



The McAfee Safety Series

The Metaverse and NFTs in India



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A Practical Guide in Plain Language

A couple steps onto the stage, rising above a grandly appointed castle ballroom decked out in a Harry Potter theme. They look out over the crowd of hundreds gathered for their wedding reception, smile and wave to all, taking special note of the bride's late father, who is also in attendance.

Here, in the metaverse of course.



Image Credit: BeyondLife.club

This scene took place in virtual space in February 2022 when Dinesh SP and Janaganandhini Ramaswamy got married in Sivalingapuram, a small village of Tamil Nadu. Pandemic restrictions meant that their reception would be limited to 100 people, yet the bride and groom had other ideas—[they'd hold their reception in the metaverse](#), a digital 3D world, where hundreds of well-wishers could attend, complete with a Harry Potter theme and NFTs (non-fungible tokens) as digital mementos for the well-wishers. And yes, the reception had a special guest of honor as well—a digital representation of a loved one who had passed away.

This is the world of the metaverse and the digital goods within them, NFTs—both topics of growing interest for people living in India. And for several reasons. Together they will shape how we work, play, and simply gather with friends and loved ones, not to mention shape our economy and workforce as Indian companies and developers will play a major role in developing these technologies for a mass marketplace.

Without question, both the metaverse and NFTs are worth a closer look.



The Metaverse, What It Is and Who's Building It

As with any rapidly evolving technology, the definition of the metaverse is rather fluid. Broadly speaking, it's a collection of virtual spaces where people connect, interact, game, and potentially work as well. Further technologies drive it, such as virtual reality (VR) and augmented reality (AR), which include headsets to immerse visitors into metaverse spaces and digital overlays for smartphones that enhance live camera images of people and their surroundings. Other emerging technologies include smart glasses that likewise overlay digital images atop the wearer's field of view.



The popular notion from books and films may be of a single metaverse where everyone participates (such

as portrayed in *Ready Player One*), yet the reality of the metaverse is that there are a host of them. Just as this Indian couple created their own little pocket metaverse for their wedding, individuals, companies, and possibly even governments and their agencies will create metaverses of their own. How these may come together collectively, in the way that the global internet does today, remains to be seen.

Unsurprisingly, major corporations have lined up to take their place in the development of the metaverse. Noteworthy brands are realising the potential of virtual spaces and are investing heavily in them as they seek to carve out their realms of virtual real estate.

In January 2022, [Microsoft](#) announced that it had acquired Activision Blizzard, among the world's largest video game companies. The deal involved a transaction of \$68.7 billion, which is the biggest purchase ever made by the company in this domain. The acquisition of Activision Blizzard will most importantly provide Microsoft building blocks for the metaverse.

Also in January, [the computer hardware manufacturer Nvidia announced that it would make its "Omniverse" software free to content creators](#), which those content creators could then put up for sale in the several officially supported Omniverse marketplaces. Meanwhile, Nvidia announced that it would offer Omniverse to corporate customers, starting at \$9,000 U.S. price tag. Ostensibly, Nvidia is giving its metaverse and the economy within it a boost with this move. More content arguably leads to richer virtual environments, thus making the metaverse a more attractive proposition for corporate customers that could build more of their virtual worlds with digital content "pulled from the shelf" of the Omniverse marketplaces.



Rendering of Nvidia headquarters building Endeavor in Santa Clara, CA

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Epic Games, the maker of the popular Fortnite game, looks to take its place as a prominent player in the metaverse as well. Already, Fortnite has evolved into something more than a multiplayer online game, having hosted [metaverse-esque concerts for major artists like Travis Scott and Ariana Grande](#). Building on experiences like these, Epic CEO Tim Sweeney, recently stated that Epic is one of [several racing to be the first with a billion users on its emerging metaverse platform](#). Like Nvidia, the company views content creation as key to the development of the metaverse—sets of digital items that will populate everything from film and television to computers, consoles, and smartphones. Consequently, Epic has been acquiring game studios as well to support this aim.

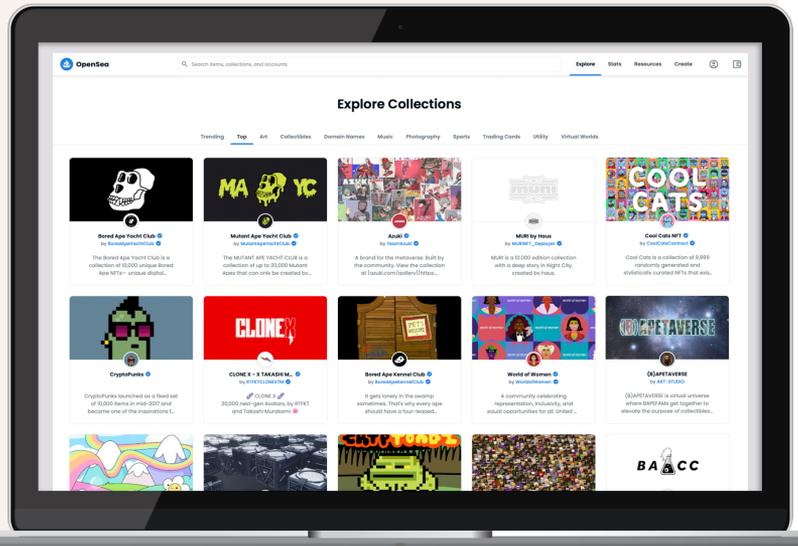
Quite notable in 2021 was Facebook's rebrand to [Meta](#), at which time chairman Mark Zuckerberg declared a company-wide commitment to “developing exciting new technologies that will help people connect and explore in the metaverse.” [The keynote](#) given by Zuckerberg demonstrates the company's belief that the next stage of social interaction will be in the metaverse, so much so that Facebook adopted an entirely new name to suit.



Exploring the Potential of the Metaverse

Looking forward, the metaverse will further erode the already blurred line between life online and life offline. With our smartphones already a constant companion that helps us go about our day, we can project what life may look like when the metaverse likewise becomes a regular gathering place for us.

- **People Will Express Themselves in Radical Ways** – As people pick up the tools to create content within the metaverse, many will take it as an [opportunity for self-expression](#). They'll create unique digital expressions of themselves, known as avatars, which may augment or entirely reinvent their physical appearance. As with the wedding example above, they'll also create digital items, goods, and even gathering places—worlds and realms within larger worlds that others can join in and explore.
- **Economies Will Develop** – Just as the internet became an extension of the global economy, the metaverse will do likewise. People, companies, and governments will participate in it, which means that financial transactions will inevitably follow, as will the means of trading and investing in products, goods, and services.
- **NFTs Could Accelerate Its Growth** – As an emerging form of digital goods, NFTs have a financial value with them, and thus make them items not only to possess in the metaverse but items to buy, sell, and trade as well. While we'll cover NFTs in further detail below, suffice it to say that NFTs could become a common medium of exchange and even revenue creation. In this way, it's quite likely that NFTs will further fuel participation in the metaverse and its development.



Without much doubt, we can expect the metaverse to reshape our social experience, similar to the way that the internet has. Just as online games have unveiled virtual worlds where people play, gather, and simply hang out with friends, the metaverse will create these spaces as well—which will be filled with opportunities for expression, trade of goods and services, and become a yet another conduit for pop culture.

Prospects for the Metaverse in India

The metaverse has made an early impact in India. Currently, [estimates show that 100,000 Indians are involved in metaverse projects](#), with work tending to center on two cities, Mumbai and New Delhi.

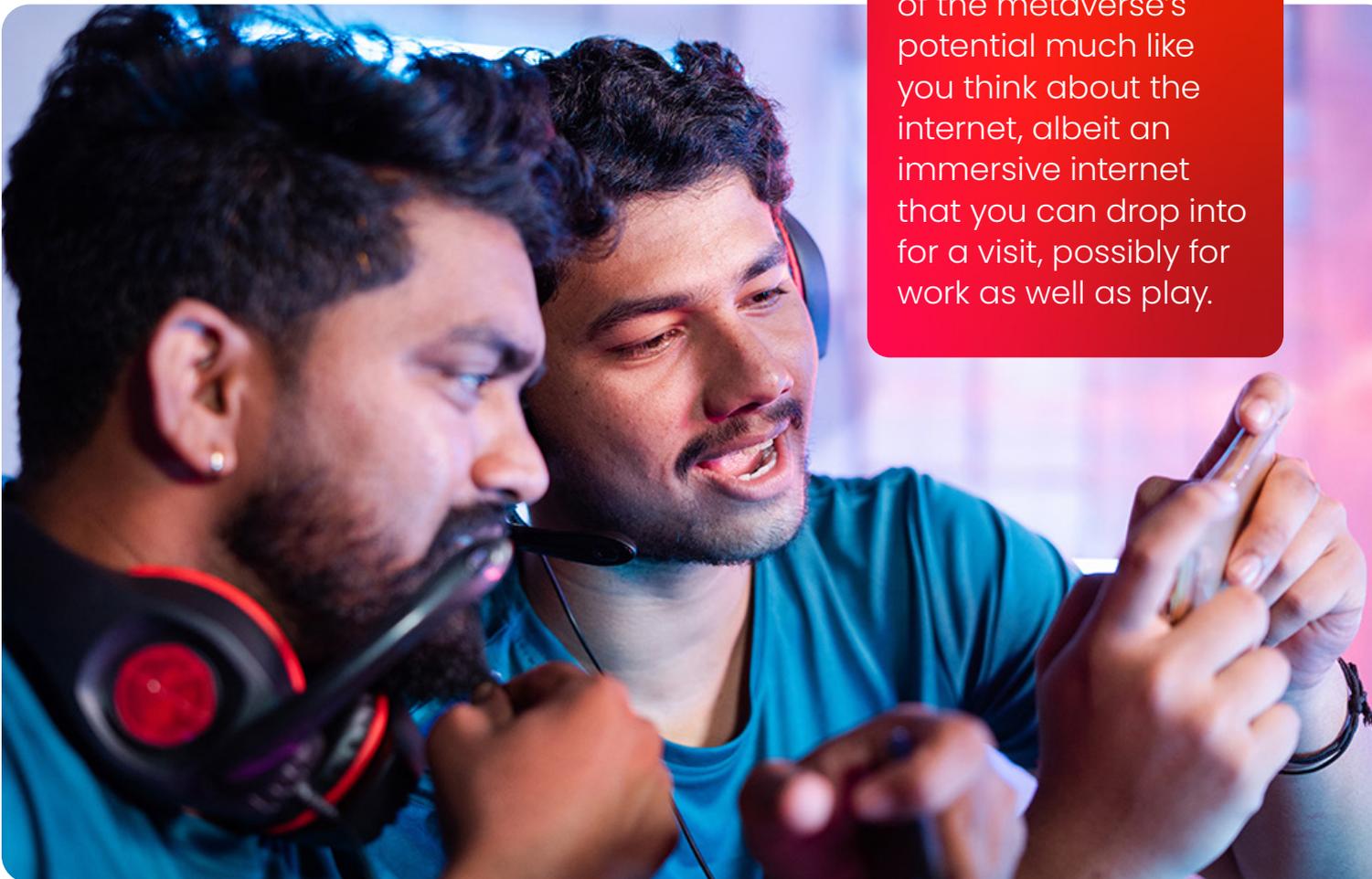
Major developers of the metaverse have already taken note of India and what it has to offer. [Meta's Mark Zuckerberg has stated that India will play a key role in the development of the metaverse.](#)

"I'm really excited about the role that India will play in building this future and that's because India's talent pool, the engineers, developers and creators, and your whole vibrant startup ecosystem are playing a huge role in shaping the future. Really, we are already here," he said.

Beyond the investment and enthusiasm Meta has shown, the upsides build from there. Indian businesses can likewise develop hardware and software for the metaverse, with a particular eye on lower cost solutions given that much of the current generation of glasses and gear are at a higher price point that prevents wider adoption of the technology in the marketplace.

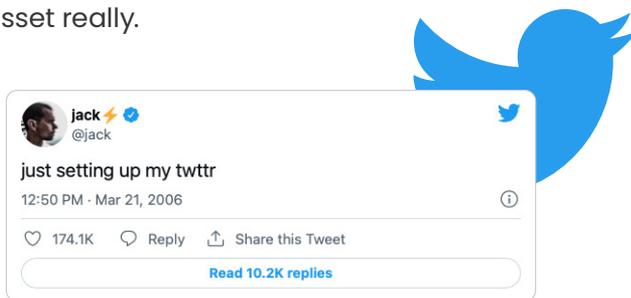
The Indian government also has its opportunity to adopt these technologies for defence, health, and education applications, which can further bring in additional investment from major technology firms.

In all, you can think of the metaverse's potential much like you think about the internet, albeit an immersive internet that you can drop into for a visit, possibly for work as well as play.



The Arrival and Impact of NFTs

We've mentioned non-fungible tokens, or NFTs, over the course of discussing the metaverse and established that they're effectively a digital item, good, or collectible that potentially holds value. For example, a NFT could be a jpeg image of artwork, a video, [or even a tweet, such as the tweet that Twitter CEO Jack Dorsey sold for \\$2.9 million U.S.](#), just about any kind of digital asset really.



Of course, there's much more to NFTs than that.

Let's start with the "non-fungible" bit of the NFT name. "Non-fungible" is actually an economic term meaning that describes things that are not interchangeable because they have distinct properties. What makes an NFT "non-fungible" is a blockchain network, the same technology that makes cryptocurrencies work. The blockchain is designed to ensure that each NFT is marked as unique and that the transactions associated with it are tracked at every step. In this way, the code associated with an NFT is stamped as one of a kind and that it has a single owner as well—all viewable as part of the digital public record. Be aware, though. Forgeries are possible. Blockchain-backed NFTs can indeed establish current and original ownership of a digital asset, but it does not tell you whether the asset in question is the original (you would need to compare the original with another to tell).

So while it's easy to roll our eyes and wonder what's going on while a tweet sells for millions and while other [speculators are purchasing digital art as NFTs](#), the future impact of NFTs goes beyond their collectability and possible cultural cache that are associated with them at the moment.

If we step back into the metaverse for a moment, we can see where NFTs may enable all kinds of commerce and trade. Imagine a custom wedding venue that's designed by a content creator in the metaverse. (Perhaps a castle with a Harry Potter theme?) Now, give it NFT status. Thanks to the blockchain technology driving NFTs, the creator would be verified as the owner of that virtual property. From there, as owner, the content creator could rent it out to other couples. Or perhaps that content creator could even sell it, transferring the NFT to the new owner like a homeowner acquires a deed in the physical world.



In all, NFTs may provide the foundation for all manner of digital exchange in the metaverse. They hold that potential, both in theory and emerging practice.

Exploring the Potential of NFTs

As noted previously, NFTs also carry information that show how they exchange hands. In this way, NFTs could support all manner of transactions, on the internet, in the metaverse, and the physical world as well.



Science and Healthcare Applications – Amedis, a healthcare solutions provider based in the Netherlands, uses NFT technologies for gathering, evaluating, and sharing medical data securely for purposes of medical research. Similarly, [RMDS Lab in the U.S. plans to launch its NFT marketplace](#) for science and technology intellectual property in early 2022.



Entrepreneurial and Artistic Applications – NFTs provide an excellent means signifying ownership of intellectual property (IP) as well. This means that artists, writers, musicians, photographers, and all manner of content creators could assign NFTs to their work and sell them in a global, digital marketplaces. This could open new avenues of revenue for them and [provide underrepresented creators with global exposure as well](#).



5G Cellular and Internet of Things (IoT) Applications – The major talking point you hear about in adverts for 5G is speed. However, 5G offers another set of benefits that will have tremendous implications for the way businesses, cities, and governments operate: bandwidth and low latency. Taken together, that means 5G networks can host more devices than before and with a near-instantaneous response time. We will see an onrush of IoT devices that monitor everything from heating systems in buildings, traffic signals, and medical equipment. NFTs can help verify the authenticity the massive volume of data traffic that this flood of devices will exchange—particularly for IoT devices that will help monitor and run critical infrastructure and business operations.

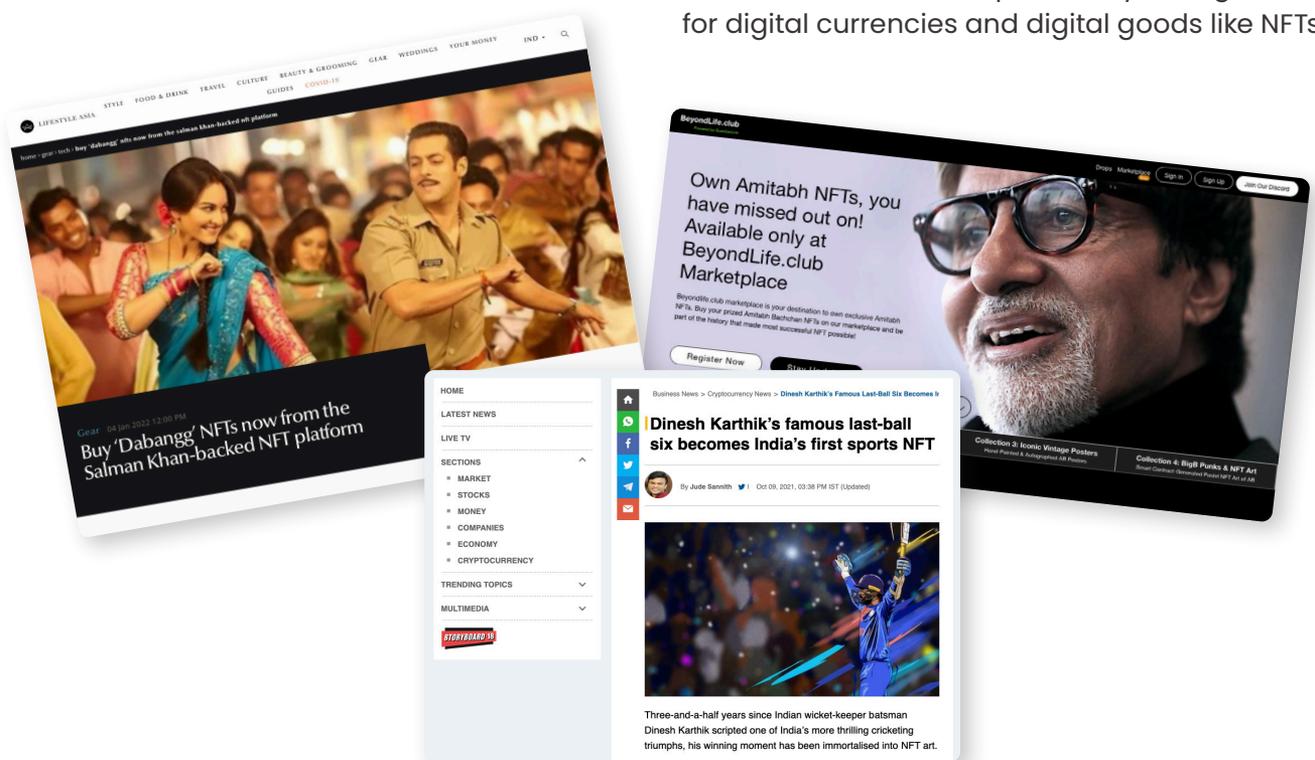


Prospects for NFTs in India

NFTs are already taking root in India, as prominent celebrities mint their own digital goods. Bollywood superstars Amitabh Bachchan and Salman Khan have launched collections, and cricketers like Dinesh Karthik have already put up NFTs based on their match-winning moments. From there, we can speculate on other ways India may come to see and use NFTs—above and beyond being items of pop culture.

- As mentioned above, artists have been taking advantage of NFTs, with Indian artists among them. As art galleries closed during the pandemic, digital art sales opened up. [Estimates show that global NFT sales nearly equaled global art sales in 2021.](#)
- According to the US India Strategic Partnership Forum, the combination of [NFTs and advances in the metaverse stand to inject more than \\$1 trillion to the Indian economy](#) over the next decade, provided the proper policies and regulation is in place.
- The Indian government is taking its first steps toward putting such measures in place. It announced [plans to launch its own cryptocurrency and now taxes cryptocurrency and NFT transactions.](#) Moreover, New Delhi has pledged to increase the reach of the internet and digital banking to rural parts of the country so that more Indian citizens can take advantage of NFTs and cryptocurrencies.
- Also in the wings is the [Cryptocurrency Bill](#), which is expected to be brought up this year. At stake is the official position the Indian government will take on NFTs and cryptocurrencies, particularly if the government will classify them as assets and then put regulations and protections in place accordingly.

In all, India’s interest in NFTs is certainly established, even as its adoption is still in the relatively early stages. However, given that [the Indian government is rolling out controlled trials of its own cryptocurrency](#) and plans to treat it like bank notes indicates a potentially strong future for digital currencies and digital goods like NFTs.



Questions Ahead: Securing the Metaverse and NFTs

Many of the issues and concerns that exist with the internet today—phishing, identity theft, fraud, and so forth—have already made the jump into the metaverse and NFTs, albeit in new forms. And it only follows that sets of entirely new issues will surface as well. Actively thinking about what issues may arise, preparing for them, and envisioning the solutions we can put in place are equally as important as these new technologies themselves. If they can't be used safely and securely, why use them? For example, it's difficult to imagine stepping into a tangible metaverse environment if the online threats within it feel tangible to a degree as well.

With regards to NFTs, will they successfully make the jump to enterprise, medical, scientific, and governmental spheres? And if so, at what scale? And given that NFTs are decentralized, [where will](#)

[people turn when their digital goods are stolen?](#)

As one technology journalist found out, the answer isn't always clear—nor is the path to justice for the culprits. Beyond questions of adoption and security, [the environmental impacts of NFTs must be considered](#) as they demand a massive amounts of electricity to create and maintain, electricity that may come from sources that create pollution and expand our carbon footprint.

With regards to the metaverse, no single company will own it. Which is just the same as no single company owns the internet today. Yet the question remains, which technology companies will control a dominant share of it? Within those digital landscapes, what protections will they put in place to protect people's privacy, security, and identity—along with protections from criminal activity, abuse, bullying, and harassment?

Just as we have mores, policies, and laws that guide people's behaviors in the physical world, what form will they take in the metaverse? Put plainly, the metaverse must be made safe just like any other space where people gather together.





Another aspect of the blockchain technology behind NFTs is that blockchain technology is decentralized, and thus signaling a sort of populist movement that liberates the flow of digital goods and currency. Yet just as the early internet was lauded as being “decentralized,” the majority of blockchain capacity that supports NFTs is held by a few key players. Much like the tech giants that now hold sway over large portions of the internet today and the major institutions that dominate the traditional finance world, a handful blockchain operations dominate NFTs blockchains and mining of cryptocurrencies. Using bitcoin as an example of a blockchain-backed asset, “(t)he top 10% of miners control 90% and just 0.1% (about 50 miners) control close to 50% of mining capacity.” In all, there’s much in the hands of the few at the moment.

Proponents further state that blockchain technology (and the NFTs and cryptocurrencies associated with it) is resistant to hacking and corruption. However, that’s not to say that cryptocurrencies aren’t invulnerable to fraud, hacking, and corruption. They are, just as the

technology journalist mentioned above had his currency stolen and failed to recover it all, despite his best efforts.

Likewise [bitcoin and other cryptocurrencies have fueled ransomware attacks](#), as they are indeed anonymous and difficult to track when push comes to shove. And does it come as any surprise that [stashes of cryptocurrencies have become central in divorce proceedings](#)? Again, because a spouse could potentially squirrel away a tidy sum without their spouse knowing about it.

No question about it. Matters of security, regulation, and simple viability in the marketplace abound. Thus, any excitement we share about what’s ahead should be tempered with a fair share of consideration and sense of caution as well.

Looking Ahead

Collectively, many refer to these new technologies as Web 3.0, the third generation of the internet. Coining such a term acknowledges that we've lived through big changes before, and that means we collectively have some context through which we can view these coming developments.

Consumers, businesses, technologists, and leaders are looking on with interest as the metaverse and NFTs take shape. Yet more are actively taking a hand in shaping and developing their future as well. Along with that are questions, questions about viability, implications of their use, and how these technologies will reshape our lives. Which is a good sign. We have a sense of what to ask. And how to take action.

For some time now at McAfee, we've been talking about the feeling of security. People want to feel safe. They want to know everything's alright. We see the metaverse and NFTs through that lens, because amidst all the change they'll bring, one thing remains constant: people. Whether you're on a smartphone or a VR headset, you're the one connecting to the internet. You're the one enjoying the internet. We believe that you should do that with confidence. Just as we have for years now, we'll protect you with this in mind. We believe you should feel safe and have the tools to stay that way, no matter where your day takes you online.



In the meantime, let's all keep an eye on the potential of NFTs and the metaverse with people's safety and wellbeing in mind.

What's digital has become quite real and will only continue to become more real if these trends indeed take wing. Think about it, your day may take you to all kinds of new and interesting places quite soon. Perhaps even a wedding in a Harry Potter-themed castle...now that'd be something.



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