

Kluwer Arbitration Blog

Arbitration Tech Toolbox: Virtual & Mixed Reality Headsets and Immersive Experiences – Do We Need Them?

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Just when it seemed that the tech industry had [turned its back](#) on futuristic, immersive digital worlds, often called the [metaverse](#), Apple launched its first Mixed Reality headset, the [Apple Vision Pro](#), on June 5, 2023. Expected to go on sale in the U.S. in early 2024 for \$3,499, the Apple Vision Pro signals Apple's foray into this space, or what Apple calls "spatial computing." A few days before, Meta (formerly Facebook) unveiled plans to release the third iteration of its Virtual Reality headset, the [Quest 3](#).

An interesting feature of Apple's new headset is that it promises users to create a virtual version of their faces that is [accurate](#) to how they look. Exit the cartoony avatars generated by apps like [Microsoft Teams](#) and Meta's [Horizon Worlds](#).

Despite the [mixed](#) initial reviews of Apple's Vision Pro, these concurrent announcements from two tech giants have reignited discussions surrounding these cutting-edge technologies (previously discussed [here](#)).

In this blog post, we dive into the world of Extended Reality (XR) and its different forms, and explore XR's benefits, challenges, and potential implications for international arbitration.

Introduction to XR

The [roots of modern XR](#) can be traced back to the 1960s when the first devices laying the foundation for modern head-mounted displays (HMDs) were developed. In the past decade, XR gained significant attention with the launch of modern HMDs such as the first Oculus Rift in 2012 and the emergence of AR smartphone applications. Since then, XR has evolved rapidly as the latest HMDs testify (TechCrunch provides an overview of Vision Pro's features and first impressions, available [here](#)).

The term XR encompasses [Virtual Reality \(VR\)](#), [Augmented Reality \(AR\)](#), [Mixed Reality \(MR\)](#), and other immersive technologies. VR provides a fully immersive experience, allowing users to interact with others in entirely computer-generated environments. AR enhances the real-world view by overlaying digital information or graphics, while MR blends virtual objects seamlessly into the physical world. MR offers an enhanced interactive experience, bridging the gap between

VR and AR. Generally, these technologies are distinguished by their varying degrees of immersion in digital virtual worlds and their complexity, enabling users to engage with digital virtual environments and objects in different ways. Typically, computers create these digital images and allow real-time interaction between users and the XR program via various hardware devices, such as an HMD, AR glasses, smartphones, or even holographic displays.

Although niche, these technologies have been [successfully adopted in various industries](#), including gaming and entertainment, education and training, healthcare, retail, and advertising. They are also being increasingly used in engineering and construction.

The Power of Immersion

Lawyers have long recognized the power of visual media in presenting complex information and enhancing communication (discussed [here](#) and [here](#)). Over the years, practitioners have adopted increasingly sophisticated visual aids and technologies, including charts, maps, digital renderings and modeling, and some digital simulations. Companies like [DOAR](#) and [Z-Axis](#) specialize in turning complex information into interactive presentations, using software, strategic thinking, and visual design that can be used internally or at hearings.

Yet, XR technologies go beyond these more traditional forms of visual media and computer-generated imagery. As described in detail in Jeremy N. Bailenson, Jim Blascovich, Andrew C. Beall, and Beth Noveck's paper, *Courtroom Application of Virtual Environments, Immersive Virtual Environments, and Collaborative Virtual Environments* (2006), XR technologies are unique in combining both interactive and immersive features, meaning that users feel perceptually surrounded by digital virtual information, with which they can interact in real-time.

VR immersion, in particular, appears to provide users with the ability to experience a sense of spatial (or environmental), social, and self-presence in the virtual, filling the role of imagination for individual and sensory experiences.

AR and MR are just as, if not more, powerful. As in the physical world, where we absorb a large amount of information almost instantaneously, AR and MR can replicate how we perceive and process information. By overlaying supplementary content such as text, images, or virtual simulations onto the physical world in interactive presentations, AR and MR presentations can help [minimize cognitive load and reduce cognitive distance](#), *i.e.*, the mental effort required to process information and the gap between the form in which information is presented and the context to which it is applied.

Consequently, one notable aspect of these technologies is that the designers of an XR experience possess significant control over the user's perceptions. They can design a virtual experience to achieve a desired look and feel, providing a high degree of customization, immersion, and subjectivity.

Applications of XR to International Arbitration

To our knowledge, there is no recorded use of XR in arbitration proceedings. However, XR

technology has been employed in courtrooms, albeit infrequently. In the case of *Stephenson v. Honda Motors Ltd. of Am.*, No. 81067 (Cal. Supp. Ct. Placer Co. June 25, 1992) (unreported), Honda's attorney convinced a California Superior Court to utilize a virtual reality simulation to provide the jury with a comprehensive understanding of the accident terrain. The Court recognized the simulator's 3D view as more informative, pertinent, and probative. In another example, in 2015, the German Public Prosecution Service used a VR rendition of Auschwitz to aid in the trial of former SS guard Reinhold Hanning. Judges equipped with HTC Vive headsets immersed themselves in the VR model, gaining insight into Hanning's perspective from his guard post, ultimately leading to his conviction. In a noteworthy development this year, a Colombian court conducted its first trial in the metaverse, with participants appearing as avatars in a virtual courtroom.

For parties in international arbitration disputes, the potential benefits of utilizing XR could include:

1. **Bringing evidence to life.** XR can enhance the visualization of evidence by creating virtual representations of objects, locations, or events. The visualization can be complemented by overlaying additional information on top of it.
2. **Recreating site visits.** XR can enable remote and interactive site visits, especially if combined with drone technology, allowing arbitrators, experts, and parties to virtually explore the physical location relevant to the dispute, particularly if the site is geographically distant or inaccessible.
3. **Enabling interactive simulations and demonstrations.** This can involve recreating specific scenarios, such as equipment failures, construction sequences, or operational procedures. Parties and arbitrators can actively engage with the virtual environment, manipulate objects, and observe the consequences of different actions.
4. **Enhancing virtual or hybrid hearings.** XR could improve communication, collaboration, and engagement in virtual hearings. Hearings could also be conducted to enable participants to annotate virtual models, documents, or visual representations.

The Admissibility of XR

Neither current institutional rules nor the [2020 IBA Rules on the Taking of Evidence in International Arbitration](#) (IBA Rules) restrict the use of XR *per se*. Generally, under national arbitration legislation and institutional rules, arbitrators enjoy broad discretion over the administration of the procedure, the means of gathering evidence, and the associated costs.

Yet, by its very nature, the prospect of using XR in arbitration gives rise to unique due process and equality concerns.

Generally, the right to fair proceedings and equal treatment requires that both sides have equal opportunity to address the allegations, argument, and evidence submitted. XR equipment and programs are expensive, and may be unaffordable to a party, or their costs are disproportionate to the sums in dispute. Indeed, in the case of XR-based evidence, not only does its use require the appropriate equipment by the parties and the arbitrators, but XR developers would be needed to create such exhibits.

Additionally, XR technologies pose risks of undue influences on users' perceptions and potential manipulation of users by creating emotional biases that could lead to unfair results. For instance, [researchers from the University of Vienna](#) have demonstrated that immersive virtual environments

may be intentionally designed to provoke specific emotions and empathy by applying slight changes to a recreated environment's lighting, sound, and perspectives.

It is likely that these challenges can be overcome. When it comes to the admissibility of XR-based evidence, the principles of equality and fairness require that all parties have access to the XR environments to test and challenge them. As [Jeremy N. Bailenson *et al.*](#) proposed in the context of national litigation, parties should be required to submit a comprehensive list of "assets," or virtual objects included in recreated environments, marking which aspects are agreed upon, disputed, or represent a dramatic representation.

Looking Ahead

While XR technologies are still transitioning from niche adoption to mainstream acceptance, they offer undeniable advantages for arbitration practitioners in ways that were impossible with prior technologies.

However, the due process and equality issues that XR technologies raise will require users to reexamine procedural rules to ensure that XR's immersive and interactive qualities do not undermine their value in the arbitral process.

As XR technologies continue to evolve, it will be crucial to strike a balance between harnessing their potential and safeguarding the fundamental principles of due process and equal treatment of international arbitration.

Further posts in our Arbitration Tech Toolbox series can be found [here](#).

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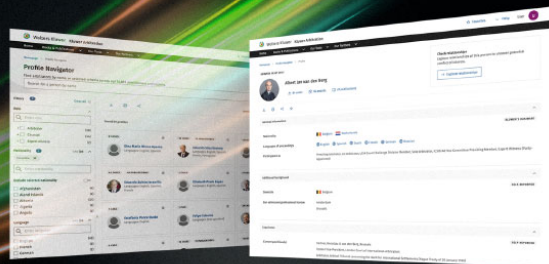
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