LITEPAPER

Abstract

This whitepaper will provide insight into how the Pollen protocol functions on a technical level while introducing new features unique to the Pollen governance model. We aim to showcase the Pollen governance model, protocol, its design function, and the mathematics employed. We introduce new concepts and incentive layers for both investors and liquidity providers (LP's).

Disclaimer

All of the information presented in this whitepaper is tentative and is subject to change at any time. None of the information herein should be construed as legal, accounting, or investment advice of any kind. This document does not represent a solicitation for investment, nor does it represent an offering or sale, public or private, of any kind of financial instrument, security or otherwise, in any jurisdiction. This whitepaper is provided for informational purposes only, with the intention to describe Pollen's prospective protocol and governance model.

Introduction

Pollen DeFi provides a fully decentralised asset management protocol ushering in the evolution of DeFi 2.0.

Pollen introduces two new assets to the Avalanche ecosystem and soon the Ethereum ecosystem as well: the PLN utility governance token and the vote-escrowed powered vePLN governance token.

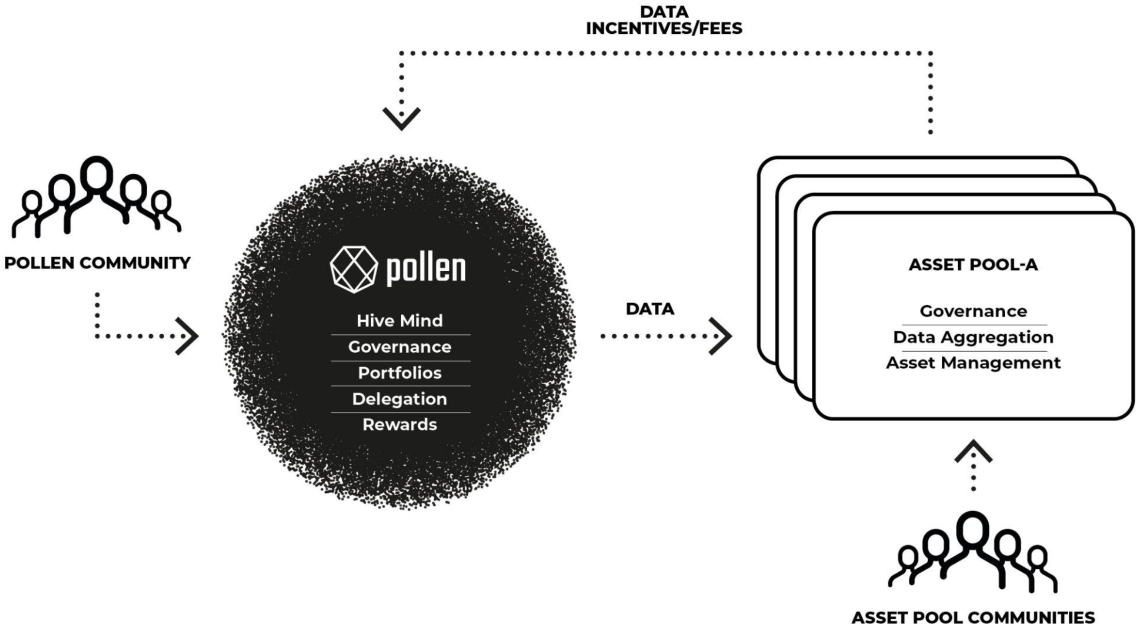
PLN token holders can create, manage, or delegate to virtual portfolios in order to earn rewards as well as play a role in governing the Pollen DAO. Additionally, PLN token holders have the option to lock their PLN tokens in return for vePLN tokens in order to receive boosted rewards and rewards from a pool of 20 Million PLN tokens during the first 1406 days, depending on the time and amount locked, to minimise dilution.

Pollen implements an automated liquidity protocol and asset governance model designed to democratise asset portfolio management.

The model leverages collective intelligence and decision-making in order to outperform the wider market. Moreover, Pollen’s governance protocol fully decentralises the process through meritocratic decision validation and community control.

All asset pools are launched independently from the protocol and are backed by PLN tokens locked as collateral in a factory contract. The Pollen protocol utilises liquidity pools to fulfil orders created through our governance protocol to optimise the asset pool and minimise rebalancing slippage.

The Pollen protocol uses collective decision-making, user portfolio signals, and governance mechanisms to create a participatory token economy. Unlike traditional index funds, Pollen asset pools are actively managed via decentralised governance, and asset allocations are continually rebalanced and optimised for markets that operate 24/7.



Pollen's open protocol and merit-based system rewards and empowers the brightest minds in its community. The protocol harvests crowd intelligence by allowing community members to stake PLN tokens in virtual portfolios that are exposed to asset prices.

Virtual portfolios represent a collection of 'virtual allocations. That is, a user decides what assets should be included in their virtual portfolios and their corresponding allocation weights. These provide signals to inform the composition of fully backed asset pools via reward, reputation, and rebalancing algorithms.

The protocol's reputation algorithm identifies the best performers and uses this information to award PLN governance tokens, inform asset pools and optimise the delegation process.

By fully decentralising governance and introducing a merit-based reputation and rewards system, the platform crowdsources market intelligence to optimise the asset pool allocations.

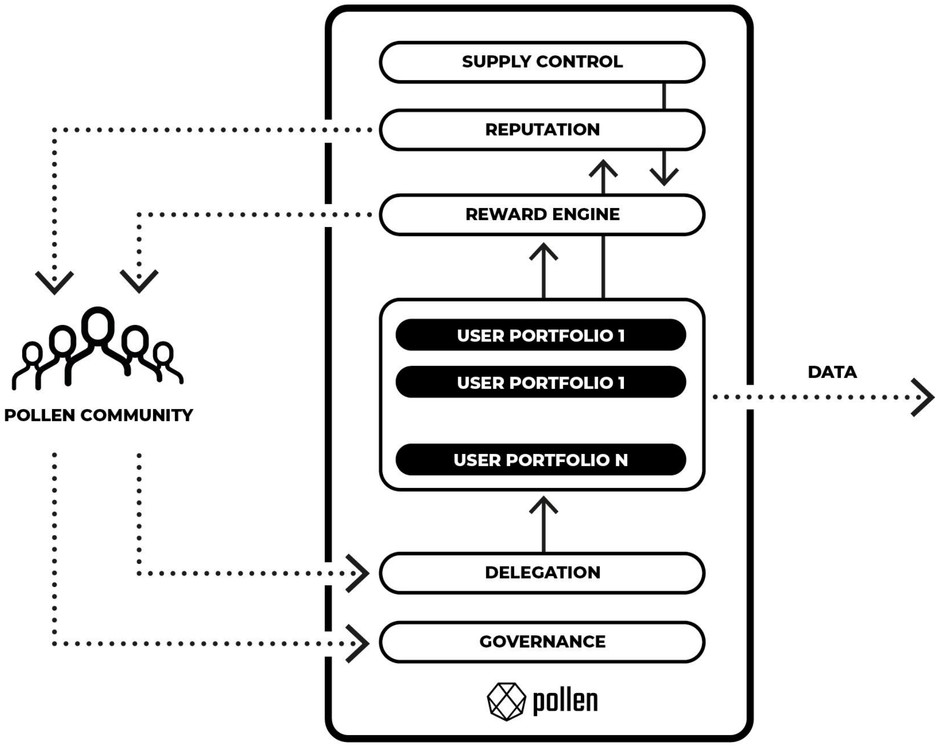


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Figure 2: DAO schematic description.

Virtual Portfolios

Virtual portfolios represent a collection of 'virtual allocations'. That is, a user stakes PLN tokens and decides what assets should be included in their virtual portfolios and their corresponding allocation weights. These virtual portfolios generate signalling data that can be used to inform the composition of fully backed asset pools.

Portfolios may be rebalanced at any time and when a user rebalances or closes their portfolio, the reward/penalty in PLN is calculated by measuring the initial and final values of the portfolio.

When the user's virtual portfolio performs well, the protocol awards them with PLN tokens and their reputation improves. Conversely, when the user's virtual portfolio performs poorly, the protocol penalises the user by requiring them to forfeit PLN tokens and their reputation weakens.

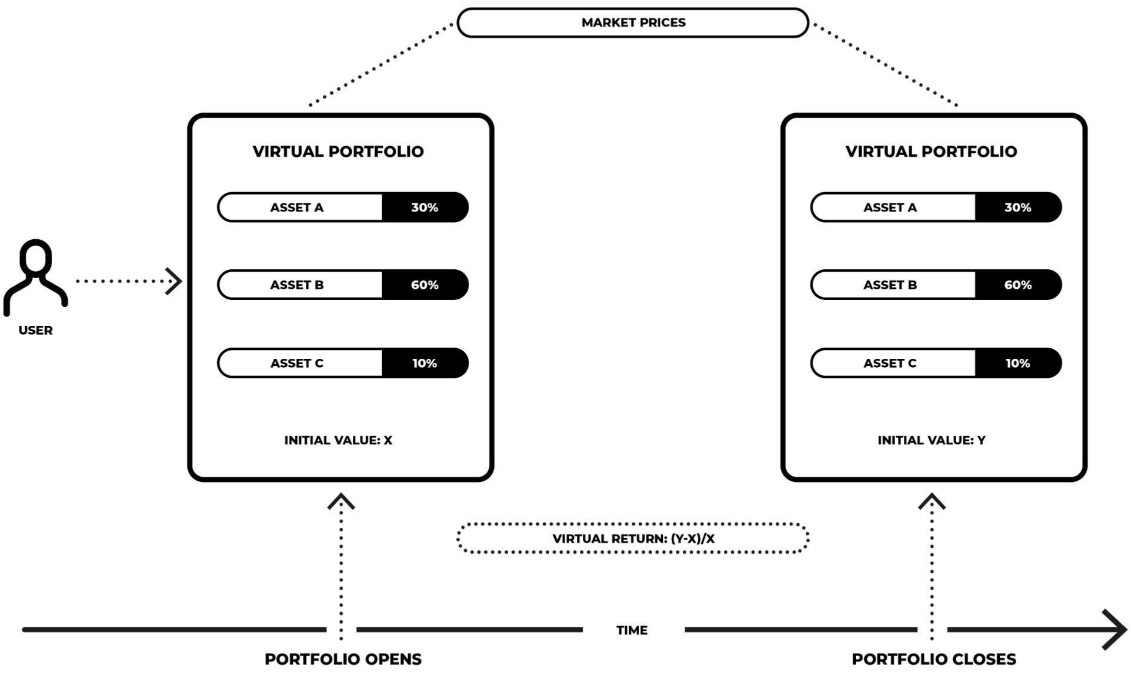


Figure 3. Virtual portfolios: User skills with regards to predicting the market are measured by returns using market prices without actually being exposed to the underlying assets

The amount of PLN tokens awarded and forfeited is proportional to the amount of PLN the user has staked and the increase or decrease in the value of the user's virtual portfolio. Further, the amount of PLN tokens awarded and forfeited will vary depending on the current performance of the virtual portfolios across the entire community.

Theoretical Description

Let $S = \{a_1, a_2, ..., a_N\}$ be the set of the N crypto assets supported by Pollen. The assets are represented by a_i and are fully characterised by the evolution over time of their price $P_i(t)$ and associated base currency, e.g. ETH or USD. We assume that the time-series $P_i(t)$ is known at discrete samples of time. The interval can be either 1 minute, or 1 hour, or 1 day, or 1 week, etc, but not necessarily equally spaced.

Let $R_i(t_k)$ denote the one-period return of the asset a_i between the instants t_{k-1} and t_k:

$$R_i(t_k) = \frac{P_i(t_k) - P_i(t_{k-1})}{P_i(t_{k-1})}$$

A User U is characterised by:

- an initial amount $V_U(t_0)$ PLN that they want to invest into the family of assets S.
- a set of weights $W(t) = W_U(t) = \{w_1(t), w_2(t), ..., w_N(t)\}$, such that , $w_i(t) \in [-1, 1]$ that distributes the amount $V_U(t_0)$ over each asset

In this context, $w_i(t_k)$ is said the *weight* of the asset a_i in the user U portfolio at time t_k. We require

$$\sum_{i=1}^{N} |w_i| = 1$$

Note that weights are allowed to take negative values. This is equivalent to entering short positions in the asset i. The condition that the sum of the absolute weights has to be 1 models a short position through collateralization.

This is somewhat similar to the mechanisms applied by established lending platforms. In our specific case, the collateralization rate is 1.

The return $R_U(t_k)$ of the portfolio U is the weighted sum of each asset return $R_i(t_k)$ scaled by their contribution $w_i(t_k)$ into the portfolio:

$$R_U(t_k) = \sum_{i=1}^{N} w_i(t_{k-1}) R_i(t_k)$$

The value of the User's portfolio at time t_k is given by

$$V_U(t_k) = V_U(t_{k-1})\big[1 + R_U(t_k)\big]$$

Users must stake PLN when creating a virtual portfolio and then can amend their staked amount each time they modify their asset allocations.

Onchain Return Calculation

In order to implement the calculation of the return on-chain, considerations on fees and efficiency should be taken into consideration:

- The initial value of the portfolio (PV_o) is equal to the number of Pollen tokens used to open the portfolio times the value of each pollen. When the portfolio is open, the number of coins of each asset is calculated and stored as:

$$C_i = \frac{w_i N_p P_p}{AP_i(t_0)}$$

Where t_o denotes the time at which the portfolio was open. C_i is the number of coins of the asset i, $w_i N_p$ is the amount of pollen assigned to asset i, P_p is the price in USD for one Pollen and AP_i is the price of asset i in USD.

- The final value of the portfolio is calculated as:

$$PV_f = \sum_i C_i \times AP_i(t_f)$$

- Return is then calculated as:

$$\begin{aligned} R &= \frac{PV_f - PV_0}{PV_0} \\ &= \frac{1}{N_p P_p}\left[\sum_i C_i AP_i(t_f) - N_p P_p\right] \\ &= \frac{1}{N_p P_p}\left[\sum_i \frac{w_i N_p P_p}{AP_i(t_0)} AP_i(t_f) - N_p P_p\right] \\ &= \sum_i \frac{w_i}{AP_i(t_0)} AP_i(t_f) - 1 \end{aligned}$$

This means that instead of saving the number of coins, it is enough to save the value $(w_i / AP_i(t_o)$ for each asset in the portfolio, in order to calculate the return.

Direct Delegation

In addition to users creating their own virtual portfolios, they also have the option to delegate a portion of their PLN tokens to other members of the community (i.e., delegates). Users that delegate (i.e., delegators) are then awarded or must forfeit PLN tokens depending on the performance of the delegate's virtual portfolio.

Delegates receive 20% of returns generated [although this percentage can change via governance voting in the future], producing a passive yield for delegators. Delegators are profitable when delegates are profitable. Converselvely, delegators forfeit PLN tokens when their delegates perform poorly. Delegators have the option to undelegate at any time.

Rewards

Rewards are shared in the protocol's native PLN token with users that have positive virtual returns. The rewards shared are proportional to the virtual returns and the staked PLN tokens in users' virtual portfolios. The amount of rewards shared will vary depending on the current state of the community market and the available funds in the protocol's rewards pool. In periods where the average performance is low, the best performers are incentivized with higher reward amounts, while in market upturns, rewards generated are more conservative.

Supply control

Supply control is achieved by an algorithmically defined tracking and virtual issuance schedule.

In periods where rewards minted are low, rewards issuance increases, recalibrating with the theoretical issuance schedule. In periods where rewards minted are high, rewards issuance decreases to stay in sync with the theoretical issuance schedule.

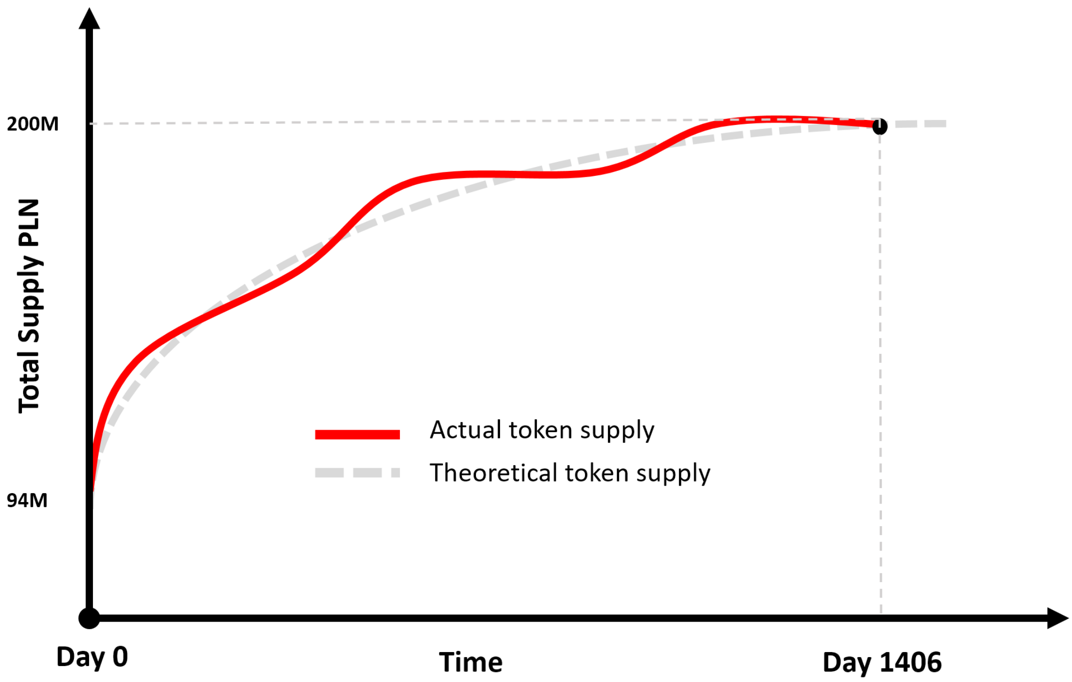


Figure 4: Theoretical token supply and expected supply controls curve. After day 1406 the issuance schedule will be decided by governance voting.

The rewards released and penalties imposed are parametrized such that Pollen becomes more attractive compared to the market. For example, it issues more rewards in bullish market conditions and fewer penalties in bearish conditions.

This ensures that the total PLN token supply, capped at 200M for the first 1406 days, is never exceeded and helps create a healthy token economy for the protocol. The total supply is split into two, 180M is given as rewards to the users for their performance and 20M is reserved for locked vePLN rewards.

An algorithmic procedure that compares the “actual” rewards and penalties runs periodically. This algorithm relies on a theoretical minting curve:

$$M(t) = 94M + 2.1004 * t * I_1 + 0.44505 * t * I_2 + 0.1348 * t * I_3 + 0.055 * t * I_4$$

where, I_k is 1 for year k and 0 for the rest of the years

The minting curve affects the total rewards and the total returns through the parameters $a(t)$ and $b(t)$below, such that:

$$a(t) * Total_{Rewards} - b(t) * Total_{Penalties}$$

This ensures the PLN tokens that are awarded do not exceed the token supply.

Reputation

Reputation measures the ability of a user to make sound investment decisions that are reflected in the returns awarded from their virtual portfolios. In order to avoid confounding variables due to differences in the amount of PLN that users stake, the reputation scores are defined as the compounded return assuming an initial stake of 1 PLN in each virtual portfolio.

This makes the score insensitive to the amount of PLN staked and provides at any point in time an indication of how much value a particular user has been able to generate by adeptly managing their virtual portfolios.

The reputation score can be expressed as:

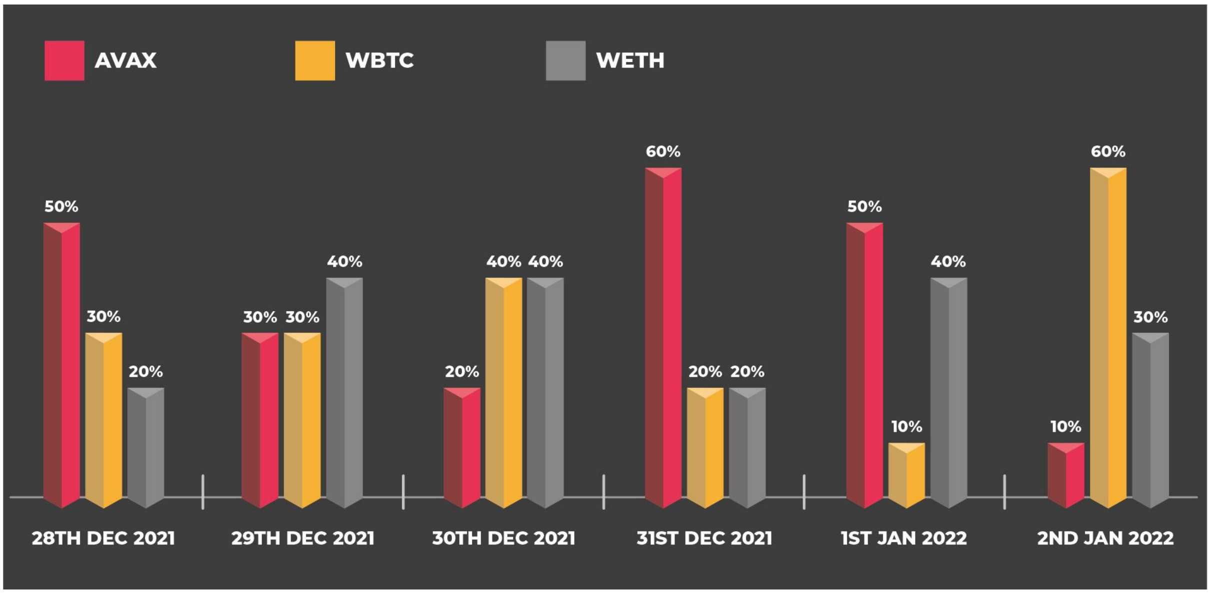
$$RS = \prod_{i=1}^{n} \left[1 + (R(t_i) - R_m(t_i))\right]$$

Where R(t) is the portfolio's return at each event of rebalancing the portfolio, Rm(t) is the return of the market benchmark (e.g. CCi30, CRIX, or Bloomberg Galaxy Crypto Index), and n is the total number of rebalancing events of the user portfolio. Reputation measures, therefore, the user's ability to outperform the market. The quantity R(t)-Rm(t) is known as *excess return*. Data is emitted from smart contract events, and the calculations are executed off-chain.

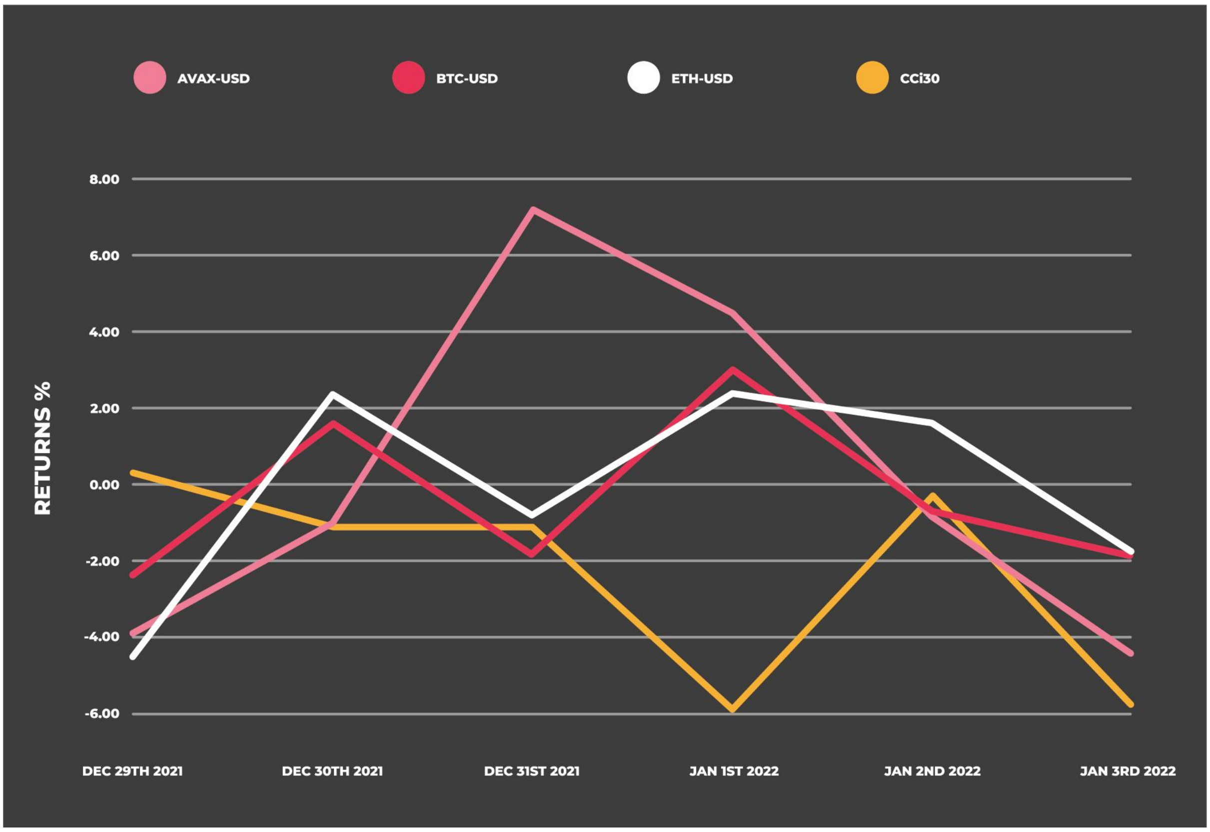
Additional information regarding the average amount of PLN staked in a virtual portfolio, the amount of PLN awarded, and the amount delegated is provided to the user, enabling them to make informed delegation decisions.

As an example of how the protocol calculates reputation, assume a user joins the platform on 2021-12-28, they acquire PLN and select the following three tokens: AVAX, BTC, and ETH. The initial allocation of the virtual portfolio is 50% into AVAX, 30% into BTC, and 20% into ETH, with assets priced at approximately $107, $47588, and $3800, respectively.

The table below shows the reallocations performed by this fictitious user (who is assumed to rebalance daily) from 2021-12-28 until 2022-01-03.



The Figure below shows the (actual) daily returns of the assets in USD over the same period. This example considers CCi30 as the market benchmark.



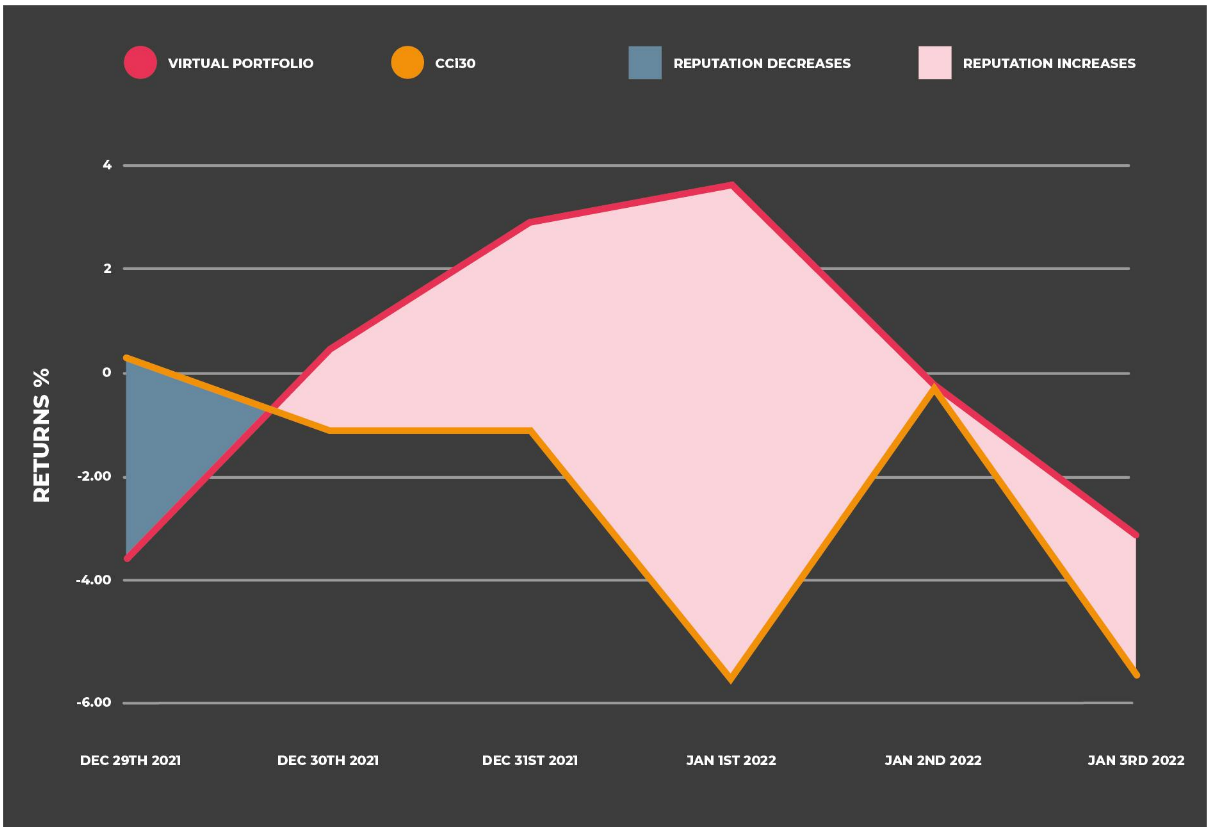
User reputation is calculated using a two-step process: computation of the virtual portfolio return and the market benchmark return (both at the time of rebalancing).

The virtual portfolio return is computed by the weighted average of the assets returns (see *Virtual Portfolios* section for details).

The excess return is the difference between the virtual portfolio return and the market benchmark return.

The figure below compares the virtual portfolio return (in red) with the market benchmark return (in yellow) - each daily, which is assumed to coincide with the event of rebalancing for the sake of simplicity (see the *Onchain Return Calculation* section for details).

The dusty red areas highlight the periods when the virtual portfolio outperforms the market, and therefore the user reputation increases in this period. The user reputation decreases in the slate grey areas because the virtual portfolio return is below market benchmark return.



Precisely, reputation is computed by compounding the initial amount of one PLN by the excess return whenever the user rebalances his virtual portfolio. The table below shows the reputation per date (i.e., rebalancing events) and how it was computed.

DATE	REPUTATION	COMPOUNDING
28th DEC 2021	1.000	—
29th DEC 2021	0.992	1.000 x (1-0.794%)
30th DEC 2021	0.976	0.992 x (1-1.619%)
31st DEC 2021	1.014	0.976 x (1+3.943%)
1st JAN 2022	1.014	1.014 x (1-0.075%)
1st JAN 2022	1.007	1.014 x (1-0.621%)
2ND JAN 2022	0.987	1.007 x (1-2.030%)

Market Benchmark

The section above compares a virtual portfolio with a market benchmark, an index composed of a subset of the available assets that represent market aspects. For example, a market benchmark constructed by market capitalization selects the Top 30 or Top 50 assets, and defines their weights based on their participation in the total market capitalization of selected assets (e.g., S&P 500, DJIA, CCi30, etc.).

Pollen defines a custom market benchmark because the universe of tokens in which Pollenators can express market sentiment is restricted.

Therefore, a custom benchmark that considers market capitalization, token availability (e.g., through a wrapped version), and transaction costs is defined. The latter is needed because, whenever the Pollenator rebalances, the smart-contracts need to collect and store additional information to compute the entry/exit positions in the market benchmark and provide an accurate description of a Pollenator reward and skill.

The CCi30 benchmark is used as a reference for the global cryptocurrency market benchmark. Given that Pollen’s community opted for an initial deployment in the Avalanche blockchain, the following tokens satisfy the conditions mentioned above: WBTC, WETH, AVAX, BNB and LINK. The objective is to form Pollen’s benchmark as a weighted average of these five tokens (or any subset of them) such that the correlation with the broader market is maximized and transaction costs are minimized.

Pollen’s market benchmark will be reassessed as the platform is deployed in other blockchains or considerably changes the supported tokens. This is required to provide an accurate representation of the market and make sure the value that Pollenators are creating is being fairfully measured and rewarded.

PollenSkill

The PollenSkill algorithm estimates the investment skill of players through the use of Bayesian inference.

The algorithm assumes that investing skill follows a normal distribution. The skill of a user is updated whenever they rebalance. This creates an interesting dynamic. A player's skill is described by both a mean and a variance. The more rebalancing a player is doing, the more certainty we have around estimating their skill.

The final score is measured in points that arise as a comparison of a player against all other players. This comparison is more impactful when a player's variance is lower.

Players are incentivized to rebalance when they have positive returns. Therefore, a player might forgo rebalancing when experiencing negative returns, to avoid reducing the estimation of his skill. However, other players will rebalance more, reducing the estimation error of their skill, and accruing more points, as a result. A player who doesn't rebalance often, will have his points gravitate towards 0.

Therefore, the PollenSkill algorithm creates a constant tension between determining how other players will perform and forecasting one's portfolio performance. This will lead the protocol to a dynamic adaptation, as users adjust their investment styles in order to be able to better demonstrate their trading skills.

The table below shows a high level structure (from a game theoretic perspective) of how the system works. The player can find themselves in the following matrix. The notation [x,y] means that the player can encounter any range of outcomes.

The interesting part of this matrix is that waiting yields very uncertain results, due to the volatility of the market. Performance in volatile markets is generally seen as a marker of trading skill.

	Wait	**Rebalance**
Negative returns	[-3,+1]	-1
Positive returns	[-1,+3]	+1

In-depth look and methodology

PollenSkill follows the conjugate Normal-Inverse Gamma model, which estimates the mean and the precision (inverse of variance) of the user's returns simultaneously.

The new model has the following parameters:

μ_0: The prior mean (expected returns)

ν: The number of pseudo-observations. This variable represents the number of observations that we assume we have seen before the user actually experience returns.

α: This is one of the two parameters required by the Gamma distribution

β: The second parameter of the gamma distribution

The posterior of the model is defined as the NormalGamma distribution. So, we assume that

$$skill \sim NormalGamma(\mu_0, \nu, \alpha, \beta)$$

The final points are calculated as

$points = \mu - \sigma$

Where $\sigma = \frac{\beta}{\nu(a-1)}$

The update equations are the following:

$\mu' = \frac{\nu\mu_0 + n\mu}{\nu+\mu}$

$\nu = n + \nu$

$a = \alpha + \frac{n}{2}$

$\beta = \beta + \frac{1}{2}\Sigma(x - \mu)^2 + \frac{n\nu}{n+\nu}\frac{(x-\mu)^2}{2}$

And we define as n the new number of observations (real observations, not pseudo-observations), as μ we define the mean of the data (in this case the returns of a player).

The initial parameters of the model are:

$\mu_0 = 0$, we assume that a random user (without knowing anything about them) will have 0% return

ν = 15, this parameter is set to 15 to factor in user portfolio rebalancing into the prediction

$a = 2$, parameter set based on observations

$\beta = 5$, parameter set based on observations

The final interpretation of skill under this model is that it's the minimum expected return for a user with more than 85% probability.

Governance

As we've discussed, PLN token holders inform the Pollen protocol by means of their virtual allocations in their virtual portfolios. Additionally, PLN token holders can lock their PLN tokens and create voter escrow PLN tokens or what we refer to as vePLN. Users that opt to lock their PLN tokens in return for vePLN tokens receive three benefits:

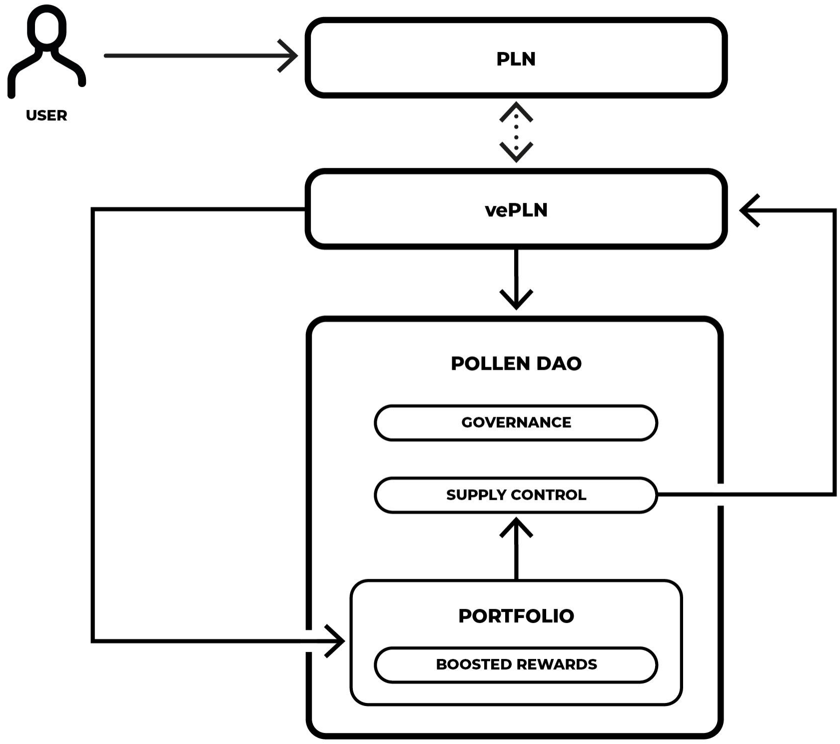
1. Up to 20% boosted rewards on the performance of their virtual portfolios depending on the lock period
2. A share from a pool equal to 10% of the total circulating supply as a reward for locking their PLN.
3. Governance rights in which vePLN token holders can issue and vote on Pollen Improvement Proposals (PIPs) to improve the protocol

Rewards and voting power are higher for longer locks, and they decay over the term of the lock, thereby incentivizing users to extend their lockup periods. Users have the option to relock their PLN in order to reset and again increase their boosted rewards and voting rights thereby offsetting the decay. In this way users express long-term confidence and support in the protocol and are rewarded for doing so.

Governance Architecture

Let's take a closer look at how this works in the contracts:

1. When a Pollenator locks up their PLN to create a virtual portfolio, the protocol issues them vePLN tokens that they can use to govern the Pollen DAO. They can set the lockup period for any amount of time with a minimum of one week and a current maximum of 4 years. You can learn more about the issuance schedule in the Supply Control section of this lite paper.
2. The longer a Pollenator's lockup period the larger the boost to their reward issuance while still adhering to the supply limit curve
3. The Pollenator's vePLN tokens are non-transferable ERC-20s and represent the Pollenator's voting rights. Voting rights and the boosted rewards decay over the period of the lock. I.e., users must continue to extend their lock-ups in order to maintain higher-levels of boosted rewards and increased voting power.



Rewards

Concerning boosted rewards for Pollenators that lockup their PLN in return for vePLN, the boosted rewards are a percentage of the increase to the rewards they've earned. The boost or extra rewards are received when rewards are claimed. That is, when Pollenators rebalance or close their virtual portfolios.

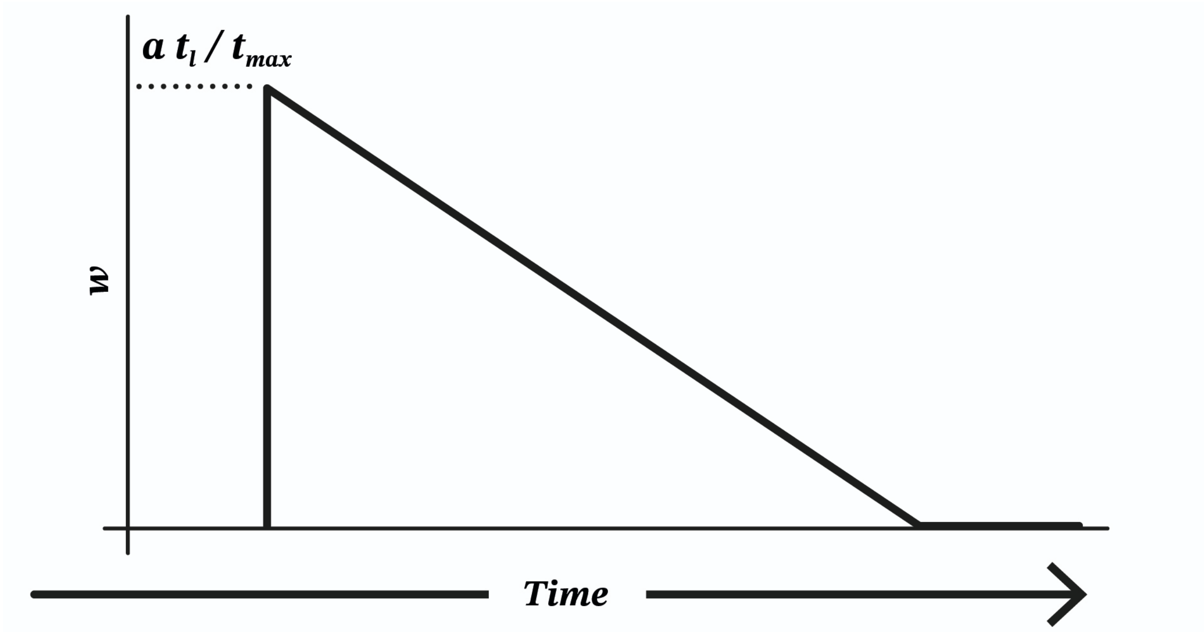
Further, the rate of the boost decays inline with the decay associated with voting rights over the term of the lockup. As more PLN tokens are locked, the rate of PLN rewards that will be issued decreases.

Lastly, the protocol extends vePLN token holders to rewards similar to staking. That is, as new PLN is minted, vePLN token holders will get as a reward, a share from a pool of tokens equal to 10% of the total circulating supply. This way vePLN token holders get less diluted compared to others if the supply is inflationary and end up with an even bigger share if the supply is deflationary.

Voting Rights

The vePLN tokens empower Pollenators with voting rights. Rather than using the amount of tokens locked as voting power, the Pollen DAO assigns the voting power in relation to the amount of time that the user will be committed to the platform after voting for a proposal. That is, a user should be willing to confront the outcomes of the proposals for which they are voting.

Voting power is designed to be a combination of the amount of PLN tokens locked and the remaining time in the lockup for those tokens. This represents and directly models the level of commitment that users with voting rights have when it comes to governing the protocol. This idea stems from the Aragon Minime Token, later modified by the Curve team for their protocol:



The curve shows the voting power (*w*) decreasing linearly with time such that the less time left in a Pollenator's lockup, the less voting power they have. Users have the option to extend lockup periods at any time to retain as much voting power as they can.

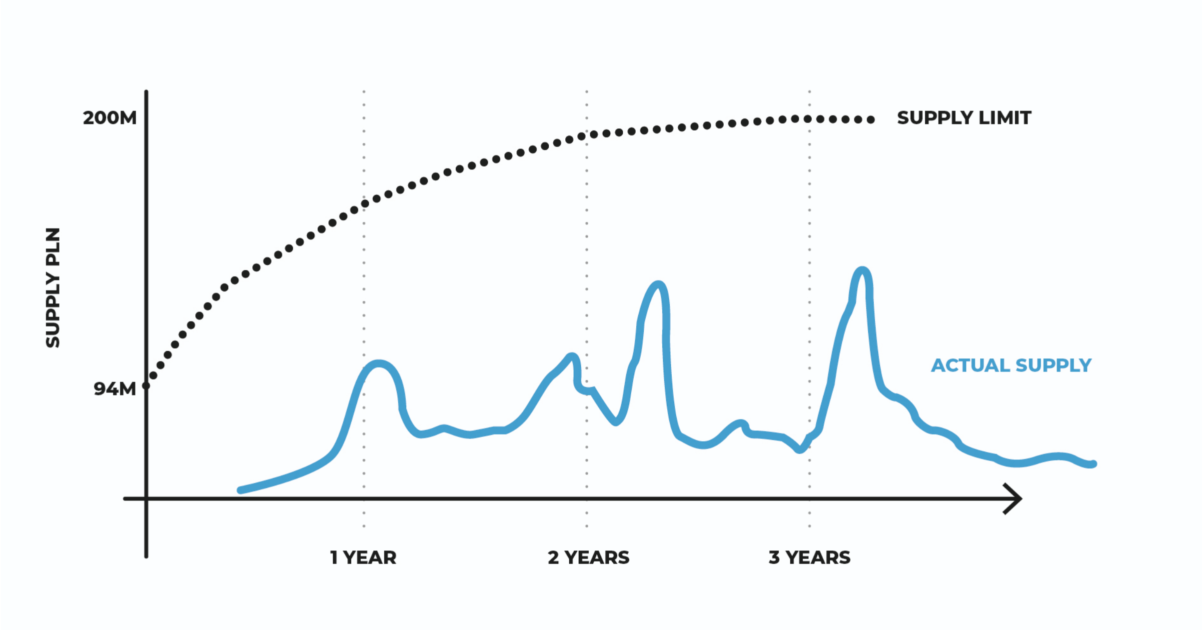
Market BenchmarkIssuance Curve

The curve is defined as a piecewise linear function with three segments. The first segment has a higher slope to incentivize early adopters and to help bootstrap the protocol. Each segment is a linear function where a_i is the designated slope for the year i:

$$supply(t) = a_i t + b$$

Current implementation allows selecting the parameters (a dn b) for the first 1400 days in periods of 365 days by the admin or governance with the sole restriction that there should not be more than 200M tokens before 1400 days.

Given a particular boost on rewards, this implies a vertical shift in the actual supply. This is only for visualisation as different users will likely have different boost values depending on the amount of time that they lockup the tokens.



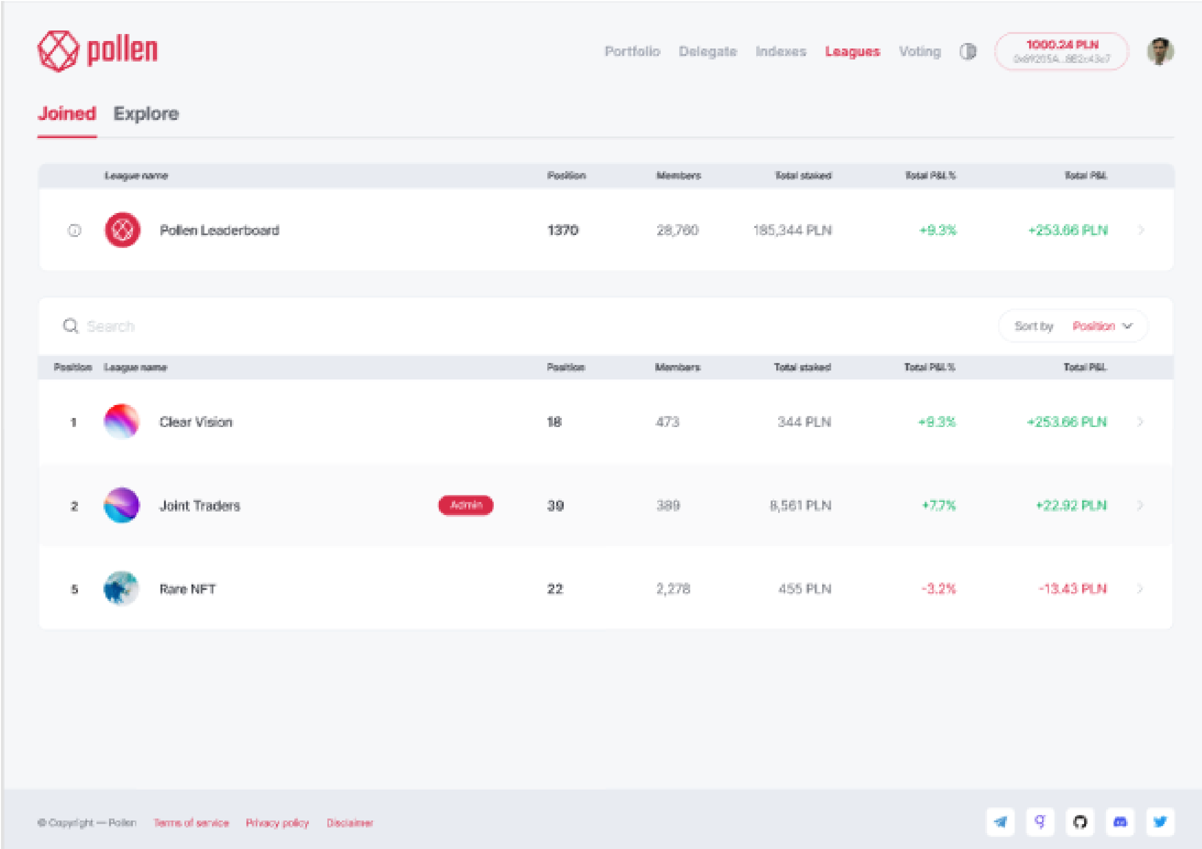
Pollen Virtual Leagues

Pollen Virtual users can participate in the overall Pollen portfolio. Soon, however they will also be able to participate in specialised virtual leagues:

Leagues can have many different token sets or types of users and league revenue-generating opportunities, e.g., sponsorship. The reputation of the top 10 in each league determines the overall reputation of the league versus other leagues.

Although a user might not be the top performer overall on Pollen, they might be in a leader position within a specific league as such their portfolio will be taken into account by indexes that follow the specific league.

Users have their own portfolio for each league because new types of assets can be added that are not available on other leagues or the general Pollen portfolio, e.g., GameFi guild tokens, ECO climate tokens, derivatives, tokens representing real assets or collectibles.



Leagues can provide collective wisdom around specific niche markets by allowing long and short positions and a broad portfolio of investable assets.

Because each league has a leaderboard and overall reputation, we foresee inter and intra-league competition. Through delegation, sponsorship, and other revenue-generating league apps, league participants are rewarded for continued participation.

Plans are in place for delegation functionality to be extended to enable an educational aspect through knowledge sharing between the top performers inside a league and their followers.

A community that collectively improves will significantly benefit the quality of their collective intelligence regarding indexes following their combined decisions.

Data Aggregation

Pollen allows users to create virtual portfolios backed with native PLN tokens. Portfolios are only exposed to the price of the assets, not to the real assets.

The protocol aggregates data from the following sources:

1. The list of assets that the user includes
2. The amount of PLN tokens staked in each virtual portfolio
3. The portion of tokens assigned to each asset in the portfolio

The protocol generates additional data from virtual portfolio performance and the timing of user actions.

Users are incentivized and encouraged to delegate to the top performers to optimise the system and maximise returns. As a consequence, virtual portfolios offer a unique crowdsourced dataset that reflects varying community investment theses based on varying risk profiles.

By performing historical price analyses, these risk profiles inform well-established risk and return models grounded in Modern Portfolio Theory (MPT). Pollen's data aggregation algorithms provide probabilistically optimised returns compared to automated bots and similar techniques (based on technical analysis) or with traditional optimization (based on stand-alone random generation of multiple portfolios).

Reputation plays a fundamental role in measuring and informing the data aggregation process used within the protocol's asset allocation and portfolio rebalancing mechanisms.

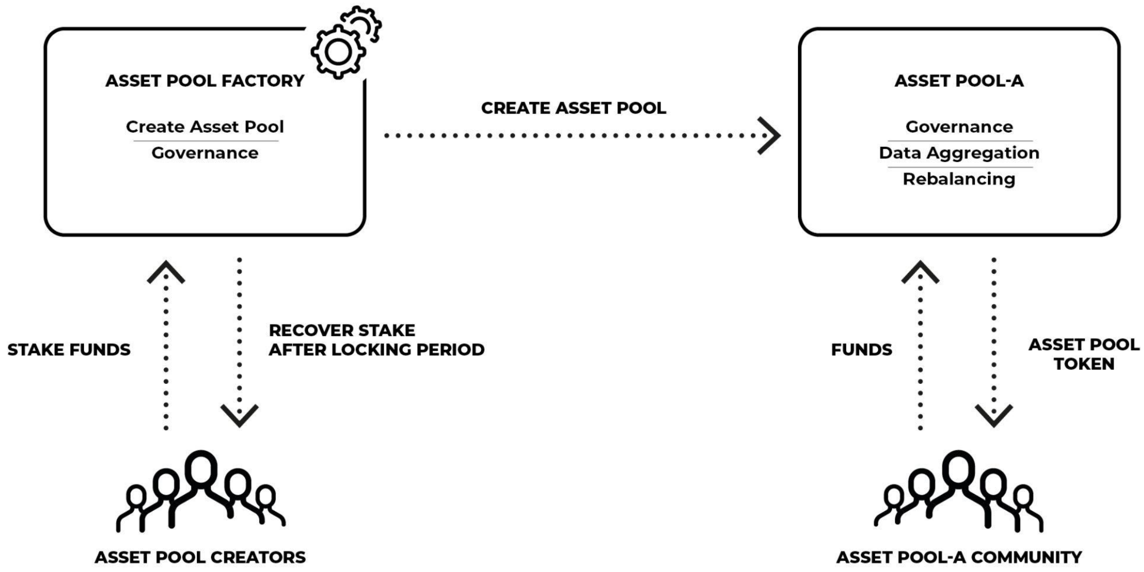
Let $\{w_1(t_k), w_2(t_k), \ldots, w_N(t_k)\}$ define a user's allocation at time t_k. The simplest data aggregation method is the weighted average of the users' allocation scaled by reputation:

$$x_i(t_k) = \frac{1}{\sum_W \mathrm{Rep}_W(t_k)} \sum_U \mathrm{Rep}_U(t_k) w_i(t_k)$$

The reputation metric captures the actual amount a user was able to produce solely based on their decisions. That is, the higher the reputation, the better the user manages their virtual portfolio. Therefore, we should expect that an allocation of assets that sets more weight to users with a higher reputation should capture more rewards.

Asset Pools

In addition to virtual portfolios, the Pollen protocol also has fully backed asset pools. All asset pools are launched independent of the Pollen DAO and are backed by PLN tokens locked as collateral. The PLN tokens necessary to launch an asset pool must meet a minimum capitalization threshold and be locked for a certain period of time. This is done to optimise for high-quality Asset Pools. When it comes to securing assets and rebalancing, the Asset Pools utilise liquidity pools to fulfil orders.



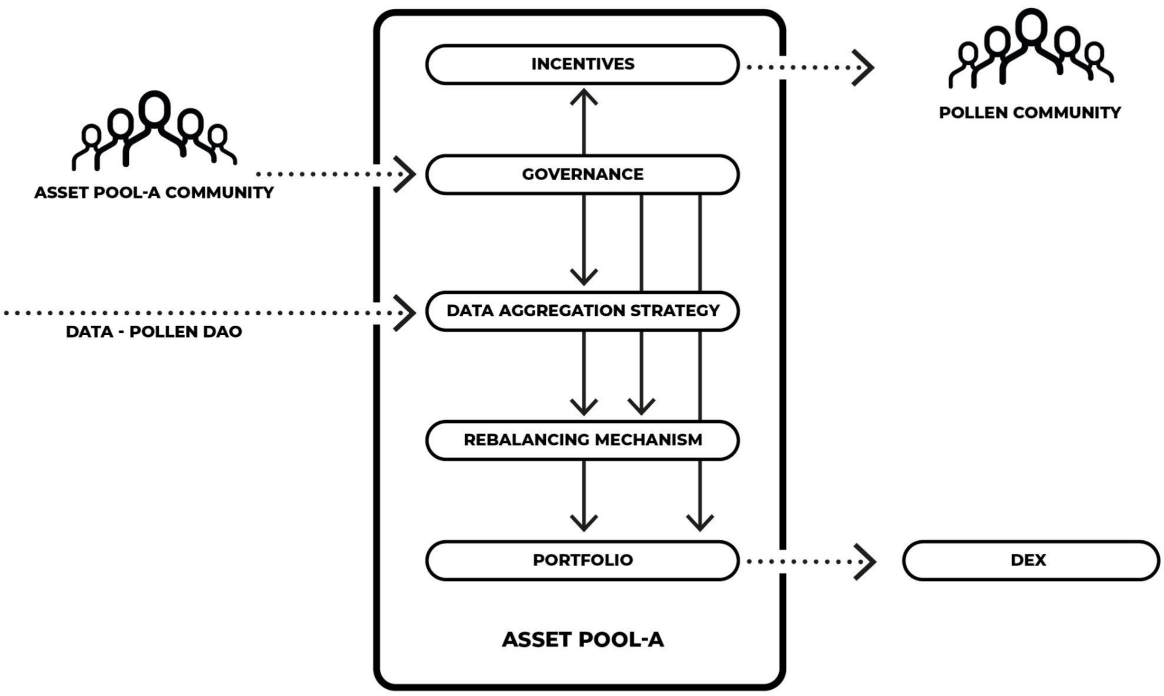
How do Asset Pools Work

An Asset Pool factory smart contract enables users to launch and govern their own fully backed asset pools. Through governance, asset pool users can decide if they'd like to subscribe to a Pollen DAO crowdsourced data aggregation algorithm or they can manually manage the asset pool's portfolio themselves.

Asset Pools can leverage virtual portfolio data via data aggregation from the highest reputable Pollenators to determine the rebalancing process of the fully backed assets in their asset pools. The data aggregated will reflect different strategies that correspond to different risk profiles and can be used to help inform how an asset pool is balanced.

The Pollen community does not have any direct influence in an Asset Pool's decisions using PLN tokens. Instead, users governing an Asset Pool can decide how/if they want to use data from the Pollen community's virtual portfolios to supplement their investment strategies with other data or mechanisms.

Lastly, each Asset Pool has its own corresponding token that is used to represent the participation and value of an individual's position in a particular fund. Asset pools can include tokens from other asset pools as well.



In order to rebalance, Asset Pools use decentralised exchanges (DEXs), swaps and other liquidity providers, to buy and sell assets. Other portfolio rebalancing approaches can be added in the future provided the Asset Pool governance process votes to do so. Multi-chain asset solutions to optimise gas fee usage and other improvements will likely be added as well.

Asset Pools have a mechanism to give back to the Pollen community and incentivize Pollen DAO users to participate, as this is in the best interest of the Asset Pool. The parameters of this incentive mechanism are under the control of the Asset Pool community via governance and may involve the distribution of awards in Pollen or an Asset Pool's corresponding token.

Conclusion

The Pollen DeFi protocol addresses the $4.3 trillion market in the traditional finance world with a decentralised solution that unleashes the power of DeFi 2.0.

We built Pollen to provide a safer way to participate in the ecosystem. The Pollen DeFi protocol delivers a new DeFi primitive that enables communities to grow and create fully backed asset pools that reflect their community's interests and values.

Further, the Pollen protocol and its voter-escrowed vePLN token model rewards users for locking up their PLN tokens for extended periods of time. In doing so, token holders express their long-term confidence in and commitment to the protocol.

Our mission is to rethink asset management from the ground up, reduce market risk, and provide a safe harbour for market volatility. Like AMMs, Pollen borrows from prediction markets to deliver an elegant protocol designed for markets that operate 24/7.

Pollen unleashes the power of prediction markets and ve, creating an asset management and governance benchmark in the rapidly maturing Web 3.0 token economy.

Pollen is here to make DeFi better for everyone. Welcome to DeFi 2.0's first asset management protocol.