ORIGINAL PROPOSAL:

https://forum.apecoin.com/t/aip-368-apechain-a-zk-powered-polygon-layer-2-to-support-apecoin-growth

RESUBMISSION UPDATES:

Having decisively won the Non-Conflicted ApeCoin Vote for AIP-368 by a wide margin (65% - 35%, or 10 million to 5.5 million), we are resubmitting the AIP largely unedited. The few edits we have are additive, matching or exceeding financial incentives that other AIP Ideas and AIP Drafts have included in their terms. Namely, Polygon Labs will pay for or ensure availability to:

- 3 years of the RaaS provider's costs (Gateway.fm);
- 3 years of block explorer maintenance (which OKX makes available at no charge viaOKLink) and
- a $3 million development fund administered by the ApeCoin DAO Foundation, payable in any crypto-asset, to help stimulate the growth of ApeCoin-integrated projects (experiences, entertainment, games and consumer applications) and ApeChain-related public goods (middleware, marketplaces, and necessary infrastructure).

DISCLOSURE

: Polygon Labs owns as of the date this AIP is submitted as a draft more than 6 million APE tokens and, in circumstances where there are votes other than Non-Conflicted ApeCoin Vote, on this AIP or another similar AIP, Polygon Labs may vote on this AIP or those similar AIPs with those tokens and any other APE tokens it may acquire.

PROPOSAL NAME

: ApeChain - A zk-Powered Layer-2 to Support ApeCoin Growth (Resubmission)

PROPOSAL CATEGORY

: Brand Decision

TEAM DESCRIPTION

:

Sandeep Nailwal, Co-Founder, Polygon Labs

Marc Boiron, CEO, Polygon Labs

Igor Mandrigin, CTO, Gateway.fm

ABSTRACT

:

Polygon Labs proposes that ApeCoin DAO launch and maintain its own zero-knowledge powered Layer-2 ("zk-L2

") with the Polygon Chain Development Kit ("CDK

") to accelerate the growth and development of the ApeCoin ecosystem.

This proposal includes (1) the launch of a dedicated ApeCoin zk-L2 chain ("ApeChain

") built and maintained by Gateway.fm, a premier rollup as a service ("RaaS

") provider that builds Web3 infrastructure and tooling products with advisory support from Polygon Labs and oversight of such building and maintenance to be conducted by the ApeCoin DAO Foundation, (2) ecosystem collaboration with Polygon Labs to help stimulate the growth of ApeCoin-integrated projects (experiences, entertainment, games and consumer applications) and ApeChain-related public goods (middleware, marketplaces, and necessary infrastructure) and (3) a development fund to help stimulate the growth of ApeCoin-integrated projects (experiences, entertainment, games and consumer applications) and ApeChain-related public goods (middleware, marketplaces, and necessary infrastructure).

As contemplated under "Gateway.fm as RaaS Provider and Architecture Considerations

" below, ApeChain will be fully owned, governed and run under the patronage of the ApeCoin DAO community with 100% of all revenue, including sequencer fees or any potential Native Yield (defined below), accruing to the ApeCoin DAO and ApeCoin Validators (defined below)

. No AIP Idea is inherently linked to this AIP and all AIP Ideas–design architecture or otherwise–not explicitly covered within this AIP (e.g., a separate "ApeChain token" launch/airdrop) is not precluded from this ApeChain implementation but instead is left to the community (e.g., through subsequent AIPs by ApeCoin community members) even in cases where Polygon

Labs does not believe it would be in the best interests of APE holders.

BENEFIT TO APECOIN ECOSYSTEM

:

The ApeCoin community has been aware that ApeCoin “will need to migrate to its own chain in order to properly scale” since these very words were tweeted by Yuga Labs nearly 18 months ago. Indeed, Yuga Labs went on to “encourage the [ApeCoin] DAO to start thinking in this direction.” While ApeCoin DAO voted on AIP-41 to keep ApeCoin within the Ethereum ecosystem, the question of an ApeCoin-specific chain is open and remains ripe for decision.

Here’s where this AIP comes in: to propose a dedicated ApeChain, using PolygonCDK, an open source toolset developers can use to launch their own zk-powered L2 on Ethereum with little friction and an emphasis on modularity, built and maintained by Gateway.fm with advisory support from Polygon Labs and oversight by the ApeCoin DAO Foundation.

As detailed below under “Platforms and Technologies

,” ApeChain will provide ApeCoin DAO and its members potential sequencer fees and staking rewards for network validators while solving the scaling issue mentioned above. In other words, this chain will provide dedicated, ultra-premium and inexpensive blockspace for ApeCoin DAO-affiliated and/or -incubated experiences, entertainment, games and consumer applications that will ultimately bring not only more users into the ApeCoin ecosystem, but also additional activity and creation of all types of value (content, assets, data and the like).

Polygon CDK has seen great adoption already. Chains being developed using Polygon CDK and core contributors thereto include X1 (built by OKX), Immutable zkEVM, NEAR zkWASM, Gnosis Pay, Capx, Palm Network, Astar zkEVM, Canto, Flipkart, Manta Network and Celestia (for data availability), among others. This is because Polygon CDK offers the highest degree of flexibility in scaling Ethereum while also remaining maximally secure.

ApeCoin DAO’s stated mission is to “empower a decentralized community building at the forefront of web3.” Via $APE, ApeCoin DAO will build and support “a decentralized protocol layer for community-led initiatives that drive culture forward into the metaverse."

ApeChain will provide the ApeCoin DAO with an efficient and secure execution environment upon which ApeCoin DAO projects can be built to help realize this mission. As a result, by virtue of ApeCoin DAO gaining composability and interoperability with the entire modular suite of Polygon solutions (including Polygon PoS, which will soon be upgraded to a zkEVM Validium, Polygon zkEVM, Polygon Miden and various customizable L2 permutations using the CDK, together “Polygon Architecture”), the ApeCoin ecosystem will be primed for tremendous growth.

With thousands of dApps and millions of daily transactions, the Polygon Architecture is by far the most robust and stable Ethereum L2 scaling solution. With ApeCoin already bridged onto Polygon PoS, it is already available to be used by all dApps across Polygon Architecture – including for gas and staking in relation to dApps built on the proposed ApeChain (see “Platforms and Technologies

” below).

It is well-documented that mainstream adoption of blockchain technology and Web3 is underway, and the Polygon Architecture is helping to bring blockchain to “Internet-scale.” This is across verticals and use cases, including gaming (Square Enix), loyalty rewards (Starbucks), phygital goods and co-creation (Nike), digital avatars (Reddit), self-expression and identity (L’Oreal) and the most adopted Web3-native use cases (from defi, like Uniswap and Aave, to the open metaverse, like Sandbox and Decentraland). As such, the Polygon Architecture is the most well-suited ecosystem for ApeCoin DAO to launch “community-led initiatives that drive culture forward into the metaverse” and Polygon Labs is the most well-suited entity to help ApeCoin DAO stimulate the growth of ApeCoin-integrated projects and ApeChain-related public goods.

KEY TERMS:

“ApeChain” means a dedicated ApeCoin zk-L2 chain built and maintained by Gateway.fm.

“Native Yield” means rewards earned by ApeChain depositors on ERC-20s (e.g., APE, ETH, MATIC or

USDC) that they transfer to ApeChain.

“Polygon Architecture” means the entire modular suite of Polygon solutions (including Polygon PoS,

which will soon be upgraded to a zkEVM Validium, Polygon zkEVM, Polygon Miden and various

customizable L2 permutations using the CDK).

“Polygon CDK” means the open source modular set of code and infrastructure tooling that makes up the

Polygon Chain Development Kit.

“RaaS” means rollup as a service provider that builds Web3 infrastructure and tooling products.

“zk-L2” means a zero-knowledge powered Layer-2 chain…

PLATFORMS AND TECHNOLOGIES

:

Ethereum Alignment and Background in

zk. Ethereum is the paragon of decentralized, permissionless technology. With L2s and rollups on its roadmap, Ethereum’s future relies on implementing the best technology to scale securely and in a frictionless way.

Core developers at Polygon Labs have spent years building zk technology that aligns with Ethereum as closely as possible. Breakthroughs, including the Plonky2 zk proving system, have meant that L2 chains deployed using Polygon CDK see reduced fees and finality times across use cases, all while inheriting the security and existing tooling and smart contracts that make Ethereum the best programmable blockchain.

Value Propositions

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- Security

. Any L2 chain deployed using Polygon CDK inherits the full security of Ethereum via zk validity proofs. Every transaction is proven on Ethereum L1 with a mathematically verifiable proof, a process which happens quickly and does not rely on economic incentives or any human action. Any L2 that lacks zk validity proofs inherently loses some of the security that Ethereum provides.

- Low Fees

. Not only does Polygon CDK offer an off-chain data availability solution for zk-powered L2s running in validium mode (recommended), but by joining a shared interoperability layer that brings together all CDK chains, developers and users would experience fees that are magnitudes lower, as proof verification on L1 is amortized across all chains.

- Shared Liquidity

. One of the biggest reasons to become an Ethereum L2 is to gain access to deep liquidity. This will allow users and developers to seamlessly transact or move across chains. The deeper the pool of liquidity, the more opportunities for developers and users to harness and create value across all use cases. As Polygon Labs develops newer versions of its shared interoperability layer, the shared liquidity becomes even faster to access.

- Customizability and Interoperability

. Polygon CDK allows for out-of-the-box L2 customization. ApeChain can be deployed with a decentralized sequencer that uses ApeChain validators, widely configurable data availability solutions, and customization for block finality and the time it takes to post zk proofs of the chain state to Ethereum. ApeChain would be natively interoperable with all other Polygon CDK chains. This means growing access to expanded Ethereum blockspace, all connected to a shared zk bridge that will allow for near-instant cross-chain activity and access to shared liquidity. The result will be a network of zk-L2s that are so seamlessly connected it feels like a single chain through a novel zk interoperability layer currently under development.

- Near-Instant Withdrawals and Fast Finality

. Polygon CDK’s zk proofs offer the fastest deterministic finality of any rollup design. Deterministic finality is how long it takes for a user to withdraw their funds on the L1. This is distinct from transaction finality, which is when a user sees that their balance has changed. With optimistic rollups, reaching deterministic finality requires waiting the seven-day challenge window. Other zk rollups live on Ethereum take at least 21 hours to reach deterministic finality. As it is today, Polygon CDK technology is orders of magnitudes faster; future optimizations to the prover are expected to reduce this even further. The ability to reach deterministic finality this quickly is a reflection of the technical advantages of ZK proofs, generally, and the soundness of Polygon proving technology, specifically.

- Leading L2 Development Ecosystem

. Polygon Labs and the broader ecosystem of Polygon CDK builders have the deepest bench of L2 developers, including zk researchers and developers, who continue to push the boundaries to increase the safety, reliability, speed and cost efficiency of L2s. When using Polygon CDK, ApeChain receives the benefit of the continued development of those teams.

- Community Alignment

. Polygon CDK and all developers using the Polygon CDK are one aligned community. They are not a community aligned around Polygon Labs or any live Polygon protocol. Instead, they are a community who each have their own independent and sovereign chains who have come together as a community to work together towards developing the best zk-L2 in

production. From development of the code base to shared infrastructure and liquidity, chains using the CDK benefit from each other's growth in a maximally aligned manner.

Gateway.fm as RaaS Provider and Architecture Considerations

. With advisory support from Polygon Labs and oversight by the ApeCoin DAO Foundation, Gateway.fm will launch and maintain ApeChain, which will be funded by Polygon Labs for 3 years. Gateway.fm has the technical and practical expertise required to advise on all aspects and decisions of launching and maintaining ApeChain, including trade-offs around different decisions to be made along the way.

As core contributors to the Polygon CDK and Erigon (the Ethereum client to be used with Polygon CDK), Gateway.fm works closely with Polygon Labs' zk engineering team. The team's deep understanding of the Polygon Architecture makes it an ideal partner for many team looking to use the Polygon CDK: from complicated migrations (Palm Network) to high priority projects (OKX's X1 chain) and novel use cases (Gnosis Pay). Gateway.fm also built, deployed and maintain Stavanger, a public testnet for Polygon CDK. Gateway.fm has been recognized by projects seeking to use Polygon CDK not only for the team's technical expertise but also their commitment to success of projects with which Gateway.fm works.

Gateway.fm, with as-needed technical support from Polygon Labs and oversight by the ApeCoin DAO Foundation, will architect ApeChain taking the following into account:

- Gas and Sequencer (or Validator) Fees

: * Option for gas and fees to be paid and received in $APE (or gas and fees can be paid in $ETH, and $APE can be used only through smart wallets using account abstraction).

- In a centralized sequencer setup, any fees (including those generated by the sequencer) will accrue entirely to ApeCoin DAO.
- If and when the network migrates to a decentralized sequencer any fees will instead be distributed to ApeCoin community members participating in ApeChain security and validation (ApeChain Validators).
- Option to migrate the ApeCoin staking contract to ApeChain allowing for further staking rewards to be paid to ApeCoin Validators for their contributions to network security.
- Option for any ApeChain depositor to earn rewards on ERC-20s (e.g., APE, ETH, MATIC or USDC) that they transfer to ApeChain ("Native Yield

").

- Option for gas and fees to be paid and received in $APE (or gas and fees can be paid in $ETH, and $APE can be used only through smart wallets using account abstraction).
- In a centralized sequencer setup, any fees (including those generated by the sequencer) will accrue entirely to ApeCoin DAO.
- If and when the network migrates to a decentralized sequencer any fees will instead be distributed to ApeCoin community members participating in ApeChain security and validation (ApeChain Validators).
- Option to migrate the ApeCoin staking contract to ApeChain allowing for further staking rewards to be paid to ApeCoin Validators for their contributions to network security.
- Option for any ApeChain depositor to earn rewards on ERC-20s (e.g., APE, ETH, MATIC or USDC) that they transfer to ApeChain ("Native Yield

").

- Validium

: To keep costs as low as possible while maintaining security, data will be stored off-chain on a reputable data availability layer, which handles maintenance and storage of transaction data.

- Interoperability

: To keep composability as high as possible and provide as much access to liquidity across the extended Polygon Architecture, ApeChain will be integrated with the above-mentioned shared interoperability layer, thus maintaining native interoperability with all other Polygon CDK chains.

Ecosystem Development and Support

. This will be a collaborative endeavor between ApeCoin DAO and Polygon Labs for ecosystem development, including:

- Purpose

: Advancing the overall purpose of ApeChain through ensuring wide-scale knowledge and promotion of ApeChain.

- BD Team

: Supported by the world class Polygon Labs BD team, advancing and supporting additional collaborations with games, consumer brands, entertainment IP, Web2 platforms, SaaS and marketplaces.

- Infrastructure Support

: Access to numerous middleware and infrastructure providers, such as block explorers, RPC providers, oracles and wallets, that have have built on Polygon Architecture, including free support (e.g., Polygon Labs will make available 3 years of block explorer maintenance via OKLink from OKX) or preferred pricing that some of them have made available to builders using Polygon CDK, in addition to all infrastructure made available by Gateway.fm who have developed strong infrastructure support for Polygon CDK chains.

- Promotion

: promoting the development of ApeChain to Polygon Labs' international audience of active Web3 users through social media or other channels.

- Enablement Manager

: an assigned Polygon Enablement Manager within Polygon Labs to liaise between ApeCoin DAO and Polygon Labs' ecosystem.

STEPS TO IMPLEMENT & TIMELINE

:

1. Alignment (4 weeks)

: Discussion to determine contours of collaboration on technical matters and ecosystem development.

1. Strategy (4 weeks)

: Determine best network development given ApeCoin DAO feedback around the above "Gateway.fm as RaaS Provider and Architecture Considerations," including validator selection, gas and validator fees, and data availability. Other strategic considerations may include, but are not limited to block time, block size and front end business logic (if any).

1. Scoping (4 weeks

): Gateway.fm will determine the appropriate path to integration, including interoperability, bridging, etc.

1. Integration (2 - 4 weeks)

: Gateway.fm's build and deployment.

1. Promotion (during scoping and integration, at launch and ongoing)

: Polygon Labs to work with ApeCoin DAO to craft a considered and impactful plan.

1. Results (Immediate)

: ApeCoin DAO's very own sovereign L2 network, no "noisy neighbor" problems, no mainnet congestion, faster and cheaper transactions, fully EVM-equivalent, shared liquidity with the entire Polygon ecosystem of dApps and protocols.

1. Growth (Ongoing)

: Polygon Labs' business development team to work with ApeCoin DAO on developing a growth strategy with respect to strategizing around and deploying the $3 million ApeChain development fund.

OVERALL COST

:

This AIP comes at no cost to ApeCoin DAO. As laid out in the preceding sections of this AIP, Polygon Labs will pay:

- 3 years of the RaaS provider's costs (Gateway.fm);
- 3 years of block explorer maintenance and
- a $3 million development fund administered by the ApeCoin DAO Foundation, payable in any crypto-asset, to help stimulate the growth of ApeCoin-integrated projects (experiences, entertainment, games and consumer applications)

and ApeChain-related public goods (middleware, marketplaces, and necessary infrastructure).

After the initial 3 years come to term, the DAO will decide for itself how it will fund and maintain ApeChain in subsequent years. Possibilities include negotiating with Gateway.fm on a contract extension or fielding proposals from community members with sufficient expertise who are willing to contribute to ApeChain's maintenance, for example.

CLOSING

:

We believe ApeCoin DAO is standing at the precipice of a new and exciting era. By deploying ApeChain using Polygon CDK, ApeCoin DAO will continue to execute against its mission to scale into a "decentralized protocol layer for community-led initiatives that drive culture forward into the metaverse."

We look forward to continuing this dialogue with the ApeCoin DAO community.

ADDENDUM

:

Throughout this process, Polygon Labs has endeavored to be as accessible and transparent as possible. We answered over 30 discrete questions from community members in the Forums, held community calls in an AMA format, appeared on various independent third party X Spaces and kept open Telegram channels with various groups of delegates and voters. In that spirit, below we provide answers to the 29 questions from Section 4 ("ApeChain Features and Characteristics") of the APE Foundation's RFP.

Scalability

1. Throughput (transactions per second)

: The current zkEVM prover is in Beta Phase 1 reaching up to 40 transactions per second. Right now, throughput is limited by the custom execution client, not by the prover. We're approaching the launch of a new client based on Erigon that will target 100m gas/s or up to 4500 transactions per second.

1. Transaction fees

: Transaction fees depend on many factors, including the type of transaction and the choice of design. It is important to note that cost per transaction in a zk system like Polygon CDK is lower the more transactions that occur. The operational cost for submitting a proof is amortized across the transactions that are included in each proof. In addition, based on the core development team's expertise in zk technology, fees continue to go down as both zk technology further develops and proofs across all Polygon CDK chains are aggregated.

Upgradeability & Extensibility

1. What is the path to upgrading the proposed blockchain? (e.g. are upgrades forkless, or require network participants to coordinate a fork?)

: Most of our upgrades are designed to have minimal player impact. From an implementation standpoint it's a coordinated restart and we'll have strict guidelines for the more involved prover and verifier upgrades. There should be no reason to coordinate a hard fork.

1. What is the path to extending features?

: See "Customizability and Interoperability" above.

Security & Decentralization

1. Consensus model

: The sequencers in rollups and validiums today are currently centralized; however, Polygon CDK allows for decentralizing sequencers and provers, which will be enabled when the staking hub is complete in Q2 2024. For more information on our Consensus Contract, see here.

1. Block validation

: See information on OKLink under "Ecosystem Development and Support" above.

1. Account abstraction

: See "Gas and Sequencer (or Validator) Fees" above. Moreover, Polygon Labs is the industry leader with the most EIP-4337 transactions of any chain and are likely to be the first chain to add EIP-3074 support (tentatively April 2024). We are also researching EIP-5003 which helps users migrate away from EOAs. We intend to support as many EIPs related to

account abstraction that make for a better user experience; to date, we are still assessing whether RIP-7560 solves any issues that the aforementioned EIPs do not – if RollCall continues to push 7560 forward, we will deeply consider implementing it.

1. Data availability

: See “Validium” under “Gateway.fm as RaaS Provider and Architecture Considerations” above.

1. Finality

: See “Near-Instant Withdrawals and Fast Finality” above.

1. $APE use case (e.g. can $APE be used to secure the chain and/or what are other use cases for $APE in the proposed blockchain?)

: See paragraph starting with “As contemplated under “Gateway.fm as RaaS Provider and Architecture Considerations” under “ABSTRACT” above.

Tokenomics

1. Will $APE be used to incentivize network participants (e.g. validators or miners)?

See paragraph starting with “As contemplated under “Gateway.fm as RaaS Provider and Architecture Considerations” under “ABSTRACT” above.

1. Will $APE be used as a gas token?

See “Gas and Sequencer (or Validator) Fees” above.

1. Is there a proposed update to the existing $APE tokenomics? (e.g. changes to on-chain treasury management)

: See paragraph starting with “As contemplated under “Gateway.fm as RaaS Provider and Architecture Considerations” under “ABSTRACT” above.

Ecosystem Development

1. Account abstraction, including ability to incorporate custom gasless transactions

: See “Gas and Sequencer (or Validator) Fees” above. Note also that the chain can run with gas fees are set low, and operational costs are paid for by the operator.

1. Composability

: See “Interoperability” under “Gateway.fm as RaaS Provider and Architecture Considerations” above.

1. Portability

: This question/prompt is unclear.

1. Liquidity

: See “Shared Liquidity” above.

1. Support of precompiles that facilitate gaming or other use-cases as the community and ecosystem deems it fit:

Polygon Labs and its community of contributors supports precompiles as required by the wider Ethereum community. If a specific community deems any precompile as a requirement for Etheruem, we will ensure it’s supported.

1. Support for modern smart contracts languages and approaches that expand developer adoption (e.g. Web Assembly (WASM) support)

: We’ve partnered with NEAR to bring WASM support to all of our technology. As leaders in the zk space we are committed to providing proving mechanisms for many different execution layers.

1. Availability of funding to build public goods and stimulate growth of ApeChain and the ApeCoin ecosystem

: See “ABSTRACT” and “OVERALL COST.”

Gaming Support & Discussion

1. Can the proposed blockchain architecture be optimized for high-performance gaming transactions and interactions, with minimal latency and maximum security? If so, you may elaborate.

Polygon CDK is designed with modularity in mind. As a result, CDK chains can achieve fast throughput based on the client, low cost relying on a validium structure using non-Ethereum data availability, and with superior finality while maintaining complete security from the Ethereum Layer 1.

1. Robust support for Non-Fungible Tokens (NFTs) to represent unique in-game items and assets, providing true digital ownership to players. This is not limited to the support of established EVM non-fungible token standards such as ERC-721 or ERC 1155; but also open to:

This question is incomplete as it seems to cut off right where it's about to make a point. Suffice it to say, Polygon CDK supports all NFT standards and leads on them, including ERC-6551.

1. Ethereum improvement proposals (EIPs) related to NFTs and gaming

: Similar to questions no. 7 and 18 above, Polygon Labs is the industry leader when it comes to EIP support; we will support all EIPs that make for a better user experience and/or as required by the wider Ethereum community. More specifically, Polygon CDK supports all the major EIPs related to gaming and NFTs, including Tokenbound Accounts: ERC-6551, Multiverse NFTs: ERC-5606 and Hierarchical NFTs: ERC-6059 – all which play a crucial role in the next iteration of web3 games. We stand strongly behind our mission to supporting all native EIPs. We will always support any new accepted EIPs that benefit the gaming ecosystem.

1. Support for native on-chain game engines such as Mud, Dojo, Paima game engine and others

: Polygon CDK is EVM compatible and thus supports all EVM-based on-chain game engines (as well as popular non-Web3-native engines through SDKs offered by our robust set of middleware providers, like Unity).

1. Cross-platform compatibility and interoperability, allowing for a unified gaming experience across various games and platforms

. See answer above, no. 24 as well as "Low Fees" under "Value Propositions" above. Note also that the shared zk bridge provides industry-leading compatibility and interoperability across games and platforms that may live on other Polygon CDK chains (see "Customizability and Interoperability" above).

1. User-centric design, ensuring ease of use for gamers of all levels, with intuitive interfaces and straightforward navigation. This is not limited to supporting concepts such as account abstraction, but also refers to custom mechanisms that lead to faster onboarding or tailored gaming experiences.

Polygon boasts the largest ecosystem of developers, middleware providers, necessary infrastructure and SaaS platforms than any competitive blockchain. And with over thousands of Web3 games building on some permutation of Polygon and Immutable zkEVM, there is an incredible precedent for superior design and UX throughout Polygon's gaming ecosystem.

Licensing

1. Are there any limitations on making upgrades to the chain, forking parts of the software and/or making it customizable?

The Polygon codebase is open source and welcome to changes by the community. Published under the GNU Affero General Public License means that any changes should also be shared for the shared benefit of the community but any and all changes can be made freely.

1. Can ApeChain be spun out under a different technology stack in the future?

See answer above, no. 27. In short: yes.

Foreseeable Limitations, Constraints & Assumptions

1. As research and innovation related to blockchain technology rapidly advance, existing approaches are likely to become outdated and/ or lose preference. To this end, you may elaborate on any foreseeable limitations, constraints and working assumptions under which the proposed ApeChain architecture is presented under. This is not limited to technology considerations, but also relates to business and user adoption considerations.

Polygon CDK minimizes this risk based on the team at Polygon Labs. Polygon Labs has the most robust zk research team in the industry, which developed Plonky2, the prover technology used by several teams in the space, and is far along in the development of the next generation, Plonky3, along with other zk technology, which allows for navigating and staying ahead of limitations and constrains that exist in building L2s and interoperability.