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Metaverse Patents

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Blurring the edges between reality and make-believe, the Metaverse is part of an aspirational Web 3.0, characterised by certain features including an immersive 3D virtual space, interoperability, and real-time operation. While there is no consensus on its definition, certain foundational technologies such as AI (artificial intelligence) and XR (extended reality), which includes VR (virtual reality), AR (augmented reality) and MR (mixed reality), contribute to the Metaverse.

The Metaverse market is anticipated to experience a compound annual growth rate (CAGR) of 37.73% between 2024 and 2030, reaching a projected market volume of US $507.8 billion by the end of the forecast period. Considering that around 390,000 patent applications are pending worldwide concerning AR, VR, and XR, Metaverse-related inventions may dominate the market in the future.

At present, the US and China lead in the number of Metaverse-related patent filings. Companies innovating in the Metaverse seek patent protection for two main types of subject matter: hardware components and software processes. The former typically includes enhanced Central Processor Units for the virtual environment and physical access devices such as VR headsets. In contrast, the latter includes algorithms and networked computer systems like distributed ledgers and blockchain.

Sony, Microsoft and Samsung are leading in terms of Metaverse-related patent applications. Apple has secured a US patent for a method and device to block out unwanted user interaction in a simulated reality space and has filed over 5,000 applications for its “Vision Pro” VR headset. In 2022, the USPTO awarded a patent to an Indian biomedical entrepreneur for the world’s first digital vaccine, which works on reinforcing healthy behaviour in the virtual world to promote such behaviour in the physical world. And Microsoft in 2019 filed a European patent application on an AR/VR-related colour correction mask to ensure colour uniformity.

Also, in 2019 Nike patented a blockchain technology within their physical sneakers to provide

customers with proof of authenticity of the purchased product ("A colour correction mask programmatically generated in software on an HMD device is applied to a gaze region on a display field of view (FOV) on a head-mounted display (HMD) device to optimise system resources while rendering a display"). Then, in the same year, RTFKT, a fashion brand acquired by Nike, launched the 'Cryptokicks'- a collection of customisable NFT sneakers intended to be worn in Nikeland, Nike's virtual world, the shoes being verifiable with Nike's blockchain technology. But it is the Chinese e-commerce titan Alibaba which currently holds the highest number of blockchain-based patent applications.

Moreover, Meta holds over 200 patents referring to AR or VR technology. In 2017, it received its first AR/VR patent for a "multi-directional communication system" boasting high data rates in communication without "onerous restrictions on the system or the user". There was no turning back after the first registration. Over the past few years, Meta has steadily increased its registrations for Metaverse-related hardware and software patents, including head-mounted displays with eye trackers, VR garments that could jam user movement, and innovations generating realistic makeup in video streams. And in 2021, Meta filed a patent at the EPO for a method to render occlusion (the way a physical object blocks the view behind it) in AR.

Yet, securing patent protection within the Metaverse presents some complexities. The novelty requirement, for example, may pose a hurdle. Specifically, evaluating the novelty of a 'digital twin' or replica of a physical-world object, based on whether the invention in the Metaverse resembles the same physical product or process outside it, is a complex exercise. What happens if the only difference between the two processes is that the digital twin resides in the Metaverse?

Additionally, given that the building blocks of the Metaverse are computer simulations of real-world elements, what about their patentability? In 2021, an EPO Enlarged Board of Appeal decision made the patentability of computer simulations more difficult by concluding that the mere fact that technical principles underlie a simulation is inadequate to render such a simulation patentable. A computer simulation must achieve an intended technical purpose or solve a specific technical problem to be patentable. The consequence of such decisions is that most simulations are likely unpatentable, unless the intended technical purpose of the simulation which triggers the technical effect can be implied in the claims.

As we increasingly see technological advancements attempt to bring virtual experiences as close to reality as possible, patents will likely play in the future a more active role in incentivising innovation in this sector. The intersection of patents with the Metaverse platform may not require a total overhaul of the law – it may instead need expanding the boundaries of patentable subject-matter and fine-tuning the novelty and inventive step / non-obviousness requirements. Time will tell if patent offices and courts will be willing to go down that route and thus promote further innovation in Web 3.0.

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