



Interreg
España - Portugal



Fondo Europeo de Desarrollo Regional



MAIN GAP

REALIDAD AUMENTADA Y VIRTUAL

BOLETÍN DE VIGILANCIA TECNOLÓGICA

Julio – Septiembre 2021

CIS TECNOLOGÍA E DESEÑO - AXENCIA GALEGA DE INNOVACIÓN



**XUNTA
DE GALICIA**



CEIIA



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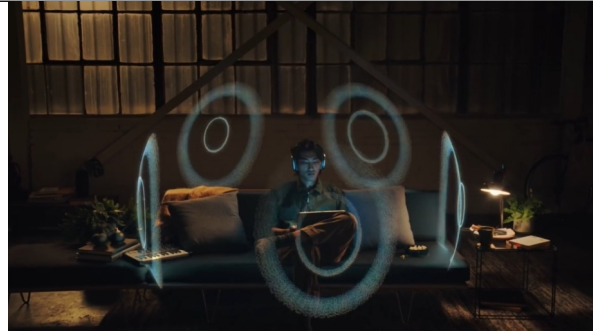


NOTICIAS

08/07/2021

Apple working on Spatial Audio system for virtual and mixed reality devices

Apple is working on developing a system that could integrate spatial audio experiences into virtual or mixed reality platforms, potentially for a head-mounted device like [Apple Glass](#). In a [patent application](#) on July 8, Apple details an interface system that could present a "synthesized reality" to users. However, the patent application details how this reality could go beyond visual and include other senses, such as hearing. A synthesized reality, in this case, is defined as an entirely or partly computer-generated setting that a user could interact with or sense. That covers both virtual reality and augmented reality — both technologies that Apple is rumored to be working on.



<https://appleinsider.com/articles/21/07/08/apple-working-on-spatial-audio-system-for-virtual-and-mixed-reality-devices>

09/07/2021

Perception Holo-SDK signs agreement to bring Holographic Augmented Reality to museums in the UK and Thailand

[Perception Holo-SDK](#), a deep-tech company supported by the UK Government's Department for International Trade's Global Entrepreneur Programme (GEP), has announced the signing of a Memorandum of Agreement with [Imperial War Museums](#) and the [Science Museum Group](#) to explore new opportunities for Holographic augmented reality (AR) across the museum, arts and culture sector. The agreements outline plans to create holographic exhibitions which bring museum artefacts to more than 20,000 students in the UK and Thailand.



<https://www.auganix.org/perception-holo-sdk-signs-agreement-to-bring-holographic-augmented-reality-to-museums-in-the-uk-and-thailand/>



14/07/2021

VRM Switzerland's Virtual Reality helicopter simulation solution selected for use by Zurich University of Applied Sciences

[VRM Switzerland](#), a provider of professional flight training simulation solutions, has today announced that Zurich University of Applied Sciences (ZHAW) has selected the company for a research partnership and has purchased a virtual reality (VR) helicopter simulator from VRM Switzerland as a result. At ZHAW's Centre for Aviation, the team for Flight Mechanics and Flight Control Systems will use and further develop the simulator for a variety of research and development purposes, as well as in human factor and human-machine-interface research.



<https://www.auganix.org/vrm-switzerlands-virtual-reality-helicopter-simulation-solution-selected-for-use-by-zurich-university-of-applied-sciences/>

22/07/2021

SEAT mejora sus eventos comerciales con Realidad Virtual

Donde antes llegaban los eventos comerciales, ahora llega la realidad virtual. La pandemia ha obligado a las compañías a reorganizar la manera de prestar servicios, o de relacionarse con sus clientes. Es lo que ha hecho SEAT S.A., que [ha aplicado la Realidad Virtual de la mano de everis](#) y su plataforma NAKA como alternativa para mantener algunos de sus eventos comerciales, cuando la presencialidad no ha sido una opción.



<https://www.ciospain.es/industria-y-utilities/seat-mejora-sus-eventos-comerciales-con-realidad-virtual>

23/07/2021

Tokyo 2020: Virtual reality and augmented reality bringing spectators closer to the action

As the COVID-19 pandemic still looming large over the Tokyo 2020 Olympic Games, technological innovations are promising to bring spectators and athletes closer to the action. Using advanced virtual reality (VR) and augmented reality (AR), this year's event will be the first Games with its own COVID-inspired Olympic Virtual Series. On-site at the Games, a team from NTT Docomo, one of Japan's major network providers, is helping spectators get an upgraded experience.

<https://www.xataka.com/pro/ferrari-contrata-a-aws-para-mejorar-sus-coches-creara-gemelos-digitales-sus-piezas-nube-para-obtener-datos-rendimiento-antes-fabricarlas>



03/08/2021

Borward Health using VirtaMed's 'LaparoS' Mixed Reality surgical training simulator

According to VirtaMed, Broward Health will use the LaparoS for general surgery training with an emphasis on patient safety. Commenting on the LaparoS platform, which was first installed in June 2021, Dr. Ivan Puente, General Surgery Program Director at Broward Health Medical Center, said: "We chose the LaparoS because it offers our residents a more realistic simulation of what they will encounter in the operating room. We feel very strongly that this will not only enhance their skill development but also contribute to patient safety."

<https://www.auganix.org/borward-health-using-virtameds-laparos-mixed-reality-surgical-training-simulator/>

06/08/2021

Nextech lanzará su aplicación de creación de hologramas de personas en HoloLens 2

Nextech AR Solutions ha anunciado que ha comenzado a preparar su solución **HoloX** para los visores de realidad aumentada **HoloLens 2**, estando previsto su lanzamiento para el mes de **septiembre**. Esta implementación permitirá utilizar la herramienta de creación y visualización de hologramas de personas con métodos como los gestos de las manos o el seguimiento de los ojos.

<https://www.realovirtual.com/noticias/10157/nextech-lanzara-su-aplicacion-creacion-hologramas-personas-hololens-2>

12/08/2021

Las estaciones de trabajo virtuales de Nvidia para CloudXR llegarán este año a Google Cloud

Nvidia ha anunciado en SIGGRAPH la llegada este año de su plataforma de CloudXR a las instancias preparadas de Google Cloud de todo el mundo, lo que permitirá a cualquier compañía ofrecer a los creadores y usuarios finales experiencias de realidad virtual y aumentada de alta calidad, tal y como afirman. CloudXR de Nvidia se ejecutará a través de estaciones de trabajo virtuales con GPUs de Nvidia gestionadas por la nube de Google.



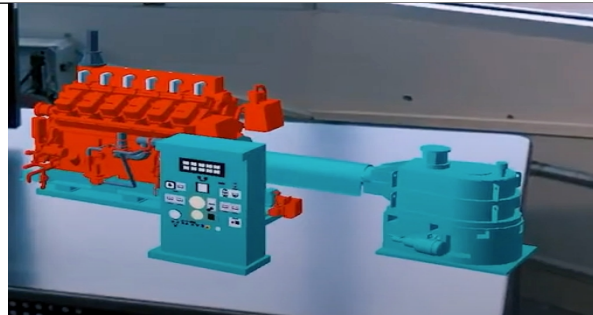
<https://www.realovirtual.com/noticias/10172/las-estaciones-trabajo-virtuales-nvidia-cloudxr-llegaran-este-ano-google-cloud>



24/08/2021

Taqtile announces enhanced Digital Twin capabilities to its Manifest Augmented Reality work instruction platform

Taqtile, a provider of enterprise software that leverages augmented reality (AR), cloud computing, and LTE/5G networks for knowledge capture and sharing, has today announced enhancements to its ‘Manifest’ AR work-instruction platform that will now allow frontline workers to fuse digital twins with Internet of Things (IoT) data in order to view and virtually interact with large pieces of equipment.



<https://www.auganix.org/taqtile-announces-enhanced-digital-twin-capabilities-to-its-manifest-augmented-reality-work-instruction-platform/>

Exohaptik Caregiver VR Multi User Training to train caregivers

Nursing work places considerable demands on the health of caregivers. In addition to mental stress, caregivers are at increased risk of developing musculoskeletal disorders (MSDs). The objective of the project is to support family caregivers and professional caregivers in their caregiving activities and their healthy posture.



<https://www.lightshape.net/en/projects/exohaptik-caregiver>

07/09/2021

WiMi Hologram Cloud anuncia un nuevo visor AR ligero: WiMi HoloAR lens

La compañía china WiMi Hologram Cloud ha anunciado hoy que lanzará un nuevo visor AR destinado al mercado doméstico, WiMi HoloAR lens. No será autónomo, sino que necesitará ser conectado a un ordenador o teléfono. Tendrá seguimiento 6 Dof, un ángulo de visión de 63º y una pantalla virtual equivalente a 600 pulgadas con una resolución de 1920*1080p que funcionará con una tasa de refresco de 90Hz.



<https://www.realovirtual.com/noticias/10270/wimi-hologram-cloud-anuncia-nuevo-visor-ar-ligero-wimi-holoar-lens>



14/09/2021

Xiaomi Smart Glasses: la marca ya tiene su prototipo de gafas inteligentes con pantalla microLED e independientes del móvil

Pesan 51 gramos de peso e integran hasta **497 componentes** en una construcción bastante compacta en apariencia. Entre ellos están un procesador ARM de cuatro núcleos la cámara, altavoces y micrófono, funcionando con Android como plataforma. Respecto a la pantalla integrada, se trata de **un panel monocromo de 0,13 pulgadas** con dicha tecnología microLED de 2,4 x 2,02 milímetros (más o menos el tamaño de un grano de arroz, casualmente), con píxeles de 4 µm.



<https://www.xataka.com/otros-dispositivos/xiaomi-smart-glasses-marca-tiene-su-prototipo-gafas-inteligentes-pantalla-microled-e-independientes-movil>

23/09/2021

LG se prepara para la batalla que viene en el sector automovilístico: compra Cybellum, empresa de ciberseguridad para coches, por 240M\$

Cybellum es una empresa que promete detectar y evaluar vulnerabilidades en servicios y hardware de vehículos conectados. Y lo hace con un original [enfoque de "gemelo digital"](#). Según describe la propia compañía, la plataforma permite mapear en busca de vulnerabilidades "bajo el capó". Cybellum identifica cada componente del vehículo y crea una réplica digital idéntica con la que trabajar. Esto incluye una "lista completa de software de código abierto, propietario y comercial, sistemas operativos, arquitecturas de hardware y cualquier medida criptográfica que los proveedores puedan haber utilizado".



<https://www.xataka.com/vehiculos/lg-se-prepara-para-batalla-que-viene-sector-automovilistico-compra-cybellum-empresa-ciberseguridad-para-coches-240m>



23/09/2021

Zuckerberg a sus accionistas: el objetivo de Facebook es ser la empresa que lidere la construcción del metaverso

Mark Zuckerberg ha explicado a los accionistas que su objetivo es que dentro de unos años Facebook pase de ser vista como una compañía de medios sociales a una **empresa de metaverso**, un entorno virtual donde se podrá estar presente con otras personas en espacios digitales, **la evolución de internet**. A partir de ahora, todos los esfuerzos de Facebook en las áreas de comercio, plataforma informática, realidad virtual y aumentada, como el próximo lanzamiento de sus [gafas inteligentes](#), formarán parte de la construcción del **metaverso**.



<https://www.realovirtual.com/noticias/10131/zuckerberg-sus-accionistas-objetivo-facebook-es-ser-empresa-que-lidere-construccion-del-metaverso>

23/09/2021

Qualcomm confirms acquisition of Augmented Reality SDK provider Wikitude

Global semiconductor company [Qualcomm Technologies, Inc.](#) has recently acquired [Wikitude](#), a provider of an augmented reality (AR) software development kit (SDK), for an undisclosed sum.

Qualcomm is one of the world's largest semiconductor providers and offers a range of chipset solutions for the extended reality (XR) market, namely its Snapdragon XR1 and XR2 5G platforms, which have been built with augmented and virtual reality applications in mind.

Qualcomm



wikitude

See more.

<https://www.auganix.org/qualcomm-confirms-acquisition-of-augmented-reality-sdk-provider-wikitude/>



PUBLICACIONES CIENTÍFICAS

Julio

IIoT based Augmented Reality for Factory Data Collection and Visualization

In Industry 4.0, machine data acquisition plays an important role in improving overall performance on the factory floor by monitoring processes, providing feedback, and integrating the information with other machines. Leveraging these hidden data instantaneously to reduce machine downtime could also minimize efforts in determining the causes of maintenance issues. This paper explores a novel method of bringing the factory floor data into an Industrial Internet of Things (IIoT) environment and visualizing real-time machine analytics through Augmented Reality (AR) and Mixed Reality (MR) based smart devices. The factory floor data from selective machines at a Volvo Group plant was integrated with IIoT and visualized in real-time through the use of AR-enabled devices such as an iPad and a HoloLens headset. The configuration process for the server and IIoT environment was automated through a software solution, and the performance and feasibility of spatial anchors were evaluated by testing accuracy, triggering times, and latency of data. The results displayed promising applications of AR/MR on factory floors for real-time machine data visualization and associated troubleshooting.

<https://www.sciencedirect.com/science/article/pii/S235197892100072X>

Exploring Differences in Student Learning and Behavior Between Real-life and Virtual Reality Chemistry Laboratories

Recent global events and educational trends have led schools to heavily rely on digital media to educate their students. Science classes, in particular, stand to lose substantial learning opportunities without the ability to provide physical laboratory experiences. Virtual reality (VR) technology has the potential to resolve this issue, but little is known if VR environments can produce similar results to real-life (RL) science learning environments. This 2 × 1, between-subjects study compares students' learning results and safety behaviors in VR and RL chemistry laboratories. The study attempts to identify differences in learning experience (i.e., general chemistry content, experiment comprehension, laboratory safety knowledge) and laboratory safety behavior. Results indicate learning general content knowledge, laboratory skills, and procedure-related safety behaviors were comparable between RL and VR conditions, but clean-up behaviors were less frequent in VR. Also, the exploratory, risk-free nature of VR environments may have allowed the learners to elaborate and reflect more on general chemistry content and laboratory safety knowledge than in the RL environment.

<https://link.springer.com/article/10.1007/s10956-021-09925-0>



Improving the Learning of Mechanics Through Augmented Reality

This study investigates to which extent students' understanding of the physical phenomenon of torque can be improved through the use of visualization technology, in particular of augmented reality (AR). The students in the first-year course Mechanics I at KTH participated in the study by taking two tests on torque. In between those tests, a subgroup of students participated in a user study where they used an AR application to solve problems regarding torque. The results of the pre-test and the post-test indicate that the subgroup who used the app improved their understanding of torque to a greater extent than the ones who did not use the app. However, a larger sample space would be required to obtain a complete statistical characterization of the reported (qualitative and quantitative) improvement.

<https://link.springer.com/article/10.1007/s10758-021-09542-1>

Getting started with virtual reality for sensory and consumer science: Current practices and future perspectives

While virtual reality (VR) has become increasingly popular in food-related research, there has been a lack of clarity, precision, and guidelines regarding what exactly constitutes a virtual reality study, as well as the options available to the researcher for designing and implementing it. This review provides a practical guide for sensory and consumer scientists interested in exploring the emerging opportunities offered by VR. We take a deep dive into the components that make up a VR study, including hardware, software, and response measurement methods, all the while being grounded in immersion and presence theory. We then review how these building blocks are put together to create two major categories of research scenarios: product selection, which can be entirely created in VR, and food evaluation, which involve tasting products in real life. For each category, we review current literature with a focus on experimental design, then highlight future avenues and technical development opportunities within sensory and consumer research. Finally, we evaluate limitations and ethical issues in VR food research, and offer future perspectives which go above and beyond ensuring ecological validity in product testing.

<https://www.sciencedirect.com/science/article/pii/S0963996921003094>



Agosto

Topological distance-constrained feature descriptor learning model for vessel matching in coronary angiographies

Feature matching technology is vital to establish the association between virtual and real objects in virtual reality and augmented reality systems. Specifically, it provides them with the ability to match a dynamic scene. Many image matching methods, of which most are deep learning-based, have been proposed over the past few decades. However, vessel fracture, stenosis, artifacts, high background noise, and uneven vessel gray-scale make vessel matching in coronary angiography extremely difficult. Traditional matching methods perform poorly in this regard.

<https://www.sciencedirect.com/science/article/pii/S209657962100053X>



Septiembre

An AR based Digital Twin for Laser based manufacturing process monitoring

In the modern manufacturing era, monitoring systems evolve towards sophistication and complexity, introducing numerous challenges in the feasibility, the assembly, the efficiency, and the integration of process monitoring devices on the relative equipment. The current work introduces a novel digital AR based digital twin framework, enabling real-time information analysis and advanced data visualization of monitoring performance on process monitoring systems. The main goal of the current research is to provide a dynamic AR environment, capable of simulating the main system's functionalities, minimizing the configuration time, cost, and inaccuracies. The case study introduced regards the configuration of optics for thermal emissions capturing from laser based processes, while the coexistence with other aspects of monitoring, such as in the case of Remote Laser Welding is considered. The usability of the tool is shown and visualization issues encountered are presented.

<https://www.sciencedirect.com/science/article/pii/S2212827121007873>

Study on non-contact geometric measurement using mixed reality space technology

In recent years, there are many environments where direct length measurement is difficult, such as distant objects, objects that are prohibited from contact, and dangerous areas. In the case of length measurement using a machine, the problems mentioned earlier can be solved, but the operation is not intuitive and requires complicated operations. To solve these problems at the same time, it is necessary to construct a system that can be easily operated by anyone and enables non-contact measurement. Therefore, this study realizes intuitive and non-contact geometric shape measurement using mixed reality technology.

<https://www.sciencedirect.com/science/article/pii/S266591742100088X>

Highly wearable SSVEP-based BCI: Performance comparison of augmented reality solutions for the flickering stimuli rendering

A highly-wearable single-channel Brain- Computer Interface (BCI) based on Steady-State Visually Evoked Potentials (SSVEPs) and Augmented Reality (AR) is proposed. The SSVEP elicitation is provided by three AR head-mounted displays (HMD), namely Epson Moverio BT-350, Oculus Rift S, and Microsoft HoloLens. Four flickering stimuli, ranging from 8 Hz to 15 Hz, are used. The goal of the work is to carry out a performance comparison of the three aforementioned devices, in terms of stimuli visualization and SSVEPs detection. To this aim, classification accuracy and time response were assessed involving nine healthy volunteers during the experimental activity. The obtained results demonstrate that choosing an adequate HMD to render the flickering stimuli is decisive for obtaining adequate performances.

<https://www.sciencedirect.com/science/article/pii/S2665917421002683>



Augmented Reality: Focusing on Photonics in Industry 4.0

Industry 4.0 (or 4th industrial revolution) facilitates horizontal and vertical digital information flow along value chains up to the end-customer and is highly relevant in a broad variety of industries. Augmented reality (AR) is a key technology in Industry 4.0, which connects the virtual and real-world environments using such digital information flows. In doing so, the technology relies upon the systems that includes hardware and software components. Particularly, optics and photonics are of much importance in the display and processing of information in these systems. However, a particular challenge is that the AR-based systems have not been adopted in the industry as much as other technologies even after several decades of their existence. Based on review of academic literature, an industrial survey and experiments conducted in the industry, this article aims to identify success factors and challenges of AR systems and metrics of photonic components that can form the basis of an AR* framework for photonics-based system design for future research.

<https://ieeexplore.ieee.org/abstract/document/9468957>



EVENTOS

05 – 07 OCTUBRE 2021

IOT SOLUTIONS WORLD CONGRESS

The 2021 edition will take place October 5-7 and it will be focused on disruptive combinations of technologies including IoT, AI, 5G, Digital Twin, Robotics and quantum computing. The new edition will combine an exclusive face-to-face exhibition aimed at C-Level executives with additional digital content for a broader worldwide audience.

<https://www.iotsworldcongress.com/>



19-20 OCTUBRE 2021

Digital Twin World

Digital Twin World Conference is an exclusive virtual event consisting of top-level content and thought leadership discussions exploring the digital twin ecosystem. Join us at Digital Twin World North America on 22-23 September 2021, and hear from leading digital experts and discover key strategies for making your digital efforts a success. Discover the critical technologies and approaches needed to make better, more informed business decisions, improve operational efficiency, improve customer engagement and retention and drive your organization's digital culture. Book your ticket today to learn how to tackle the latest challenges, and explore opportunities, market insights, trends, and debates within digital twin technology.

<https://www.digitaltwin-conference.com/>



18-19 noviembre 2021

Technarte Bilbao 2021

The topics of the interest for the conference include, but are not limited to:

Generative art , AI art, Virtual and augmented reality
Wearable tech, Data art, Robotic art, Interactive architecture, Immersive environments



<https://technarte.org>

20 NOVIEMBRE 2021

Edición española del Global VR Day

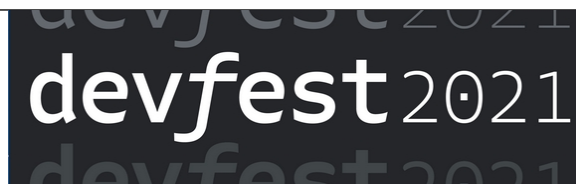
El [Virtual Reality Day](#) o VR Day es una iniciativa sin ánimo de lucro, abierta a todo el público interesado en conocer el potencial de la Realidad Virtual. Se trata de una convocatoria en la que se celebran eventos en diferentes ciudades de todo el mundo, siempre el fin de semana anterior al Black Friday, con el objetivo de impulsar el conocimiento de esta tecnología. Este año se celebrará el sábado, 20 de noviembre durante todo el día. En la edición de este año 2021 organizaremos, de manera colaborativa, un evento a nivel nacional que reúne a varias iniciativas de diferentes ciudades españolas, para fomentar las sinergias entre las diferentes comunidades de nuestro país.

<https://vrdayspain.com/>

18 NOVIEMBRE 2021

DevFest & VR Day 2021

Vuelve DevFest Zaragoza 2021, nuestro mayor evento del año en su cuarta edición junto a la celebración del Virtual Reality Day 2021. Este evento tendrá como objetivo difundir las tecnologías inmersivas mediante dos talleres prácticos adaptado a todos los niveles de experiencia.



<https://gdgzaragoza.es/devfest-vrday-21/>



14-16 DICIEMBRE 2021

2021 International Conference on Haptics and Virtual Reality (ICHVR 2021)

2021 International Conference on Haptics and Virtual Reality (ICHVR 2021) will be held in Budapest, Hungary during December 14-16, 2021. Through papers and oral presentations, leading researchers and industry experts from around the world will present the latest studies. The conference will include topics related to all areas of theoretical and applied haptic systems and virtual reality. The conference welcomes the submission of quality research papers that are accessible to the general public and discuss state-of-the-art approaches to shaping the future. This conference will be open to all researchers and professionals. I encourage you whole heartedly to submit and attend this excellent conference.

<https://www.ichvr.org/>

05-08 ENERO 2022

Consumer Electronics Show (CES) 2022

CES is the most influential tech event in the world – the proving ground for breakthrough technologies and global innovators. This is where the world’s biggest brands do business and meet new partners, and the sharpest innovators hit the stage. Owned and produced by the Consumer Technology Association (CTA), CES features every aspect of the tech sector. It also includes a conference program where the world’s business leaders and pioneering thinkers address the industry’s most relevant issues.



<https://www.ichvr.org/>



23-25 ENERO 2022

SPIE AR/VR/MR 2022

Researchers and engineers, investors and entrepreneurs, customers and suppliers meet at Society of Photo-Optical Instrumentation Engineers (SPIE) AR | VR | MR to create the future of augmented, virtual, and mixed reality. This focus on hardware and enabled content, combined with visionary industry perspectives from technology leaders working in the largest AR-VR-MR companies, startups, and suppliers, make this event one to include on your calendar every year. Come and discover the hardware that will enable the metaverse.

<https://spie.org/conferences-and-exhibitions/ar-vr-mr?SSO=1>

23-25 ENERO 2022

Mobile World Congress (MWC) Barcelona 2022

Researchers and engineers, investors and entrepreneurs, customers and suppliers meet at Society of Photo-Optical Instrumentation Engineers (SPIE) AR | VR | MR to create the future of augmented, virtual, and mixed reality.

This focus on hardware and enabled content, combined with visionary industry perspectives from technology leaders working in the largest AR-VR-MR companies, startups, and suppliers, make this event one to include on your calendar every year. Come and discover the hardware that will enable the metaverse.



<https://spie.org/conferences-and-exhibitions/ar-vr-mr?SSO=1>



01 FEBRERO 2022

XR Summit ISE 2022

XR Summit Integrated Systems Europe (ISE) is a half-day B2B strategy conference focused on the Virtual, Augmented, and Mixed Reality (VR/AR/MR) industry. Taking place in the Fira de Barcelona, it explores the latest in those technologies, business strategies, and solutions and how they impact and empower the AV business. Topics for discussion will include developments in spatial audio, 5G, haptics and brain-computer interfaces, as well as the integration challenges posed by these new technologies. Speakers will include some of the finest minds operating in XR who will be aiming to lay out a roadmap for the future of this fascinating technology area.



<https://xr-summit.org/>

