits since Jan 2023, including POLITICO, XR Today & The Washington Post. Despite tech beats dominated by AI & potential legislation, XRA created a drum of positive stories on XR and the metaverse, proving its significance."



MEDIA HITS INCLUDE

A warning to Congress about the virtual future

By Derek Robertson, POLITICO, November 7, 2023

VR Can Make School More Immersive, but Accessibility Issues Remain

By Brandon Paykamian, Government Technology, September 14, 2023

The metaverse works unite

By Derek Robertson, POLITICO, September 14, 2023

What It Means To Talk About Accessibility And Inclusiveness In The Metaverse

By Daniele Rossi, Elle Decor, August 23, 2023

Challenges Behind Applying Real-World Laws to XR Spaces and Ensuring User Safety

By Gergana Mileva, AR Post, August 8, 2023

The Economist's Enterprise Metaverse Summit to Kick Off In London

By Demond Cureton, XR Today, June 23, 2023

AWE 2023: Mixed Reality Woos Metaverse

By Kenneth Wong, Digital Engineering, June 9, 2023

XRA Supports Immersive US Workforce Training Bill

By Demond Cureton, XR Today, March 12, 2023

Everyone wants a byte of CHIPS

By Caitlyn Oprysko, POLITICO, March 13, 2023

Metaverse Winter Sets In

By Derek Robertson, POLITICO, February 22, 2023

#1171: XR Association Updates on XR for All Foundation DEI Effort, Tech Policy, & Accessibility

By Kent Bye, Voices of VR, February 2, 2023

XRA Survey: Teachers Pin Hopes on XR for Better Classroom Engagement

By Gergana Mileva, AR Post, January 5, 2023

LOOKING AHEAD

XRA Policy set an ambitious agenda for 2023 and I am pleased to report: We Crushed It!

First, we built upon the continued interest of U.S. lawmakers in American technological competitiveness and their growing understanding of the importance of XR. In 2022, XRA succeeded in persuading Congress to include “immersive technology” in the CHIPS and Science Act’s (Pub. L. 117–167) priority list of “key technology focus areas.” Leveraging that momentum, we worked with partners at George Washington University’s Digital Trade and Data Governance Hub to research XR growth initiatives currently underway in other parts of the world – namely the EU, the UK, South Korea, and China – and compared that data to activity in the United States.

Unfortunately, our research showed the U.S. finished last. Upon completion of this research we worked with the team at George Washington University to produce a seminal report on global XR competitiveness, “Reality Check: Why the U.S. Government Should Nurture XR Development.” This report should serve as a wakeup call for Capitol Hill and spur lawmakers to action.

XRA has created draft legislation, based on our research findings, to authorize a national commission on U.S. leadership in XR, and we are in the process of discussing the measure with various House and Senate offices. So far, interest has been very strong. Our second major policy initiative for 2023 was engaging and influencing the conversations underway in the European Union and the United Kingdom around the development of XR regulation.

In 2023, XRA traveled to London, Vienna, and Brussels, where we met with industry stakeholders, civil society, and government representatives to discuss current thinking about the need to regulate virtual worlds. Specifically, we explored how XRA and its members can contribute to the discussion. Just this year, the EU published its “EU Initiative on Web 4.0 and Virtual Worlds: a head start in the next technological transition” and the UK launched its Digital Regulation Cooperation Forum, which identified XR as a priority. In 2024, XRA intends to strengthen these relationships in Europe and continue participating in this critical international dialogue.

Looking ahead to 2024, in addition to further advancing the initiatives above, XRA will begin to work with our members to implement the recommendations generated by our XR Advisory Council. Among them, we will identify ways to maximize online safety for young people in immersive environments; address the lack of clarity that exists surrounding critical privacy terms associated with immersive technologies; and establish a dedicated privacy track as part of the annual AR/VR Policy Conference that XRA hosts with the Information Technology and Innovation Foundation (ITIF).



Joan O'Hara

Senior Vice President of Public Policy, XRA

LOOKING AHEAD



Stephanie Montgomery

Senior Vice President of
Research and Best Practices,
XRA

We witnessed significant technological advances in consumer and enterprise XR hardware in 2023, from the launch of several mixed-reality headsets to Apple Inc. entering the XR marketplace with an immersive solution primed to advance spatial computing. The promise of XR is coming into focus.

While innovation continues to solve some of the industry's biggest challenges, hurdles remain. XRA continues to host open dialogues on privacy, data security and age-appropriate use balanced against user autonomy, agency and ability.

This year XRA explored one area where immersive technology has an immense impact: Healthcare. Immersive technologies are being deployed for everything from training medical students and educating patients to aiding surgical procedures and delivering precision therapeutics. Using XR has proven to drive efficiency, access, and positive return on investment for medical centers.

To address these advancements and develop best practices for application developers and enterprise users in the healthcare ecosystem, our Healthcare Working Group convened a summer workshop to talk with experts from hospitals, medical academia, and software developers. Additionally, we surveyed nearly 500 healthcare practitioners on the use of immersive technology in healthcare. These efforts formed the basis of the next chapter of XRA Developer's Guide: Chapter 5: Designing Immersive Solutions for Healthcare, released in January 2024.

Looking forward, XRA members will examine how XR solutions can help address the challenge of an evolving workforce. Immersive experiences can be used for employee training and upskilling. At the same time, digital twins of airports, automotive plants, and oil rigs can enable plant managers and maintenance teams to identify and solve problems without disrupting current production. Immersive technology has the potential to revolutionize the workplace.

In addition to exploring XR's impact on how we work, XRA will continue to highlight and advance our member's efforts to transform the healthcare and education sectors. As always, supporting and underpinning this exploration and innovation is the ongoing industry commitment to improve access for all through the development of accessibility by design.

XR technology continues to provide effective and efficient solutions to today's and tomorrow's challenges, from access to mental health treatment in outer space to building more efficient and effective manufacturing processes. XRA remains committed to the responsible development of immersive technology through stakeholder discussions and best practice creation.

THANK YOU!



We'd like to offer a special thank you to our members who drive the immersive technology industry forward. Their contributions and commitment to XR technology is leading the way for the responsible development and adoption of virtual, augmented and mixed-reality technologies.

We're excited to work closely with our members this year to continue to drive policy impact in this critical space.

