DAOs & Governance

A Standalone Mini-Course

BSc Blockchain Course

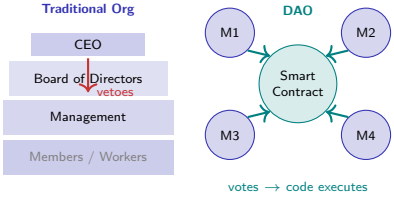
What If a Company Had No CEO, No Board, and No Headquarters?

Every organisation you have ever joined had a hierarchy. A school has a principal. A company has a board. A charity has trustees. Someone, somewhere, holds the authority to make final decisions – to hire, to spend, to change direction.

The question DAOs ask:

- What if the rules were encoded in software – visible to everyone, changeable only by vote?
- What if every member had a proportional say, with no central veto?
- What if treasury funds moved only when a majority approved – automatically, without a bank?

A Decentralized Autonomous Organization (DAO) replaces the CEO with code and the boardroom with a token vote. The result is an organisation that runs according to rules no single person can override unilaterally.



A DAO does not eliminate governance – it replaces human discretion with pre-agreed rules encoded in a smart contract that any member can audit and any vote can change.

DAO = Decentralized Autonomous Organization: governance by code and token vote, not by hierarchy.

Have You Ever Voted in an Election Where Your Vote Felt Meaningless?

Most people have experienced it: a vote is held, the outcome is pre-determined by whoever controls the agenda, or the result is ignored anyway. Traditional organisations suffer from exactly this problem – governance on paper, control in practice concentrated in a few hands.

Quick Exercise – Think Before We Continue

1. **Recall a group decision you were part of – a club, a class project, a workplace choice.** Who actually decided? Was it a vote, a consultation, or did one person with authority simply announce the outcome? Be honest about the difference.
2. **What would have changed if the rules were written down in code?** If the decision procedure had been published in advance and enforced automatically – no chair could override it, no committee could quietly alter the outcome – would you have trusted the result more? What could still go wrong?
3. **Think about a community you belong to online.** A forum, a game guild, a Discord server. Who makes the rules? Who controls the money, if any? Could a DAO replace that governance – and would members actually participate?

Keep these examples in mind. We will use them to stress-test DAO design throughout this session.

Every governance failure has the same root: concentrated power without accountability. DAOs attempt a technical fix.

What Makes a DAO Different from a Traditional Organization?

Four organisation types – same goal, very different rules:

Type	Control	Rules	Execution	Membership
Corporation	Board / CEO	Legal docs	Managers	Shareholders
Cooperative	Member vote	Bylaws	Elected mgmt	Members
Foundation	Trustees	Charter	Staff	Restricted
DAO	Token holders	Smart contract	Automatic	Token-gated

The pattern to notice: Every row above DAOs requires human intermediaries to translate a decision into action – lawyers, managers, treasurers. A DAO collapses that gap: the vote triggers the contract, and the contract executes the treasury transfer. No human discretion stands between the decision and its effect.

What "token-gated" membership means:

- **Traditional org:** membership requires approval by existing members or purchase of registered shares via a regulated exchange.
- **DAO:** anyone who acquires the governance token – on a public market, at any time – instantly holds voting rights proportional to their stake. No registration required.

What automatic execution costs:

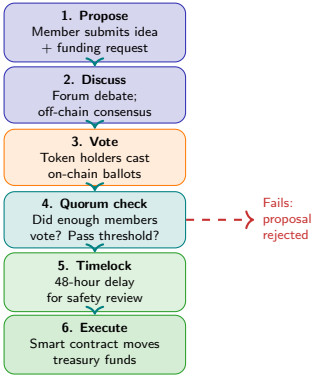
- Code bugs become policy bugs
- No court can reverse a confirmed transaction
- Low participation can skew outcomes

The tradeoffs are structural, not incidental.

A DAO is not a better corporation – it is a different contract: you trade human judgment for code-enforced neutrality, and flexibility for predictability.

Smart contract + token vote + automatic execution: the three properties that distinguish a DAO from every prior organisation type.

Follow One DAO Proposal from Idea to Execution



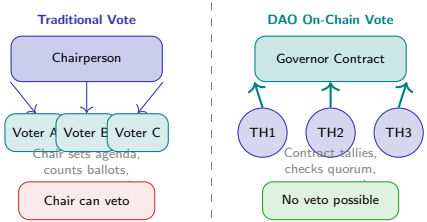
Each step – in plain language:

1. Any token holder above a minimum threshold can submit a formal proposal on-chain. The proposal includes executable code if treasury funds are involved.
2. Most DAOs hold off-chain discussion (Discord, forums) before the formal vote. This shapes community sentiment without spending gas on every comment.
3. Voting is on-chain: each token equals one vote (or weighted by quadratic formula). The snapshot of holdings at a specific block determines eligibility.
4. Two thresholds must pass: quorum (minimum participation) and approval (minimum yes-share). Both are set in the contract at launch.
5. A timelock delay (commonly 24–72 hours) allows the community to detect malicious proposals and exit before execution.
6. If all checks pass, anyone can trigger execution. The contract moves funds, updates parameters, or upgrades itself – automatically.

The six-step lifecycle removes every human intermediary between a community decision and its financial effect – but each step carries its own failure mode.

Propose, discuss, vote, quorum, timelock, execute: the DAO governance pipeline encoded in smart contract logic.

How Does a Smart Contract Count Votes and Execute Decisions?



How on-chain voting eliminates the chairperson:

- **Traditional:** a person records and announces the result. They can miscount, delay, or simply refuse to call the vote. Power flows from the chair's authority.
- **DAO:** the governor contract records each vote as a blockchain transaction. Anyone can audit the tally in real time. The contract announces the result – no chair required.

Token-weighted vs quadratic voting:

- **1-token-1-vote:** simple, but large holders dominate
- **Quadratic voting:** cost of votes grows as votes^2 – distributes power more evenly
- Both are enforced by the contract – no discretion

The voting mechanism is a design choice baked in at launch. Changing it requires a vote – which itself uses the old mechanism.

On-chain voting replaces human discretion with contract logic: every vote is recorded, auditable, and enforced without a referee.

Governor contract = the DAO's chairperson, built from code rather than authority.

The DAO That Lost Sixty Million Dollars

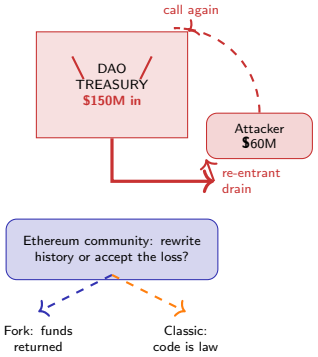
The DAO Exploit (2016) In 2016, a DAO raised over 150 million dollars to fund community-chosen projects on Ethereum. The governance contract allowed members to withdraw their share of funds at any time – a feature intended to protect minority holders.

An attacker discovered that the contract sent Ether *before* updating the internal balance. By recursively calling the withdrawal function, the attacker drained roughly sixty million dollars before the balance recorded a cent leaving.

The governance crisis that followed:

- The code performed exactly as written – no bug in the traditional sense
- "Code is law": the exploit was valid under the contract's own rules
- The Ethereum community voted for a hard fork – reversing the drain
- A minority refused; the original chain lived on as Ethereum Classic

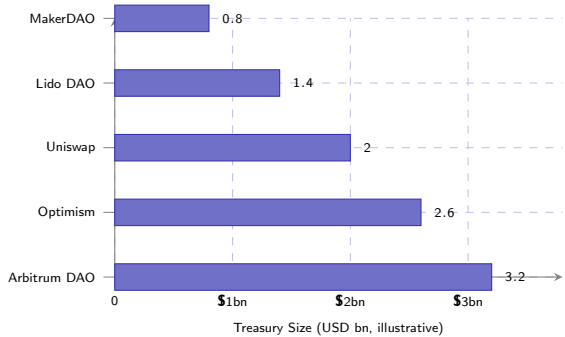
Lesson: immutable governance is only as safe as the contract that defines it.



The DAO hack proved that "trustless" governance trusts the code absolutely – so code quality is not optional. One logic flaw can be governance-ending.

Re-entrant attack: the exploit was legal under the contract's rules. The community's hard fork proved immutability is a choice, not a law.

Billions Under Community Control



Illustrative figures based on public reports 2023–2024. Not investment advice.

What these numbers mean:

- **Arbitrum DAO** controls one of the largest Layer-2 treasuries. Governance token holders vote on grants, protocol parameters, and fee structures across a network processing billions in weekly volume.
- **Uniswap** governs the most traded decentralized exchange. A single governance vote can set the fee tier for any trading pair – affecting millions of users instantly.
- **MakerDAO** governs the DAI stablecoin – a currency used across DeFi. Governance decides interest rates, collateral types, and risk parameters for a system holding billions in collateral.

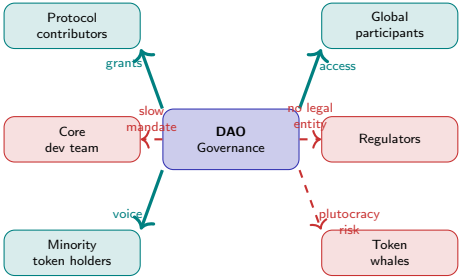
The participation problem:

- Most DAOs see under 10% token-holder participation in votes
- A motivated minority with large holdings can pass proposals
- Delegation and incentive design are active research areas

Billions of dollars now move based on token-holder votes. The scale is real – and so are the governance participation gaps that make plutocracy a live risk.

DAO treasuries in 2024 rival mid-sized institutional funds – governed by on-chain token votes with participation rates under 10%.

Who Benefits from Decentralized Governance – And Who Gets Hurt?



Stakeholder perspectives:

Contributors: Developers, researchers, and community builders can be funded directly by governance vote – no venture capital gatekeeping, no corporate approval chain.

Global participants: Anyone with internet access and a wallet can join, vote, and receive grants. Geography is not a barrier.

Minority holders: Timelocks and quorum rules give minority holders time to exit before hostile proposals execute.

Token whales: 1-token-1-vote systems allow large holders to dominate proposals. Concentration of ownership = concentration of governance power.

Dev teams: Governance approval for every parameter change can slow technical responses to emergencies.

Regulators: DAOs have no legal domicile, no identifiable officers, and no single jurisdiction – challenging existing oversight frameworks worldwide.

Decentralized governance distributes authority – but token concentration, low participation, and regulatory uncertainty mean the distribution is rarely equal.

The same property – no central authority – empowers contributors and creates plutocracy risk and regulatory blind spots simultaneously.

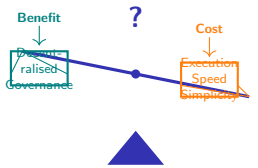
Three Questions That Reveal Whether a Community Truly Needs a DAO

Before any community launches a DAO, ask:

Q1 **Do multiple parties need to jointly control funds – and do they distrust any single party as custodian?** If one trusted party could hold the treasury and enforce rules, a multisig wallet or a legal entity is simpler. A DAO earns its complexity only when shared control with no privileged party is a genuine requirement.

Q2 **Is the governance process frequent and consequential enough to justify on-chain overhead?** On-chain governance carries gas costs, coordination overhead, and slow cycle times. If decisions are rare and low-stakes, a forum vote with a multisig executor is faster and cheaper.

Q3 **Can the community sustain meaningful participation – or will low turnout concentrate power?** A DAO with 3% voter participation is governed by the 3% who vote – often large holders. If the community lacks the size, incentives, and engagement to maintain broad participation, a DAO may produce worse governance than a small trusted committee.



Q1–Q3 tell you which way the scale tips.

Quick diagnostic:

- All three YES → DAO is a strong candidate
- Two YES, one NO → evaluate the specific trade-off
- One YES or fewer → multisig or legal entity is better

A DAO is not a governance upgrade for every community – it is a solution to one specific problem: shared treasury control with no trusted single custodian and sufficient participation to resist plutocracy.

Apply Q1–Q3 to every DAO proposal you encounter. Most communities do not need a DAO – they need clearer rules and better tooling.

Your Challenge

Read the case below, then apply the three questions from the previous slide.

Case: Open-Source Protocol Governance

Situation: An open-source messaging protocol has 400,000 active users across 60 countries. The protocol is maintained by a non-profit foundation with five trustees, but users have no formal say in decisions. Recently the foundation proposed removing end-to-end encryption to comply with a government request from one country – sparking a community revolt. Contributors from other countries want a governance mechanism that cannot be overridden by any single jurisdiction or trustee.

Apply the three questions. Fill in the table below:

Question	Your answer (Yes / No / Partial)	Reasoning (one sentence)
Q1: Shared control needed – no trusted single custodian?	.....	.....
Q2: Governance frequent and consequential enough?	.....	.....
Q3: Community can sustain broad participation?	.....	.....

Discuss with your neighbour (3 minutes): Does this community need a DAO – or a reformed legal structure with a broader trustee election? Where does the 60-country scope change your answer? What governance attack vectors does a DAO introduce that the foundation model avoided?

The hardest DAO skill is knowing when NOT to use one. Q1–Q3 forces you to distinguish decentralisation need from decentralisation fashion.