SafeZen

the future of insurance

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ABSTRACT

SafeZen is a revolutionary decentralized insurance product with two major peer-to-peer insurance models- a zero-premium insurance model backed by community participants, and a pay-as-you-go insurance model backed by underwriters and governed by the SafeZen community members.

In the zero-premium insurance model, each individual's assets will simultaneously be covered and will underwrite the assets of other peers in the coverage pools within the SafeZen ecosystem against any future event. Whereas, in the pay-as-you-go insurance model, the underwriters will underwrite and provide the liquidity in the coverage pools to insure users against any future unfortunate event.

Under both models, coverage pools will either be community-driven or non-community-driven. There will be risk-based sub-pools, i.e., low risk, medium risk, and high-risk pools, within the community-driven coverage pools.

SafeZen initially plans to offer the following insurances: stablecoin de-peg, smart contract vulnerability, custodian risk vaults, collateral protection for crypto-backed loans, and NFT insurance. Later on, we do have plans to incorporate insurances that exist in the traditional world, such as vehicles, gadgets, crops, and travel insurances, to offer more transparency and benefits.

BACKGROUND

The insurance concept date back to the time when claims or pay-off were not even subjected to financial transactions. There are historical examples where neighbors pledge to help rebuild a neighbor's house when it is destroyed.

The main concept of insurance has always been to spread out the uncertain future risk from an individual to a larger community. The pooling funds raised are used to "pay off" the claimant in case of any unfortunate event.

In late 1600, the concept of underwriting emerged and became immensely popular and mass adopted. And with the changing economic world, modern insurance economics revolves around certain factors:

1. **the law of large numbers:** the more individuals share their risk in a grouped pool, the higher the chances to predict the probability of an event happening accurately, and hence, paying out all claims if an unfortunate event happens, i.e., maintaining solvency,
2. the lesser the claims approved, the more the profit can be shared with the stakeholders, i.e., **lower Claim Settlement Ratio (CSR)**.

With large institutions dominating the insurance industry, to serve their own best interests, the agents or large institutions have constantly remained focused to approve as less claims as possible and underwriting insurances even when not having funds to cover such insurances in case of genuine claims.

These traditional insurance claims were and are still subjected to a centralized verifier, are often not transparent, and remain unfair to the public. And, at the same time, delaying the insurance claim payments and unfair underwriting practices lead to a lack of trust in the system.

CASE STUDY: 2008 FINANCIAL CRISIS

We all have heard about the collapse of Lehmann Brothers and AIG, which led to the systemic collapse of the global financial system. During the 1990s and 2000s, big American banks started offering risky subprime mortgages to low-credit score individuals, offering an easy pathway for Americans to get home in the USA. This was a dream come true for many Americans to live the lavish American Dream life, as they can have their own home with such cheaply adjustable mortgage rates.

To earn more bucks, the banks usually bundle hundreds and thousands of mortgages and sell them as bonds in the financial market, termed Collateralized Debt Obligation (CDO). As they were riskier assets due to their nature of business, banks approached insurance

providers and AIG, the then-largest insurance organization in the USA to offer insurance against such CDOs.

AIG was selling insurances on CDOs with a very poor credit rating and effectively swapping with their own trust rating. Such insurance policies were termed Credit Default Swaps (CDS). As financial institutions found themselves covered by AIG, they started issuing more bad mortgages to home buyers and selling more and more CDOs to the financial institutions. If anything turned wrong, they had a belief that they can make a claim against their insurance policies.

As of the end of 2007, approximately 65 percent of AIG's collateral for securities lending was invested in securities that were sensitive to home prices and mortgage defaults, either directly or indirectly. AIG started lending securities with less than 100 percent collateral rather than the traditional typical practice of requiring 102 percent collateral. They started relying on the theoretical probability that the housing market will not fall.

When the housing market crashed and the giant bubble burst, the adjustable mortgage rates hiked, but as they were issued to risky people with low credit ratings, they were not able to pay up their debts with the increase in the monthly debt repayments. And, with that domino effect started, as CDOs started collapsing. Still, no big panic alarm was activated, as big banks had their hopes on AIG will honor and pay back their claim amount.

Things broke out when AIG run out of money on September 15th, 2008, as they were not having enough assets to remain solvent, and on the very same day, Lehmann Brothers declared bankruptcy. Seeing AIG on the verge of collapse, the Federal Reserve realized the same and bailed them out taking an 80% stake in AIG with people's hard-earned money. AIG then used $165 million of the bailout money to payout bonuses to its executives, who were the sole responsible for such a recipe of global financial disaster.

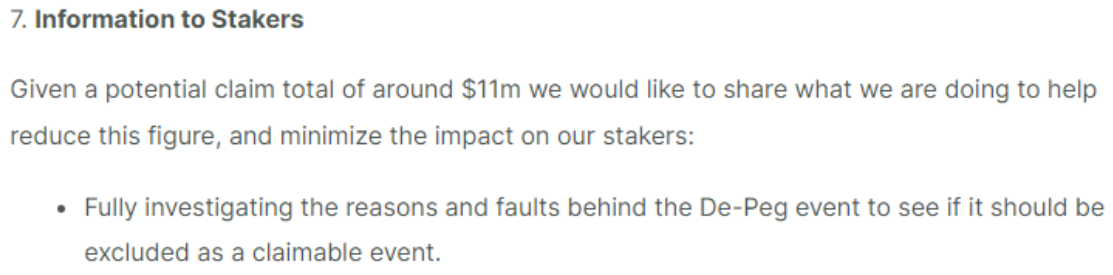
MAJOR LESSONS LEARNT

1. Before underwriting any insurance, we must ensure whether there can be any domino effect lined up, in case if something went south. In this case, once some bonds started defaulting, other bonds were likely to be default. If there is any chance of chain-reaction, then risk should be evaluated exponentially.
2. Insurance provider should always be having enough assets to back up against the issued insurances that even if all claims are filed and are genuine, then the insurance provider can repay all the claim amount without getting insolvent.
3. Even with strict regulations, there is still big lack of transparency among the policyholders, financial institutes, regulator and insurance policy provider.
4. Issuing a certain type of insurances above more than a certain threshold can lead to a higher risk in case of an unfortunate future event, and thus, insurance provider should issue each kind of insurances within a certain threshold.

CURRENT CHALLENGES IN DEFI INSURANCE

With tens of decentralized insurance launched to date, there is still a lack of decentralization in a few protocols. For instance, in the recent UST de-peg event, most of the decentralized insurance protocols offering stablecoin de-peg insurance suffered a huge loss, as they were not able to calculate the risk accurately.

Most of the de-fi insurance protocol relies on the utilization ratio, which cannot predict the risk accurately. And, at the same time, they're not completely decentralized, as the initial claim approval process is still being held in the power of the protocol advisors.


7. **Information to Stakers**

Given a potential claim total of around $11m we would like to share what we are doing to help reduce this figure, and minimize the impact on our stakers:

- Fully investigating the reasons and faults behind the De-Peg event to see if it should be excluded as a claimable event.

Figure 1: UST De-Peg Update – May 22 – InsurAce.io Blog

LIMITATIONS OF CURRENTLY LISTED INSURANCE PROTOCOLS

NEXUS MUTUAL

It is one of the oldest insurance protocols, and have managed to maintain its legacy in the past several years in the de-fi space. But the products offered by the listed protocol require user KYC and are very limited to smart contract coverage, yield-bearing token de-peg, and custodian risks.

At the same time, Nexus Mutual does not offer risk-based coverage pools. This means that there are chances that a protocol on the higher side of the risk might not receive funds for the protocol's coverage pool, leading to zero-insured people for that listed protocol.

This also means that there is a higher level of risk for the underwriters underwriting the specific project or protocol, as if successful claims are made, then their staked amounts will be getting liquidated.

INSURACE

There are some major issues when it comes to the InsurAce platform. First and foremost, whenever a claimant files a claim, the requests get submitted to the advisory board, which is by no means of decentralization of power, as they have the right to dismiss the claim request, stating it to be as invalid before it's get voted by the community members.

At the same time, when it comes to underwriting, InsurAce has a kind-of global coverage pool, which means, that in case the claimant files a successful claim, then each and every underwriter who participated in the coverage pool will get liquidated. With that said, it implies that the risk coverage provider who actually wishes to add liquidity in the medium-risk project to earn decent rewards with a lesser chance of getting liquidated is forced to participate in this liquidation event as the coverage pools are not risk-based.

EASE

Ease insurance is based on the concept of "reciprocally covered assets". In such an approach, each and every individual shares their risk with other members participating within the community, without the need of the risk coverage provider to underwrite and add liquidity to the coverage pools. It is a revolutionary decentralized insurance product with a similar shortcoming as with the above-mentioned projects, and that is related to coverage pools.

As per the RCA whitepaper written by ease founder Robert M.C. Forster, whenever liquidation happens from coverage pools, the riskiest protocols will have a certain amount of funds removed in almost every liquidation event, whereas the safest protocols will only have funds removed once the liquidation is large enough.

To put it in simple words, whether the liquidation happens because of lower-risk projects, or from medium-risk projects, liquidation will always affect the higher-risk projects. And, that will eventually bring down the interest of risk coverage provider to underwrite the higher-risk projects as their funds will always be getting liquidated, irrespective of whether the liquidation happened because of one of the higher-risk projects or a lower-risk project.

SOLACE

Solace hasn't yet launched their whitepaper. As they're in the insurance space for quite a time, it was worth checking out what they're building. Their project claims the underwriting staking to be risk-free, whilst in actuality when the underwriter underwrites the coverage pools, their assets are used to buy Solace tokens, and the then bought Solace tokens are further staked in the staking pool. Insurances are then made against the value locked with the assets received.

Whenever a successful claim is made, the claim amount is paid out from the coverage pool, leading to a significant drop in the Solace token price drop, which indirectly

impacts the underwriter, as they will receive the said amount of token, but the price of the Solace token will be much lower than previously, resulting in high negative ROI's.

Figure 2: Solace Bond- ihttps://app.solace.fi/bond

SOLUTION: RISK-BASED COVERAGE POOLS

Risk coverage providers are always subjected to risk due to the nature of their business, but the risk should spread equally among them based on the factor of risk. If a project A coverage pool charges 2% APY, whereas project B's coverage pool charges 2.10% APY to provide coverage against the unseen future risks, then in a broader sense, both the projects share the same level of risk.

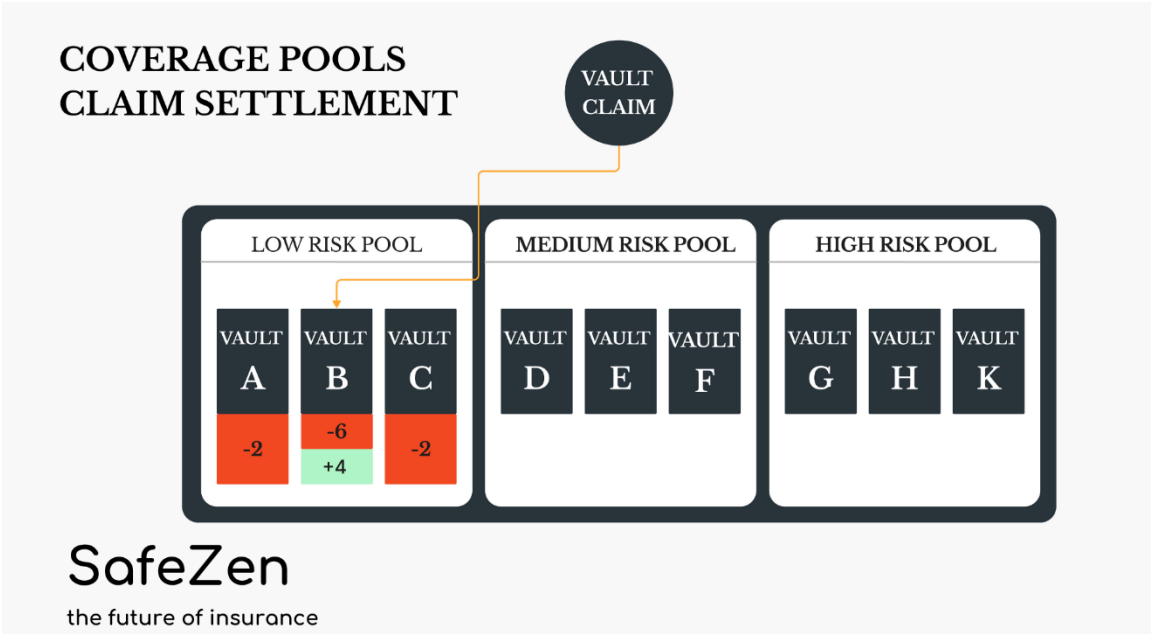


Figure 3: SafeZen Coverage Pools Claim Settlement

Forming a risk-based coverage pool is a great option in order to reduce the risk of the coverage providers, and at the same time, add more liquidity to the project with less liquidity to offer insurance to a broader community.

Each and every protocol listed on the platform will be checked against a number of parameters, including but not limited to the team, codebase, audits, project age, documentation, and potential risks. Then the DAO community will cast their votes on whether to offer the coverage as a part of community-driven pools, or non-community-driven pools.

Further, if a project is selected under the community-backed pool, based on the SafeZen community ratings and the associated risk, the project will be added to one of the risk-based sub-pools.

At the very core of the principle of decentralization, each and every individual or project should be able to take participate in insurance, whether to offer insurance or to avail the insurance services.

If the project doesn't get approved by the community to be listed under community-backed, the individual or project can create a project-specific pool to offer the insurance against their underwriting amount.

Same risk-based metrics will be followed for the traditional insurances.

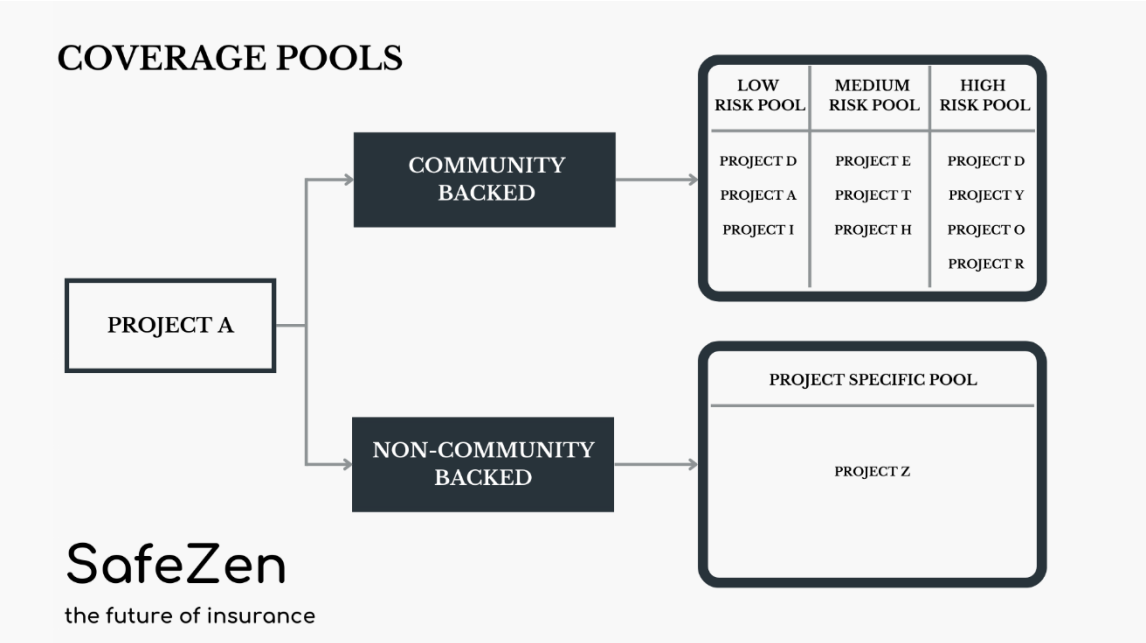


Figure 4: SafeZen Coverage Pools

INSURANCE MODELS AND COVERAGE POOLS

SafeZen will broadly offer two peer-to-peer insurance models: a zero-premium insurance model, and a pay-as-you-go insurance model.

Under both the insurance models, if the community approves listing a project under community-driven pools, the project will then receive coverage under the risk-based sub-pools.

ZERO PREMIUM INSURANCE MODEL

In a zero-premium insurance model or ‘reciprocally-covered assets’, a term coined by ease, the coverage pool will not require external risk coverage providers to underwrite the insurance.

In such an approach, the assets will be covered simultaneously and will underwrite the other assets covered within the SafeZen ecosystem against any future event.

Users are assured that there will be no premium payments that are needed to be paid, and at the same time their vaults will not be liquidated unless someone within the ecosystem files for a claim.

In case of zero premium insurance model, 3% will be charged as platform fee whenever user leaves the platform.

PAY-AS-YOU-GO INSURANCE MODEL

In a pay-as-you-go insurance model, the underwriters offer coverage against the premiums the users pay to the insurers. The coverage provider buys and stakes our native token $SZT against stablecoins like USDC, DAI, etc. The insurance will be issued against the market value of the assets deposited with a strict solvency ratio of 1.2. This restriction helps our protocol remain solvent always despite the market fluctuations that might happen in stablecoins or any other unseen event in the rare case scenario.

Users have the flexibility to pay the premium only when they’re needed to be covered, and not when they’re not needed the coverage. For example, we want to have our vehicle insurance be active while we're driving the vehicle, and not at the ideal time. But unfortunately, in the traditional insurance world, we're forced to buy insurance for a specified period. And, with this fact, most people find insurance as one the unnecessary expenses as they'll need to bear the cost of insurance when they're not in need of the insurance.

Such an option, however, might not be applicable in offering insurances such as health insurance, as no one knows when they'll get diagnosed with a disease and need to file an insurance claim to pay out for their medical expenses.

ADVANTAGE PAY-AS-YOU-GO INSURANCE

With our innovative advantage model, an extension to community-based pay-as-you-go insurance, the users can insure themselves against many protocols risk in a single insurance policy. Users have a belief that at any point in time, they'll need to file a claim against only one of the protocols or projects insured within their advantage insurance. At the same time, the pricing of the insurance will be much lesser, compared to, if they've purchased the insurance cover for each of the projects separately.

Underwriters have the benefit as they can get better premiums with a very minimal increase in their risk appetite.

Understanding it with an example, earlier user A was investing $100 in protocol X and $100 in protocol Y. Protocol X and Protocol Y are community-listed low-risked projects on our platform with a yearly 2% premium.

Users instead of paying $4 as a premium for protocol X and protocol Y now can opt for advantage insurance, which will be cheaper than $4. However, the insurance amount will still be $100, and not $200 as in the normal insurance policy. Users do have faith that at any point, only one project can be subjected to file a claim for, and they'll never need to file a claim for multiple projects.

For underwriters, though, their risk has increased a bit, but the probability of such an event happening is still the same, yet they do have leveraged their premium position on the insured amount.

It's a win-win situation for both the parties, i.e., the insured and the insurer.

It is worth noting, as with users opting to cover more projects under one policy, the risk for the underwriter will increase significantly. To cover this, users will be offered lesser discounts, as if they opt for more projects under one policy.

Calculations: (Premium (in APY) * Protocols Covered * alpha) + (beta * Protocols Covered)

Initially, alpha and beta values will be 0.75 and 0.2 respectively, which later can be changed by community members.

PREMIUM DISTRIBUTION

In case of community-driven pay-as-you-go insurance model, the allocation of collected premium will be as follow:

- 50% of the premium will be paid out to the coverage pool provider via Superfluid money streaming.
- 30% will be rewarded to users in forms like discounts, referrals, and issuing tokens, if they do not make a claim, or to payout the community in case a claim is filed.
- 20% will be added back to the main $SZT treasury pool, to add more value to the ecosystem, and thus add more value to the token issued to the coverage provider.

In the non-community-driven pay-as-you-go insurance model, the allocation of the premium will be as follow:

- 75% of the premium will be paid out to the coverage pool provider via Superfluid money streaming.
- 10% will be rewarded to users in various forms.
- 15% will be charged as a platform fee, and be added back to the main SZT treasury.

RISK ASSESSMENT

The advisors and the SafeZen will initially make the risk assessment of any listed project. There will be several factors that will be initially be considered for web3 projects, as defi insurance is still in very early age:

1. Project Audits Report

2. Project Bug Bounty

3. Code Quality

4. Project Team

5. Project Whitepaper

6. Project Age and Documentation

For the traditional insurances, various risk models will be built and be presented by the SafeZen team and the community members to the broader SafeZen community and the participating underwriters.

IDLE CAPITAL YIELD GENERATION

It is worth noting that most of the capital within the protocol will remain idle all the time. Taking this into consideration, some percent of the idle capital, around 20%-30%, will be transferred to some yield-generating platforms.

At the same time, insurance will be taken against the capital deployed to other platforms to insure against any unseen future events.

For example: If AAVE offers 5% APY on USDC, and some trusted insurance platform like Nexus Mutual offers coverage for AAVE at 3.5%, then it's a 1.5% free money that will be generated out of the idle capital lying in the Coverage Pools or SafeZen Treasury.

Yield generated from the idle capital will be disbursed in the following manner:

- 90% will be transferred to the capital provider, i.e., either coverage pool or stakers or SafeZen Treasury.
- 10% to the SafeZen treasury.

TOKENOMICS

SZT tokenomics will be quite different when compared to traditional blockchain tokenomics. SZT tokens will be having a hard capping of 21,000,000,000 SZT tokens, with no token allocation to the stakeholders including founders, the SafeZen team members, and investors.

SZT token pricing will vary based on the "YUVAA" pricing curve, and not on the basis of the market token speculation. SZT tokens will be minted only whenever any individual entity or institution underwrites and add liquidity to one of the project or coverage pool, or stake the minted tokens to reflect their trust within the ecosystem.

With every unit of token purchase, the token price will increase by a certain amount, which will be based on the then total market cap divided by the total number of tokens exist. There will be an inbuilt token burnt system, applicable whenever the risk coverage provider or stakers withdraws their staked tokens from the platform.

The initial token price will be set as $1000, the reason for which has been covered in the later Governance section.

If the protocol has generated profit in the then past month and the protocol is running on net profit, the SafeZen Labs and Foundation can withdraw 80% of the treasury pool amount, i.e., money generated by the fees, for the protocol's smoother operations and to keep developing and promoting innovative solutions. Rest 20% will still be kept in the treasury pool for future unseen events.

GOVERNANCE AND CLAIM SETTLEMENT

Whenever a user stakes an SZT token, a logarithmic percentage of SZT governance tokens (govSZT) will be rewarded to the user. Similarly, the investors investing in our parent organization, SafeZen Labs, will be rewarded governance tokens based on the same formulae. With the govSZT token, users can take active participation in the voting related to the claims, community decisions, etc.

Formulae: *log(SZT token counts, 1.5) for SZT token count > 1 else 1*

Resonating with Ethereum Founder Vitalik Buterin's view in his Cryptoeconomics In 30 Minutes talk at Devcon5, this is done so that users have healthy participation, and do not harm the ecosystem. The higher we push the cost of attack, the lower the risk an attacker has enough economical resources to harm the ecosystem.

For the same reason, the initial token price has been kept at $1000. With this step, the voting power can be truly decentralized, as no individual can have a maximum of 45.6 votes even if they have half of the SZT tokens staked within the protocol, which in the actual scenario is not economically feasible, yet considered as a worst-case scenario. For the rest of half of the tokens, we can safely assume to have at least 100 members having a minimum of 1 SZT token within the protocol. That means, all those 100 members can have 1 govSZT token with each of them.

This ensures that whenever voting happens, no individual person can have a monopoly in decision making, yet have a major share to put their views during the voting, as they have a good percentage of contribution in our protocol growth.

After taking participation in voting, there will be 24 hours cooling period, in which each user who has voted earlier cannot vote in the new decisions.

75% voting will be required to pass the claim or community decisions, and if not, it will again be passed on to the community members for the second time. And, still if not passed then, 49% of voting power weightage will be on the advisors and founders, whilst 51% of voting power weightage will be on the users for that particular decision.

Following the Proof of Stake concept, a certain percentage of voters will be randomly chosen, and the quorum will be 25% of the total selected members in the voting decision.

In case if user votes against the majority, the user will lose 20% of the govSZT token, followed by losing 30% and 50% of the total govSZT token, if voted against the majority consecutively. If the user voted against for the fourth consecutive time, then the user will lose all govSZT tokens he/she/they have.

At the same time, the user will not be able to withdraw funds for a period of 6 months, with an additional withdrawal fee of 2.5%.

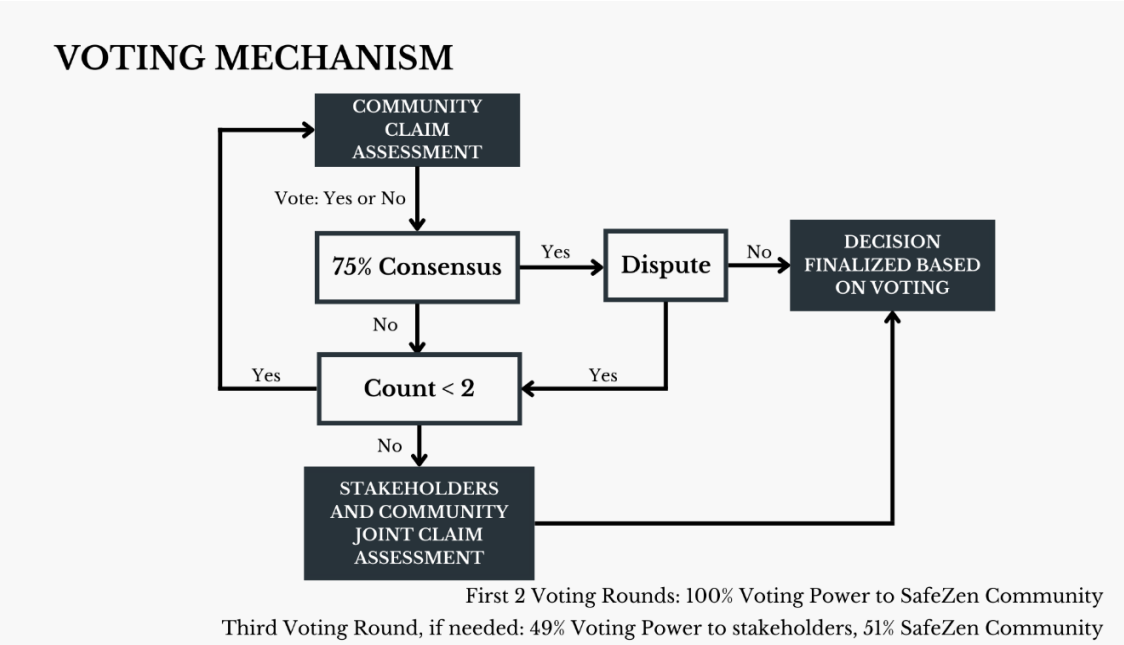


Figure 5: SafeZen Voting Mechanism

MONETIZATION

1. 15% and 20% of the premium will directly be added to the SZT treasury in case of community-driven, and non-community pay-as-you-go insurance models respectively.
2. For the zero-premium insurance model, a 3% fee will be levied when the user exits the platform.
3. Advertisement, coupons, and offers: For instance, if a user interacts with our protocol, we know they are familiar with web3. Then for just an example we can tie up with some hardware wallet provider to offer a special discount to our users, or advertise via our platform to target our userbase with high conversion rate.

NOTE

Over the first few months, the team will continue managing the protocol parameters and will gradually transition it to the SafeZen DAO.

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