

# Augmented, Virtual and Mixed Reality– A Reflective Future

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Legal, Regulatory and Tax  
Considerations

**Strategic, Legal, Tax and Ethical Issues**

September 2019

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At Nishith Desai Associates, we have earned the reputation of being Asia's most Innovative Law Firm – and the go-to specialists for companies around the world, looking to conduct businesses in India and for Indian companies considering business expansion abroad. In fact, we have conceptualized and created a state-of-the-art Blue Sky Thinking and Research Campus, Imaginarium *Aligunjan*, an international institution dedicated to designing a premeditated future with an embedded strategic foresight capability.

We are a research and strategy driven international firm with offices in Mumbai, Palo Alto (Silicon Valley), Bangalore, Singapore, New Delhi, Munich, and New York. Our team comprises of specialists who provide strategic advice on legal, regulatory, and tax related matters in an integrated manner basis key insights carefully culled from the allied industries.

As an active participant in shaping India's regulatory environment, we at NDA, have the expertise and more importantly – the VISION – to navigate its complexities. Our ongoing endeavors in conducting and facilitating original research in emerging areas of law has helped us develop unparalleled proficiency to anticipate legal obstacles, mitigate potential risks and identify new opportunities for our clients on a global scale. Simply put, for conglomerates looking to conduct business in the subcontinent, NDA takes the uncertainty out of new frontiers.

As a firm of doyens, we pride ourselves in working with select clients within select verticals on complex matters. Our forte lies in providing innovative and strategic advice in futuristic areas of law such as those relating to Blockchain and virtual currencies, Internet of Things (IOT), Aviation, Artificial Intelligence, Privatization of Outer Space, Drones, Robotics, Virtual Reality, Ed-Tech, Med-Tech & Medical Devices and Nanotechnology with our key clientele comprising of marquee Fortune 500 corporations.

NDA has been the proud recipient of the RSG - FT award for 2019, 2017, 2016, 2015, 2014 as the 'Most Innovative Indian Law Firm' and in 2016 we were awarded the 'Most Innovative Law Firm - Asia Pacific,' by Financial Times (London).

We are a trust based, non-hierarchical, democratic organization that leverages research and knowledge to deliver extraordinary value to our clients. Datum, our unique employer proposition has been developed into a global case study, aptly titled 'Management by Trust in a Democratic Enterprise,' published by John Wiley & Sons, USA.

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- **FT Innovative Lawyers Asia Pacific 2019 Awards:** NDA ranked 2nd in the Most Innovative Law Firm category (Asia-Pacific Headquartered)
- **RSG-Financial Times:** India's Most Innovative Law Firm *2019, 2017, 2016, 2015, 2014*
- **Chambers and Partners Asia Pacific:** Band 1 for Employment, Lifesciences, Tax and TMT *2019, 2018, 2017, 2016, 2015*
- **Benchmark Litigation Asia-Pacific:** Tier 1 for Government & Regulatory and Tax *2019, 2018*
- **IFLR1000:** Tier 1 for Private Equity and Project Development: Telecommunications Networks. *2019, 2018, 2017, 2014*
- **Legal500:** Tier 1 for Dispute, Tax, Investment Funds, Labour & Employment, TMT and Corporate M&A *2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012*
- **AsiaLaw 2019:** Ranked 'Outstanding' for Technology, Labour & Employment, Private Equity, Regulatory and Tax
- **Who's Who Legal 2019:** Nishith Desai, Corporate Tax and Private Funds – Thought Leader  
Vikram Shroff, HR and Employment Law- Global Thought Leader  
Vaibhav Parikh, Data Practices - Thought Leader (India)  
Dr. Milind Antani, Pharma & Healthcare – only Indian Lawyer to be recognized for 'Life sciences-Regulatory,' for 5 years consecutively
- **Merger Market 2018:** Fastest growing M&A Law Firm in India
- **Asia Mena Counsel's In-House Community Firms Survey 2018:** The only Indian Firm recognized for Life Sciences
- **IFLR:** Indian Firm of the Year *2013, 2012, 2011, 2010*
- **IDEX Legal Awards 2015:** Nishith Desai Associates won the "M&A Deal of the year", "Best Dispute Management lawyer", "Best Use of Innovation and Technology in a law firm" and "Best Dispute Management Firm"

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## Acknowledgements

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# 1. Overview

“Why shouldn’t people be able to teleport wherever they want?” - Palmer Luckey, Founder, Oculus VR.

We find ourselves at the brink of a technological revolution with augmented reality (“AR”) and virtual reality (“VR”), and now mixed reality (“MR”) poised to embed in our everyday lives.

It wasn’t long ago that AR and VR were limited to science fiction; but now there is increased adoption of these “in-addition” and “alternate” modes of reality by consumers and businesses alike. Needless to say, this is uncharted territory, as these new technologies may have widespread ramifications on businesses, and will bring with it legal and regulatory hurdles to overcome. Through this paper, we take you through the uncharted legal and tax territories of AR and VR technologies’ especially when it merges into all major spheres of our daily lives.

## I. What is AR /VR?

Point of Difference	Virtual Reality	Augmented Reality
<b>Nature of Digital Environment</b>	A fully digital, artificial environment.	A digital and artificial environment, only partially in the backdrop of the naturally existing environment.
<b>Means of Operation</b>	A virtual and computerized artificial environment, distinct from the real environment.	Over-lays or superimposes virtually and computer-generated objects and graphics on real world environment.
<b>Effect</b>	Creates a separate virtual existence which operates in absence of reality dimensions.	Allows interaction between artificial objects and real world entities in a natural setting.
<b>Impact</b>	Immerses or engages the user entirely in the virtually created digital atmosphere by detaching him/her from the natural environment.	Only enhances the observation, experience and understanding of the real world by using visual objects and addition of artificial smell, sound and graphics.
<b>Quality of Display Device</b>	Use of highly sophisticated computerized technologies in creation of heavy graphics and virtual objects.	Only adds virtual objects to existing natural world view, requirement of the quality of graphics is low.
<b>Device</b>	HTC Vive, Oculus Rift or Google Cardboard.	Pokemon Go, Snapchat Lenses, Google Glass.
<b>Illustration</b>	Virtual recreation of a historic era to enable better understanding of the past for students.	Projects a busy road with super-imposed virtual signs indicating shops, petrol outlets nearby.

## A. Augmented Reality

AR is an 'augmented' view of the world, where the real world view has superimposed computer generated objects. AR can be traced back to 1901, where L. Frank Baum, first mentioned the idea of an electronic display that represented the nature of a person represented by a character which the wearer saw on peoples' foreheads.<sup>1</sup> In 1986, Pete Purdy and Kirk Beach filed a patent for a near-eye heads up display; the first commercial embedded computer sport biometric system which included a speedometer and performance computer built into the goggles.<sup>2</sup>

Tom Caudell could be credited with coining the term "Augmented Reality" back in 1990.<sup>3</sup> In 2000, Hirokazu Kato created and released a software called ARToolKit. Through this software, one could capture real-world actions and combine it with interactions of virtual objects. Soon after, mainstream technologies and applications such as Google Glass, Microsoft HoloLens, Pokémon Go, Google's ARCore and Apple's ARKit have emerged, finally bringing AR to the masses.

## B. Virtual Reality

In comparison to AR which involves an overlay of fictional elements in the present surroundings of the user, VR transports the user to a completely new reality. The 1800s are where VR found its origin in the form of 360 degree artwork drawn to immerse a person in the scene.<sup>4</sup> In 1929, Charles Wheatstone demonstrated the brain's ability to process different images with his stereoscope.<sup>5</sup>

Between 1957 and 1962, numerous developments took place including Morton Heilig's Sensorama and "Telesphere Mask" which gave the spectator a complete sensation of reality.<sup>6</sup> During this period, Philco Corporation engineers developed the first head mounted display, called the Headsight which was linked to a closed circuit camera and was meant to navigate in dangerous situations.<sup>7</sup> 1968 saw the birth of the first virtual reality device by Ivan Sutherland which he called the Sword of Damocles which featured a head-mounted display that hung from the ceiling.<sup>8</sup>

In 1982, Tom Furness presented the Air Force with his first working model of a virtual flight simulator he called the Visually Coupled Airborne Systems Simulator.<sup>9</sup> The early 1990s saw Sega release its Sega VR headset for arcade games<sup>10</sup> and the launch of the first mass produced multiplayer VR entertainment system, Virtuality.<sup>11</sup> Soon after, Google's Street View, Oculus Rift, Google Cardboard, HTC Vive, Samsung's Gear VR and Sony's PlayStation VR were all released between 2007 and 2017.

## C. Mixed Reality

MR is an advanced version of augmented reality. The significant point of difference between MR and AR is the degree of interaction between the real and virtual world. MR offers higher interactivity between the real and virtual platforms. MR, as the name suggests is an attempt to be a hybrid of the virtual digital world and the natural real world layouts. MR includes within itself elements of both the platforms. The outcome provides an amalgamation of the features of the two platforms. It generally

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1. <http://www.historyofinformation.com/detail.php?entryid=4698> and <https://web.archive.org/web/20130522153011/http://moteandbeam.net/the-master-key-l-frank-baum-envisions-ar-glasses-in-1901>

2. <https://patents.google.com/patent/US4757714A/en?q=purdy%2c&q=beach&oq=purdy%2c+beach>

3. <https://www.digitaltrends.com/gaming/what-is-augmented-reality-iphone-apps-games-flash-yelp-android-ar-software-and-more/> and <https://www2.potsdam.edu/betrusak/566/Augmented%20Reality%20in%20Education.pdf>

4. <https://interestingengineering.com/whats-in-a-name-the-long-and-short-history-of-virtual-reality> and <https://www.vrs.org.uk/virtual-reality/history.html>

5. <https://www.vrs.org.uk/virtual-reality/history.html>

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6. <https://www.techradar.com/news/wearables/forgotten-genius-the-man-who-made-a-working-vr-machine-in-1957-1318253/2>

7. <https://glassdevelopment.wordpress.com/2014/04/17/hmd-history-and-objectives-of-inventions/>

8. <http://simpublica.com/2014/03/19/the-sword-of-damocles-and-the-birth-of-virtual-reality/>

9. <https://www.defensenews.com/30th-anniversary/2016/10/25/30-years-virtual-reality-training-transformation/>

10. [https://segaretro.org/Sega\\_VR](https://segaretro.org/Sega_VR)

11. <https://www.ign.com/articles/2016/01/14/the-evolution-of-virtual-reality>

involves creation of holographic devices which scan the user's environment and places a 3D object in front of them, which they can then view from different angles.

MR allows a user to visualize computer generated virtual 3-D objects superimposed on the natural environment. Hence, it is the mechanism that allows the user to lay down virtual objects on real, natural environments. There are only minute differences when it comes to MR and AR. In AR, the interaction between virtual contents and the real world is not possible. It merely allows visualization of digitally created content or objects over real life environment layouts. But, in the case of MR, content from the virtual and the real world can interact with each other in the real-time. MR brings together real world and digital elements. In mixed reality, you interact with and manipulate both physical and virtual items and environments, using next-generation sensing and imaging technologies. Mixed Reality allows you to see and immerse yourself in the world around you even as you interact with a virtual environment using your own hand, all without even removing your headset. Essentially, in MR, the virtual object is treated so as to enable it to become an inherent part of your natural world dynamics.

An example of the MR technology is the Microsoft's HoloLens which is a mixed reality headset that projects 3D holograms onto the lenses. The wearer can move around the object, manipulate it, and experience it as if it were actually present. It uses specialized optics and holographic processing to render 3D images in space but visible only to the user. The rest of the real world is preserved, allowing the wearer to manipulate the hologram and perform other tasks.

## II. Trigger Points

The windfall success of AR and VR can be attributed to numerous factors; one of them being that technology has finally caught up with what an everyday consumer would expect when they think about AR and VR technology. The adoption of these technologies has greatly increased, especially in consumer facing industries, such as gaming, retail, education, to name a few. On a micro level, Pokémon Go leads the charge to popularize AR technology while other obvious acknowledgements go to Google's Cardboard and ARCore, HTC's Vive, Samsung's Gear VR, Oculus's Rift and Apple's ARKit.

As per reports, by 2022, the AR and VR markets are expected to reach 56 billion U.S. dollars.<sup>12</sup> Goldman Sachs predicted that by 2025, the AR and VR based Video Game software market would in itself have 216 million users worldwide and could be worth 11.6 billion U.S. dollars.<sup>13</sup>

12. <https://www.idc.com/getdoc.jsp?containerId=prUS43860118>

13. <https://www.goldmansachs.com/insights/pages/technology-driving-innovation-folder/virtual-and-augmented-reality/report.pdf>

## 2. Major Industry Applications

The beauty of AR and VR, is their application across industries. This extensive impact is attributed perhaps, to AR's ability of overlaying information; better explained by referencing to our real tangible world as a canvas on which AR enables us to draw or show information; and VR's ability of presenting us with an empty canvas to draw and enjoy our own experiences. A few major industry applications of AR/VR are as follows:

### I. Gaming and Entertainment

The year which witnessed significant increase in the adoption of AR was 2018 which brought AR to the masses primarily due to the widespread reach of Pokémon Go, Apple's ARKit and Google's ARCore. Long before the 2018 popularity agents, Google Glass, Ingress and Snapchat<sup>14</sup> were three active engines of propagating AR to the masses. Further, recently a Silicon Valley based company Magic Leap has gone beyond contours to bring in a lightweight wearable AR and VR glass which lets Movies and TV "jump into the living room" It is a multiple use entertainment supplement used to play games, watch movies as well as perform business oriented tasks under the domain of AR and VR.<sup>15</sup>

The entertainment industry has also witnessed numerous news channels, educational channels, streaming services etc., pushing VR content to viewers for a competitive edge.<sup>16</sup> In order to better catch the market and sway public perception, some companies are also sending VR headsets to their consumers to view product launches in VR.<sup>17</sup>

VR has also seen adoption in more traditional industries such as movie theaters (to enable VR theaters which will be devoid of screens much

akin to silent discos)<sup>18</sup> as well as in the adult entertainment industry which is projected to be an estimated \$1 billion industry by 2025.<sup>19</sup>

Microsoft Hololens is already working with the NFL to completely change the way fans can watch and interact with players, other fans, real-time game experiences and its advertisers and sponsors. Further, some of the successful examples of mixed reality games on Android and iPhone till date are SpecTrek, Ingress, Gbanga, and Pokémon Go.

### II. Social Media

With the dawn of the AR/VR age, one of the ways in which social media companies could innovate and keep their audiences intact is by deploying AR technology. Snapchat jumped on the AR train quite early by offering various interactive photo filters, with Instagram following suit.

Recently, Snapchat released Shoppable AR which allows consumers to try out brands' products using a lens and then the retailer will be able to direct the consumers to where they can actually buy that product.<sup>20</sup> On the VR end of things, social networking tools such as vTime, Facebook Spaces, etc. allow parallel digital social worlds to exist, which allow a user to completely "exit" life's reality.

Also, Holoportation will allow device users in different cities or countries to sit and interact with each other in the same space virtually, while remaining miles.

14. <https://www.adweek.com/digital/why-snapchat-matters-to-the-future-of-augmented-reality/>

15. <https://www.magicleap.com/magic-leap-one>

16. <https://www.3rockar.com/augmented-reality-entertainment-industry/>

17. <http://www.jackmorton.com/work/insideout-the-worlds-first-product-launch-in-vr/>

18. <https://www.realitytechnologies.com/applications/entertainment/>

19. <https://www.marketwatch.com/story/how-the-future-of-virtual-reality-depends-on-porn-2015-07-15>

20. <https://www.forbes.com/sites/lilachbullock/2018/11/16/ar-and-social-media-is-augmented-reality-the-future-of-social-media/#4ffdfdf141>

### III. Retail

Any business that has a consumer facing element stands to benefit from the advantages that AR and VR boast of. AR and VR solutions almost guarantee saving time, money and other associated costs by providing a virtual simulation of the product and negating the need for multiple samples.<sup>21</sup>

AR can also be used to superimpose structures or designs on real world objects to help engineers and designers function with greater accuracy and efficiency. This industry stands to massively gain, as the potential that AR carries for the retail industry is huge. A small example is that AR can help consumers visualize how furniture will look in their homes to reducing store inventory, or by enabling AR on an item so the consumer can see how different colors will look on them. The possibilities are endless. Adidas, Ikea, LEGO, Dulux<sup>22</sup> are a few companies who stand at the forefront of AR technology.

While AR is focused on enhancing experience, VR is focused on changing it altogether. One of the most exciting recent examples was provided by outdoor apparel company North Face. Using virtual reality technology, they transported customers to Yosemite National Park as they were shopping at the stores.

### IV. Education

VR has brought out a number of changes in the education sector, such as: learning via printed symbols in textbooks will shift to learning via simulations; and curriculum materials will no longer be predominantly text-based, but will be imagery and symbol-based.

VR has the potential to move education from its reliance on textbook abstractions to experiential

learning in naturalistic settings. For example, rather than reading about an historical event, students could participate in the event and interact with simulated persons from that historical time period.<sup>23</sup> The major players in the education sector include Google with their Google Expeditions Pioneer Program, Alchemy VR, Discovery VR, EON Reality, DAQRI, and GAMOOZ.<sup>24</sup>

Using MR, in colleges, students will be able to simulate dissections from their dorm rooms, no longer needing a cadaver in a lab. In classrooms, educators will be able to isolate and enlarge specific body regions and organs, facilitating truly interactive group-work between students. In clinics, practitioners will be able to show patients at a real-life scale and in real-time how their bodies should be working and contrast that with any condition the patient might be experiencing.

### V. Travel

AR technology's ability to supplement real life with 3D images and interactive videos, providing necessary information as and when needed remain relatively untouched "boom" factors for the industry. While hoteliers can opt to show their rooms using AR as opposed to 2D images, airlines can go the extra mile by showing the customer an AR-esque view from the exterior of the aircraft much like the implementation of Airbus' "iflyA380."<sup>25</sup> Google Translator, Wikitude, Waalkz are all applications currently dealing with the AR travel industry.<sup>26</sup>

VR brings along with it far more potential to harness business than any photos or videos

21. An American company, SGW Design Works recently published an article in which they stated that they were able to save USD \$50,000 as well as significant development time for their client by adopting a VR based prototyping system as opposed to other traditional method. - <https://sgwdesignworks.com/virtual-reality-prototyping/>

22. <https://www.retaildive.com/news/10-retailers-leading-the-way-in-ar/520520/>

23. Sandra Helsel, Virtual Reality and Education, Educational Technology, Vol. 32, No. 5, May 1992 (<https://www.jstor.org/stable/44425644>)

24. <https://thejournal.com/articles/2017/07/14/report-top-5-vendors-in-global-ar-education-market.aspx>

25. <https://www.augrealitypedia.com/augmented-reality-tourism-travel/>

26. <http://travel.cnn.com/explorations/life/top-10-augmented-reality-travel-apps-569570/>

could ever provide.<sup>27</sup> Travel agency Thomas Cook launched the “*try before you fly*” campaign that transported viewers to a helicopter tour around Manhattan, a hike up the Egyptian pyramids, and a walk on Singapore’s OCBC Skyway. The campaign “generated flights and hotel bookings totalling £12k in the UK and Germany” and realized a “40% return on investment in the first three months alone.”<sup>28</sup> Qantas Airways, Timelooper, YouVisit, Google Street View, Discovery VR, Jaunt VR, Ascape Virtual Travel & Tours etc. are all industries engaged in the VR travel industry space.<sup>29</sup>

## VI. Construction

Pegged as one of the industries with the most potential for change on account of AR and VR,<sup>30</sup> the practical applications remain endless. The past adopted 2D models, the present embraced 3D models and the future will adopt AR and VR models revolutionizing the construction industry. AR could be useful for on-site construction workers to refer to plans on the go along with bringing plans made on paper to life for an easier comparative analysis of the paper frame to a real world simulation.

As of date, modern adoptions of AR include seeing what potential plots of land could look like or to evaluate how they looked like after a disaster for rebuilding purposes.<sup>31</sup> Seattle’s BNBuilders began using it to show clients proposed designs in the context of existing conditions using Apple iPads and other mobile devices on a construction site while companies like JBKnowledge and BIMevoke Ltd. have started rendering AR augmentations on top of 2D plans.<sup>32</sup> Gilbrane Building Company saved

thousands of dollars thanks to errors caught by project managers with a HoloLens.<sup>33</sup>

Companies like Lowe provides mixed reality retail experiences such as holographic home remodeling that instantly demonstrates a variety of customizable design options that gets projected into the physical world.

## VII. Automotive

Convenience is perhaps one of the most important aspects which AR provides in the automotive world by allowing users not to focus on instruments telling them information but displaying that information on the windshield itself; information not only being restricted to speed and fuel indicators but also speed limit signs, warnings, traffic, navigational prompts etc.<sup>34</sup>

AR can also help consumers see the actual size of the car right outside their door or see different colors, models and modifications of cars using AR.<sup>35</sup><sup>36</sup> Companies including BMW and Hyundai’s Genesis have developed AR owner’s manuals. When installed on the owner’s mobile device, the apps use computer vision to identify components of the interior cabin or engine, overlaying relevant information over the car’s real world components.<sup>37</sup>

VR too brings its offerings to the automotive industry especially for automotive showcasing. VR enables dealers to show vehicle models easily irrespective of place. Automotive company Lexus used Oculus Rift glasses to let people take a virtual test drive of their new models, in a much more ‘realistic’ way than a regular driving simulator.<sup>38</sup>

27. <https://appeal-vr.com/blog/vr-travel-apps-for-business/>

28. <https://www.saveur.com/virtual-reality-travel>

29. <https://www.gearbrain.com/vr-travel-samsung-gear-vr-google-cardboard-1735875065.html>

30. <https://vrvisiongroup.com/how-virtual-reality-is-set-to-change-the-construction-industry/>

31. <https://www.autodesk.com/redshift/what-is-augmented-reality/>

32. <https://fieldlens.com/blog/building-better/augmented-reality-construction/>

33. <https://esub.com/4-applications-in-2018-for-augmented-reality-in-construction/>

34. <https://www.mercedes-benz.co.uk/passengercars/mercedes-benz-cars/models/a-class/hatchback/facts-and-lines.pi.html/mercedes-benz-cars/models/a-class/hatchback/facts-and-lines/equipment-lines/advanced-navigation-package>

35. <https://www.blippar.com/blog/2018/10/24/3-ways-augmented-reality-can-drive-value-for-auto-brands>

36. <https://www.accenture.com/in-en/success-bmw-digital-transformation-augmented-reality>

37. <https://next.reality.news/news/augmented-reality-cars-companies-tech-driving-us-into-future-0182485/>

38. <https://www.whisbi.com/info/omnichannel/solution/retail/in-store/virtual.html>

## VIII. Healthcare



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AR applications such as EyeDecide and AccuVein show simulations overlaid on the real world by leveraging the power of AR in turn teaching users what a person's vision looks like when they are suffering from a certain disease and where a person's veins are to combat the failure rate of intravenous injections respectively. Marker-based augmented reality provides patients with the 3D model of medicaments, their main functions and how they work inside the body.<sup>40</sup>

While doctors can benefit from using overlays of CT scans, MRI scans, using 3D real world models or organs to consult or to teach, keeping their hands free during surgery whilst readily accessing all information.<sup>41</sup> A few major players in the healthcare AR industry include Google, Orca, Brain Power, Midsights Tech, Cable Labs etc.<sup>42</sup>

While AR is still in its nascent stages in the healthcare industry, VR has brought fictitious concepts to life. VRHealth, an application in the VR healthcare space currently deploys Oculus Go and Rift to provide VR technology solutions for a variety of health challenges, from pain management for birthing mothers and cancer patients during chemotherapy to alleviating patient anxiety before and after surgery.<sup>43</sup> DeepStream VR, Immersive Touch, Virtually Better etc. are a few players participating in the VR healthcare industry.<sup>44</sup>

## IX. AR Maps

Paper maps have been long outdated and replaced by digital offerings such as Google Maps, Apple Maps etc. Today, we are at the brink of mainstream adoption of AR maps which overlay navigational information on our reality.

Apart from navigational purposes, true AR world maps may also help aid education by making geography more interactive. Weather maps too may exploit the potential of AR to overlay weather information. Additionally, a constellation map may also be drawn on the sky to aid the study of astronomy. Major players of the AR Maps space include WrlD, Google (soon to release true navigational AR maps), Here Technologies etc.

39. Picture sourced from:  
[https://commons.wikimedia.org/wiki/Category:Augmented\\_reality#/media/File:App\\_iSkull,\\_an\\_augmented\\_human\\_skull.jpg](https://commons.wikimedia.org/wiki/Category:Augmented_reality#/media/File:App_iSkull,_an_augmented_human_skull.jpg).

40. <https://thinkmobiles.com/blog/augmented-reality-medicine/>

41. <https://appeal-vr.com/blog/augmented-reality-for-healthcare/>

42. <https://medicalfuturist.com/top-9-augmented-reality-companies-healthcare>

43. <https://www.forbes.com/sites/jenniferhicks/2018/09/30/see-how-this-company-uses-virtual-reality-to-change-patient-healthcare/#308deba5455e>

44. <https://www.flatworldsolutions.com/healthcare/articles/virtual-reality-applications-in-healthcare.php>

## 3. Legal & Tax Implications: An Indian Law Approach

As is true with most technologies which have a multi-industry impact, the widespread adoption of AR and VR, bring with them a host of legal & tax challenges. Though these technologies purport augmented and virtual realities, the laws applicable to them remain very much real. The legal implications are as follows:

### I. Intellectual Property Rights

#### A. Copyright

##### i. Ownership of the AR/VR Technology

Under the Indian Copyright Act, 1957 (**“Copyright Act”**), copyright subsists in original literary, musical, artistic and dramatic works, cinematograph films and sound recordings. A computer programme is treated as a ‘literary work’ and is protected as such. Source and object code constitutes a computer program that is essential to the creation of an AR/VR software and therefore, such software will be protected by copyright laws once created.

Indian courts have discussed at length the level of originality to be satisfied to qualify for copyright protection. Indian Copyright law requires that in order for a ‘work’ to qualify for copyright protection, it would have to meet the ‘skill and judgment’ standard laid down in *Eastern Book Company and Ors. v. D.B. Modak and Anr.*<sup>45</sup> In this case, the Court held that “skill and judgment” and some substantive variation and not merely a trivial i.e. a mechanical variation’ is required. If the AR/VR software meets this threshold, it could qualify for copyright protection.

45. Appeal (civil) 6472 of 2004 (para. 37,38)

##### ii. Ownership of works created using AR/VR Technology

As regards to the protection of the content produced and visible by the AR and VR software, it is imperative to understand that these essentially are based on a combination of user inputs and the artificial intelligence fed therein. The Copyright Act, under section 2(d) (vi) provides that the author, in relation to any literary, dramatic, musical, or artistic work which is computer generated, is always the person who *“causes the work to be created”*. Few jurisdictions such as the United States, have recognized that when aesthetic copyrightable works are created using AR and VR technologies it is the *“most proximate contributor”* to the direct expression of the work, who will be given copyright.<sup>46</sup>

This varies with the type and extent of technology used. For example, in cases of videogames, mostly all image sequences generated upon interaction with the user, are merely copies of the memory stored on the computer program. Nothing is originally and autonomously generated by the program herein and everything that comes as a display is fed in the memory of the game by the programmer. Hence, the substantial proximate contribution towards the expression is of the programmer and not the user. If the expression provided by the programmer goes beyond the basic functionality of the programme, and includes copyrightable elements like compilations dictating the expression, then the authorship in the output could rest with the programmer based on a derivative works argument. This however might not be true in all circumstances. In situations of involvement of deep learning mechanisms, where the programmer itself cannot predict what the output upon use of the software can be, and it goes beyond their

46. <https://scholarship.law.berkeley.edu/cgi/viewcontent.cgi?article=2067&context=facpubs>.

conception, the authorship could rest with the most proximate contributor that is the “user” who provided certain inputs, because of which that particular expression originated. For example, in a software which produces automated songs, the user is the one who provides a list of numerous songs. based upon which the expression of the song produced using automated technology gets formulated. Herein, hence, the most proximate contributor to the expression will be the user and hence he/ she could be considered the author who “caused the work to be created”. However, jurisprudence on the same is at a very nascent stage and should hopefully evolve with the passage of time.

### iii. Derivative works

The creation of derivate works run on different tangents in the cases of AR and VR. The question remains whether or not digital additions and overlays have the potential to turn copyrighted material into a derivative work, especially in cases where there is involvement of technology. Taking the example of a poster captured by the AR software, as nothing actually changes on the physical poster, the question of whether an infringement has occurred depends on how much of the original poster was reproduced within the computing world in order to create the effect, and whether the end result can be fixed into a tangible / electronic form and distributed.<sup>47</sup>

For example, a person could use AR to create an artistic digital layer of data which appears when looking at a particular painting in the AR medium. One could argue that this is copyright infringement because the AR design is triggered by a particular painting and thus, could be viewed as copyright infringement. However, one could also argue that although the digital layer is triggered by the painting, the digital layer is simply an illusion which exists in another medium, and thus it technically remains separate from the physical painting, which could be considered an independent copyright.<sup>48</sup>

The case of *Eastern Book Company and Ors. v. D.B. Modak and Anr*, held that:

*“the work that has been originated from an author and is more than a mere copy of the original work, would be sufficient to generate copyright... (the) precondition to copyright is that work must be produced independently and not copied from another person...where a compilation is produced from the original work, the compilation is more than simply a re-arranged copyright of original, which is often referred to as skill, judgment and or labour or capital...the courts have only to evaluate whether derivative work is not the end-product of skill, labour and capital which is trivial or negligible but substantial. The courts need not go into evaluation of literary merit of derivative work or creativity aspect of the same.”*

Hence, as long as the work created through the AR / VR technology is not a mere copy of what was already available and the user inputted enough skill, labour and capital in the creation of the work, the work created in the AR/VR world could qualify for IP protection. However, as discussed above, the larger question continues as to who owns the IP in situations where the machine / computer is the creator.

### iv. Copyright infringement in an AR / VR World

In order to constitute copyright infringement, it must be proved that the allegedly infringing work shows a ‘substantial similarity’ to the original work. This test was developed in the American case of *Kohus v. Mariol*,<sup>49</sup> and has been consequently widely adopted. The Supreme Court of India, in the case of *R.G.Anand v. Deluxe Films*<sup>50</sup> held that the two works in question need to be examined from a holistic perspective, and to judge the ‘look and feel’ of both works in questions of copyright infringement.

There may be instances where real world copyrighted works, such as images, buildings, or even statues are captured in the virtual worlds

47. Brian D. Wassom, IP in An Augmented Reality, 6 *Landslide* 8 (2014).

48. *Id.* at 7.

49. *Kohus v. Mariol*, 382 F.3d 848.

50. *R.G.Anand v. Deluxe Films*, AIR 1978 SC 1614

of AR / VR. The question which then arises is whether such use of the copyrighted work would result in copyright infringement. The legal principle of '*de minimis*' essentially refers to a trivial legal violation that is insufficient to warrant legal remedy. Arguments based on this principal are commonly made in copyright infringement cases. In the AR / VR world, the same would need to be evaluated on a case to case basis, depending upon the actual test of infringement.

## v. Assignment of AR/VR works

Unlike ordinary audiovisual works, the very purpose of the virtual world is to allow user participation, interaction, modification, adaption, and re-creation of virtual objects. Ordinarily, for an audio-visual work, the ownership of content lies with the creator of the content, but in the AR/VR world, the attribution of ownership for IP created in a virtual world is difficult. This is especially true due to the fact that all the code permitting the creation as well as the creation itself may belong to the platform. Any work created by a user of the platform, would therefore be inherently intertwined with the platform which enabled the creation of the work (and subject to the arguments of ownership as discussed above) leading to the question of the assignment of rights in the works created in AR/VR worlds.

Present day social media websites act as guides in this respect; they attribute all content created by the user to the user itself, effectively mitigating risks.<sup>51</sup> Similar to this approach, Linden Labs, the creator of VR game, Second Life, allowed users to retain rights to all of their creations. However, social media websites would retain usage rights to the works created in this manner. The terms of use of VR platforms will have to be drafted appropriately to provide for the assignment of these ownership and usage rights. Termination contingencies will also have to be incorporated into the terms.

This will be done pursuant to the fact that in the event the platform shuts down or access to the user account is terminated due to any reason, will a user be denied his intellectual property especially if the user is monetizing his intellectual property in real world currency?<sup>52</sup> These are valid questions that arise from the use of AR/VR technology.

Indian law requires that copyright assignment be in writing and signed by the assignor. Hence, assignment of rights created by a user in the AR / VR world, would be subject to the said conditionalities for it to be a valid assignment under Indian laws.

## B. Patents

*Prima facie*, filing patents for AR/VR is no different than for any other computer program. There may be nuances as different areas become more ripe for patent filing and see more activity, like user interfaces and motion tracking technologies, but the base elements needed for registration are the same: the invention must be of a patentable subject matter, novel, non-obvious and useful.<sup>53</sup>

Patentable subject matter for AR and VR can include numerous items such as-

- **Systems** - overall system architecture and functionality; e.g., integration of location awareness/real-time data sensors with AR application; contextual awareness, etc.
- **Maps** - map generation, map display, indexing, markers, attributes, tagging, data layering and other map functionality.
- **Data** - capture, management, manipulation, analysis, modeling and display; data aggregation and display; data structures.
- **Business Methods/Services** – location based services; commerce and other interactions via AR application; location-based advertising models; real-time promotions.

51. Ariane Takano, Diluted Reality: The Intersection of Augmented Reality and Trademark Dilution, 17 Chi.-Kent J. Intell. Prop. 189 (2017).

52. Ibid.

53. <https://odinlaw.com/protecting-your-patents-intellectual-property-in-vr/>

- **Features/Functions/Processes** – unique combinations of features/functions/information, GUI features and functionality, algorithms or implementations of algorithms, user customizability, integration of the functionality of existing technologies and/or services.<sup>54</sup>

With the AR and VR industry rapidly expanding and evolving with its unique utilities, players may seek patent protection for their applications.

### i. Patentability of ARVR

In India, the law governing patents is the Patents Act, 1970 (“**Patents Act**”). Section 6 of the Patents Act, states that an application for a patent for any invention can be made only by the true and first inventor of the invention or the persons assigned by such person.<sup>55</sup> However, not all innovations are “inventions” within the definition of the Patents Act. The term “invention” is defined under Section 2(1) (j) of the Patents Act as “a new product or process involving an inventive step<sup>56</sup> and capable of industrial application.”

Innovations that are not inventions within the meaning of the Patents Act, and accordingly are not patentable in India, include: a mere discovery of any new property, or new use for a known substance, or a mathematical or business method or a computer program per se or algorithms, among others.

Hence, whether AR/VR technology would be eligible for patent protection in India is a question which may hinge on the determination of the patentability of software, or computer programs. There was a 2002 Amendment to the Patents Act which stated that “computer programs per se” is not an “invention” - raising a debate whether a computer program with any additional features

such as technical features, would be patentable. In Section 3(k) of the Patents Act, while maintaining that computer programs per se is not an invention, the Ordinance had created an exclusion for certain computer programs. Computer programs, in its technical application to industry and computer programs in combination with hardware were identified as patentable inventions.<sup>57</sup> Therefore, prima facie, patent applications for AR/VR technology coupled with hardware features should qualify as patentable in India, subject to meeting other required criteria.

Patent applications for AR/VR technology are already in force with a Bengaluru based startup claiming to be the World’s first patented Augmented Reality solution for retail which recently filed for 2 patents.<sup>58</sup>

### ii. International Jurisprudence

While there is yet to be an AR/VR related lawsuit in India, there are some in foreign countries. *Lennon Image Technologies LLC v. Mattel Inc.*<sup>59</sup> is one of those cases which discusses AR patent infringement. In this case Lennon Image Technologies LLC filed multiple suits against retailers with websites featuring “virtual try-on” technology. This form of AR uses a computer’s webcam to recognize a customer’s hand, arm, face, or entire body, and superimpose on it such apparel as rings, watches, eyeglasses, and dresses.

Lennon owns a patent issued in 2003 titled “*Customer Image Capture and Use Thereof in a Retailing System*”, based on which Lennon filed six identical infringement lawsuits in 2012, followed by another seven in March 2013. Among the targets were well-known brands such as Mattel, Macy’s, Bloomingdale’s, Luxottica, and Tacori. Each targeted retailer immediately removed the feature from its website, and many have since quietly settled. This sort of virtual try-on technology was the primary business model for several AR startups.

54. <https://www.internetandtechnologylaw.com/files/2014/11/Legal-Issues-with-Augmented-Reality.pdf>

55. Section 6 of the Indian Patents Act, 1970

56. Section 2(1) (ja) of the Patents Act: “inventive step means a feature of an invention that involves technical advance as compared to the existing knowledge or having economic significance or both and that makes the invention not obvious to a person skilled in the art.”

57. The New patents ordinance gives IT a breather , January 16, 2005.

58. <https://www.indianweb2.com/2016/05/04/2-patents-name-startup-worlds-first-ar-based-solution-provider-retail/>

59. 1:12-cv-00901.

Yet another interesting case was that of *P.S. Prods., Inc. v. Activision Blizzard, Inc.*<sup>60</sup> in which the question was whether a design patent for a physical article could be infringed by a virtual article, inside a video game. The asserted designs were directed to “stun guns,” which appeared to resemble brass knuckles. The accused infringer, Activision, moved to dismiss the complaint, arguing that under the U.S. standard for design patent infringement, no ordinary observer would mistake the weapon in its video game for the design claimed in the patent. The court dismissed the case on this ground that it found that no reasonable person would purchase Activision’s video game believing that they were purchasing plaintiffs’ stun gun. In other words, in the court’s view, it seems that no reasonable person would have confused the virtual with the real.<sup>61</sup>

Drafting of patent applications with utmost care to not only cover the interior workings of an object but to intertwine them with the exterior portion will also play an imperative role to enforce patent rights in the future.<sup>62</sup>

### C. Trademarks

Similar to digital spaces today, we will soon see trademark disputes enter the AR/VR landscape. While commercial advertising has already caught both the AR and the VR industry, a closer scrutiny is warranted in the AR industry especially as far as unregulated use of trademarks is concerned. An example of the latter would be a fast food company using AR to overlay an image of an unsavory item on the brand logo of its competitor.<sup>63</sup>

Further, use of AR in advertising and a more developed customized usage may make brands be prone to trademark dilution. The association of a

visual created in the AR world with a pre-existing trademark has potential to cause blurring or tarnishment of the pre-existing mark, which will give rise to a claim of trademark dilution.<sup>64</sup> Such pop-up advertisements on seeing a brand mark have immense potential to make the consumer believe alleged similarities in the products of the multiple brands popping up in relation to the subject. Hence, this dilution issue is imperative to be resolved.

Another new concept that has come in similar to an AR construct is the trademark on a hologram which is a moving object. With the broadening of the definition of a trademark in the TRIPS agreement, to include any sign capable of distinguishing goods and services,<sup>65</sup> such marks may soon come into existence and so can virtual reality based and developed marks.

As per the Indian Trade Marks Act, 1999, the test to see whether a trademark has been infringed is whether there is a likelihood of confusion for a consumer with average intelligence and imperfect recollection to believe that the use of the trademark is associated with the owner of the trademark. Ideally, should an AR overlay over a logo of McDonald’s produce an animated burger, for example – there may be a likelihood of confusion for an average consumer, who may assume that McDonald’s was behind the animation. Hence, trademark law should give the owners of the trademarks the right to exploit their trademarks in the AR/VR world, in relation to the goods and services for which they have obtained such registration.

## II. Data Protection

AR/VR technologies are heavily reliant on data which is either provided by the user or data which is collected automatically. Due to the invasive nature of these technologies, data protection and privacy concerns vis-a-vis AR and VR technology are only growing. With

60. 4:13-cv-00342.

61. <https://www.awa.com/globalassets/documents/articles/virtual-worlds.pdf>

62. Timir Chheda, Intellectual Property Implications in a Virtual Environment. <https://repository.jmls.edu/cgi/viewcontent.cgi?article=1077&context=ripl>

63. The “Leak in Your Hometown” application added an overlay of a broken pipeline over the BP logo at gas stations to represent the Gulf of Mexico oil spill. <https://theleakinyourhometown.wordpress.com/>

64. Ariane Takano, *Diluted Reality: The Intersection of Augmented Reality and Trademark Dilution*, 17 Chic. Kent JIP 189 (2018) 202-206

65. Art 15(1) TRIPS

existing, as well as newly introduced data protection laws such as the European Union’s recently enforced General Data Protection Regulation (“**GDPR**”), and the proposed Indian draft *Personal Data Protection Bill, 2018* (“**PDP**”) there will be a host of challenges for businesses in the sector to comply with.

A pressing concern is that as AR automatically passes information about persons that the user sees, there could be anything seen from social media, criminal record, and marital status.<sup>66</sup> VR/AR companies and content providers must evaluate very carefully the potential legal consequences deriving from non-compliant data collection, data sharing, or location tracking in AR and VR environments since they carry significant amounts of fines under the reigns of the GDPR,<sup>67</sup> which has been replicated in the PDP.

## A. Privacy concerns

In its present form, AR wearables can capture photos and videos without altering the subjects of the same; possibly perform facial recognition and upload the produced photos and videos to the internet for anyone in the world to see. A practical real world example of the same would be Google Glass’ “wink” feature which allows users to take a photograph by just winking.

Biometrics especially facial recognition via AR wearables could also pose a significant threat to privacy especially due to the fact that a vast pool of photos is uploaded to social media websites everyday which could be used for possible identity verification. In 2013, Google banned applications and services that used facial recognition on its Glass device.<sup>68</sup>

VR is the less intrusive cousin of AR; intrusive nonetheless. In the past, VR companies have been seen collecting location as well as body movement data in addition to a user’s head movement data and whether or not a user was seeing in a particular direction.<sup>69</sup> VR headsets may also use live mics to record all conversations, while tracking systems/HMDs with always-on cameras may record video of private spaces. Heed is also to be paid to the fact whether or not all communication of data via the internet is encrypted or not. Further, personal information such as biometric, payment, and location data may be further transferred to third parties, heightening the risk of hackers accessing such data. This makes it all the more important for any third parties to be appropriately vetted, and their security systems secured. The risk of malware, or other vulnerabilities on cloud platforms should be appropriately protected against.

As discussed above, the AR/VR industry thrives on the collection of data. This throws up queries on the security of the data collected, as well as the legal repercussions if correct practices and procedures are not followed. Further, the privacy policies of AR/VR applications would need to be revisited by companies and users alike – to ensure that the specifics of the usage of data is detailed.

## B. Current Data Protection Regime in India

We have provided a short primer on the relevant data protection framework in force in India and the reason for the prominence / spurt of Indian privacy laws.

Section 43-A of the Information Technology Act, 2000 (“**IT Act**”) mandates following of ‘reasonable security practices and procedures’ in relation to the Information Technology (Reasonable security practices and procedures and sensitive personal data or information) Rules, 2011 (“**SPDI Rules**”). The section per se

66. Roesner, F. C., Denning, T., Kohno, T., Newell, B., & Calo, R. (2014). Augmented reality: Hard problems of law and policy. UbiComp 2014 - Adjunct Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing, 1283-1288.

67. Chiara Addis, The General Data Protection Regulation (GDPR), Emerging Technologies and UK Organisations: Awareness, Implementation and Readiness available at [https://www.ukais.org/resources/Documents/ukais%202018%20proceedings%20papers/paper\\_39.pdf](https://www.ukais.org/resources/Documents/ukais%202018%20proceedings%20papers/paper_39.pdf).

68. <https://www.theguardian.com/technology/2013/jun/03/google-glass-facial-recognition-b>

69. <https://www.gearbrain.com/virtual-reality-privacy-consumer-battle-rights-1845199637.html>

primarily concentrates on the compensation for negligence in implementing and maintaining 'reasonable security practices and procedures' in relation to 'sensitive personal data or information ("SPDI")'. The IT Act also provides for the Government of India to decrypt/monitor/intercept any information for security purposes.

The SPDI Rules apply only to sensitive data. Hence, if AR/VR players take care to not collect any sensitive data (such as biometric, health, or financial data), the SPDI Rules may not apply to them. However, the SPDI Rules classify 'physical, physiological and mental health condition' as SPDI. Hence, should the AR / VR collect the said attributes of a person, it could be argued that the SPDI Rules apply.

### C. Proposed Privacy Law in India – PDP

The PDP, should it be introduced in its current form, will entail a massive overhaul of the current data protection law as delved into above. The PDP applies to the processing of both Personal Data ("PD")<sup>70</sup> and Sensitive Personal Data ("SPD")<sup>71</sup> of natural persons. Unlike the existing law which regulates only SPD, the proposed law regulates both PD and SPD. This wider application of the law may need to heightened compliance requirements for AR/VR, who may need to comply with the PDP even with the collection of personal data, such as the name or the likeness of an individual. This is not the case under current law, where the compliance requirements are only applicable if SPDI is collected.

Further, the PDP introduces extra territorial application, and may apply to businesses located outside the country who have a nexus to India.

70. PD is data about, or relating to a natural person who is directly or indirectly identifiable, having regard to any (or combinations of) characteristic, trait, attribute or any other feature of the identity of such natural person.

71. SPD is a subset of PD and consists of specified types of data, such as passwords, financial data, health data, official identifier, sex life, sexual orientation, biometric data, genetic data, transgender status, intersex status, caste or tribe, religious or political belief, etc. The Data Protection Authority (as explained hereunder) has the power to declare further categories of data as SPD.

This is also a change from current law, which applies to body corporates located in India. Relevant to AR/VR, the PDP further mandates the implementation of '*privacy by design*' which is the requirement to implement the managerial, organizational, business and technical systems, policies and measures to ensure that the privacy of the user is protected.

Certain impact areas on AR/VR should the PDP be introduced in its current form are as follows:

- Where the current law only prescribed compliance requirements for SPDI, the PDP would put in place such requirements for the collection and processing of PD as well. Hence, even the collection of a player's name and email id would mandate compliance.
- The PDP proposed to have extra territorial application in specific instances, as it would apply to entities processing personal data outside India in so far as they have a business connection in India, carry out a systematic activity of offering goods or services to individuals located in India, or carry on activities involving profiling of individuals in India. 'Wizards Unite', Niantic's AR game based on Harry Potter went live in India in June 2019 – and as an example, should the PDP be enacted, Niantic would have to comply with the law.
- Subject to a few conditions, the PDP mandates data localization, or the storage of data in a server/data center in India. For internet based offerings, data is often stored on the user's device itself, or within the application (rather than be collected altogether by the company). Therefore, this mandate would be a practical hurdle for implementation for AR/VR companies, especially for those who don't currently store data in India.
- Consent, notice and data retention requirements – The PDP brings in stringent requirements which would have to be implemented on AR/VR applications.
- Similar to the GDPR, consent is required from the individual for onward transfers to overseas parties (which should include group companies). In addition, it must be ensured

that (a) certain provisions are included in the contract which are pre-approved by the Data Protection Authority constituted under the PDP, or (b) the Government approves the location or organization for the transfer, or (c) the Data Protection Authority specifically approves such a transfer due to a necessity. Only subject to the fulfilment of these conditions, can a Data Fiduciary disclose or transfer the data to another party overseas. These requirements would be important for AR/VR companies that work across borders.

### III. E-Contracts

In India, e-contracts like all other contracts are governed by the basic principles governing contracts in India, i.e. the Indian Contract Act, 1872 (“**Indian Contract Act**”) which inter alia mandate certain pre-requisites for a valid contract such as free consent and lawful consideration. What needs to be examined is how these requirements of the Indian Contract Act would be fulfilled in relation to e-contracts. In this context it is important to note that the Information Technology Act, 2000 (“**IT Act**”) recognizes the validity of e-contracts. There is no requirement under the Indian Contract Act to have written contracts physically signed. However, specific statutes do contain signature requirements. For instance, the Indian Copyright Act, 1957 states that an assignment of copyright needs to be signed by the assignor. In such cases the IT Act equates electronic signature with physical signature. The implementation of this would become challenging in the AR/VR world if there is any assignment of copyright (akin to computer programs / codes) contemplated. Primary reason being that it is unlikely for all users to have an electronic signature as recognized under the IT Act.

Further, unless expressly prohibited under any statute, e-contracts like click-wrap agreements would be enforceable and valid in India if the requirements of a valid contract as per the Indian Contract Act are fulfilled. In India, the jurisprudence on the issue of whether standard form online agreements are unconscionable or not is not very developed. However, Indian laws

and Indian courts have dealt with instances where terms of contracts (including standard form contracts) were negotiated between parties in unequal bargaining positions. However, in case of unconscionable contracts, the courts can put a burden on the person in the dominant position to prove that the contract was not induced by undue influence.

The *Consumer Protection Act, 2019* introduces the concept of ‘unfair contracts’. While the Consumer Protection Act, 2019 has been passed as law, the Government is yet to notify a date for it to come into force. An unfair contract could mean any contract between a service provider and a consumer which has such terms which causes significant change in the rights of such consumer, including entitling a party to the contract to terminate such contract unilaterally, without reasonable cause; or permitting or has the effect of permitting one party to assign the contract to the detriment of the other party who is a consumer, without his consent; or even imposing on the consumer any unreasonable charge, obligation or condition which puts such consumer to disadvantage. AR/VR players would need to keep these principles in mind while drafting any Indian consumer facing contracts.

With the above being introduced, it is very likely that Indian jurisprudence on the sanctity and enforceability of standard form AR/VR contracts would evolve in the near future.

### IV. Jurisdictional Issues

AR and VR are technologies are truly *sans* borders. Any player from anywhere in the world may connect to such augmented or virtual realities and depending on the application, may undertake a host of actions; whether lawful or unlawful depending on the jurisdiction of each player. Being subjected to such “dynamic” jurisdictions is the reality of AR and VR.

A United States federal district court recently came out with an unprecedented decision involving an interactive virtual world called

Second Life.<sup>72</sup> The case arose when the virtual land of a user was confiscated by the VR platform operator. The VR platform operator in this case was Second Life, a platform which had advertised aggressively that their platform allowed the user to retain basic rights *vis a vis* their virtual property.<sup>73</sup> Judge Robreno ruled that the district court had personal jurisdiction over a non-resident operator of the ‘massively multiplayer online role playing’ game, in which the avatar of the user could engage in virtual business transactions with others and own property.

In the suit, a user claimed that the cancellation of virtual sale, and freezing of his account, deprived him of property rights. While the court held that the court had the jurisdiction to try the suit, the court unfortunately did not have the opportunity to rule on the substantive aspects of the suit as it was settled out of court.

## V. Taxation of Virtual Assets

Income tax in India is levied under the Income Tax Act, 1961 (“**ITA**”). Under the ITA, residents are taxed on their worldwide income while non-residents are taxed only on income arising from sources in India.

Thus, where an Indian resident legal entity is in the business of running an AR/ VR platform, the global income of such entity will be subject to tax in India. On the other hand, where a non-resident entity is the provider of the AR/ VR platform, only the income which is sourced from India will be taxable in India under the ITA.

For determining residency, a company is said to be resident in India when (a) it is incorporated under the laws of India, or (b) when its place of effective management (“**POEM**”) is in India. The POEM of a company is the place where the key management and commercial decisions that are necessary for the conduct of the business are in substance made. This test however, remains substantially subjective and is decided on a case

to case basis. The Central Board of Direct Taxes (“ **CBDT**”) in India has clarified that residency by virtue of POEM in India does not apply to companies having turnover or gross receipts less than INR 500 million during a financial year.<sup>74</sup>

In the case of a resident company, the ordinary corporate tax rate of 30% (exclusive of applicable surcharge and cess) applies. In some cases, depending on the total turnover of the company, a lower rate of 25% may be applicable. Further, a dividend distribution tax (“**DDT**”) at the rate of 15% (exclusive of surcharge and cess) on a gross basis is also levied on a company on the dividends which are distributed to its shareholders. The dividend income is however then exempt in the hands of the corporate shareholders once the DDT is paid by the company.

On the contrary, in the case of non-residents, the applicable rate of tax on all income sourced from India is 40% (exclusive of surcharge and cess). Moreover, even where a non-resident entity is deemed to be a resident by virtue of having its POEM in India, it has been clarified that the 40% rate of tax would continue to apply.<sup>75</sup>

Normally, where a non-resident provides services (including digital services) in India, withholding taxes may apply on the consideration paid by the resident entity to the non-resident entity, where the income is taxable in India. In such cases, the resident entity shall have to deduct tax at the applicable rates which would vary depending on the characterization of income in the hands of the non-resident entity.

Since non-residents are only taxed to the extent income is sourced in India, ordinarily, income that is characterized as ‘business profits’ is not taxable in India in the absence of a permanent establishment (“**PE**”) / Business Connection (“**BC**”) in India. If however, the non-resident has a PE / BC in India, the non-resident is taxable in India to the extent of profits attributable to the PE/BC. In cases where the non-resident AR / VR platform has a fixed place of business at its disposal in India, or has an agent who habitually

72. Bragg v. Linden Research, Inc., No. 06-4925, 2007 U.S. Dist. WL 1549013 (E.D. Pa. May 30, 2007).

73. [http://wiki.secondlife.com/wiki/Intellectual\\_Property\\_Rights](http://wiki.secondlife.com/wiki/Intellectual_Property_Rights)

74. CBDT, Circular No. 08 of 2017, dated 23rd February, 2017

75. CBDT, Circular No. 29 of 2018, dated 22nd June, 2018

concludes contracts in India on its behalf, or where the AR / VR platform sends employees, experts, technicians and other staff to India there may be a risk of creating a PE. Even merely the presence of a server in India, where the foreign AR / VR platform stores its data may lead to the creation of a PE. Indian courts in the past have taken the view that carrying out business through any automated equipment in India can lead to a PE where the non-resident has an element of control over the equipment.

Moreover, the definition of BC under the ITA has been expanded to include the concept of Significant Economic Presence (“SEP”), the presence of which would constitute a BC. A non-resident would be deemed to have a SEP in India if it carries out any of the following:

- transactions in respect of any goods in India above a specified value, including digital goods;
- transactions in respect of any services in India above a specified value, including digital services;
- transactions in respect of any property in India above a specified value, including download of data or software;
- systematic and continuous solicitation of business from India from a prescribed number of users through digital means; or
- systematic and continuous engagement with prescribed number of users through digital means.

The definition of SEP thus is very broad and would cover all cases where the digital services provided by the AR / VR platform exceed a prescribed value. Even transactions involving the download of data or software, or merely the continuous interaction by the non – resident AR / VR platform with prescribed number of Indian users would be covered. It is however noteworthy that unless tax treaties are modified to allow the imposition of tax pursuant to the formation of a BC, the beneficial provisions under the tax treaty (which do not currently provide for such thresholds of BC) should prevail and these transactions should remain

non-taxable. Moreover, the thresholds to determine SEP have yet not been notified by the Government. It is expected that they should soon be notified by the CBDT.

In cases where the profits earned by the non-resident platform qualify as royalties or fee for technical services (“FTS”), they would be taxable only at 10% under the ITA. This may be the case where the non-resident AR / VR platform has a group entity in India which carries out the Indian business. With respect to FTS, under many Indian tax treaties, consideration for services would qualify as FTS only where the services ‘make available’ and enable the service recipient to apply the underlying technology or technical knowledge independently in the future. Additionally, it is to be noted that under domestic law, payment of royalty or FTS even between two non-residents is also considered to be sourced in India, if the payer utilizes the information, property or rights or services for a business or profession carried out in India. If, however the payments do not constitute FTS or royalties, they would consequently not be taxable in India unless the entity has a PE/BC in India.

Therefore, the characterization of income should directly impact the tax cost of doing business in India. Particularly, where characterization by Indian tax authorities is not in consonance with international principles, non-residents could potentially face the risk of double taxation (arising from non-availability of credit for the taxes paid in India).

India has also introduced wide General Anti Avoidance Rules (“GAAR”) which provide broad powers to the tax authorities to deny tax benefits in the context of “impermissible avoidance arrangements”. GAAR has come into effect from April 1, 2017 in India and overrides tax treaties signed by India. The GAAR provisions in India allow the tax authorities the power to disregard entities in a structure, reallocate income and expenditure between parties to an arrangement, alter the tax residence of entities and the legal situs of assets involved, look through an arrangement by disregarding any corporate structure, treat debt as equity and

vice versa, and the like. Further, subjective terms are used in the definition of GAAR which allow for a wide interpretation, and can lead to a large number of transactions coming under the scrutiny of the tax authorities.

Moreover, Goods and Services Tax (“GST”) may also be applicable on the goods and services provided by the AR / VR platform. The rates of tax would vary depending on the type of services provided. The GST rates for goods and services ranges from 0-28%. However, if the services performed qualify as an export of goods or services under the Integrated GST Act, 2017 then such export should be zero rated and no GST should be payable. Normally the liability to pay the GST is on the service provider but in some specified cases, the service recipient may become responsible for payment of the GST. However, in almost all cases, the economic burden of the tax is passed on to the final consumers / users.

The Government of India has also introduced the Equalisation Levy (“EL”) in the year 2016. The EL has been introduced to achieve the following two objectives:

- equalizing the playing field between resident service providers who pay income taxes in India and non-resident service providers who do not pay taxes in India;
- taxing the untaxed income of non-resident service providers who do not have a physical presence in India

The EL currently imposes a 6% tax “on consideration received or receivable for any specified services” which currently includes “online advertisement, any provision for digital advertising space or any other facility or service for the purpose of online advertisement”. The aggregate consideration should however be more than INR 100,000 in a year for the EL to be applicable. As of now, the EL is only applicable on the online advertising industry. However, in 2016 the Government released the Report of E-commerce Committee on Taxation of E-commerce (“Report”) which suggested including several other services under the EL. One such service being use of digital platforms for sale of goods and services; and online software applications accessed or downloaded through internet. If the same is introduced, it can affect the AR / VR sector and tax at the rate of 6-8% may be applicable on non-residents providing services through such digital platforms. Further, EL has been deliberately kept outside the purview of India’s income tax regime and consequently, the government has taken the position that tax treaty relief should not be available. As a consequence, countries of residence of the foreign service providers could potentially refuse to grant tax credits against the EL paid in India thereby leading to double taxation.

## 4. Conclusion

AR, VR and even MR technologies are only going to penetrate the market more with time. Are we headed towards a future where an alternate reality is the norm where our current reality is deemed as boring? Time will only tell. In a recent Augmented and Virtual Reality Trends Survey,<sup>76</sup> technology and business stakeholders indicated that consumer use of AR/VR will see adoption first. Most importantly, 69 percent of respondents believe AR/VR will become mainstream within five years.<sup>77</sup> As a result of this, and with the number of smartphone users increasing by the day, the dependency of entities and individuals on these systems is also expected to increase proportionately.

Due to the lack of legal jurisprudence on this subject, it is hoped that in the near future legal and tax principles are established which will not only foster the development of these alternate realities, but also ensure that the necessary safeguards are in place. It is also important to spread awareness of the security risks that these technologies currently represent, to usher in an era of innovation and responsible use of technology.

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76. Please see <https://www.jabil.com/insights/blog-main/future-of-augmented-and-virtual-reality-technology.html>.

77. Id.

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Our dedication to research has been instrumental in creating thought leadership in various areas of law and public policy. Through research, we develop intellectual capital and leverage it actively for both our clients and the development of our associates. We use research to discover new thinking, approaches, skills and reflections on jurisprudence, and ultimately deliver superior value to our clients. Over time, we have embedded a culture and built processes of learning through research that give us a robust edge in providing best quality advices and services to our clients, to our fraternity and to the community at large.

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