

Digital investigations in the metaverse

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The time has come to reflect on how, in the not-too-distant future, a digital investigation of cybernetic offences would be conducted in the Metaverse, one of the most talked-about subjects of 2022, according to Professor Álvaro Machado Dias.

Recently, five vectors for technological development have emerged: *"Over the last three to four years, five major lines of technology have seen an exponential advance: IoT, digital twins, low latency connectivity, XR and blockchain. In parallel, machine learning, whose turning point was the launch of deep learning by Geoff Hinton and colleagues in the first decade of the century (2006), has exploded in popularity, tying everything together by means of predictive models, natural language algorithms, and heightened consistency in computer graphics."*¹ These technologies are still largely untried in digital and regulatory investigations, either public (policy inquiries, for example) or private (internal corporate investigations, for instance).

In this article we will have a quick look at the use of cryptoasset and blockchain technologies in money laundering in the Metaverse and at digital investigation of cybercrimes in high-tech contexts.

By now, it is clear that the disruptive nature of cryptoasset technologies, in conjunction with the blockchain, is due to the fact that they function like an unregulated financial system, free of intermediaries and completely independently of central authorities.

Transactions take place using peer-to-peer (P2P) technologies, authenticated by complex mathematical calculations in blocks strung into a chain, which are generated only when certain information is confirmed (by hashes or time stamps, among other means), ensuring the authenticity of the transaction and the transfer of monetary values in digital form exclusively between the parties to the transaction.

This reality creates a parallel environment in which hundreds of thousands of financial transactions are made without passing through any traditional financial system and thus occur, at least in principle, outside the monitoring and control of the Financial Intelligence Units operating in the world, and outside the scope of any regulation.

From an investigative point of view, the first challenge that must be dealt with is identifying the two ends of each transaction, since there is no central server or central authority that enables transactions to be traced. It is difficult enough to identify and locate the individuals behind any given digital transaction, but it is even more difficult to identify financial transactions that are conceived, structured and based in computational logic to occur off grid, such as transactions carried out by professionals who design money laundering structures.

Starting from the general concept of the Metaverse, which promises to blend the physical world with different digital worlds and systems by integrating various technologies, it's only too easy to imagine, how additional, obfuscating layers could be added to digital money laundering transactions in various currencies and systems:

- transactions initiated in illegal digital currency exchange webhouses, intended to receive deposits from illegal sources;
- turned into digital assets, through hundreds of thousands of cryptoasset transactions stored in blockchains in various networks and systems in the Metaverse;
- returned to clients as valid, legal cryptoassets, ready for trading on the market; or
- paid into fraudulent digital wallets created to conceal money, or even transferred to QR codes to be printed on paper and kept in safes, banks or residences; or even
- used to carry out lawful financial transactions using assets that originate in criminal activity.

This imaginary flow of funds is highly sophisticated, and investigating it will involve information technology artifacts of various types, from IoT to cloud computing, all purposely shuffled together in multiple layers. In short, digital investigation can involve all the technologies that permeate the Metaverse and may make it part of a new reality that is currently being constructed.

The new reality, therefore, is that modern investigators must acquire a solid understanding of the cutting-edge technologies that will be present in the Metaverse, for the simple fact that all professionals who work in the private investigations market will have to deal with the Metaverse. Another reality is the need for self regulation of markets, to ensure that wrongful use of new technologies does not undermine the benefits that wide-scale use can bring, or restrict or even prevent use of those technologies by the population at large.

NOTES:

¹ Álvaro Machado Dias, Uol, 2021. Our translation.

>>> This article is part of the e-book "Metalaw: Reflections on Law in the Metaverse".

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