Fachhochschule Nordwestschweiz
Hochschule für Wirtschaft

DIGITAL TRUST

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DAO

Decentralized Autonomous Organizations - Workshop

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Schedule

Theory

1. DAO Definition
2. Governance
3. Real-World Applications

Practice

1. Setup
2. Foundation
3. Vote

DAO: Definition

Decentralized autonomous organizations (DAOs)

- Member-owned communities without centralized leadership.
- A safe way to collaborate with internet strangers.
- A safe place to commit funds to a specific cause.

“Decentralized Autonomous Organizations as a Threat to Centralized Platforms…”

https://ethereum.org/en/dao/

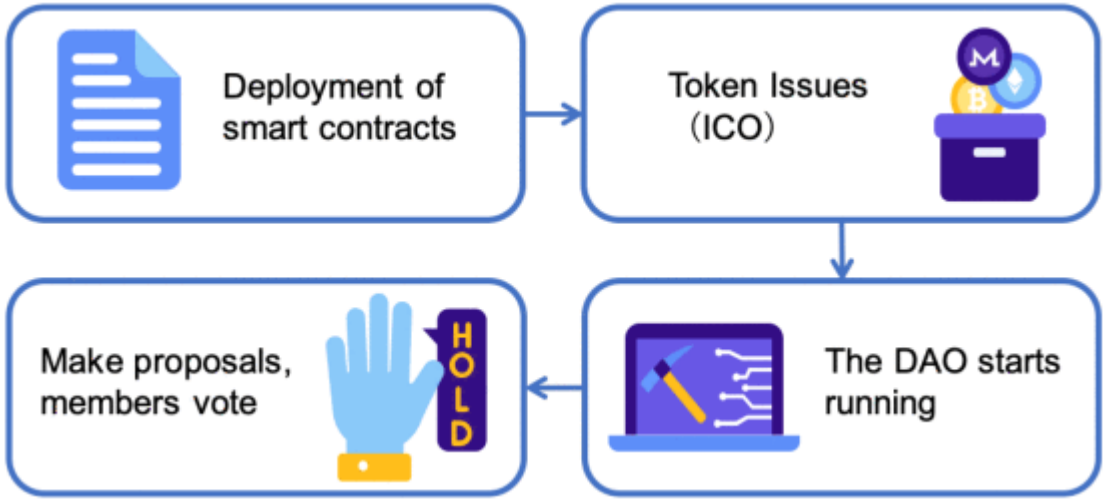
DAO: **Definition**

DAO	A Traditional Organization
Usually flat, and fully democratized.	Usually hierarchical.
Voting required by members for any changes to be implemented.	Depending on structure, changes can be demanded from a sole party, or voting may be offered.
Votes tallied, and outcome implemented *automatically* without trusted intermediary.	If voting allowed, votes are tallied internally, and outcome of voting must be handled manually.
Services offered are handled automatically in a decentralized manner (for example distribution of philanthropic funds).	Requires human handling, or centrally controlled automation, prone to manipulation.
All activity is transparent and fully public.	Activity is typically private, and limited to the public.

https://ethereum.org/en/dao/

DAO: Definition

The concept of a Decentralized Autonomous Organizaion (DAO) was originally introduced by a white paper [1], in which a DAO is defined as **an organization built on smart contracts** that can execute autonomously. A DAO achieves the decentralized organization by encoding a **set of rules** in smart contracts that define its operational settings [2].

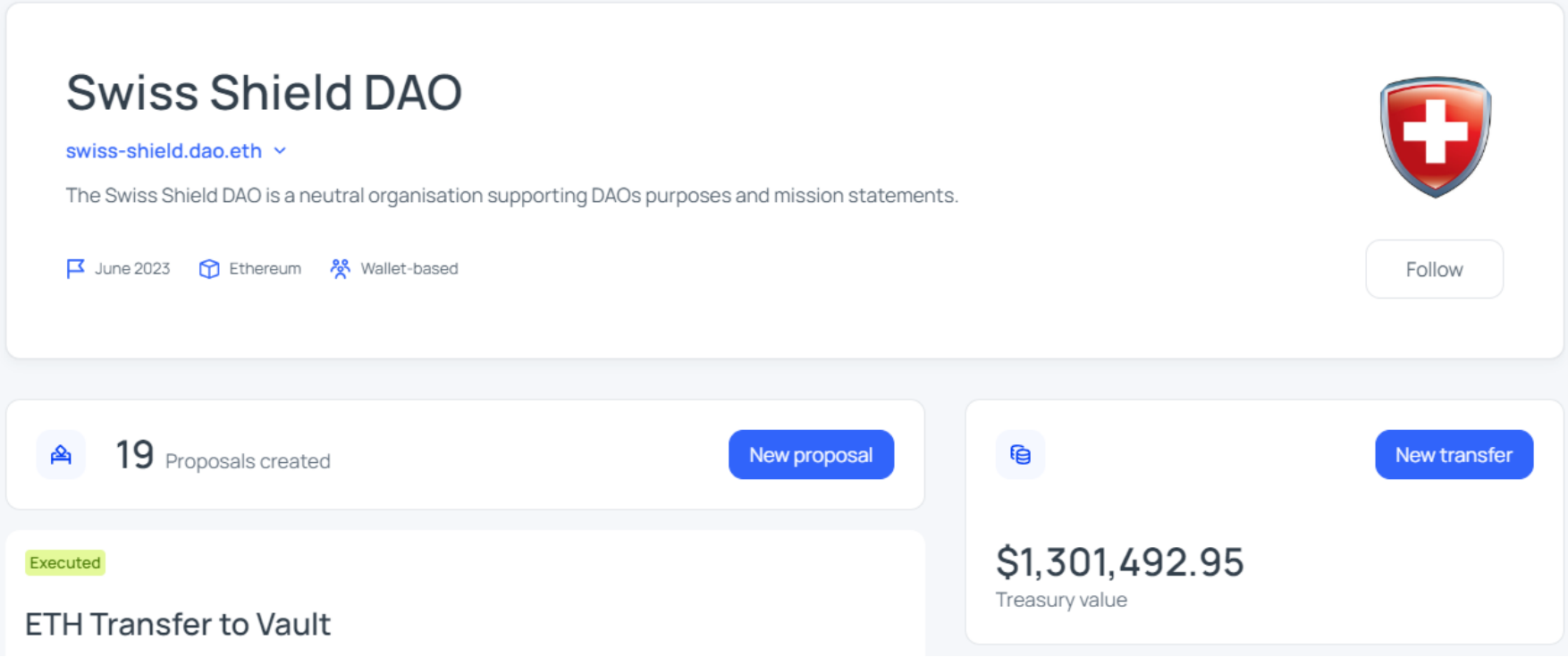


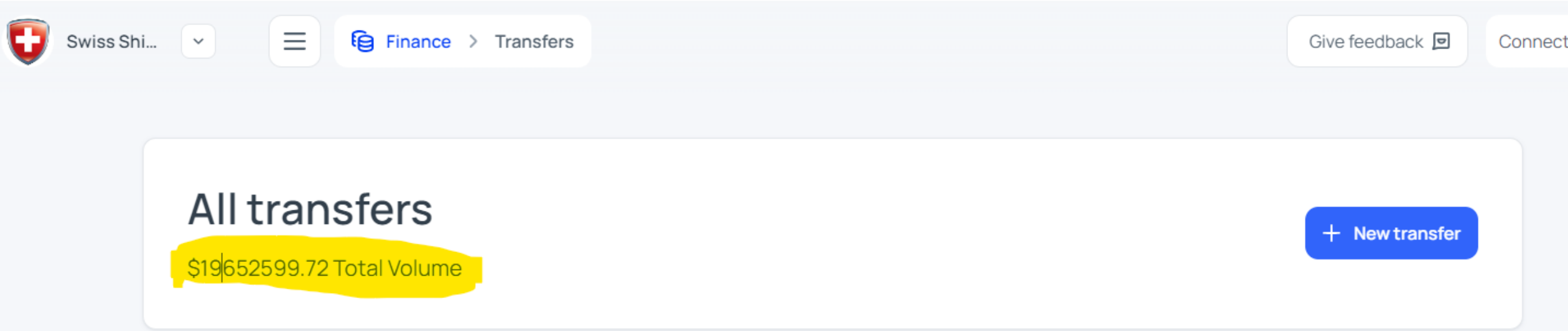
[1] V. Buterin et al., "Ethereum white paper: A next generation smart contract decentralized application platform", *First Version*, vol. 53, 2014, [online] Available: https://cryptorating.eu/whitepapers/Ethereum/Ethereum_white_paper.pdf.

[2] L. Liu, S. Zhou, H. Huang and Z. Zheng, "From Technology to Society: An Overview of Blockchain-Based DAO," in *IEEE Open Journal of the Computer Society*, vol. 2, pp. 204-215, 2021, doi: 10.1109/OJCS.2021.3072661. keywords: {Blockchains;Security;Organizations;Bitcoin;Databases;Fault tolerant systems;Computer hacking;Blockchain;contracts;DAO;fault tolerant system;governance},

Real-World DAOs

3 Members…





Real-World DAOs

BitDAO
EVERY BIT COUNTS

3+ Billion $ in assets
(Peter Thiel..), now Mantle

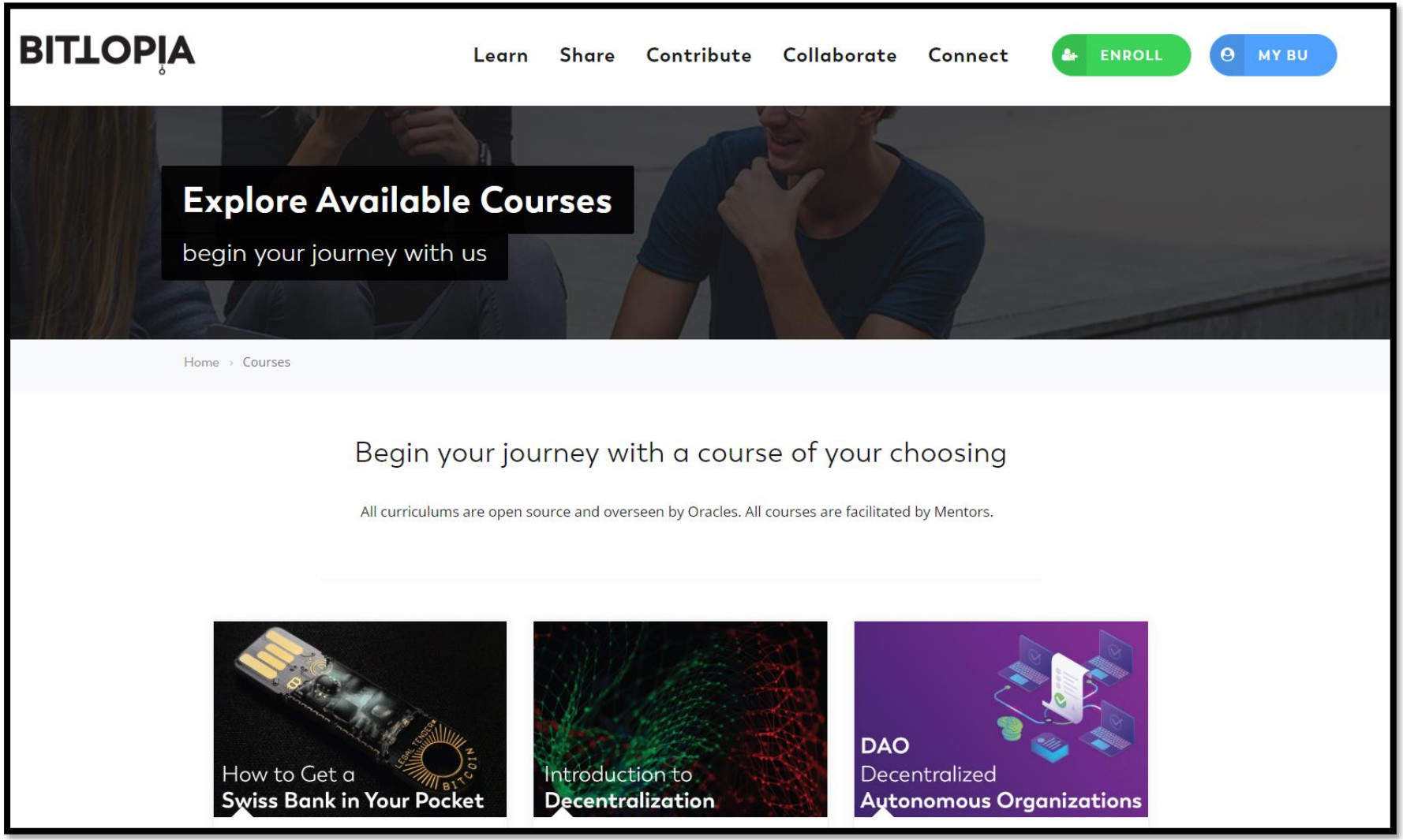
Buying Land
in 3D

City DAO
The DAO for decentralized asset ownership

Buying Land in Wyoming, USA

Real-World DAOs

Bittopia



Practice

1. Ethereum wallet installation

METAMASK

Pros

- Non-custodial and open-source
- Most widely used
- **Lots of browser extensions**

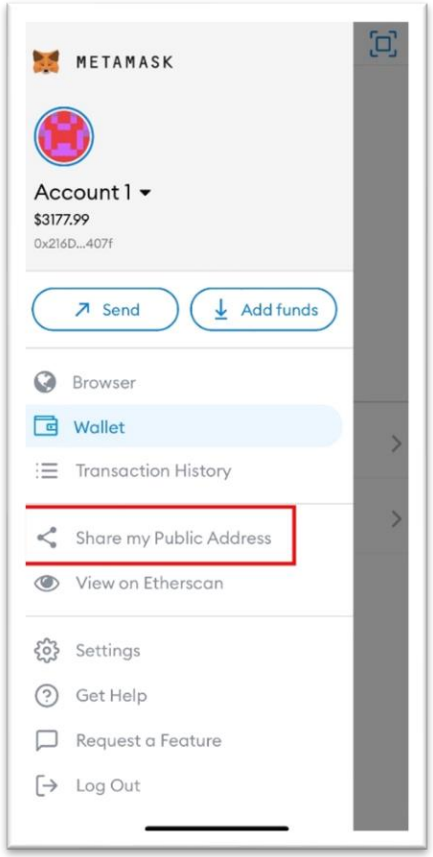
Cons

- Mobile app browser has issues with some platforms (like with one we will use)

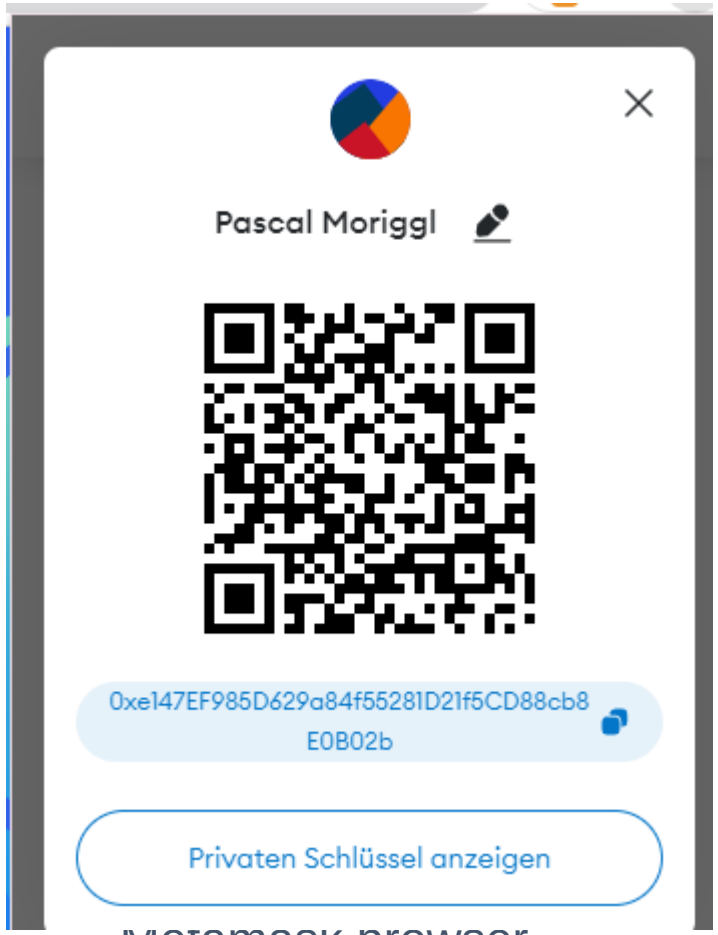
metamask.io/download

2. Sharing Ethereum address

Step 1: copy address in your wallet



Metamask mobile



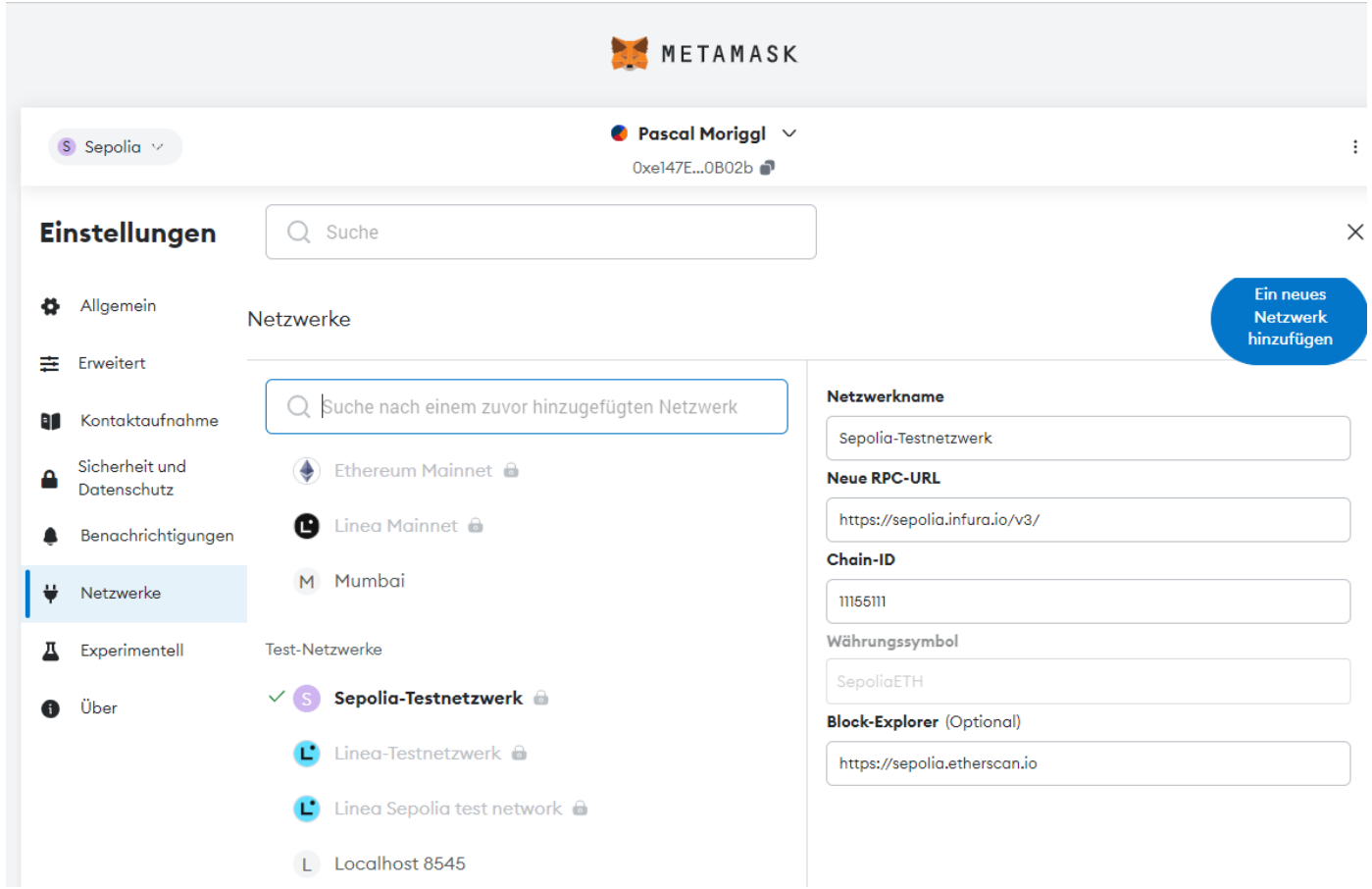
Metamask browser

2. Sharing Ethereum address

Step 2: share it with us

It will be used during the initialization phase of DAO establishment

3. Connecting Wallet to Sepolia testnet: Metamask



Sepolia-Testnetzwerk

https://sepolia.infura.io/v3/

11155111

SepoliaETH

https://sepolia.etherscan.io

You need tokens

We will send you some tokens that you need for the first vote!

Live Stream:

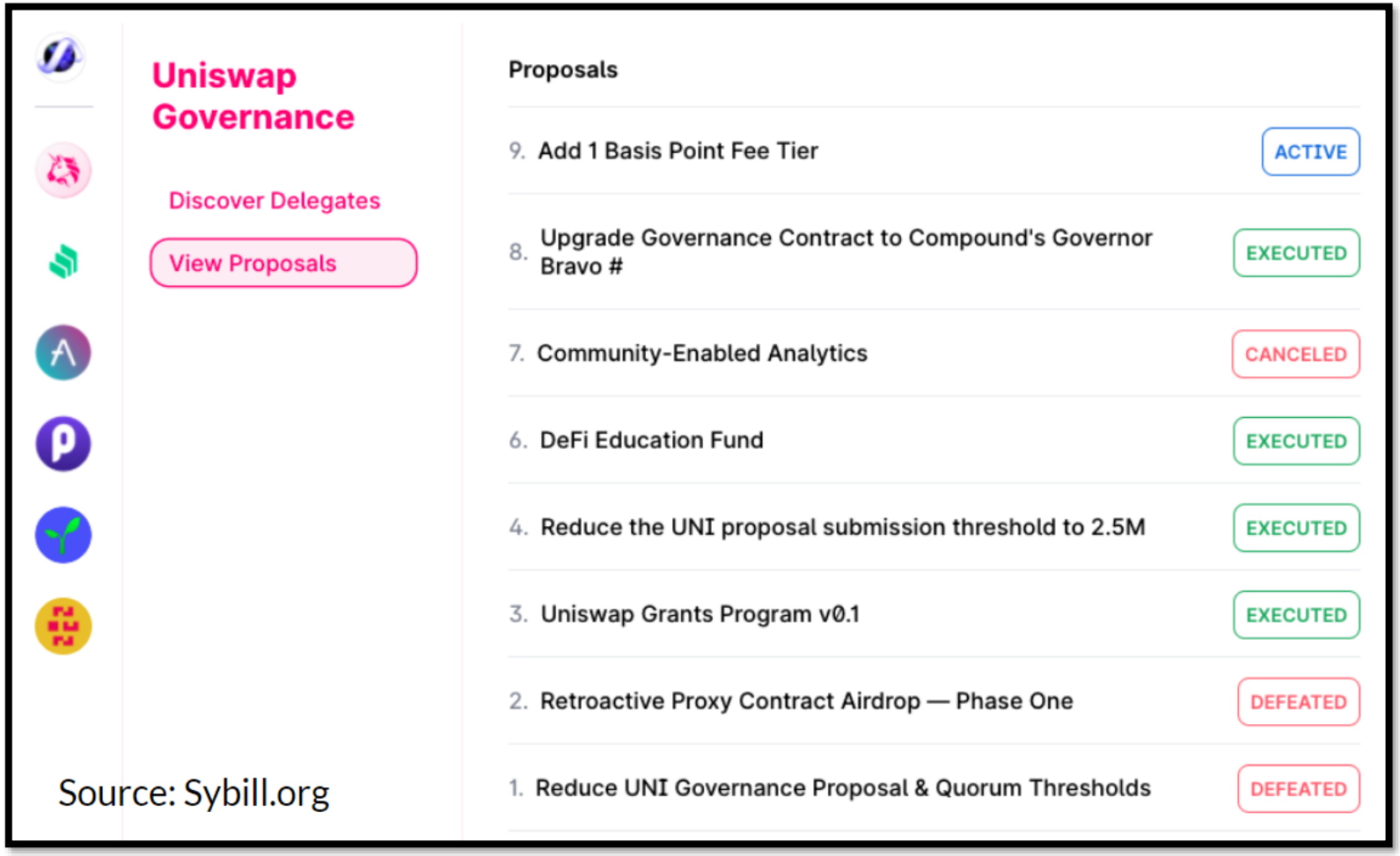
-Spread Tokens

-Setup DAO

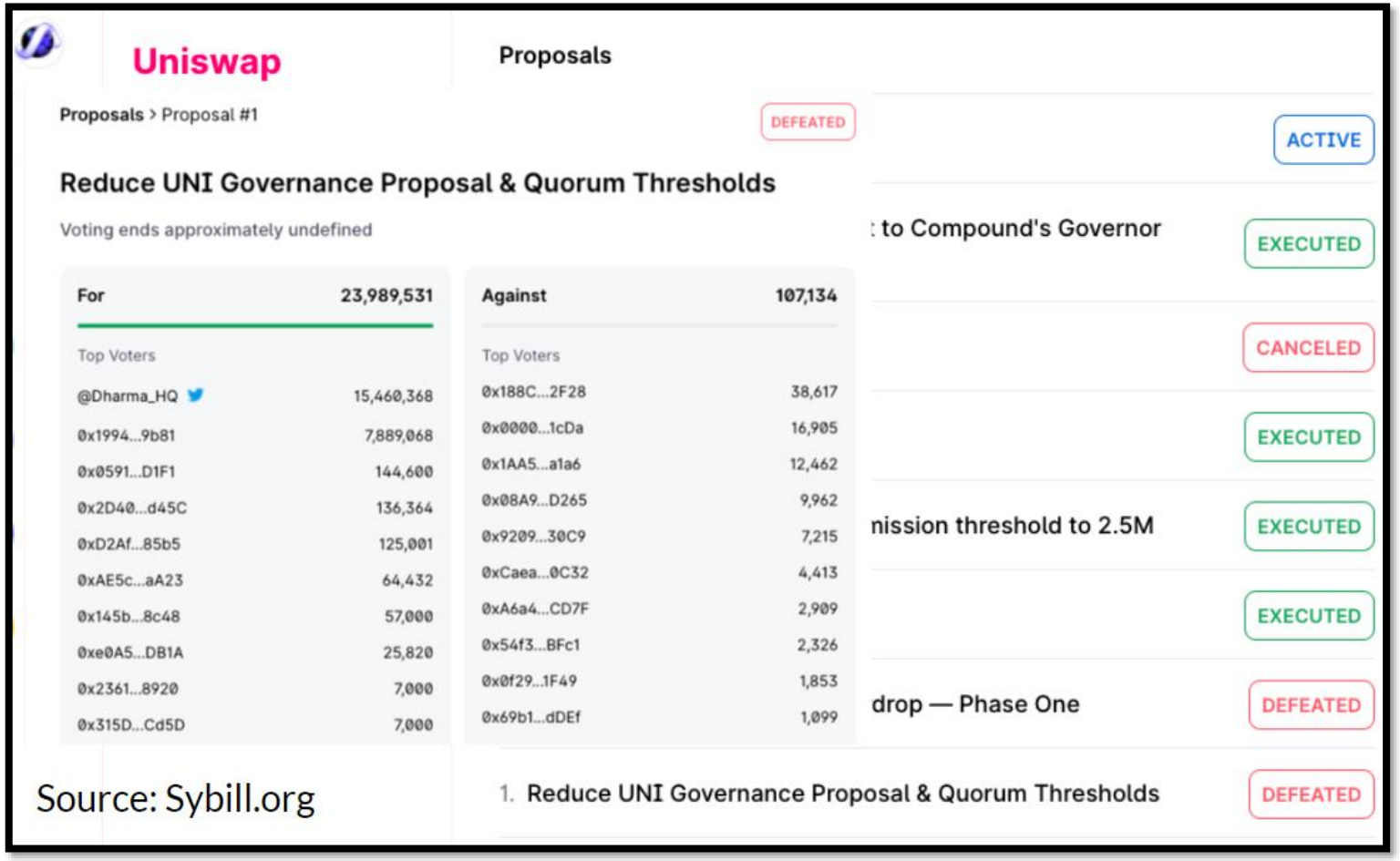
-Log in to Aragon: Vote

Challenges

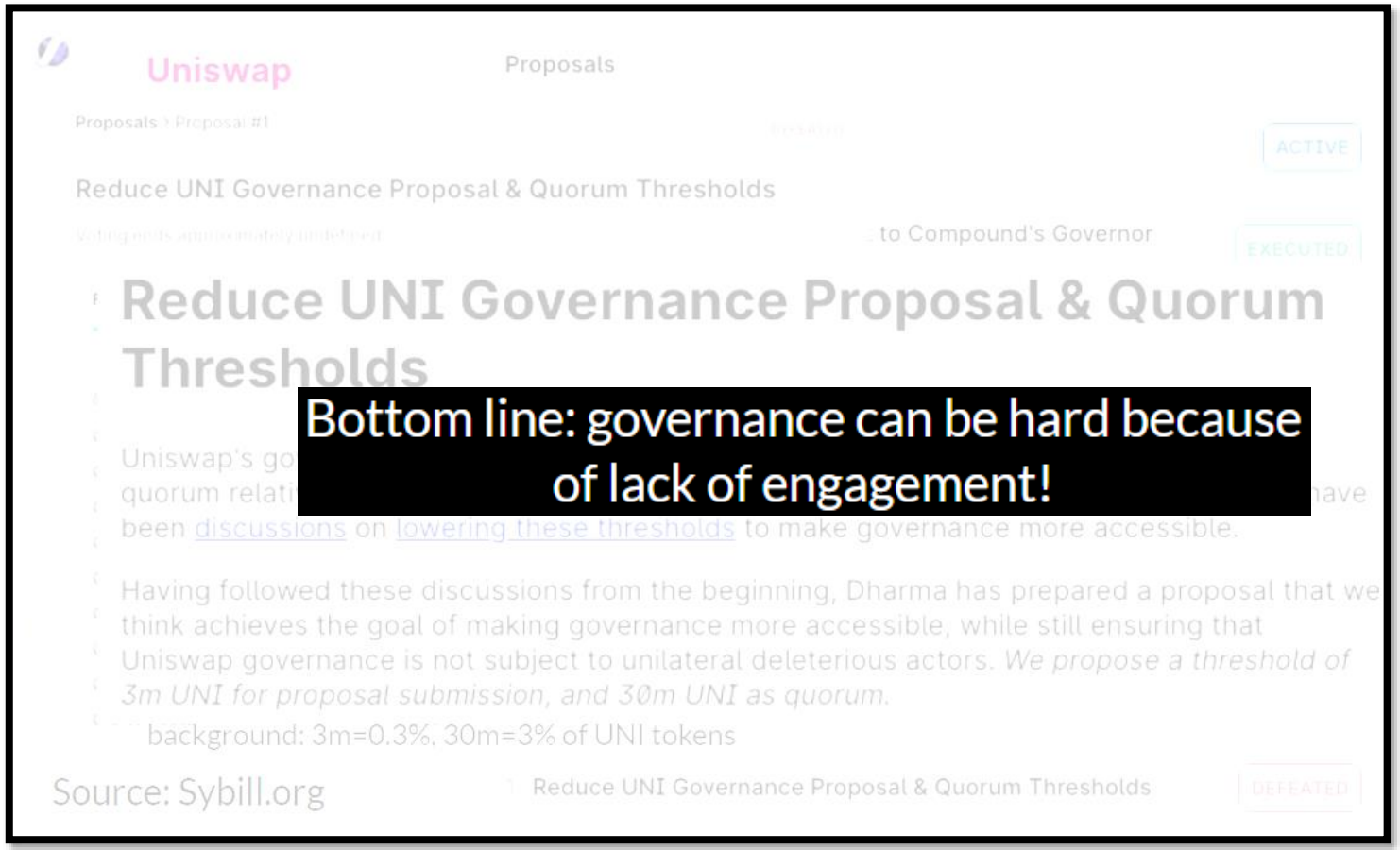
Governance: Challenges



Governance: Challenges



Governance: Challenges



Governance: Challenges

Accountability

Governance voters are collectively accountable for their decisions (poor decision => everyone's coins drop to zero), but no voter is individually accountable

Public goods provision

How do you incentivizes contributions to protocol development, upgrade and maintenance?

Voting

Who, on what, and how?

Governance: Voting

coin holders: one coin = one vote

The Problem: governance power without economic interest

–borrower has governance power without economic interest lender has economic interest without governance power

–borrow coins on platform short term

This is how we vote

Governance: Voting

humans (proof of personhood):
–network participant = one vote
–A fair reflection of economic interest?

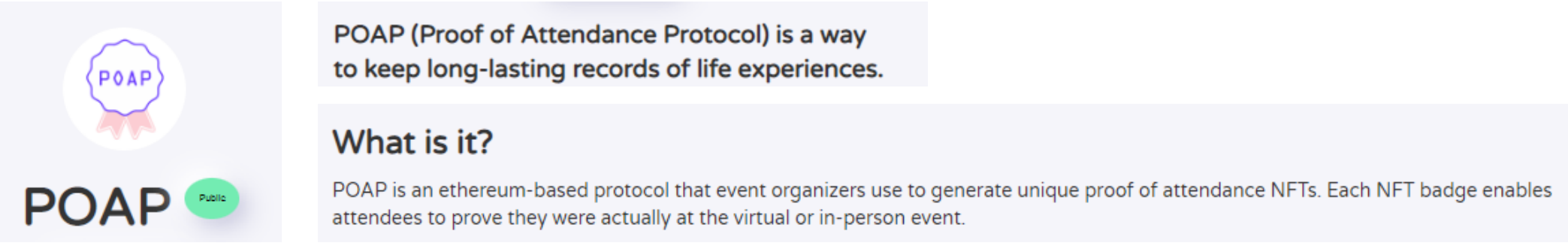
BrightID uses trusted relationships between people to verify its users. This includes people's ability to recognize someone in person using all available information, including recognizing their face. A real person's ability to recognize another person far surpasses that of an AI.

Governance: Voting

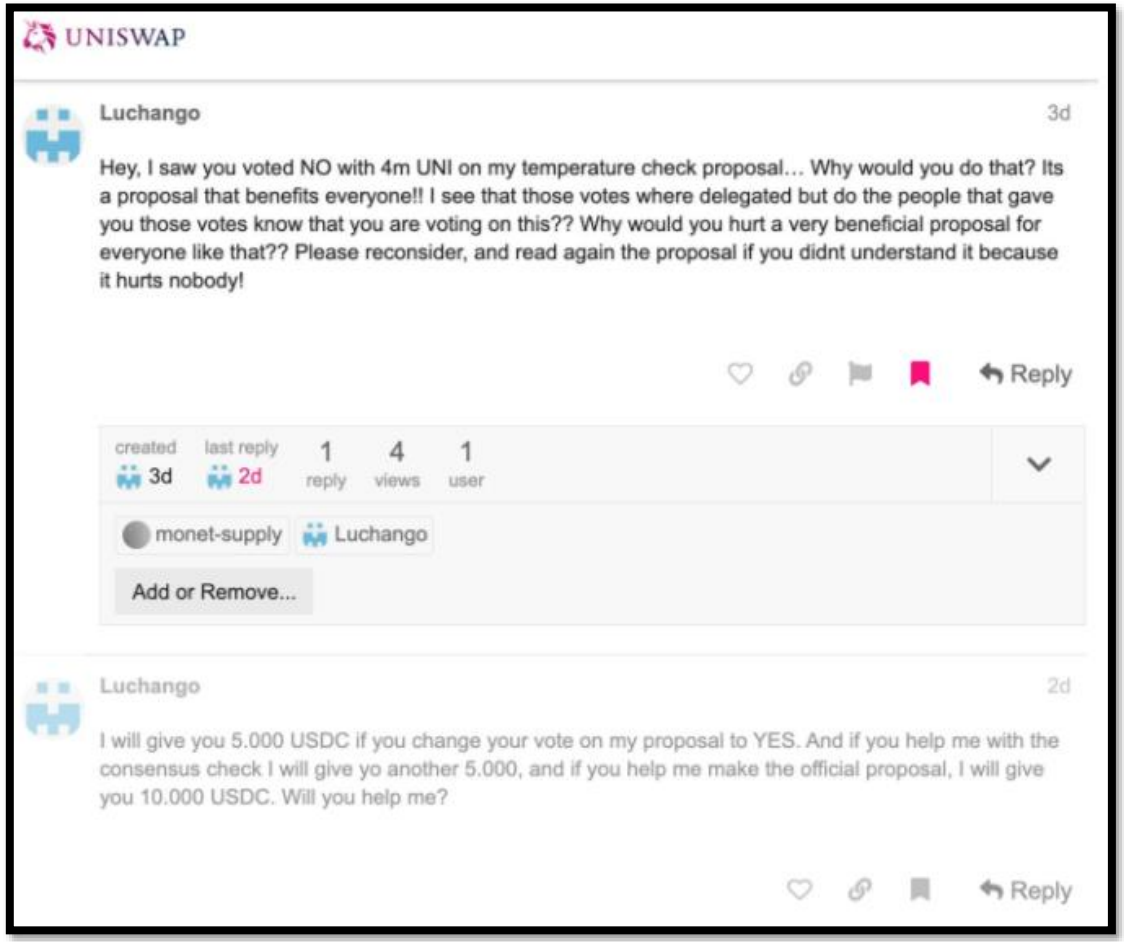
Check out the token drop system from LEU:
https://leu.zuerich/

contributors (proof of participation):

–people who made meaningful contributions to a network
–What's meaningful?
–Does this translate into a meaningful stake?



Governance: Voting Challenges



Big idea: blockchain does allow new and different vote participation rules!

Governance: Voting Challenges

- can be very subtle
- status quo vs new proposal (often has a status quo bias)
- voting among alternatives plus status quo
- single votes, ressource vote ("quadratic voting"), ranked ballots, etc

Governance: Voting Challenges

Who should vote? e.g.,

- ❑ coin holders: one coin = one vote
- ❑ humans: network participant = one vote
- ❑ contributors: people who made meaningful contributions to a network

What should you vote on?

- ❑ parameters
- ❑ one-off choices
- ❑ Pairwise

How should you vote?

- ❑ one at a time
- ❑ ranked ballot

Governance: Voting Challenges

2000 US Presidential Vote with

- ❑ Bush vs. Gore vs Nader
- ❑ Most liberals preferred Gore and Nader to Bush
- ❑ Suppose 55% for Gore/Nader and 45% for Bush
- ❑ If liberals split 50/50, Bush wins.

Vote splitting and strategic voting is very real issue (both on the left and on the right)

Some voting rules: Majority, Super-majority, two-tier voting with delegates, plurality (among more than 2 candidates, the one with the most votes), ranked voting (e.g. with Borda count (top gets n points, next n-1, etc.)

Governance: Voting Challenges

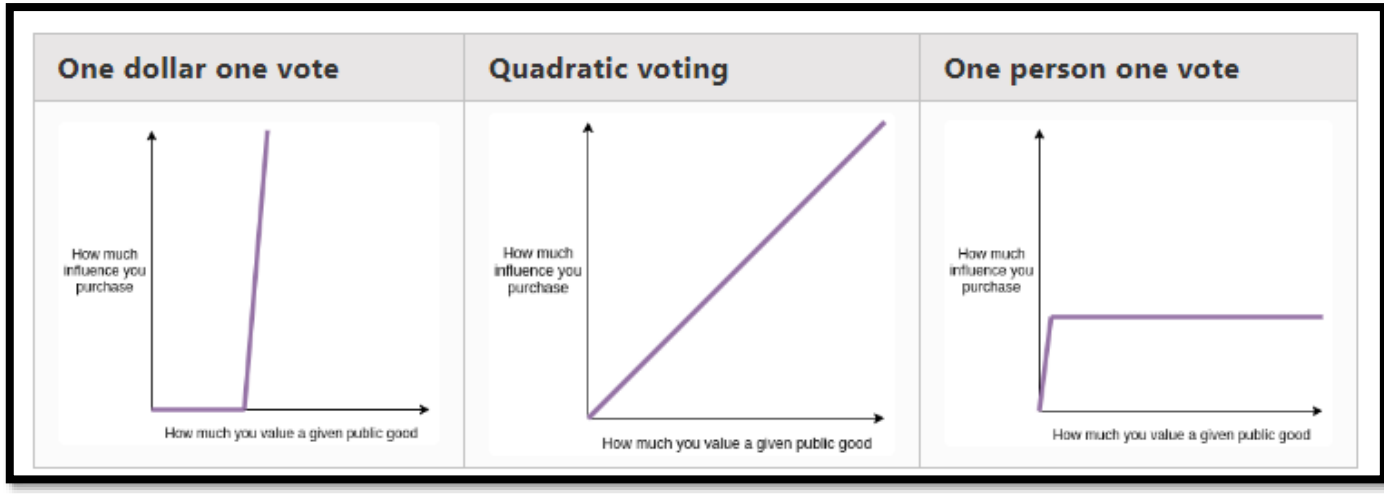
basic idea:

- ❑ solve the "how much you care" problem
- ❑ you pay for your vote
- ❑ your marginal cost is increasing (to reflect how much you care)

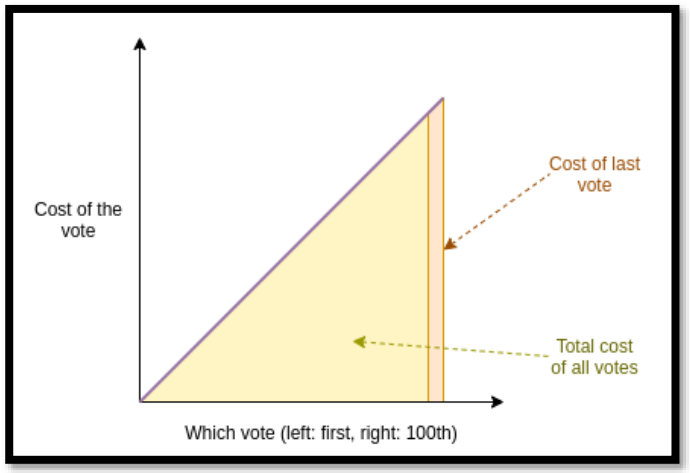
how done:

people are endowed with "voice credits"
to vote on a topic a voter chooses voice credits (costs per vote)

Result: quadratic cost is the only rule that ensures that commonly best utility is implemented (and that people vote as such)



https://vitalik.ca/general/2019/12/07/quadratic.html



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