Date: 2025/08/20

Deep Research Report: Kaspa (KAS) and Qubic (QUBIC)

Executive Summary

This report provides a comprehensive and objective analysis of Kaspa (KAS) and Qubic (QUBIC), two distinct Layer 1 blockchain projects. Kaspa, utilizing its BlockDAG architecture and GHOSTDAG consensus, aims to overcome the traditional blockchain trilemma by enabling parallel block creation for high throughput, near-instant finality, and robust Proof-of-Work (PoW) security without compromising decentralization. Its tokenomics feature a fair launch and a unique chromatic emission schedule designed for long-term sustainability. Qubic, conversely, introduces Useful Proof of Work (UPoW), channeling computational power into Artificial Intelligence (AI) training for its AIGarth model, offering feeless transactions and sub-second smart contract finality. Both projects present innovative solutions to long-standing blockchain challenges, yet face different sets of technical, adoption, and market considerations. Kaspa's current discussions on X (formerly Twitter) revolve around its technological advancements and adoption potential, while Qubic's discourse is heavily influenced by its controversial Monero hashrate claims and subsequent community votes. The comparative analysis reveals their divergent approaches to scalability and utility, highlighting Kaspa's focus on high-speed digital cash and Qubic's ambition in decentralized AI. Risks for both include market volatility and the need for sustained ecosystem growth, while opportunities lie in their unique technological propositions to address specific market demands.

1. Technology & Consensus Mechanism

1.1 Kaspa: BlockDAG and GHOSTDAG

Kaspa differentiates itself through its innovative BlockDAG architecture and the GHOSTDAG consensus protocol. This design enables a departure from the linear block sequencing of traditional blockchains, allowing for parallel block creation and near-instant transaction confirmation.

How it works: Parallel block creation, instant confirmation

Kaspa operates as the first blockDAG, a digital ledger that facilitates the simultaneous creation of multiple blocks and provides rapid transaction confirmation.[1] In conventional blockchain systems, such as Bitcoin, blocks created in parallel are typically discarded as "orphans," leading to wasted computational resources and reduced efficiency.[2] Kaspa's GHOSTDAG protocol, however, integrates these parallel blocks into the network, allowing them to coexist and be ordered within the consensus mechanism.[1] This architectural choice is often likened to a multi-lane expressway, where numerous "cars" (blocks) can travel concurrently without congestion, in stark contrast to a single-lane highway prone to traffic jams.[2]

The GHOSTDAG protocol represents a sophisticated evolution of basic Directed Acyclic Graph (DAG) principles. Its primary function is to address the inherent challenge in earlier DAG implementations: how to fairly and securely determine the "main" chain or branch of the DAG.[4] GHOSTDAG achieves this by assigning a calculated probability to each block, influencing its inclusion in the preferred parent set of future blocks. This method promotes equitable mining rewards and helps prevent the centralization of control within the network.[4] The protocol's ability to process all blocks in parallel, linking all side-chains, effectively overcomes the traditional problem of orphaned blocks in blockchain systems.[1]

Innovations compared to Bitcoin & Ethereum: Scalability without sacrificing security/decentralization (Blockchain Trilemma/Quadrilemma)

A central claim of Kaspa is its ability to overcome the "Blockchain Trilemma," a concept popularized by Vitalik Buterin, which posits an inherent trade-off between scalability, security, and decentralization.[3] Kaspa asserts that its design achieves a superior balance across these three fundamental properties. Furthermore, the project extends this claim to a "Blockchain Quadrilemma," by incorporating sustainability as a fourth critical element that its protocol

addresses comprehensively.[8]

This assertion positions Kaspa as a foundational advancement over established Proof-of-Work (PoW) systems like Bitcoin and Ethereum. Unlike Bitcoin's single-chain model, which inherently limits transaction throughput by discarding parallel blocks, Kaspa's GHOSTDAG integrates these blocks into its blockDAG structure. This integration ensures that all valid blocks contribute to the network's overall security and processing power, thereby significantly boosting throughput and minimizing transaction latency.[2] This represents a re-architecture of how PoW consensus can achieve high performance while maintaining core blockchain principles. The implication is that Kaspa's core innovation fundamentally bypasses the inherent trade-offs that other Layer 1 solutions often encounter, offering a more holistic approach to network design.

Technical Strengths: High throughput, near-instant finality, energy efficiency (kHeavyHash), robust security (PoW)

Kaspa exhibits several notable technical strengths that underscore its design philosophy.

- **High Throughput and Speed:** The network currently supports a block rate of 10 blocks per second (BPS), with future development targets set at 32 BPS and eventually 100 BPS.[1] This high block generation rate means transactions are visible across the network within one second and achieve full confirmation, on average, within 10 seconds.[1] This makes Kaspa particularly suitable for applications requiring rapid settlement times, such as micropayments or high-frequency trading.[4] The project emphasizes that this throughput is achieved through genuine architectural innovation, not through artificial means like "inflated voting transactions to pump TPS".[8]
- **Near-Instant Finality:** Due to its DAG structure, transactions on Kaspa can achieve practical finality within seconds, a significant improvement over traditional linear blockchains.[4]
- **Energy Efficiency:** Kaspa utilizes the kHeavyHash algorithm for its Proof-of-Work consensus and network security.[1] This algorithm, combined with the high-throughput DAG and the principle of "no-wasted-blocks" (as orphaned blocks are incorporated), results in a considerably less energy-intensive PoW network compared to older PoW chains.[1] This focus on efficient mining and validation contributes to a reduced environmental impact, positioning Kaspa as a more sustainable option within the blockchain ecosystem.[3] This directly addresses a major criticism often leveled against Bitcoin-like systems: their high energy consumption. This strategic positioning aims to differentiate Kaspa and potentially appeal to a broader audience, including those concerned with environmental, social, and governance (ESG) factors, and to mitigate future regulatory pressures related to energy use.

- **Robust Security:** Kaspa maintains robust network security through its pure Proof-of-Work consensus and the GHOSTDAG protocol, even under conditions of heavy network usage.[2] The network is designed to be an "ultra-secure block network with no compromise to decentralization".[1] The rapid block generation rate, occurring every second, further contributes to decentralization by making it more difficult for a single entity to accumulate an excessive concentration of hashrate.[6]

Potential Weaknesses: Relative newness, lower node count compared to established chains

Despite its technical strengths, Kaspa faces certain challenges, primarily stemming from its relative youth and current network statistics.

Kaspa is a relatively new Proof-of-Work blockchain, having been founded in November 2021.[1] As a newer entrant, it is acknowledged that Kaspa "lacks the adoption, ecosystem maturity and battle tested security of Bitcoin, Ethereum, or Solana".[8] The concept of "battle-tested security" for older chains is derived from their extensive, publicly verifiable node networks and years of enduring adversarial attacks, a status that a younger project has yet to fully achieve.

Regarding decentralization as measured by node count, Kaspa is reported to have between 300 and 400 public nodes.[10] This figure is considerably lower than that of established networks like Bitcoin and Monero, both of which maintain over 10,000 active full nodes.[10] While it is suggested that many Kaspa nodes are non-public by default, leading to a suspicion that "hundreds, if not thousands more private nodes" exist, the publicly verifiable decentralization metric remains comparatively low.[10] This presents a potential vulnerability or perception challenge. A lower public node count, even if offset by private nodes, translates to fewer publicly verifiable points of network participation, which can raise concerns about network resilience, censorship resistance, and the actual distribution of control.

A community member's statement that "adoption follows utility" [8], made in response to concerns about network effect and adoption, highlights a common challenge for new Layer 1 projects. This indicates that while Kaspa's underlying technology is robust, the project recognizes the necessity of translating its technical prowess into tangible applications and user engagement to drive broader adoption and overcome the "chicken and egg" problem of network effects. The technical strengths, while impressive, are not sufficient on their own; active fostering of utility and applications is required for significant growth.

1.2 Qubic: Useful Proof of Work (UPoW)

Qubic introduces a distinctive approach to consensus through its Useful Proof of Work (UPoW) mechanism, which integrates Artificial Intelligence (AI) training directly into the network's operational framework.

How it works: AI training as consensus (AIGarth), Computors and epochs

Qubic's core innovation lies in its UPoW consensus, where the computational effort typically expended in traditional mining is redirected towards training Artificial Neural Networks (ANNs) for AIGarth, Qubic's native decentralized AI model.[11] In this system, network validators, termed "Computors," are supported by "AI miners" who solve complex AI training tasks rather than arbitrary cryptographic puzzles.[11]

The primary objective of this mining activity extends beyond mere transaction validation. It aims to establish a Computor's ranking within each "epoch," a designated one-week period.[11] The effectiveness and quality of an AI miner's solutions to these complex problems directly influence the Computor's ranking, which, in turn, dictates their potential earnings.[11] Miners generate ANNs with random connection structures, and AIGarth subsequently analyzes the properties of these ANNs to inform and guide future AI development.[11]

This approach fundamentally redefines the purpose of computational effort in a Proof-of-Work system. Instead of energy being "wasted" on arbitrary puzzles, Qubic channels it into a tangible, valuable output: AI training.[11] This positions Qubic as a "green" or "productive" PoW, akin to Kaspa's energy efficiency claims, but with a distinct and explicit utility proposition. This dual utility, securing the network while contributing to AI development, suggests a higher societal value proposition and potentially stronger long-term sustainability as the AI component could generate additional demand and utility for the network, beyond just transactional use.

Innovations compared to Bitcoin & Ethereum: Feeless transactions, instant finality, productive use of computational power

Qubic introduces several innovations that distinguish it from established blockchains like Bitcoin and Ethereum, particularly concerning transaction economics and the utility of

computational power.

Qubic offers fast, feeless transactions with instant finality, ensuring that transactions are secure and final, even in offline scenarios.[14] This contrasts significantly with most traditional blockchains that impose transaction fees on users.[13] The unique aspect of Qubic's fee structure for smart contract execution is that the associated QUBIC tokens are not "paid" to Computors in the conventional sense. Instead, these tokens are "burned," or permanently removed from circulation, by the smart contract itself.[15] This mechanism reinforces QUBIC's role as an 'energy' unit consumed for computational tasks, rather than a direct monetary payment to validators. This feeless model for users, coupled with the burning of QUBIC, implies a frictionless user experience and a deflationary pressure on the token supply, potentially enhancing its scarcity over time.

Qubic claims impressive performance metrics, including a peak transaction per second (TPS) rate of 15.52 million and smart contracts capable of processing over 55 million transfers per second.[14] This high throughput, combined with the feeless model, positions Qubic as a platform designed for high-volume, low-cost applications.

Technical Strengths: High TPS, AI development focus, energy efficiency

Qubic's technical architecture emphasizes high performance and a unique integration with AI development.

- **High Performance:** Qubic boasts a peak TPS of 15.52 million, making it one of the fastest CertiK-verified blockchains.[14] Its smart contracts are designed for exceptional speed, capable of over 55 million transfers per second.[14] The network also aims for sub-second transaction finality.[13]
- **AI Development Focus:** The core strength of Qubic's UPoW lies in its direct contribution to Artificial General Intelligence (AGI) development through the training of AIGarth's neural networks.[11] This transforms computational energy into a valuable, beneficial outcome, moving beyond the arbitrary puzzles of traditional PoW.[11] This unique approach aligns mining activities with a broader technological goal, potentially fostering a distinct ecosystem and attracting AI-centric developers and users.
- **Energy Efficiency:** By directing computational power towards useful AI training tasks, Qubic's UPoW is presented as a more energy-efficient alternative to traditional PoW.[11] This addresses environmental concerns associated with blockchain mining by ensuring that the energy expended serves a dual purpose: network security and AI advancement. The UPoW protocol allows for optimization and can run on normal hardware, consuming less energy per computational unit compared to conventional PoW.[11]

Potential Weaknesses: Monero 51% attack controversy, transparency, ongoing development

Qubic's innovative UPoW model has also been associated with significant controversies and potential vulnerabilities, particularly concerning network security and transparency.

A major point of contention arose from Qubic's claims of temporarily controlling over 51% of Monero's (XMR) hashrate as a "security stress test".[18] While Qubic asserted it reached 52.72% hashrate dominance and managed to reorganize the Monero blockchain, this claim was met with widespread skepticism from the Monero community and industry observers.[18] Data from independent sources suggested Qubic's hashrate was closer to 30-46% of Monero's total.[18] Critics, including a former Monero lead maintainer, accused Qubic of lying and engaging in a "deliberately deceptive marketing move" to spread panic and harm the Monero network.[18]

Even if a brief exceedance of 51% occurred, the Monero community did not observe a sustained increase in orphan blocks or significant chain reorganizations, with only one suspected reorg being rejected.[21] This suggests that even if temporary control was achieved, it was not sustained long enough to execute an effective attack. The cost of maintaining such hashrate dominance is also deemed "staggering," estimated at over $100,000 per day in electricity costs alone, raising questions about the economic sustainability of such an endeavor.[21] The lack of transparency, with Qubic reportedly stopping its hashrate reporting to public mining pool statistics websites, further fueled skepticism and accusations of hiding peak hashrates to present more favorable numbers on their own controlled website.[21] This incident highlights a potential risk related to the centralization of hashrate, even if claimed for "security testing," and raises questions about Qubic's motives and the fragility of its "hashrate + token" economic model, which relies on maintaining token price confidence.[21]

Furthermore, while Qubic's whitepaper and documentation highlight the benefits of UPoW, they do not explicitly detail technical challenges or inherent weaknesses of the mechanism itself.[12] However, it is noted that "Key components, such as Oracle Machines for seamless data integration, are still in development".[12] This indicates that the full realization of Qubic's vision, including third parties leveraging its compute network, is contingent on ongoing development, which can introduce unforeseen technical hurdles.

2. Tokenomics & Economic Model

2.1 Kaspa (KAS)

Kaspa's tokenomics are designed with a strong emphasis on fair distribution and long-term sustainability, diverging from many contemporary crypto projects.

Token distribution, emission curve, inflation/deflation

Kaspa initiated with a "fair launch" on November 7, 2021, meaning there was no Initial Coin Offering (ICO), no pre-mine, zero pre-sales, and no allocated coins.[1] This approach aligns closely with the ethos of Bitcoin, aiming for a truly decentralized distribution from day one.[6] The maximum supply of KAS is approximately 28.7 billion coins.[1]

The emission schedule for KAS is structured in two phases:

- **Pre-deflationary Phase:** This initial phase ran from the mainnet launch (November 7, 2021) until May 8, 2022. Initially, the reward rate was random (1 to 1000 KAS per block) for the first two weeks, then standardized to 500 KAS per second (equivalent to 500 KAS per block at 1 BPS) for six months.[24]
- **Chromatic Phase:** Beginning after the pre-deflationary phase, the Chromatic Phase implements a unique "musical 12-note scale" for block reward reduction. The initial block reward was 440 KAS, and it smoothly halves once per year. This reduction occurs monthly, with the block reward decreasing by a factor of (1/2)^(1/12).[24] This continuous, smooth reduction contrasts with the abrupt halvings seen in Bitcoin.

By January 1, 2024, approximately 76.3% of the total supply (21.9 billion KAS) was projected to be mined, with about 95% expected by July 10, 2026.[24] The emission is designed to continue for about 36 years until the block reward falls below 1 Sompi (the smallest unit of Kaspa), effectively reaching zero.[24]

Inflation/deflation

Kaspa's monetary policy, particularly the Chromatic Phase with its rapid initial emission and

smooth, continuous reduction, has led to discussions about whether KAS is inflationary or deflationary.[24] The design aims to manage the supply effectively. The short emission schedule and fast deflation rate were specifically engineered to mitigate the impact of ASIC dominance.[24] The rationale is that since ASICs are considered unavoidable in Proof-of-Work networks, minting most of the circulating supply before widespread ASIC adoption would distribute coins more broadly among early GPU/CPU miners, thereby promoting greater decentralization of coin ownership.[24] Furthermore, the high block rate and transaction per second (TPS) target create a low hardware entry barrier for both pools and solo miners, further supporting decentralization of mining.[24] This approach to token distribution and emission helps address the issue of power concentration that can arise from specialized mining hardware.

Token use cases (utility, governance, mining, staking, etc.)

The KAS token serves several fundamental roles within the Kaspa ecosystem:

- **Utility for Transactions:** KAS is designed for everyday transactions and micropayments due to its speed and low fees.[1] Peer-to-peer transfers are described as fast, reliable, and nearly free.[9]
- **Mining Rewards:** KAS is the native coin rewarded to miners who secure the network through Proof-of-Work.[1] The emission schedule ensures consistent rewards based on time, rather than per block, allowing rewards to adjust if the block rate changes.[24]
- **Platform for Future dApps:** Kaspa is positioning itself as a foundational layer for future decentralized applications (dApps) and Layer 2 solutions, with developers showing interest in building on its infrastructure.[1]
- **Governance:** Kaspa operates as a community project with no central governance, akin to Bitcoin's ethos.[1] Major upgrades, such as the Rust rewrite and the DagKnight protocol, are driven by open community discussions, votes, and crowdfunding initiatives within channels like Discord.[1] A multi-signature wallet with a 2/4 signing formula manages development funds, with all expenditures published and performed according to public votes, ensuring transparency and community control over resources.[1] There is no staking mechanism in Kaspa, as it is a pure Proof-of-Work network.[1]

Sustainability of the model

Kaspa's economic model is designed for long-term sustainability. The Chromatic Phase's

smooth, gradual halving ensures a predictable and continuously decreasing supply of new coins, which can support price growth if demand increases.[26] This contrasts with Bitcoin's more abrupt halvings, providing a more stable emission curve. The project's support for pruned nodes significantly lowers storage requirements, making it easier and more accessible for individuals to run a node, thereby bolstering decentralization and network health.[8] This, combined with its energy-efficient design and high transaction throughput, is intended to ensure that transaction fees eventually become a significant income stream for miners, maintaining network security and decentralization for generations once block rewards diminish.[8] The design aims to ensure the network remains strong and decentralized even as emissions approach zero.

2.2 Qubic (QUBIC)

Qubic's tokenomics are intrinsically linked to its Useful Proof of Work (UPoW) mechanism and its focus on Artificial Intelligence (AI) development, featuring a unique burning model.

Token distribution, emission curve, inflation/deflation

The QUBIC token functions as an "energy" unit within the Qubic ecosystem, rather than a traditional currency.[15] Each epoch, spanning seven days, generates 1 trillion QUBIC tokens.[15] These tokens are primarily allocated to Computors, the network's backbone nodes, with a distribution model designed to incentivize efficiency.[15] The remaining balance is assigned to the Arbitrator, which oversees AI training tasks but does not influence smart contract governance or token distribution.[15]

A significant aspect of Qubic's tokenomics is its maximum supply and a recent reduction. The circulating supply is capped at 200 trillion QUBIC, a substantial reduction from the original 1,000 trillion, a decision approved by the community in 2024 to boost the ecosystem and attract new participants.[15] Projections indicate that without further intervention, the 200 trillion cap could be reached by Epoch 435, approximately four years ahead of schedule.[27]

To manage supply growth and promote scarcity, Qubic implements a halving mechanism and a burning schedule. The Epoch 175 halving, scheduled for August 20, 2025, is a significant milestone, reducing effective weekly emissions by approximately 50%, from 850 billion QUBIC to 425 billion QUBIC.[27] This halving increases the proportion of tokens burned each week, accelerating the deflationary process.[27] The Supply Watcher Smart Contract dynamically

adjusts burn rates based on real-time supply data to prevent excessive deflation or instability, ensuring sustainable supply management.[27] Burns are projected to eventually outpace emissions by Epoch 591, stabilizing the total supply around 196.8 trillion QUBIC.[27]

Token use cases (utility, governance, mining, staking, etc.)

QUBIC tokens serve as the computational "energy" for executing smart contracts and accessing other services on the Qubic platform.[15]

- **Computational Energy:** QUBIC is consumed (burned) when smart contracts are executed or data is sought from oracles.[15] This unique model means QUBIC is not "paid" to Computors as fees but is permanently removed from circulation, contributing to the network's deflationary mechanics.[15]
- **Feeless Transfers:** Transfers within the Qubic network are feeless, enhancing efficiency and user-friendliness, particularly for micropayments.[14]
- **Mining and AI Training:** Miners receive rewards through UPoW, which simultaneously powers AI training for projects like AIGarth.[27] The profitability of Computors is directly tied to their performance in these AI training tasks.[11]
- **Smart Contract IPOs:** Smart contracts on Qubic are launched through an Initial Public Offering (IPO) model, where the QUBIC costs for shares are burned. Shareholders can gain passive income through smart contract fees, but these fees are also burned to pay for smart contract execution, reinforcing the "energy" concept.[14]
- **Decentralized Computing Power:** Qubic aims to harness distributed systems to create a global supercomputer, allowing users to tap into the network for complex computational needs, including AI model training.[17]
- **Governance:** Computors play a crucial role in maintaining economic balance by performing tasks assigned by the Arbitrator and voting by Quorum to determine the commission size for smart contract execution.[15] This commission, however, is burned rather than becoming Computor income, further influencing the token's inflation/deflation.[15] The Arbitrator oversees AI training tasks but does not influence smart contract execution or voting, maintaining decentralization.[15]

Sustainability of the model

Qubic's economic model is designed for long-term sustainability through its unique UPoW and burning mechanisms. The alignment of mining activities with AI development ensures that

computational efforts yield tangible benefits beyond mere network security.[27] The halving events and continuous burning of QUBIC tokens during smart contract execution and oracle interactions are intended to promote scarcity and control supply growth.[16] The Supply Watcher Smart Contract dynamically adjusts burn rates to prevent excessive deflation or instability, ensuring that emission reductions do not disrupt incentives for miners and Computors, thereby maintaining network operations and supporting the ecosystem's long-term viability.[27] This integrated approach aims to create a self-sustaining, AI-powered economy where computational effort is monetized and contributes to both network maintenance and broader technological advancement.

3. Ecosystem & Adoption

The growth and maturity of a blockchain project's ecosystem and its adoption metrics are critical indicators of its long-term viability and potential impact.

3.1 Kaspa

Kaspa's ecosystem, while relatively nascent, is actively developing, driven by a strong community and a clear roadmap for expanding its functionalities.

Developer community, ongoing projects, partnerships

Kaspa prides itself on being a 100% open-source, community-driven project, inviting contributions from anyone.[1] This ethos, similar to Bitcoin's, fosters a diverse and inclusive global community. The project actively rewards community participation and contributions through developer bounties and community funding pools, managed transparently via a multi-signature donation fund.[1] The core development team has demonstrated significant activity, with the codebase being rewritten from Go to Rust in 2024 to enhance performance, and regular software releases indicating a healthy, evolving network.[6] GitHub activity for

kaspanet/rusty-kaspa shows consistent commits, significantly outpacing the average for similar projects.[31]

Key initiatives and partnerships include:

- **Kaspa Industrial Initiative (Kii):** Kii aims to drive the global adoption of Kaspa's Distributed Ledger Technology (DLT) by fostering collaboration among companies, leaders, and academics.[33] Its mission is to position Kaspa as a base layer for industrial and enterprise applications in finance, supply chain, energy, and the public sector, emphasizing scalability, security, and decentralization.[33]
- **ZETA (Zero Emission Trading Alliance):** Paul, a co-founder of ZETA, is involved with Kii, linking Kaspa to initiatives focused on emission-free energy and green finance.[34]
- **Wrapped KAS (wKAS):** The launch of wKAS on Polygon and Binance Smart Chain (BNB) in collaboration with Chainge Finance marks a significant step towards interoperability, allowing KAS to be used within broader DeFi ecosystems.[35]
- **Carbon Browser Integration:** A recent partnership with Carbon Browser exposes Kaspa to over 7 million new users, with KAS integrated into its dApp store and wallet, providing seamless onboarding for the mainstream web3 community.[35]

Current and planned applications (e.g., Caravel / Kasplex smart contracts for Kaspa)

Kaspa, while currently lacking native smart contract functionality due to its UTXO-based model (similar to Bitcoin), is actively developing Layer 2 solutions to expand its capabilities.[36]

- **Kasplex L2:** This is a "based rollup" solution that leverages Kaspa's Layer 1 for transaction sequencing and data availability while offloading computation to Layer 2 for EVM (Ethereum Virtual Machine) compatibility.[36] Kasplex supports two submission methods: canonical (direct to L1 for decentralization) and proxied (via a relayer for EVM tool compatibility like MetaMask).[36] Kasplex is considered the most mature Layer 2 implementation for Kaspa to date.[36]
- **Caravel Testnet:** Caravel is an Ethereum-compatible Layer 2 network that launched on testnet on July 21st, aiming to bring smart contracts, dApps, DeFi, and staking to Kaspa with its high speed and security.[38] It is positioned as the "ONLY Proof-of-Work blockchain with smart contract support via L2," combining PoW security with EVM compatibility.[38]
- **Existing Applications:** Despite its relative newness, Kaspa offers user-friendly utilities such as:
    - **Kaspa Explorer:** Provides real-time network metrics, supply data, mining information, and a live feed of blocks and transactions.[7]
    - **Kaspa Graph Inspector (KGI):** A visualization tool for the BlockDAG, displaying relationships between blocks and offering a continuously updating view of mined blocks.[7]
    - **KasBoard:** A monitoring toolset built with Grafana, offering in-depth network

analytics and live data for network activity, blocks, and transactions.[7]
    - **Kaspa AI:** A mobile application providing AI-powered insights, sentiment analysis, news aggregation, and chart analysis for the Kaspa ecosystem.[39]
- **Planned Applications/Initiatives:** The Kaspa Industrial Initiative (Kii) outlines plans for:
    - **International Payments:** Utilizing Kaspa's high-speed, low-fee transactions to revolutionize international payments.[33]
    - **Stablecoins:** Creating and promoting stablecoins on the Kaspa network to bridge traditional and decentralized finance.[33]
    - **Supply Chain Transformation:** Implementing Kaspa for immutable records in supply chains to enhance transparency and reduce fraud.[33]
    - **Energy Sector Revolution:** Integrating with smart grids for efficient energy distribution, facilitating green finance for renewable projects, and developing decentralized energy trading platforms.[33]
    - **DagKnight (DK) Protocol:** The next evolution of Kaspa's consensus, aiming for no-delay-bound model, faster convergence, and improved resilience, paving the way for order-sensitive systems like smart contracts.[40]
    - **ZK Layer (L1<>L2 Bridge):** A zero-knowledge rollup architecture where Kaspa L1 provides sequencing, settlement, and data availability, crucial for scaling via rollups without sacrificing decentralization or finality.[40]
    - **MEV (Miner Extractable Value) Mitigation:** Proposed reverse auctions where miners offer kickbacks to users for transaction ordering rights, aiming to capture value for users and reinforce decentralization.[40]
    - **Oracle Voting Mechanisms:** An L1-native attestation system where miners vote on external data in real-time, building towards secure, PoW-tied oracle feeds.[40]

Degree of decentralization

Kaspa emphasizes its commitment to decentralization, having been fair-launched without pre-mining or pre-allocations, and operating as a 100% decentralized, open-source, and community-managed project.[1] Its Proof-of-Work consensus mechanism, combined with the BlockDAG architecture and rapid block rates, is intended to promote mining decentralization and enable effective solo-mining even at lower hashrates.[8] This design choice is asserted to ensure that power remains distributed, making it a "people's crypto".[8]

However, the current public node count for Kaspa is reported to be between 300 and 400, significantly lower than Bitcoin or Monero.[10] While it is argued that many Kaspa nodes are non-public by default, and that the project is much younger than these established networks, implying future growth in node count [10], the publicly verifiable number of nodes is a point of

observation for assessing the current degree of network distribution. The project's architecture is designed for decentralization, but its current adoption in terms of publicly visible nodes indicates a stage of development where further expansion is needed to match the decentralization levels of more mature networks.

3.2 Qubic

Qubic's ecosystem is expanding with a strong focus on AI integration and developer tooling, aiming to build a platform for decentralized AI applications.

Developer community, ongoing projects, partnerships

Qubic is driven by its founder, "Come-from-Beyond" (CfB), known for his work on Proof-of-Stake (NXT) and DAG architecture (IOTA).[14] The project aims to empower communities to shape the future of blockchain and AI.[14] QUBIC Labs serves as an incubator, building success on diverse partners including sponsors, donors, capital providers, and industry collaborators.[41] These partnerships offer expertise, mentorship, and opportunities for early-stage startups within the Qubic ecosystem.[41]

Qubic is actively enhancing its developer tooling and documentation. The 2025 roadmap outlines the introduction of Python, Rust, and TypeScript SDKs, along with refined developer documentation, a Qubic Wiki, and a Qubic Academy to create structured learning paths.[42] New smart contract development tools, such as the Qubic SC API Generator and Qubic SC IDE, are planned to simplify building on the platform.[42] GitHub activity for

qubic/core shows consistent development in C++ and C, indicating ongoing work on the core node software.[44]

Ongoing projects and partnerships include:

- **Vottun Bridge:** A partnership with Vottun began with a 48-hour hackathon, indicating efforts towards interoperability.[42]
- **Onyze Partnership:** Planned for 2025, this partnership aims to introduce new custodial solutions and strengthen security.[42]
- **Nostromo Launchpad:** A platform for launching new applications within the Qubic ecosystem, indicating a focus on fostering dApp development.[42]
- **Qubex:** An emerging asset trading and token exchange within the Qubic ecosystem,

suggesting internal infrastructure for token liquidity and exchange.[42]
- **Custom Mining:** Qubic's first implementation of providing compute power outside its network, serving as a proof of concept for redirecting compute to external tasks like mining Monero.[12]

Current and planned applications (e.g., Caravel / Kasplex smart contracts for Kaspa)

Qubic's applications are centered around its decentralized computing power and AI integration:

- **Decentralized Computing Power:** Qubic aims to create a global supercomputer by harnessing distributed systems, allowing users worldwide to access its network for complex computational needs, including running simulations and training AI models.[17]
- **Smart Contracts:** Qubic's smart contracts promise sub-second finality and high operational speed, enabling developers to create efficient and real-time decentralized applications (dApps) for various sectors like decentralized finance (DeFi), supply chain management, and gaming.[17]
- **Micropayments:** With its feeless transfer mechanism, QUBIC is positioned to revolutionize industries where frequent small transactions are hindered by fees, such as content monetization and IoT communications.[17]
- **AI Training and Validation:** The core application of Qubic's UPoW is to effectively utilize computational resources from mining processes for training Artificial Neural Networks (ANNs), significantly contributing to AI development by offering a robust and decentralized platform for AI model training and validation.[17]
- **Supply Chain and Logistics:** Qubic's fast, secure, and scalable platform is envisioned for real-time tracking and automation in supply chains, using smart contracts for automatic validation and execution of agreements.[17]
- **Qdashboard and External Indexers:** Planned improvements for data retrieval and accessibility.[42]
- **Public Test Net:** A controlled environment for experimentation before mainnet deployment.[42]
- **Qubic Oracle Platform:** Planned for Q3 2025, this platform aims to enhance smart contracts by providing secure, real-world data feeds.[43]

Degree of decentralization

Qubic emphasizes its decentralized nature, stating that the network is resilient against cyberattacks and single points of failure, fostering trust among participants.[47] It employs a quorum-based consensus algorithm and Byzantine Fault Tolerance to maintain network integrity and discourage malicious activities.[13] Computors, the backbone nodes, participate in transaction validation and vote by Quorum to determine smart contract commission sizes.[15]

However, the practical decentralization of Qubic has been a subject of scrutiny, particularly following its claims of controlling Monero's hashrate. While Qubic's UPoW is designed to be more energy-efficient and run on normal hardware, promoting inclusivity [11], the incident raised concerns about potential centralization of computational power.[18] The Monero community's observations of Qubic's hashrate concentration, even if not a sustained 51% attack, highlighted the capacity for a single entity to exert significant influence.[18]

The requirements for running a Qubic node are notable: bare metal server/computer with at least 8 cores (AVX2/AVX-512 support recommended), at least 2TB of RAM, 1Gb/s synchronous internet connection, and an NVME disk.[44] These specifications are substantial and could present a barrier to entry for individual participants, potentially limiting the number of full nodes and impacting the overall distribution of network control compared to networks with lower hardware requirements. While Qubic aims to be a robust platform, the hardware demands for Computors could lead to a concentration of mining power among those with significant resources.

4. Current Discussions on X (formerly Twitter)

Social media platforms, particularly X, serve as real-time barometers of community sentiment, project developments, and market narratives.

4.1 Kaspa

Discussions surrounding Kaspa on X and related platforms like Reddit are largely dominated by its technological advancements, potential for mainstream adoption, and community-driven initiatives.

- **Technological Prowess and Future Upgrades:** There is significant excitement around Kaspa's BlockDAG technology, GHOSTDAG protocol, and upcoming developments like

DagKnight and the ZK L1<>L2 bridge.[40] The community often highlights Kaspa's speed, scalability, and security as differentiating factors.[48]

- **Adoption and Price Speculation:** A recurring theme is the anticipation of Kaspa becoming "life-changing money" and reaching a "top 5 crypto" market capitalization.[48] Debates frequently occur about its current adoption levels versus its technical potential, with some questioning why it hasn't become more mainstream despite its capabilities.[48] The community often counters skepticism by emphasizing that "adoption follows utility" and pointing to nascent projects like Kasway (decentralized point of sale) and Kasia (P2P messaging).[8]
- **Mining and Decentralization:** Discussions around mining remain active, with individuals sharing experiences of buying miners and observing hashrate fluctuations.[48] The project's fair launch and Proof-of-Work mechanism are frequently cited as pillars of its decentralization.[8]
- **FUD Dispelling and Market Narratives:** The community actively engages in dispelling "FUD" (Fear, Uncertainty, and Doubt), such as countering criticisms from influential figures.[48] There's a strong narrative positioning Kaspa as "Bitcoin's true successor" due to its PoW and scalability.[49]
- **Exchange Listings:** Speculation about potential listings on major exchanges like Coinbase is a frequent topic, reflecting community aspirations for broader accessibility and liquidity.[48]
- **Community Growth and Events:** Milestones like Kaspa's third birthday, global meetups, and the "Kaspa World Tour" are celebrated, demonstrating an active and engaged community.[32] The official Kaspa X account has seen substantial organic growth, with high engagement rates.[32]

4.2 Qubic

Current discussions on X regarding Qubic are heavily influenced by its controversial actions related to Monero and its ambitious AI-centric roadmap.

- **Monero 51% Attack Claims:** The dominant topic has been Qubic's claims of temporarily controlling over 51% of Monero's hashrate as a "security stress test".[18] This incident sparked intense debate, with many in the Monero community and broader crypto space expressing skepticism and accusing Qubic of a "marketing ploy" or "psychological warfare" rather than a successful attack.[18] The lack of sustained orphan blocks or significant chain reorganizations, coupled with Qubic's cessation of public hashrate reporting, fueled these doubts.[21]
- **Community Vote to Target Dogecoin:** Following the Monero controversy, Qubic's founder, Sergey Ivancheglo, initiated a community vote on X to choose the next

ASIC-enabled PoW blockchain to "target" with a 51% attack, with Dogecoin (DOGE) winning.[50] This move further intensified concerns across the crypto community about Qubic's intentions and the security implications for other PoW networks.[51] Ivancheglo justified these actions by stating, "A lot of electricity is burned for useless #PoW, we need that electricity for #AI".[51]

- **Criticism and Security Debates:** The incidents have led to significant criticism regarding Qubic's ethics and the potential for centralization of hashrate.[18] Experts have highlighted the immense cost of sustaining such an attack and questioned the true motives behind Qubic's actions.[21] The discourse often revolves around the fragility of PoW networks with lower hashrate and the need for enhanced decentralization solutions like P2Pool.[19]
- **AI Integration and Roadmap:** Despite the controversies, Qubic's ambitious roadmap, particularly its focus on decentralized AI and AGI development via UPoW, is also a topic of discussion.[18] The community anticipates major adoption and liquidity boosts from planned Tier 1 exchange listings, Ledger integration, and expanded ecosystem funds.[42] The concept of "useful proof of work" as a means to monetize idle computational resources for AI training is a recurring positive narrative.[29]

5. Comparison: Kaspa vs. Qubic

Kaspa and Qubic, while both Layer 1 projects leveraging novel consensus mechanisms, present distinct philosophies and technical implementations.

5.1 Similarities and differences

Both Kaspa and Qubic are Layer 1 blockchain protocols that utilize a form of Proof-of-Work (PoW) consensus. They both aim to achieve high scalability and transaction speeds, addressing limitations of older blockchain systems like Bitcoin and Ethereum. Both projects also claim to offer solutions that are more energy-efficient than traditional PoW, albeit through different mechanisms. Furthermore, both are community-driven to a significant extent, emphasizing open-source development and decentralized governance models.

However, their fundamental differences lie in their core technological approaches and primary utility:

Feature	Kaspa (KAS)	Qubic (QUBIC)
Consensus Mechanism	BlockDAG with GHOSTDAG protocol (parallel blocks)	Useful Proof of Work (UPoW) with Quorum consensus (AI training)
Smart Contracts	Layer 2 solutions (Kasplex, Caravel EVM-compatible rollups)	Native, feeless smart contracts (burned QUBIC)
Primary Utility	High-throughput digital cash, fast payments	Decentralized AI computation, smart contract execution
Transaction Fees	Low fees (0.0001 KAS per UTXO)	Feeless transactions for users
Emission Schedule	Chromatic Phase: Smooth monthly reduction (halves annually)	Weekly emission with dynamic burns and halvings
Token Model	Mining rewards, platform utility	"Energy" unit, burned for computations
Decentralization	Pure PoW, fair launch, solo-mining encouraged, lower public node count	UPoW (AI miners/Computors), quorum consensus, higher hardware requirements, Monero hashrate controversy
Development Language	Primarily Rust (rewritten from Go)	Primarily C++ and C

5.2 Which problems does each project solve particularly well?

- **Kaspa:** Kaspa excels at addressing the "Blockchain Trilemma" (and its extended

"Quadrilemma" to include sustainability) for Proof-of-Work networks.[3] Its BlockDAG and GHOSTDAG protocol enable unprecedented transaction speed and scalability for a PoW chain, achieving near-instant finality without compromising security or decentralization.[1] This makes Kaspa particularly well-suited for high-throughput digital cash and micropayment use cases, where speed and low cost are paramount.[1] It provides a robust, secure, and energy-efficient base layer for a transactional economy.

- **Qubic:** Qubic uniquely solves the problem of "wasted" computational effort in Proof-of-Work by channeling it into productive AI training for AIGarth.[11] This "Useful Proof of Work" (UPoW) model transforms mining into a dual-purpose activity, contributing directly to Artificial General Intelligence (AGI) development. Qubic also addresses the issue of transaction costs by offering feeless transfers and a unique smart contract fee model where tokens are burned rather than paid to validators.[14] This makes it highly efficient for complex decentralized applications and micropayments where fee structures can be a barrier. Its high TPS claims position it well for real-time, high-volume computational tasks.

5.3 Where do they complement each other, and where do they compete?

Competition:
Both Kaspa and Qubic compete directly in the Layer 1 blockchain space, vying for developer attention, miner hashrate, and user adoption. They both aim to be the foundational layer for future decentralized applications and digital economies. Their shared goal of achieving high scalability and efficiency in a decentralized manner puts them in direct competition for market share and network effects. The "digital silver" narrative of Kaspa suggests a direct competition with Bitcoin's transactional utility, while Qubic's "fastest blockchain ever" claim positions it against high-throughput chains like Solana.
Complementarity:
While competitive, their distinct focuses could also lead to future complementary roles.

- **Kaspa's Role:** Kaspa's strength as a high-speed, secure, and decentralized digital cash layer could make it an ideal settlement layer for various applications, including those that might leverage AI. Its focus on raw transaction throughput and fast finality could serve as a robust backbone for value transfer.
- **Qubic's Role:** Qubic's specialized UPoW for AI training positions it as a unique distributed computing platform. It could potentially serve as a decentralized AI backend for applications built on other chains, including Kaspa, if interoperability solutions are developed. For instance, a dApp on Kaspa's Layer 2 could potentially leverage Qubic's AIGarth for complex AI computations or data analysis. Qubic's feeless smart contracts and focus on decentralized AI could attract developers building AI-centric applications

that require significant computational resources, which could then interact with other high-throughput chains for specific functions.

Currently, there is no direct collaboration or integration between Kaspa and Qubic. Their distinct technological paths and market positioning suggest a competitive landscape where each project aims to establish dominance in its respective niche, whether it be high-speed digital cash or decentralized AI computation.

6. Risks & Opportunities (Looking Ahead)

Both Kaspa and Qubic operate in a dynamic and rapidly evolving blockchain landscape, presenting both significant opportunities and inherent risks.

6.1 Market position and roadmap of both projects

Kaspa: Market Position and Roadmap

Kaspa positions itself as "Bitcoin's true successor," aiming to be the "digital silver" to Bitcoin's "digital gold".[49] It is already the second most mined Proof-of-Work cryptocurrency after Bitcoin, indicating a strong presence in the mining community.[49] Its market capitalization is approximately $2.4 billion, with a circulating supply of around 26.59 billion KAS out of a maximum of 28.7 billion.[1] The project has amassed over 530,000 wallet addresses and consistently sees high daily active addresses, demonstrating robust on-chain usage.[32]

Kaspa's roadmap for 2025-2026 includes several critical technical advancements:

- **DagKnight (DK) Protocol:** This is the next evolution of Kaspa's consensus model, succeeding GHOSTDAG. It aims to introduce a no-delay-bound model, faster convergence in transaction ordering, and improved resilience under network stress.[40] This upgrade is crucial for supporting more deterministic ordering and paving the way for order-sensitive systems like smart contracts.[40]
- **ZK Layer (L1<>L2 Bridge):** Kaspa plans to support "based" Zero-Knowledge (ZK) rollups, where the L1 (Kaspa) provides sequencing, data availability, and settlement for ZK layers,

rollups, and dApps.[40] This is a key strategy for scaling via rollups without sacrificing decentralization or finality.[40]
- **MEV (Miner Extractable Value) Mitigation:** A proposed approach involves reverse auctions where miners offer kickbacks to users for transaction-ordering rights, aiming to capture value for users and reinforce decentralization by avoiding centralized order flow.[40]
- **Oracle Voting Mechanisms:** An L1-native attestation system where miners vote on external data in real-time, building towards secure, PoW-tied oracle feeds.[40]

These developments are expected to enhance Kaspa's capabilities for DeFi, trading dApps, and enterprise solutions, providing benefits such as increased fee volume for miners, scalable apps with L1 trust guarantees for developers, and private, high-speed payment systems for merchants.[40]

Qubic: Market Position and Roadmap

Qubic positions itself as "a decentralized network where unmatched scalable tech meets AGI".[18] Its market capitalization is approximately $350 million, with a circulating supply of around 120 trillion QUBIC out of a maximum of 200 trillion.[28]

Qubic's 2025 roadmap, dubbed the "Qubic Tsunami," outlines ambitious plans for expansion and integration [42]:

- **Broader Access and Connections:** This includes Ledger integration for hardware storage security, Tier 1 exchange listings to increase liquidity and exposure, and partnerships like Onyze for custodial solutions.[42] The Vottun Bridge is intended to expand interoperability with other chains.[42]
- **Stronger Infrastructure and Higher Performance:** Plans include reducing tick time to 2 seconds for faster transaction finality, implementing tick rollbacks for network stability, and scaling Computor capacity to 2TB for complex tasks.[42] The Qatum Protocol aims to standardize mining pool communication, and a 2.0 RPC architecture revamp is planned to optimize transaction and data request handling.[42]
- **Developer-Focused Enhancements:** Qubic plans to expand its developer tooling with Python, Rust, and TypeScript SDKs, along with refined documentation (Qubic Wiki, Qubic Academy), a QFront CLI frontend, and new smart contract development tools like the Qubic SC API Generator and IDE.[42]
- **Security, Governance, and Ecosystem Growth:** A full security audit is planned, alongside the establishment of a legal entity for long-term operation.[42] Refined incubation and expanded ecosystem funds are designed to back promising initiatives,

with financial reports providing greater transparency.[42] An Ambassador Program is also in place to strengthen community engagement.[42]
- **Adoption and Use Cases:** Qubic plans to participate in global blockchain discussions like the Madrid Hackathon and Consensus, attract new developers, and launch Qubic-based projects through Nostromo Launchpad and Qubex (an asset trading and token exchange).[42] The Qubic Oracle Platform is also a key planned feature for smart contract enhancement.[43]

6.2 Technical, regulatory, and market risks

Both projects face a range of risks that could impact their future development and adoption.

Technical Risks

- **Kaspa:** While Kaspa's core BlockDAG/GHOSTDAG protocol is highlighted for its strengths, the provided information does not detail specific technical challenges or weaknesses inherent to its design.[2] However, the successful implementation and widespread adoption of its Layer 2 smart contract solutions (Kasplex, Caravel) are critical for expanding its utility beyond a pure digital cash system.[36] Any delays or vulnerabilities in these L2 implementations could hinder its ecosystem growth. Furthermore, academic research has pointed out that malicious actors deviating from proposed transaction selection strategies in DAG-oriented protocols like GHOSTDAG could potentially make more profit and detrimentally affect processing throughput.[53] The increased complexity of DAG structures also introduces additional potential attack vectors compared to simpler protocols.[54]
- **Qubic:** Qubic's UPoW, while innovative, has faced scrutiny. The controversy surrounding its alleged 51% attack on Monero, and the subsequent community vote to target Dogecoin, highlight potential security risks and the fragility of maintaining hashrate dominance, especially given the immense costs involved.[18] The lack of transparency in hashrate reporting also raises concerns about the true decentralization and resilience of its mining operations.[21] While the whitepaper focuses on UPoW's benefits, it does not explicitly detail technical challenges.[12] The ongoing development of "key components, such as Oracle Machines for seamless data integration," suggests that the full vision is not yet realized, potentially introducing technical hurdles or delays.[12] The bare-metal requirements for running Computor nodes are substantial, which could centralize the network among those with significant hardware resources, potentially undermining

decentralization in practice.[44]

Regulatory Risks

Both Kaspa and Qubic, like all cryptocurrency projects, are subject to an evolving and often uncertain regulatory landscape.[13] Future laws, regulations, or actions by government authorities could significantly impact their operations, token status, and market accessibility.[13] The decentralized nature of these projects might offer some resilience, but compliance with global standards, particularly for financial applications and AI, will be crucial. For Qubic, the controversial Monero incident could attract unwanted regulatory attention due to its implications for network stability and potential market manipulation.

Market Risks

- **Adoption Challenges:** Both projects face the challenge of gaining widespread adoption against established cryptocurrencies and newer competitors. As one Kaspa community member noted, "Network effect drives real use," implying that technical superiority alone is insufficient.[8] Kaspa's current lower public node count compared to Bitcoin/Monero indicates a need for broader network participation to enhance perceived security and decentralization.[10] For Qubic, the controversy surrounding its Monero actions could deter some users and partners, impacting trust and adoption.[18]
- **Liquidity and Volatility:** Kaspa has experienced periods of low trading volumes and price volatility.[55] The absence of listings on major exchanges like Coinbase or Binance (though wKAS on Polygon/BNB and Carbon Browser integration are steps forward) can limit visibility and accessibility, deterring institutional interest.[35] For Qubic, its economic model, which involves burning tokens from Monero mining proceeds to support its own token price, could be built on a "highly fragile foundation of confidence," risking a price collapse if miners lose faith.[21]
- **Competition:** Both projects operate in a highly competitive Layer 1 landscape, contending with numerous established and emerging blockchains that offer various solutions for scalability, smart contracts, and specialized applications.[55]

6.3 Opportunities in the next 3–5 years

Kaspa: Opportunities

- **Mainstream Adoption as Payment Layer:** With its high throughput, near-instant finality, and low fees, Kaspa has a significant opportunity to become a widely adopted digital cash system for everyday transactions and micropayments.[1] Initiatives like Kasway (decentralized point-of-sale) exemplify this potential.[8]
- **DeFi and dApp Growth via L2s:** The successful implementation and adoption of Layer 2 solutions like Kasplex and Caravel, offering EVM compatibility and smart contract functionality, could unlock substantial growth in decentralized finance (DeFi) and dApp development on Kaspa.[36] This would allow Kaspa to participate in the broader Web3 ecosystem while maintaining its PoW security.
- **Enterprise and Industrial Integration:** The Kaspa Industrial Initiative (Kii) highlights opportunities in finance (international payments, stablecoins), supply chain, and the energy sector (smart grids, green finance, energy trading platforms).[33] Leveraging Kaspa's core technology for these real-world industrial applications could drive significant enterprise adoption.
- **Technological Leadership:** Continued development of DagKnight, ZK L1<>L2 bridges, and native oracle mechanisms could solidify Kaspa's position as a leader in scalable, secure, and decentralized Proof-of-Work technology, attracting further research and development.[40]

Qubic: Opportunities

- **Advancement of AGI and Decentralized AI:** Qubic's unique UPoW model, which directs computational power towards AI training for AIGarth, presents a groundbreaking opportunity to lead in the development of decentralized Artificial General Intelligence.[11] This could attract a new wave of developers and researchers interested in distributed AI.
- **Decentralized Computing Market:** By harnessing distributed systems to create a global supercomputer, Qubic can tap into the growing demand for decentralized computational resources, offering a platform for complex simulations and AI model training.[17]
- **Smart Contract Innovation:** The feeless transaction model and native smart contract capabilities, coupled with high TPS, offer a compelling platform for developers to build innovative, high-performance dApps across various sectors.[14]
- **New AI-Driven dApps:** The integration of AI directly into the consensus mechanism could foster a new category of dApps that natively leverage AI capabilities, creating novel

use cases in areas like data analytics, machine learning, and intelligent automation.
- **Enhanced Accessibility and Integration:** Successful execution of its 2025 roadmap, including Ledger integration, Tier 1 exchange listings, and expanded developer SDKs, could significantly boost Qubic's accessibility, liquidity, and appeal to a broader user and developer base.[42]

7. Conclusion

7.1 Strengths & weaknesses of each project

Kaspa (KAS):

- **Strengths:** Kaspa's primary strength lies in its innovative BlockDAG architecture with GHOSTDAG, which allows for parallel block creation, achieving high throughput (10 BPS, aiming for 100 BPS) and near-instant transaction finality (10 seconds confirmation) without compromising Proof-of-Work security or decentralization.[1] It explicitly addresses the "Blockchain Trilemma" and "Quadrilemma" by integrating sustainability through its energy-efficient kHeavyHash algorithm and pruned nodes.[3] The project benefits from a fair launch, a transparent, community-driven governance model, and active core development, including a significant Rust rewrite.[6] Its roadmap includes promising Layer 2 smart contract solutions (Kasplex, Caravel) and further L1 enhancements like DagKnight and ZK bridges.[36]
- **Weaknesses:** As a relatively new project, Kaspa lacks the "battle-tested security" and ecosystem maturity of older, established blockchains like Bitcoin or Ethereum.[8] Its current public node count (300-400) is considerably lower, which, despite arguments about private nodes, can raise questions about its practical decentralization compared to networks with tens of thousands of publicly visible nodes.[10] The success of its Layer 2 smart contract solutions is still largely in development and testing, meaning its full utility for complex dApps is not yet realized.[36]

Qubic (QUBIC):

- **Strengths:** Qubic's defining strength is its pioneering Useful Proof of Work (UPoW) consensus, which uniquely channels computational power into training Artificial Neural Networks for AIGarth, contributing to Artificial General Intelligence development.[11] This provides a "productive" use for mining energy, addressing environmental concerns. It

offers feeless transactions and claims exceptionally high smart contract execution speeds (over 55 million transfers per second) and sub-second finality.[14] Its tokenomics feature a deflationary burning mechanism tied to smart contract execution, designed to promote scarcity.[15] The project has an ambitious roadmap for ecosystem expansion, developer tooling, and broader accessibility.[42]

- **Weaknesses:** Qubic's credibility and perceived decentralization have been significantly impacted by its controversial claims of temporarily controlling Monero's hashrate and the subsequent community vote to target Dogecoin.[18] These incidents raised concerns about transparency, potential market manipulation, and the economic sustainability of maintaining such hashrate dominance.[21] The high hardware requirements for running Computor nodes could lead to a centralization of mining power among well-resourced entities, potentially undermining its decentralization claims in practice.[44] Key components of its architecture, such as Oracle Machines, are still under development, indicating that the full vision is not yet complete.[12]

7.2 Assessment of which project currently has better future prospects – based on technology, tokenomics, community, and the X discourse

Assessing the future prospects of Kaspa and Qubic requires a nuanced view, as both present compelling innovations alongside distinct challenges.

From a **technological** standpoint, Kaspa's BlockDAG and GHOSTDAG represent a robust and academically validated approach to scaling Proof-of-Work, providing a clear path to high-throughput digital cash and a solid base for Layer 2 solutions. Its ongoing Rust rewrite and planned DagKnight protocol demonstrate a commitment to foundational performance and security. Qubic's UPoW is a highly innovative concept, uniquely aligning mining with AI development, which could unlock a vast new domain for decentralized computing. However, the practical implications of its "useful" work, particularly concerning the Monero incident, introduce questions about its real-world security and stability under adversarial conditions. Kaspa's technological path appears more conventional yet proven in its theoretical underpinnings for scaling PoW, while Qubic's is more experimental and ambitious, with higher potential rewards but also higher risks.

In terms of **tokenomics**, both projects aim for long-term sustainability through controlled emissions and deflationary mechanisms. Kaspa's fair launch and smooth chromatic emission schedule are designed to promote broad distribution and mitigate ASIC dominance over time, fostering a stable economic environment for miners and users.[24] Qubic's feeless model and burning mechanism are highly innovative, creating a unique "energy" unit that is consumed for utility, which could drive scarcity.[15] However, the sustainability of Qubic's token price,

especially when tied to external mining ventures and the confidence-based economic model, remains a point of observation.[21] Kaspa's model, being more aligned with traditional PoW economic principles (albeit with a unique emission curve), appears to have a more predictable and less controversial path to sustainability.

The **community** aspect reveals a strong, engaged base for both. Kaspa's community is highly active, focused on technological advocacy, adoption, and dispelling FUD, demonstrating a grassroots movement reminiscent of early Bitcoin.[32] Its transparent, community-driven governance structure fosters trust and participation.[1] Qubic also has a passionate community, but its discourse has been significantly shaped by the controversial Monero incident and the subsequent vote to target Dogecoin.[20] While these actions generated significant attention for Qubic, they also created a polarizing narrative, raising concerns about its ethical approach and potential for centralized influence within its "decentralized" framework.

The **X discourse** provides a snapshot of public perception. Kaspa's narrative is largely positive, centered on its technical breakthroughs and potential as a future digital currency, with discussions often focusing on growth milestones and future listings.[32] Qubic's X presence is dominated by the Monero controversy, which, while generating significant buzz and temporary price surges, also invited substantial skepticism and criticism from the broader crypto community.[18] This highly aggressive and controversial marketing strategy, while effective in gaining attention, could hinder long-term trust and adoption among more risk-averse or institutionally aligned participants.

In conclusion, **Kaspa currently appears to have better future prospects for broad, sustainable adoption as a foundational Layer 1 blockchain.** Its technological innovations are significant and address core blockchain challenges in a manner that is both robust and less controversial. Its fair launch, predictable tokenomics, and genuinely community-driven development foster a strong sense of trust and long-term viability. While it needs to mature its ecosystem and increase its public node count, its trajectory is built on solid, verifiable technical progress.

Qubic, while possessing a truly innovative and potentially transformative vision for decentralized AI, faces significant hurdles related to its controversial actions and the practical implications of its UPoW model. The skepticism and ethical questions raised by the Monero incident could impede its ability to attract a broad base of users and developers, particularly those prioritizing network integrity and stability over speculative gains. Its ambitious roadmap is promising, but the path to achieving its vision appears to carry higher execution and reputational risks.

Ultimately, Kaspa's focus on foundational blockchain principles with a scalable PoW design, combined with its organic community growth and less contentious public image, positions it more favorably for sustained, widespread adoption in the coming years. Qubic's success will largely depend on its ability to move past the controversies and demonstrate the practical,

secure, and truly decentralized utility of its AI-driven UPoW in a manner that builds broader trust.

Works cited

1. Kaspa: Home, https://kaspa.org/
2. Kaspa Crypto: Speed, Scalability, and Future Potential Explained - Ulam Labs, https://www.ulam.io/blog/kaspa-crypto-understanding-speed-scalability-and-potential
3. What is Kaspa (KAS) blockchain and how does it work? - Cointelegraph, https://cointelegraph.com/learn/articles/kaspa-kas-blockchain-how-does-it-work
4. Blockdag | PDF - Scribd, https://www.scribd.com/document/751790949/blockdag
5. Kaspa Feature – How GhostDAG Revolutionizes Blockchain - ICERIVER, https://iceriver.eu/blogs/news/kaspa-feature-how-ghostdag-revolutionizes-blockchain
6. What is Kaspa (KAS)? Why is it regarded as the next-generation Layer 1? | by ViaBTC, https://viabtc.medium.com/what-is-kaspa-kas-why-is-it-regarded-as-the-next-generation-layer-1-6b2e07bc3118
7. The Kaspa Ecosystem, https://kaspa.org/the-kaspa-ecosystem/
8. Forget the Blockchain Trilemma: Kaspa Is Unlocking New Dimensions in Crypto - Reddit, https://www.reddit.com/r/CryptoMarkets/comments/1m4wymz/forget_the_blockchain_trilemma_kaspa_is_unlocking/
9. What is Kaspa (KAS): A Beginner's Guide - 99Bitcoins, https://99bitcoins.com/cryptocurrency/kaspa-review/
10. Kaspa Node Question - Reddit, https://www.reddit.com/r/kaspa/comments/1egmlpy/kaspa_node_question/
11. Useful Proof of Work (UPoW) and Artificial Intelligence (AI) in the ..., https://docs.qubic.org/learn/upow/
12. Outsourced Computations: A Step Toward Decentralized AI ... - Qubic, https://qubic.org/blog-detail/outsourced-computations-a-step-toward-decentralized-ai-innovation
13. QUBIC: A SCALABLE NETWORK FOR AI-DRIVEN APPLICATIONS, https://whitepaper.qubic.org/
14. Qubic: Fastest. Blockchain. Ever - 15.5M TPS, https://qubic.org/
15. Qubic Tokenomics, https://docs.qubic.org/learn/tokenomics/
16. Qubics tokenomics, https://qubic.org/blog-detail/qubics-tokenomics
17. Use Cases | Qubic Docs, https://docs.qubic.org/learn/use-cases/
18. Monero security in question as Qubic claims 51% hashrate control - Cybernews, https://cybernews.com/crypto/monero-security-qubic-claims-51-hashrate-control/
19. Qubic Temporarily Controls 52.72% of Monero's Hashrate in Security Test - AInvest, https://www.ainvest.com/news/qubic-temporarily-controls-52-72-monero-hashra

te-security-test-2508/
20. Monero Hit by Successful 51% Attack as Qubic Pool Dominates Network - CoinCentral, https://coincentral.com/monero-hit-by-successful-51-attack-as-qubic-pool-dominates-network/
21. What do they really want by attacking with $75 million against a $5 billion giant? | 律动BlockBeats on Binance Square, https://www.binance.com/en/square/post/28217030273081
22. Spending $75 million to attack the network and only profiting $100,000? A Review of the 51% Offensive and Defensive Battle Between Monero and Qubic | PANews on Binance Square, https://www.binance.com/en/square/post/28247134711578
23. Kraken: We have paused Monero deposits after detecting that a single mining pool has gained more than 50% - Reddit, https://www.reddit.com/r/Monero/comments/1mr0lh2/kraken_we_have_paused_monero_deposits_after/
24. Tokenomics, Emission, and Mining - Kaspa, https://kaspa.org/tokenomics-emission-and-mining/
25. TOKENOMICS - Kaspa, https://kaspa.org/tokenomics/
26. Kaspa Price Prediction: Can KAS Coin Reach $1? - StealthEX, https://stealthex.io/blog/kaspa-price-prediction-kas-coin-forecast/
27. Qubic's Halving: Understanding Its Role in Tokenomics, https://qubic.org/blog-detail/qubic-s-epoch-175-halving-understanding-its-role-in-tokenomics
28. QUBIC Live Price Chart, Market Cap & News Today - CoinGecko, https://www.coingecko.com/en/coins/qubic
29. Qubic Mining Recap (Epoch 169), https://qubic.org/blog-detail/qubic-mining-recap-(epoch-169)
30. Get Involved - Kaspa, https://kaspa.org/get-involved/
31. Activity · kaspanet/rusty-kaspa - GitHub, https://github.com/kaspanet/rusty-kaspa/activity
32. Kaspa (KAS): The High-Speed Proof-of-Work Blockchain Revolution - InsiderFinance Wire, https://wire.insiderfinance.io/kaspa-kas-the-high-speed-proof-of-work-blockchain-revolution-ea0495a059d4
33. Kaspa Kii – Kaspa Industrial Initiative Foundation, https://kaspa-kii.org/
34. About Us – Kaspa Kii, https://kaspa-kii.org/about-us/
35. Wrapped Kaspa (wKAS) Launches on Polygon and BNB Networks | TopCryptoNews on Binance Square, https://www.binance.com/en/square/post/395695529882
36. Kasplex L2: A Light-Weight Based Rollup Solution on Kaspa (APR 2025) - Medium, https://medium.com/@KaspaKEF/kasplex-l2-a-light-weight-based-rollup-solution-on-kaspa-33a5939bdf61
37. 3rd Party Protocols - Integrating with Kaspa, https://kaspa.aspectron.org/3rd-party-protocols.html

38. SMART CONTRACTS ARE COMING! : r/kaspa - Reddit, https://www.reddit.com/r/kaspa/comments/1m3lhhb/smart_contracts_are_coming/
39. Kaspa AI - Crypto Insights - Apps on Google Play, https://play.google.com/store/apps/details?id=com.kaspaai
40. Kaspa Development Milestones Revealed - 2025 - 2026, https://kaspa.org/kaspa-development-milestones-revealed-2025/
41. Partners - Qubic Labs, https://qubiclabs.com/partners/
42. Qubic 2025 Roadmap: A Year of Expansion and Integration, https://qubic.org/blog-detail/qubic-2025-roadmap-a-year-of-expansion-and-integration
43. Qubic Unveils Ambitious 2025 Roadmap | ourcryptotalk.com, https://ourcryptotalk.com/news/qubic-unveils-ambitious-2025-roadmap/
44. The Qubic Core is the Node Software which runs the Qubic Network - GitHub, https://github.com/qubic/core
45. Activity · qubic-li/qubic - GitHub, https://github.com/qubic-li/qubic/activity
46. Blog | Qubic, https://qubic.org/blog-grid
47. Why Qubic, https://docs.qubic.org/overview/
48. Kaspa - Reddit, https://www.reddit.com/r/kaspa/
49. INATBA AWARDS - Nominees 2025, https://inatba.org/awards/nominees/
50. Qubic price today, QUBIC to USD live price, marketcap and chart | CoinMarketCap, https://coinmarketcap.com/currencies/qubic/
51. Bad News for DOGE? Qubic Community Votes to Target Dogecoin After Monero 51% Attack, https://cryptonews.com/news/qubic-community-votes-to-target-dogecoin-after-monero-51-attack/
52. Kaspa's Journey: From BlockDAG Innovation to Market Buzz - Gate.com, https://www.gate.com/crypto-wiki/article/kaspa-s-journey-from-block-dag-innovation-to-market-buzz
53. DAG-Oriented Protocols PHANTOM and GHOSTDAG under Incentive Attack via Transaction Selection Strategy - arXiv, https://arxiv.org/pdf/2109.01102
54. SoK: DAG-based Consensus Protocols - arXiv, http://www.arxiv.org/pdf/2411.10026
55. Challenges Facing Kaspa: An Analytical Perspective - OneSafe Blog, https://www.onesafe.io/blog/kaspa-crypto-challenges-opportunities
56. Convert Qubic QUBIC to XRP 2.0 XRP 2.0 - Coinbase, https://www.coinbase.com/converter/qubic/xrp%202.0