



**ATHENA INS**  
PROTECTED BY THE COMMUNITY

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DeFi protocol to establish  
**Insurance** smart contract

**WHITE PAPER**



## **ABSTRACT**

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Athena Ins wants to Introduce the P2P protection of wallets, smart contracts or exchanges in the world of decentralized finance. The platform will allow members to come together as a community, to share risks, easily establishing an insurance smart contract functionality that will allow everyone to generate income, and buy coverage to protect their assets. When purchasing an insurance policy by a subscriber the subscription fees are redistributed to the members who created this cover or injected into the liquidity pool dedicated to it. Managed by the community for the community, Athena Ins governance is based upon holding of tokens. Tokens allow you to create insurance smart contracts, vote on compensation requests and purchases of coverage.

## **INTRODUCTION**

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Athena Ins is the next generation DeFi insurance protocol on Multi chains. It uses blockchain technology so that people can share risks together without the need for an insurance company. There have been countless smart contracts hacks, cyber hacks, and attacks on exchange platforms that have caused a huge loss in investors' funds. To avoid these losses, the insurance smart contract is coming to the market and will avoid these harmful consequences.

The system provides ease of quoting, claiming and processing the insurance in a short period of time. In the decentralized finance market (DeFi), insurance plays a predominant role. Many DeFi investors come from trust-based financial systems where insurance is an important element, whether it is an institutional player or a private provider. For widespread acceptance, DeFi must offer a greater sense of security. ATHENA INS will enable all investors to insure themselves against piracy or other fraudulent activities. Athena INS will build a new ecosystem that will offer consumers privacy, autonomy, protection of their digital assets, transparency and peace of mind while also allowing them to generate revenues via DeFi.

## MISSION

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Our mission is to revolutionize the world of insurance by giving investors who want to earn income a tool to create their own insurance smart contract and insure a portion of the DeFi. Athena is also a solution for investors who want to insure themselves against hacking or any other loss of funds. We aim to give every person in the world an equal opportunity to manage and improve their wealth via Defi with an insurance that covers their assets.

### Key points

- Insure each holder to gain exposure to digital assets or the Defi protocol.
- Let each user earn returns with the creation of insurance smart contracts or by being a liquidity provider.
- Lower the barrier of entry to a more advanced financial ecosystem with higher returns.
- An operation based on community governance.

Athena Ins's ambition is to offer decentralized P2P insurances for common needs such as health, property etc... The fact that the decision to compensate or not is no longer up to guarantee fund providers but up to a community of users that is as diverse as possible will be a further step towards the complete decentralization of the system and an additional guarantee for the users to get an impartial decision on their compensation and in case of a proven disaster to get a fair compensation.

Today we aspire to protect every crypto-currency that is in your wallet. Hence, a world where a platform that has been breached by hackers becomes accessible to everyone while allowing them to keep a peace of mind. The Athena Ins project wants to give everyone the opportunity to offer insurance with their own guidelines (platform and insured risks, guarantee fund, subscription fees) via an insurance smart contract that will allow each person to earn a passive income via DeFi, while maintaining their privacy, security and autonomy.

## WHY ATHENA IS NECESSARY

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Hacks and data breaches happen on an almost daily basis. Cryptocurrencies exchange hacks are especially devastating since they usually impact thousands of customers and entail the loss of money. Today contributions are used by insurance companies to make various investments with the aim of improving their profit. Insurers are no longer just there to protect the community, they play the role of accusers, in the event of a claim the customer must justify himself to be compensated. All administrative and unnecessary audit costs are billed to the customer. In another time, people came together in a community in order to mutualise their resources so it became easier to protect a member who had faced a disaster. All the funds raised were used for the benefit of community members.

As risk diversification is key, the more members a cover has, the lower the risk to individual members' capital. Currently the insurers are regulated by the administrations to which they must report but for the customer there is no transparency. It is very difficult to know how an agency is managed and to know what investments are made by the insurer with the contributions of the clients. If the management of the investments is not correct the company can go bankrupt and at the same time lead to the contributions of the customers which were to be used to compensate the losses encountered.

## PROBABILITY, POSSIBILITY OR PROPORTION

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If you do not have field data, the Probability is not verified, it becomes a Proportion (eg the number of people affected) when it comes to do a retrospective study of a risk. It is very important that P to be a ratio, so the analysis is relative.

**Examples:** Case rate:  $P = \text{number of cases} / \text{total population}$   
National expenditure:  $P = \text{expenditure} / \text{GDP}$   
Sector value added:  $P = \text{VA} / \text{GDP}$   
Resources:  $P = \text{consumption} / \text{capacity}$

When quantitative data is not (yet) available, the probability can be expressed qualitatively, using simple numerical levels, varying here up to 5:

$$P = 1/105 - NP; NP = 5 - \log(1/P)$$

The logarithmic approach is necessary because the value of the probabilities varies enormously in the same analysis.

## ESTIMATION OF RISK

By questioning the opinions of potential victims about their feelings of risk, there is no consensus on the severity estimates, even in health, the important thing is that they are consistent in the same analysis, to allow comparison and follow-up.

### Estimate a single risk

We have :  $R = P \times G = P \times 10NG$   
 $NR = \log (R)$

### Estimate the overall risk

An overall risk is calculated, the sum of all the other risks:

$R_g = \sum R_i$   
 $NR_g = \log (\sum P_i \times 10NG_i)$

It is common for risks to follow each other or to exclude each other (eg: risk 1 loss of fund excluded risk 2 fund blockage, risk 2 can no longer occur), it is then necessary to calculate different global risks, for each possible scenario.

### Benefits and Benefit / Risk Ratio

A benefit is like a risk, characterized by probability and importance:

$B = P \times I$   
 $NB = \log (B)$   
 $B_g = \sum B_i$   
 $NB_g = \log (\sum P_i \times 10NB_i)$

### The benefit / risk ratio balances the pros and cons, comparing risks and benefits:

$BR = B_g / R_g$   
 $NBR = \log (B_g / R_g) = \log (B_g) - \log (R_g)$   
 $NBR = NB_g - NR_g$

Define the analysis, it is fundamental to supervise your analysis, by setting several points. The subject: a population, a sub-group of people, a country. The period, most often annual, is in any case the most easily interpreted period. The risks and benefits, but these are rarely definitive, indicators will be added and removed as you work on ADR. Note that the choice of subject affects the probability P. To track risks over time a plot of the evolution of risk over time is a first way of monitoring them, it can be supplemented by:

- A smoothing / filtering / a moving average if the risk is "changing"
- A frame, by Bollinger bands

## ATHENA INS PROCESS

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Athena Ins' first service is the creation of smart insurance policies. The demand for protocol coverage has never been greater than today with the explosion of Yield Farming. However, the lack of a decentralized provider leaves most participants without an adequate solution. Athena Ins offers this possibility to everyone allowing them to create a peer-to-peer hedge fund with crypto-currency. The insurance creators will be able to set the membership prices as they wish, and the risk will be covered on the platform of their choice.

The process begins when the protectors (creators) file guarantees to cover a risk and indicate the guidelines of subscription to their smart insurance contract. Coverage seekers (subscribers) can then select and enroll in the coverage they need.

Athena Ins allows DeFi users to be protected against risks related to smart contracts or on centralized exchanges. It stabilizes the turbulent DeFi space by instilling trust between the protocols and their users by bridging the gap between decentralized and traditional finance. Athena ins will open the doors of DeFi to all investors. The long-term vision of the project is to allow anyone to create a hedge fund on any risk.

Compromised security due to flaws in the protocol code is a well-documented problem with the different ecosystems. Unfortunately, there is always a risk that a particular protocol is not properly secured, even with formal verification. We believe that offering additional vulnerability protection to users concerned about the security of their funds would be very beneficial to the Ethereum ecosystem.

Centralized exchange users and other custodians responsible for holding private keys to crypto-currency assets on behalf of their users or another DeFi protocol, will now be able to join another individual's hedge from Athena Ins and protect their assets. It will protect users who place funds in a centralized exchange.

For example, users will be covered when:

- The custodian is hacked, and the user loses more than 5% of their funds,
- Withdrawals from the depository are blocked for more than 90 days.

The contribution to subscribe to a cover will be defined by the community member who creates the cover with his knowledge and experience. The contribution to subscribe must be attractive for the subscriber but also for the future liquidity provider.

The person creating the cover may decide to make up his or her own mind or follow that of a trusted analyst.

## CLAIMS VALIDATION\*\* METHODOLOGY

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In the event of a request for compensation, all users will have the power to verify the claim presented and will have 72 hours to reach a decision. If a consensus of 65% of validators confirms that the request for damages is viable it will be accepted and executed. In the case of a contract based upon a trigger threshold the compensation will be paid automatically when the predetermined trigger threshold is reached.

Otherwise the evaluation method will be based upon crowdsourcing\*\* information and voting mechanism. A group of members decides if the funds are distributed. This focuses immediately efforts on the objective of the crowd-source approach.

In addition, the following incentives will be implemented:

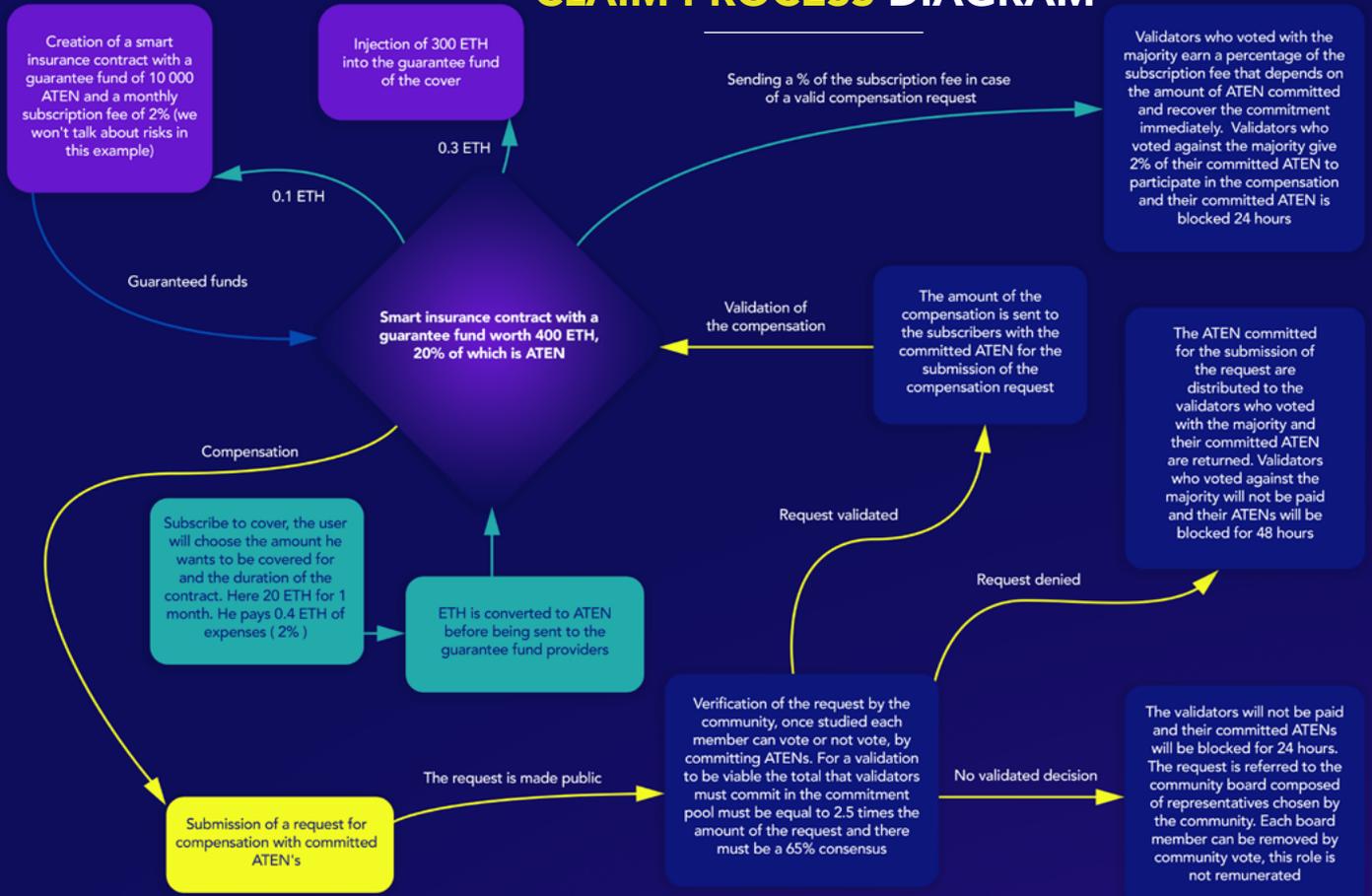
- Vote with the majority validators gives the right to a percent remuneration of cover costs. The fees will be paid in the form of additional ATEN tokens the value being a fixed percentage of the cost of coverage.
- Vote against the majority outcome results in the bond being blocked for a period of 3 days. The assessment is often complicated and should not block high values of tokens for reasons other than bad intentions should be avoided. (ex: real differences of opinion should not be sanctioned).
- The sum of the tokens committed by the validators for the vote to be validated must be greater than more than 2.5 times the amount of coverage.
- If no consensus is reached, this translates into a reduction in payment for claims validators. The sinister is then sent to community council for a vote.
- Member tokens contributing to the vote of a complaint is blocked and cannot contribute to another claim evaluation during 24 hours. This prevents a member of submit numerous fraudulent claims from total value well above stake amount.

Community council has time to intervene and block this vote before too much fraudulent claims are approved. The fraudulent member's tokens will be burned or distributed to the validators. Community council members are not remunerated for this type of decision. Designing incentive structures with community governance and resistant to attacks is complicated. The approach described above has a basic incentive and includes community intervention to avoid more extreme scenarios.

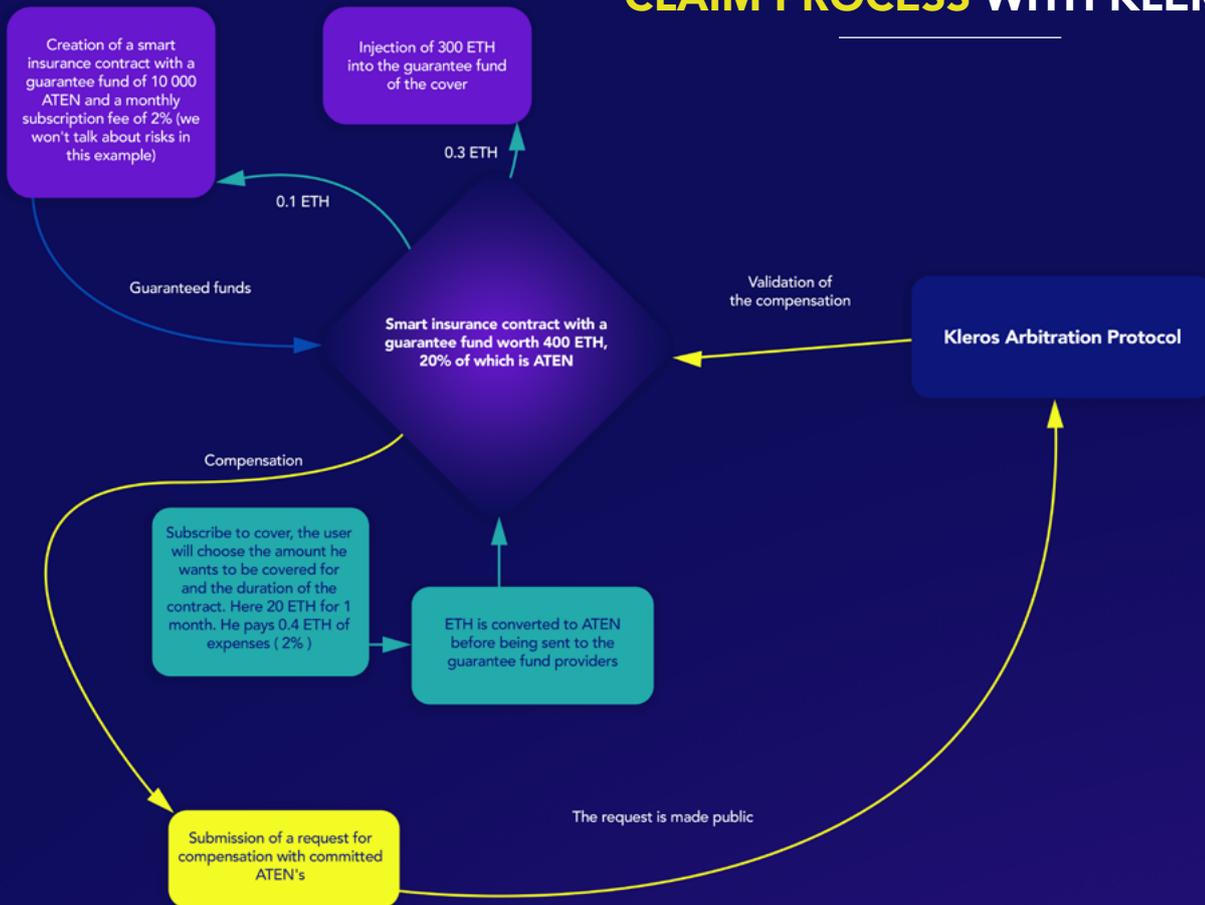
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\* The crowdsourcing information will be obtained via a centralised Oracle (ex : Chainlink) or a decentralised one (ex : Api3)

# CLAIM PROCESS DIAGRAM



## CLAIM PROCESS WITH KLEROS



## PERFORMANCE

Return on investment is an often underestimated aspect of insurance. This is a key element for the profitability and must therefore be replied in one way or another if Athena ins wants to be able to exist in the longer term.

We expect to see ETH and its ecosystem grow considerably over time. For the yield of users creators of cover to prosper over time, the participation of as many users as possible is essential. The Ethereum network being the main network of DeFi and the one with as well as the most advanced technology the most liquidity and users, a collaboration with this ecosystem was therefore inevitable for the Athena project.

Athena Ins will be fully managed by its community, so the policeholders contribution will be distributed without fees to the liquidity providers.

## SECURITY & YIELD

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Participations on the Athena platform give the right to returns:

- Open cover offers two types of return, a fixed return in ATEN and a return corresponding to the subscription fee paid by each user who wishes to protect his digital assets.
- Participate in the votes of the complaints, this action requires to engage ATEN a few hours or days in order to vote on the request for compensation of a user, if a voting consensus of 65% is reached the validator is rewarded in ATEN. In the contrary case he will not receive any reward. A malicious validator can see his tokens burned or returned to the community on the vote of the community council, this system makes it possible to avoid sanctions for a real difference of opinion.
- Staking your ATENs allows you to obtain a yield that can be used for staking, for a vote on a request for compensation or reinvested in a cover.

As more and more people, including institutional investors, realize the crypto market's lucrativeness the substantial growth of crypto has seen a boom in DeFi platforms allowing investors to earn holding rewards seamlessly.

Crypto holding is fast becoming a trend of earning passive income by simply holding or locking funds in a wallet. Since holding cryptos requires some know-how, ATHENA INS platform come in handy to allow investors, even those without technical knowledge, to hold coins and earn rewards with security and tranquility. She protect you and enables you to earn passive income. If you're thinking of making passive income through staking, ATHENA INS is a unmissable option.

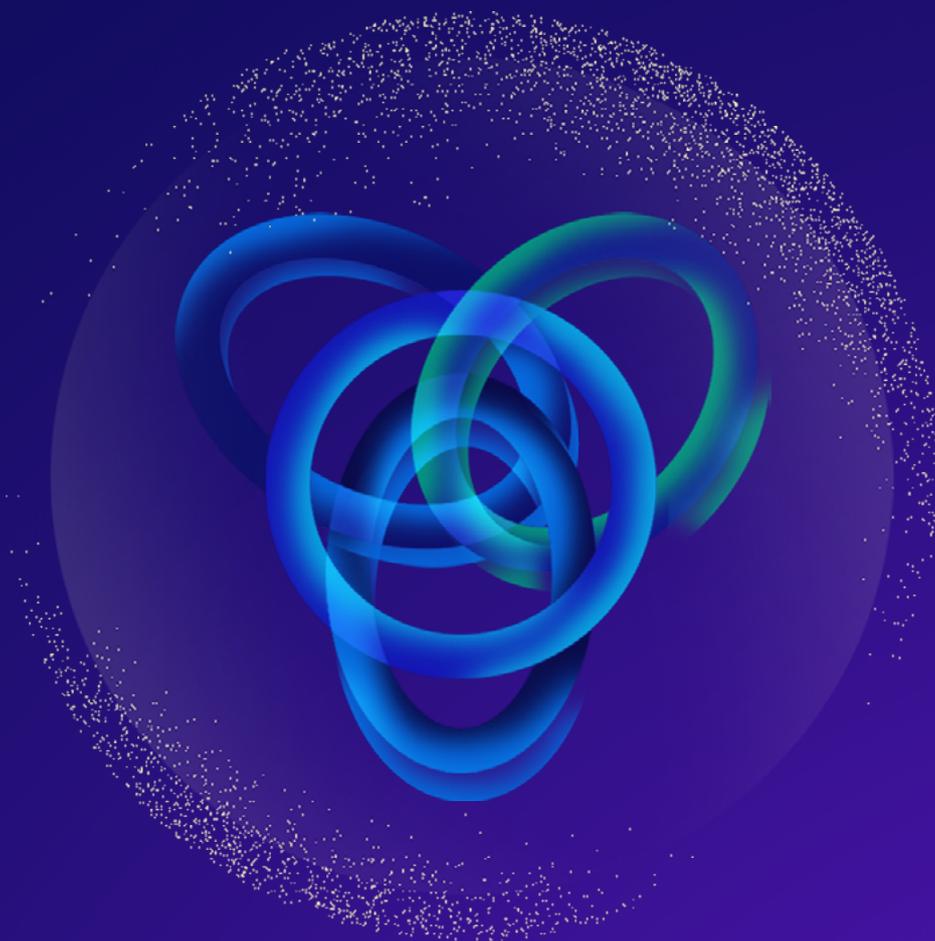
The Athena Ins project will give everyone the opportunity to become an insurer by easily establishing an insurance smart contract functionality that will allow everyone to generate income. Creating an insurance contract requires evaluating the protocol that one wishes to insure, the risks to be covered, setting the percentage of contribution per month and / or year, establishing the duration of time for which the guarantee fund will be blocked (6 months, 1 year or 2 years) and of course providing the guarantee fund.

In exchange for your coverage plan the subscribers' contributions made to your insurance contract will be paid back to you (without any platform fees) and you will also earn a return in ATEN on the guarantee funds that were blocked during the insurance contract set up. The return will depend on the time that was agreed upon of the blocking of the guarantee fund. For those who do not wish to create their own insurance contract, there is always the possibility of injecting liquidity into an existing coverage and benefit from the same advantages.

The protocol offers users the possibility of increasing their exposure. This system will allow everyone to cover different protocols that have no risk in common and thus accumulate the contributions of the policyholders associated with these covers. The objective is to cover a large number of protocols with a minimum capital lock-in. A claim having taken place in a context verifiable through an oracle or through a decentralized arbitration system such as Kleros will give rise to a compensation considered here as the total or partial liquidation of the capital. This mechanism allows any person to multiply his returns. The returns will depend on several factors such as the initial capital injected, the number of protocols covered and the use of hedges.

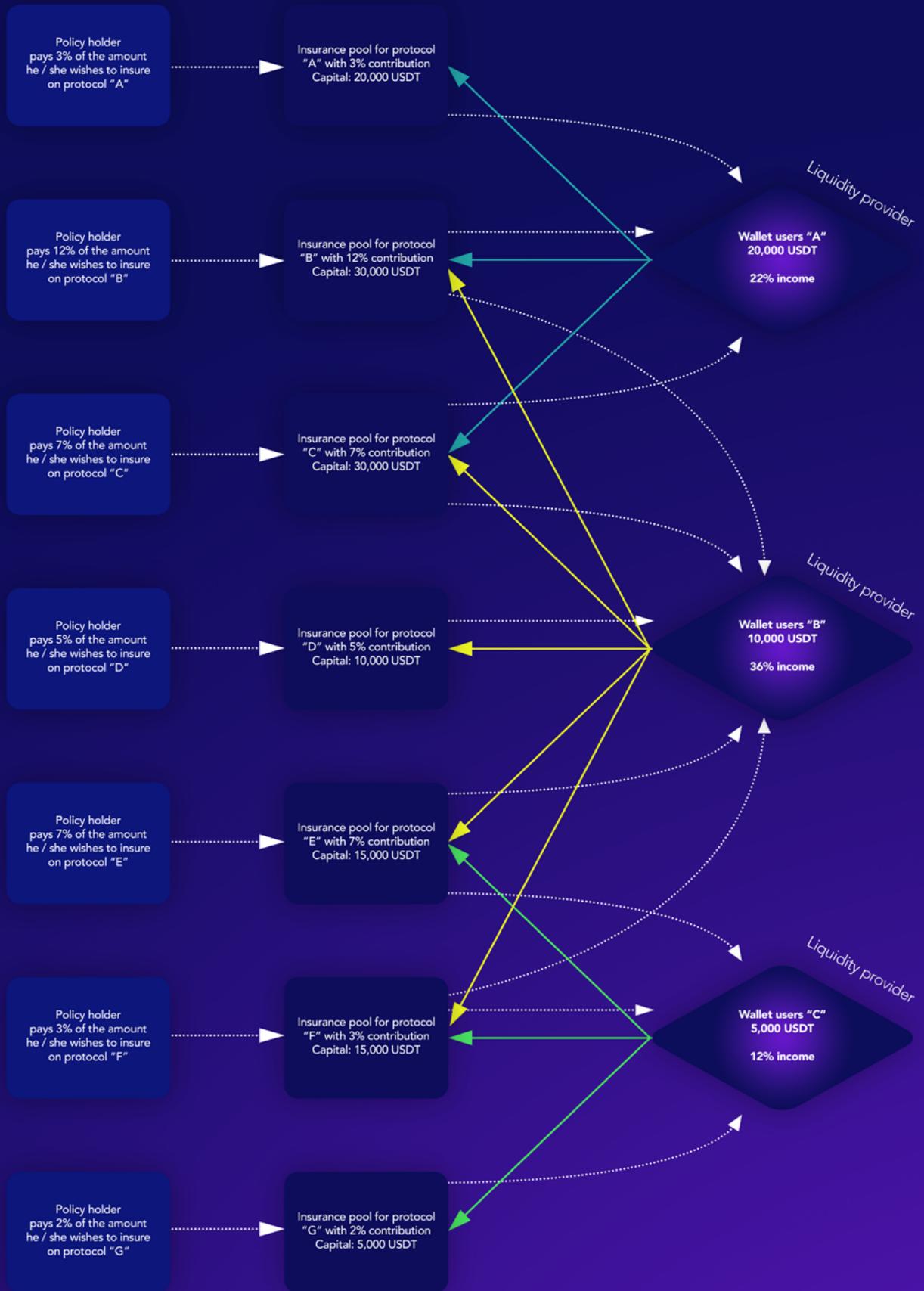
**Example :**

a user wishing to cover a protocol X at 7% + protocol Y at 5% + protocol Z at 8% will allow this one to cumulate the returns and to obtain an APR of 20%. If the covers are used at 75% the APR would be 15%.



**Injection of liquidity into insurance coverage**  
 The amount of the contributions and the liquidity of the guarantee fund are defined by the creator of the coverage. The figures below are given as an indication, based on a 100% utilization of the coverage.

POLYHOLDERS



The funds on the insurance pools will be transferred to an external DeFi protocol.

## PROOF OF STAKE CONSENSUS PROTOCOL

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Proof-of-stake (PoS), is a process that allows someone to demonstrate their involvement in a crypto-economic system through a signature algorithm permitting access to privileges. This method is usually used in distributed system consensus models.

The Athena Ins protocol uses a proof of stake allowing to participate in the validation process and to be paid. To participate in an application validation, a validator must commit ATENs as a proof of honesty. To encourage them to participate in the system, validators are rewarded by the issuance of tokens and a part of the subscription fees paid by the members of the hedge funds. The weight of the vote and the remuneration of each validator are proportional to the number of tokens he/she commits to.

ATEN holders could also receive an income continuously without any monitoring requirement effort on their part by automatically delegating their vote to a trusted validator. The validator will also receive a part of the revenue for his work.

## DIVERSIFICATION

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The business model of a traditional insurance company allows it to insure for more than the capital it holds. For example, if an insurance company covers the risk of 10,000 drivers randomly located in a country, it is unlikely that all 10,000 drivers will have a claim at the same time, but if this were to happen, the total amount that the insurance company would have to pay out would be much higher than the capital it holds. It would therefore be impossible to compensate users immediately. Procedures would be put in place for the insurer of the insurance company concerned to take over part of the compensation. These procedures take time without litigation. In the case of a dispute between insurers, the waiting time can be multiplied, and the claim may not even be successful.

Our approach is 100% guaranteed insurance contracts must always hold the full insured value. When a guarantee fund isn't sufficiently funded for the cover reimbursement the membership fees will be reduced accordingly in order to match amount needed for the cover. No cover reimbursement will be issued if the guarantee fund has zero value.

This combined with the immutability of blockchain gives the consumer an extremely high level of security.

For traditional insurers, diversifying risks is essential, in the crypto-currency world it's the same, this diversification advantage must be exploited otherwise we can't compete with existing institutions. The recommended capital model is a multi-module structure, where each module represents coverage for different protocols or risks.

## TRANSPARENCY

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Athena Ins provides members, potential members and other interested parties with accurate information about the platform. Blockchain technology is naturally transparent thanks to its public aspect. A website interface will be developed to provide key metrics in real time.

### **This includes:**

- History of total capital metrics on the platform and the token price.
- Total number of tokens (outstanding, locked, or transferable).
- Details of the results of the last complaints evaluation.

Combined, this information will provide an accurate real-time status of the platform.

Compared to a traditional insurer whose financial information usually takes several months (at best) to determine an outcome, blockchain can provide statistics transparently and quickly.

## ADVANTAGES

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### **0% Fees for the platform on the guarantee fund and the affiliates' fees**

Athena Ins is responsible for making available to its users the possibility of creating smart contracts without financial compensation for the platform.

### **Easy to use**

It will be possible to create smart cover contracts easily for all users, new or experienced, wishing to obtain income by insuring other members. Athena is setting up a call for tenders system in order to meet the needs of all users wishing to cover themselves against specific DeFi risks, which current cover does not provide.

0.025% fees for ATEN's holders

It is expected that part of the transaction fees will be distributed to ATEN's holders directly to their wallet's token address.

### **Yield and profit**

The platform offers 3 types of remuneration:

- The creation of cover brings, for the creator and the liquid suppliers, a return in ATEN and the subscription fees of the users wishing to protect themselves.
- Voting on complaints to earn ATENs.
- Stacking generates rewards.

## TOKEN DETAILS

- **Platform Name** Athena INS
- **Total Supply** 3 000 000 000 ATEN
- **Blockchain** Ethereum
- **Type** ERC-20

## TOKENOMICS INFORMATION

|  | Tokens        | Price \$ | Allocation % | Lock | Vesting (month) | Note   |
|--|---------------|----------|--------------|------|-----------------|--|
| <b>Team / Advisors</b>                     | 360,000,000   |          | 12%          | 20   | 10              | 10% monthly starting month 20  |
| <b>Partners</b>                            | 300,000,000   |          | 10%          | 3    | 15              | 5% for month 4 to 7, then 10% for month 8 to 15                              |
| <b>Liquidity</b>                           | 600,000,000   |          | 20%          | 40   |                 |  |
| <b>Marketing / Listing</b>                 | 240,000,000   |          | 8%           |      |                 | 5% per month unlock only for events  |
| <b>Protocol rewards</b>                    | 900,000,000   |          | 30%          |      |                 | Unlock at protocol launch (Q4 2022)<br>Realease 27 months<br>3.70% per month |
| <b>Seed sale 1</b>                         | 120,000,000   | 0.0035   | 4%           | 2    | 5               | Lock 2 month then 20% monthly  |
| <b>Seed sale 2</b>                         | 30,000,000    | 0.005    | 1%           |      | 10              | 50% at listing then 5% monthly   |
| <b>Strategic sale 1</b>                    | 100,000,000   | 0.005    | 3.33%        |      | 19              | 5% at listing then 5% monthly  |
| <b>Strategic sale 2</b>                    | 100,000,000   | 0.008    | 3.33%        |      | 14              | 10% at listing then 5% for month 1 to 10 then 10% monthly                    |
| <b>Strategic sale 3</b>                    | 100,000,000   | 0.012    | 3.33%        |      | 9               | 10% at listing then 10% monthly  |
| <b>Public sale 1</b>                       | 148,000,000   | 0.017    | 4.93%        |      | 3               | 25% at listing then 25% every month  |
| <b>Public sale 2</b>                       | 2,000,000     | 0.02     | 0.07%        |      |                 | 100% at listing  |
| <b>Total circulating supply at listing</b> | 78,000,000    |          | 2.6%         |      |                 |  |
| <b>TOTAL SUPPLY</b>                        | 3,000,000,000 |          |              |      |                 |  |

# ROADMAP



## LEGAL DISCLAIMER

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The Athena Ins project will give everyone the opportunity to become an insurer by easily establishing a smart insurance contract functionality that will allow everyone to generate income.

It will be operating within the framework of a decentralized collaborative insurance. A decentralized collaborative insurance is not an insurance provider it is a grouping of individuals or structures that insure themselves. Therefore, Athena is not required to comply with all insurance regulatory and legal requirements. The cover can be supplied all over the world. As such, coverage is available worldwide as long as:

- Members can legally become a member of the platform.
- Local Laws and regulations of jurisdiction are respected. In practice, this means that Athena Ins will be able to provide coverage anywhere in the world with some countries being restricted for various local laws.

All of the above views are based on informed research and discussion with business and legal experts. Thus, when joining, each member agrees to have their membership cancelled if necessary, for legal reasons which could endanger the functioning of the Athena Ins system.

## GOVERNANCE

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### **Athena Ins Governance and the ATEN Token:**

Athena seeks to establish itself as an autonomous platform controlled by the holders of the ATEN governance token. Holders of the ATEN token reserve the right to participate in the governance proposals and decisions of the platform upon Athena's operational and functional maturity.

In addition to governance entitlements, the ATEN token is proposed to be yield bearing with 0.025% of transaction volume to be distributed to ATEN holders. ATEN will also be required for policy creation, yielding additional benefits to the staking creators.

## PROJECT TEAM



**Anthony Jaoui**

Advisor

More than 10 years experience in the consulting area. Business development, team management, international mobility, reward strategy, payroll methodology, team off shoring.



**Jonathan Quali**

Advisor

Marketing strategist for many succesfull projects (aleph.im, phantasma.info), CPO at massa.net, CEO of slime.marketing (web 3 agency).



**François Renedo**

CO-founder and CEO

9 years CIO In charge of external IT infrastrucutre. Manages, leads and coordinates internal and external teams. (Paris, Nice, Madrid). Very enthusiast to be working on Athena INS.



**Axel Moulin**

CO-founder and COO

10 years of expereince in business development and management. Investor invarious blockchain projects since 2016. Co-creator of a blockchain with SHA256 algorithm.



**Come Pecorari**

CTO

10 years in software development, from industry to blockchain, from web 2.0 to web 3. Developer Fullstack & Blockchain.

## PROJECT TEAM



**Guillaume Aliaga**

CIO

12 years It engineering. Expert in scientific calculation, HPC, infrastructure and security. Has worked in finance, nuclear research and development. Passionate about cryptocurrency, supporter of decentralisation.



**Pierre Riche**

DevOps

5 years system engineer. Worked in various environments and supported high-end storage solutions in close relation with developpers. Supporter of decentralisation.



**Charles Tremblay**

Data scientist  
Senior Actuary

Actuary and data scientist with 5 years experience in the insurance sector. Specialized in risk pricing and machine learning.



**Thao N'Guyen**

Algo and Blockchain  
developer

Doctor in algorithms, blockchain developer, likes to go to the end of things and optimize the code to make everything efficient.



**Victor Blackwell**

Web3 App Developer

Start-up veteran with business school background, fell in love with code and again with blockchain. Apps, Dapps & APIs with a focus on raw data processing, data intelligence & cybersecurity.

## PROJECT TEAM

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**Antoine Palau**

Web Developer

15 years of experience at the head of numerous web companies. Expertise oriented towards creation and consulting in digital communication. Developer of web and mobile applications.



**Hans Haugaard**

Designer

Designer and art director based in Stockholm Sweden. Visual identity and user experience. Passionate about the blockchain since 2016. NFT artist and collector.



**Vincent Icardo**

Chief Community Officer

Business development, team management and community building and growth strategies for numerous successful blockchain projects.

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\*\* KLEROS open source code :

EIP: 792  
Title: Arbitration Standard  
Status: Draft  
Type: Informational  
Category: ERC  
Author: Clément Lesaege <clement@kleros.io>  
Created: 2017-12-06

## ABSTRACT

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The following describes a standard of Arbitrable and Arbitrator contracts. Every Arbitrable contract can be adjudicated by every Arbitrator contract. Arbitrator contracts give rulings and Arbitrable contracts enforce them.

## MOTIVATION

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Using two contracts allows separation between the ruling and its enforcement. This abstraction allows Arbitrable contract developers not to have to know the internal process of the Arbitrator contracts. Neither do Arbitrator contract developers with Arbitrable ones.

It allows dapps to easily switch from one arbitration service to another one. Or to allow their users to choose themselves their arbitration services.

## SPECIFICATIONS

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### Arbitrable

This contract enforces decisions given by the Arbitrator contract.

It must call the functions `createDispute` and `appeal` of the Arbitrator contract and pay the required fee. It is its responsibility to determine in which case a dispute occurs and when an appeal is possible. It must track the disputes by their `(arbitrator, disputeID)` unique key. If the contract only has a `indicate` that no ruling has been given.

### Methodes

#### Rule

To be called by the Arbitrator contract.

Enforces the ruling `_ruling` for dispute `(msg.sender, _dispute)`.

Arbitrators should only call `rule` when all appeals are exhausted.

It must revert in case of failure.

It must fire the `Ruling` event.

```
function rule(uint _disputeID, uint _ruling)
```

**NOTE:** The Arbitrator contract should not assume that `rule` will be successfully executed. A malicious (or buggy) Arbitrable contract could make `rule` revert.

## Event

### Ruling

Must trigger when a final ruling is given.

```
event Ruling(Arbitrator indexed _arbitrator, uint indexed _disputeID, uint _ruling)
```

## Arbitrator

This contract makes rulings. It must call the `rule` function when a decision is final.

## Methods

**NOTE:** The variable `_extraData` can contains information to require a custom arbitration (resp. appeal) behaviour of the contract. The format of this variable is determined by the Arbitrator contract creator. In case `_extraData` is void or invalid, functions should act according to a default arbitration (resp. appeal) behaviour.

**NOTE:** The variable `_extraData` SHOULD be formatted the same way for both dispute creation and appeal.

**NOTE:** Different `_extraData` values can be used by a same Arbitrable contract, even during the same dispute. Therefore Arbitrator contracts MUST NOT assume `_extraData` to be constant across disputes and appeals.

**NOTE:** Arbitration (resp. appeal) fee can change, therefore Arbitrable contracts should call this function each time it is relevant and not assume the fee are the same as in the last call.

**NOTE:** If the Arbitrable contract does not pay enough fee, the functions should revert. However, if it pays too much fee, the contract should not revert and accept the higher fee.

### arbitrationCost

Returns the cost of arbitration fee in wei required to create a dispute.  
function arbitrationCost(bytes \_extraData) view  
returns(uint fee)

### appealCost

Returns the cost of appeal fee in wei required to appeal the dispute  
(arbitrator, \_disputeID).  
function appealCost(uint \_disputeID, bytes \_extraData)  
view returns(uint fee)

### createDispute

Create a dispute.

It should be called by the Arbitrable contract. It must pay at least  
arbitrationCost(bytes \_extraData) weis.

The parameter `_choices` indicates the maximum value `_ruling` can  
take. So for a binary ruling, `_choices` should be 2 (0 to refuse to give a  
ruling, 1 for giving the first ruling and 2 for the second).

This method must fire the `DisputeCreation` event.

The Arbitrator contract should assign a unique `disputeID` identifier to  
the dispute and return it.

```
function createDispute(uint _choices, bytes _extraData)  
payable returns(uint disputeID).
```

### appeal

Appeal the dispute (arbitrator, \_disputeID).

It should be called by the Arbitrable contract. It must pay at least  
appealCost(uint \_disputeID, bytes \_extraData) weis.

This method must fire the `AppealDecision` event.

```
function appeal(uint _disputeID, bytes _extraData)  
payable
```

### appealPeriod

Return the [start, end] time window for appealing a ruling if known in  
advance.

If those time are not known or appeal is not possible, returns (0,0).

```
function appealPeriod(uint _disputeID) public view  
returns(uint start, uint end).
```

### currentRuling

Return the ruling which will be given if there is no appeal or which has  
been given.

```
function currentRuling(uint _disputeID) view returns  
(uint ruling).
```

### disputeStatus

Return the status of the ruling.

```
function disputeStatus(uint _disputeID) view returns  
(DisputeStatus status)
```

with:

```
enum DisputeStatus {Waiting, Appealable, Solved}
```

**NOTE:** The value solved does not necessarily means that the function rule was called. It means that the ruling is final and that it won't change.

## EVENTS

### DisputeCreation

Must trigger when a dispute is created.

```
event DisputeCreation(uint indexed _disputeID, Arbitrable indexed  
_arbitrable)
```

### AppealDecision

Must trigger when the current ruling is appealed.

```
event AppealDecision(uint indexed _disputeID, Arbitrable indexed _  
arbitrable)
```

### AppealPossible

Must trigger when appealing a dispute becomes possible.

```
event AppealPossible(uint indexed _disputeID, Arbitrable indexed _  
arbitrable);
```



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If you have any questions, comments,  
or concerns regarding our practices,  
please contact us at:

**[support@athena-co.io](mailto:support@athena-co.io)**