

ContributionDAO

Lightpaper

Community Review revision

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Abstract

ContributionDAO - CDAO - is a DAO (Decentralized Autonomous Organization) designed for overseeing and governing collaborative contribution by multiple parties in public blockchain ecosystem. This DAO is chain-agnostic, it is just my personal flavor to choose ICON public chain as the target platform for its implementation. By using protocol designed in this paper, anyone can build it on any blockchain that satisfy its requirements.

The ultimate purpose of ContributionDAO is to maintain a public trustless system which host and govern everyone's contribution quantitatively. All contribution proposals it hosts are evaluated and quantified by community, therefore it is publicly owned.

In blockchain networks that take contribution of participant as the key metric for reward allocation, ContributionDAO could be an important tool for identification and quantifying the merit of people.

As I know, ICON is the only blockchain project with strong emphasis on Proof of Contribution, it is the perfect candidate for experimenting ContributionDAO.

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1. The Purpose

Starting from being a member of ICON ecosystem, I have been trying to search for a strong system that can satisfy

- Identify, evaluate, and quantify the contribution done by participants in open collaborative environment, then reward them for their merit.
- Incubate, foster and oversee public contribution using a community-owned fund.
- As objective and unbiased as possible, AKA it must be truly decentralized and controlled by the community.

There is one thing I find strange is ICON Foundation does not offer anything close to that, although they emphasize on "contribution". Anyway, they cannot build everything alone, it may be community duty I guess. Therefore, I have been gradually forming the idea of a DAO satisfy all requirements of that system.

And **ContributionDAO** is born. It has 3 sub-systems

- CDAO Contribution Quantification System
- CDAO Public Treasury
- CDAO Community Funded Project Governance

2. Quick Start

2a. The backbone of any truly decentralized community governance portal

Everyone knows, **decentralized networks must need decentralized governance tools**. If you did not know, now you do.

Governance tools are usually made of both centralized and decentralized components.

- Frontend and UI could be centralized like traditional web apps.
- A part of its backend could be also centralized running in private servers.
- However, critical components that control the consensus and decision making process must be truly decentralized
 - ContributionDAO is designed to be this component.

As long as that decentralized gear is robust, community can focus on building good and user friendly governance tools or portals.

2b. Can contribution be quantified, and how ?

This question should be started with another one: **how do we define contribution ?** We cannot quantify something without identifying it first.

But there are many answers, very biased ones you know. Anyway, at the end of the day, we must come to a consensus on how we could identify contribution. In my observation, the consensus is **“anything help to bring value to ICON network, it could be counted as contribution”**

Now here comes another question, how do we know that some activity will bring value to ICON network (and ICX price) ? Well, just use common sense alone, I can make a list like the following

- Develop open source projects in ecosystem
- Make great tools and documentation to help onboarding new developers
- Implement ICON node client using different languages, it plays a vital role in resilience of the network (Ethereum has 7, 8 different client implementations)
- Hosting hackathons and developer events to spread awareness and create strong developer mindshare
- Brainstorming ideas on how to use blockchain (and ICON network) to bring economic benefit to business, as well as executing those ideas
- Propose strong and well thought proposals on network governance

That is my list, there are many more for sure, it depends on your experience and perspective. As long as you can explain how your activity could bring value to ICON, **and if community accept it**, then it is contribution. Subjectivity is the nature of the game.

At this point, assume that we can identify contribution (or we think something may be a contribution), how to quantify them ? How to determine how big, how important, how significant that contribution is ? Again, subjectivity is still around here. There is no universal truth at all. Each ICONist probably has a subjective view on the significance of some specific contribution. It makes us hard to quantify contribution reliably, so what should we do ?

A heuristic technique to quantify contribution

So, do we must live with it ? Even ICON Foundation does not give us any strong set of rules on this quantification problem. Is it that sad ? Is it the end ?

Not really, no way we are in a dead end here, we never surrender. In fact, I strongly believe that we just need to use common sense and community wisdom, combined with verifiable proof of finished contribution and one well designed DAO for overseeing them, we could come to a good enough heuristic method to quantify contribution.

Wait a minute, what does heuristic mean ?

“A heuristic technique, often called simply a heuristic, is any approach to problem solving or self-discovery that employs a practical method that is not guaranteed to be optimal, perfect or rational, but instead sufficient for reaching an immediate goal.” — Wikipedia

2c. Cryptoeconomic incentives and game theoretic structure

ContributionDAO works in a way that favor all responsible ICONists who actively stake their ICX and participate in ICON network governance. It means they care for ICON ecosystem in the long term and ContributionDAO strongly encourage that. Beside that, ContributionDAO also appreciate veteran ICX holders who have been in ICON ecosystem for a long time.

It is all about people power and merit

Win a poll and ICONist earns more merit and power.

Lose a poll and ICONist loses a bit of merit and power.

With **competitive on-chain voting**, a **unique on-chain scoring system** and **dedicated CNTR token for economic incentive**, all ICONists have a fair opportunity to participate in governance without barrier or fear of punishment. However, that opportunity could also be lost if ICONist is not careful or being rogue.

3. The Rabbit Hole

3a. CDAO Contribution Quantification System - How it works

It starts with the main pillars of a fair and decentralized blockchain-based society

- Merit of individuals in the society
- A robust mechanism to identify the merit
- Power and resource are vested in individuals according to their merit
- And merit will be destroyed if people go rogue

CDAO Contribution Quantification System is composed of three components

- Unique on-chain scoring system for quantifying the power and merit of all ICONists
- Competitive on-chain voting system for quantifying accomplishments of contributors
- A token for realization of merit in form of monetized value

Unique on-chain scoring system for quantifying the power and merit of ICONists

We have 2 main scores: *iconist_merit_score* and *iconist_power_score*

iconist_merit_score

This score represents the merit that ICONists have earned, and it is also the only way to claim for CNTR token.

It is re-calculated for every resolved competitive poll and can be earned or lost in 2 ways

- Be the **voters** for **accomplishments** submitted by **contributors**
 - The bigger the victory, the more *iconist_merit_score* winner earn
 - The bigger the defeat, the more *iconist_merit_score* loser lose
- Be the **contributor** of **accomplishments**
 - The more upvotes than downvotes, the more *iconist_merit_score* contributor earns
 - The more downvotes than upvotes, the more *iconist_merit_score* contributor loses

In order to claim for CNTR, *iconist_merit_score* must be higher than zero.

After being claimed, *iconist_merit_score* is decreased upon the claimed amount.

If an ICONist never vote for any **accomplishment**, *iconist_merit_score* is zero.

This voting process could be seen as a "mining activity" to make more CNTR.

iconist_power_score

This score represents for voting power that ICONists use to vote for accomplishments of contributors.

iconist_power_score is calculated on demand using an equation controlled by following variables, ordered by its importance

- *iconist_merit_score* is used as the **amplifier**
 - If *iconist_merit_score* is zero, amplifier value is 1 (no amplification)

- If below zero, then it becomes the **attenuator**
- Age of ICX wallet address, counted from the first transaction date to present
- Number of staked ICX (only staked, irrelevant on whether it is voted)
 - Reflects the commitment and dedication of ICONist in long term
- Number of ICX in wallet
 - Skin in the game, however it would be "weakened" proportional to ICX holding by an equation to reduce whale's influence
- Resonance of **wallet age** and **staked ICX**
 - It helps to solve sockpuppet problem (a single entity possesses thousands of wallets)

Competitive on-chain voting system for quantifying accomplishments of contributors

A voting system with reward but without penalty will not be able to yield optimum results. However, penalty probably make people hesitate to vote because of financial loss. In ContributionDAO, people always have rights to vote as long as they hold ICX, and penalty would be executed on their earned-reward via *iconist_merit_score* (and indirectly their CNTR). Win or lose, their ICX is always safe.

vote_weight

Voting power of ICONist on a specific **accomplishment** is put in a variable called *vote_weight* which is capped by *iconist_power_score*. It is equal to the number of votes used to vote for that **accomplishment**. ICONists can set *vote_weight* value on their will.

Accomplishment (by PReps and all other contributors) can be quantified like below

- All contributors must finish their works/contributions and submit them as individual **accomplishments** to **ContributionDAO**
- For all submitted **accomplishments**, ICX holders (all ICONists) can use their *vote_weight* to **upvote** or **downvote** them competitively. After a certain amount of time (determined by a number of blocks), the winners and losers are known and **rewarded** or **penalized** correspondingly.
 - **Rewarded** means winner's *iconist_merit_score* is **increased** proportionally to the amount of *vote_weight* and how big they win.
 - **Penalized** means loser's *iconist_merit_score* is **decreased** proportionally to the amount of *vote_weight* and how big they lose.
- Vote result of an **accomplishment** could be interpreted like below (still a draft at the moment)
 - If a submitted accomplishment has very small amount of votes or no vote at all (both downvote and upvote), it could be considered **pointless**.
 - If it has almost equally amount of upvotes and downvotes, it could be considered **controversial**.
 - If it has **way more upvotes than downvotes**, it could be considered **useful**.
 - If it has **way more downvotes than upvotes**, it could be considered **harmful**.
 - In conclusion, **the higher value of upvote/downvote ratio, the more significant and important one contribution is**. This ratio value is calculated using a formula to take net voting volume into account.

A token for realization of merit in form of monetized value

iconist_merit_score can be converted to CNTR token that play an important role in voting system of **CDAO Community Funded Project Governance**. Note that, CNTR cannot be converted back to *iconist_merit_score*, merit can be earned only by hard work, it can never be bought. If ICONists decide to sell their merit (by claiming for and sell CNTR), they cannot buy it back.

3b. CDAO Contribution Quantification System - Essential formulae

All variables in **CDAO Contribution Quantification System** are controlled by formulae and equations which will be finalized in **yellow paper**. It may take a quite, fine tuning process is not easy.

3c. CDAO Public Treasury

This treasury hold ICX funded by all ICONists. It is controlled by all CNTR holders via **CDAO Community Funded Project Governance**

3d. CDAO Community Funded Project Governance

This is actually just another voting system beside **CDAO Contribution Quantification System**, however it is different in voting mechanism.

Any ICONist can propose a new community project with a specific amount of funding it will need. Then community (all CNTR holders) can **upvote** or **downvote** it. If a proposal is passed, funds will be allocated gradually from **CDAO Public Treasury**, more details in **yellow paper**.

There are two voting scenarios here

- If there is at least 80% of circulating CNTR used in the voting process (both upvote and downvote)
 - It requires more than **50% upvotes** of total voted CNTR for a proposal to be passed
- If there is below 50% of circulating CNTR used in the voting process (both upvote and downvote)
 - This situation is called **voter's apathy**
 - Therefore, it must require at least **80% upvotes** of total voted CNTR for a proposal to be passed (**super-majority** rule)

Those numbers are subjective to be changed. We have not known what is the optimum value yet. Related formulae will be also in **yellow paper**.

4. Wrapping Up

4a. Notable obstacles and how ContributionDAO can overcome them

How to distribute CNTR in a way that prevent centralization of CNTR token

Actually, CNTR is not distributed at all, it can be earned only by accumulating *iconist_merit_score*.

In the beginning, all ICONists (ICX holder) have rights to vote. They could earn more or lose their merit and power over time.

By winning in voting, ICONist can earn more *iconist_merit_score* which is the only way to claim for CNTR.

How to prevent some whale/PRep from buying a huge amount of CNTR on open market

By limiting the seller, we can prevent whale buyer. Therefore we have *iconist_merit_score* which is the only medium for claiming CNTR, and it takes effort to earn *iconist_merit_score*.

Also, CNTR **cannot** be used to vote for **PRep's accomplishment** in **CDAO Contribution Quantification System**, therefore PReps will not try to buy CNTR for that purpose.

How to prevent the avalanche effect of competitive voting that happen when one side has much more votes than the opposite, naturally it would attract more and more people to vote for it just because of reward gaining.

It can be solved by a simple secret voting mechanism called **Partial Lock Commit Reveal**.

This secret vote process hides voting state and vote choice from the public, however the **cryptographic hash** of vote choice is still public. When voting result is resolved and shown publicly, it can be verified easily using cryptography.

In this way, people cannot know which side is winning and would not be influenced.

4b. Potential failures

At this point, I think they could be

- ICONist's apathy. Again, if no one cares about ICON's future, then no one will bother to question the value of PReps contributions or any type of contributions at all.
- Software bug in the DAO implementation, it could lead to a huge loss of ICONists's money in **CDAO Public Treasury**.
- Any hidden weakness in ContributionDAO design itself, I hope that community can find it early though.
- Contributors (including PReps) do not submit their **accomplishment**, therefore community has nothing to vote for. In this case, we already have *iconist_merit_score* and CNTR token as incentives. If contributors submit their work and it has more upvotes than downvotes, they will earn more merit and CNTR.
 - In case of PReps, if they deliberately do not submit, I think community must step in and do **social enforcement**

4c. Implementation feasibility

As long as the target blockchain platform can satisfy protocol logic requirement of ContributionDAO, we can build it on that chain. Smart contract platforms should fit well here.

That said, in case we cannot build it on ICON public chain (due to technical constraints of its smart contract maybe), we still could make another dedicated chain using Parity Substrate (a framework for building special purpose blockchains) and connect it to ICON public chain using ICON bridging feature or Polkadot network. Anyway, still too early to talk about this.

4d. Community role and duty

I thought this part could be a whole paragraph in length, but it turns out I can make it well-expressed in just one sentence.

"If ICONists do not care about ICON ecosystem, all governance tools are useless."

Sincerely thank all ICONists for coming this far

*This Lightpaper is still in Community Review revision and subjective to be modified
For all formulae, Yellowpaper is coming soon*