Technological Trends & Developments

Sixfold improvement in Ethereum's execution time achieved by Microsoft scaling research

Forerunner proposes a novel constraint-based approach to speculative execution on Ethereum. When fully implemented, Forerunner is evaluated as a node connected to the worldwide Ethereum public mainnet. While processing 13 million transactions live in real time, Forerunner achieves an effective average speed increase of 8.39 times on the transactions that it hears during the dissemination phase, which accounts for 95.71% of all transactions. The end-to-end speedup over all transactions is 6.06 times. The code and data sets are publicly available. Microsoft researchers conclude that this capability opens up realistic opportunities toward a significant throughput increase in Ethereum's foundation layer.

Polygon, a layer-2 Ethereum solution, launches its zkEVM public testnet

Polygon, a layer-2 Ethereum scaling solution [has announced the release](#) of performant zero-knowledge (ZK) proofs within an Ethereum Virtual Machine (EVM) equivalent system which has been adopted in a public testnet environment. A zk-Rollup is a layer-2 infrastructure on top of Ethereum that extends its scalability through mass transfer processing rolled into a single transaction. ZK proof technology is used to present and publicly record the validity and correctness of the rolled transfers processed on the Ethereum blockchain. By storing just the proof and the compressed data of a batch of transfers, the efficiency and the throughput of the network is multiplied. As explained in the release notes, the main challenge when building a zkEVM is to find a way to harness the power of ZK proofs within an environment that is compatible with EVM. Polygon engineers claim to be the first to release a public testnet with a complete, open-source ZK proving system. The testnet version of Polygon zkEVM also has limited throughput capacity, which means it is far from its final form as an optimised scaling machine.

Stanford University researchers propose reversible Ethereum transactions

Blockchain researchers affiliated with Stanford University have led an active debate within the blockchain technical community following their proposal for creating reversible transactions on Ethereum. [The paper notes that:](#) 'In 2020, $7.8 billion was stolen and in 2021, that amount doubled to $14 billion.' The researchers argue that if there had been a way to reverse the offending transactions – as in traditional finance - the damage could have been reduced. The researchers designed opt-in token standards that are siblings to

ERC-20 and ERC-721 token standards, and support reversing transactions. They are called ERC-20R and ERC-721R, respectively
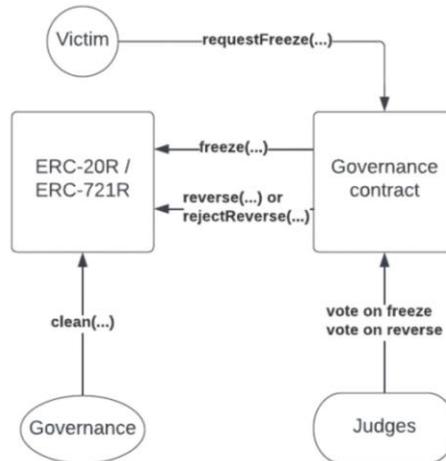
Process for reversing a transaction

With these new standards, a transaction is eligible for reversal for a short period after it has been posted on the chain. After the dispute period has elapsed, the transaction can no longer be reversed. Within the short dispute period, a sender can request a transaction reversal by convincing a decentralised set of judges to first freeze the disputed assets, and then convince them to reverse the transaction. The paper has been released with a prototype implementation. It has sparked a lot of discussion within the technical community and beyond. The argument centres around the value proposition of blockchain networks, which is meant to be persistent, meaning that posted transactions are immutable and cannot be changed.

New Cosmos white paper revamps Cosmos Hub

A newly released whitepaper proposes numerous expansions to the Cosmos Hub utility, the blockchain of the Cosmos ecosystem. Currently, the role of the Hub is to be an enabler template for building new blockchains in the Cosmos interchain of individual but interconnected blockchains. The new white paper suggests a revamped role for the Hub. It is now positioned at the heart of interchain security and can be used by other chains to secure their own networks. The document outlines the transition to the next phase of the Cosmos Hub as an infrastructure service platform. The paper introduces two pieces of app-specific functionality; the interchain scheduler and interchain allocator. Together, they form a flywheel for accelerating interchain growth. The interchain scheduler is a cross-chain block space marketplace that generates revenues from cross-chain maximal extractable value (MEV). These revenues are used by the interchain allocator to capitalise new Cosmos chains, foster interchain collaboration, and thereby expand the scheduler's total addressable market.

NEAR Protocol releases JavaScript SDK

NEAR Protocol has announced the release of its JavaScript software development kit (JSSDK). Rust and Solidity are currently the most popular coding languages for blockchain development. However, in a move towards mass adoption, the NEAR blockchain has released NEAR JSSDK to address a wider audience of some 20 million active JavaScript users. The JSSDK provides each contract with its own instance of a JS engine running inside it. This design allows developers to write contracts in pure JavaScript or TypeScript and access all the same features such as oracles which are available to Rust contracts.

Cardano releases Vasil Upgrade

As described by Cardano founder Charles Hoskinson, the Vasil upgrade has been the most difficult implemented by Cardano developers since the project launched in 2017. Vasil has enhanced Cardano's smart contract capabilities through Plutus V2, which adds greater efficiency to an already powerful smart contract platform. The update has reduced script execution costs and transaction size, as well as improved throughput. The new capabilities include node and command-line interface (CLI) support for reference inputs, inline datums, reference scripts, and collateral outputs. Vasil leverages the EUTXO model to enable faster and more sophisticated decentralised applications (DApps).

Infura is launching decentralized infrastructure network

Ethereum engineering firm Infura has announced its transformation into a decentralised infrastructure network (DIN), which is to launch sometime next year. Infura provides backend infrastructure and offers Web3 projects a way to connect to blockchains like Ethereum without having to run their own nodes. The network aims to provide access to Web3 products without outages and downtime caused by a single point of failure. According to the announcement, the network is ready to move forward to its next development stage as a decentralised protocol. Infura is part of ConsenSys, a software company dedicated to the Ethereum blockchain. The decentralised protocol will be a community of highly engaged infrastructure providers participating in an open-source ecosystem that can overcome the limitations of the existing marketplace together.

Regulatory Updates

Europe

The cryptocurrency exchange, Binance, recently announced the launch of 'Binance New Zealand.' This follows similar moves in France, Italy, Spain and other countries. Binance New Zealand filed its registration with New Zealand's Ministry of Business, Innovation and Employment (MBIE) and is now a financial service provider in that country. (source)

The metaverse, decentralised finance (DeFi) and decentralised autonomous organisations (DAOs), as well as non-fungible tokens (NFTs) have recently been targeted by members of the **European Parliament**. More specifically, the European Parliament has drafted a set of 'compromise amendments' as it is looking into revamping the European Union's money-laundering laws proposed by the European Commission in 2021. The draft also sees Web3 as a threat and obliges Web3 companies to carry out money laundering checks on their customers under EU law. However, this compromise legislation still needs to be voted on by lawmakers. (source)

Members of the **European Parliament** have joined forces against the European Central Bank, after the ECB announced that it will collaborate with the US retail giant Amazon to develop a digital euro. Among other opinions, Members of the European Parliament have stated that this choice could undermine the goal of a digital euro for competitive and free payments and that this decision would prevent the digital euro from achieving market prevalence. (source)

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The Bank for International Settlements (BIS) will be partnering with the central banks of **Norway**, **Sweden** and Israel in order to co-examine central bank digital currencies (CBDCs) on international retail and remittance payments. In this collaboration, called Project Icebreaker, the Central Bank of Norway, the Central Bank of Israel and the Sveriges Riksbank will create a new hub where they can connect their proof-of-concept CBDC systems and explore CBDC designs and architectures, as well as related policies. (source)

Crypto.com, a Singapore-based digital asset platform, has been approved in **France** and successfully registered as a digital asset service provider (DASP) by the stock market regulator Autorite des Marches Financiers (AMF). This regulatory approval enables the platform to provide a suite of products and services to customers located in France, while maintaining compliance with local regulations. (source)

USA

Aimed at expanding the Commodity Futures Trading Commission's (CFTC) consumer protection mandate, its Commissioner, Caroline Pham, recently proposed the formation of an 'Office of the Retail Advocate.' Pham stated that the potential of blockchain and cryptocurrency to change the existing market calls for new

retail investor protection against crypto crash, risk management failures and substantial retail losses. (source)

JP Morgan Chase's CEO, Jamie Dimon, expressed his scepticism of crypto tokens, referring to them as 'decentralised Ponzi schemes,' during Converge 22. Kevin O'Leary commented on this, stating that stablecoins have the potential to reduce transaction fees throughout the world, making traditional banks justifiably frustrated. (source)

The Defence Advanced Research Projects Agency (DARPA) has affiliated with Inca Digital, a digital asset data analytics company, to study the implications of digital assets on national security and create a cryptocurrency ecosystem mapping tool. In addition to detecting possible money laundering and sanction evasions, this project aims to demystify the interactions between traditional and digital financial systems, as well as explore other possible areas that can put the US government at risk. (source)

UK

Sir Jon Cunliffe, the Bank of England Deputy Governor, expressed strong warnings about distributed ledger technology (DLT) security. More specifically, Cunliffe stated that crypto is not just about assets and it comes with more implications for traditional markets and interoperability than those that meet the eye. Notably, he commented on the high-speed settlements and the challenges they pose when it comes to handling liquidity, although these settlements 'need not be instantaneous or decentralised.' (source)

The Government of the United Kingdom, actively trying to drive 'dirty money' out of the country, recently introduced the Economic Crime and Corporate Transparency Bill in Parliament. The Bill authorises law enforcement to ask businesses to hand over information that could possibly be related to money laundering or terrorist financing. It gives them the freedom to easily seize, freeze and recover crypto assets. (source)

Rest of the World

Kassym-Jomart Tokayev, President of **Kazakhstan**, stated at the international forum Digital Bridge 2022 that the country's goal is to become an international leader in digital technology, cryptocurrency and regulated mining. Now, a major bank in Kazakhstan has successfully bought crypto for fiat for the first time and the country is ready to legalise a mechanism for the conversion of cryptocurrencies to cash, if required. (source)

Bitkub, a **Thai** crypto exchange, has been targeted by the country's Securities and Exchange Commission (SEC) for falsifying and creating artificial trading volume on the platform. More specifically, the Thai SEC believes that the platform has been involved in wash trading, where investors buy and sell the same assets at the same time to inflate the market with false trading volumes. (source)

In an attempt to conform to international anti-money laundering standards and keep up-to-date with the Financial Action Task Force (FATF), **Japan** has prepared an amendment that will add crypto to its travel rules. Specifically, the amendment requires that exchange operators should collect information on transactions involving cryptocurrency and stablecoins at the same level of scrutiny already applied to fiat transactions. (source)

The ongoing Russo-Ukrainian War has actively limited **Russia's** accessibility to the international trade market. This situation has seen Russia searching for alternative means of payment and trade settlements

and it is currently in the pilot phase of its CBDC development, which is expected to be completed by early next year. More specifically, the country is planning to be able to use the digital ruble for mutual settlements with China. (source)

The Reserve Bank of **Australia** (RBA) is actively working towards launching an in-house central bank digital currency (CBDC) and is planning to conduct a pilot project for eAUD. The key goal of this project is to examine innovative business models, use cases, benefits and risks of a CBDC. The respective report is expected to be released in mid-2023. (source)

Market Updates

- One of the biggest crypto news breakthroughs in recent months is the Ethereum upgrade from a 'proof-of-work' to 'proof-of-stake' system in a move referred to as the 'Merge'. The switch, implemented on 15th September, cuts Ethereum's energy usage by up to 99.9%, significantly reducing its environmental impact. However, in the following 15-day period, Ethereum lost almost 20% of its market capitalization, or USD 37.6 bn.

- Binance, the world's largest crypto exchange by volume, stopped support for USDC, Pax Dollar (PAX) and TrueUSD (TUSD) stablecoins, and began converting all customer holdings to Binance USD (BUSD), their own stablecoin, starting 29th September. Many critics consider the move anti-competitive.

- World Blockchain Summit Global Series, a leading global summit of blockchain, crypto, web3 and metaverse, will be held in Dubai from 17 to 18 October. The event will host leading individuals from the crypto industry, policymakers, government delegates and investors. The summit will add to the rising popularity of the UAE, particularly Dubai, as a regional crypto and blockchain powerhouse.

- The Bank of Russia, the country's central bank, started testing its central bank digital currency (CBDC) digital ruble this year with plans of an official adoption in 2024, according to its monetary policy update. Furthermore, InDeFi, a Russian decentralised finance start-up, is working on an Ethereum-based and ruble-backed stablecoin called 'cryptoruble' (independent from the digital ruble). The company estimates its supply to be in the range of RUB 5-10 bn, or USD 80-160 m.

- Meanwhile, India and Australia are also gearing up for CBDC trials. The Indian Central Bank is holding consultations with fintech firms and state-owned banks for a pilot CDBC project ahead of a possible rollout in the fiscal year of 2022 (April-March). The Australian central bank, on the other hand, plans to release a white paper outlining eAUD pilot project in mid-2023.

- The Bank for International Settlements (BIS) said it conducted a 'successful' CBDC pilot project involving central banks of China, Hong Kong, Thailand and the UAE between 15th August and 23rd September, facilitating USD 22 m worth of international transactions. Following this, on 28th September, BIS launched Project Icebreaker with the central banks of Israel, Norway and Sweden to explore use cases for international retail and remittance payments using CBDCs. The results are expected in the first quarter of 2023.

- Kwon Do-hyung, the CEO of Terraform Labs, also known as Do Kwon, had a South Korean arrest warrant and an Interpol red notice issued against him in September after being accused of a string of offences, including capital-market law violation. Korean officials also froze 3 313 BTC (approximately USD 66.7 m) transfer linked to Mr Kwon to two overseas crypto exchanges made after the arrest warrant was issued. Mr Kwon's current whereabouts is unknown, although he has denied being on the run.

- As with cryptocurrency markets, crypto C-suites are facing a volatile year, with several top executives having resigned in recent months. The list includes CEOs of Celsius Network, Genesis, Microstrategy, Kraken and Alameda Research and the president of FTX.US. Though the reasons

and company market positions have been remarkably different, the exodus reflects a change of mindset amid a slowdown in the crypto industry after a bullish 2020-21 run.

- The Enforcement Directorate, India's economic crime investigation agency, raided and froze the accounts of WazirX on 15th August. The Indian crypto exchange was 'acquired' by Binance in 2019 and the legal action was a result of foreign exchange law violations. What followed was a Twitter spat between the CEOs of WazirX and Binance - based on the technicalities of their agreement, each attempted to shift the blame onto the other party. On 27th September, the agency also froze cryptocurrency worth USD 1.5 m during its investigation.

- The latest big name to join the non-fungible token (NFT) race is Tiffany & Co., a US-based luxury jeweller, with the 5th August launch of its 'NFTiff' design collection modelled after CryptoPunks non-fungible tokens and priced at ETH 30 a piece. The limited collection of 250 pieces is estimated to have fetched over USD 12.5 m.

- In a first case of insider trading involving cryptocurrencies, Nikhil Wahi, the brother of Coinbase's former product manager Ishan Wahi (co-accused), pleaded guilty on 12th September to a wire fraud conspiracy charge. Ishan Wahi is accused of profiting by sharing confidential information with his brother about at least 14 coin listings. He had earlier pleaded not guilty and his next hearing is scheduled for March 2023.

- Celsius Network, a crypto lending company, filed for bankruptcy in July this year. It was one of the key drivers of the 2022 crypto crash which nearly wiped off USD 1 tn from the market. Its troubles are far from over as recent reports suggest that the founder and former CEO, Alex Mashinsky, withdrew USD 10 m in June from the company as it froze customer accounts and headed towards bankruptcy. The company was also reported to be mulling over a revival plan outlined on 8th September at an employees' meeting.

Market Regulations

- On 2nd September, the Financial Supervisory Commission (FSC) of the Banking Bureau of Taiwan released a list of 24 cryptocurrency companies registered for compliance with the country's Money Laundering Control Act. The well-known names include the WOO Network, MAX Exchange and ACE.

- On 8th August the US Treasury's Office of Foreign Assets Control (OFAC) sanctioned Tornado Cash, a currency mixing service, for its alleged use in laundering over USD 7 bn, followed by the arrest of Alexey Pertsev, its developer, in Amsterdam, the Netherlands on 10th August. In a first, the US has sanctioned a code rather than a person or entity, which triggered strong reactions from the crypto community: six users of the service decided to sue the US Treasury in a lawsuit being funded by Coinbase.

- On 18th September, Bits of Gold, an Israel-based cryptocurrency exchange, became the country's first crypto company to receive a license from its Capital Markets Authority. Until recently, Israel's banking sector had been unfriendly towards virtual currencies, citing money laundering issues.

- In early September, the new UK government under Prime Minister Liz Truss sent a positive signal to the crypto industry by saying that it wants to make the UK a 'dominant global hub for crypto technologies'. The government also presented the Economic Crime and Corporate Transparency Bill in the same month to provide a legislative framework to law enforcement agencies around cryptocurrencies. The Truss government also conveyed its support for the Financial Services and Markets Bill, which aims to establish, among other things, a regulatory framework for stablecoins.

- Observing a significant rise in the use of virtual currencies in crimes, the Australian Federal Police established a dedicated cryptocurrency unit to monitor crypto transactions and boost in-house expertise in August. The unit will have the dual role of tracing cryptocurrency transactions and targeting virtual assets.

- One reason countries legalise cryptocurrencies is to bypass global sanctions. Both Iran and Russia recently legalised the use of cryptocurrency for international payments. However, both countries look keen on avoiding crypto usage in their own domestic financial systems.

- The UAE has been one of the top destinations for crypto markets. Keen to remove the FATF grey list tag, the country is clamping down on money laundering using cryptocurrencies. Starting August, real estate agents are required to notify authorities if any real estate deal payments are made using virtual currencies. Furthermore, on 25th August, Virtual Asset Regulatory Authority, Dubai's dedicated crypto regulator, issued regulatory guidelines for crypto marketing activities aimed at protecting investors.

- The US Financial Stability Oversight Council, a collaborative body of regulators, published a report on 3rd October which urged the US Congress to pass legislation on regulating the cryptocurrency sector. The report suggests that as crypto companies face uncertain market conditions, the regulatory bodies are pressing for clarity in jurisdiction in the sector. However, sources indicate that the Congress is months away from passing legislation.

- The EU finalised the draft Markets in Crypto Assets (MiCA) legislation in late September and opened it for public comments. The Bill lays down company requirements like registration with authorities and capital holding requisites to maintain stablecoin pegs. MiCA is expected to have repercussions on the crypto sector globally. While the Bill is deemed as positive overall, certain sections of it, specifically on NFTs, have been labelled as 'unnecessarily complicated.'