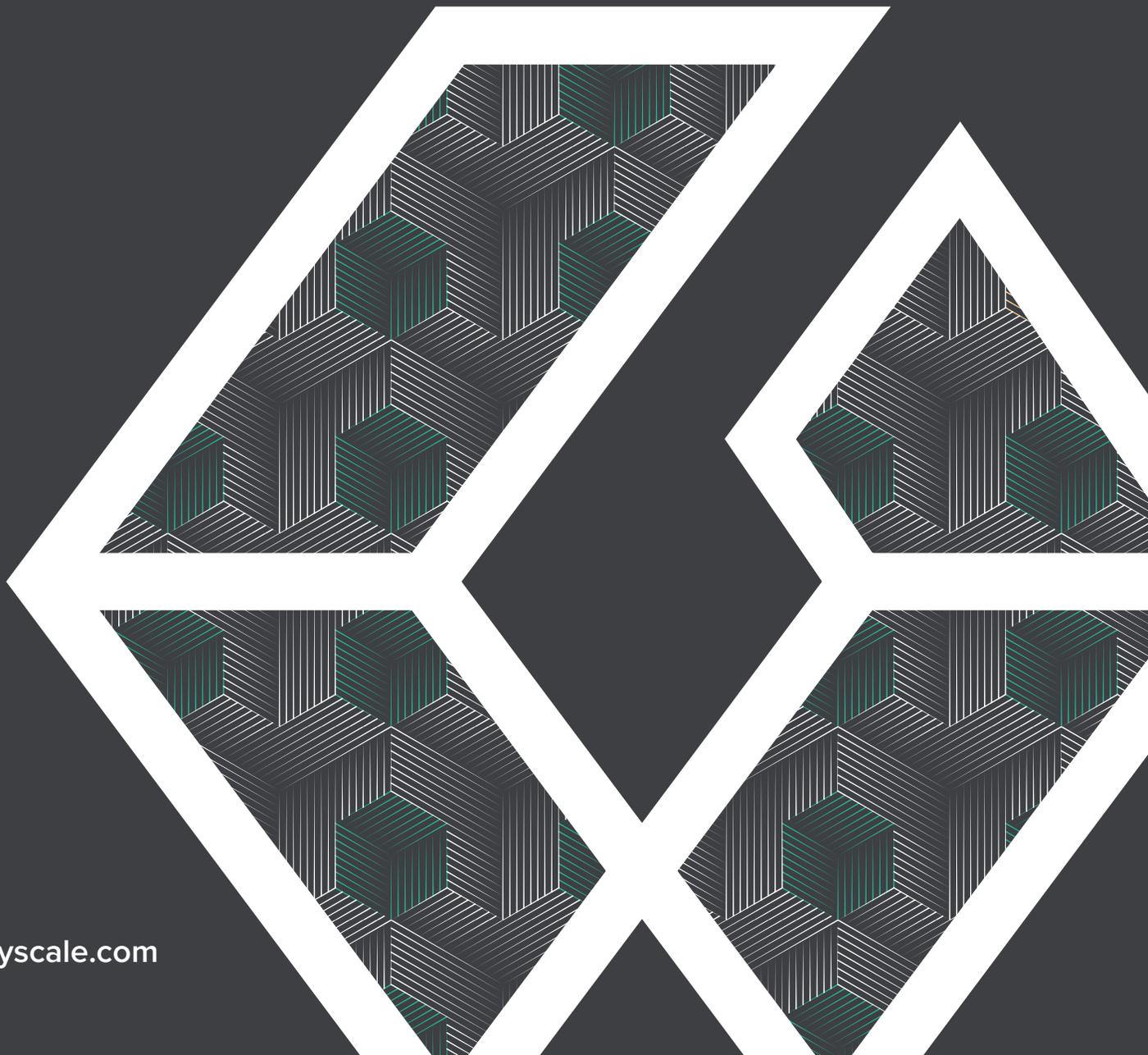


An Introduction to Ethereum Classic



An Introduction to Ethereum Classic

Ethereum Classic is a global, open-source blockchain platform for decentralized applications (DApps), powered by smart contracts and embedded with a native digital currency, ether classic (ETC). On Ethereum Classic, code can be written to control the transmission of digital value based on programmable conditions without the possibility of interference by a central authority. ETC serves three main purposes on the network: (i) to store value, (ii) to settle transactions by allowing users to send or receive payments and (iii) to facilitate network operations (i.e., power DApps) via transaction fees paid in ETC, which are based on the computational costs of executing the code. Ethereum Classic is the original version of the Ethereum blockchain, which seeks to preserve the foundational principles of decentralization and immutability through its untampered transaction history.

The June 2016 hack of The DAO¹ spurred the controversial hard fork of Ethereum, which resulted in the protocol splitting into two distinct networks: Ethereum Classic and Ethereum. At the time of the split, Ethereum Classic and Ethereum were nearly identical in terms of technical design but have since evolved in their own unique ways. Despite the controversy over the Ethereum Classic-Ethereum hard fork, Ethereum Classic has amassed support from a decentralized and global base of developers, users, investors, business operators, and independent organizations. More recently, interoperability between the Ethereum and Ethereum Classic networks has been enhanced as a result of the [Agharta](#) upgrade, allowing Ethereum Classic to directly benefit from quality upstream development work on the Ethereum blockchain. Today, Ethereum Classic is one of the top twenty digital currency networks by market cap.²

1. Michael del Castillo. "The DAO Attacked: Code Issue Leads to \$60 Million Ether Theft." *CoinDesk*. June 17, 2016.

<https://www.coindesk.com/dao-attacked-code-issue-leads-60-million-ether-theft>.
2. Coin Metrics, CoinMarketCap.com, Messari / OnChainFX. As of August 1, 2021.



FIGURE 1: **ETHEREUM CLASSIC SUMMARY STATISTICS**³
As of August 1, 2021

Asset	Ether Classic (ETC)
Inception of Network ⁴	July 30, 2015
Price (USD)	\$51.66
Market Cap (USD)	\$6.65 billion
Circulating Supply (ETC % of Max Supply)	128.97 million ETC / 56.1%
Max Supply (ETC)	230 million ETC
Current Block Reward (ETC) ⁵	3.2 ETC
Next Block Reward Reduction Date (Expected) ⁶	June 1, 2022
Current Annual Inflation Rate ⁷	Approximately 8.1%
Average Block Time ⁸	Approximately 13 seconds
Market Segment	Digital Currency Smart Contracts General-Purpose Platform

A Brief History of Ethereum Classic

In the following section, we will briefly cover three major periods in the history of Ethereum Classic: (i) the events leading up to the launch of the Ethereum network, (ii) the infamous hack of The DAO in June 2016 and (iii) major milestones in Ethereum Classic's post-fork development.

Part 1: Prior to Network Inception (Early 2013 - July 30, 2015)

Ethereum was first outlined as a proof-of-concept 'world computer' in the original 2013 [whitepaper](#) by Vitalik Buterin, an early Bitcoin contributor and co-founder of Bitcoin Magazine. As an early adopter of Bitcoin, Buterin developed the view that a digital currency and its associated blockchain could facilitate much more than simple P2P electronic value transfer. In pursuit of this grander vision, he set out to create a Turing-complete virtual ecosystem, featuring a global blockchain and smart contract programming platform. Both would be powered by a native digital currency, ETH.

3. Ibid.

4. Ethereum Classic launched as the Ethereum network on July 30, 2015, however it wasn't until July 20, 2016 following the hard fork that the network was rebranded as Ethereum Classic.

5. Matt Mazur. "Proposal ECIIP-1017: Monetary Policy and Final Modification to the Ethereum Classic Emission Schedule." *GitHub*. January 19, 2017. <https://github.com/ethereumproject/ECIPs/pull/20/files>.

6. F2Pool as of August 1, 2021

7. Ibid.

8. Bitinfo Charts as of August 1, 2021. <https://bitinfocharts.com/comparison/confirmationtime-btc-etc.html#3m>

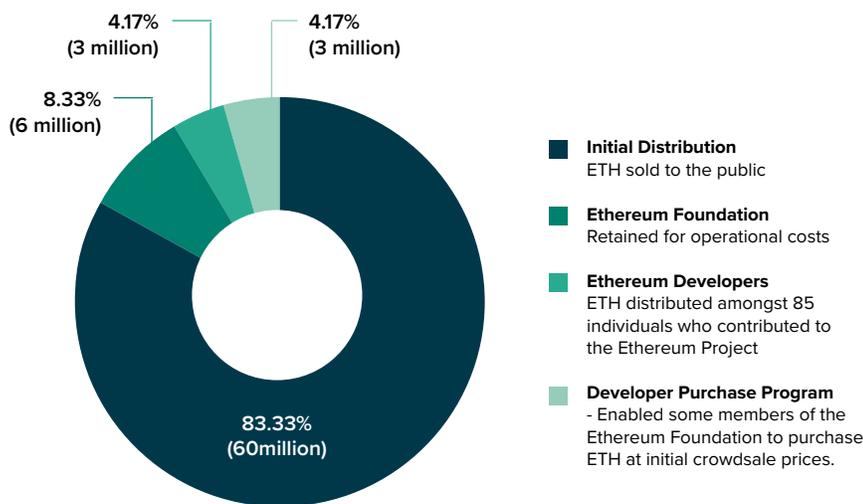


By integrating programming capabilities directly into the Ethereum protocol, developers all over the world would be able to design a new class of decentralized applications hosted on a public blockchain with payment automation using ETH. Through the use of smart contracts, applications built on Ethereum could automate the transmission of information and value between one another and users under dynamic conditions, enabling tailored business models for a new Internet economy, or Web 3.0.⁹

After joining forces with Mihai Alisie, Amir Chetrit, Charles Hoskinson, Anthony Di Iorio, Dr. Gavin Wood, Joseph Lubin and Jeffrey Wilke in late 2013 and early 2014, Buterin and his colleagues founded Ethereum. Shortly thereafter, Dr. Wood coded the first functional implementation of Ethereum and detailed the technicalities of the protocol, including the Ethereum Virtual Machine (EVM) and smart contract programming language, Solidity, in the [yellow paper](#). On a parallel path, two entities were formed and tasked with overseeing development of Ethereum: EthSuisse, the for-profit arm established in February 2014, and the Ethereum Foundation, its non-profit counterpart established in July 2014.

At network inception on July 30, 2015, 72 million ETH were created and allocated based on the approximate \$18 million USD that was raised in the initial crowdsale, conducted between July and August 2014.¹⁰ Coinciding with the network launch, it was decided that EthSuisse would be dissolved, designating the Ethereum Foundation as the sole organization dedicated to accelerating adoption and usage.

FIGURE 2: ETH SUPPLY ALLOCATION AT INCEPTION¹¹



9. Smit Maurya. "Embracing Web 3.0: The New Internet Era Will Begin Soon." *Hacker Noon*. January 22, 2019. <https://hackernoon.com/embracing-web-3-0-the-new-internet-era-will-begin-soon-630ff6c2e7b6>.
10. Amy Castor. "The Ethereum ICO: Where did all the tokens go?" *The Block*. December 18, 2018. <https://www.theblockcrypto.com/2018/12/18/the-ethereum-ico-where-did-all-the-tokens-go/>.
11. Ibid.



Part 2: The DAO Hack (June 17, 2016)

On April 30, 2016, slock.it, a blockchain and Internet of Things (IoT) solutions company, announced the launch of 'The DAO' on Ethereum. The DAO was positioned to function as a decentralized venture capital fund in which over \$150 million USD was raised within a 28-day crowdfunding window.¹² The DAO granted voting rights to members, proportional to their investment, who could then vote to finance projects. If a project proved to be profitable, members would be rewarded based on the terms of the relevant smart contracts and their stake in the DAO.

However, The DAO did not work as planned. On June 17, 2016, an anonymous hacker exploited a bug in the smart contract code used to construct The DAO, siphoning approximately \$60 million worth of ETH into a segregated wallet address. In response, the ETH market experienced a large-scale sell-off as investors rushed to liquidate their holdings.

Controversy ensued within the digital currency community over how to best rectify the situation, given that the stolen funds could not be retrieved. Ultimately, it was decided that a hard fork would take place on July 20, 2016, and a new version of the Ethereum blockchain would be created. This version would be referred to as Ethereum, removing any record of the theft and restoring the stolen ETH to the original owners. The original Ethereum protocol was rebranded as Ethereum Classic, and its native token as ETC. It left the transaction history untampered, including The DAO theft, and preserved the foundational principles of decentralized governance and immutability.

Today, the Ethereum and Ethereum Classic networks coexist and in many ways are just now beginning to interoperate. While similar in functionality and real-world application capabilities, the base-layer separation between these two networks has driven important differences in their technical architectures, development philosophies, and governance principles over the past several years.

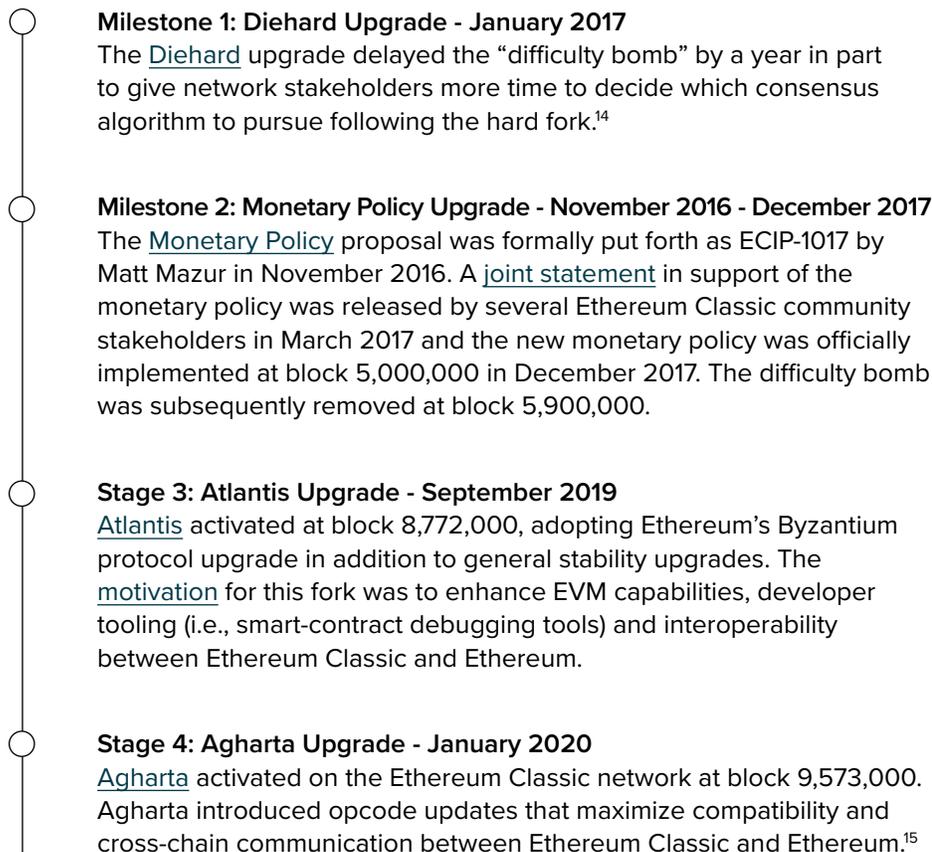
Part 3: Ethereum Classic is [Re]born

Since the time of the hard fork, there have been four major development milestones with some subdivided into multiple stages. Each stage is integrated into the main protocol as a hard fork, supplemented with comprehensive testing of features in network testnets. Over time, the roadmap has evolved to reflect community consensus. Contributions to the Ethereum Classic Project work towards reaching its final stage, in which the goal is to be a globally scalable payment network, smart-contract platform, and digital store of value resistant to centralized governance.

¹² "The DAO of accrue." *The Economist*. May 19, 2016. <https://www.economist.com/finance-and-economics/2016/05/19/the-dao-of-accrue>.



FIGURE 3: MAJOR MILESTONES OF ETHEREUM CLASSIC DEVELOPMENT¹³



For a comprehensive explanation of the features introduced in each of these milestones, please refer to [Ethereum Classic Improvement Proposals](#).

13. Ethereum Classic Profile. *Messari*. August 1, 2021. <https://messari.io/asset/ethereum-classic/profile>.
14. Alyssa Hertig. Ethereum Classic Freezes ‘Difficulty Bomb’ with ‘Diehard’ Fork. *CoinDesk*. January 13, 2017. <https://www.coindesk.com/ethereum-classic-diehard-fork>.
15. Ethereum Classic Profile. *Messari*. August 1, 2021. <https://messari.io/asset/ethereum-classic/profile>.



Defining Characteristics of Ethereum Classic

The Ethereum Classic network was designed to expand upon the use cases afforded by Bitcoin and serve as a decentralized world computer and alternative digital store of value. While Bitcoin employs a limited scripting language that only permits P2P value transfer, Ethereum Classic was designed to be computationally universal, or Turing-complete, facilitating more advanced types of programmable digital interactions with ETC.

With that said, Ethereum Classic and Bitcoin share many of the following characteristics, though they are at different points on the spectrum of each.

- **Decentralization:** Ethereum Classic employs PoW, effectively eliminating the need for a central authority (e.g., governments and financial institutions) to validate transactions or smart-contract based network operations. Buterin asserts that blockchains are politically and architecturally decentralized, but behave in a logically centralized way, in which the nodes hold equal power in the network and must collaborate to validate transactions.¹⁶

One caveat is that while governance is designed to be decentralized, there may be risks associated with the level of decentralization of mining pools in the Ethereum Classic network. As of August 1, 2021, the top two largest mining pools controlled over 50% of the hashrate of the network.¹⁷

- **Permissionless:** Anyone can participate in the network.
- **Secure:** In PoW protocols, the network “is secure as long as honest nodes control more [power] than collective attacker nodes.”¹⁸ An attacker seeking to make a fraudulent transaction on the blockchain would have to locate the desired block, change the transaction data, then mine each consecutive block until the fraudulent one was accepted by the network, in what is called a 51% attack. The primary deterrent of these attacks is that they are computationally expensive with uncertain payoff, and as a result, are unlikely.¹⁹

In January 2019, the Ethereum Classic network was the target of a 51% attack in which blocks on the mainchain were reorganized and approximately 219,500 ETC (worth \$1.1 million at the time) was double-spent through a series of fraudulent transactions.²⁰ Since then, steps have been taken by service providers dealing in ETC

16. Vitalin Buterik. “The Meaning of Decentralization.” *Medium*. February 6, 2017.

<https://medium.com/@VitalikButerin/the-meaning-of-decentralization-a0c92b76a274>.

17. Ethereum Classic Mining Pools (ETC) Equihash. *Miningpoolstats.io*. August 1, 2021.

<https://miningpoolstats.stream/ethereumclassic>.

18. Satoshi Nakamoto. “Bitcoin: A Peer-to-Peer Electronic Cash System.” *Bitcoin Project*. October 31, 2008.

<https://bitcoin.org/bitcoin.pdf>.

19. Saravanan Vijayakumaran. “The Security of the Bitcoin Protocol.” *Indian Institute of Technology Bombay*. May 19, 2018.

<https://static.zebpay.com/web/pdf/Bitcoin-Security-White-Paper.pdf>.

20. Mark Nesbitt. “Deep Chain Reorganization Detected on Ethereum Classic (ETC).” *The Coinbase Blog*. January 7, 2019.

<https://blog.coinbase.com/ethereum-classic-etc-is-currently-being-51-attacked-33be13ce32de>.



as well as Ethereum Classic community members to mitigate the risk of double-spending on the network, including increasing the number of required confirmations prior to accepting a transaction as final. Since then, there have not been any further reported attacks.

Furthermore, though the 2016 DAO hack raised concerns over the security of the network, Atzei et al. (2016) identified vulnerabilities with Solidity, the programming language used to design Ethereum smart contracts, as the primary reason for the attack and not the network itself.²¹

- **Open-source:** The source code for the Ethereum Classic Project is available on the Internet, free for anyone to access, contribute to, or fork. This is an important characteristic for building trust and accumulating users, evidenced by the fact that the Ethereum Classic project boasts a distributed, global base of active developers.

Users can introduce Ethereum Classic Improvement Proposals (ECIPs), which are feature suggestions designed to improve the network and follow strict technical guidelines.

- **Transparent:** All transactions are recorded and publicly viewable on the Ethereum Classic blockchain from anywhere in the world.
- **Pseudo-anonymous:** Public wallet addresses are not directly linked to any identifying personal information. However, in the current state, complete anonymity is difficult to achieve. This is because addresses involved in any Ethereum Classic transaction are permanently and publicly viewable on the blockchain. Information like multiple transactions originating from one wallet or data leaks from custody solutions or exchanges can almost always trace back to one's identity.²²
- **Finite supply:** At inception, 72 million ETC were created and disseminated to the public as part of the initial ETH crowdsale. Following the hard fork, Ethereum Classic stakeholders and community members recognized the need for a robust and transparent economic framework that balances the long-term interests of investors, developers, and business operators. On March 1, 2017, several members of the Ethereum Classic community announced their commitment to implement a new monetary model. Similar to Bitcoin, the new policy was built on the fundamental economic principle that the value of an asset is a function of its utility and its scarcity. As such, it established a hard cap on the total ETC issuance to bootstrap network adoption. Due to slight variations in the block reward rate, it is anticipated that the total supply of ETC will reach ~210 million and will never exceed 230 million.

21. Nicola Atzei, Massimo Bartoletti, and Tiziana Cimoli. "A survey of attacks on Ethereum smart contracts." *Università degli Studi di Cagliari*. October 7, 2016. <https://eprint.iacr.org/2016/1007.pdf>.

22. Aaron Van Wirdum. "Is Bitcoin Anonymous? A Complete Beginner's Guide." *Bitcoin Magazine*. November 18, 2015. <https://bitcoinmagazine.com/articles/is-bitcoin-anonymous-a-complete-beginner-s-guide-1447875283>.



Key Features of Ethereum Classic

Ethereum Classic is the first digital asset to incorporate a platform with smart contract capability. It is comprised of the following elements, which are essential to understanding the network and its many applications.

Ether Classic (ETC)

ETC is the digital currency native to Ethereum Classic. It serves three main purposes: (i) to store value in ETC, (ii) to settle transactions by allowing users to send or receive payments in ETC and (iii) to facilitate network operations (i.e., power DApps) via transaction fees paid in ETC (known as ‘gas’), which are based on the computational costs of executing the code. Gas is the internal unit of value used for smart contract code execution, calculated by measuring the computational cost of executing a given instruction. Miners and smart contract programmers collect transaction fees in ETC, based on the equivalent amount of gas. Gas prices are measured in wei, the smallest unit of ETC, where 10^{18} wei is equal to 1 ETC.

Smart Contracts

Smart contracts are lines of code that facilitate the exchange of anything representative of value, such as money, information, property, or voting rights. They are uploaded onto the blockchain and transactions executed cannot be modified. Using smart contracts, users can send or receive ETC, create markets, store registries of debts or promises, represent ownership of property or a company, transfer funds given a set of logical instructions, and form new digital assets in compliant offerings or issuances. The concept of a smart contract was first proposed by Nick Szabo, a renowned computer scientist specializing in digital currencies and the creator of Bit Gold, and was explored in his 1997 [whitepaper](#).

Solidity

Solidity is the primary programming language of Ethereum Classic. It is used to write smart contracts, develop DApps, structure DAOs, and operate IoT (Internet of Things) devices built on Ethereum Classic technology. Additional languages have recently been added to the Ethereum Classic network, such as [Vyper](#), while others have been deprecated, like Serpent and Mutan.

Decentralized Applications (DApps)

Decentralized applications (DApps) are applications, programs, or tools that utilize smart contracts built into the Ethereum Classic network. DApps have potential use cases across many sectors, including financial services, asset management, supply chain management, identity management, and data storage encryption and transfer. Some popular DApps built on the Ethereum blockchain include [MakerDAO](#), [CryptoKitties](#), and [IDEX](#). MakerDAO, in particular, is currently the largest decentralized financing (DeFi) platform.²³ As a tangible application of Ethereum, it has the potential to democratize access to financial services. As of August 1, 2021, approximately 9.7 ETH was [locked up](#) as collateral for DeFi purposes.

23. “Maker Dominance.” *DeFi Pulse*. August 1, 2021. <https://defipulse.com/>.



This is even more relevant within the context of the Agharta upgrade, as the enhanced compatibility between Ethereum Classic and Ethereum increases the likelihood the DApps already deployed on Ethereum can be more easily redeployed on Ethereum Classic. According to [State of the DApps](#), there are 2,738 total DApps on Ethereum, while [DApp Direct](#) lists 36 currently operating on Ethereum Classic.²⁴ As the two networks continue to scale their interoperability, we may see a convergence in these counts as DApp developers become agnostic between the two networks and seek to maximize their addressable markets.

Decentralized Autonomous Organizations (DAOs)

Decentralized Autonomous Organizations (DAOs) are organizations that function independent of a central governing body. Unlike traditional companies where ownership is divided amongst its shareholders, a DAO is owned by those who contribute tokens, who are also given voting rights. In addition, the rules of a DAO are determined by its accompanying collection of smart contracts.

Ethash Algorithm

Although both Ethereum Classic's Ethash and Bitcoin's SHA-256 utilize PoW, the two protocols differ in how they address ASICs (Application-Specific Integrated Circuits). In Ethash, GPUs (Graphical Processing Units) are the preferred choice of equipment and are relatively cheaper compared to ASICs, which are integral to SHA-256. As a result, the Ethereum Classic mining process is more egalitarian with a lower cost barrier to entry. It also reduces the probability of mining centralization, and subsequent risk of attacks on the network. However, the tradeoff for adopting Ethash is that computations are more memory intensive.²⁵

For more on the technicalities on Ethash, please refer to this open-source [guide](#) on Github.

Ethereum Virtual Machine (EVM)

The EVM was created by Dr. Gavin Wood in 2014 and detailed in the original Ethereum [yellow paper](#), the technical version of the whitepaper. The EVM handles the state of the Ethereum blockchain and executes all smart contracts, DApps, and DAOs on the network. It is Turing-complete, meaning that the program will always run to completion given sufficient time and memory. This was a significant innovation in blockchain technology because it permitted sophisticated, conditional logic and provides the basis for more complex programs. Other virtual machines, such as SputnikVM, are in development for Ethereum Classic.²⁶

24. "Ethereum Classic Agharta hard fork goes live." *Messari*. January 13, 2020. <https://messari.io/article/ethereum-classic-agharta-hard-fork-goes-live>.

25. Vitalik Buterin. "On Mining." *Ethereum Foundation Blog*. June 19, 2014. <https://blog.ethereum.org/2014/06/19/mining/>.

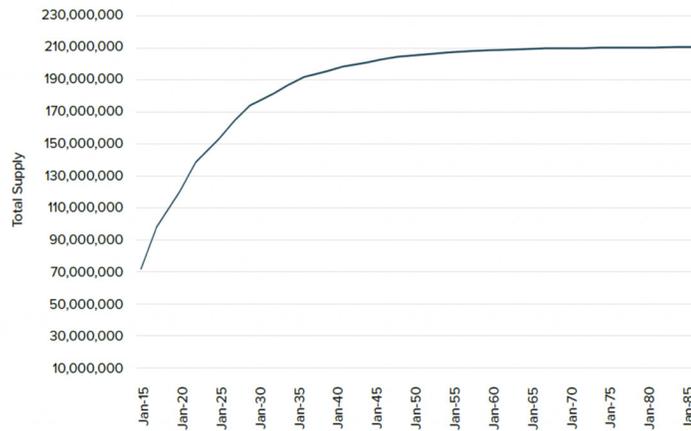
26. "SputnikVM." *GitHub*. <https://github.com/ETCDEVTeam/sputnikvm>.



Mining Rewards

The miner reward of 5 ETC per block established at inception was reduced by 20% (to 4 ETC per block) at block 5,000,000 in December 2017, coinciding with the implementation of the new monetary policy outlined in ECIP-1017. The reward will continue to be reduced by 20% every five million blocks thereafter. A block of transactions is confirmed on the Ethereum Classic network about every 13 seconds. Like Bitcoin, Ethereum Classic miners may also be paid additional amounts of ETC to account for transaction fees.

FIGURE 4: ETHEREUM CLASSIC ISSUANCE SCHEDULE²⁷



Since inception, the history of block rewards is as follows²⁸:

- Block #0 to Block #5,000,000: 5 ETC
- Block #5,000,000 to 10,000,000: 4 ETC
- Block 10,000,000 to 15,000,000 (Estimated to begin in March 2020): 3.2 ETC

27. Matt Mazur. "Proposal ECIP-1017: Monetary Policy and Final Modification to the Ethereum Classic Emission Schedule." *GitHub*. January 19, 2017. <https://github.com/ethereumproject/ECIPs/pull/20/files>.
28. *Ibid*.



Potential Advantages of Ethereum Classic

The design of the Ethereum Classic protocol leads to three potential advantages when compared to traditional financial institutions, payment channels, and other digital asset networks:

- 1. Pioneering smart contract compatibility in a ‘store-of-value’ protocol²⁹:** Ethereum Classic set a precedent as the first smart-contract powered digital currency network to practically embody the governance and economic principles of Bitcoin, with a focus on immutability. This may allow ETC to play a complementary role to Bitcoin as an alternative digital store of value with the smart contract functionality of Ethereum.
- 2. Active and decentralized community:** There is a growing base of developers, business operators, non-profits, and active community members driving development, education and adoption of Ethereum Classic. Below we’ve provided a brief description of some of the active groups that are contributing to Ethereum Classic today:
 - **ETC Core** - The leading development team for the Ethereum Classic protocol at ETC Labs. Their work spans open-source tool development, driving improvement specifications from design to implementation, and maximizing the capabilities of the EthereumStack.³⁰
 - **ETC Consortium** - An association of individuals, companies and organizations from various crypto and blockchain communities, originally formed in China. The mission of the institute is to propagate the Ethereum Classic fundamental values which are decentralization, immutability and censorship resistance.³¹
 - **Ethereum Classic Cooperative (ECC)**³² The ECC is a 501(c)(3) non profit created to financially support the growth and development of the Ethereum Classic protocol. The ECC believes that the Ethereum Classic protocol can enhance the ways that information and value are shared in a digital economy, and is committed to doing its part to realize this potential. The ECC has established guidelines for the deployment of its capital across three core investment areas: (1) development; (2) marketing; and (3) community.³³

29. Donald McIntyre. "The Ethereum Classic Ideal Long-Term Roadmap. *Etherplan*. September 27, 2019. <https://etherplan.com/2019/09/27/the-ethereum-classic-ideal-long-term-roadmap/8791/>.

30. ETC Core. <https://etccore.io/>.

31. Ethereum Classic Consortium. <https://etcconsortium.org/>.

32. In order to promote the growth and development of the Ethereum Classic network, Grayscale intends, but is not obligated, to direct up to one-third of the annual fee of Grayscale Ethereum Classic Trust towards the Ethereum Classic Cooperative, whose initiatives support development, marketing, and community activities of the Ethereum Classic network. For more information, visit etccooperative.org.

33. Ethereum Classic Cooperative. <https://etccooperative.org/>.



- 3. Lower barriers to entry for miners:** Ethereum Classic mining is more accessible to those who are limited by equipment, as the expense of confirming a block, in terms of electricity costs and computational capacity, is cheaper compared to Bitcoin. Therefore, Ethereum Classic mining may be attractive to potential marginal miners because it requires less processing power and has lower operating costs.
- 4. Enhanced interoperability with Ethereum:** The Agharta and Atlantis upgrades introduced updates that maximize compatibility and cross-chain communication between Ethereum Classic and Ethereum. This allows Ethereum Classic to more easily tap into, and benefit from, upstream development on the Ethereum network, including DApps, new technologies, and a broader base of developers, tools and users.

Potential Risks of Ethereum Classic

There are important trade offs to consider when choosing between different digital currency networks to use and invest in. Selection will often depend on the one that best satisfies the needs of the user. We outline four key risks related to investing in Ethereum Classic:

Scalability Problems

Like many of its digital currency counterparts, Ethereum Classic faces limitations in terms of scalability. Currently, the network can only process an average of 15 transactions per second, compared to traditional payment channels such as VISA, which handles approximately 1,700 transactions per second (and claims to have the capacity to handle more than 24,000 per second).³⁴ Ethereum Classic has already undergone several software modifications to adapt to the scaling challenges presented by its initial design. However, scalability continues to be one of the largest challenges for the Ethereum Classic network and remains an active area of research for developers.

There are two types of approaches being researched to resolve Ethereum Classic's scalability issues: (i) on-chain, or Layer 1, which refers to the main blockchain and (ii) off-chain, or Layer 2, which refers to feature implementations outside of the main blockchain, such as Sidechains, Payment Channels, State Channels, or other scaling technologies built on interoperable blockchains, like Ethereum 2.0.

Many stakeholders prefer that Ethereum Classic remain a secure Layer 1 system to provide a stable financial network upon which ETC can fulfill the role of a Turing-complete internet reserve currency, like Bitcoin. Outsourcing the risks associated with experimental technologies or methods of performance optimization to Layer 2 solutions appears to be the favored approach.³⁵

³⁴ Visa. February 15, 2020. <https://usa.visa.com/run-your-business/small-business-tools/retail.html>.

³⁵ Donald McIntyre. "The Ethereum Classic Ideal Long-Term Roadmap. *Etherplan*. September 27, 2019. <https://etherplan.com/2019/09/27/the-ethereum-classic-ideal-long-term-roadmap/8791/>.



Level of Decentralization

There may be risks associated with the level of decentralization of the Ethereum Classic network, particularly with respect to mining pools. For example, as of August 1, 2021, the top two largest mining pools controlled over 50% of the network hashrate.³⁶

Competition

Ethereum Classic faces strong competition from a broad spectrum of general-purpose platform digital currency networks, including Ethereum, Horizen, Eos, and Tezos, among others. Each of these may be viewed as direct or indirect competitors to Ethereum Classic and it remains to be seen whether decentralized applications, smart contract functionality, or other use cases may be better served on one or some versus others. It is also possible that these networks fail collectively, or that some combination of them succeed alongside one another due to competitive market forces.

Volatility with Smart Contracts

Since transactions resulting from smart contracts may be difficult to stop or reverse, any vulnerabilities in the underlying code can weaken the network. For example, the 2016 exploit of The DAO led to an unknown attacker siphoning off approximately \$60 million worth of ETH into a segregated account. This event spurred the controversial hard fork of Ethereum, resulting in the split into two networks: Ethereum and Ethereum Classic. In 2017, Parity, the multi-sig wallet software created by Parity Technologies, was also affected by two exploits. The first, in July 2017, resulted in a theft of \$30 million in ETH, and the second, in November 2017, led to an indefinite freeze of approximately \$160 million in ETH.³⁷ Smart contract technology is relatively new and still in open-source development.

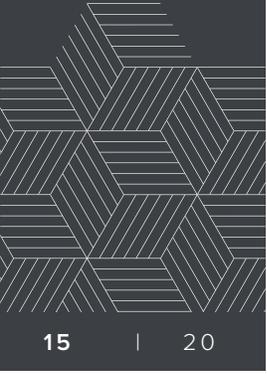
Regulatory Uncertainty

The SEC has stated that certain digital assets may be considered “securities” under the federal securities laws. To date, the SEC has only identified two digital assets, Bitcoin and Ethereum, for which it does not intend to take the position that they are securities. While the argument for not considering Ethereum Classic to be a security is likely the same as Ethereum, the SEC has not specifically addressed Ethereum Classic as of the date this report was released. As a result, any other digital asset, including ETC, is at risk of being deemed a security, which may have material adverse consequences for such digital assets. Moreover, there are a number of regulatory considerations related to tokens, products, and businesses built atop the open-source Ethereum Classic network that could pose further risks to ETC prices.

36. “Top 25 Miners by Blocks.” *Etherscan*. August 1, 2021. <https://etherscan.io/stat/miner?range=7&blocktype=blocks>.

37. Jon Russell. “A major vulnerability has frozen hundreds of millions of dollars of Ethereum.” *TechCrunch*. November 7, 2011. <https://techcrunch.com/2017/11/07/a-major-vulnerability-has-frozen-hundreds-of-millions-of-dollars-of-ethereum/>



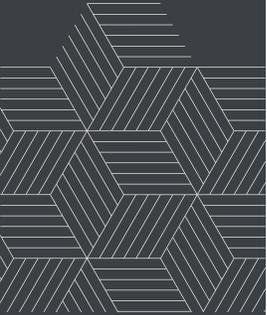


Summary

Ethereum Classic initiated the second wave of innovation in blockchain technology, expanding upon the use cases afforded by Bitcoin and solidifying its own unique role in the digital currency ecosystem. In its final form, Ethereum Classic seeks to be a globally scalable payment network, smart-contract platform, and digital store of value resistant to centralized governance. Despite the 2016 hack of The DAO that resulted in the controversial hard fork, Ethereum Classic maintains its position among the top twenty largest digital currency networks by market cap. With its global network of users, developers, business operators, and enthusiasts, Ethereum Classic has proven resilient with material social and technological momentum, while still retaining optionality to benefit from quality upstream developments introduced on Ethereum.

To learn more about other digital assets underpinning the Grayscale family of products, please visit the Building Blocks section of [Grayscale Insights](#).





About Grayscale Investments, LLC

Founded in 2013, Grayscale Investments is the world’s largest digital currency asset manager. Through its family of investment products, Grayscale provides access and exposure to the digital currency asset class in the form of a security without the challenges of buying, storing, and safekeeping digital currencies directly. With a proven track record and unrivaled experience, Grayscale’s products operate within existing regulatory frameworks, creating secure and compliant exposure for investors.

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Digital assets have historically experienced significant intraday and long-term price swings. In addition, none of the Products currently operates a redemption program and may halt creations from time to time or, in the case of Grayscale Bitcoin Trust (BTC), periodically. There can be no assurance that the value of the common units of fractional undivided beneficial interest (“Shares”) of any Product will approximate the value of the digital assets held by such Product and such Shares may trade at a substantial premium over or discount to the value of the digital assets held by such Product. At this time, none of the Products is operating a redemption program and therefore Shares are not redeemable by any Product. Subject to receipt of regulatory approval from the SEC and approval by Grayscale, in its sole discretion, any Product may in the future operate a redemption program. Because none of the Products believes that the SEC would, at this time, entertain an application for the waiver of rules needed in order to operate an ongoing redemption program, none of the Products currently has any intention of seeking regulatory approval from the SEC to operate an ongoing redemption program.
- **MARKET ADOPTION**
It is possible that digital assets generally or any digital asset in particular will never be broadly adopted by either the retail or commercial marketplace, in which case, one or more digital assets may lose most, if not all, of its value.
- **GOVERNMENT REGULATION**
The regulatory framework of digital assets remains unclear and application of existing regulations and/or future restrictions by federal and state authorities may have a significant impact on the value of digital assets.
- **SECURITY**
While each Product has implemented security measures for the safe storage of its digital assets, there have been significant incidents of digital asset theft and digital assets remains a potential target for hackers. Digital assets that are lost or stolen cannot be replaced, as transactions are irrevocable.
- **TAX TREATMENT OF VIRTUAL CURRENCY**
For U.S. federal income tax purposes, Digital Large Cap Fund will be a passive foreign investment company (a “PFIC”) and, in certain circumstances, may be a controlled foreign corporation (a “CFC”). Digital Large Cap Fund will make available a PFIC Annual Information Statement that will include information required to permit each eligible shareholder to make a “qualified electing fund” election (a “QEF Election”) with respect to Digital Large Cap Fund. Each of the other Products intends to take the position that it is a grantor trust for U.S. federal income tax purposes. Assuming that a Product is properly treated as a grantor trust, Shareholders of that Product generally will be treated as if they directly owned their respective pro rata shares of the underlying assets held in the Product, directly received their respective pro rata shares of the Product’s income and directly incurred their respective pro rata shares of the Product’s expenses. Most state and local tax authorities follow U.S. income tax rules in this regard. Prospective investors should discuss the tax consequences of an investment in a Product with their tax advisors.
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