

## DIGITAL TRANSFORMATION – APPLICATIONS OF IMMERSIVE TECHNOLOGY



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### Virtual Immersion into Digital Reality

Applications of immersive technologies are interactive and mediating processes with the help of computing devices which can create various simulated environments for exciting experiences of as if present in a physical environment. These digital technologies create virtual versions of real world. Applications of Immersive technologies (ImTs), viz., Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR) are influencing the processes by which various business activities are performed and life is lived in present digital era.

By wearing the headset, which is connected to a computing device, an individual can get the virtual feeling that he / she is shaking a tree branch standing on a snowy hilltop, and snow crystals are falling from it. Another extreme example could be the experience of a shopper while interacting with an eCommece platform. ImTs can help him / her to see how a garment is fitting on his / her body without wearing it. The camera eye of the computer or handheld phone first takes measurement of his / her physique and then creates another image by superimposing on it the image of the garment of required size. The shopper will be able to see whether the garment is fitting well or not from various angles, and the areas where the same is loose or tight on his physique, one of the common and popular applications of ImTs is for video gaming.

ImTs thus equip an individual to manipulate and perceive a digitally created environment in a manner that it resembles the real world. Business entities are gainfully using those

for operations to gain momentum in transforming users' pre-purchase experiences taking them into a digital domain. Examples could be providing customers virtual experience of a newly launched car or a completely furnished dwelling unit without visiting the showroom or the flat. ImTs are also effectively being used in classrooms for teaching students of medicine, bio-technology, engineering etc.

In his research paper, presented in a conference of marketing professionals, Stephen O' Mahony<sup>1</sup> observed that, *"The ubiquity of digital media is axiomatic of the contemporary environment, wherein digitally mediated interactions have become the essence of its landscape. .... Increasingly, virtual content is extracted from synthetic worlds and assimilated into the corporeal; the mediating technologies through which individuals interact with it are becoming appendages of the physical self, signalling profound changes to innumerable application areas"*.

### Genesis and Advancement of Immersive Technologies

The innovative idea of ImT started with Charles Wheatstone in 1838. He discovered Stereoscope which helped near to 3D viewing of images. David Brewster worked further and invented in 1849 the first portable 3D viewer. In 1929 Ed Link created a simulator which helped pilots to get a precise idea of how it really feels to control a plane. This was perhaps the first innovative application of virtual reality. In 1961 Morton Heilig first invented a head-wearable display device, which helped users to see stereoscopic 3D pictures coupled with stereo sound. Ivan Sutherland's joint research with his student Bob Sproull lead to the invention of a further developed headset in 1968 which enabled an user to view computer-generated wireframe rooms.

The process of development continued. Jaron Lanier officially first propagated the 'Virtual Reality' in 1987. He founded an

organisation named 'VPL Research' which manufactured and sold VR Products and distributed specialised software for computer-based VR applications. AR became a popular word when 'Pokemon Go', the most popular video game of the world, was released in 2016. Finally, it emerged as the most profitable gaming app of the world. Digital scientists are of the view that almost all minimum required digital technologies are available by now on which will be built the world of extended reality.<sup>2</sup>

Advancements in simultaneous applications of computer vision, IoTs and sensors, big data storage and analytics, multimodal displays, and other related digital technologies have helped scientists to generate many solutions for complex practical problems that help manufacturers and consumers. Those are also adopted for commercial and industrial applications.

## The Ranch of Extended Reality

All immersive digital technologies that can enhance human senses come under the group of mediated and interactive technologies. Different forms and variations of such digital technologies of late have been brought under a group called Extended Reality (XR). According to Franklin Institute<sup>3</sup> "*XR is an umbrella term that covers all of the various technologies that enhance our senses, whether they're providing additional information about the actual world or creating totally unreal, simulated worlds for us to experience.*" At this stage it will be useful to briefly know about these technologies and their applications.

### Virtual Reality

Virtual Reality or VR is an interactive technology. It enables a computing device to generate an environment that enables the user to experience with a stimulated virtual presence and a perceived sense of reality but not being physically present there. VR enables an user manipulate and feel an environment conceived and created in such a way that it seems like the real world. In other words, it gives the user a complete immersion experience that can shift him / her to a near real-world and imagined environments. For example, the individual can feel roaming through the middle of a screeching penguin habitat, or in a chilly hilltop where it is snowing and he / she can make snowballs, or even riding on the back of a dragon or elephant through a deep forest.

According to the research report of Capgemini<sup>4</sup> applications of VR have gained popularity and impetus among business organisations because "*VR can engage customers in experiencing their desired services distinctively. If 100 companies are deploying VR, 36 of them are implementing while the remaining 64 are experimenting.*"

### Augmented Reality

In simple terms Augmented Reality or AR is nothing but a combination of real and virtual environment generated by a computing device. Oxford Dictionary has defined AR as "*A technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view.*"

The best examples for applications of AR can be set by fire safety engineers. AR provides them opportunities to display

their fire safety SOPs, tactics and usage of equipment for fighting fire in a worst-case scenario to save human lives and assets from destruction. AR can also help them strategising pre-emptive actions, penetrating through an area with inferno, and designing firefighting equipment. AR is extensively used by cinematographers for creating augmented environments of fire, flood, flying objects, etc. Tourism, leisure and event management industry use AR and VR for pre-sale customer experience as a part of marketing activities,

### Mixed Reality

As the name suggests the experience of Mixed Reality or MR is a combination of experiences from both AR and VR. It is a computer and headset enabled combination of all experiential features of both AR and VR. In this digital technology both real-world objects and those created digitally interact. Applications of MR has just started coming to the consumers' world with MR apparatuses called HoloLens of Microsoft.

### Future of Extended Reality

Gartner's research report<sup>3</sup> revealed that the enormous stakeholders' acceptances of mediated and interactive technologies have emboldened business professionals to reframe their strategies along with reshaping of the business space. Large business organisations around the world are applying AR and VR for developing effective applications for mission critical items. Video gaming and entertainment industries are immensely being benefited by the experiential impacts that these digital technologies are creating. In 2019 Gartner predicted that 20% of large business entities will soon adopt AR VR and MR.

Nasscom in its report of April 2020 quoted International Data Centre (IDC) stating that in 2019 the global spend on AR and VR was USD 10.5 Bln. 50% of this was expended by industry and service sectors like discrete manufacturing, consumer retail, media and entertainment, professional training and development. IDC has predicted total expenditure for advanced immersive technologies will touch USD 103.1 bn. by 2023. New sectors that are expected to be added for faster growth would include banking, investments and financial services.

The author is of the view that in the new world order post Covid-19 pandemic all these technologies for immersive experience management with extended reality would gain momentum at an accelerated pace and quantum leap. AR, VR and MR will redefine the way business activities are performed, and life is lived. MA

## Webliography

*Only webliographical references have been quoted below for economy of words and space.*

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