

# DAOs & Governance: A Visual Introduction

## Standalone Mini-Lecture

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*"The future of organization is decentralized" – Vitalik Buterin*

Prof. Dr. Joerg Osterrieder

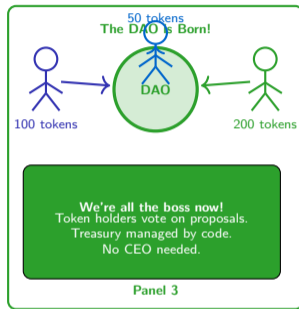
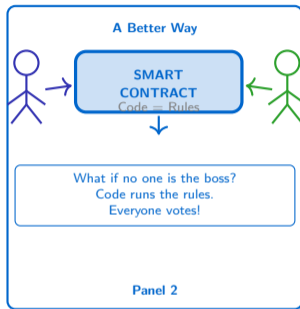
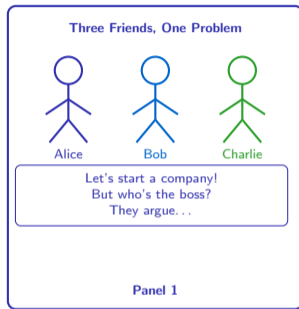
University Lecture Series

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**This mini-lecture covers Decentralized Autonomous Organizations: how they work, governance mechanisms, treasury management, attacks, and real-world examples.**

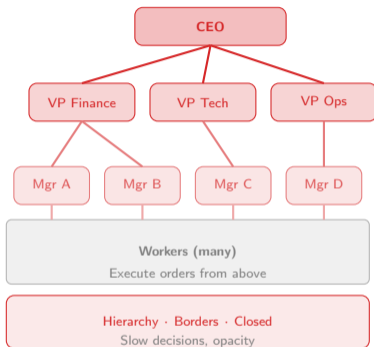
# What is a DAO?



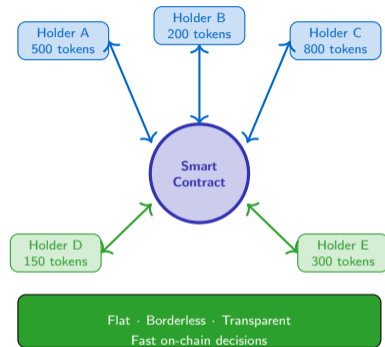
**DAO = Decentralized Autonomous Organization. Smart contracts replace management: rules are encoded in code, decisions made by token-weighted voting.**

# Traditional Organization vs. DAO

## Traditional Hierarchy



## DAO: Flat Network



### Hierarchy vs Flat

CEO decides alone

### Borders vs Borderless

Global participation

### Closed vs Transparent

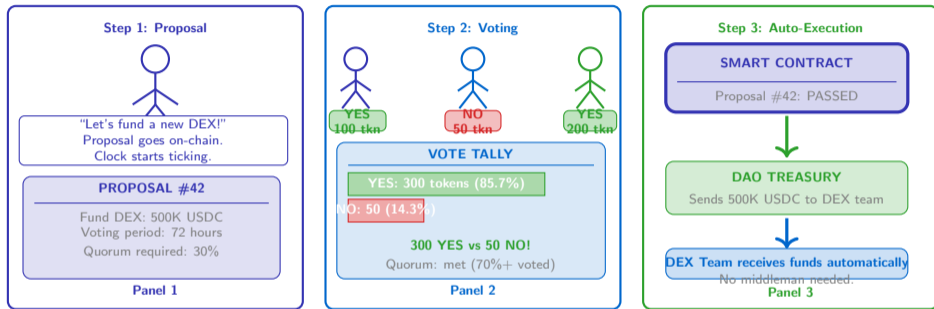
All votes on-chain

### Slow vs Automated

Code executes instantly

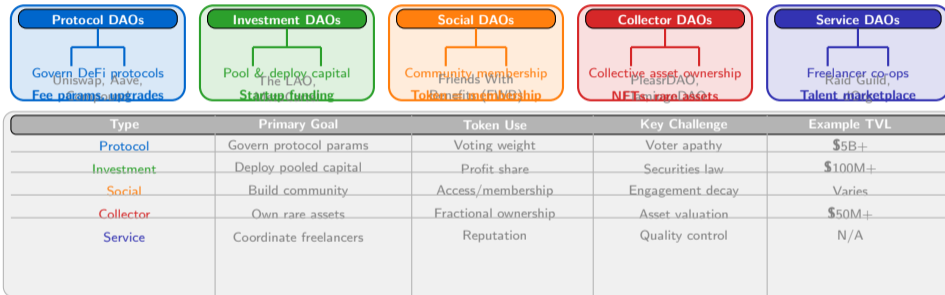
**Traditional organizations rely on hierarchical authority; DAOs replace the hierarchy with transparent, code-enforced rules and token-weighted democratic voting.**

# How Voting Works in a DAO



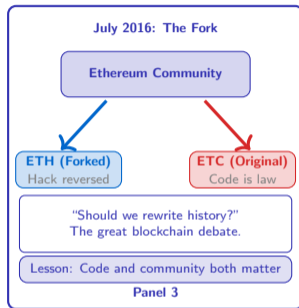
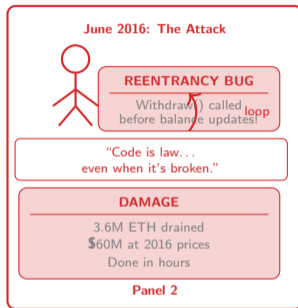
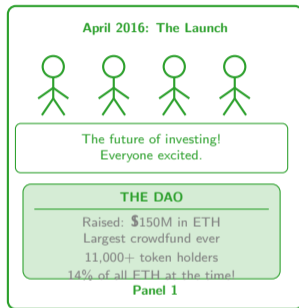
**DAO governance: anyone can submit a proposal; token holders vote (token-weighted); smart contracts automatically execute approved proposals – no human intermediary.**

## The DAO Ecosystem: Five Major Categories



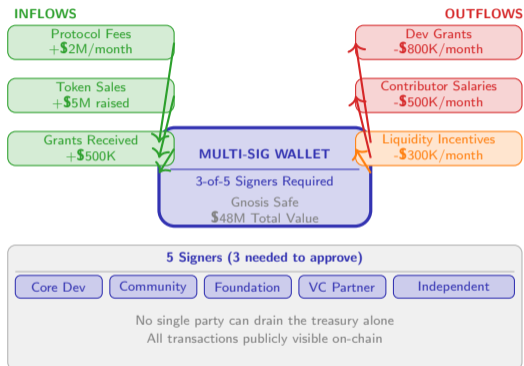
DAOs are not one-size-fits-all. Protocol DAOs govern DeFi, investment DAOs pool capital, social DAOs build community, collector DAOs own NFTs, service DAOs coordinate work.

# The DAO Hack of 2016: A Defining Moment



The 2016 DAO hack drained \$60M via a reentrancy vulnerability. Ethereum hard-forked to reverse the theft, splitting the chain into ETH and ETC – a pivotal moment in blockchain history.

## Multi-Sig Treasury Architecture



## Treasury Best Practices

### Diversification

Hold stablecoins + native token

### Runway Planning

Maintain 18–24 months of runway

### Transparency

Monthly on-chain reports

### Timelocks

48h delay on large transfers

### Emergency Pause

Guardian multisig for crises

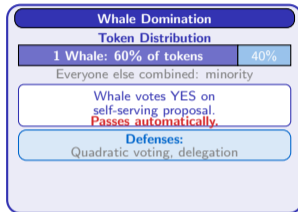
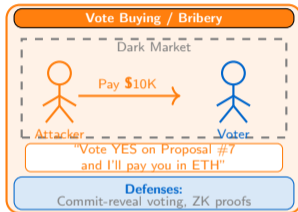
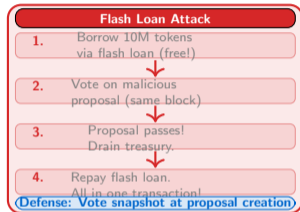
### Runway Gauge

6mo | 12mo | 24mo+ (Safe)

Target: green zone minimum

DAO treasuries use multi-signature wallets (e.g., Gnosis Safe) requiring multiple approvers per transaction, providing security through distributed control and full on-chain transparency.

## Warning: Three Major Governance Attack Vectors



### Governance Security Toolkit

Snapshot voting at proposal block  
Timelock delays on execution

Quadratic voting reduces whale power  
Quorum + supermajority thresholds

Veto guardian multisig  
Constitutional constraints

**Governance attacks are not theoretical – flash loan governance attacks have drained millions. Defense requires: vote snapshots, timelocks, quadratic voting, and quorum requirements.**

# Famous DAOs: Real-World Examples

## MakerDAO

**Key Stat**  
\$8B+ TVL in DAI

**Token**  
MKR (governance)

Governs DAI stablecoin – the original DeFi DAO

### Governance Model

MKR holders vote on: stability fees, collateral types, DSR rate, liquidation ratios, emergency shutdown.  
Executive votes: on-chain, continuous approval voting.  
Governance delay: 48h timelock on all changes.

## Uniswap DAO

**Key Stat**  
\$1T+ cumulative volume

**Token**  
UNI (1B supply)

Governs the largest DEX – \$150M+ grants given

### Governance Model

UNI grants program: funding new DeFi projects.  
Temperature check (Snapshot) then on-chain vote.  
2.5M UNI quorum required to pass proposals.  
Delegation: token holders delegate to active voters.

## Aave DAO

**Key Stat**  
\$20B+ lending TVL

**Token**  
AAVE (safety module)

### Governance: Risk Parameters

Votes on: collateral LTVs, liquidation thresholds.  
Safety Module: AAVE stakers cover bad debt.  
Guardian: 10-of-12 multisig can pause protocols.

## ENS DAO

**Key Stat**  
2M+ .eth domains

**Token**  
ENS (airdropped)

### Governance: Airdrop Model

ENS airdrop to .eth domain holders (2021).  
Governs: pricing, registrar, public goods fund.  
Template: retroactive rewards to early users.

**MakerDAO, Uniswap, Aave, and ENS DAO are among the most successful DAOs, collectively governing billions in assets and setting governance design patterns for the industry.**

## 1 Smart Contracts Replace Management

DAOs encode organizational rules in code: token-weighted voting replaces hierarchical authority.

## 2 Governance Mechanisms Are Critical Design Choices

Simple majority, quadratic voting, conviction voting – each trades off efficiency vs. fairness.

## 3 Treasury Management Requires Discipline

Multi-sig wallets, diversification, timelocks, and 18–24 month runway targets protect DAO assets.

## 4 Governance Attacks Are Real Threats

Flash loans, vote buying, and whale domination require defensive design: snapshots, quorums, and timelocks.

## 5 DAOs Are Evolving Into Legitimate Structures

From the 2016 hack to MakerDAO's \$887M TVL – DAOs have evolved from experiments to real institutions.

**Next: Governance Mechanisms – Quadratic Voting, Conviction Voting, and DAO Legal Wrappers**

**DAOs are a new organizational primitive: transparent, borderless, and code-governed. Understanding their strengths and failure modes is essential for any blockchain practitioner.**