

# The Metaverse

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First coined in the 1992 cyberpunk novel *Snow Crash*, the word 'metaverse' entered the investment vernacular late last year following Facebook's decision to pivot towards the metaverse opportunity, renaming itself Meta to underline its intent. Other heavyweights such as Microsoft and NVIDIA have also jumped on the bandwagon while a slew of non-technology, real-world companies also announced plans to become metaverse-ready by filing trademarks, buying virtual land and/or acquiring NFT (non-fungible tokens) assets.

### What is the metaverse?

Described by Mark Zuckerberg as "the next chapter for the internet", there is no agreed definition. For some it is the 'digitisation of everything', 'a new platform for the digital age' and, for the hyperbolic, 'the potential to disrupt almost everything in human life'. However, a more useful definition might be

**'a collective virtual shared space, created by the convergence of virtually enhanced physical reality and physically persistent virtual space, including the sum of all virtual worlds, augmented reality and the internet'.**

This shared space would therefore represent an enhanced, upgraded internet, spatially organised with real-time synchronous communication, an evolutionary successor to the mobile internet coalescing around immersive new interfaces such as virtual (VR) and augmented (AR) reality. While this at least helps frame the debate, the lack of an agreed definition reflects both its nascency and its potential scope – like trying to define God, or happiness, it really depends on who you ask.

The decision to spend tens of billions of dollars on the metaverse appears to be a no-going-back moment for Zuckerberg, with the renaming of Facebook resembling the decision by Spanish conquistador Hernán Cortés to burn his ships having landed in Mexico in 1519, eliminating any possibility of retreat. Unfortunately, the Meta pivot has seen Reality Labs' losses at >\$10bn in 2021 with 10,000 people working on VR/AR. While the rename to Meta has been met with scepticism or derision (Hebrew speakers amusingly pointed out that 'Meta' sounds like the Hebrew word for 'dead'), the Zuckerberg vision of the metaverse is certainly OASIS-like in its ambitions.

### Life, the metaverse and everything

In *Ready Player One* (a brilliant, dystopic, science-fiction novel where the metaverse is reimagined as the OASIS), the fortune of James Halliday and his controlling shares of the OASIS are valued at \$240bn. According to Morgan Stanley, our own metaverse might eventually be worth as much as \$7trn. However, for now the metaverse prize is likely to remain in the tens of billions, with the total value of the AR/VR market estimated at \$36bn by 2025 while, incredibly, the value of NFTs traded last year exceeded \$21bn.

In addition, the market for virtual goods, skins and lives in 2021 was \$54bn. In time, this could extend into luxury goods; by 2030, Morgan Stanley believe digital assets could account for 10% of the addressable market, representing an additional \$57bn revenue opportunity. More importantly, **the metaverse presents an opportunity to disrupt and reallocate profit pools associated with the mobile internet.** For instance, the \$170bn spent in app stores (dominated by Apple and Google through iOS and Android respectively) is a likely target, especially for companies like Facebook without an operating system of its own. Finally, we might also consider the value associated with displacing so-called Web 2.0 (mobile internet) winners whose combined market cap was worth \$14.8trn in November 2021.

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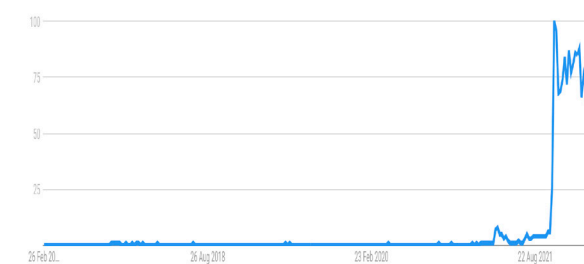
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### Interest in the metaverse (2017 - Present)



Source: Google Trends, 23/2/22

### Mark Zuckerberg x Hernán Cortés - 2021



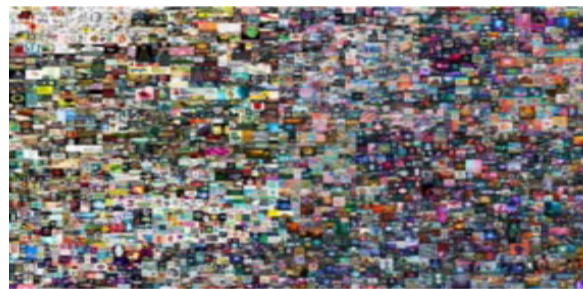
Source: Google Trends, 23/2/22

## A new digital frontier, a new digital goldrush

The size of the prize, together with the asymmetric risk associated with missing out has seen many, varied companies declare an early interest in the metaverse. This includes real-world (non-tech) companies staking claims, including Disney, Nike, Adidas, Sotheby's and even JP Morgan as well as McDonalds and Panera Bread.

However, this virtual land grab is a mere sideshow relative to the action in areas such as cryptocurrency (worth \$3trn in November) and NFTs (a \$40bn market last year, only \$10bn less than the global art market). Not only are these two markets connected by technology but the high end of the NFT market appears dominated by crypto/blockchain 'whales'. The winning bid for a digital work of art – Mike Winkelmann's (aka Beeple) 'Everydays: The first 5000 Days' – was made by a bitcoin billionaire for \$69m, making Winkelmann the third most valuable living artist.

'Everydays: the first 5000 days' by Beeple



**Much of this crypto/NFT frenzy can be attributed to the metaverse** and crypto has the potential to become its system of money. As venture capitalist Matthew Ball states: "For many, the idea of the metaverse is not just intertwined with blockchain; it fundamentally requires it". This reflects the idea that the metaverse will both presage and require **decentralised ownership of the web**, in contrast with today's centralised, closed ecosystems run by Big Tech.

## A metaverse framework

Despite its nascency, a framework for understanding the metaverse is beginning to take shape:

### • 3D interfaces

Necessary to access the metaverse, immersive or 3D interfaces are likely to remain a key focus. Just as smartphones and their operating systems proved critical in the battle to control app stores, so we expect the battle to become a metaverse gatekeeper to be waged through hardware, especially for those companies (like Meta) lacking their own operating system. While the CEO of Unity believes AR/VR headsets will be "as common as games consoles by 2030", mass adoption of the metaverse will "require significantly better immersive experience versus the... mobile internet", at price points that drive mainstream adoption and contain losses ahead of that inflection point.

### • Virtual reality

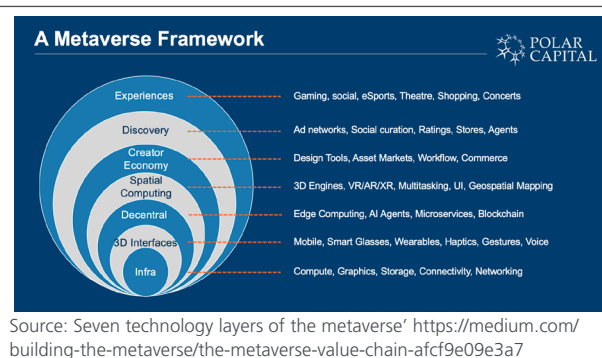
There has been significant improvement in VR headsets since 2011. The original Oculus Rift had 1080 pixel resolution/72 hertz refresh while the latest Quest 2 boasts 4K/90hz. Newer Oculus headsets are also untethered which means they do not require VR-capable PCs or games consoles and therefore can reach much larger potential audiences. Having shipped around 10 million Quest 2 headsets during 2021, Meta currently leads the VR race (ahead of Sony and HTC) with an estimated 60% share. However, greater adoption looks unlikely until VR can become truly immersive. VR technology has a long way to go and, according to Zuckerberg, it will be ready for the metaverse "by the end of the decade".

### • Augmented reality

Rather than creating an alternative to the real world, the vision of AR has always been about using technology to augment life. The CEO of Niantic has described it as wanting to "build a world we want to live in, and not escape from.". To date, this vision has largely been confined to smartphone-based games such as Pokémon Go (2016) which enable digital objects to interact with real-world surfaces using spatial data. Since then, Snap has taken up the AR baton with Snapchat Lenses which allow its users to create Snaps with 3D effects, objects, characters and transformations. Snap believes AR allows it to "contribute to human progress by empowering people to express themselves, live in the moment, learn about the world and have fun together". This message seems to resonate with its Gen Z-skewed user base with more than 200 million daily active users engaging with AR and more than six billion AR Lens players every day.

However, for AR to become immersive and a potential metaverse interface requires wearables. The problem is the pursuit of AR glasses is not new and core technology challenges have yet to be solved. Indeed, most of the technologies at play today have been around for years and have the same limitations. For instance, basic principles of optics "pose major challenges to fully immersive field-of-view on practically sized

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lenses that are so close to the viewer's eye". Battery life represents another meaningful challenge; Snap's newest Spectacles can only manage 30 minutes of continuous use.

Even though Apple CEO Tim Cook has said the technology "doesn't exist" for quality AR glasses today, Apple will not want to miss this market. After all, AR glasses would represent another companion device for the iPhone that adds to the user experience and Apple ecosystem. Apple already sells more than 40 million watches per year (enjoying >50% market share) and an estimated 90 million AirPods per year – a product widely lampooned when first introduced in 2016.

#### • Infrastructure

While we know very little yet about its end-state architecture, the need to deliver large, real-time, shared and persistent virtual environments suggests the metaverse will have the greatest ongoing computational requirements in human history. It will also have to scale to support vast numbers of users and ensure they can interact and enjoy the same game state.

In addition to cloud storage and compute, the metaverse may need to be streamed and/or will require local rendering. Streaming will require large amounts of network/datacentre capacity, while local rendering will be graphic/compute/memory-intensive. In addition, a truly immersive metaverse experience will require near-zero latency which should drive demand for yet more bandwidth, faster connectivity, and edge computing.

#### • Artificial intelligence (AI)

AI is likely to play a pivotal role in the metaverse to power spatial computing. It will also be instrumental in the creative process, helping with storytelling and content creation. Perhaps with this in mind, Apple recently acquired AI Music, a start-up that uses AI to generate personalised soundtracks and adaptive music. AI will also be used to create photorealistic digital humans which can then be published into games and/or the metaverse as avatars. More importantly, AI will power deep-learning GPT (generative pre-trained transformer) models that address natural language processing (NLP). The aim is to help Meta train large models in NLP and computer vision to help build new AI systems that can power real-time voice translations to large groups of people, each speaking a different language.

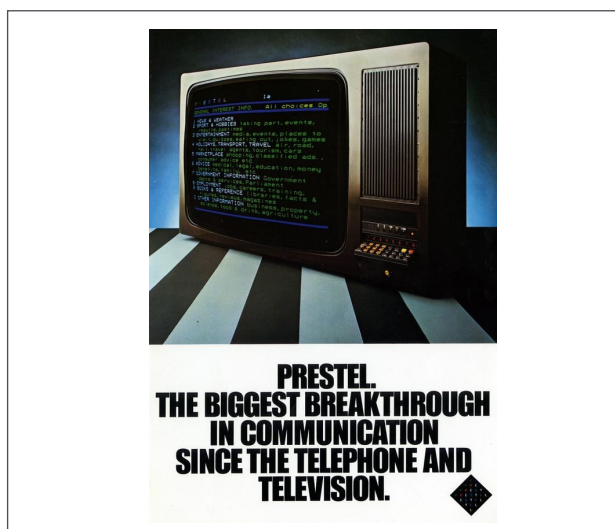
#### Final thoughts

The metaverse is years away and is easily dismissed as little more than a buzzword – or worse, a VR/AR rebranding exercise led by a growth-challenged social media incumbent. However, in time, it could represent the next stage of the internet, not just as a successor to the smartphone but as a **logical next step for humankind and our interconnectedness**.

The past two years have proved an interesting antidote to the pre-Covid world of mass personalisation and societal fragmentation as we pulled together in a wartime-like spirit.

The pandemic showed us we can be apart and together at the same time which is the foundation/vision of the metaverse. Unlike the internet, where you can be online but completely alone, the metaverse aims to deliver the scale, shared experiences and enjoyment of online gaming – aka digital human interaction – into myriad new domains for the betterment of humankind.

Of course, **there is much still to do**. While there are some metaverse buildings block in place today (including cloud infrastructure, broadband, early VR/AR interface, motion tracking tools etc) there are big debates still to be had around privacy, ethics, governance and so on. Like the internet, the metaverse will only be a thing if the network becomes invisible and billions of metaverses are able to synchronise and interact. Until these debates have been concluded, the status of the metaverse is best understood as a pre-www internet which makes Meta's decision to pursue its own metaverse look highly reminiscent of 1970s videotex services like Prestel (UK) and Minitel (France). These early systems all wrongly assumed one single company would build and operate the network, presumably because communications had been perceived as a natural monopoly for almost a century.



For now, we should still resist the temptation to dismiss the metaverse as a buzzword, not because we fear sounding like Larry Ellison, Oracle's former CEO, when he lampooned cloud computing in 2008 ("Maybe I'm an idiot, but I have no idea what anyone is talking about. What is it?").

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It's complete gibberish. It's insane. When is this idiocy going to stop?"), but because the biggest ideas in technology often lurch into the lexicon before they are truly coherent. The narrative may be somewhat ahead of itself, but this is a normal technology response to the enormity of the opportunity. The pandemic has accelerated the adoption of virtual alternatives, but we are all virtual pioneers now. Despite its dystopian billing, the metaverse feels every bit the successor state of a post-pandemic internet.

**Ben Rogoff**

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