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2022 Year Review and 2023 Year Ahead

December 2022

Research and Insights

Crypto.com Research and Insights Team

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Summary

In this special year-end report, we selected the top 10 events and developments of 2022, followed by our outlook for the key trends in 2023.

Looking back at 2022, the crypto industry witnessed both impressive milestones and tumultuous times. We applauded the successful transition of Ethereum to proof-of-stake via *The Merge* and celebrated the milestone of 400M crypto retail adoption. In the meantime, against the backdrop of challenging macroeconomic conditions globally, we saw a drop in market volumes as well as a few high-profile bankruptcies. In hindsight, 2022 was an interesting year, to say the least.

That being said, regardless of the highs and lows of the market or global economy, innovations and developments continued in the crypto industry. In 2022, the builders have been hard at work as usual: they have kept growing layer-1 and layer-2 ecosystems, introducing new use cases to NFTs, brainstorming creative ways to construct digital identities and more.

Looking ahead to 2023, we are optimistic that crypto adoption - both retail and institutional - will continue growing at a steady pace. We are excited about new infrastructure developments and how they would make blockchains more scalable, such as modular blockchains and the advancement of parallel processing. We are also watching out for more utility-based use cases to emerge in DeFi, as well as the birth of higher-quality blockchain games, including AAA titles. We remain bullish on Web3 and look forward to seeing more innovations around digital identity and social networks. Finally, 2022 was a reminder to everyone that security sits at the foundation of any business. We are hopeful that companies and projects will continue investing in strengthening their security, together with educating users to empower them in making informed decisions.

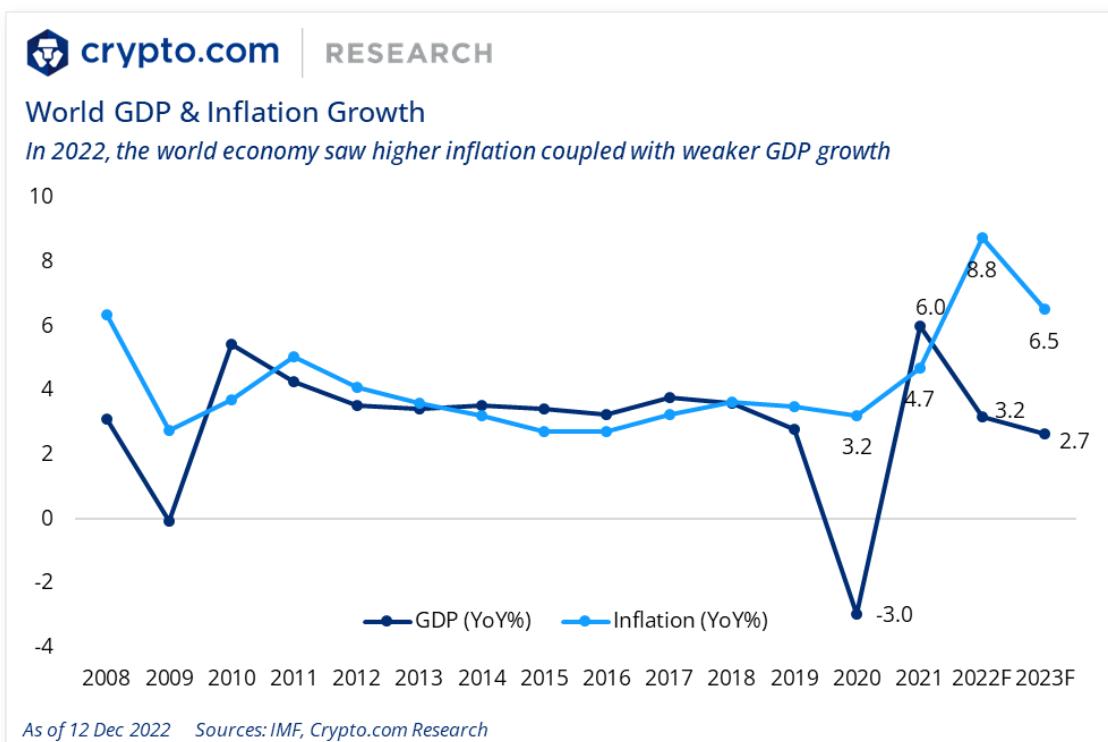
Last but not least: we are very grateful to our community for reading our publications and sharing valuable feedback. We look forward to bringing you more quality research and insights in the coming year.

1. 2022 Year in Review

In this section, we curate the top ten events of 2022.

1.1 Macroeconomy & Market Cycle

In 2022, the global economy struggled under macro and geopolitical headwinds. We saw monetary tightening by central banks around the world to combat inflation, the conflict in Europe, supply chain disruptions, and lingering effects of the COVID-19 pandemic. As a result, the expected global GDP growth in 2022 is 3.2%, a sharp drop from ~6% in 2021. Meanwhile, the annual growth rate of inflation continued to increase, reaching 8.8%.



Considering the challenging macro environment, most asset classes delivered negative returns year-to-date, as illustrated in the chart below. **Bitcoin (BTC)** and **Ethereum (ETH)** underperformed other asset classes such as gold and equity.

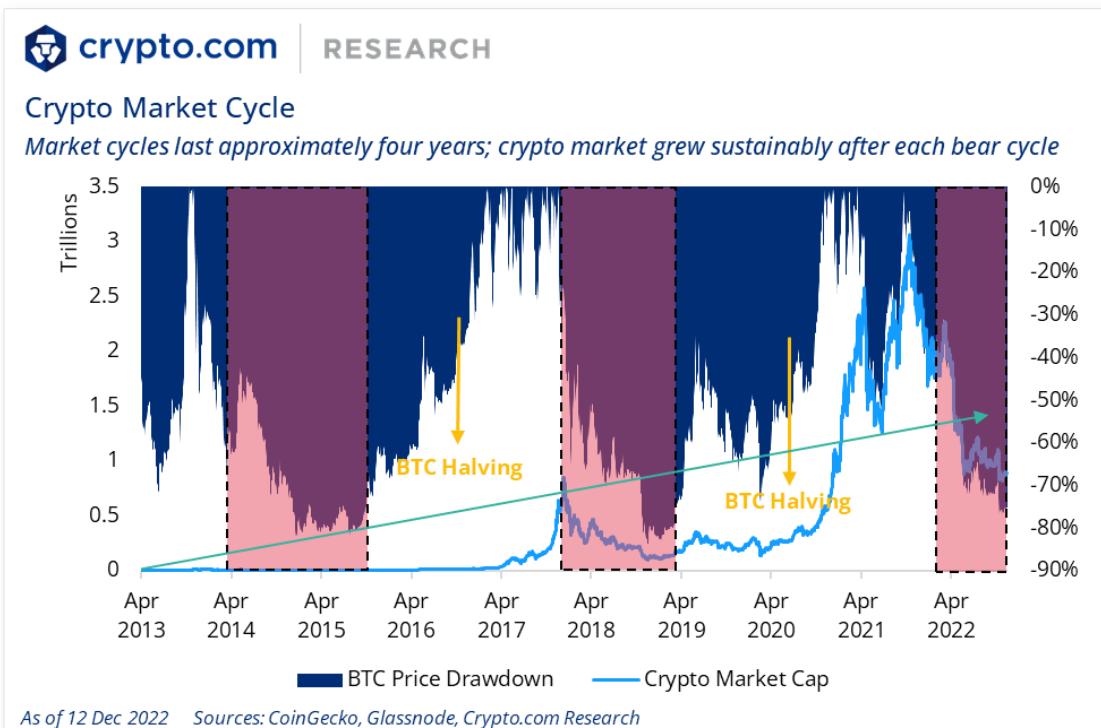


2022 Year-to-Date Performance of Asset Classes



As of 7 Dec 2022 Sources: Crypto.com Research, TradingView

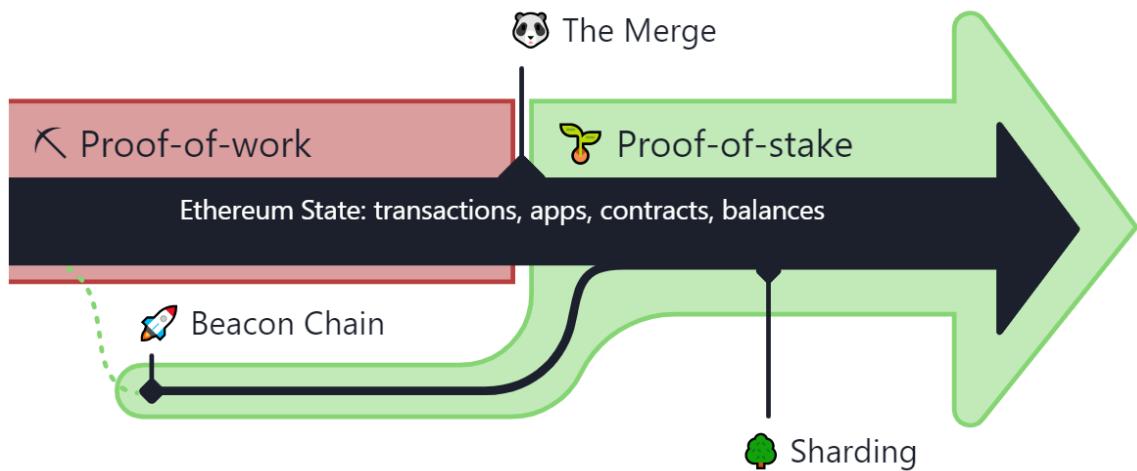
In addition to macro headwinds, the crypto market was also negatively impacted by several events, notably the **Terra stablecoin (UST) collapse** in May and the **FTX bankruptcy** in November. Both events and the subsequent fallouts produced ripple effects, which affected other players in the ecosystem, and dampened confidence in the sector. It's arguably still "Crypto Winter" at the time of writing. That being said, it is natural for market cycles to fluctuate between bearish and bullish periods, as indicated by the graph below.



Read more about crypto bear markets in our report [Crypto Bear Markets - A Detailed Analysis.](#)

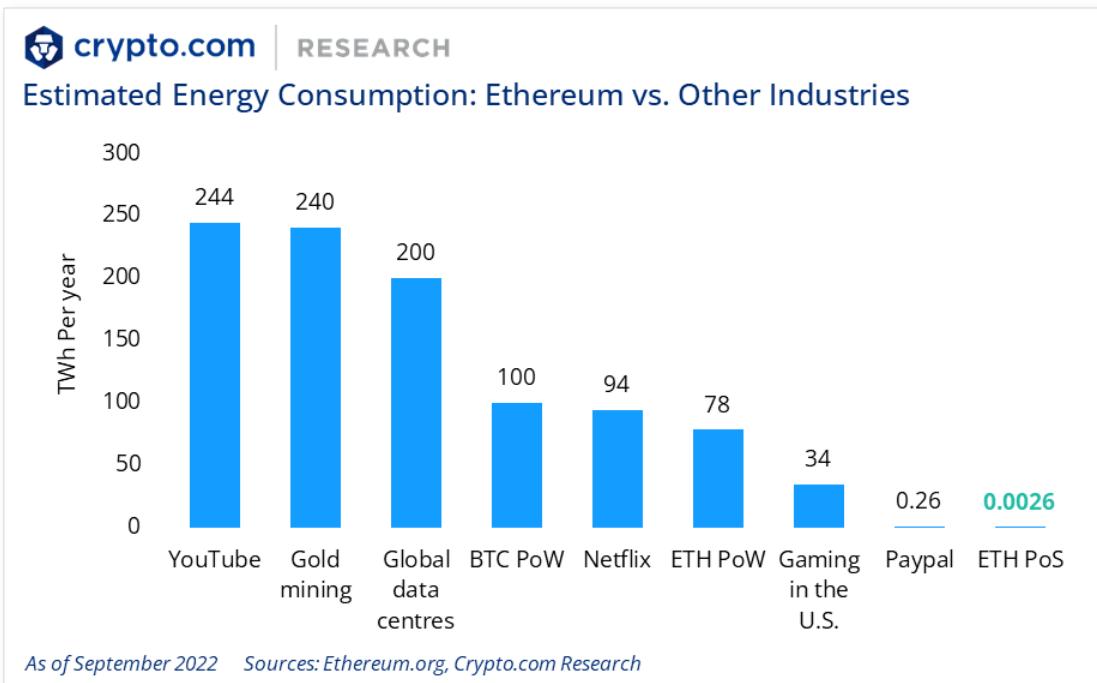
1.2 The Merge

Ethereum's Merge is widely considered one of the most anticipated crypto events this year. Completed on 15 September 2022, The Merge witnessed the final step of the Ethereum blockchain's transition to a proof-of-stake (PoS) consensus mechanism from proof-of-work (PoW).



Source: Ethereum.org

One of the positive effects of The Merge is that Ethereum's energy consumption dropped by a whopping 99.95%, as PoS does not require the energy-intensive mining rigs of proof-of-work (PoW). Instead, PoS blockchains rely on validators to verify the transactions. The PoS Ethereum blockchain's energy consumption is estimated to be roughly 1% of PayPal, and orders of magnitude smaller than PoW networks.



From an end user's perspective, The Merge did not drastically change their experience transacting on the Ethereum network. For example, gas fees have not changed materially after The Merge. Rather, The Merge sets the stage for future upgrades to increase the scalability of the Ethereum blockchain. For a more detailed analysis of the impact of The Merge, please read our feature report, [Ethereum: The Merge](#).


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Future Roadmap of Ethereum

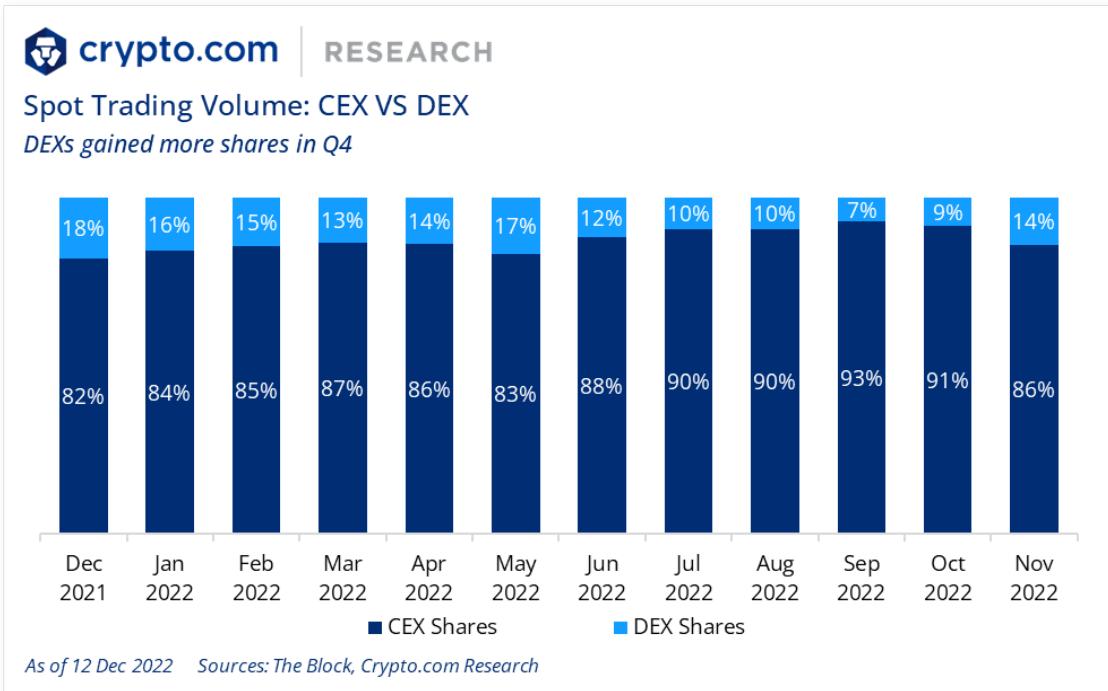
More upgrades are incoming

The Surge	Scalability increases for layer 2s through sharding
The Scourge	Reliable and credibly neutral transaction inclusion, and to avoid centralisation
The Verge	Statelessness through Verkle trees
The Purge	Eliminating certain historical data
The Splurge	Miscellaneous upgrades to simplify the use of Ethereum

Sources: Vitalik Buterin (Twitter), Crypto.com Research

1.3 Centralised & Decentralised Exchange

Following the bankruptcy of FTX in late 2022, we saw decentralised exchanges (DEXs) take up a higher share of total crypto spot trading volume. As of November 2022, DEXs took up 14% of spot trading volume, compared to 9% in October.

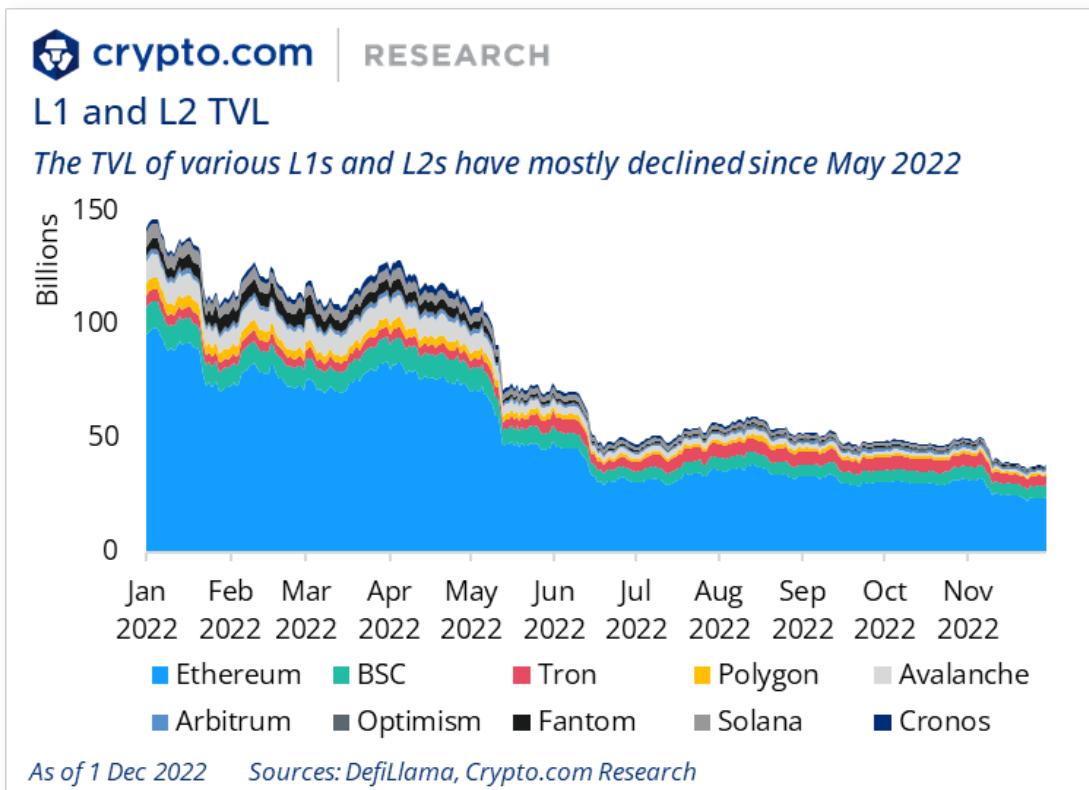


In the aftermath of FTX's bankruptcy, crypto players are seeking ways to increase transparency and reassure their end users. Crypto.com is one of the platforms in the industry that provides [Proof of Reserves \(PoR\)](#) to show that customers' assets are fully backed. More details about how PoR works can be found in our [University article](#).

In addition, more and more crypto players offer non-custodial wallets, such as the [Crypto.com DeFi Wallet](#), to cater to users who prefer to self-custody their funds.

1.4 Layer-1 & Layer-2 Landscape

Impacted by the macro market conditions, we saw the Total Value Locked (TVL) of top layer-1 and layer-2 chains drop notably in the second half of 2022.



Throughout 2022, Ethereum maintained its leadership position in terms of TVL. That being said, some younger blockchains have made their way into the top 10, such as Cronos and Avalanche. In addition, some new chains launched in 2022, with notable examples being Aptos and Sui - both created by ex-developers from Meta's Diem team and use similar technologies such as parallel engine and the Move programming language. Highlights of those newer blockchains are:

- **Cronos:** Its innovations include being the first EVM-compatible chain built on Cosmos, interoperability, and proof-of-authority (PoA).
- **Avalanche:** It implements the novel leaderless consensus protocols, introduces the Subnets, and uses a directed acyclic graph (DAG) to organise transactions.
- **Aptos:** It introduced a new consensus algorithm (AptosBFT), parallel execution framework (Block-STM), and the Move programming language.
- **Sui:** It is similar to Aptos, but also adopts a split of simple and complex transactions, a dual consensus mechanism, and Sui Move.

Scalability Metrics

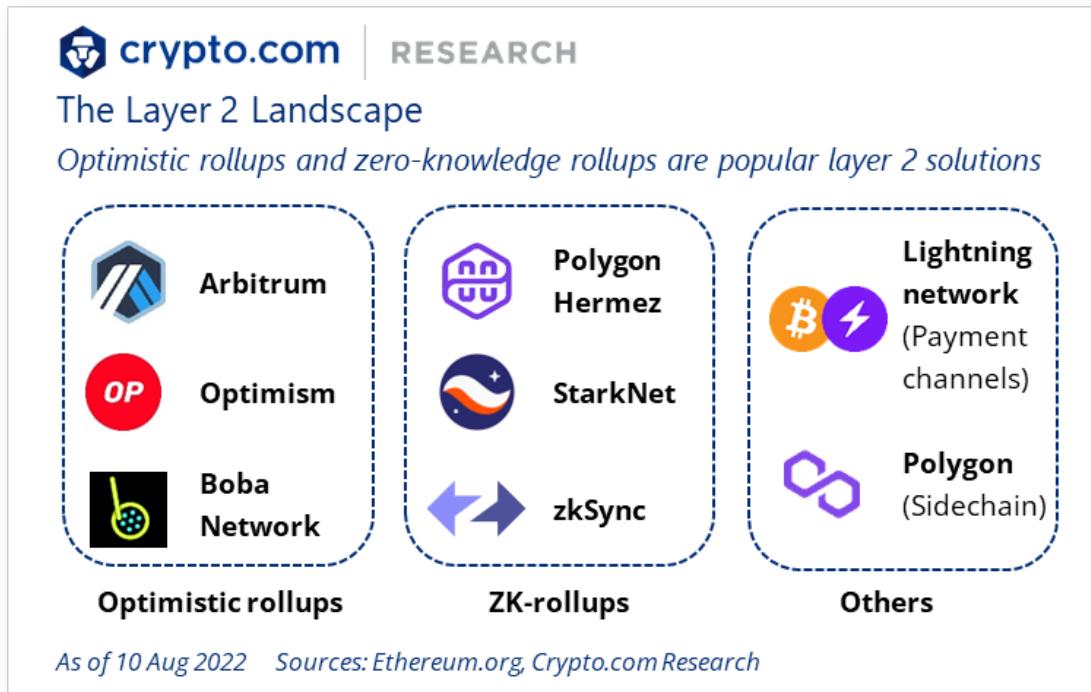


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Metrics	Cronos	Avalanche	Aptos	Sui
Features	<ul style="list-style-type: none"> • EVM Compatible • Tendermint • PoA • Interoperability 	<ul style="list-style-type: none"> • Snow protocols • DAG • Subnet 	<ul style="list-style-type: none"> • AptosBFT • Block-STM • Move 	<ul style="list-style-type: none"> • Narwhal & Bullshark • Sui Move
Consensus	Tendermint + PoA (PoS-based)	C-Chain: Snowman X-Chain: Avalanche P-Chain: Snowman (PoS-based)	AptosBFT (PoS-based)	Narwhal & Bullshark (PoS-based)
Theoretical TPS	<u>Thousands</u>	<u>>4.5K</u>	<u>130K</u>	<u>>130K</u>
Finality	<u>5-6 sec</u> , deterministic	<u>< 2 sec</u> , probabilistic	<u>< 1sec*</u> , deterministic	<u>Instant for simple transactions;</u> <u>2-3 sec for complex transactions*</u>

* indicates the data in the test environment

The layer-2 (L2) landscape has also been vibrant, especially the zkEVM projects that deliver a better experience both on security and privacy compared to Optimistic rollups and EVM-compatible environments.



Interested readers can read more about L1s and L2s in our previous [research reports](#).

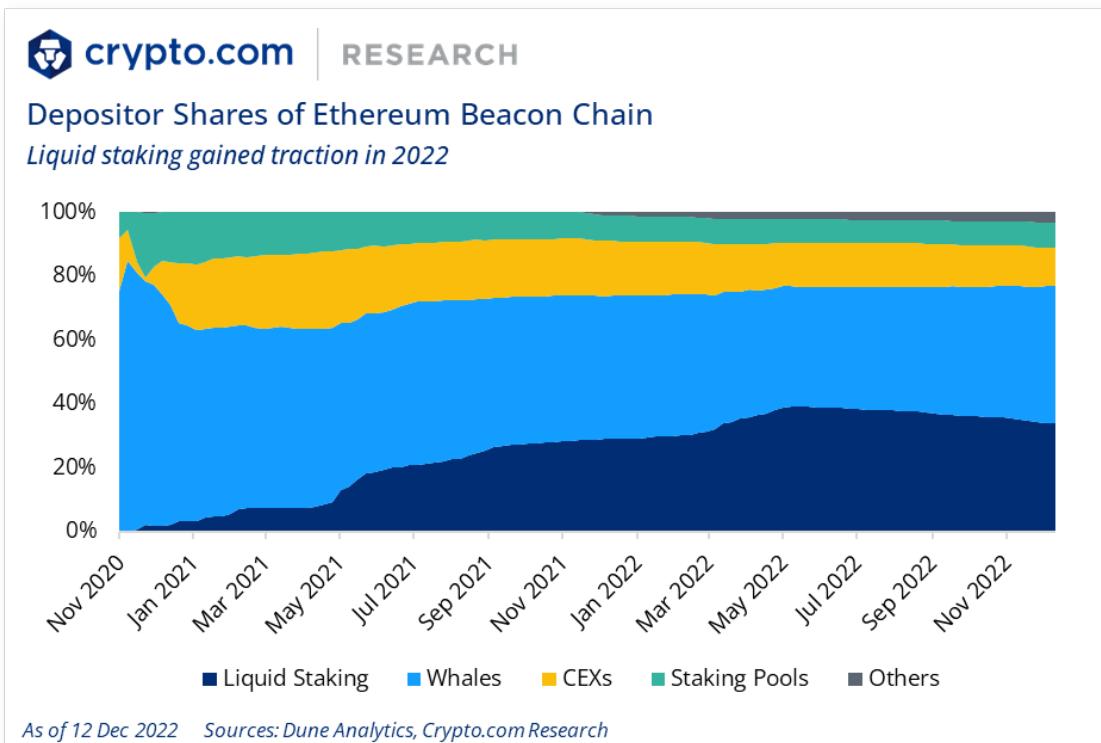
1.5 Liquid Staking

The tail end of 2021 saw a strong finish for PoS networks, which made up [almost a third](#) of the total crypto market cap. This laid the foundation for the increase in PoS staking that we saw in 2022.

PoS staking requires locking up tokens by default, which means the token holder has to choose between earning yield or preserving liquidity. Liquid staking attempts to solve the problem by letting the tokenholder enjoy the best of both worlds - enjoying yield on the PoS token while maintaining some degree of liquidity.

In a nutshell, when a user deposits a PoS token to a liquid staking platform, the platform would issue a liquid synthetic token that is often 1-to-1 pegged to the underlying PoS token as a 'receipt'. The user could later redeem the underlying PoS token with the synthetic token. For example, a tokenholder of ETH could stake ETH on Lido Finance to earn staking rewards from Ethereum, and receive liquid stETH tokens in return. Then, the user could earn yield using stETH tokens in the broader DeFi ecosystem.

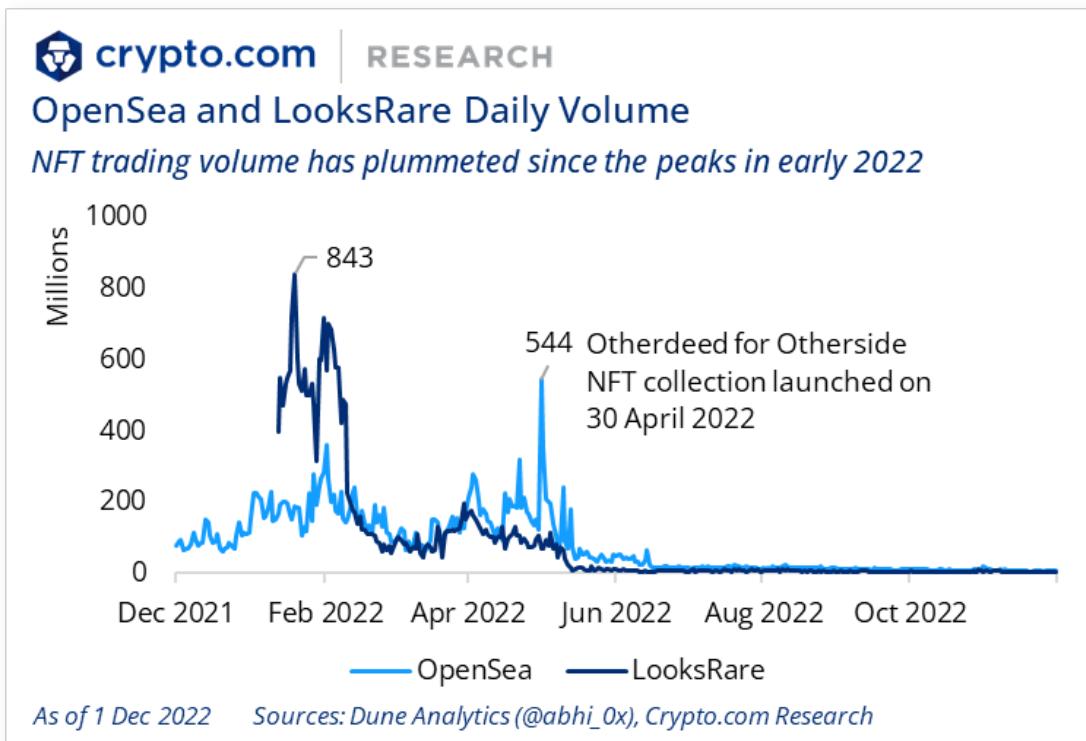
The flexibility that liquid staking provides to depositors are some of the [reasons](#) it flourished in 2022. According to the [market cap](#) of the liquidity staking tokens, ETH is the most popular token choice. Lido Finance continues to lead the liquid staking market, taking around [78%](#) of the market share.



Together with the rising demand for PoS staking, we see [more players starting to offer PoS staking services](#), such as pass-through staking products. Staking has seen notable institutional adoption as well thanks to institutional-grade custodial services such as [Anchorage](#) and [Blockdaemon](#). Even global banks like [SEBA Bank](#) and [Sygnum](#) have made their foray into the staking market.

1.6 NFT

In the first half of 2022, the NFT market was vibrant with strong trading volumes. In May 2022, OpenSea hit a high of US\$544 million in daily volume, which was driven by the launch of the "[Otherdeed for Otherside](#)" collection by Yuga Labs, the company behind the blue-chip Bored Ape Yacht Club (BAYC) NFTs.

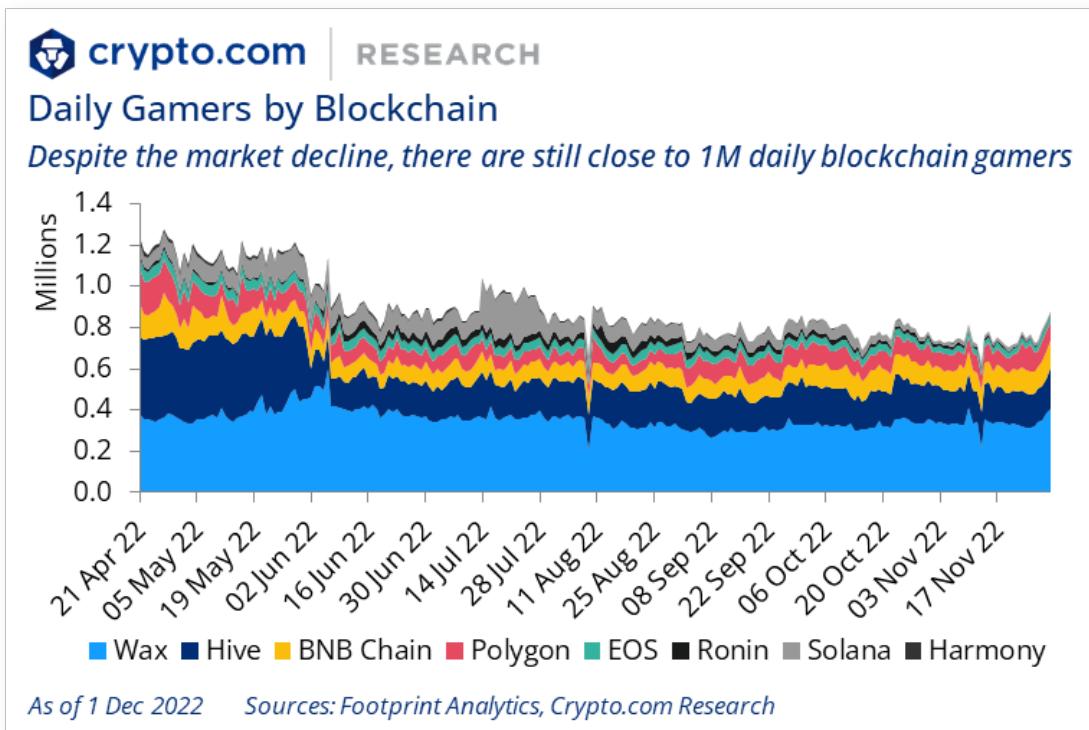


However, NFT trading volumes dropped sharply in the second half of 2022, coinciding with the drop in crypto trading volume. Despite this, some NFT collections delivered decent volumes. For example, [Goblintown](#) embraced a “doom theme” and gave the crypto winter a spin with dark humour. Edition #8995 in this collection sold for a record high of [\\$136,440](#) in October.

In spite of softer trading volumes in recent months, NFT partnerships and innovations continued. For example, Crypto.com [collaborated with A Story](#) to develop the “Extraordinary Whales Club” social NFT series — a project based on the Korean drama *Extraordinary Attorney Woo*. In November, Crypto.com extended its first foray into Web3 by launching [Crypto.com Land: The First Frontier](#) NFTs, which will power a new blockchain game developed on the Cronos blockchain.

1.7 Blockchain Gaming

Despite the market downturn, there were still around 1 million daily blockchain gamers for most of 2022. The Wax blockchain is currently leading in terms of the number of daily gamers at 315,000 at the time of writing. Wax hosts several [top games](#), such as [Splinterlands](#) and [Farmers World](#).

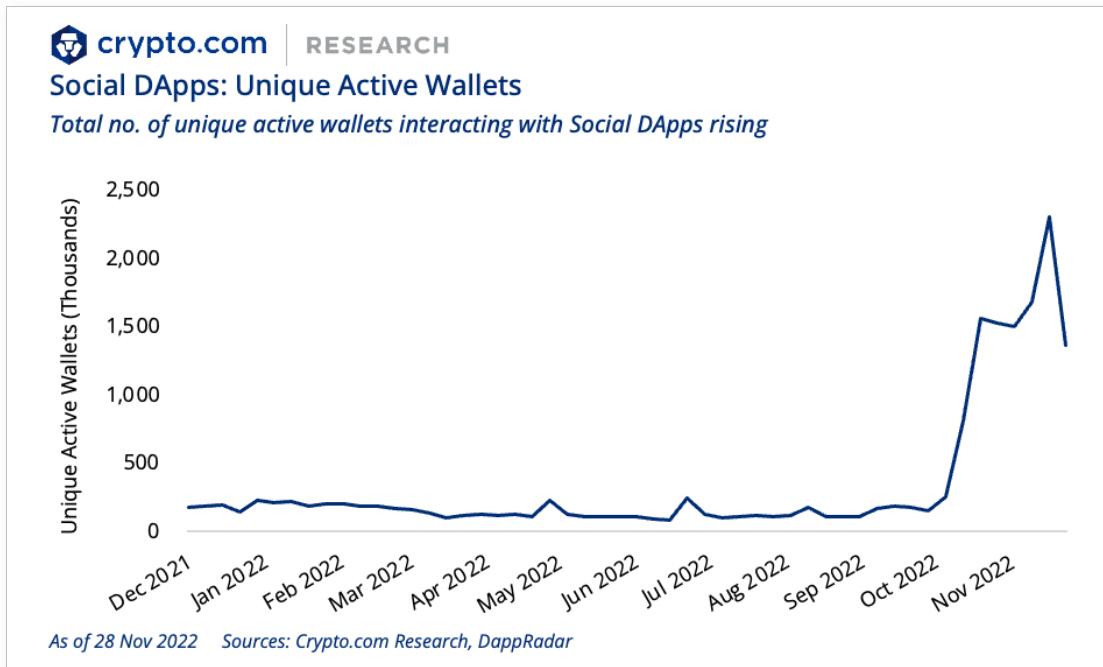


In terms of developer tools, Cronos announced [Cronos Play](#), a comprehensive [modular suite of developer tools](#) for blockchain games in the Cronos ecosystem. Cronos Play is a key pillar of Cronos's strategy to bring millions of end users to Web3 and consists of a wide range of integrations, developer products, and services supporting multiple game platforms. [Loaded Lions: Mane City](#), a [tycoon-style idle game powered by Cronos](#), was first announced in November 2022. In Mane City, each Land NFT owned will grant a plot to build businesses with superior gaming experiences.

A number of traditional gaming companies are also moving into blockchain gaming. Ubisoft has been [partnering](#) with and [investing](#) in a number of blockchain gaming companies. Final Fantasy maker Square Enix recently also announced [Symbiogenesis](#), an NFT-driven web-based game set to launch on Ethereum in Spring 2023. In September 2022, Mythical Games introduced [Blankos Block Party](#), which was the first blockchain game to launch on the Epic Games Store.

1.8 Digital Identity and Social

Blockchain-based social media applications gained traction in 2022, as seen by the sharp growth in the total number of unique wallets interacting with the smart contracts of social dApps.



Part of the interest in Web3 social media can be attributed to [problems with Web2 social media platforms](#) related to data privacy and ownership, security, moderation and censorship, and surveillance capitalism — some of which are amplified through social media giant [Twitter](#). Leading up to Elon Musk's takeover of the company in October, there was an influx of new users to Twitter alternatives such as Mastodon and Farcaster (even Ethereum co-founder Vitalik Buterin has [signed up](#) on these platforms).

The [decentralised social network landscape](#) is growing rapidly. Whilst Web2 is dominated by several large players, the Web3 landscape is much more varied and nuanced, with categories ranging from social graph, identity, messaging, and even data storage. Some of the popular social and DID projects for 2022 are CyberConnect, Lens Protocol, ENS, and CronosID.

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Decentralised Social Networks Landscape: Examples

Identity	 ENS	 CRONOS ID	 brightID	 DAS	 Spruce	
Social Graph	 LENS	 CyberConnect	 Mem protocol	 ATEM		
Social Media	 Showtime	 ONACO	 METATIME	 Myriad	 gm	
Messaging	 Blockscan	 status	 Dialect			
Creator Economy	 Mirror	 BBS	 rally	 Paragraph	 sigle	
Credentials	 PROJECT GALAXY	 POAP	 DEGEN SCORE	 RabbitHole	 ARCx	 Spectral
Feed & Tools	 RSS3	 Reveal	 Zapper	 Mask	 KOOP	

Source: Crypto.com Research

1.9 Capital Investment and Incubation

Capital investment and incubation of projects in the blockchain space continued to grow. About US\$29 billion in funding was raised in the first half of 2022 alone, with infrastructure and Web3 startups — including NFT, blockchain gaming, and metaverse — taking up the lion's share of the funding pool. The total amount of funds raised in those first six months already outpaced figures from 2021, which saw 1,313 rounds with [\\$30.2 billion](#) invested for the entire year.

On a quarterly basis, the first two quarters of 2022 saw a rising level of investments. However, venture capital inflows in Q3 fell sharply to \$3 billion, which [some perceive](#) as most likely a result of investors pushing their fundraising to later in the year once markets have recalibrated.

In terms of sector, the blockchain service category saw consistent spread of investments throughout the year. It received the most funding with a total of 592 deal rounds made, followed by the DeFi and GameFi categories.



Looking at deal count and company count in 2022, a16z, Animoca Brands, and Pantera Capital were some of the top VCs and the most active globally. Some of the largest crypto funds seen in 2022 came from [a16z](#) (\$4.5 billion) and [Sequoia](#) (\$2.85 billion), while [Citadel Securities](#) bagged the highest capital raised in 2022 at \$1.1 billion.

Company Funded	Raised	Funds and Investors (Lead+ # of others)	Category
Citadel Securities	\$1.1 billion	Sequoia Capital +1	CeFi
Cross River	\$620 million	a16z +5	Blockchain Service
Polygon (MATIC)	\$450 million	Sequoia Capital India +36	Blockchain Infrastructure
ConsenSys	\$450 million	ParaFi Capital +14	Blockchain Service
Yuga Labs	\$450 million	a16z +36	NFT

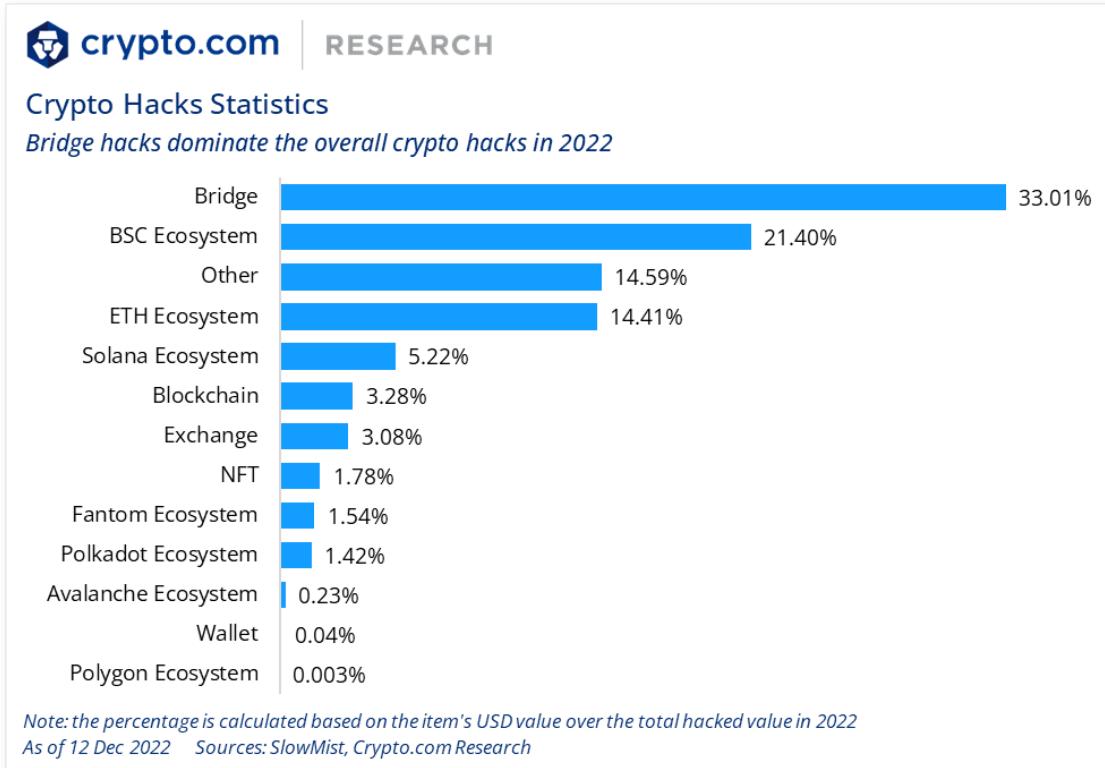
Note: Top 5 crypto funding rounds from 1 Jan to 5 Dec 2022, by amount of funds raised (Source: [Cryptorank](#))

Blockchain and crypto projects also attracted funding from public companies, with [Alphabet](#), [Blackrock](#), and [Morgan Stanley](#) topping the ranks with the highest deal activity and invested amount.

Besides traditional crypto investment funds, crypto companies also actively took part in fundraising to support the startups. For example, Crypto.com Capital continued to drive the crypto sector forward, hunting for innovative projects across infrastructure, DeFi, gaming, and NFT verticals. In 2022, it invested in over [60 companies](#) globally, including [Nomad](#), [Boba Network](#), [Braavos](#), and [Magic Square](#).

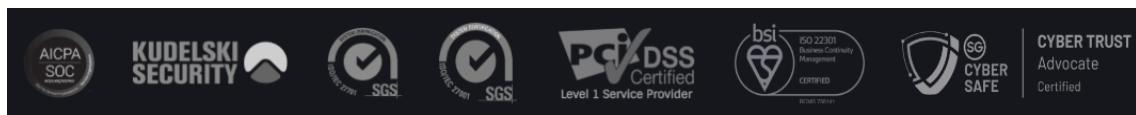
1.10 Security

The issue of security is a focus for any blockchain network. In 2022, we continued to see hacks and exploits. At the time of writing, the total amount of money lost in crypto hacks in 2022 is about US\$3.7 billion, which dropped by 63% compared with 2021. Vulnerabilities in bridges accounted for over one-third of the overall amount.



With regard to the blockchain and digital asset industry in particular, it is critical to protect users by having robust security and compliance measures in place.

Crypto.com is built on a solid foundation of security, privacy, and compliance and is the first cryptocurrency company in the world to have ISO 22301:2019, ISO/IEC 27701:2019, ISO/IEC 27001:2013 and PCI DSS v3.2.1 Level 1 compliance, and independently assessed at Tier 4, the highest level for both NIST Cybersecurity and Privacy Frameworks, as well as Service Organization Control (SOC) 2 compliance. Crypto.com has also engaged globally recognised security consulting and auditing firms like Kudelski Security to stress test and audit our core Blockchain systems. The achievements in security compliance help safeguard Crypto.com's users and establish its leadership in the industry.



2. 2023 Year Ahead

In this section, we will cover several topics that will potentially drive the next development of the industry.

2.1 Crypto Market Sizing

Despite challenging macro conditions, crypto adoption growth remained strong in 2022. **As of November 2022, the number of crypto owners crossed the 400 million milestone, reaching 402 million.** During the year, the monthly average adoption growth rate was 2.9%. Depending on market conditions, we expect the number of global crypto owners could reach 600 - 800 million in 2023.



2.2 New Era of Blockchain Gaming

In the blockchain gaming sector, we expect to see a few AAA games in the next year or two, which will provide players with new gaming experiences that integrate high-performance gameplay with blockchain technology.

[AAA games](#) are produced by teams with relatively higher development and marketing budgets. In contrast, indie games (short for independent video games) are typically created without much financial and technical support. Usually, big budget AAA games will take approximately [three to five years](#) to develop. Considering that the concept of GameFi started around [2019](#), the typical game development timeline implies that AAA crypto games should start to appear in the upcoming years.

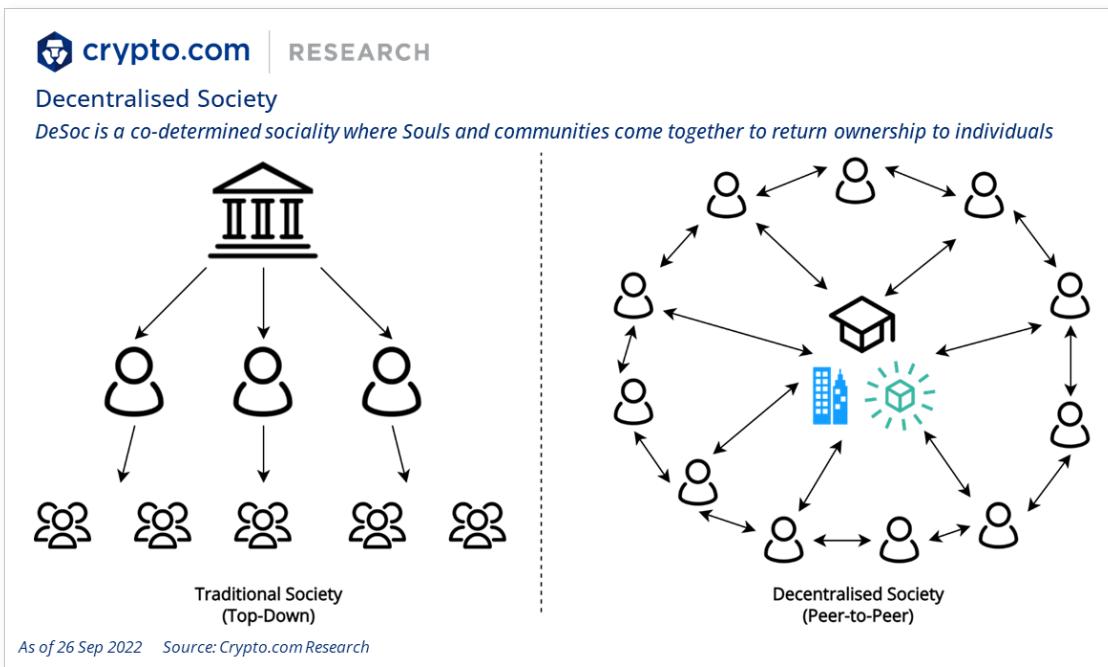
Examples of upcoming AAA blockchain games include [Big Time](#), a third-person multiplayer roleplay game currently in [early access development](#). [Illuvium](#) is an AAA fantasy RPG game that has [released its private beta for registration](#). Other notable upcoming AAA crypto games include [StarAtlas](#) (currently in the [early access](#) stage), [Shrapnel](#) (in [active development](#)), and [Guild of Guardians](#) (in the [pre-alpha](#) stage).

2.3 More Web3 Use Cases

The increasing use cases for Soulbound Tokens (SBTs) could be the next potential market driver. SBTs are NFTs tied to an individual or entity that are **non-transferable and non-tradeable**. They aim to represent the holder's social identity by containing the holder's commitments, credentials, and affiliations. It is similar to the concept of a resume or CV.

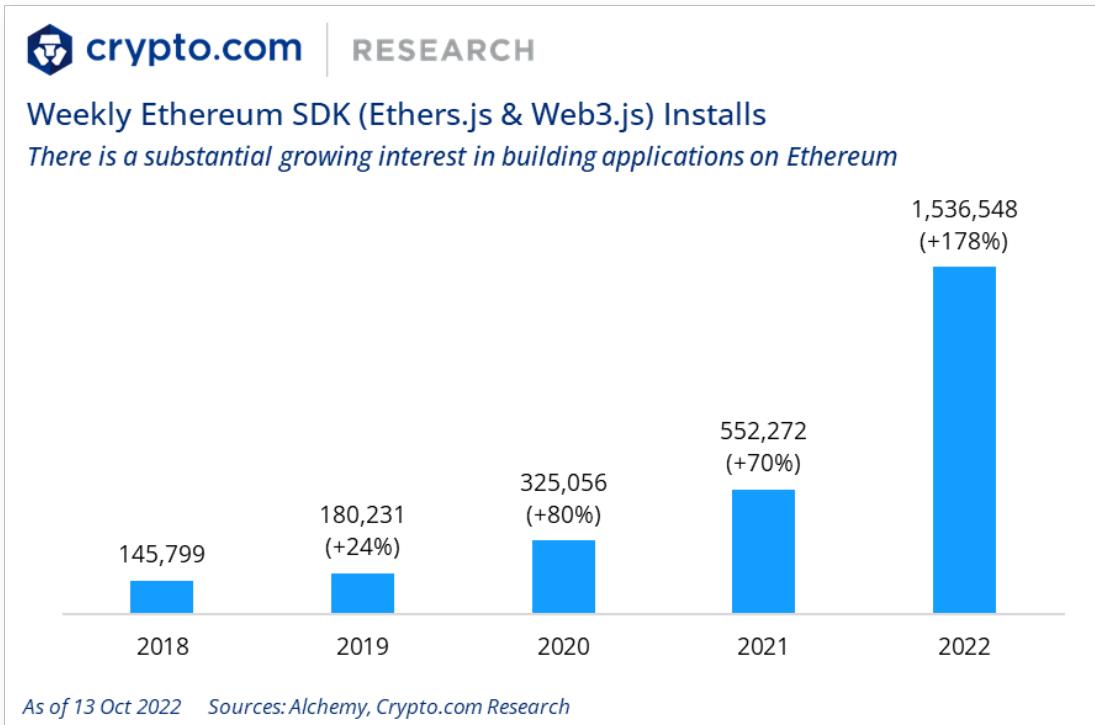
The adoption of SBTs can direct us to a decentralised society (DeSoc) or a co-determined sociality, where Souls and communities convene in a bottom-up way. DeSoc, based on non-transferable SBTs, aims to represent the commitments, credentials, and affiliations of 'Souls' that can encode the trust networks of the real economy to establish provenance and reputation.

SBTs are in their infancy. The ideas, use cases, and implementations have yet to be fully discussed, designed, and fleshed out. Eric Glen Weyl, one of the co-authors (along with Vitalik Buterin) of the paper 'Decentralized Society: Finding Web3's Soul', predicted that early use cases of SBTs will be available by the end of 2022. So, in 2023, we expect to see more SBTs applications and use cases being developed.



2.4 More Builders & Tools

In 2022, we saw an interesting phenomenon of more and more Web2 developers having great interest in Web3. The downloads of the two popular Web3 development libraries, Ethers.js and Web3.js, have surged 10x since 2018.



Developers flocking to Web3 will stimulate the growth of the companies that provide Web3 development tools. We can take Remote Procedure Call (RPC) and application programming interface (API) as examples. An RPC is a lightweight software communication protocol, which allows a local programme (the client) to communicate with a remote programme (the server) hosted on a different network without needing details about the server's network. In a blockchain, a dApp requires blockchain data to function correctly. As such, in the RPC client-server model, the dApp is the client, and the server is an RPC node.

Hosting an RPC node is costly, and even if a user self-hosts the RPC node, operation problems can also be challenging. Therefore, current RPC businesses are mostly dominated by some small groups of RPC node providers like Alchemy and Infura. Additionally, other extended services like data warehouses and APIs can be established based on the stronger engineering capability of these node providers. This reflects on the growth of Alchemy, where its [valuation tripled to \\$10.2 billion in about three months](#).

API is another significant and fundamental area in Web3. A real-time, multi-chain data access service will satisfy the various requirements of developers for building their dApps. There are [some companies that gained VC investment](#) in 2022, and we can expect to see a bunch of API providers with diversified services launch in 2023.

2.5 Growing Focus on Security & User Education

In the aftermath of a few bankruptcies and hacks in the industry in 2022, we have seen a growing focus on security as well as user education. **The key to building a successful business model is to establish trust with end users.**

Going into 2023, we expect this trend of more focus on security and user education to continue. On one hand, we may see more platforms invest in security audits and certifications. On the other hand, we also look forward to seeing more educational initiatives rolled out in this space, continuing the trend from 2022. For example, in November 2022, [Crypto.com launched a new University module in its app](#), a one-stop learning hub for users to enhance their crypto knowledge. To make the user experience more engaging and fun, users who successfully complete a learning course could redeem an array of items in the rewards store. We look forward to seeing more interactive learning experiences in the year ahead.

2.6 And More

Besides the above trending topics, developments in other areas are expected to be watched, including the new blockchain infrastructure, ZK proofs adoption, more utility-based DeFi applications, Ethereum's Shanghai upgrade and institutional adoption. Interested readers can access the [full version of our outlook in 2023](#) by becoming a [Private Member](#) or [Exchange VIP](#).

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