National College of Ireland Academic Internship

## < Voting DAO & Funding Pool Web3 System>

# Project Proposal

Project document Details

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| **Project Name:** | Voting DAO & Funding Pool Web3 System | | |
| **Date:** | 26 April 2025 | **Release:** | Draft |
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| **Owner:** | Project Board | | |
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# Project definition

* what is the overall purpose of this project?  
  To build a decentralized, transparent, and trust-less governance and funding system based via web3 on blockchain
* why does it need to be done?  
  Current centralized governance and banks models lack transparency and trust as it empowers them only, but a decentralized system will empower the users instead.
* why it should be done now?  
  The adoption of blockchain is increasing Bitcoin price 10 years ago was 1$ and at the time of writing this report is sitting around 100,846.42$ if this does not showcase that blockchain adoption is exponentially increasing then I don’t know what will. This will be an opportunity to deploy decentralized blockchain empower users during the exponential adoption
* what the result of this project should be?  
  Launching voting and funding decentralized platform
* what are the implications are of not doing it?  
  Missing the opportunity and we will always give power to the centralized entities such as banks and web2 institutions, and the technology is there, if we don’t launch it someone else will.

Objectives

Completion of this project will result in a fully functional decentralized governance platform with non-token weighted and quadratic voting mechanism which features smart contracts and decentralized storage integration for proposals and a working test blockchain.

Scope:

Business Requirements:

Decentralized governance for community that is transparent, decentralized, and trust-less.

Functional Requirements:

* Smart contracts deployment for voting logic by (ERC20 token)
* Integration with wallets like MetaMask.
* Decentralized storage for proposals.

Non-Functional Requirements:

* Frontend load time < 3 seconds
* System availability 99.9%.
* Smart contract audit and failover testing (failover < 2 hours).

Time:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Stage | Description | Start Date | End Date | Duration | Tolerance |
| Initializing & Planning | Trello project setup, scheduling | 1 March | 15 March | 15 days | ±3 days |
| Research | Technology, voting models, tools | 16 March | 18 March | 3 days | ±1 day |
| Software Requirement Specification | Define Requirements | 19 March | 1 April | 14 days | ±2 days |
| Development Setup | Hardhat, React, IPFS configuration | 2 April | 7 April | 6 days | ±2 days |
| Coding | Smart contracts, frontend, backend | 8 April | 15 April | 8 days | ±4 days |
| Acceptance Testing | User and functional testing | 16 April | 23 April | 8 days | ±2 days |
| Project Closing | Deployment, documentation, final report | 23 April | 30 June | 2 months | ±5 days |

Quality:

* Costumer expectation: reliable, secure, trust-less, transparent DAO voting and funding system.
* Quality register: created duration initialization, updated after each milestone.
* Acceptance criteria: 100% smart contract functionality > 95% frontend test coverage, no critical security.

Risk:

* Risk register will be created during the initialization
* The risk would be lack of audit or not using tools such as OpenZeppelin this will result to Smart contract vulnerabilities and therefore low voter participation and pool funding hacks issues.

Benefit:

Deploying a decentralized flatform to empower the uses which will result to adoption as web2 platform empower only the institution behind the project rather than the users.

This will increase adoption and voting participation rate above 20% of eligible token holders within 1 month of launch.

# Project product description

Purpose

The purpose is to deploy to the market a decentralized project to empower the users instead of controlling them.

Composition

|  |  |  |
| --- | --- | --- |
| Unique ID | Deliverable Title | Deliverable Description |
| D1 | Smart Contract Suite | Non-Token-weighted voting contracts (ERC20, Quadratic models). |
| D2 | Web3 Frontend | React-based DApp is integrated with web3 wallets (MetaMask and Trust Wallet). |
| D3 | Snapshot Integration | Off-chain gasless voting using Snapshot. |
| D4 | IPFS Proposal Storage | Decentralized storage of voting proposals. |
| D5 | Documentation | User manual, developer guide, system architecture diagrams. |

Derivation

Based on existing research papers on DAOs open-source voting frameworks and platforms such as MakerDAO, and blockchain governance.

Development Skills Required

* Solidity smart contract development
* React frontend development
* Web3.js and ethers.js integration
* IPFS storage management
* Blockchain testing and deployment (Hardhat)

# Project approach

* I have done Agile Methodology approach by committing on GitHub if the project misses a feature or requires more development
* GitHub is the main software to manage repository code, documentation, issues, and deployments
* Initial deployment of smart contract on MegaETH test blockchain, possible deployment to L2 solutions like polygon MATIC or Arbitrum or Optimism for gas fees cost efficiency

# Project Plan of action

Phase 1: Planning and learning

* Research DAO structure, voting mechanisms, and technology
* Creating architecture diagram
* Finalize the DAO and funding pool feature

Phase 2: implementation

* Develop of smart contract
* Set up frontend and web3 wallet connections
* IPFS and snapshot of decentralized storage integration
* Conduct internal testing

Phase 3: Testing and Deployment

* Deployment of smart contracts on test blockchain such as MegaETH
* Deployment frontend on vercel or GitHub actions

Phase 4: Day-to-Day management

Management through GitHub and can be seen here

GitHub Repository: <https://github.com/EskandarAtrakchi/DAO-web3-voting-system>

# References

1. Ethereum Foundation (n.d.) DAO Resources. Available at: <https://ethereum.org/en/dao/> (Accessed: 25 April 2025).
2. Snapshot (n.d.) Snapshot Documentation. Available at: <https://docs.snapshot.org/> (Accessed: 25 April 2025).
3. Protocol Labs (n.d.) IPFS Documentation. Available at: <https://docs.ipfs.tech/> (Accessed: 25 April 2025).
4. OpenZeppelin (2024) OpenZeppelin Contracts v5.0 Documentation. Available at: <https://docs.openzeppelin.com/contracts/5.x/> (Accessed: 25 April 2025).
5. Hardhat (n.d.) Hardhat Framework Documentation. Available at: <https://hardhat.org/getting-started/> (Accessed: 25 April 2025).