

A Year Review with Lessons Learnt, Interesting Research Questions & Future Direction

ArbitrumDAO

Patrick McCorry
Intern, Arbitrum Foundation

Talk Outline

- **Why should rollups care about DAOs?**
- **The (A) in DAO:**
 - Growth of the ArbitrumDAO and what they like to vote on?
- **The (D) in DAO:**
 - What is the right Decentralization Metric to Target?
- **The (O) in DAO:**
 - Hiring Contributors & Creating an Organisational Chart via Popular Vote

Why should rollups care about DAOs?

Or at least... how I eventually understood why DAOs are important

Governing code & deployments

Publicly Available Code

The screenshot shows the GitHub repository page for `ethereum/go-ethereum`. The main content area displays a list of commits from the `master` branch. Each commit includes the author, message, date, and a link to the pull request. The commits are organized into several categories, such as `github`, `accounts`, `beacon`, `build`, `cmd`, `common`, `consensus`, `console`, `core`, `crypto`, `docs`, `eth`, `ethclient`, `ethdb`, `ethstats`, `event`, `graphql`, `internal`, `les`, `light`, `log`, and `service`. The repository has 36 branches and 216 tags. On the right side, there is an `About` section with links to the official Ethereum website (`geth.ethereum.org`) and various documentation and policy pages. Below the `About` section, there are sections for `Releases` (with 173 releases), `Used by` (with 13.3k users), and `Contributors` (with 911 contributors).

Anyone can read the code

Jump on the github, read code, figure out how it works.

Maintainers Manage Contributors

Q ls:pr ls:open

Labels 30 Milestones 1 New pull request

1 61 Open ✓ 8,892 Closed

Author ▾ Label ▾ Projects ▾ Milestones ▾ Reviews ▾ Assignee ▾ Sort ▾

- 1: rpc: attempt to fix ping/pong logic race ✘
#27733 opened 15 hours ago by fjl · Review required
- 1: rpc: make websocket ping interval shorter than pong timeout ✓
#27726 opened yesterday by zgln · Review required
- 1: internal/ethapi: eth_multicall ✘
#27720 opened 3 days ago by s1na · Review required
- 1: optimize & clean up EstimateGas ✘
#27710 opened 4 days ago by roberto-bayardo · Review required
- 1: internal/ethapi: implement eth_getBlockReceipts ✓
#27702 opened 4 days ago by jsvisa · Review required
- 1: Api to report freezer table's live elements size ✘
#27700 opened 5 days ago by joaovwfreire · Draft
- 1: eth/tracers: add debug_traceCallMany method ✘
#27696 opened 5 days ago by zhangguyu6 · Draft
- 1: all: live chain-aware tracing - add tracers subscription ✘
#27694 opened 5 days ago by joohnnn · Draft
- 1: eth/traces,core: support tracing transactions while the chain is synchronizing and store results in db. ✓
#27680 opened last week by zhangguyu6 · Draft
- 1: crypto/kzg4844: remove unnecessary init call & fix typo ✓ status:triage
#27679 opened last week by Itaglia · Approved
- 1: WIP: allow to choose memorydb as an alternative database engine ✘
#27653 opened 2 weeks ago by lead4good · Draft

```
1 # Lines starting with '#' are comments.
2 # Each line is a file pattern followed by one or more owners.
3
4 accounts/usbwallet @karalabe
5 accounts/scwallet @gballet
6 accounts/abi @gballet @MariusVanDerWijden
7 cmd/clef @holiman
8 consensus @karalabe
9 core/ @karalabe @holiman @rjl493456442
10 eth/ @karalabe @holiman @rjl493456442
11 eth/catalyst/ @gballet
12 eth/tracers/ @s1na
13 graphql/ @s1na
14 les/ @zsselfoldi @rjl493456442
15 light/ @zsselfoldi @rjl493456442
16 node/ @fjl
17 p2p/ @fjl @zsselfoldi
18 rpc/ @fjl @holiman
19 p2p/simulations @fjl
20 p2p/protocols @fjl
21 p2p/testing @fjl
22 signer/ @holiman
```

Anyone can submit a pull request

Found a bug? Fork the code, fix it, try to merge the code back in.

Anyone Can Run the Code Too

Operating a private network

Maintaining your own private network is more involved as a lot of configurations taken for granted in the official networks need to be manually set up.

Defining the private genesis state

First, you'll need to create the genesis state of your networks, which all nodes need to be aware of and agree upon. This consists of a small JSON file (e.g. call it `genesis.json`):

```
{
  "config": {
    "chainId": <arbitrary positive integer>,
    "homesteadBlock": 0,
    "eip150Block": 0,
    "eip155Block": 0,
    "eip158Block": 0,
    "byzantiumBlock": 0,
    "constantinopleBlock": 0,
    "petersburgBlock": 0,
    "istanbulBlock": 0,
    "berlinBlock": 0,
    "londonBlock": 0
  },
  "alloc": {},
  "coinbase": "0x0000000000000000000000000000000000000000",
  "difficulty": "0x20000",
  "extraData": "",
  "gasLimit": "0x2fefd8",
  "nonce": "0x0000000000000042",
  "mixhash": "0x000000000000000000000000000000000000000000000000000000000000000",
  "parentHash": "0x000000000000000000000000000000000000000000000000000000000000000",
  "timestamp": "0x00"
}
```

The above fields should be fine for most purposes, although we'd recommend changing the `nonce` to some random value so you prevent unknown remote nodes from being able to connect to you. If you'd like to pre-fund some accounts for easier testing, create the accounts and populate the `alloc` field with their addresses.

```
"alloc": {
  "0x0000000000000000000000000000000000000001": {
    "balance": "11111111"
  },
  "0x0000000000000000000000000000000000000002": {
    "balance": "22222222"
  }
}
```

Run a private network using Geth?

Instructions available in the public repository
to get you started

... but what if there is only one meaningful deployment?

... but what if there is only one meaningful deployment?

 Bitcoin BTC	 Polygon MATIC
 Ethereum ETH	 Arbitrum ARB
 BNB BNB	 Optimism OP
 Solana SOL	 ImmutableX IMX
 Cardano ADA	
 Polkadot DOT	
 Avalanche AVAX	

One big question

Who is authorised to upgrade the rules/code for
the live instance?

Towards Decentralized Governance



Centralised authority

Approves upgrade deployment

Browse Commits

- [r42] fix transaction fee bug in CreateTransaction, higher size cutoff for free transactions in GetMinFee
- [r41] minor fix to batched initial download in case requester has more than 500 block non-main branch
- [r40] bugfix Db::open/close and zombie sockets bugs fix double-close of socket handle, keep databases open, close db cursors, init misc compile error
- [r39]
- [r38] monitor ThreadSocketHandler and terminate and restart if hung, convert _beginthread to CreateThread wrapper, disconnect in
- [r37] Get local host IP on Linux, Shutdown() a little cleaner -- linux-0.1.6-test1 waypoint
- [r36] ui tweaks, multiple xpm icon sizes
- [r35] UI tweaks, use BindListenPort to detect instance already running, setsockopt(SO_REUSEADDR) so can bind during TIME_WAIT
- [r34] UIThreadCall, ThreadSafeMessageBox
- [r33] got rid of CheckForShutdown, replaced some thread-unsafe wxWidgets calls, Linux fixes, socket send MSG_NOSIGNAL, bind
- [r32] unix build merged in, bitmap resources from xpm instead of rc, better addr relay, better selection of addrs by time last seen for
- [r31] hack to make it include xpm.h
- [r30] linux compile fixes, now it compiles but doesn't link
- [r29] added build-unix.txt, xpm.h and xpm directory
- [r28] renamed build.txt to build-msw.txt

unix build merged in, bitmap resources from xpm instead of rc, better addr relay, better selection of addrs by time last seen for faster connect

Authored by: s_nakamoto 2009-11-05

Parent: [r31] [Browse code at this revision](#)

Child: [r33]

add	/trunk/build-unix.txt
add	/trunk/makefile.unix
add	/trunk/xpm
add	/trunk/xpm/addressbook16.xpm

Towards Decentralized Governance

BIP: 9

Title: Version bits with timeout and delay

Author: Pieter Wuille <pieter.wuille@gmail.com>

Peter Todd <pete@petertodd.org>

Greg Maxwell <greg@xiph.org>

Rusty Russell <rusty@rustcorp.com.au>

Comments-Summary: No comments yet.

Comments-URI: <https://github.com/bitcoin/bips/wiki/Comments:BIP-0009>

Status: Final

Type: Informational

Created: 2015-10-04

License: PD



Rough consensus

Block producers ‘signal’ they want to upgrade
and then it activates on a flag day

Standards Track: Core

EIP-3675: Upgrade consensus to Proof-of-Stake [🔗](#)

Specification of the consensus mechanism upgrade on Ethereum Mainnet that introduces Proof-of-Stake

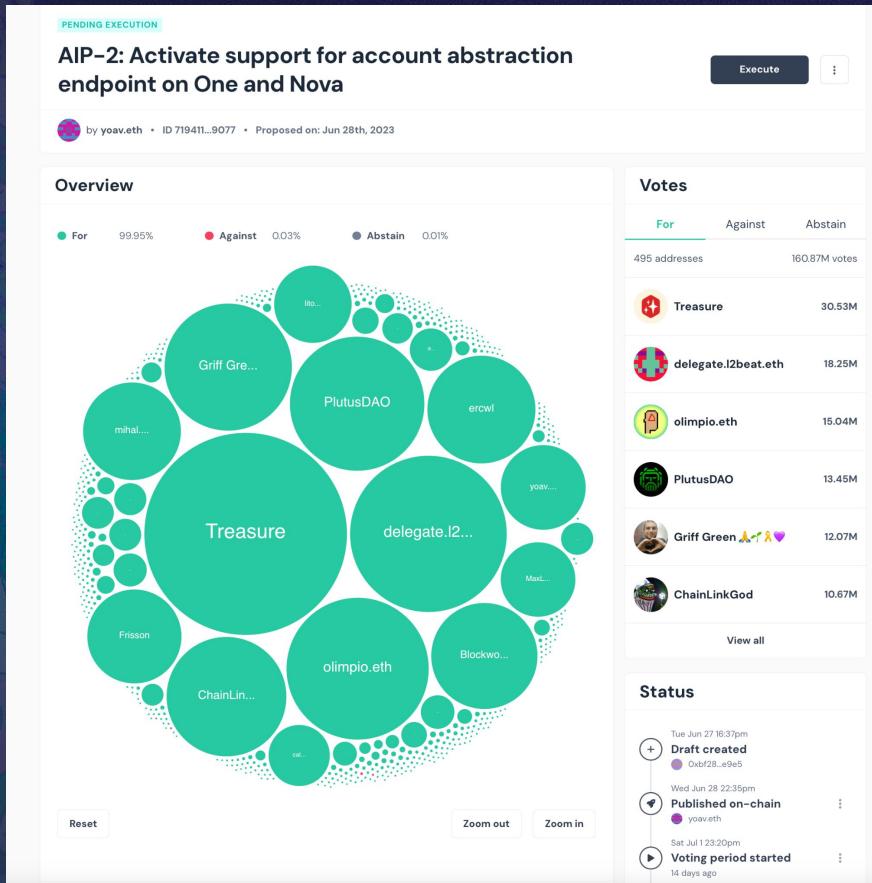
Authors Mikhail Kalinin (@mkalinin), Danny Ryan (@djrtwo), Vitalik Buterin (@vbuterin)

Created 2021-07-22

Requires EIP-2124



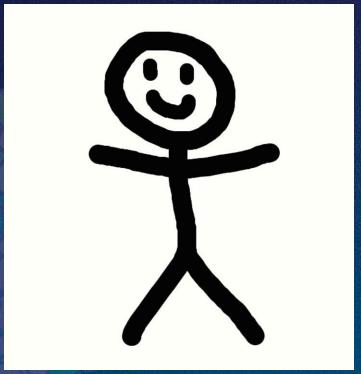
Towards Decentralized Governance



On-chain Voting Protocol

All voters are identifiable, they can cast their vote, anyone can tally the votes and verify the final result

Towards Decentralized Governance



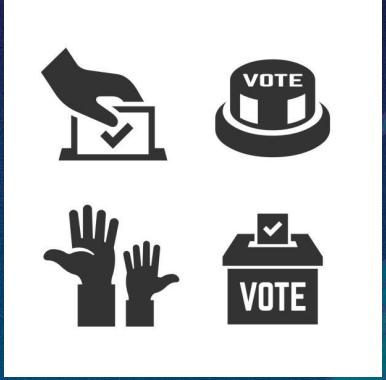
Centralised authority

Decides when an upgrade is deployed



Rough consensus

Everyone 'signals' they want to upgrade and then it activates on a flag day



On-chain Voting Protocol

Voters can cast their vote and the final tally can be verified by anyone

Towards Decentralized Governance



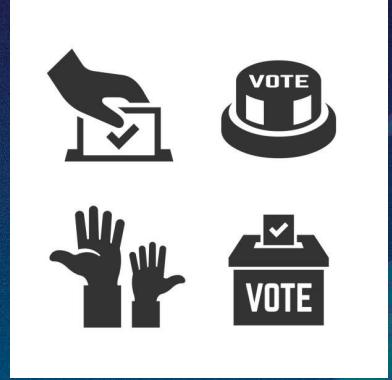
Centralised authority

Decides when an upgrade is deployed



Rough consensus

Everyone 'signals' they want to upgrade and then it activates on a flag day



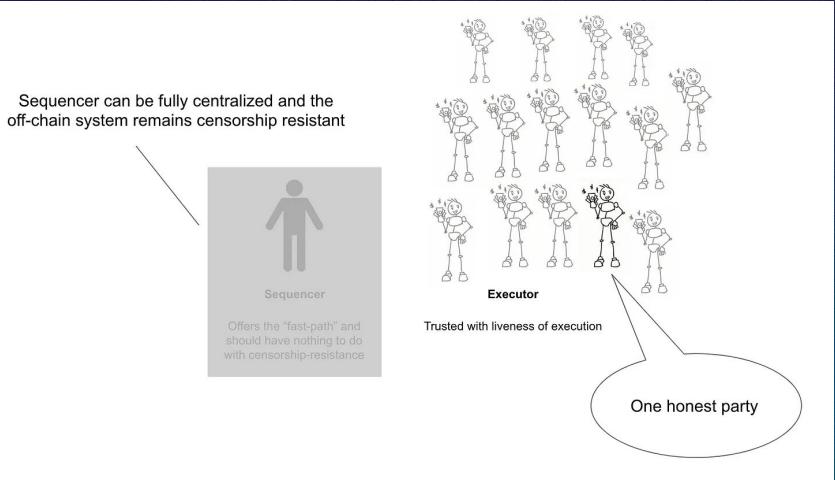
On-chain Voting Protocol

Voters can cast their vote and the final tally can be verified by anyone

Wait? On-chain Voting?

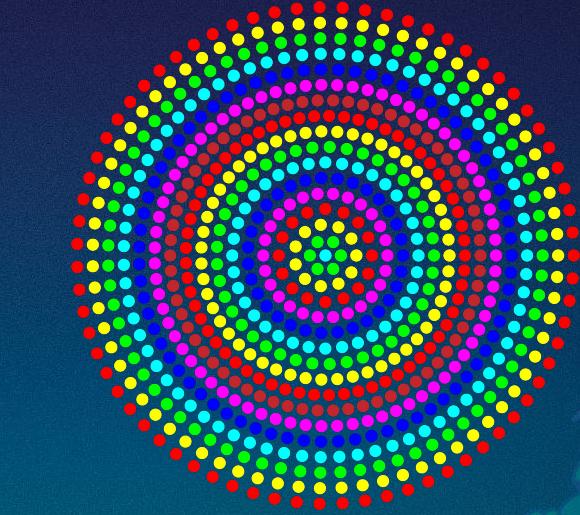
Does that impact Arbitrum's security?

Security of a Rollup & Arbitrum



Day To Day Operation → 99.99% of the time

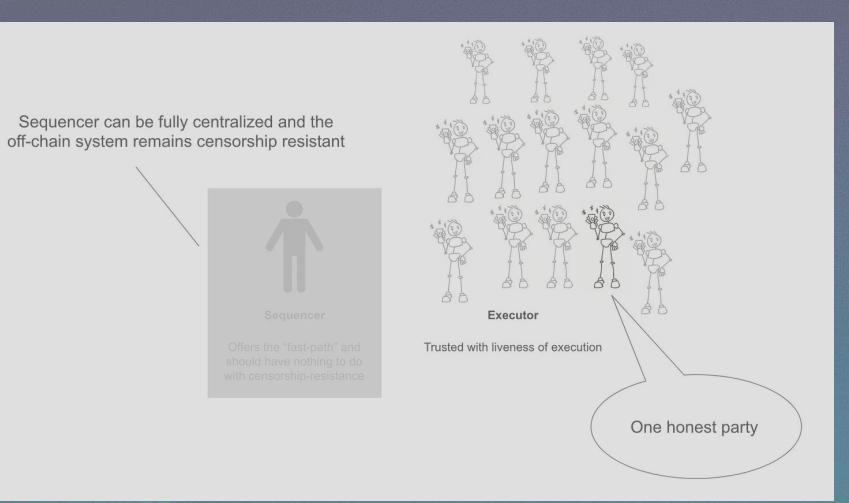
A rollup only needs one honest party, an executor, who can step up and force through the execution of transactions



Governance → 0.01% of the time

The process of social agreement before changing the rollups software.

Security of a Rollup & Arbitrum



Day To Day Operation → 99.99% of the time

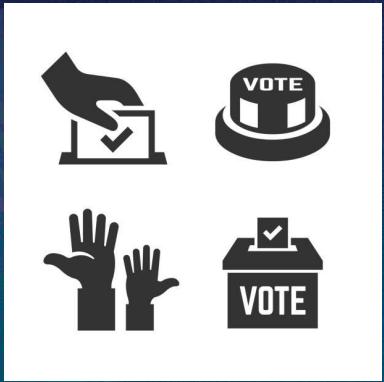
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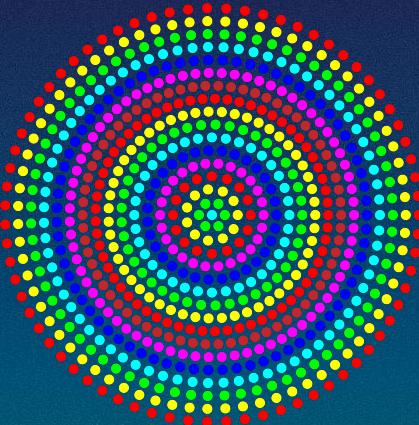
The process of social agreement before changing the rollups software.

Explicit Governance To Upgrade Software



Voting Protocol

+



Diverse Population

=

Explicit Governance

Transparent voting process to decide upgrades to the software

Growth of ArbitrumDAO And what they like to vote on?

The (A) in DAO

What does the ArbitrumDAO vote on?



Defender of Arbitrum

Vote on proposals that impact the Arbitrum network including on-chain smart contracts and major off-chain upgrades



Manage DAO Treasury

They manage a treasury of ~35% of all ARB tokens



ArbitrumDAO has autonomy to submit proposals, vote on proposals, and run their own initiatives.

Forum: ~208 threads

Snapshot: ~329 temperature checks

Tally: ~51 proposals

Expenditure: ~710m ARB

Software upgrades: ~9

Since 2023-03-27... 1 year + 8 months..

~4.4 proposals per week to vote on

Ofc, they come in bursts, but crazy still

Crypto Legal Defense

Incentive Grants

Governance Companies

Funding Stylus

ArbOS Upgrades

Arbitrum Foundation

Questbook Grant Programs

Real World Assets (RWA)

Security Audits

Blockchain Gaming (200m ARB)



Contributors in the ArbitrumDAO need time to build their own collective identity and this will only happen if they are allowed to run with their own initiatives and kickass.



Encourage Contributor Leadership

All actions taken by the Arbitrum Foundation should focus on enabling contributors to dream, create, own, and run with their initiatives.



Contributor Playground

Provide the right environment for new, whacky, and interesting ideas to flourish.

forum.arbitrum.foundation/... Finish update

Gmail Calendar Forum Snapshot - Arbitrum Tally | Arbitrum All Bookmarks

[RFC] Fund The Stylus Sprint

Proposals proposal

Evaluation Committee and Committee Advisors

To effectively administer the program, it is essential to establish an Evaluation Committee composed of Stylus experts. Additionally, a group of advisors will provide consultative support to the committee, although the advisors will not possess decision-making authority. Given the innovative nature and specific technical nuances of Stylus, we propose that the committee be primarily made up of members from Offchain Labs and OpenZeppelin, the two entities responsible for developing Stylus thus far. Currently, there are limited experts qualified to assess Stylus applications effectively. However, should the DAO prefer to engage in a broader selection process that we believe would be inefficient and lead to a less successful program, Entropy Advisors is more than happy to facilitate an RFP process instead, contingent upon a DAO vote to define and appoint these roles.

Evaluation Committee

1. Derek Lee - Offchain Labs (Waiving Payment)
2. Chris Cordle - Offchain Labs (Waiving Payment)
3. Srinjoy Chakraborty - Offchain Labs (Waiving Payment)
4. Michael Lewellen - OpenZeppelin (5000 ARB per month)
5. Gustavo Gonzalez - OpenZeppelin (5000 ARB per month)
6. Matt Hamilton - Arbitrum Foundation (Waiving Payment)

Committee Advisors

1. Entropy Advisors (Waiving Payment)

The Committee Advisors' main role will be facilitating discourse with the DAO, applicants, and general project management in order to reduce the burden on the Evaluation Committee if possible. **Members of the Evaluation Committee and Committee Advisors will not be able to vote on this proposal.**

1 / 6

Open Discussion of Proposal(s) - Bi-weekly Govern...



Governance Operations: 20th GRC call and upcoming improvements

- **Purpose of the call:** Provide a positive and helpful overview of the DAO's initiatives
- **Key goals:** Improve coordination and communication within the DAO
- **Metimeter for current call:** <https://www.menti.com/alemqrw3g7r> (Joe)

FUTURE:

- **Future:** Joe and I will continue improving the Tracker and get input from stakeholders on what is needed
- **After call:** Will publish video, otter and tracker so you can stay up to date.

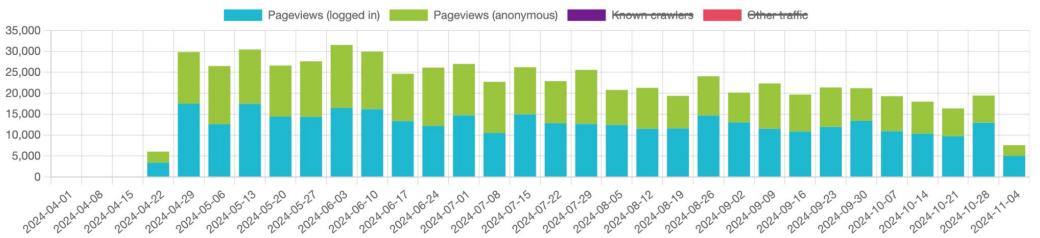


Community health

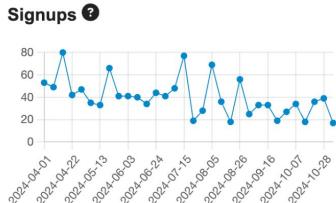
Quarter AUG 6 – NOV 6



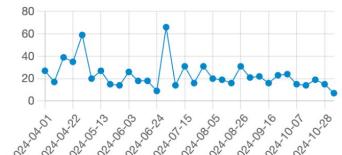
Site traffic ?



Signups ?



Topics ?



Posts ?



The Judges

Disruption Joe
Head of Decentralization at ThriveProtocol

Krzysztof Urbaniak
Governance Lead, L2Beat

George Beall
BD / Governance at Gauntlet

CoinflipCanada
GMX

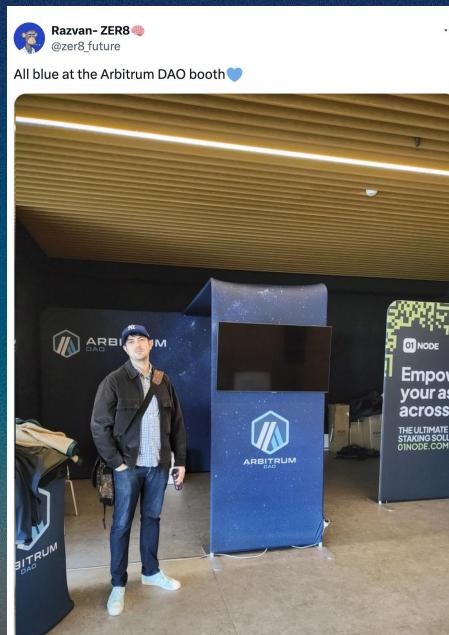
JoJoCow
Strategy JonesDAO

Arbitrum Delegate Arbitrum Delegate Arbitrum Delegate Arbitrum Delegate Arbitrum Delegate

Arbitrum GovHack Brussels'24 Wi-Fi: Hilton Honors Meeting / Connect@DTBH POWERED BY HACK HUMANITY



hi arb frogs



Arbitrum Citizen's Round

This round is in support of rewarding the outstanding individuals who have contributed to the Arbitrum ecosystem in a proactive way since the DAO was launched. Applicants must apply individually and showcase their contributions.

100,000 ARB Matching Pool

Apply

Funding their own outreach



Next Phase: Now that a community is alive and well, Arbitrum Foundation should have a more proactive role to help the contributor's kick ass.



Support our contributors

We can't do the work for them, but we should do our absolute best to setup contributors for success

i dont think i can intro atm though to avoid interfering with election

Apr 19, 2024, 3:18 PM · Sent

yeah you are right

btw thanks for the quick turnaround

its better like this more fair

People care more about fairness than neutrality

When there is a level playing field and contributors are treated with respect, that's when real impact is generated.

What does Decentralization mean?

The (D) in DAO

World Population



DAO dream: Everyone should be involved!

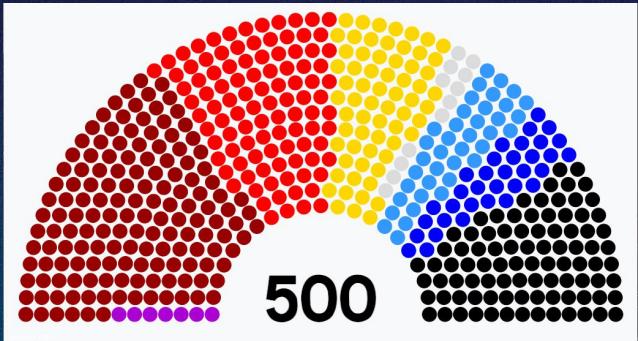
But the question is.. In what manner?

decision making process

working for DAO

Decentralize the decision making process?

Decentralize the decision making process?



Voting blocs emerge

People with the same views grouped into 'blocs'



**Yes / No
decisions**



**Make
compromises**

Decentralization

Maximise number of participants in each bloc

Delegation helps

Voter is effectively joining a bloc by delegating their vote

Decentralize the decision making process?



Sometime last year, someone made a joke that the ArbitrumDAO has four political parties..

I don't know who they are, but it resonates with the voting bloc idea

Delegation HELPS decentralize DAOs

DAO Decentralization: Voting-Bloc Entropy, Bribery, and Dark DAOs

James Austgen* Andrés Fábrega* Sarah Allen Kushal Babel
Mahimna Kelkar Ari Juels

Cornell Tech, IC3
1 November 2023 (v1.0)

Abstract

Decentralized Autonomous Organizations (DAOs) use smart contracts to foster communities working toward common goals. Existing definitions of decentralization, however—the ‘D’ in DAO—fall short of capturing key properties characteristic of diverse and equitable participation.

We propose a new metric called Voting-Bloc Entropy (VBE, pronounced “vibe”) that formalizes a broad notion of decentralization in voting on DAO proposals. VBE measures the similarity of participants’ utility functions across a set of proposals. We use VBE to prove a number of results about the decentralizing effects of vote delegation, proposal bundling, bribery, and quadratic voting. Our results lead to practical suggestions for enhancing DAO decentralization.

One of our results highlights the risk of systemic bribery with increasing DAO decentralization. To show that this threat is realistic, we present the first practical realization of a *Dark DAO*, a proposed mechanism for privacy-preserving corruption of identity systems, including those used in DAO voting. Our Dark-DAO prototype uses trusted execution environments (TEEs) in the Oasis Sapphire blockchain for attacks on Ethereum DAOs. It demonstrates that Dark DAOs constitute a realistic future concern for DAO governance.

Very nice paper about voting bloc entropy

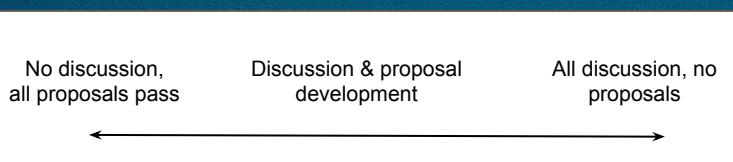
How we may measure decentralization in DAOs
according to the blocs that emerge

Decentralize the decision making process?

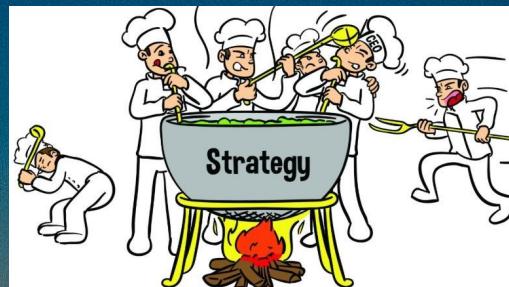


Need to be careful with diversity of voting blocs.

DAO needs to eventually reach a result, otherwise it becomes frozen.



Too many & too few opinions, bad.



“Too many cooks” in the kitchen

Decentralization is not just about decision making... but execution!

"Who is working towards the success of Arbitrum?"

- Arbitrum Foundation
- ArbitrumDAO
- Offchain Labs
- Entropy Advisors
- Gaming Catalyst Fund
- Many ecosystem projects
- ADPC
- ARDC
- STEP
- MSS
- Hack Humanity
- ThankARB

All teams are opinionated on the path they want to execute on for achieving the goal, but they are all aligned on making Arbitrum better.



Hiring Contributors & Creating an Organisational Chart via Popular Vote

The (O) in DAO



Patrick McCorry (❤️,🧡) ✅
@stonecoldpat0

...

There are several opportunities in DAOs to earn \$20k, \$40k, or more on tasks/sidegigs/jobs.

What do you think is stopping people from finding, applying or working towards getting onboarded for such tasks?

ie DAOs can pay above the average salary, but not many takers

12:12 AM · Jan 18, 2024 · 35K Views

So much opportunity to do cool work and make money.

What is stopping people?



Ryan Holloway ✅
@raholloway

...

Generally speaking, I think it comes down to the politics involved in landing a lot of these gigs which makes them unattractive, even with an increase in pay.

If somebody needs to spend 3 months convincing a DAO they're suitable for the task, to earn 1.5x their monthly salary (one time), with no health benefits, and future payments not guaranteed - they're better off working for a salary than for the DAO.

Ie the time cost for most contributors is greater than the time put into completing the task itself

Getting hired by a DAO is HARD



hanniabu.eth (Ξ, α)
@hanni_abu

...

> pay above the average salary

Until you consider the overhead of politics, writing proposals, managing community, writing updates, etc

Working for a DAO is like begging on a street corner for a job, then continuing to beg to keep it

It's demoralizing & feel worthless/scammy

5:30 AM · Jan 18, 2024 · 7,085 Views



Campbell ✅
@CampbellEaston

...

DAO governance has an incredibly steep learning curve. I've suggested to some old frens back in with Africa that they get involved but they're too intimidated by all the forums.

4:44 AM · Jan 18, 2024 · 553 Views



1



7



Post your reply

Reply



Rex ⚡ @israelxrex · Jan 19

I can relate, Forums are intimidating.
Speaking as an African, but eventually I overcame that.

...

3 months work for 1.5x salary?

No thank u

Politics + begging on street corner for job?

No thank u

Getting hired by a DAO is HARD

Learning curve + scary forum

Hard to start

What do most people want?



Hobby / fun / side-gig

Majority of contributors (today) participate out of fun/interest, with some potential for income.

It is good for bootstrapping a DAO, but the long term impact? Part timers will only get you so far (in my opinion)



Formal employment

Job postings with an application process.
Interviews with potential colleagues.
Stable employment with benefits.

It took the crypto industry ~10 years to form reliable companies to employ normies and it is now a whole new journey for DAOs.

Early contributors are more like entrepreneurs than employees

Working for a DAO is more akin to **entrepreneurship** than typical employment:

- Come up with idea, pivot, pivot, pivot
- Convince DAO to fund it
- Report results, ask for more funding

Not everyone is cut out to be an entrepreneur.

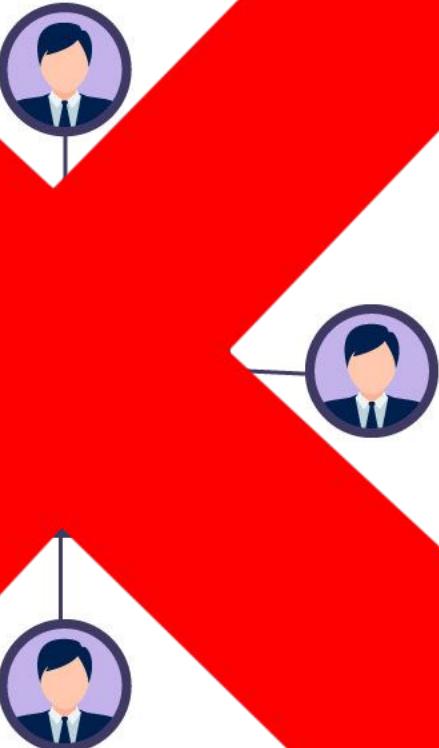
It is an unfair ask for folks who just want to contribute & earn.



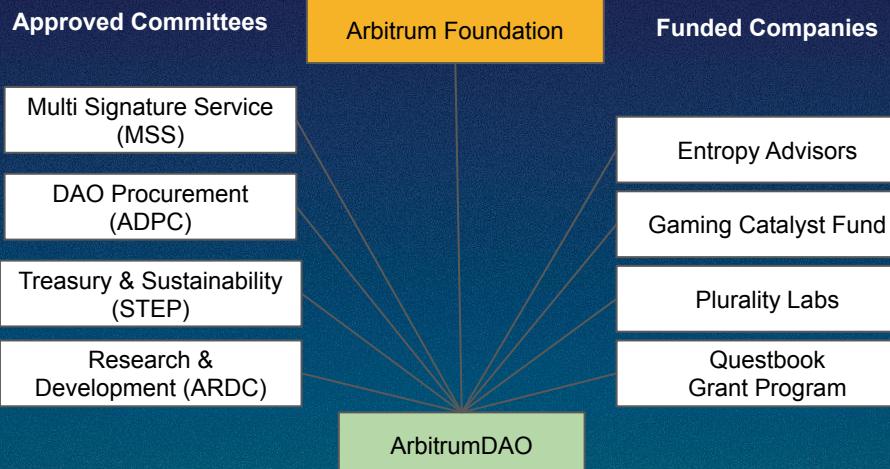
Centralized Organizational Structure



Centralized Organizational Structure



Organisational Structure by Popular Vote



There should always be an opportunity to be funded by the DAO directly, but, a successful DAO will have many companies dedicated to serving it and normies can work for them!



Implement voting protocols that can skew towards a majority?

Like First Past the Post systems? Perhaps only within certain parameters (i.e., not software upgrades, only for proposals within a pre-allocated budget)?

Enabling voters to cast vote & reduce delegates power on individual proposals

Don't like how your delegate voted? Cast your own vote right away

Formal in-depth review period for proposals to allow voters to propose edits/modifications?

Like a google doc? Already happens informally, but generally invite-only

Greater visibility into voting blocs by analyzing forum posts, telegram messages, and voting records?

Who are the 4 political parties?!

Empower DAO to hold organisations accountable to their deliverables?

Clawbacks? Ability to fire? Minimal oversight?

Overton Windows & Fast Sentiment Change

Opinions & pressing issues change rapidly, how and why?

Automatically change delegation to 'exclude' address if delegate is inactive?

DAOs can easily reach Quorum issues if delegates become inactive

ProtocolGuild-like system to tip contributors and delegates for their contribution?

An honour system, 1 person 1 vote, to add/remove people who should be rewarded. More people, less reward for each person.

Synchronise orgs to work on collective goal?

Organisations can take different approaches, but need collective synchronisation and avoid silos for maximum impact

Sourcing Candidates & Adverse Selection

Recruit processes for candidates for DAO-proposals to open pool of applicants, otherwise only those "in the know" will apply, even if they are not the right fit.

Professionalising DAO's project management

Management and operational resources dedicated to DAO-approved proposals

Minimising Proposals in the ArbitrumDAO

Only "large" proposals should be fought in the DAO and initiatives should accommodate for "smaller proposals" without any DAO interaction