Kowala - PWC

Kowala PWC Questionnaire Answers

Note: you can decline to answer certain questions (like marketing / go to market) which may be trade secrets and we will put in "declined to answer due to current trade secret".

a. General

i. Which blockchain / DLT are you building on top of?

The Kowala Protocol is a meta-blockchain specification, allowing the creation of any number of specialized stablecoins, generically referred to as kCoins. The first kCoin that the Kowala team will launch is kUSD, with a primary token that targets the value of 1 USD. In the implementation of our network client, we initially forked the go-ethereum codebase, giving us the excellent feature set of Ethereum as a starting place, especially its smart contract features. We replaced Ethereum's proof-of-work consensus with a modified version of the Tendermint consensus protocol. Not only is Kowala a protocol for creating stablecoins, but it is a platform protocol with high transaction speeds and predictable gas prices that solidity developers can build DApps upon from day one.

ii. How does the stablecoin work?

Each kCoin is a dual-token system, using both a primary stablecoin token and a secondary mining token. For example, the kUSD blockchain has a stablecoin token, referred to as simply kUSD, and a corresponding mining token, called mUSD.

Each kCoin uses a minting algorithm that maintains the stablecoin token's 1-to-1 target value in the face of rising demand by allowing holders of its corresponding mining token to mine new stablecoins. Whenever demand for the stablecoin declines and its value falls below 1 unit of fiat currency, the network autonomously initiates a stability fee that is levied on on-chain transactions in order to decrease the total money supply. The burning of stability fees is publicly visible to all network participants.

Beyond robotic money supply-control mechanisms, Kowala also leverages the behavior of rational and self-interested market actors as a secondary price stabilizing mechanism. Because traders know in advance that algorithmically controlled coin-burning processes will automatically initiate whenever a kCoin dips below its peg, they are highly incentivized to purchase kCoins that are trading below the the 1-to-1 target, increasing the rate at which a kCoin can return to its targeted value.

iii. What is your revenue model?

We have sold mining tokens to private investors via SAFT agreements. Kowala is also a mining token owner and expects to earn mining rewards in the future.

b. Launch & marketing

i. What does the market need to be confident in the stability of your token?

By their very nature, asset-backed stablecoins like Tether rely on central parties who keep fiat currencies in a vault and are responsible for periodically issuing new coins into the network's money supply. As such, they suffer from severe centralization problems. These central parties must constantly and credibly update the public on the state of their asset reserves, a difficult task at best.

On the other end of the spectrum are assetless stablecoins. The current landscape of these assetless projects suffers from over-reliance on continuous market growth and volunteerism. Assetless stablecoin projects that use collateralized crypto or seigniorage shares to maintain their price pegs lack emergency stabilization options when demand for a stablecoin decreases or the overall crypto market crashes.

With these problems in mind, we anticipate that a highly decentralized rollout of Kowala miners, coupled with highly public demonstrations of Kowala's coin-burning mechanisms in action, should be incredibly appealing to those living in inflationary economies who are clamoring for anti-volatility measures that won't simply replace their dependency on a government with a C-suite.

ii. How are you bootstrapping to that level of confidence?

The market capitalization of the kUSD stablecoin begins at near zero and increases only when purchases of kUSD are made on exchanges at even a small amount above 1 USD. These newly minted coins are sold by miners--who have purchased the right to mine the kUSD network through their ownership of mUSD mining tokens--for other crypto assets like Bitcoin. It is in the self-interest of kUSD miners that kUSD maintain stability and gain confidence. Therefore, we expect kUSD miners to act in their self-interest and pursue profitable trading around the coin's target price, providing stability and liquidity to the coin as the wider market gains confidence and market cap grows.

iii. What are your go-to-market strategies?

We view our role as providing stablecoin protocol and infrastructure for existing marketplaces. Currently, we are facilitating integration with exchanges, wallet providers, and payment platforms to make kUSD available to their existing customer bases upon launch.

c. Economics

i. **What is your coin stable with respect to?**

Kowala's first stablecoin is kUSD, a cryptocurrency with a primary token that targets the value of one U.S. dollar. However, the Kowala protocol can be used to produce stablecoins for any and all fiat currencies, and other kCoins are slated for rollouts quite soon.

ii. **How much volatility can this peg withstand? Is that the same for upwards and downwards pressure? How wide is the band of behavior it can support?**

Based on stress tests, we can conservatively estimate that the Kowala protocol is capable of burning 8% of the total money supply within 30 days and up to 40% of the total money supply in 180 days. The simplicity of the coin-burning model makes Kowala much better equipped than other stablecoin projects to handle the threat of death spirals or black swan events.

iii. **How easy is it to analyze the band of behavior from which it can recover?**

kUSD blockchain data, including minting and burning processes, are publicly available. Similarly, exchange prices are publicly available. We expect traders and others will utilize this public data to perform the analyses they need to meet their own goals.

iv. **How expensive is it to maintain the peg/stability mechanism?**

The process is automatic and the associated work is provided by miners and oracles who are incentivized by rewards. There is no cost to a central party.

v. **How transparently can traders observe the true market conditions?**

The burning of stability fees is public and transparent, meaning network participants can watch in real time as a kCoin's money supply reduces in accordance with declining demand.

vi. **Which monetary theory (theoretical) assumptions do you think are not true and how does your protocol account for that?**

Assetless stablecoins that use on-chain collateralization of other, highly volatile cryptocurrencies to maintain their price pegs are uniquely vulnerable to crashes and market purges.

Assetless stablecoins that rely on a seigniorage share models are able to achieve relative stability, but only so long as there is constant demand for the stablecoin and its corresponding share token. Such models are highly susceptible to death spirals when trader confidence falters, as evidenced by the recent downfall of Nubits.

Kowala's coin-burning stabilization mechanism does not require constant growth of demand for either the stablecoin or the mining token. Even if demand decreases drastically and a kCoin's stablecoin value is briefly depressed, the question is not whether the stablecoin can regain its target value, rather, the question is how LONG it will take to do so.

vii. **Does your stablecoin supply scale in response to demand? If so, how?**

Unlike asset-backed stablecoins that require a central party to publicly announce and then mechanically introduce new rounds of coins or tokens to accommodate rising demand, Kowala's algorithmic minting mechanism allows it to react to increased kCoin demand in real time. As soon as a demand increase threatens to overvalue a kCoin's stablecoin in relation to the fiat it is targeting, miners who do the work of mining (after verifying their ownership of mining tokens) are immediately rewarded with newly minted stablecoins, growing the money supply at a rapid pace.

viii. **Who provides the capital to maintain exchange rate peg? How are they compensated / Why do you think they would continue to lock up capital, given other investment opps?**

Kowala's stablecoins do not rely on capital to maintain their fiat-paired price pegs. Rather than keeping piles of cash or gold in centralized vaults, stablecoins built with the Kowala protocol maintain their price pegs via the autonomously controlled minting and burning of their money supplies.

ix. An eventuality plan in case of a "black swan" event.[1,2] The 1% case will happen eventually.

While black swan events are likely to hamper any stablecoin, Kowala is arguably the best equipped of the class for a crisis scenario. Unlike asset-backed stablecoins like Tether, Kowala's globally decentralized mining network makes any of its stablecoins extremely difficult to shut down by any one government or alliance of governments. Even if a Kowala stablecoin saw a massive decrease in its market demand, unlike other assetless stablecoins, Kowala's robotic coin-burning mechanism can restore the peg over time, regardless of widespread trader sentiment.

d. Tech

i. Are any novel consensus mechanisms used, over and above the underlying blockchain?

Rather than living on top of another blockchain, each kCoin is its own blockchain. The underlying consensus protocol is an implementation of the well-regarded Tendermint consensus. Tendermint gives each kCoin blockchain lightning-fast transaction throughput.

ii. What transaction throughput can the blockchain currently handle and how does it plan to scale? Do its plans coincide with your plans for your estimated demand?

Our tests indicate that the kCoins can currently process at least 7000+ tps.

iii. What tradeoffs does your protocol make and why did you make those tradeoffs? (supply/demand, temporarily peg breaking) (censorship resistance) (privacy tradeoffs) (accuracy of present market data and ease of manipulation of the data feed protocol uses (responsiveness of market and ease of manipulation)

One primary tradoff concerns the consensus mechanism. We wanted to insure that the kUSD blockchain could function with high speed and at low cost. This means that the number of nodes allowed to mine the network should be kept below a certain threshold. However, we also want to maximize decentralization and achieve broad ownership of our mining tokens and the network as a whole. Thankfully, third parties have begun to step in to help resolve this tradeoff by offering regulatorily compliant services that allow miners to effectively combine their tokens to successfully mine without increasing the number of nodes on the network to an extent that impairs network speed.

iv. Are there any centralized components of your system? Would any of these be easy for govs to shut down?

Of the stablecoin projects on the market, Kowala is arguably one of the most decentralized, as it is assetless and relies on a globally decentralized network of miners to mint the money supply. Additionally, the decision to initiate coin-burning is done robotically based on information feeds from a decentralized oracle, which prevents price manipulation by any individual actor.

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[1] https://en.wikipedia.org/wiki/Black_swan_theory 2

v. **Does your protocol require information outside the blockchain such as a feed of price data? If so, how does this oracle work? Who manages it, what are the incentives for managing it, and what happens if the data they provide has a glitch?**

Yes, each kCoin relies on its own set of participants who collectively form a price oracle. These are highly invested individuals who each own at least six million mining tokens. These oracles must continue to both mine the stable coin and periodically vote on the validity of purportedly accurate trade data from exchanges. These oracles receive a 4% bonus on their ordinary mining rewards. Failure to provide price data will result in a loss of the 4% oracle reward, and a failure to mine continuously will result in a loss of both mining rewards and the associated 4% oracle reward. No mining rewards or oracle are rewards are paid unless the oracle has maintained an online connection to the network and validated blocks continuously for at least the prior 10,000 blocks.

To handle data glitches, the algorithm for combining the votes from oracles is configured to throw out outliers in the originally reported data as well as outliers in the votes from oracles.

Furthermore, the algorithms for the variable minted amount and the variable stability fee have built in caps to prevent excessive values.

vi. **Which participants can see which transactions? What is the data and metadata available, and to whom? How does this impact privacy?**

All transactions are viewable in the blockchain. kCoins have the same privacy characteristics as Ethereum blockchain.

vii. **Are you doing anything with formal verification? Smart contracts used?**

kCoins do not make use of formal verification. Each kCoin has several smart contracts to manage the stability mechanisms and the ownership and use of mining tokens.

viii. **What is the rebase period? (Length of time between currency adjustments.)**

The block minted amount and stability fee percentage are recalculated every 900 block (approximately 15 minutes).

ix. **Can we make this automated?**
    1. **Do we use a smart contract, or network rules of the blockchain operators?**

Yes, the mechanisms for maintaining the value of the stablecoin token are fully automated.

e. Regulation

i. **What are your perceptions of local and global regulation in supporting stable coin, asset backed token economies?**

DECLINE TO ANSWER

ii. **What could be done to improve regulation in terms of speed, quality, value for your company ?**

DECLINE TO ANSWER

f. Testing

i. **What kind of simulations have you done and what have they helped you learn? (simulating broad array of market conditions)**

We have created a sophisticated agent-based software model to test the simultaneous use of all three mechanisms that form the Kowala Protocol. We have run a significant number of simulations against various permutations of the model, including:

1. variations in constants used by the Minting Algorithm
2. variations in constants used to define the Stability Fee
3. variations in starting conditions
4. market demand fluctuations, including mass panics
5. rapidly increasing and decreasing numbers of participants
6. excessive optimism and pessimism of arbitrageurs and prospectors