

OAMO

THE FUTURE OF TOKENIZATION

WHITE PAPER

Non-Binding until Formal Document is Offered. Content Subject to Change

Version 1.4, Sept 2018

August 15, 2018

Abstract: The Gamo software introduces a new blockchain and architecture of trust designed to specifically facilitate creation of Decentralized Autonomous Initial Coin Offering (DAICO) by creating an environment which DAICO's can be built on. The environment includes coding protocols, test nets, best practice frameworks and enforcement protocols. The resulting technology is a revolutionary blockchain architecture that will help to create Initial Coin Offerings (ICOs) and Businesses that are audited and accountable, keeping the investors safe and updated.

Copyright © 2018 Robust Harvest

Anyone may use, reproduce or distribute any material in this white paper for non-commercial and educational use without prior permission, provided that the original source and the applicable copyright notice are cited.

DISCLAIMER: This Gamo Technical White Paper v1 is for information purposes only. SnapTech does not guarantee the accuracy of or the conclusions reached in this white paper, and this white paper is provided "as is". Snap Innovations does not make and expressly disclaims all representations and warranties, express, implied, statutory or otherwise, whatsoever, including, but not limited to: (i) warranties of merchantability, fitness for a particular purpose, suitability, usage, title or non infringement; (ii) that the contents of this white paper are free from error; and (iii) that such contents will not infringe third-party rights. Snap Innovations and its affiliates shall have no liability for damages of any kind arising out of the use, reference to, or reliance on this white paper or any of the content contained herein, even if advised of the possibility of such damages. In no event will Snap Innovations or its affiliates be liable to any person or entity for any damages, losses, liabilities, costs or expenses of any kind, whether direct or indirect, consequential, compensatory, incidental, actual, exemplary, punitive or special for the use of, reference to, or reliance on this white paper or any of the content contained herein, including, without limitation, any loss of business, revenues, profits, data, use, goodwill or other intangible losses.

TABLE OF CONTENT

•	BACKGROUND	2
•	DESIGN CONSIDERATIONS	3
•	INTRODUCTION TO DAICO	4
•	BENEFITS OF DAICO	5
•	CHALLENGES OF DAICO & GAMO'S SOLUTION	6
•	GAMO PROTOCOL	8
•	TOKEN MODEL & RESOURCE UTILIZATION	23
•	GOVERNING PROCESS	30
•	SUMMARY	33
•	GAMO PROTOCOL TIMELINE	34
•	TOKEN GENERATION EVENT	36
•	FUNDS & STRATEGIC PARTNERS	41

GAMO PROTOCOL

BACKGROUND

Initial Coin Offerings have bloomed in recent years leading their largely unregulated nature to result in many bad practices. There are several examples of founders running away with ICO funds or progress of projects not being aligned with their pre-ICO promises. All of the above put the investors vulnerable to fraudery and losses.

This way, the investors have more accountability and control over the projects.

As with any new concept, there are challenges facing the implementation of DAICO. There are limited materials and libraries to implement DAICO technically, as well as a lack of comprehensive guidelines for DAICO.

With this project, Gamo aims to

provide a comprehensive environment

for both the technical and methodical

Since January 2018, a new ICO model DAICO has been introduced. The DAICO model incorporates some elements of a DAO. With DAICO in place, trust is not placed completely with a centralized party. The decision making is distributed among contributors using a democratic voting system.

This allows funds to be released according to voting preferences and developers are kept in check to deliver their promised milestones.



DESIGN CONSIDERATIONS

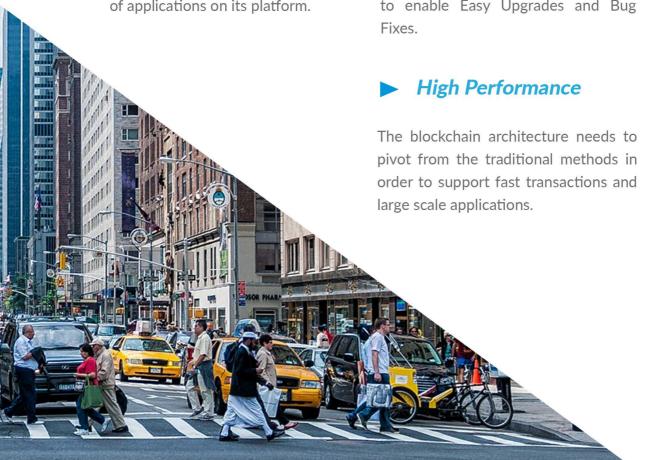
In order to gain widespread use, applications on the blockchain require a platform that is flexible enough to meet the following requirements:

Support Millions of Applications

The technology should support wide spread use of ideas and applications. It should be able to support millions of applications on its platform.

Easy Upgrades and Bug Fixes

Upgrades and Bug Fixes are common processes in software development. The systems should be robust enough to enable Easy Upgrades and Bug Fixes.



GAMO PROTOCOL

INTRODUCTION TO DAICO

Unlike Coin Governance System which is implemented as a separate module from the ICO, DAICO is proposed as an abstract idea that incorporates the Contribution and Governance mode into the smart contract.



DAICO is the combination of DAO and ICO. It has 2 important modes - Contribution mode and Tap mode.

The contribution mode can be in the form of Capped sales, Uncapped sales or Dutch auction.

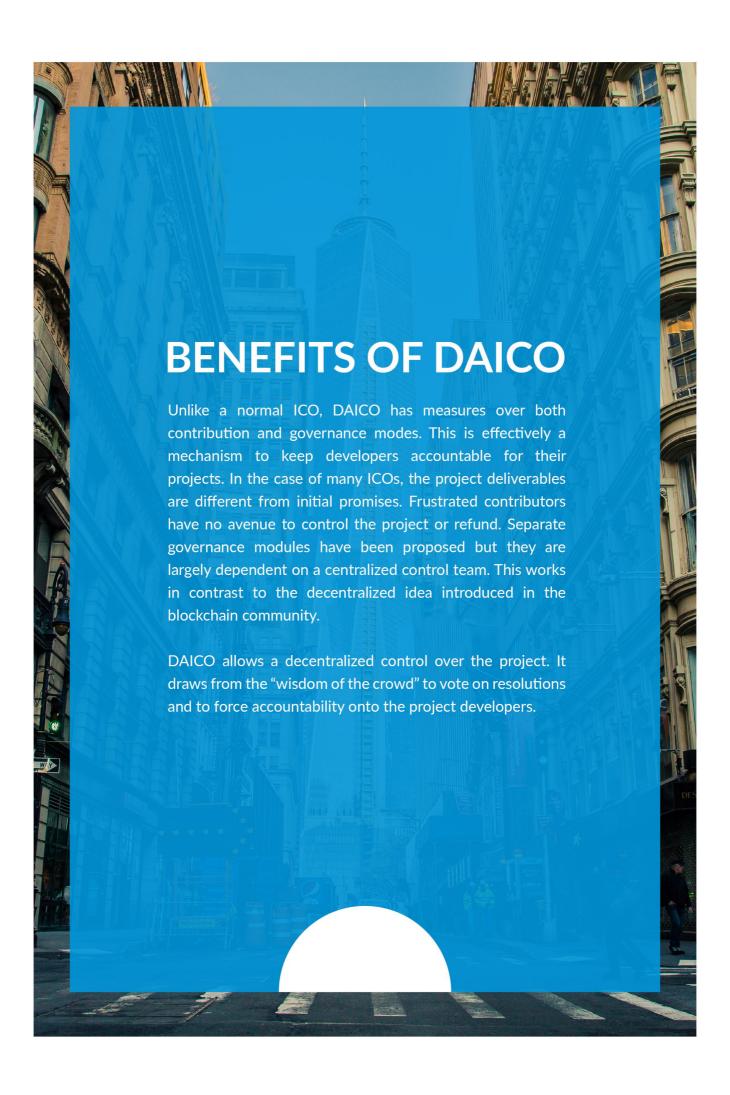
The Tap mode allows control over the speed of coin release to the developers. This is initialized at zero and can be increased via voting.

The DAICO will incorporate voting mechanism that allow contributors to vote on resolutions.

The types of resolutions are:

- 1. Raising the Tap
- 2. Project Destruction

In case of Project Destruction, contributors will have alternatives to reverse the funds that are held. This essentially keeps the developers accountable for the projects that they are responsible.



GAMO PROTOCOL

CHALLENGES OF DAICO AND GAMO'S SOLUTIONS



As with any new concept, there are challenges in the actual implementation of DAICO, many of which GAMO aims to solve.

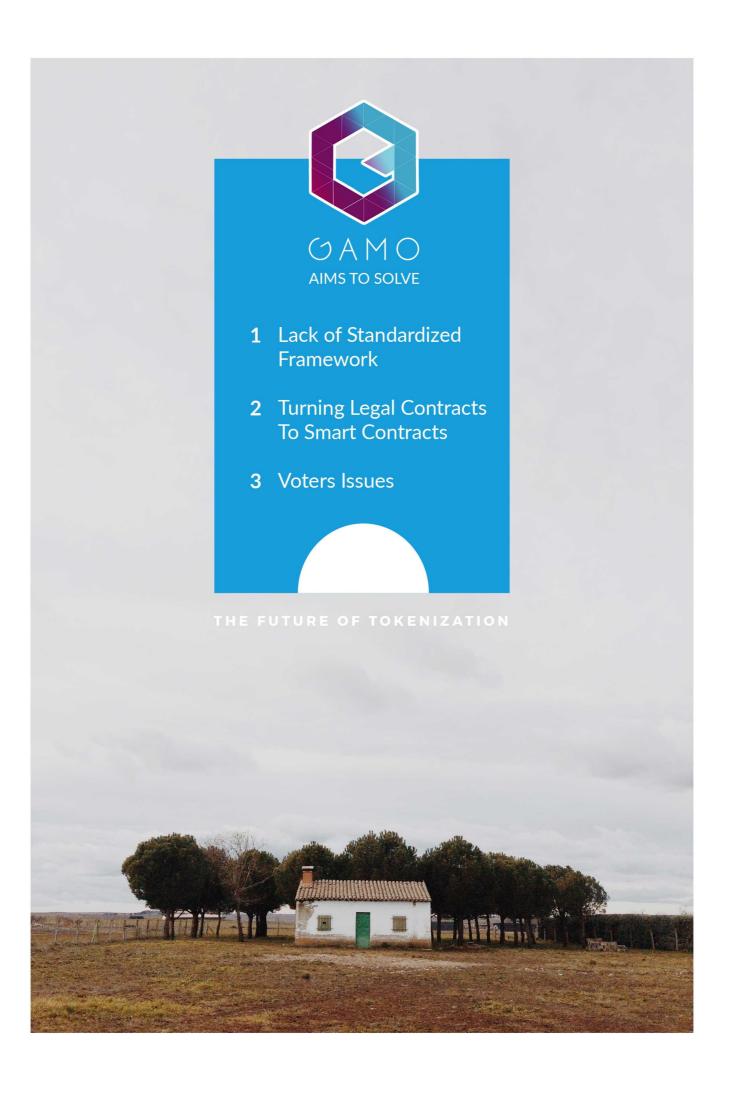
The most obvious problem of DAICO is the lack of standardized framework. It is an abstract idea in this stage. There are very few success cases. GAMO aims to provide both the environment and framework to make DAICO more resilient.

It is noteworthy that the writing of smart contract is a challenge to most people. Traditionally, contracts are drafted by teams of lawyers / finance / compliance / subject matter experts whilst coding is done by developers. To come up with a correct smart contract, it requires close collaboration between coders and lawyers / finance / compliance / subject matter experts. Such coordination is often much more complicated compared to writing a traditional contract.

GAMO creates an easy to use smart contract interface for non-developers to write contracts.

The other significant problem of DAICO is the voters issue. DAICO relies heavily on the decision made by voters but in actual implementation, there can be a number of loopholes. Firstly, voters are assumed to be educated over the project and have good decision making skills Secondly, there are problems with lazy voters who can be absent from a resolution voting process.

With GAMO's framework, it provides recommended guidelines and solutions to the problems mentioned above.



INTRODUCING

GAMO PROTOCOL

In order to support the creation of DAICO, its platform should be able to provide the technical environment as well as best practice framework.

The ecosystem includes the following components:

01 GAMO Framework

The GAMO Framework is a guideline of enforcement made possible by GAMO and also the best practices which the project developers should follow. It incentivizes compliance to best practices.

02 GAMOTECH

A contract-oriented programming language for writing smart contracts. It is used for implementing smart contracts on various blockchain platforms, especially for the purpose of building DAICO. The language is strongly influenced by C++ and Javascript.

03 GAMOwallet

A Free, Open Source, Web-based Platform what supports friendly UI for generating and using GAMO Wallets.

04 Testnet

An alternative to the GAMO Blockchain to allow developers to test their applications before going live.

GAMO FRAMEWORK

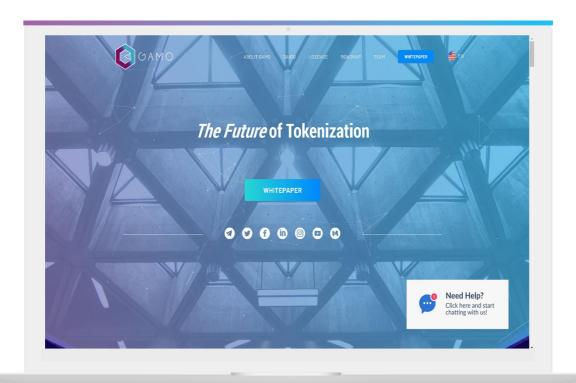
The GAMO Framework is perhaps the most important feature in the GAMO ecosystem to launch a DAICO. The framework focuses on enforcement and best practices.

Enforcement modules are integrated on GAMOTECH and can be used in the smart contracts. The usage of these modules are not compulsory but will be recommended on the framework. The smart contract will be published and the public can verify if the said contract follows the guidelines as recommended by the framework.

The mechanism will reward the project owners for compliance and penalize project owners for failure to fulfill their obligations. This works by rewarding successful milestones with GAMO coins and to invoke the voting process to review tap by the contributors.

GAMO Framework aims to share the best practices of governance in the current market. There is no need to reinvent the wheel.





GAMOTECH

GAMOTECH is a contract-oriented interface for writing smart contracts. It is heavily influenced by C++ and Javascript. The objective of this language is to provide the tools necessary to come up with smart contracts that are aligned with implementation of DAICO. It will have both coding and assisted views.

Assisted views in GAMOTECH will provide an easy to use interface for users with lower programming skillsets. This is in consideration that contract writers are often from the legal or financial profession. The User Interface will have drag and drop functionalities and also contract templates for easy coding.

Various tools and policies are implemented in GAMOTECH as part of the protocol. One such policy is the enforcement policy, which forces project owners and developers to update their project status in order to gain favourable tap increase from the contributors. The policy also enables contributors to assess each milestone and vote to decrease or increase tap (acting as a mean of control over the project owners).

The vision for GAMOTECH is to have an easy interface to deal with complicated smart contract writing process.

TESTNET

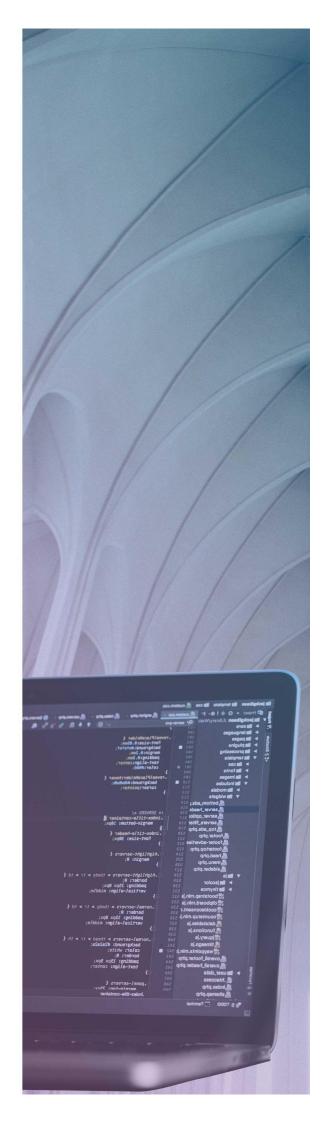
The GAMO Testnet serves to provide an alternative blockchain for developers to test their smart contracts and applications before moving to live environment. This gives developers leeway to discover bugs and do bug fixes.

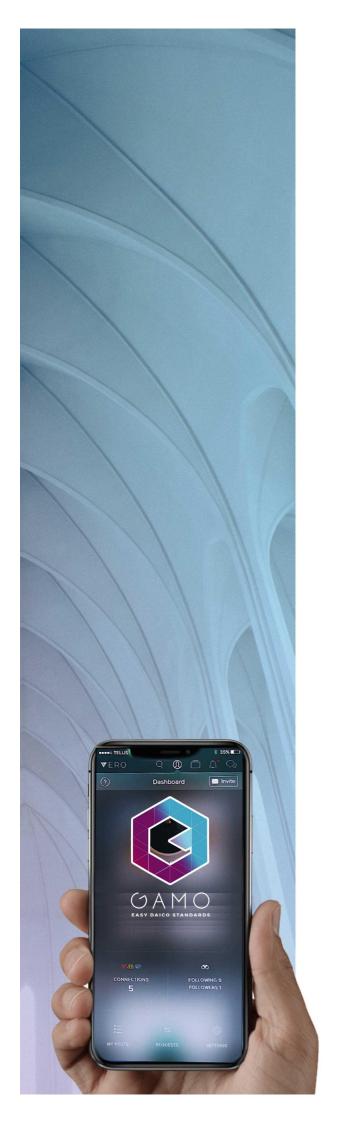
The Testnet gives developers a chance to run their smart contracts in a virtual environment which provides realistic outcome for the developers. Working on the test net, the developers can simulate many real life situations, such as token contribution, voting, increasing tap and eliminating a project. The test can simulate both technical and non technical situations.

Technical testing includes the discovery of bugs, security loopholes and logic failure. By testing the application thoroughly, the chance of critical bugs in the live application will be reduced significantly.

Non technical testing includes workflow testing. For example, project developers can test the entire process of voting. In this case, a simulated environment is available for testing the workflow so project developers can prepare the workflow for the real life situation.

The Testnet can be used to explore new ideas before implementing into production environment. This will reduce if not eliminate risky situations tremendously.





GAMOWALLET

GAMOwallet is a web-based, open source application that allows generation and usage of electronic wallets. It acts as a hardware wallet as well to enhance the security of token owners.

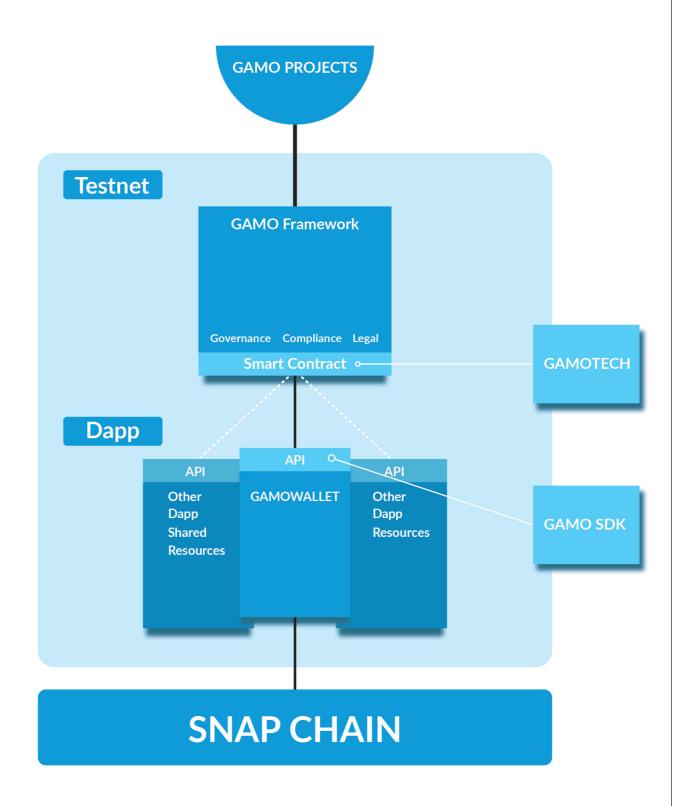
GAMO tokens and tokens based on GAMO have the same structure. In order to determine the token's ownership, private keys will be used. Most people will also require an interface to visualize "storing the tokens".

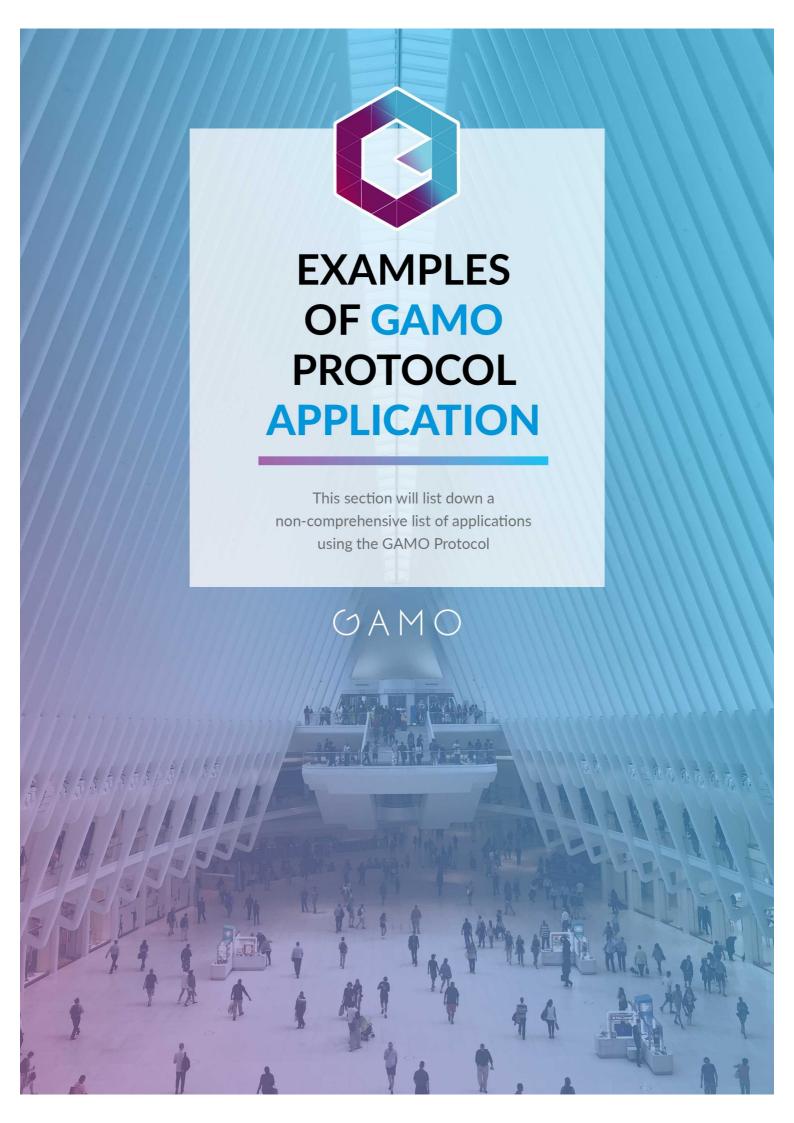
Developers will be able to expand the features by using the API. With the API, developers can generate wallets, check balance, log, send, receive tokens and query the blockchain to obtain transactional data of specific wallet or token.

GAMOwallet uses state-of-the-art technology for its protection and encryption. It has the option to use 2FA tokens that are distributed physically, similar to those adopted and used in banks. It also follows the ONVIF framework both operationally and technically for its security protocols.

A wallet is a necessity and it is a shared resource for other DAICO, GAMOwallet aims to aid in swapping all tokens that comes onboard on GAMO Protocol.

FLOWCHART





APPLICATIONS

SMART CONTRACT WRITING

As mentioned in the previous section, contracts are traditionally drafted by lawyers and subject matter experts. Coding is traditionally done by coders. This makes smart contract writing a complicated process because of the range of skill sets involved in handling the legal, subject matter and coding knowledge. This makes the collaboration among different teams difficult.





SIMPLIFIED SMART CONTRACT WRITING PROCESS

STEP 1

Select a crowdsale functionality

STEP 2

Provide token and crowdsale details

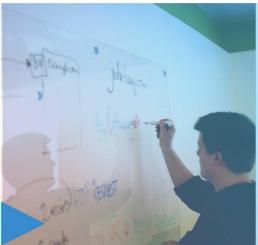
STEP 3

Review smart contract and create token

APPLICATIONS

DAICO IMPLEMENTATION





Among the tools that are available in GAMOTECH are essential mechanism for launching DAICO. The tools are separated into 3 categories:

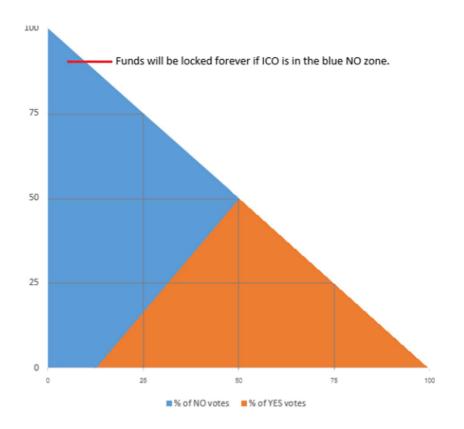
- ▶ 1. Contribution Mode
 - a. Capped Sales
 - b. Uncapped Sales
 - c. Dutch Auction
- 2. Tap Mode
- > 3. Resolution Voting
 - a. Proposing Vote
 - b. Voting Implementation

The token holders (investors) initiate a tap to activate and approve the release of funds to the development team. This enables the team to work on whatever portion of the project implementation process that has been voted by DAICO. These mechanisms are available in GAMOTECH for contract writers to deploy.

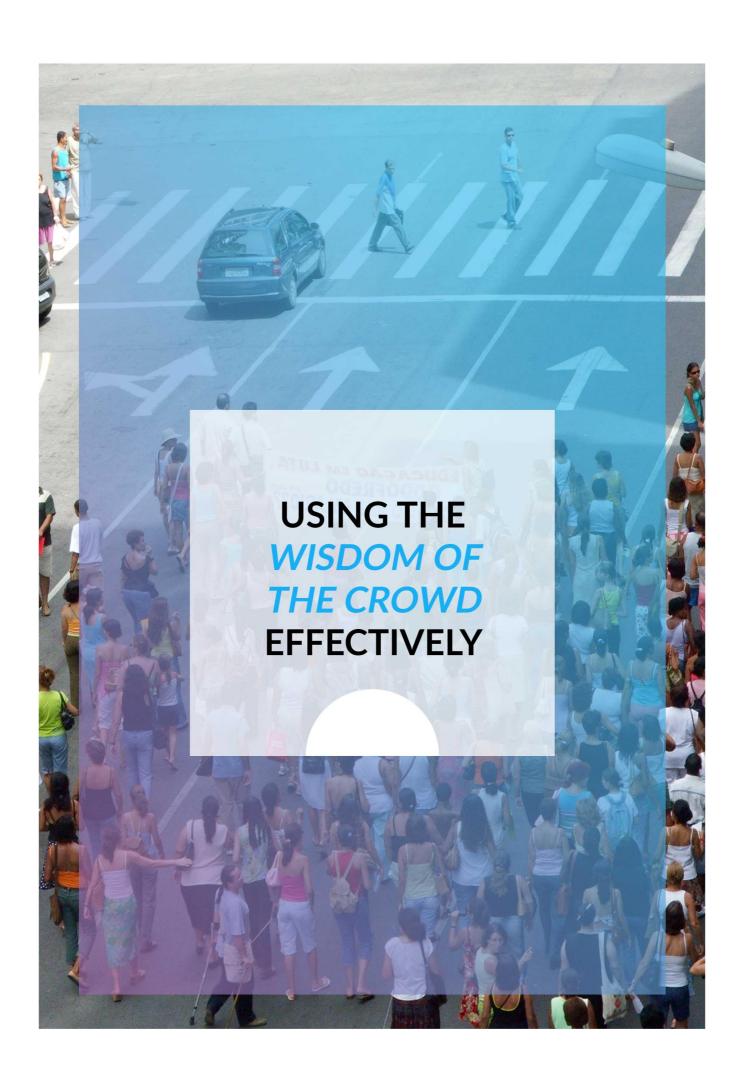
APPLICATIONS

VOTING AND LAZY VOTER PROBLEMS

Low rates of participation from token holders is one of the main issues of on-chain governance. To overcome this issue, GAMO Framework provides the following recommendation -



The vertical and horizontal axes in the graph show the percentage of token holders (investors) voting yes (vertical) or no (horizontal) in a proposal. The proposal will pass if the vote result lands on the blue section. It will fail if the vote result lands on the amber section.



IMPLEMENTATION

PROPOSING A VOTE



With the DAICO model a vote can be proposed to do either one of the following two actions:

Increase the "tap" amount (Tap, unit: wei / sec) that the development team can retrieve from the contract in a certain period. (basically the development team's income).

Withdrawal mode is to enable the supporters to withdraw the ETH left in the ICO contract. (destruction of the contract and ICO).

The aggregate Votes function can be executed by anyone after the voting period has ended. Based on the aggregation result of the proposal, the tap is raised or the ICO is shifted to withdraw mode.

The parameters are as follows:

nextOpenTime: time to start voting for new proposal

nextCloseTime: End time of voting for new proposal (nextCloseTime must be specified at least 7 days after nextOpenTime)

nextTapAmount: Amount of tap to be effective with new proposal

isDestruct: Whether this proposal aims to shift to Withdraw mode (eliminating the fund)

IMPLEMENTATION

KYC/ AML COMPLIANCE



Know Your Customer (KYC) Process protects the long term health of the company and its users. Many ICOs implement a separate KYC module, which is mostly controlled by a centralized party.

GAMOTECH provides the tools to integrate KYC into the DAICO, making the KYC process transparent, decentralized and effective. GAMOTECH provides the basic tools for user data collection.

Data verification is possible with integration to GAMOTECH API. The user data collected is the property of the project owner and API keys can be generated for 3rd party services, such as Polymath, to perform more complicated data verification process.

User information will not be shared or be publicly available. However, the process in which the KYC takes place, the validation that every token holden must go through the KYC process can be enforced by the contract.

RECOMMENDED CONTRACT TYPES



Crowdsale Contract

This smart contract is meant for crowdsale and will not be used after the end of crowdsale.

Fund Contract

This smart contract is meant for storing contributed ETH.

Tokens Contract

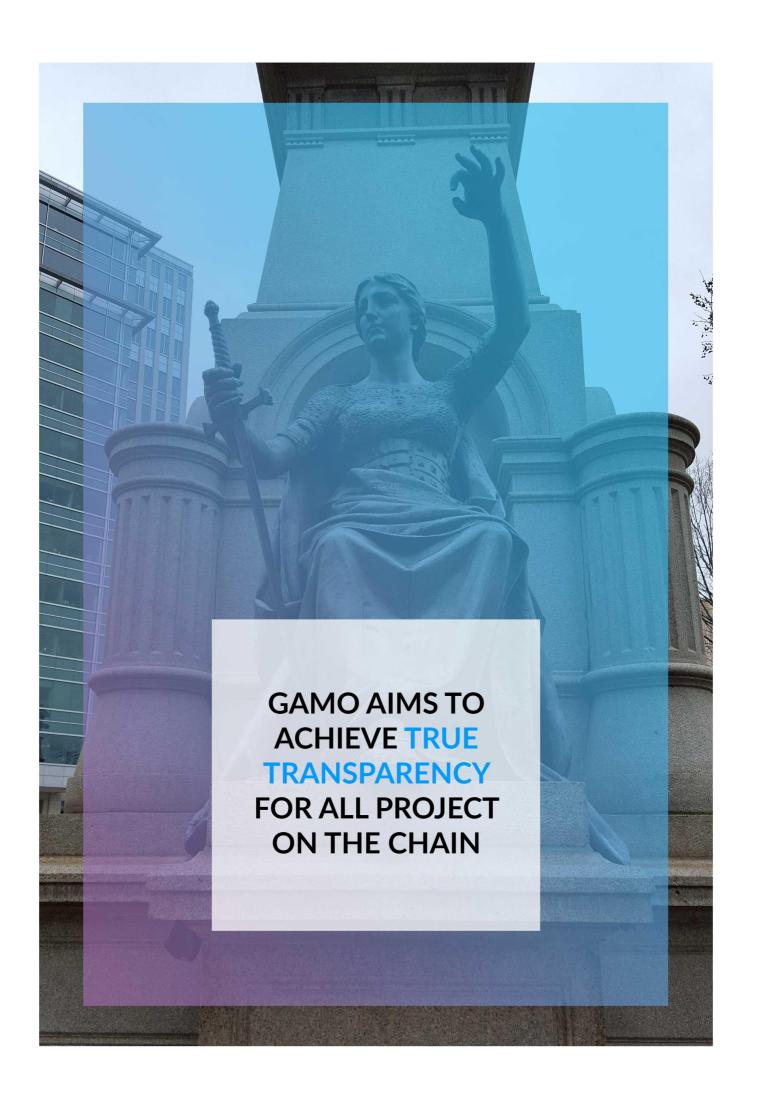
This is our main smart contract which will be operational after the end of crowdsale.

Reservation Fund Contract

This smart contract is meant for storing ETH contributed by greylist participants.

Utility Contract

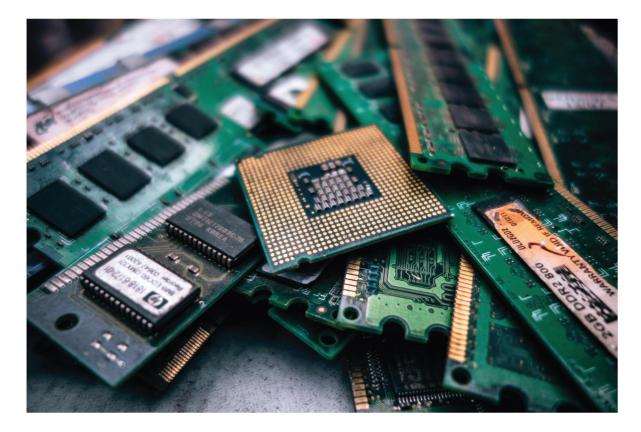
This smart contract is meant for locking the Company's Reserve and Foundation tokens for a certain time period.



TOKEN MODEL & RESOURCE UTILIZATION

All blockchains are resource constrained and require a system to prevent abuse. With a blockchain that uses Gamo software, there are three broad classes of resources that are consumed by applications:

- 1. Bandwidth and Log Storage (Disk)
- 2. Computation and Computational Backlog (CPU)
- 3. State Storage (RAM)



Bandwidth and computation have two components, instantaneous usage and long-term usage. A blockchain maintains a log of all Actions and this log is ultimately stored and downloaded by all full nodes. With the log of Actions, it is possible to reconstruct the state of all applications.

The computational debt calculations must be done in order to regenerate the state from the Action log. It is necessary to take blockchain's state snapshots and discard blockchain's history when the computational debt becomes too large. It can take 6 months to replay 1 year of transactions if the computational debt grows too fast. Therefore it is important to manage the computational debt carefully.

Blockchain state storage is information that is accessible from application logic. It includes information such as order books and account balances. If the state is never read by the application, then it should not be stored. For example, blog post content and comments are not read by application logic, so they should not be stored in the blockchain's state. Meanwhile the existence of a post/comment, the number of votes, and other properties do get stored as part of the blockchain's state.

Block producers publish their available capacity for bandwidth, computation, and state. The Gamo software allows each account to consume a percentage of the available capacity proportional to the amount of tokens held in a 3-day staking contract. For example, if a blockchain based on the Gamo software is launched and if an account holds 1% of the total tokens distributable pursuant to that blockchain, then that account has the potential to utilize 1% of the state storage capacity.

Adopting the Gamo software on a launched blockchain means bandwidth and computational capacity are allocated on a fractional reserve basis because they are transient (unused capacity cannot be saved for future use). The algorithm used by Gamo software is similar to the algorithm used by Steem to rate-limit bandwidth usage.



OBJECTIVE & SUBJECTIVE DETERMINATIONS



Instrumenting computational usage comes with heavy impact on performance and optimization. As a result, all resource usage restrictions will be subjective. Block producers are to enforce according to their individual estimates and algorithms. These are usually utilized via a custom plugin by the block producer.

Some of the things are unimportant to determine objectively. The Actions delivered numbers, internal database stored data's size are cheap to be determined objectively. The Gamo software allows block producers to utilize the same algorithm on these objective determinations but may choose to utilize subjective algorithms that are stricter over objective determinations.

PAID BY RECEIVER

Generally, the business pays for office space, computational power and other equipments that are required to run a business. Customers buy products from the business and the revenue is used to cover the costs of operation. Similarly, no website forces its visitors to pay for simply visiting its website to cover the hosting server costs. In conclusion, decentralized applications should not charge its customers for the usage of the blockchain.

A blockchain using GAMO Protocol when launched, does not require users to pay for usage of the blockchain. This means a business can freely choose its own monetization strategy for its products without constraints.



GAMO allows the sender to pay for computation, storage and bandwidth rather than the receiver. This encourages application developers to choose the best method for their application. Most of the time, sender-pays method reduces the complexity greatly for application developers who do not wish to utilize their own rationing system. With this method, they can delegate computation and bandwidth to the users and then have the sender-pays model to enforce the usage. It is free from the end user's perspective.

CAPACITY DELEGATION

If a holder of tokens on a launched blockchain which utilizes Gamo software does not have immediate need to use part or all of the available bandwidth, he/she is allowed to lease or delegate the unused bandwidth to other users. As a result, the block producers utilizing Gamo software on such blockchain will be able to recognize this capacity delegation and then allocate the received bandwidth accordingly.

SEPARATING TRANSACTION COSTS FROM TOKEN VALUE

The amount of available bandwidth to the application is fully independent of any token price. This is one of the major advantages of the Gamo software. The application can be runned indefinitely under a fixed state and usage of bandwidth, given that the owner holds a relevant amount of tokens on a blockchain that utilizes Gamo software. Users and developers in this case, will not be affected from any price volatility in the token market and not dependent on a price feed. This means that a blockchain that utilizes the Gamo software will allow block producers to increase computation, bandwidth and storage available per token independent of the token's value naturally.

Every time a block is produced on a blockchain utilizing the Gamo software, tokens will be awarded to block producers. The token's value will impact the amount of computational, bandwidth and storage a producer can afford to buy. This model leverages rising values of the token naturally in order to improve the performance of the network.



STATE STORAGE COSTS

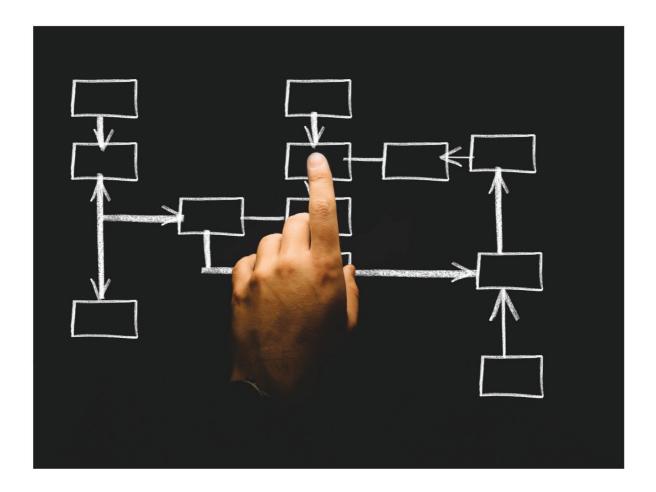


While both the computation and bandwidth can be delegated, the application storage state will require the application developer to hold the tokens until the deletion of that state. The tokens will be restricted from circulation if the state is never deleted.

REWARDS FROM PRODUCED BLOCK

Block producer is given new tokens by a blockchain that utilizes the Gamo software every time a block is produced. The number of tokens created will be decided by the average of the desired pay published by all block producers. The Gamo software will be set up to apply a cap on producer token awards so the token supply's total annual increase will not exceed 5%.

SYSTEM FOR WORKER PROPOSALS



Token holders are allowed to elect Worker Proposals that aim to benefit the community. The accepted proposals will receive tokens of up to a configured percent of the token inflation minus the tokens paid to block producers. These proposals will acquire tokens proportional to the votes that each application received from the token holders, up to the amount that they have requested for carrying out their work. Token holders are able to replace the elected proposals with the new one.

GOVERNING PROCESS

Governance is the process by which people in a community:

- Reach consensus on subjective matters of collective action that cannot be captured entirely by software algorithms
- 2. Carry out the decisions they reach
- 3. Alter the governance rules themselves via Constitutional amendments



A Gamo software-based blockchain implements a governance process that efficiently directs the existing influence of block producers. In the absence of a defined governance process, prior blockchains relied ad hoc, informal, and often controversial governance processes that result in unpredictable outcomes.

A blockchain utilizing the Gamo software acknowledges that the power begins with the token holders who delegate the power to the block producers. The block producers will check and restrict power to update defective applications, freeze accounts and suggest hard forking changes to the fundamental of protocol.

Election of block producers is implemented into Gamo software. Block producers must approve any changes before they can be applied to the blockchain. If the block producers decide to reject the changes suggested by the token holders, they can be voted out. All other non-producing full-node validators such as exchanges will reject the change if the block producers decide to perform changes without permission from the token holders.

ACCOUNT FREEZING PROCESS

Smart contracts at times can turn out to be abnormal, unpredictable or fail to perform correctly. Similarly, accounts or applications may encounter an exploit which unreasonably utilise large amount of resources. When these problems occur, the block producers will have the ability to rectify such problems.

On all blockchains, the block producers have the ability to choose which transactions to be included in the blocks. This will give them the ability to freeze the accounts. A blockchain that uses Gamo software formalizes this ability by requiring a 15/21 vote of active producers in order to freeze the account. This means that the producers can be voted out and an account becomes unfrozen if they intend to abuse this ability.



MODIFICATION OF ACCOUNT CODE

When everything else fails and an "unstoppable application" starts acting in a manner that cannot be predicted, a blockchain that uses Gamo software will allow block producers to replace the account's code without the need to hard fork the entire blockchain. Like freezing an account, the code replacement will require a 15/21 vote of elected block producers.

EXPLANATION OF CONSTITUTION

The Gamo software allows blockchains to set up a peer-to-peer terms of service agreement or a binding contract between the users who sign it. This is referred to as a "constitution". The content within the constitution defines binding conditions between the users which cannot be enforced fully by the code and assists with the dispute resolution by setting up jurisdiction, choice of law and other rules that are mutually accepted. All transaction broadcasts on the network must include the hash of the constitution within the signature, binding the signer to the contract explicitly.

The constitution defines the intent of the source code protocol that is readable by human. When an error occurs, it can be used to distinguish between a bug and a feature. This can be used to guide the community on the suitability of the fixes.

CONSTITUTION & PROTOCOL UPGRADE PROCESS

The Gamo software defines the following processes to determine if the protocol can be updated as described and defined by the accepted source code and the constitution:

- Block producers propose a change to the constitution and obtains 15/21 approval.
- Block producers maintain 15/21 approval of the new constitution for 30 consecutive days.
- All users are required to indicate acceptance of the new constitution as a condition of future transactions being processed.
- Block producers adopt changes to the source code to reflect the change in the constitution and propose it to the blockchain using the hash of the new constitution.
- Block producers maintain 15/21 approval of the new code for 30 consecutive days.
- Any changes to the code will take effect 7 days later, therefore giving all non-producing full nodes 1-week to upgrade after the source code is approved.
- All nodes which are not upgraded to and utilizing the new code will automatically be shut down.

In conclusion, timelines for the configuration of the Gamo software that is updating processes of the blockchain to add new features will take approximately 2-3 months whilst non-critical bug fixes updates that do not require changes to the constitution will take approximately 1-2 months.

EMERGENCY CHANGES

The block producers may accelerate the process if a software change is required to fix a harmful bug or security exploit that is actively harming users. Generally speaking it could be against the constitution for accelerated updates to introduce new features or fix harmless bugs.

SUMMARY

The Gamo software is created from experience. It has concepts that are already proven with best practices. They show the underlying advancements in the blockchain technology. The software is part of a complete blueprint for a blockchain that is globally scalable. This means decentralized applications can be deployed and managed easily.



TOKEN GENERATION EVENTS



We require initial funding through a token sale to follow through on project demands and complete the required technological infrastructure. Token owners will expect to achieve outsized returns through the holistic benefits of GAMO once they are functional.

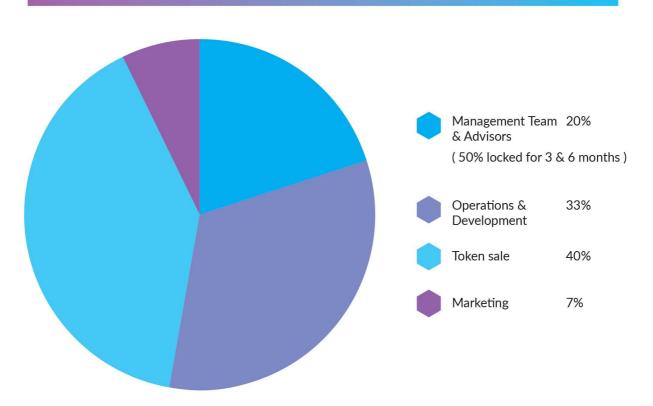
To foster a vibrant and efficient economy, network operation will be funded via decisions and contributions of network participants. A fraction of newly created tokens are set aside for entities capable of enhancing network infrastructure or providing associated tools.

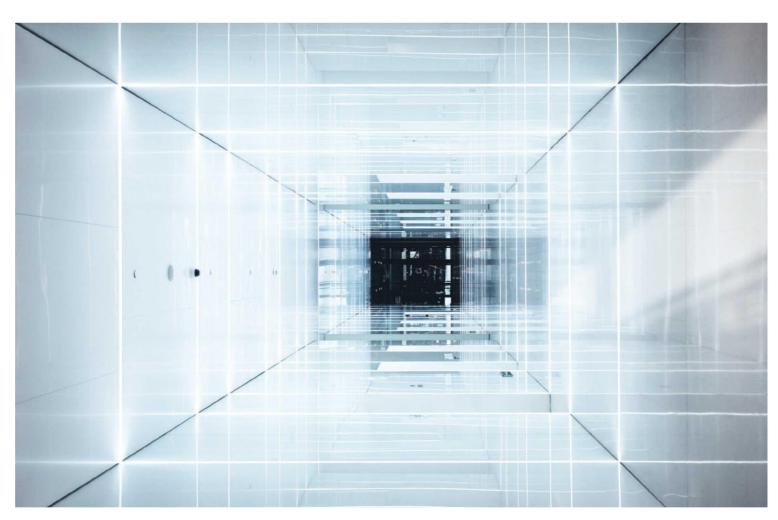
GAMO TOKEN CREATION

The economic logic outlined below is a minimum viable logic. We anticipate additions and alterations in the days to come. With the support from the global crypto community, we aim to benefit our investors through building the financial utility of the project with the long-term goal of appreciating the value of GAMO tokens.

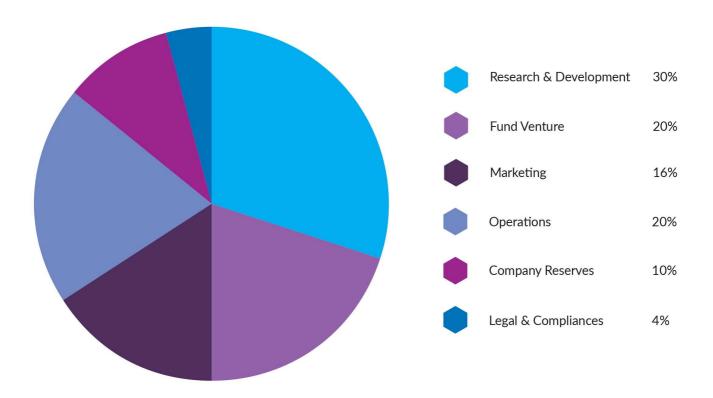
Issuer	GAMO Limited (A Seychelles Entity)
Code	GAMO
Jurisdiction of issuance	Seychelles
GAMO created per Ether	6,000 GAMO = 1 ETH
Hard cap	(Approx 38 mil USD), 126,000 ETH
Soft cap	5,000,000 USD
Maximum number of generated tokens	2,000,000,000 GAMO
Tokens generated to participants	40%
Legal	Utility Token
Token format	ERC20 Standard
Minimum contribution	0.1 ETH (600 GAMO)
Individual cap enhanced KYC	10 ETH (60,000 GAMO)

GAMO TOKEN DISTRIBUTION





FUND ALLOCATION





FUNDS & STRATEGIC PARTNERS





















SNAPB ®TS

THANK YOU



For more information contact us at Contact@Gamo.io