

AXA Venture Partners

Metaverse(s)



We invest in great entrepreneurs
We support outstanding companies

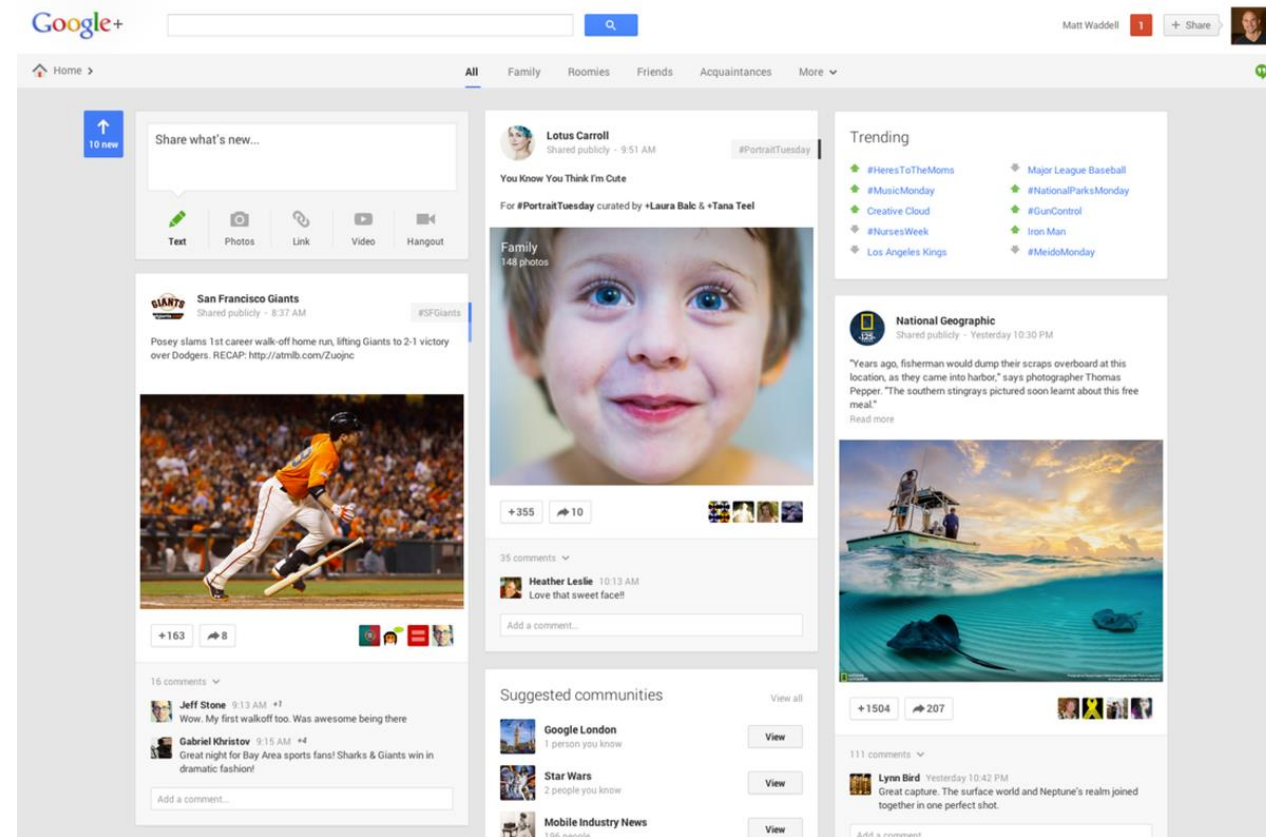
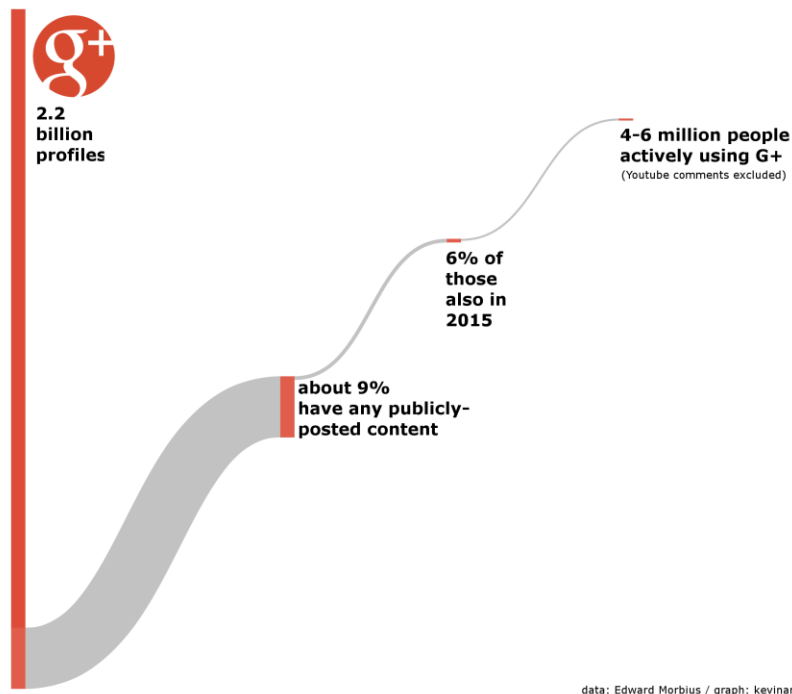
Q2-2022

The strange case of Google+

Google Plus was a huge success. Just not as a Social Network...

...but at what then?

- 90%+ of Google Plus user sessions are less than 5 seconds



“Google+ completely redesigned, now automatically enhances photos and highlights your best shots” – The Verve, May 15 2013

The strange case of Google+ (cont'd)

Despite being hailed as a failure...

... Google+ became GSuite, one of Google's blockbuster products...

- In 2011, Google wanted a share of the growing **social media market**. At the time, they owned Youtube, Gmail, and various other chat services
- In order to make use of all these platforms that were not integrated, Google developed "a social layer across all of Google's services". This enabled Google to merge its users into a single identity across all their platforms
- For the purpose of creating a social media, two of Google's major services were developed: **Google Photos** and **Google Hangouts**. The integration of these services with Android enables users to replicate many of other companies' selling points: Google Hangouts is a competitor to Zoom, and Google Photos offers a similar service to Apple, transferring your photos from one device to another

It was not because it did not have the sales and marketing prowess. But it was because **they failed to understand customers' wants and needs**. There was already a platform like Facebook that connected different people. Google+ wanted people to share everything — their emails, tweets, photos, videos, and thoughts. 30 janv. 2021

<https://uxplanet.org/the-google-plus-story-7ebb3f7d806e>

Why did Google Plus Fail? - UX Planet

À propos des extraits optimisés • Commentaires

<https://www.brainiuminfotech.com> > ... Traduire cette page

Why did Google Plus fail as a Social Network? - Brainium's Blog

11 avr. 2019 — It **failed** because they didn't stick it out. Today, they **SHOULD**, **COULD** AND **WOULD** see a mass exodus from Fascist Book, to **Google+**, if they were ...

<https://onezero.medium.com/why-...> Traduire cette page

Why Google+ Failed. Google Plus didn't fail because... | by Talin

3 avr. 2019 — **Google Plus** didn't fail because Facebook is invulnerable. It **failed** because of deep flaws embedded in it from the very start.



...making it a huge success as a digital identity platform

The trouble with Google

The Trouble with Google is the trouble with Web 2.0...

- Google, and other web platforms where users interact, have a major blindspot: they are **closed universes** (meaning they cannot engage with users outside of their platforms). In addition, most tech giants, despite their dominance, failed to anticipate **major consumer trends** and allowed competitors to flourish: music (Spotify), gaming (Epic Games, Voodoo), streaming platforms (Netflix), non-social network social media (TikTok)
- Google's troubles are the internet's troubles – or, rather, **Web 2.0**. Web 2.0 refers to the “interactive internet”, where platforms have offers ways for users to interact and create content. These platforms, while real breakthroughs, are **not addressing recently developed pain points of the internet** – and are even, arguably, making them worse

...which stems from the increasing complexity and sheer scale of the internet and its giants...

Transferring money on the Web remains very difficult, enabling cryptocurrencies

- High transaction fees on international transfers*
- Gold and the US dollar no longer seen as a safe haven: on May 11 2022, gold was at a three-month low, around \$1,830, when, among other risks, inflation is high*

Transparency, or “on the internet, nobody knows you’re a dog”

- Anonymity and false identities can enable cyber-bullying or fraud, with low barriers to entry*
- In events, paper-based tickets’ lack of traceability can create opportunities for fraud and disable customer analytics*

Tracking Users online is no longer seen as viable marketing

- GDPR severely affected online advertising: companies’ revenue suffered in 83% of cases*
- Third party cookies: c.80% of iOS users deny tracking*
- IOS 14 release: apps will now be required to get permission from the users to use IDFA (Identifier for Advertisers)*
- Further calls for politicians to make self-ownership of data mandatory*

The boundaries of graphics are constantly pushed

- Open Worlds a gaming revolution: (Ubisoft’s Scalar Cloud Technology to make its open worlds bigger)*
- 84% of internet users in the world play video games*
- Realistic fake videos (DeepFakes) – offer both the promise of computer-generated films and the progression fake news*
- Exceptional hardware innovation: First test of a gaming laptop with Arc A730m GPU was done in Asia on June 9, 2022*

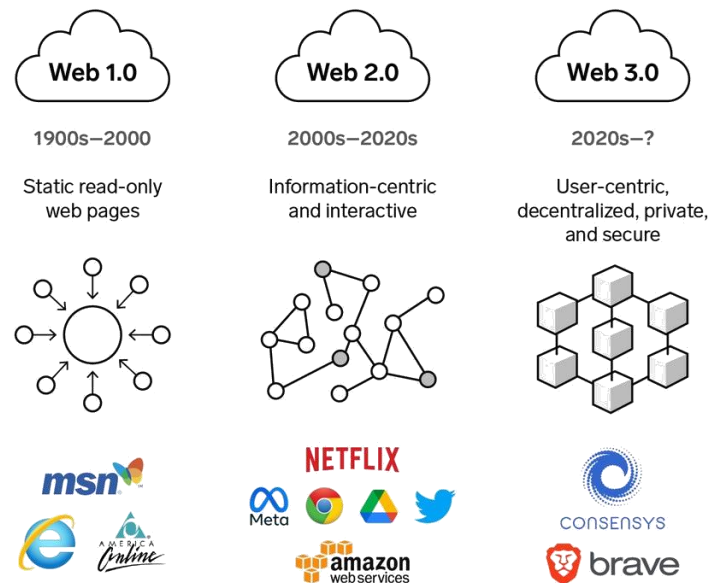
Work and meetings have moved online

- AR/VR revival came from businesses during COVID: global spending on AR and VR headsets, software and services rose in 2020 to \$12 billion, up 50% from 2019*
- Hugely promising new use cases of VR: e.g. online surgeries*

The trouble with Google (cont'd)

- The web3, a concept coined by Ethereum co-founder Gavin Wood, refers to a global solution to “fix the internet”. The idea is to give more power back to users by creating a "decentralised" web, no longer controlled by GAFAM, where they can "transport" their data from one service to another. The idea is, based on the blockchain, to eliminate intermediaries
- The "metaverse" refers to the “window” of this new approach: the user interface through which we interact with the online world, communicate with other users and manipulate data. The word "metaverse" is a contraction of "meta universe", a term encountered in Snow Crash, by author Neal Stephenson. In this novel published in 1992, citizens use digital avatars to explore an online virtual world - a way for them to escape reality
- Covid has laid out the bases for evermore virtual lives: individuals have spent more time on the Internet, telecommuting has multiplied online exchanges and meetings, remote social relationships have become the norm. Some content was created online-first: in music, French DJ Bob Sinclar has gathered up to 6 million viewers on a live session of funk music on Facebook, and South Korean pop band BTS gathered 1.33m paid users in online concerts

Evolution of the web from 1.0 to 3.0



What are the core features of a metaverse (based on components from a16z's analysis)?

Decentralisation

➔ Not owned or operated by a single entity or at the mercy of a few powerbrokers

Property rights

➔ Owning instead of renting items

Self-sovereign identity

➔ Controlling your identity and authenticating without a centralised intermediary

Composability

➔ Every software component only needs to be written once and can be reused

Openness/open source

➔ Making code freely available and able to be redistributed and modified at will

Community ownership

➔ All stakeholders have a say, proportionally to their involvement, in the governance of the system

Social immersion

➔ More than hardware, what matters is the type of activities metaverses enable

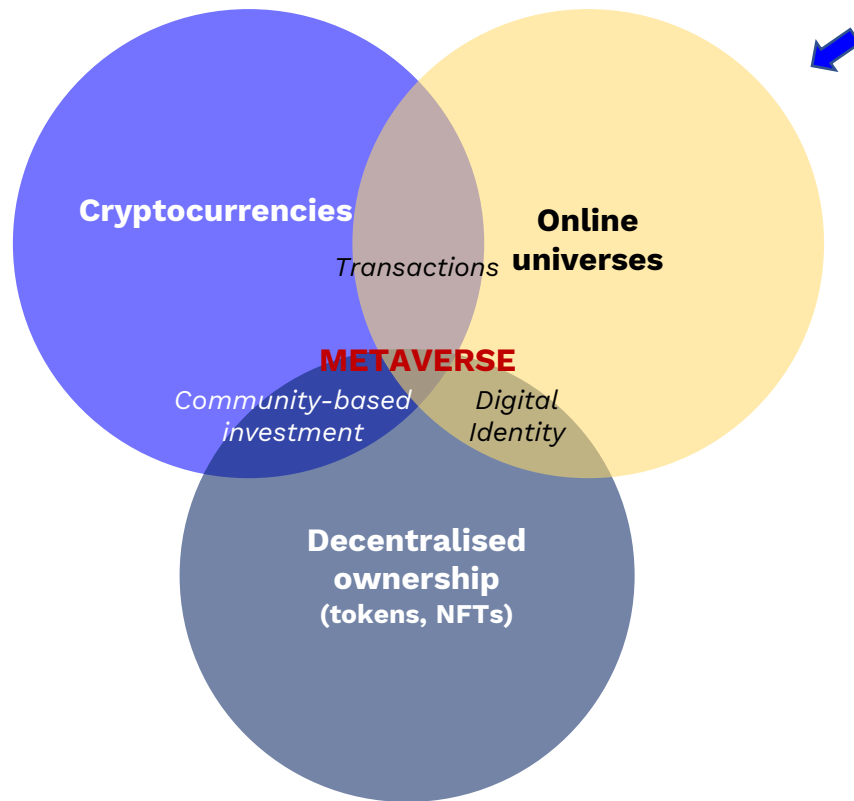
The “metaverse” refers to the extension of our offline lives to the online world, rather than to a digital universe...

TREND	Cryptocurrency	NFTs (Non-fungible tokens)	Gaming	Enterprise metaverse	Infrastructure	Marketing+	VR / AR
PROBLEM SOLVED	Convenience & Desintermediation	Traceability and digital ownership	Gaming as the New Media	Online migration of business	The « enabling glue » of blockchain assets	Traceability and digital ownership	Hardware
KEY FACTS	<ul style="list-style-type: none"> Cryptocurrency trading platforms that maintain security, liquidity and enable safe and efficient deals with anyone, anytime and anywhere Crypto-as-a-Service: white label solutions for financial institutions or enterprises 	<ul style="list-style-type: none"> NFT marketplaces: collection and exchange of luxury, art, music single assets Smart contracts (algorithm-arbitrated agreements) NFT ticketing solutions 	<ul style="list-style-type: none"> Play-To-Earn: create a redistributive system & monetise content Interoperable player profiles Collaboration between players and developers Cloud gaming enables extremely high performances anywhere Gaming is already 5x bigger than movies 	<ul style="list-style-type: none"> Gamification for consumers, staff and training to increase engagement Content distribution and personalization Event management and sponsorship Digital marketing 	<ul style="list-style-type: none"> Developer of secure decentralized infrastructures (for IoT, apps...) Better connect different critical infrastructures to automate processes and increase data collection Create standards (such as NFT contract templates) 	<ul style="list-style-type: none"> Guarantee the ethics and the authenticity of articles and fight against counterfeiting (ex: luxury) Carry out virtual transactions of hardware products (real estate) Smart Green Cities management (information to control organic waste, urban traffic...) 	<ul style="list-style-type: none"> Visual computing service platform capable to adapt to various application scenarios Holograms VR/AR for health both for patients (remove pain, psychology treatment) and for practitioners (formations...)
SAMPLE START-UPS							
AVP THOUGHTS	<ul style="list-style-type: none"> Cryptocurrencies, sometimes hailed as protection against inflation, are correlated with tech stocks – as demonstrated by the recent crisis Legacy players (banks/retail/insurance) are warming up to cryptos, but cryptos are still very early (0.36% of all fiat currencies in 2019) 	<ul style="list-style-type: none"> While unprecedented volumes of NFT sales have been reached in 2021, spending volumes have now dropped significantly, from \$3.9bn to \$964m While NFTs are interesting as pseudo-avatars, our view is that most of the use cases of 2021 are speculative (art, BoredApes) 	<ul style="list-style-type: none"> The metaverse offers a great promise for gamers: offer the ability to transfer data, digital items and content, won or bought, from one game to another. This could also, as a first step, be across “same-universe” games (e.g. Pokemon) The metaverse, for communities of fans, provides a way to engage further (through, for example, ability to monetise user generated content) 	<ul style="list-style-type: none"> The most well-known early manifestations of the metaverse in enterprise are “Digital Twins”, digital representations of buildings or assets, which prompted Satya Nadella to describe Microsoft as a “Metaverse”. We believe that while the world itself plays on the hype, digital twins show real promise 	<ul style="list-style-type: none"> While the concept of blockchain itself is easy to code, proof of work or proof of stake are difficult to implement, prompting “off-the-shelf” frameworks to emerge These platforms are key to launch decentralised applications and will remain central to the ecosystem – perhaps even reaching monopoly status Infrastructure, as in servers, remain very much a Web 2.0 domain: governments or companies can shut down servers, as well as public cloud 	<ul style="list-style-type: none"> Many niche solutions to solve well-known customer traceability issues, as loyalty programs. However, none of these solutions have managed to reach scale yet and it is unclear what market size they can capture Real estate tokenisation a promising trend, but will need government action in many countries (as existing processes are very regulated) Most use cases extremely early 	<ul style="list-style-type: none"> AR as the new “mobile”: what makes the smartphone successful is that no other device in history has done so many things at once for users. It follows that AR is more valuable than VR – as AR is a separate world, whereas VR augments the world where users live

... but remains today a Fintech-first ecosystem with more innovation being made on the financial side than on the universe side

Today's metaverse is powered by blockchain, as it enables cross-worlds portability in currencies and community-owned digital services...

...explaining why these concepts go together and why it is today, a fintech-first ecosystem



Counterintuitively, online universes are the least mature element of the metaverse

Best of the metaverse



Best of gaming



- **Gaming is a far more mature market than the metaverse** and already a much bigger media than film, with gaming boxing in \$109bn revenue in the US in 2020, vs. \$40.6bn box office revenue in the US in 2017
- In essence, **digital universe + economy = metaverse**
- **Gaming investments** have been a large part of the share of VC funds allocated to the metaverse (7.5bn\$ out of the 10.4bn as of Nov 2021), but they **tend to be « fintech-like » products**: for example, the company Tiv provides banking and rewards for games, and many companies (like Immortal.Game or Sorare) provide investment-like products such as NFTs or tokens
- In particular, **play-to-earn mechanisms have been popular especially for mobile games** that have always struggled to get users to pay
- **Despite the recent sell off, crypto-currencies based on the metaverse have fared much better than bitcoin** (as of June 2022, SAND, the Sandbox's cryptocurrency, is still x4 its price a year ago, and AXS, Axie Infinity's cryptocurrency, is at x5)
- The examples above illustrate that many Web 3.0 innovations are **not recent technology innovations** (the blockchain has been around for 15+ years) but rather a combination of technologies applied in a different way



Blockchain is a technology that allows information to be stored and transmitted transparently, securely and without a central control body. It resembles a large database that contains the history of all exchanges made between its users since its creation.

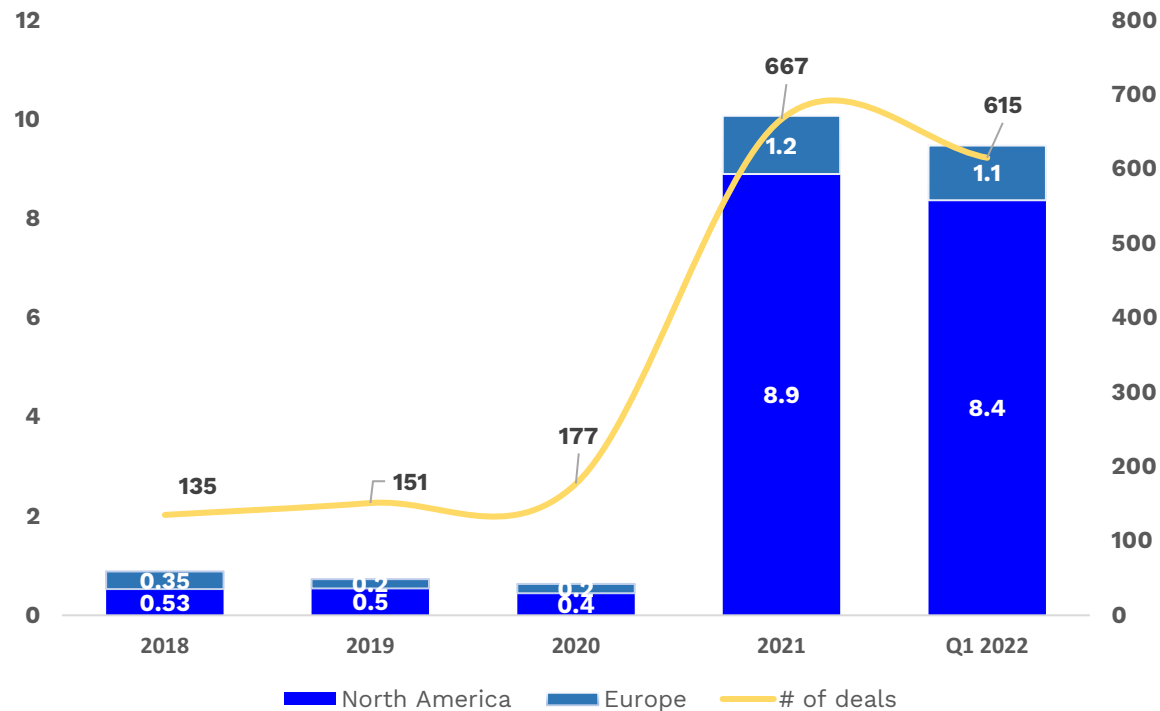
Decentralized platforms are platforms whose control and decision-making have been transferred from a centralized entity (individual, organization, group thereof) to a distributed network (the platform is thus managed by users).

An online universe is a universe created artificially by computer software and can host a community of users present in the form of avatars with the ability to move and interact.

Consequently, most investments in the metaverse today have manifested through active investor activity in blockchain companies...

Investments in blockchain are growing exponentially...

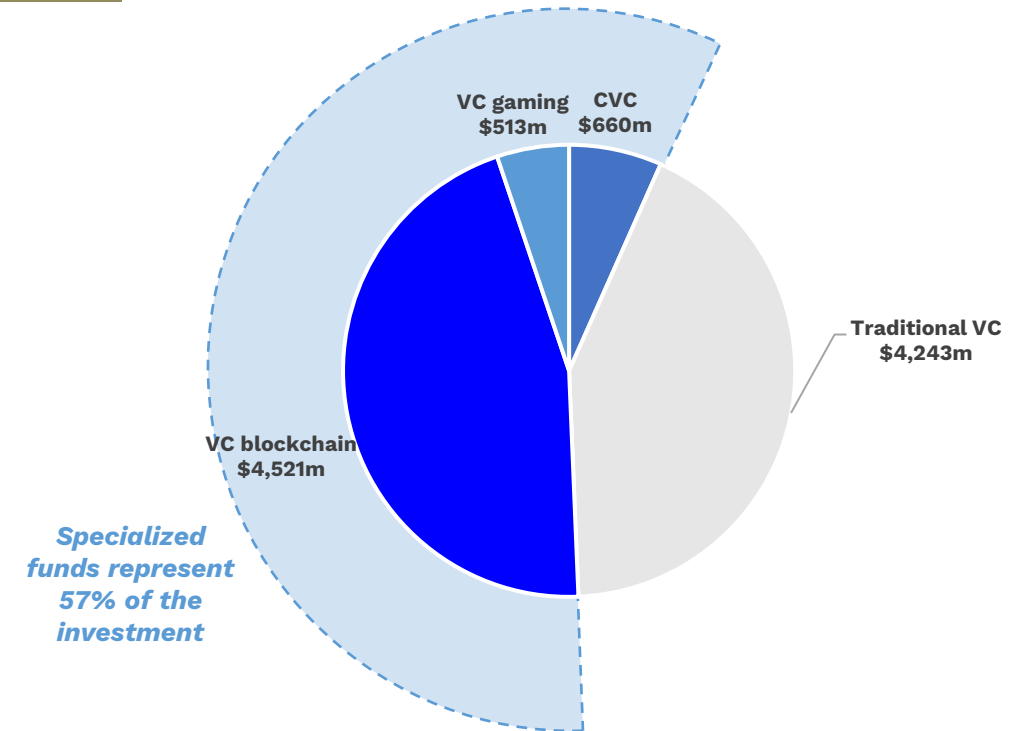
Europe & North America VC investments – Blockchain (in \$bn) ¹



... but investments still come mainly from blockchain investors

- Investors have spent nearly \$11bn on blockchain in January-April 2022, but most investment went from funds specialized in blockchain or in gaming.

January to April 2022 VC deals in blockchain by investor type (Europe, US) ²
















- CVC activity is less developed than in equipment-intensive industries (mobility, energy...)

...and investment round sizes have exploded...

Top 2022 Blockchain Rounds

Main Blockchain startups funding rounds (\$m, 2022, Europe / US / HK)

Company		Lead	Amount (in \$m)	Last pre- money valuation	Date	Description
 MoonPay	UK	Tiger Global	555	2,850	Apr-22	Payment platform and infrastructure for cryptocurrency transactions
 ConsenSys	US	ParaFi Capital	450	6,650	Apr-22	Blockchain technology-based platform for more powerful financial infrastructure
 BAHUYC	US	Animoca Brands, Andreessen Horowitz	450	3,550	Mar-22	Cartoon characters designed to auction them in exchange for cryptocurrency
 Fireblocks	US	D1 Capital, Spark Capital	550	7,450	Jan-22	Blockchain security platform designed to protect digital assets on the network
 FTX	US	SoftBank	500	7,600	Jan-22	Cryptocurrency derivative exchange platform
 Alchemy	US	SilverLake, Lightspeed Venture	250	10,200	Feb-22	Blockchain development software for developers to create mainstream blockchain applications
 Circle	US	BlackRock	400	n/a	Apr-22	Cryptocurrency-focused financial technology to exchange crypto assets
 NEAR	US	Tiger Global	350	n/a	Apr-22	Blockchain protocol to bridge the adoption gap for mainstream commercial apps
 COMPUTENORTH	US	Mercuria Energy AM, Generate	385	n/a	Feb-22	Blockchain infrastructure and hosting services intended to power operations
 LUNAR	US	Heartland, Kinnevik, IDC, Tencent	€280	€1,720	Mar-22	Digital banking application to facilitate online money transfers and payments
 BINANCE	HK	Beacon, Circle and others	200	4,500	Mar-22	Digital asset marketplace
 APTES	US	Andreessen Horowitz	200	800	Mar-22	Blockchain network that gives access to decentralized assets for developers
 BLOCKDAEMON	US	Tiger Global	207	3,040	Jan-22	Node management platform to efficiently manage blockchain applications

Source: Pitchbook, Crunchbase, AVP analysis

Top 2021/2022 M&A deals and Corporate activity


Blockchain M&A sample (\$m, 2021-2022, Europe/US)

Target		Acquirer		Deal Size	Total Raised	Date	Description
 BTC.com	US	 BTCM	US	1,330	-	Apr-21	Bitcoin mining pool, blockchain explorer and bitcoin wallet
 wyre	US	 Bolt	US	1,500	27	Apr-22	Blockchain-based payment tool
 Mirror	US	 polygon	IN	400	2	Déc-21	Open-source platform that helps users verify transactions
BITFIELD	NE	 NORTHERN DATA	GE	400	n/a	Sept-21	Bitcoin mining operator
 simplex	IS	 nuvei Payment Technology Networks	CA	250	9	Sept-21	Bitcoin payment processing technology
ALLEGRO	UK	 DHS	UK	575	n/a	Aug-21	Trading firm focused on digital assets
 Hermes	SW	 polygon	IN	250	n/a	Aug-21	Decentralized cryptography-based software for payments and token transfers
 BitGo	US	 GALAXY DIGITAL	US	1,200	70	To come	Digital asset management platform

New funds from reputable brand names are destined invest in blockchain and Web3

VC	Country	Amount (in €m)	Date	Notorious Investments
 BINANCE LABS	Hong Kong	500	May-22	Forbes, Sky Mavis, Terraform Labs, Fantoken
 BainCapital	US	560	Mar-22	BlockFi, Coin DCX, Compound Finance, Crusoe, Digital Currency Group
SEQUOIA 	US	600	Feb-22	Zoom, Apple, FTX US, Airbnb, Stripe
HAUN	US	1,500	Mar-22	Zora Labs, Highlight, TaxBit
 	FR	110	Jun-22	Owkin, Ledger, Glovo, Heetch
	US	65	Feb-22	Hashflow, Pstake, Acala, Blockdaemon, Anchorage, Messari
al6z	US	600	May-22	Facebook, Asana, Pinterest, Airbnb, Coinbase, Github

...so much that there are, instead of a Metaverse, a variety of Metaverses-as-platforms – most of them parallel economies

	Company		Lead		Amount (in \$m)	Last pre- money valuation	Date	Description	Token
 Metaverses	Gaming/ Entertainment		AG		98	102	Aug-21	Provider of virtual reality social multiplayer gaming experiences	\$SAND (Ethereum)
			US		100	n/a	Feb-22	NFT-based media intended to decentralize entertainment content creation	Punks Comic NFTs + Founder DAO (giving voting rights)
			HK		20	n/a	Mar-22	Developer of play-to-earn gaming platform	\$CHICKS (Solana)
			AR		26	n/a	Jan-20	Virtual gaming platform that allows users to create, experience, and monetize their content.	\$MANA (Ethereum)
			PHL		10	n/a	Jan-22	Developer of a blockchain technology platform designed to integrate player-built economies through a custom API toolkit	\$BREED
			Vie.		9	n/a	Oct-21	Interactive play-to-earn game similar to Pokemon that allows players to battle and trade NFT pets	AXS
	Finance		US		49	123	Feb-22	Operator of a Metaverse ecosystem intended to invest, manage and develop assets	None, but only accessible in ETHER (Ethereum)
	Identity and social media (B2C)		CA		7.5	n/a	Jan-22	Developer of unified decentralized identity and credit network designed to provide identity across all application layers and enable personal monetization in the metaverse	ISME
			US		6	n/a	Jan-21	Star Atlas is a virtual game where players create avatars, play, and earn incentives in the 3D virtual space.	ATLAS
	Digital Twin / Infra		FR		21	70	May-22	Issues digital ownership and authenticity certificates on behalf of partner brands.	\$ARIA20 (Ethereum, POANetwork)
			UK		n/a	n/a	n/a	Platform to incentivize real-world data acquisition through users' cameras	NTXT (not launched yet)

→ The only existing link between these platforms (if any) is through financial exchanges through stock-market-like platforms (e.g. Uniswap) or the NFTs they sell on common platforms (OpenSea)

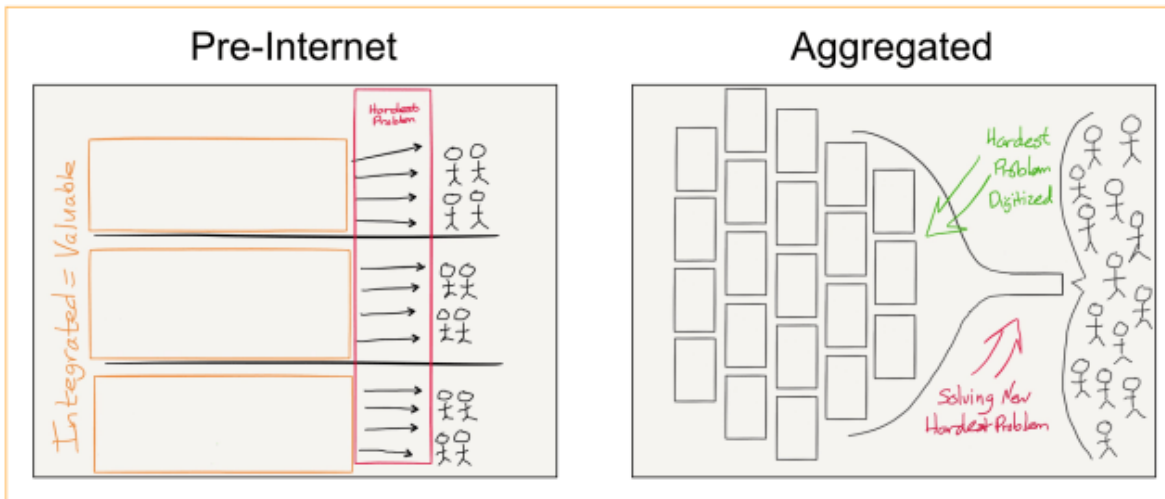
And in this flurry of options, who watches the watchmen?

Security	➔	What about the many cybersecurity attacks?	<i>In the cryptocurrency space, growth can happen quickly and explosively. Due to high market fragmentation, concentrated ownership (most cryptocurrencies are owned by a small number of people), market manipulation is easy and multi-billion-dollar cyber attacks occurred in 2021. When it comes to securing and tracking crypto-currency activity, there is still work to be done.</i>
Use cases	➔	How big are the use cases beyond gaming/VR?	<i>Beyond gaming and tradable goods between games, most use cases are still very early. The most advanced use case of blockchain is bitcoin and cryptocurrencies, with most other use cases remaining niche. Beyond gaming, it is doubtful whether virtual universes will develop (the post-COVID world having shown, for example, that virtual events are a smaller market than expected)</i>
Markets	➔	What's the real value of a token, of a cryptocurrency?	<i>If we try to value a cryptocurrency as a fiat, its value is zero. It is actually the associated blockchain that provides the crypto-currency with its real value, not its properties as a currency. So the question to ask is what is the value of the blockchain and it should be valued as a digital platform business. Jan Damsgaard (Department of Digitalization, Copenhagen Business School) has shown that using this approach, the price of several crypto-currencies (Bitcoin, Ethereum...) have a low price compared to their commercial potential and application area.</i>
Disputes, IP & Law	➔	In order to transact, you need marketplaces so centralisation is natural thanks to network effects.	<i>In order to democratize cryptography and make it more accessible to the masses, it is important to further centralize the industry: there would be more control and users will be protected from themselves and from all forms of scams. Many people are terrified that the slightest mistake in the recipient's address can lead their \$10,000 NFTs to another user without any return. Users are not immune to this situation, and in this case, no middleman can help. But the most committed in the industry are very committed to the principle of decentralization.</i>
	➔	If you disagree with an algorithm, you can still call a lawyer	<i>There is a misconception that Smart Contract negate the risk of litigation in front of courts. Disputes will arise and will be the jurisdiction of national courts – as in any contract. Further, Contract Law is itself regulated and clauses from common Smart Contracts could be made illegal (e.g. as in a worker cannot renounce worker rights by contract, or home-owners cannot forbid tenants from owning pets in certain countries)</i>
Regulation & Self-regulation	➔	Can you own the digital version of an object without the physical version of that object?	<i>NFTs are probably not protected by copyright because they do not meet the basic criteria for copyright protection. They essentially represent data on a blockchain, which would not constitute an original work of authorship under intellectual property law. There are currently no legal regulations on the subject.</i>
	➔	Who will create standards?	<i>“Privacy and safety need to be built into the metaverse from day one. So do open standards and interoperability. This will require not just novel technical work — like supporting crypto and NFT projects in the community — but also new forms of governance. Most of all, we need to help build ecosystems so that more people have a stake in the future and can benefit not just as consumers but as creators.” (Facebook, Founders Letter, Oct-21)</i>
	➔	Who will watch that companies abide by these standards?	<i>Today, there are very few standards regarding blockchain and the industry needs to be framed and standardized to ensure trust in the technology. In France, AFNOR has started to address the issue. The European Commission is also looking to play an active role in the blockchain standards community, engaging and working closely with all relevant bodies around the world.</i>

Source: <https://www.techtarget.com/searchsecurity/feature/Cryptocurrency-cyber-attacks-on-the-rise-as-industry-expands>
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4034312
<https://www.cointribune.com/tribunes/tribune-des-lecteurs/ceo-draftkings-centralisation/>
<https://coinyuppie.com/viewpoint-the-aggregation-field-of-web3-will-burst-into-great-value-in-the-future/>
<https://www.journaldugeek.com/2022/03/22/nft-et-droit-dauteur-qui-est-vraiment-le-propretaire-dune-oeuvre/#:~:text=Comme%20pour%20un%20tableau%20classique,licences%20limit%C3%A9es%20sur%20leurs%20NFT.>
<https://digital-strategy.ec.europa.eu/en/policies/blockchain-standards>
<https://about.fb.com/news/2021/10/founders-letter/>
<https://www.nortonrosefulbright.com/en/knowledge/publications/ea958758/arbitrating-smart-contract-disputes>

This can be solved in two broad ways: the Google+ of the metaverse will be either based on Aggregation or Interoperability – with the latter being the “true” vision of Web 3.0

Aggregation: Web 2.0



- The internet had developed by **creating trust between users through aggregation**: services that were previously fragmented are commoditised and provided in a single offering focussed on customer experience
- In terms of ownership, current decentralised platforms remain **concentrated on founders** – thus not capitalistically decentralised.
- If trust is insufficient, a centralised marketplace could emerge and solve the issues of trust and customer experience – thus **commoditising metaverses** and re-creating the current model of Web 2.0
- Further, as a lot of services in the Web 3.0 are based on a lack of trust in institutions, the paradoxical outcome could be a **“centralised decentralised” platform, privately owned**
- **Hardware centralisation** could mean that true decentralisation doesn’t happen: servers and public clouds are still single points of failure and will remain so unless distributed ownership is found in hardware as well as software

AVP

Interoperability: Web 3.0



- **If metaverses become truly interoperable, it would achieve the ultimate vision of Web 3.0**: user-centric, decentralized, private, trust based on blockchains
- It no coincidence that Bitcoin started with **political communities of libertarians** – the decentralised vision of the internet that Web 3.0 illustrates stems, in a large part, from political projections of society and trust in institutions to the internet.
- **There is no existing protocol that allows metaverses to communicate between each other**, and we are moving towards a metaverse landscape where many of them will co-exist. The solutions that do exist are very early and have raised small amounts of money
 - MetaMetaverse, a company that helps developers create their own metaverse, which will then be linked with others, has raised \$2m in Mar-22.
- **Interoperability protocols already exist within the cryptocurrency ecosystem**: they allow user to trade cryptos between blockchains, get the best price across protocols (e.g. Polkadot). However, In 2021, Investments in interoperability accounted for **less than 3% of Blockchain investments**

Appendix

What are the core features of a metaverse (according to a16z)?

Decentralization	➔	Not owned or operated by a single entity or at the mercy of a few powerbrokers	Centralized platforms tend to start friendly and cooperative to users and developers, but once growth slows they become competitive, extractive, and zero-sum in their relationships. Often these powerful intermediaries engage in user rights abuses and de-platforming, and they host captive economies with aggressive take-rates. Decentralised systems, on the other hand, exhibit more equitable ownership among stakeholders, reduced censorship, and greater diversity.
Property rights	➔	Owning instead of renting items	Most successful video games today make money by selling in-game items, like “skins”, “emotes”, and other digital goods. But people who currently buy in-game items aren’t actually buying items, they’re renting them. As soon as anyone leaves for a different game or the game in question unilaterally decides to shut down or switch up the rules, players lose access. True digital property rights weren’t possible before the advent of cryptography, blockchain technology, and related innovations such as NFTs.
Self-sovereign identity	➔	Controlling your identity and authenticating without a centralised intermediary	On the web today, authentication requires asking an intermediary through the form of popular one-click login methods like social login or single sign-on (SSO). Big tech platforms like Meta and Google use this approach to collect data to build their businesses: monitoring people’s behavior to develop models that serve more relevant ads. The cryptography at the core of web3 enables people to authenticate without relying on these intermediaries, so people can control their identity directly or with the help of services they choose.
Composability	➔	Every software component only needs to be written once and can be reused	To feature composability, a concept closely intertwined with interoperability, a metaverse would have to offer high quality, and open, technical standards as a foundation. In games like Minecraft and Roblox, you can build digital goods and new experiences out of the basic components supplied by the system, but it’s harder to move them outside that context or modify their inner workings. Companies offering embeddable services, like Stripe for payments or Twilio for communications, work across websites and apps but they don’t allow outside developers to change or remix their black boxes of code.
Openness/open source	➔	Making code freely available and able to be redistributed and modified at will	The best programmers and creators (not the platforms) need full control to be fully innovative. Open source, and openness, helps ensure this. When codebases, algorithms, marketplaces, and protocols are transparent public goods, builders can pursue the fullness of their visions and ambitions to build more sophisticated, trustable experiences.
Community ownership	➔	All stakeholders have a say, proportionally to their involvement, in the governance of the system	Community ownership is the piece of the puzzle that aligns network participants (builders, creators, investors, and users) to cooperate and strive for a common good. This miracle of coordination is orchestrated through the ownership of tokens, the native assets of networks. This allows for communities that are governed, built, and driven forward by their users, rather than by a single entity.
Social immersion	➔	More than hardware, what matters is the type of activities metaverses enable	A metaverse does not have to exist in VR/AR. All that’s necessary for a metaverse to exist is social immersion in the broad sense. They will let people remotely hang out, work together, mingle with friends, and have fun, much like they do using Discord, Twitter Spaces, or Clubhouse today. The pandemic underscored the need for more immersive experiences as the use of other remote conferencing and telepresence tools, like Zoom and others, soared.



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