DFIP

Egor Gavrilov

The Next Generation DeFi Insurance Protocol on Ethereum

1 Abstract

Today's insurance model is built with large institution domination, but this is one of the main reasons of its ineffectiveness. Indeed, blockchain-based insurance model solves this problem by providing decentralized approach for insurance cases validity check. DFIP uses blockchain technologies to replace conservative decision making system, that dominates in non-decentralized insurance companies.

2 Background

Before insurance companies existed, individuals grouped together in shared pools to minimize their risks. All funds raised in such pools were used to cover losses. Past centuries insurance sphere largely moved to the centralized approach. As a result, individuals can't see insurance case resolving process. Statistics says that 95% of insurance cases are not covering by large insurances institutions.

To resolve this problem we need to concentrate on transparency concept. Customer finds it extremely diffi-

cult to assess how safe a particular insurer is. There is a clear information asymmetry issue.

Blockchain technology and smart contracts can strip out not only the administrative inefficiencies but a large portion of the governance and regulatory related costs. They can do this by providing trust in a different, much more cost-effective way. Trust is moved from institutions and regulations to transparent code. Of the 35% of frictional costs we believe blockchain technology can cut out approximately 18% due to administrative savings and reduced governance and regulatory costs, effectively halving the frictional costs in the system.

Additionally blockchain realizes original risk sharing idea, where all contributions are entirely for the profit of fund members. Blockchain technology replaces unbalanced conservative insurance model.

Peer-to-peer risk sharing technology was invented for cost effective and scalable insurance systems.

3   Overview of DFIP solution.

There are plenty of necessary components, providing solid DeFi insurance system:
1. TRACKING of individual members, including their proportional ownership
2. REVENUE MODEL defines how much insurance payout is required to minimize mutual risks and maximize individual satisfaction
3. JURY SYSTEM for decentralized decision making process about insurance case validity
4. LIQUIDITY POOL SYSTEM to attract funds of in-

dividuals, who want to share risks with other insurance pool members and gain profits from every smart contract transaction

5. PRODUCT that uses DeFi Insurance Protocol to realize potential of smart contract in user-friendly way

6. SCORING MODEL to calculate insurance price for every case with every payout sum request and distribute individuals to separated (sub-)pools depending of insured object

7. IDENTITY MODEL is required as a part of sign up process in respect of legal requirements

8. TRANSPARENCY – all the transactions, insurance payouts, jury voting results are reporting in real time

9. LEGAL ENVIRONMENT to keep all the processes in a safe and legal way

4 KYC

The DFIP platform means KYC for members from different sides.

When purchasing any insurance product on the DFIP protocol, the user is obliged to provide passport data, as well as special data for the insurance product. For example, for Travel Insurance - registration address to determine the home airport, international passport, to determine the most frequent travel zones.

User data is stored in a special ERC-721 Non Fungible, which is also an insurance policy. This token is compatible with any Ethereum wallet (except exchanges), and

it also allows flexible storage and movement of the insurance policy.

KYC DFIP works online, several times faster than traditional insurance companies with a lot of paperwork.

For large holders who want to become members of the Jury program and receive a commission from the work of the DFIP protocol, a deeper KYC + AML about the origin of tokens is provided. Our goal at DFIP is to create a true ecosystem of decentralized insurance, as well as a community of interested people who will decide on disputed payments.

KYC will not be required for members of DFIP liquidity insurance pools. All funds will be checked by AML by an automatic system, and then go to the liquidity pool. The interest will also be paid anonymously.

5   Claims assessment methodology

Unlike a centralized insurance company, we at DFIP strive for optimal, fast and fair solutions, giving preference to smart contracts. However, at the current stage of public blockchains, for a wider range of products, we have added a number of more ways to assess claims.

To assess claims, several mechanisms are built into the DFIP protocol at once, which can be configured and combined individually for each product.

Soft – any program additionally built over the smart contact of a specific product using the DFIP protocol. Necessarily open source.

Oracle – Blockchain oracles are third-party services that provide smart contracts with external information. They serve as bridges between blockchains and the outside world. Blockchains and smart contracts cannot access off-chain data (data that is outside of the network). At DFIP, we use only reliable and proven solutions from the most famous companies in the blockchain industry.

Jury – We at DFIP strongly believe in the online community's ability to bring more to our platform by not only creating our own crowdsourced products, but also by participating in premium payment decisions. Our consultants from the world's largest insurance companies conducted research on the phenomenon of co-insurance and came to the conclusion that this is the most effective tool in terms of the ratio of risk distribution to compensation.

The risk model is the basis and foundation of all DFIP system. Naturally, our main focus here is on scoring and fraud prevention. We are also not new to this business: our analysts and consultants work in the largest insurance companies and banks, use scoring and underwriting products that our team is implementing right now into the blockchain. We are now implementing ready-to-use scoring models including face scoring, application scoring, behavioral scoring and fraud prevention.

6   Capital Model

Our liquidity system consists of a cascading structure
of pools, a system for redistributing liquidity between
them and a method of transferring liquidity from outside
and outside the pools. Each pool carries a risk and a
proportional amount of ETH specified in the product
code on the DFIP protocol.

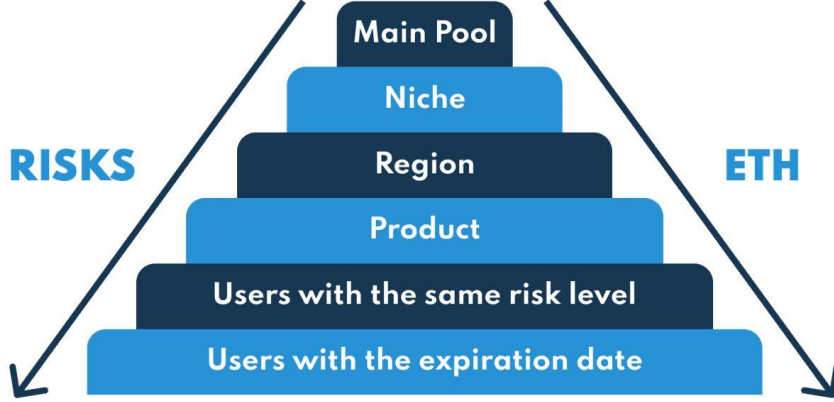$$T_n = \frac{K_p}{K_c} \times \frac{A_p}{A_s} \times 100 \qquad (1)$$

T_n = net tariff rate
K_p = number of payments during particular period
K_c = number of contracts concluded during particular period
A_p = average amount of payments
A_s = average insurance sum per contract

$$\sum_{k=1}^{n}\sum_{j=1}^{n}B(t_k,t_j)c_k,\overline{c_j} \geqslant 0 \qquad (2)$$

The DFIP protocol is designed in such a way as to automatically balance the amount of ETH at each level of the product, and the amount of risks that these pools bear. This happens inside the smart contract itself, where the ratio is laid:

$$\mathbb{P}(\max_{t\in[0,1]}|\xi_{n+1}(t)-\xi_n(t)| > \epsilon(2^{-n-1})) = \mathbb{P}(\bigcup_{r=0}^{2^n-1}\{z_r^{(n)} > \epsilon(2^{-n-1})\}) \leqslant 2^{n+1}q(2^{-n-1})$$
$$(3)$$

The ETHs themselves actually lie on n product wallets (n is the number of pool levels), and only their distribution changes depending on the addition of participants and the function of payment / non-payment of insurance premiums from time to time.
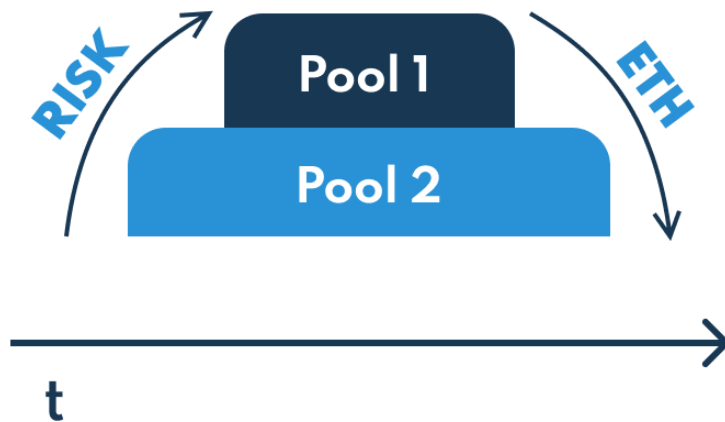
$$risk \cdot p \cdot N \sum_{0}^{k}(1 + j_k) = ETH|_t \qquad (4)$$

This mechanism allows you not to spend funds on transfers between pools without an urgent need, as well as minimize the costs of maintaining a huge staff of employees. Since people themselves can analyze the liquidity of the pools and their risks for the current operating products (on the DFIP platform), they can easily decide on the purchase of insurance products from certain providers (DFIP partners) themselves.

7 Financing

The first insurance link among liquidity pools is the Main pool, obtained on the basis of the sale of 500 million dfip, which by the role token are provided for sale to form this pool. These funds are immovable and represent the guarantor of payment in any insured event according to a pre-calculated model of insurance risk. For the release and launch of any product based on the DFIP protocol, the required minimum token sale is 1% of the specified 500 million. After that, the pool is working and the clients who purchase insurance in the future are protected by this reserve, the ethers coming from the clients are distributed among the pools according to the picture (1), from bottom to top, where the lowest is the most secured among all except Main. All insured events are paid from liquidity pools without interaction with Main, which is a "safety cushion" in non-trivial situations.

8 Protocol and products on it

DFIP is a protocol on the basis of which various insurance products can be made. The first product to be released based on the DFIP protocol is Travel insurance. The main motivation for creating the protocol, and after the development of products under the insurance protocol, were the main disadvantages of centralized insurance companies. Consider in comparison a typical insurance product in the centralized sector and DeFi:
In the first case, all decisions are made by a group (central body) within the company according to a model

developed by them, in other words, no one can know and understand on the basis of what a decision is made in a particular insurance case. Insurance based on the DFIP protocol solves this issue with 1) completely open source code that has passed all the necessary tests for viability in the testnet 2) a system of decentralized voting between DFIP token cholera, which are interested in the most fair solution. It is worth noting the speed of work of insurance companies, the paperwork and the human resource that passes through each insured event does not allow making payment a) fast b) Fair in each case. DFIP technology makes a decision in the case of a Travel insurance product in 48 hours, based on international statistics on the average time spent on baggage. If baggage is not found in the first 48 hours, the chance that it will be found is less than one tenth of a percent. To apply for payment, you need only two documents; international universal form of baggage loss and flight ticket, speed and ease of loading two files takes no more than 20 seconds. All travelers were faced with a situation of no departure in general or a large delay. Statistically, if a flight was delayed by 3 or more hours, the chance of flight cancellation approaches 60%, the protocol technology that works through the connection to the Oracle immediately reacts to such delays and already begins to pay compensation as a percentage of the delay to cover primary costs.

On the basis of the DFIP protocol, in addition to the finished Travel insurance product, four of the following are already being developed: 1) Pet Insurance 2) Luxury Gem insurance 3) Cold wallets insurance 4) Gadgets In-

surance. All of the listed products work on the basis of the DFIP smart contract, customized for it, performing the tasks that stand in each case.

9 Pricing

Taking into account the passed audit on the security of the DFIP smart contract and the impossibility of hacking the DFIP, the information stored in it will be used for competent pricing of the insurance premium. The data obtained during the registration of users are processed by a system of scoring, taking into account the main input parameters: gender / age / region / .. Based on the information received and statistics possessed by the DFIP team (including large databases from open sources), the system automatically selects the price in this or that case. The scoring system accesses the databases and, according to the entered parameters, assesses the risks of a particular group of people in which the system has identified you as a user. The system was written by a group of people who have tremendous experience in the international centralized insurance sector, but do not agree with the prices and policies that prevail in such institutions.

10 Distribution DFIP

3 billion DFIPs released. Of these, only 500 million belongs to the team, subject to the achievement of the goals: to reach 800,000 ETH in total in liquidity pools for the entire time. Private investors acquired 1 billion

DFIP in a closed round. These funds are frozen for 12 months, then the schedule for unfreezing investors' tokens

$$Si = (\frac{P_{liq}}{800000} + 12)k * t^{\frac{1}{log(CS)}} \qquad (5)$$

Si = investor's token sum
P_{liq} = amount of ETH in liquidity pools
k = constant
t = time passed (in months)
CS = current free token circulation volume

Thus, private investors are also interested in the main metric of the project, namely the liquidity of the insurance pools, which will bring even more users and investors to the DFIP platform.

800,000,000 DFIP tokens allocated for future partnerships
500,000,000 DFIP tokens will be used for funding Insurance liquidity pool
500,000,000 DFIP tokens allocated for Hackatons and New products on DeFi Insurance Protocol funding
200,000,000 DFIP tokens allocated for team have been frozen till DeFi Insurance Protocol pool will reach 500,000 ETH

11 Transparency

Open Source thanks to the Ethereum blockchain, the protocol has all the qualities of security and collective

control over the functioning of the system. The community has access to the structure of pools and the distribution of funds in each individual product, controls the payment of insurance premiums, and votes for new products on the DFIP platform. Our main strength is our people who believe in products, believe in a new future with true decentralization in such complex fintech industries as insurance.

Compared to a conventional insurance company, DFIP provides full access to the distribution of funds within the protocol, as well as to the very code of products that run on the protocol, + provides a marketplace for new external products on the protocol.

12 Competitive strategy

A key challenge in open source business is retaining a competitive advantage when anybody can copy your entire code base, decrease margins slightly and poach all your customers. To remain relevant the business must establish meaningful barriers to potential competition.

A key challenge in open source business is retaining a competitive advantage when anybody can copy your entire code base, decrease margins slightly and poach all your customers. To remain relevant the business must establish meaningful barriers to potential competition.

In open-sourced blockchain systems this is largely achieved through the network effect where a community gathers around a certain technology, becomes bought into it (usually financially as well as emotionally and philosoph-

ically) and continuously improves it to remain relevant. The following barriers and frictional costs are designed to keep DeFi Insurance Protocol relevant to current members and continually attract new ones:

RISK ASSESSOR NETWORK – Establishing a meaningful network of risk assessors (smart contract auditors to begin with) and providing them adequate incentives to participate.

SIZE OF CAPITAL POOL – The faster scale can be achieved the larger the Capital Pool can grow and the greater the diversification benefits. This ensures efficient capital usage, lower prices and provides more resilience to claims shocks. Additionally, the greater the pool value the higher the barrier to replicate.

CONTINUAL DEVELOPMENT – A continued focus on improvement of the product. Releasing new products and providing easy to use infrastructure surrounding the core blockchain code will heighten the barrier to replicate. This will be increasingly driven by all members of the mutual over time.

MEMBER TOKENS – All customers are members and have a vested interest in the success of the mutual through token ownership. If members shifted to another provider their current holdings would drop in value. Membership tokens therefore provide an indirect incentive to remain with the mutual and an additional barrier to competitors. Whilst all of these barriers have the potential to be overcome the goal is to gain network effects and scale benefits that will prevent copy-paste competitors taking significant market share.