

# DeFi Insurance

Xunan

# Outline

- Overview
- **Nexus Mutual**
- **Cover Protocol**
- Comparison
- Others

S/N	Time	Protocol	Loss (US\$M)	Exploits Description
1	22-Nov-2020	Pickle Finance	20.0	Code flaw in smart contract
2	14-Nov-2020	Value Protocol	6.0	Flash loan attacks
3	13-Nov-2020	Akropolis	2.0	Flash loan hacks
4	7-Nov-2020	Origin Protocol	7.0	Code flaw in smart contract
5	26-Oct-2020	Harvest	25.0	Flash loan attacks
6	14-Sep-2020	bZx	8.1	Code flaw in smart contract
7	6-Sep-2020	SYFI	0.25	Software bug
8	4-Aug-2020	Oryn	0.37	Double spend attack
9	28-Jun-2020	Balancer	0.50	Wrong price caused by oracle defect
10	19-Apr-2020	LendF.me	25.00	ERC777 token standard reentrancy attack
11	18-Apr-2020	imBTC Uniswap Pool	0.30	ERC777 token standard reentrancy attack
12	12-Mar-2020	Maker	9.00	Human manipulation
13	18-Feb-2020	bZx	0.64	Oracle manipulation (suspected)
14	15-Feb-2020	bZx	1.00	Flash loans and oracle manipulation
15	30-Jul-2019	Synthetix	8.1	Wrong price caused by oracle defect
	Total Loss		113.26	

# Overview

Current DeFi insurance includes:

1. Common Capital Pool: Nexus Mutual
2. Prediction Market: Cover Protocol
3. Financial Derivative: Oryn

Successful claimed event:

1. bzx flash loan attack (2.15, 2.18):
  - a. Total loss \$1.6M
  - b. **Nexus Mutual** claimed 32600 DAI + 4 ETH
2. Pickle contract attack (11.22):
  - a. Total loss \$20M
  - b. **Cover protocol** claimed \$282,035

# Nexus Mutual



*A peer-to-peer discretionary mutual on the Ethereum blockchain*

Launch Time	2019.05
Cover Type	Smart Contract
Token	NXM
TVL	\$96.93M
KYC	✓

## Covered Events:

Protection against material loss of value resulting from "unintended uses" of smart contract code.


## Uncovered Events:

Loss of private key, external environment change, ...

<https://nexusmutual.io/>


# Major Role

1. User:
  - a. People who wants to buy coverage, needs to pay premium
2. Risk assessor:
  - a. People who decides the risk of a contract and wants to provide coverage, earns premium
3. Claim assessor:
  - a. People who decides a claim is approved or not, earns fee
4. Governance:
  - a. CVC member who processes the proposal submitted by the members of the mutual


Keeper DAO


Project type: Smart contract  
Yearly cost: 11.39%  
Capacity: 845 ETH / 499.2k DAI

Select


Hegic

Project type: Smart contract  
Yearly cost: 2.60%  
**Requires more staking!**


Select


Eth 2.0

### Buy Cover

Project type: Smart contract  
Yearly cost: 2.60%  
Capacity: 3.5k ETH / 2m DAI

Select


Keeper DAO

### Summary

## Get Quote

Cover amount: 1 ETH  
Cover period: 365 days  
Quote NXM: 2.9493 NXM  
Quote ETH: 0.1138 ETH

Continue

## Risk Assessor (10x leverage)

Staking deposit

Top Up

Reset

20 NXM  
~\$457.67

Total Deposit

20 NXM  
~\$457.67

Stake your total deposit up to **10 times**, or **200 NXM**. Stake **20 NXM minimum** and **20 NXM maximum** per project. Top up your deposit to

Stake

10 NXM  
~\$229.37

Stake period

30 DAYS  
Stake period ends: 1/1/2021

### Summary

STAKED

REMAINING

20 NXM

180 NXM

Continue

- Buy at least 10 NXM to continue.
- Grant **TokenController** permission over   NXM.

Buy NXM

# Risk Cost

Risk\_Cost is a factor in calculating premium, which reflects the value staked in a contract

$$\text{Risk\_Cost} = 1 - (\text{net\_staked\_NXM} / \text{low\_risk\_cost\_limit})^{(1/7)}$$

*net\_staked\_NXM*: Total stake amount of a specific contract

*Low\_risk\_cost\_limit*: Amount of stake required to reach the low risk cost (50,000 NXM)

Risk\_cost range: [2%, 100%]

The more risk assessors staked, the lower risk the contract has



# Cover Price

Cover\_Price is the premium for a contract, which is determined by risk\_cost, cover\_period, cover\_amount

$$\text{Cover\_Price} = \text{Risk\_Cost} \times (1 + \text{surplus\_margin}) \times \text{cover\_period} / 365.25 \times \text{cover\_amount}$$

Surplus\_margin: 0.3

The higher risk\_cost, the higher cover\_price

The longer cover\_period, the higher cover\_price

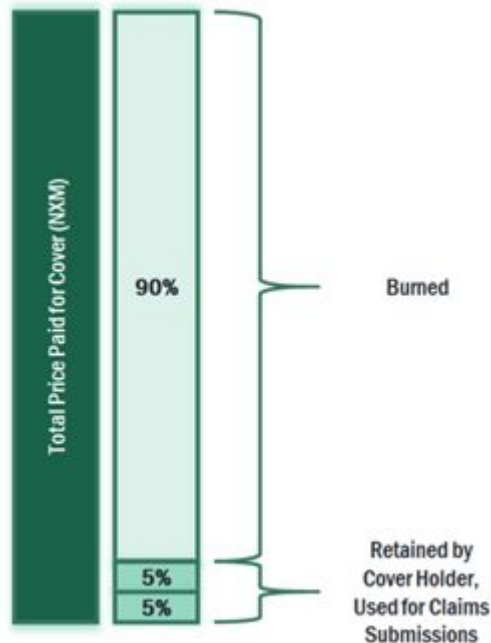
The larger cover\_amount, the higher cover\_price

# Buy Cover

1. Select the cover you want to buy
2. Get quote
3. Purchase cover

If you buy cover using DAI / ETH, the system will exchange it to NXM, then buy cover.

90% of the NXM used to purchase cover are then used (“burned”). The other 10% remain with the member and are either used as a deposit when submitting claims or are returned to the cover purchaser if no claim is made.



Use of the Cover Contribution

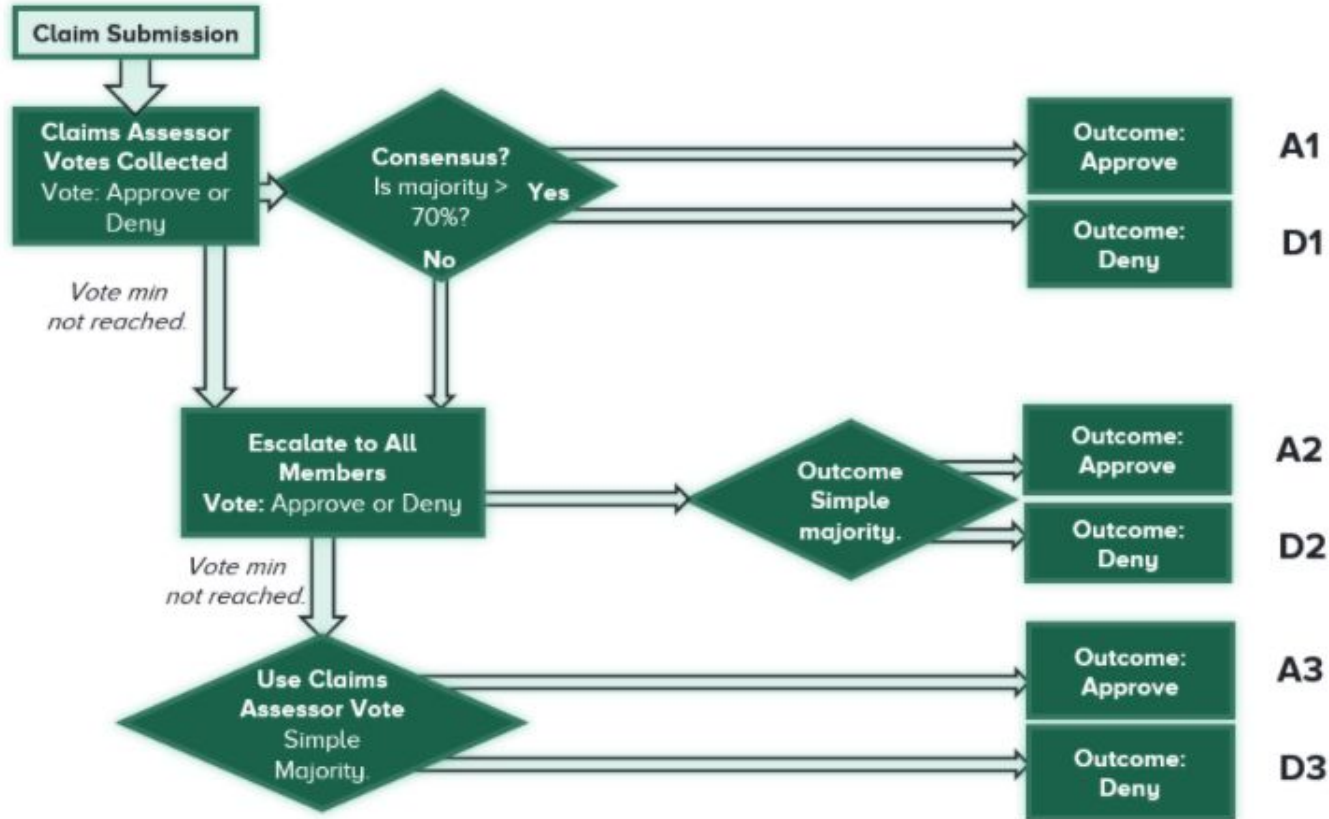
# Risk Assessor (RA)

RA is a member staking NXM tokens against particular risks they think are secure.

Parameter	Value
Self-Judgment	✓
Stake Amount	10x
Unstake Lock-time	90 Days
Fee Pool	50% of the Cover Price
Punishment	Claim Amount

# Claim

CA is a me  
tokens to p  
process.



Full voting flow for Claims Assessment

Tokens

# Governance

#106 Swap Advisory Board Member

Status

Accepted

Accepted by Majority Voting

Incentive

0 NXM

Category

Change AB Member

Quorum Progress

Member 21.00% (15% needed)

Roxana Danila to replace Nitika Goel as Board Member. Nitika has taken a step back from her involvement with Nexus. Roxana's background info: [https://docs.google.com/document/d/1HgRRg3PhvgLXCopPYmO\\_z-Xjvcd23sYFsLBXt\\_SsbT4/edit?usp=sharing](https://docs.google.com/document/d/1HgRRg3PhvgLXCopPYmO_z-Xjvcd23sYFsLBXt_SsbT4/edit?usp=sharing)

On acceptance of this proposal, automatic action shall be triggered with the following parameters

Parameter Name	Description	Values
New AB Member	Address of AB Member to be added	0x2e79a69353322da71D99499E49eF1a0f4Ad87924
Old AB Member	Address of AB Member to be removed	0xdb5b7477503ed92B803d9dCEa82ea1E3Fa091160

Current Member Support (50% needed)

Accepted 100%

Rejected 0%

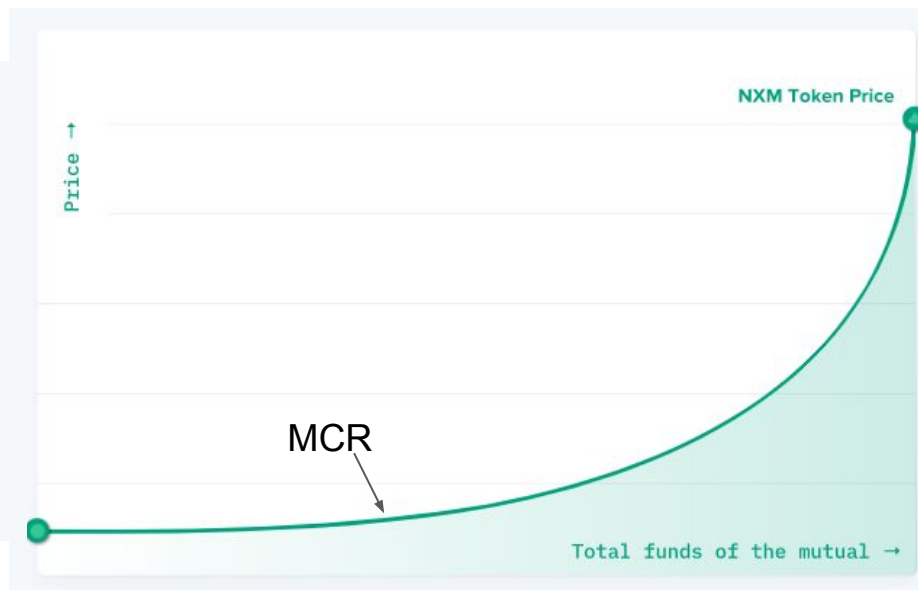
# NXM

NXM token represents membership rights. Tokens can be used to purchase cover as well as participate in claims assessment, risk assessment and governance.

Continus Token model: **Bonding curve**

## Redemption restrictions:

- Capital Pool needs to be above the MCR.
- Redemptions are capped per transaction.
- Capital Pool must have enough liquidity in Ether.
- Redemption price is 2.5% below purchase price.



# Cover Protocol



*A peer-to-peer coverage market with Fungible Tokens*

Launch Time	2020.11
Cover Type	Smart Contract
Native Token	COVER
Fungible Token	CLAIM, NOCLAIM
TVL	\$10.52M
KYC	✗

## Covered Events:

Smart contract suffers hack, bug or economic manipulation attack

## Uncovered Events:

Loss of private key, external environment change, ...

<https://www.coverprotocol.com/>

# Major Role

## 1. Market Maker

- a. People who hold **both** CLAIM and NOCLAIM tokens and provide liquidity for both

## 2. Coverage Provider

- a. People who hold and provide liquidity for **only** NOCLAIM tokens

## 3. Coverage Seeker

- a. People who hold and provide liquidity for **only** CLAIM tokens

## 4. Claim Validity Committee

- a. People who decides a claim is approved or not



## Mint

Stake collateral to mint CLAIM and NOCLAIM covTokens

0.1% fee charged on redemption

Get Fungible Token  
1 DAI: 1 claim, 1 noclaim

Protocol



Balancer - Active Nonce 0

Expiration Date

5/31/2021, 12:00:00 AM (UTC)

Protocol Contract: [0x5394...b237](#)

Amount to stake

0.00




Max: 0


You have 0 CLAIM tokens and 0 NOCLAIM tokens

Collateral: [Dai](#)


Approve



Aave  
aave.com  
1,551,509 Dai



Balancer  
balancer.finance  
1,504,189 Dai



BarnBridge  
barnbridge.com  
754,838 Dai

Buy Cover



Coverage for Aave - Current Active Nonce: 0

Protocol coverage contract: [0x1246...17C0](#)

TVL: \$1,529,649,836

Audited By: [Consensys Diligence](#)

Last Audit Date: 5/1/2020




[Source](#)

ACTIVE



INACTIVE

Nonce	Expiration Date (UTC) ↑	Collateral	Direction	Token Address	Price	Yearly Cost/Return	Total Supply	Balance	
0	5/31/2021, 12:00:00 AM	DAI	CLAIM	<a href="#">0xD386...e14b</a> 	\$0.23	47.65% ⓘ	1,551,509.33	0 \$0	<a href="#">BUY</a>
0	5/31/2021, 12:00:00 AM	DAI	NOCLAIM	<a href="#">0x568C...33bd</a> 	\$0.81	48.78% ⓘ	1,551,509.33	0 \$0	<a href="#">BUY</a>

## CLAIM pool

Balances 2 Swaps 30 Holders 3 About				
Holder		Balance	Value	Shares
 0x3ebc...e6fb <a href="#">↗</a>		154.6K BPT	3.5K	75.27%
 0xe0b9...aed5 <a href="#">↗</a>		40.3K BPT	912.676	19.64%
 0x2253...c657 <a href="#">↗</a>		10.5K BPT	236.839	5.1%

## NOCLAIM pool

Balances 2 Swaps 47 Holders 2 About				
Holder		Balance	Value	Shares
 0xe0b9...aed5 <a href="#">↗</a>		15.2M BPT	1.2M	100%
 0xc5f9...6976 <a href="#">↗</a>		0.0015 BPT	0.0001	0%

# Fungible Token

Fungible tokens are created when deposits collateral.

**1 collateral = 1 CLAIM + 1 NOCLAIM**

Claim event: **1 CLAIM token = 1 collateral**, 1 NOCLAIM token = 0

Expiration claim event: 1 CLAIM token = 0, **1 NOCLAIM token = 1 collateral**

Ticker symbol:

COVER\_{Protocol}\_{Expiration Date}\_{Collateral Currency}\_{Nonce}\_{Direction}

For example: COVER\_CURVE\_2020\_12\_31\_DAI\_0\_CLAIM

# Market Maker (MM)

When a new cover is added, Cover Protocol will create:

1. Balancer pool with 98% CLAIM tokens and 2% collateral
2. Balancer pool with 98% NOCLAIM tokens and 2% collateral

People deposits collateral, receives both tokens, then provide liquidity

**Benefit:** Earn swap fee in balancer, Participate COVER yield farming

**Risk:** Impermanent loss from providing liquidity

# Coverage Provider (CP)

We encourage project teams themselves to become Coverage Providers to show confidence in their projects and provide protection for their users at an affordable price.

People deposits collateral, receive both tokens, sells CLAIM token, then hold and provide liquidity for only NOCLAIM token

(People can also directly buy NOCLAIM token if there is arbitrage opportunities)

**Benefit:** Earn premium by selling CLAIM token, Earn swap fee in balancer,

Participate COVER yield farming

**Risk:** Loses collateral from paying claim, Impermanent loss from providing liquidity

# Coverage Seeker (CS)

People deposits collateral, receive both tokens, sells NOCLAIM token, then hold and provide liquidity for only CLAIM token

(People can also directly buy CLAIM token if there is arbitrage opportunities)

**Benefit:** Be protected in cover period, Earn swap fee in balancer,

Participate COVER yield farming

**Risk:** Lose premium, Impermanent loss from providing liquidity

# Claim Validity Committer (CVC)

People can

CVC will not  
rejected. If  
payout per

Accepted or  
to decide

## Pickle Finance - Claim 1



# Comparison

	Nexus Mutual	Cover Protocol
Pros	<ol style="list-style-type: none"><li>1. Simple Model</li><li>2. Decentralization decides claim</li><li>3. User no needs to hold token</li></ol>	<ol style="list-style-type: none"><li>1. No KYC</li><li>2. High flexibility</li><li>3. Anytime redeem</li></ol>
Cons	<ol style="list-style-type: none"><li>1. KYC</li><li>2. Low flexibility</li><li>3. Restrict redeem</li></ol>	<ol style="list-style-type: none"><li>1. Complex model</li><li>2. Centralization decides claim</li><li>3. User needs to hold token</li></ol>



# Others

Nsure:

*Open Insurance platform for open finance*

1. Alpha release
2. No KYC
3. Cover price is decided by **both** provider and buyer
4. One round vote