

Legal aspects of immersive technologies

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Introduction

Nowadays, the application of immersive technologies has gradually expanded beyond the entertainment sector and currently encompasses medical care,¹ education,² art,³ military services,⁴ commercial sector⁵ and so on. This article will consider the legal implications of deploying virtual reality (VR), augmented reality (AR) and mixed reality (MR).

Definitions

Although VR, AR and MR are all types of immersive solutions, they are fairly different when it comes to technical frameworks, user experience and ensuing legal repercussions. In particular, VR represents a complete substitution of a physical world with an artificial reality. A good example of a device embodying this technology is Facebook's Oculus Rift⁶ with which a real estate developer may be able to immerse into a future building while physically remaining in a conference room. That said, there appears to be a confusion as to the essence of AR and MR. The distinction between these two is often belittled or misconceived mainly due to the fact that the industry itself is yet to settle on universally acceptable definitions. At the moment, MR as a term is considered to be coined by Microsoft following the introduction of Microsoft HoloLens.⁷ MR marries an existing reality with virtual elements allowing them to interact and complement each other. This way an engineer could see a digital image of building's tubing system superimposed on physical walls. AR too upgrades a real-world environment by locating a specific point in actual time (also called 'fiducial markers' or 'markers'), coupling it with a corresponding virtual element and then devising a pertinent connection between these two. This is brightly exemplified by how Procore software operates in the context of Google Glass⁸: upon discovering a defective power socket the system will flag it as an action point for engineer's attention, so he/she may then assign the task of eliminating a hazard to one of the site workers. Hence, the principle difference between MR and AR is that in the former, digital and real time elements do not interact with each other, instead units of a physical world serve as points of reference to which corresponding virtual elements are linked. Immersive solutions utilised for construction purposes may be regarded as components of Building Information Modelling (BIM) suite – a set of technologies that allow for the digital representation of facilities for construction purposes.

Legal aspects to be pondered

a) Personal data protection

It would be fair to note that, at present, all issues pertaining to personal data protection shall be interpreted through the prism of the General Data Protection Regulation (GDPR) that has recently entered into force in the EU and that is, to a large extent accepted as a global standard for privacy. VR, AR and MR are no exception, especially, keeping in mind the large amount of personal data that these technologies resort to on daily basis.

Apart from the classic categories of personal data (eg, full name, email address, etc.) immersive technologies tend to routinely collect biometric and health-related information that falls under special categories of personal data under the GDPR. Notably, the GDPR is a pioneer when it comes to addressing biometric data in the context of personal data processing since, at the moment, no other enforced data privacy legislation elucidates this aspect. Article 9 of the GDPR confines scenarios where processing of such data is allowed to ten cases which, among others, include explicit consent of the data subject, enforcement of rights and obligations in employment and social security areas, public interest considerations, and so on. As a result, eye tracking employed by VR, iris scans used by AR devices and facial recognition in the context of MR together with data deriving from the measurements of muscle contractions, skin conductance or electrical activity along the scalp – all of these should be managed with a high degree of caution.

For industrial application these legislative developments trigger further obligation on the employers' end to ensure that all parties involved in the relevant process and exposed to immersive experience either granted their explicit consent for their biometric and health-related data to be processed or were offered an alternative feasible way of performing their duties after refusing such consent. The stumbling block in the former setup lies in a controversial quality of consent given by the employee to the employer. As noted by the Article 29 Working Party in its Guidelines on Consent⁹, due to the imbalance of power within the employment relationship, there are hardly any instances where the employee can grant his unequivocal consent. Consequently, employers, who opted for immersive tools as an integral part of construction lifecycle, may not be able to rely upon consent of their employees as a credible basis for processing of personal data. In such case, a good practice would be to secure alternative means of carrying on with construction activities excluding any immersive exposure, which presents another practical challenge for the real estate developer who may have invested a lot of funding, time and effort to shift its project to the immersive dimension. Furthermore, it may prove hard to harmonise and administer the work stream with multiple parties using different tools while cooperating on the same matter.

b) Confidentiality concerns

One of the features that renders immersive reality tools particularly advantageous is the shared access to the information pool that may be enjoyed simultaneously by multiple parties. Indeed, a database collating information about all stakeholders involved, visualised in an intuitive manner and made available as a matter of one click can be of a great convenience. At the same time, such a liberal approach to data sharing invokes a set of confidentiality red flags since the environment may often control highly sensitive personal data collected by immersive components, trade secrets and further intellectual property of a substantial business value. All of these have to be assigned appropriate confidentiality protocols. However, in practice, rigorous non-disclosure regimes are hard to enforce in the settings including numerous stakeholders from diverse legal and cultural backgrounds that are linked by the virtue of different contractual instruments. Thus, it is crucial to scrutinise all these factors while drafting confidentiality agreements or clauses for any deployment of immersive tools.

c) Contractual framework and legislative landscape

The incorporation of immersive solutions will require more elaborate confidentiality regime addressing an extensive shared data access. In addition, considering all categories of personal data utilised within BIM, a set of comprehensive Data Protection Agreements must be prepared. Due to the fact that such projects commonly include parties from multiple jurisdiction, very often based outside of the European Union, there may be a need to provide for standard contractual clauses for data transfers between EU and non-EU countries as well. A similarly cautious approach shall be extended to IP-related provisions, since shared environment of BIM with all parties providing their input may generate issue around joint ownership, design ownership, and so on. A myriad of construction contracts suites has crystallised by now, however, only the Construction Industry Council BIM Protocol opines on the role of the BIM solutions in the context of construction projects and offers a contractual instrument through which BIM may be flowed down into a master agreement.

In certain sectors, such as the construction industry, regulatory developments appear to be on the horizon. For example, the UK government started exploring the matter in 2011 and published its observations and recommendations in 'A Report for the Government Construction Client Group - Building Information Modelling (BIM) Working Party Strategy Paper'. Similarly, on the EU level JRC Technical Report on BIM standardisation was issued. Nevertheless, there are currently no enforceable legislation in place that would cover peculiarities of BIM in depth.

d) Liability reservations

While speaking of elements of 'immersive law' that are yet to unfold, a special attention must be paid to the question of liability. For now, it could be examined from at least two perspectives: a) a potential share of liability that software and hardware developers of VR, AR and MR products may retain, b) as well as professional liability of a construction professional who made a decision to rely upon flawed immersive technologies that ended up being detrimental to the construction project.

Liability issues faced by developers of the famous AR-based app Pokémon Go could serve as a good illustration of the first scenario. In the course of the game, distracted users were mugged and even shot to death when chasing immersive Pokémons in dangerous locations, hit by vehicles and involved in trespass. The question is now, to what extent if any Nintendo, a company that developed Pokémon Go, may be liable for damages caused to players themselves as well as damages inflicted by players upon third parties.

By analogy, the similar issue may arise when a site worker was injured, due to the broken sensor in a smart helmet that failed to alert him to a physical obstacle. Commonly, a prudent employer will have an extensive insurance cover for such incidents, however, the question is whether the manufacturer of a faulty product is also liable for the injury after the claim is subrogated to the insurance company.

Another instance of liability may come to surface in construction industry where for immersive technologies to fulfil their purpose they have to be extremely precise. Failure to account for as much as centimetre may, in industrial applications, result into significant delays and extra costs to be spent in order to fix an error. A product's liability is the area to be explored here.

In particular, the gravity of liability that may be attached to manufacturers of immersive technologies after their products render imprecise representation. Arguably, this will directly depend on how product warranties are drafted as well as extent to which a manufacturer can exclude its liability, as per applicable legislation. Another potential party to which a portion of liability may be allocated is the professional that made a decision to employ unreliable immersive solutions in the first place.

Conclusion

The application of immersive technologies is a compelling segment to investigate from both legal and industrial perspectives. Despite the added value the immersive technologies offer, there are still numerous legal and practical considerations that shall be examined before integrating immersive technologies into routine processes. In particular, it is crucial to address data privacy, confidentiality and liability facets as well as carefully scrutinise contractual framework and legislative developments. All of these are of equal importance for the developer, provider, customer and all third parties involved, and, if properly addressed, will bring the project to a new level of productivity and efficiency.

¹ Jennifer Kite-Powell, *Using Virtual And Augmented Reality In Medical Diagnosis, Treatment And Therapy* (Forbes 2017), see www.forbes.com/sites/jenniferhicks/2017/09/20/using-virtual-and-augmented-reality-in-medical-diagnosis-treatment-and-therapy/#d416458c4bcd (accessed 24 May 2018).

² Bob Violino, *More Than Half Of Colleges Will Use Virtual Reality To Enhance Education By 2021* (Forbes 2017), see www.forbes.com/sites/delltechnologies/2017/10/17/more-than-half-of-colleges-will-use-virtual-reality-to-enhance-education-by-2021/#54534aeb6c48 (accessed 24 May 2018).

³ See www.drawandcode.com/work/projects/aspect-augmented-reality-art-viewer/ (accessed 24 May 2018).

⁴ Adam Stone, *How Virtual Reality Is Changing Military Training* (Insights 2017), see <https://insights.samsung.com/2017/07/13/how-virtual-reality-is-changing-military-training/> (accessed 24 May 2018).

⁵ See www.honeywell.com/newsroom/pressreleases/2018/02/honeywell-introduces-arvr-simulator-to-train-the-industrial-workforce-and-help-close-skills-gap (accessed 24 May 2018).

⁶ See <https://geniebelt.com/blog/vr-in-construction-management> (accessed 24 May 2018).

⁷ See www.intellectsoft.net/blog/microsoft-hololens-usage-in-construction (accessed 24 May 2018).

It should be noted that, depending on the manner of application and software framework, Microsoft HoloLens may be also regarded as an augmented reality device.

⁸ See <https://constructech.com/google-glass-for-construction/> (accessed 24 May 2018).

⁹ See Article 29 Working Party, Guidelines on consent under Regulation 2016/679, https://iapp.org/media/pdf/resource_center/20180416_Article29WPGuidelinesonConsent_publishpdf.pdf (accessed 24 May 2018).