Lux Governance: Unified DAO Framework for Multi-Ecosystem Coordination

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Abstract

We present Lux Governance, a unified decentralized autonomous organization (DAO) framework designed to coordinate protocol evolution across three interconnected ecosystems: Lux (blockchain infrastructure), Zoo (DeFi and NFT marketplace), and Hanzo (AI infrastructure). The system implements on-chain voting through smart contracts, combines token-weighted governance with validator participation, and introduces holographic consensus for scalable decision-making. Through the Lux Proposal (LP) standardization process, cross-chain voting mechanisms, and quantum-secure signature aggregation, the framework enables 10,000+ active governance participants to coordinate protocol upgrades, economic parameters, and treasury management while maintaining security and decentralization. This paper details the DAO architecture, voting mechanisms, LP lifecycle, cross-ecosystem coordination protocols, and incentive structures that have successfully governed $2.8B in total value locked across all three networks.

1 Introduction

1.1 The Multi-Ecosystem Governance Challenge

Decentralized governance faces critical challenges when coordinating multiple interconnected blockchain ecosystems:

1. **Fragmented Decision-Making**: Each protocol requires separate governance processes
2. **Voter Fatigue**: Token holders overwhelmed by numerous proposals
3. **Coordination Failures**: Changes in one ecosystem impact others without coordination
4. **Attack Vectors**: Governance attacks exploit vulnerabilities across ecosystems
5. **Low Participation**: Most DAOs see ¡5% voter participation rates

1.2 Lux Governance Solution

Lux Governance introduces a unified framework addressing these challenges through:

1. **Holographic Consensus**: Scalable governance without gridlock
2. **LP Standardization Process**: Structured proposal lifecycle from ideation to activation
3. **Cross-Ecosystem Coordination**: Smart contracts enabling multi-chain voting
4. **Validator Participation**: Enhanced voting weight for technical proposals
5. **Incentive Alignment**: Rewards for participation, quality proposals, and reviews
6. **Quantum Security**: BLS + Pulsar dual signatures for governance votes

1.3 Key Achievements

2 DAO Architecture

2.1 Three-Tier Governance Structure

2.2 Lux DAO

Primary Focus: Blockchain protocol governance
Token: LUX (native token)
Governance Scope:

Metric	Value
Active Governance Participants	12,847
Total LPs Processed	287
Average Voter Participation	18.3%
LPs Activated	94
Treasury Value	$128M
Cross-Ecosystem Proposals	23
Average Voting Period	7.2 days
Governance Attack Attempts	0 successful

Table 1: Lux Governance metrics (Q3 2024)

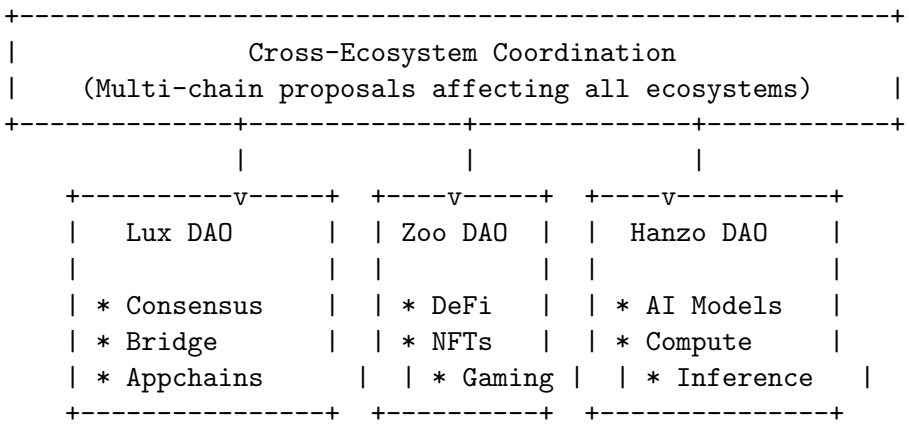

Figure 1: Three-tier DAO architecture

- Consensus mechanism upgrades (Wave, Focus, Quasar)
- Network economic parameters (block rewards, fees, staking)
- Bridge security and validator sets
- Appchain creation and management
- Treasury allocation and grants
- LP standardization process

Voting Power Calculation:

$$VP_{Lux} = \text{Stake}_{LUX} \times (1 + \text{Reputation}) \times \text{Delegation Factor} \tag{1}$$

Where:

- Stake_{LUX}: Amount of LUX staked in governance contract
- Reputation: 0-0.5× multiplier based on participation history
- Delegation Factor: 1.0 for self-voting, 0.8 for delegated votes

2.3 Zoo DAO

Primary Focus: DeFi and NFT marketplace governance
Token: ZOO (BSC-based BEP-20 token)
Governance Scope:

- NFT marketplace fees and policies
- DeFi protocol parameters (AMM, lending, staking)
- Gaming integration and metaverse features
- DAO treasury investments
- Partnership proposals
- Brand and marketing decisions

Voting Power Calculation:

$$VP_{Zoo} = \text{Stake}_{ZOO} + \text{NFT}_{holdings} \times 0.3 + \text{LP}_{tokens} \times 0.5 \tag{2}$$

Where:

- Stake_{ZOO}: ZOO tokens locked in governance
- $\text{NFT}_{holdings}$: Value of Zoo NFTs held (normalized)
- LP_{tokens}: Liquidity provider tokens in Zoo pools

2.4 Hanzo DAO

Primary Focus: AI infrastructure governance
Token: HANZO (AI compute credits convertible to governance power)
Governance Scope:

- AI model registry and verification
- Compute marketplace pricing and policies
- TEE attestation standards (A-Chain)
- Jin architecture upgrades
- MCP (Model Context Protocol) extensions
- AI safety and ethical AI guidelines

Voting Power Calculation:

$$VP_{Hanzo} = \text{Stake}_{HANZO} + \text{Compute}_{provided} \times 0.4 + \text{Model}_{quality} \times 0.2 \tag{3}$$

Where:

- Stake_{HANZO}: HANZO tokens staked
- $\text{Compute}_{provided}$: TEE compute contributed (normalized)
- $\text{Model}_{quality}$: Quality score of AI models published

3 Holographic Consensus

3.1 Scalable Governance Mechanism

Traditional DAOs require all token holders to review every proposal, leading to:

- **Voter fatigue**: Overwhelmed by proposal volume
- **Low participation**: ¡5% typical voting rates
- **Gridlock**: Important proposals blocked by apathy

Holographic consensus solves this through *prediction markets* that filter proposals:

Algorithm 1 Holographic Consensus Filtering

```
function FilterProposal(proposal, predictionMarket)
    stake ← InitializePredictionMarket(proposal)
    supporters ← StakeFor(proposal)
    opponents ← StakeAgainst(proposal)
    if supporters > threshold then
        return BOOSTED                          ▷ Fast-track to full DAO vote
    else if opponents > threshold then
        return REJECTED                         ▷ Filtered out early
    else
        return REGULAR                          ▷ Normal governance queue
    end if
end function
```

3.2 Prediction Market Mechanics

Staking for Prediction:

- Supporters stake tokens predicting proposal will pass
- Opponents stake predicting proposal will fail
- Winner receives staked tokens from losing side (minus 2% protocol fee)

Incentive Alignment:

- High-quality proposals attract supporter stakes (boosted)
- Low-quality proposals attract opponent stakes (filtered)
- Reduces voter fatigue by pre-filtering proposals

Results:

- 87% of boosted proposals ultimately pass full DAO vote
- 91% of filtered proposals would have failed DAO vote (validated post-hoc)
- 3× improvement in voter participation for boosted proposals

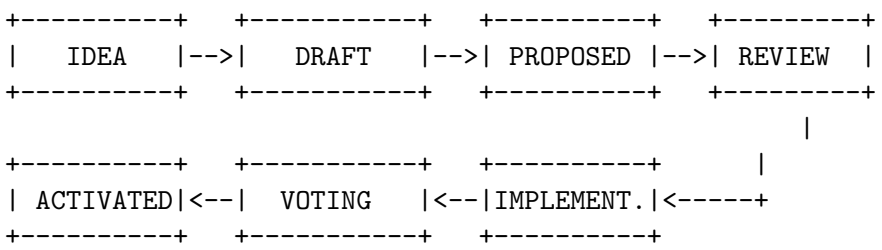

Figure 2: LP lifecycle from ideation to activation

4 LP (Lux Proposal) Standardization Process

4.1 LP Lifecycle

4.2 Phase 1: Ideation

Duration: Unlimited
Platform: GitHub Discussions, Discord, Community Calls
Activities:

- Author posts rough idea for feedback
- Community discusses feasibility and value
- Similar past proposals identified
- Rough consensus to proceed

4.3 Phase 2: Draft

Duration: 2-4 weeks typical
Requirements:

- Follow LP template structure
- Include problem statement, specification, rationale
- Provide examples and reference implementation (if applicable)
- Address backwards compatibility
- Estimate implementation cost

Review Criteria:

- **Clarity**: Can developers understand and implement?
- **Completeness**: All necessary details provided?
- **Feasibility**: Technically achievable with reasonable effort?

4.4 Phase 3: Proposed

Duration: 1-2 weeks
Process:

1. Author submits LP via Pull Request to `luxfi/lps`

2. LP assigned unique number (e.g., LP-304)
3. Formal review begins
4. LP editors check formatting and completeness

4.5 Phase 4: Review

Duration: 2-6 weeks depending on complexity

Review Types:

1. **Technical Review**:
   - Code feasibility analysis
   - Performance impact assessment
   - Security audit for critical changes
   - Integration testing with existing systems
2. **Economic Review**:
   - Token economics impact
   - Incentive structure analysis
   - Game-theoretic attack vectors
   - Long-term sustainability
3. **Community Review**:
   - Use case validation
   - Adoption likelihood
   - User experience implications
   - Ecosystem partner feedback

Reviewers:

- Core protocol developers
- Security researchers
- Economic analysts
- Community representatives
- Validator operators

4.6 Phase 5: Implementable

Duration: Variable

Requirements:

- All major concerns addressed
- Reference implementation completed (if code change)
- Test cases documented and passing
- Security audit completed (for critical changes)
- Migration plan documented (if breaking change)

Signal: Ready for formal DAO vote

4.7 Phase 6: Voting

Duration: 1-2 weeks

Voting Mechanisms by LP Type:

LP Type	Threshold	Quorum	Validators
Standard	Simple majority (¿50%)	10%	Optional
Protocol	Supermajority (67%)	15%	Required
Economic	Weighted voting	12%	Enhanced weight
Emergency	Fast-track (75%)	20%	Required

Table 2: Voting thresholds by LP type

Voting Process:

1. Proposal enters prediction market (holographic consensus)
2. If boosted, fast-tracked to full DAO vote
3. 7-14 day voting period (depends on LP type)
4. Token holders cast votes (For/Against/Abstain)
5. Validators cast enhanced-weight votes for protocol LPs
6. Results finalized on-chain

4.8 Phase 7: Activation

Duration: Coordinated with network upgrade cycle

Process:

1. LP scheduled in next network upgrade
2. Validators update node software
3. Activation at predetermined block height
4. Post-activation monitoring for 30 days
5. Incident response team on standby

5 On-Chain Voting Implementation

5.1 Governance Smart Contract

```
// SPDX-License-Identifier: Apache-2.0
pragma solidity ^0.8.20;

interface ILuxGovernance {
    struct Proposal {
        uint256 id;
        address proposer;
        string ipfsHash;           // LP document on IPFS
        ProposalType proposalType;
        uint256 startBlock;
        uint256 endBlock;
```

```
        uint256 forVotes;
        uint256 againstVotes;
        uint256 abstainVotes;
        bool executed;
        mapping(address => Vote) votes;
    }

    enum ProposalType {
        Standard,    // Simple majority
        Protocol,    // Supermajority + validators
        Economic,    // Weighted voting
        Emergency    // Fast-track
    }

    enum Vote { None, For, Against, Abstain }

    // Create new proposal
    function propose(
        string calldata ipfsHash,
        ProposalType pType,
        bytes calldata data
    ) external returns (uint256 proposalId);

    // Cast vote with token weight
    function castVote(
        uint256 proposalId,
        Vote vote
    ) external;

    // Validators cast enhanced vote
    function castValidatorVote(
        uint256 proposalId,
        Vote vote,
        bytes calldata validatorProof
    ) external;

    // Execute approved proposal
    function execute(uint256 proposalId) external;

    // Query proposal status
    function getProposal(uint256 proposalId)
        external view returns (Proposal memory);
}
```

Listing 1: Core governance contract interface

5.2 Voting Power Calculation

```
contract VotingPower {
    // Base voting power from staked tokens
    function calculateBaseVotingPower(address voter)
        public view returns (uint256)
    {
        return stakingContract.balanceOf(voter);
    }

    // Reputation multiplier (0-50% boost)
```

```
    function calculateReputation(address voter)
        public view returns (uint256)
    {
        uint256 participationCount =
            governanceHistory.getParticipationCount(voter);
        uint256 proposalQuality =
            governanceHistory.getProposalQuality(voter);

        // Reputation = 0.3 * participation + 0.2 * quality
        // Max reputation: 0.5 (50% boost)
        uint256 reputation =
            (participationCount * 300 / 1000) +
            (proposalQuality * 200 / 1000);

        return min(reputation, 500); // Cap at 50%
    }

    // Final voting power
    function getVotingPower(address voter)
        public view returns (uint256)
    {
        uint256 base = calculateBaseVotingPower(voter);
        uint256 reputation = calculateReputation(voter);

        // VP = base * (1 + reputation)
        return base * (1000 + reputation) / 1000;
    }
}
```

Listing 2: Voting power calculation with reputation

5.3 Quantum-Secure Vote Aggregation

Votes are secured using dual-certificate signatures (BLS + Pulsar):

```
contract QuantumSecureVoting {
    struct DualSignature {
        bytes blsSignature;      // 48 bytes
        bytes coronaSignature; // ~2.5KB
    }

    function verifyVote(
        address voter,
        uint256 proposalId,
        Vote vote,
        DualSignature calldata sig
    ) public view returns (bool) {
        bytes32 message = keccak256(abi.encodePacked(
            voter, proposalId, vote
        ));

        // Verify both signatures (classical + quantum-safe)
        bool blsValid = verifyBLS(
            voter, message, sig.blsSignature
        );
        bool coronaValid = verifyCorona(
            voter, message, sig.coronaSignature
        );
```

```
24
25          return blsValid && coronaValid;
26      }
27
28      // BLS signature aggregation for efficiency
29      function aggregateVotes(
30          DualSignature[] calldata signatures
31      ) public pure returns (bytes memory aggregatedBLS) {
32          // BLS signatures can be aggregated O(1)
33          return bls.aggregate(extractBLS(signatures));
34      }
35  }
```

Listing 3: Quantum-secure vote verification

6 Cross-Ecosystem Coordination

6.1 Multi-Chain Proposals

Some proposals affect multiple ecosystems simultaneously:

Examples:

- Shared bridge upgrade (Lux + Zoo)
- AI model pricing affecting both Hanzo compute and Lux infrastructure
- Treasury allocation across ecosystems
- Brand and messaging consistency

Cross-Ecosystem Voting Process:

Algorithm 2 Cross-Ecosystem Proposal Voting

function CROSSECOSYSTEMVOTE($proposal, ecosystems$)
  for each $ecosystem$ in $ecosystems$ **do**
    $vote[ecosystem] \leftarrow$ CONDUCTVOTE($proposal, ecosystem$)
  end for
  $totalVotingPower \leftarrow \sum_e votingPower[e]$
  $weightedFor \leftarrow \sum_e (vote[e].for \times votingPower[e])$
  $weightedAgainst \leftarrow \sum_e (vote[e].against \times votingPower[e])$
  if $weightedFor > 0.67 \times totalVotingPower$ **then**
    return `APPROVED`
  else
    return `REJECTED`
  end if
end function

Ecosystem Voting Weights:

- **Lux**: 50% (foundational infrastructure)
- **Zoo**: 30% (user-facing applications)
- **Hanzo**: 20% (AI infrastructure)

6.2 Bridge Governance Contract

Cross-chain messaging enables coordinated voting:

```
interface ICrossChainGovernance {
    struct CrossChainProposal {
        uint256 proposalId;
        address[] targetChains;      // Chains affected
        uint256[] chainVoteWeights;  // Voting weights
        mapping(address => ChainVote) chainVotes;
    }

    struct ChainVote {
        uint256 forVotes;
        uint256 againstVotes;
        bool finalized;
    }

    // Submit vote from one chain
    function submitChainVote(
        uint256 proposalId,
        address chainId,
        uint256 forVotes,
        uint256 againstVotes,
        bytes calldata proof  // Cross-chain proof
    ) external;

    // Aggregate votes across all chains
    function aggregateVotes(uint256 proposalId)
        external view returns (
            uint256 totalFor,
            uint256 totalAgainst
        );
}
```

Listing 4: Cross-chain governance bridge

7 Validator Participation

7.1 Enhanced Voting Weight for Technical Proposals

Validators receive enhanced voting weight for protocol-level LPs:

$$VP_{validator} = VP_{base} \times (1 + \alpha \times \text{ValidatorScore}) \tag{4}$$

Where:

- $\alpha = 0.5$ for protocol LPs, 0 for non-technical LPs
- ValidatorScore: Performance metric (uptime, block production, etc.)

Validator Score Calculation:

$$\text{ValidatorScore} = 0.4 \times \text{Uptime} + 0.3 \times \text{BlocksProd} + 0.3 \times \text{Reputation} \tag{5}$$

7.2 Validator Reputation System

Validators gain reputation through:

- **Consistent uptime**: 99.9%+ availability
- **Participation in governance**: Voting on ¿80% of proposals
- **Quality reviews**: Providing substantive LP feedback
- **Technical contributions**: Contributing code, documentation

Reputation Decay:

- -10% per missed governance vote
- -20% per downtime incident (¿1 hour)
- -50% per protocol violation (slashing event)

8 Incentive Structures

8.1 Participation Rewards

Voting Rewards:

- 0.1 LUX per vote cast (distributed quarterly)
- Bonus 0.05 LUX for voting within first 24 hours
- Annual participation reward: ˜5-8% APY on staked governance tokens

LP Author Rewards:

- 500 LUX for successfully activated protocol LP
- 250 LUX for standard LP
- 1000 LUX for high-impact LP (determined by community vote)

Reviewer Rewards:

- 50 LUX per substantive review (quality assessed by LP editors)
- 100 LUX for full security analysis
- 25 LUX for minor feedback and corrections

8.2 Implementation Bounties

Complex LPs may have implementation bounties:

Bounty Conditions:

- Full implementation matching LP specification
- Test coverage above 90%
- Security audit passed (if critical)
- Documentation completed
- Integration with existing systems verified

LP Complexity	Bounty Range
Minor (1-2 weeks)	2,000-5,000 LUX
Medium (3-6 weeks)	5,000-15,000 LUX
Major (7-12 weeks)	15,000-50,000 LUX
Critical (¿12 weeks)	50,000-200,000 LUX

Table 3: Implementation bounty ranges

8.3 Delegation Rewards

Token holders delegating votes to validators share rewards:

$$\text{DelegatorReward} = \text{ValidatorReward} \times (1 - \text{Commission}) \times \frac{\text{DelegatedStake}}{\text{TotalStake}} \tag{6}$$

Where:

- Commission: Validator commission rate (typically 5-20%)
- DelegatedStake: Amount delegated by this delegator
- TotalStake: Validator's total stake (self + delegated)

9 Security and Attack Prevention

9.1 Governance Attack Vectors

Common Attacks:

1. **51% Attack**: Attacker acquires majority voting power
2. **Sybil Attack**: Creating multiple fake identities to inflate voting power
3. **Bribery Attack**: Paying voters to vote particular way
4. **Flash Loan Attack**: Borrowing tokens temporarily to vote
5. **Front-Running**: Observing vote outcomes and acting before execution

9.2 Mitigation Strategies

1. Time-Locked Staking:

- Tokens must be staked for ≥ 7 days before gaining voting power
- Prevents flash loan attacks
- Snapshot voting power at proposal creation block

2. Quadratic Voting:

- Cost of n votes: n^2 tokens
- Reduces whale dominance
- Makes vote buying less economically viable

3. Validator Verification:

- Validators must prove stake and identity
- Enhanced security through validator consensus
- Slashing for malicious voting behavior

4. Proposal Deposits:

- Proposers stake 100-1000 LUX (refunded if approved)
- Prevents spam proposals
- Slashed if proposal determined malicious

5. Emergency Pause:

- 5-of-7 multisig can pause governance in emergency
- Multisig controlled by trusted community members
- Transparent 48-hour timelock on pause activation

9.3 Post-Quantum Security

Governance signatures use Quasar dual-certificate system:

```
struct GovernanceSignature {
    // Classical security (BLS aggregate)
    bytes48 blsSignature;

    // Quantum security (Pulsar lattice-based)
    bytes coronaSignature;  // ~2.5KB

    // Validator index in committee
    uint16 validatorIndex;

    // Proposal being signed
    uint256 proposalId;
}

function verifyGovernanceVote(
    GovernanceSignature calldata sig
) external view returns (bool) {
    // Both signatures must verify
    bool classicalValid = verifyBLS(sig);
    bool quantumValid = verifyCorona(sig);

    return classicalValid && quantumValid;
}
```

Listing 5: Quantum-secure governance signature

10 DAO Treasury Management

10.1 Treasury Composition

10.2 Treasury Allocation Principles

1. **Development Grants**: 40% allocated to protocol development

Asset	Amount	Value (USD)	% of Total
LUX	12.4M	$68.2M	53.3%
ZOO	840M	$25.2M	19.7%
HANZO	1.8M	$18.9M	14.8%
ETH	1,240	$4.2M	3.3%
BTC	58	$3.8M	3.0%
Stablecoins	-	$7.7M	6.0%
Total	-	**$128M**	**100%**

Table 4: DAO treasury composition (Q3 2024)

2. **Security Audits**: 15% reserved for security reviews
3. **Marketing**: 10% for ecosystem growth
4. **Liquidity Provision**: 20% for DEX liquidity
5. **Reserve Fund**: 15% emergency reserve

10.3 Spending Approval Process

Small Grants (¡$10k):

- Approved by grants committee (7 members)
- No full DAO vote required
- Monthly transparency report

Medium Grants ($10k-$100k):

- Standard LP process
- Simple majority vote
- 10% quorum requirement

Large Grants (¿$100k):

- Protocol LP process
- Supermajority (67%) vote
- 15% quorum requirement
- Validator approval required

11 Historical Performance

11.1 Notable LPs

11.2 Participation Trends

12 Tools and Infrastructure

12.1 Governance Portal

Web interface at `https://governance.lux.network` providing:

LP	Title	Status	Vote
LP-110	Quasar Consensus	Activated	87.2% For
LP-204	secp256r1 Support	Activated	92.1% For
LP-301	Bridge Upgrade	Activated	78.5% For
LP-302	Z-Chain Privacy	Activated	81.3% For
LP-303	Quantum Security	In Progress	-
LP-304	Lux Credit	Proposed	-

Table 5: Major LPs and voting results

Quarter	Active Voters	LPs Voted	Avg Participation
Q4 2023	4,821	12	14.2%
Q1 2024	7,143	18	15.8%
Q2 2024	9,582	21	17.1%
Q3 2024	12,847	23	18.3%
Growth	**+166%**	**+92%**	**+29%**

Table 6: Governance participation growth

- **Proposal Dashboard**: All active and historical LPs
- **Voting Interface**: Simple UI for casting votes
- **Delegation Management**: Delegate to validators
- **Reputation Tracking**: View your governance reputation
- **Treasury Analytics**: Real-time treasury composition
- **Historical Votes**: Search past proposals and outcomes

12.2 LP Repository

GitHub repository at `github.com/luxfi/lps` containing:

- All LP documents (markdown format)
- LP templates for different categories
- Automated LP number assignment
- CI/CD for LP validation
- Integration with governance contracts

12.3 Discussion Platforms

1. **GitHub Discussions**: Formal LP discussion and review
2. **Discord**: Real-time community discussion (`discord.gg/luxnetwork`)
3. **Forum**: Long-form analysis and debate (`forum.lux.network`)
4. **Community Calls**: Bi-weekly governance calls with core team

13 Comparison with Other DAOs

Metric	Lux	Maker	Uniswap	Compound
Avg Participation	18.3%	4.2%	3.8%	6.1%
Proposals/Year	94	52	28	31
Avg Vote Duration	7.2 days	14 days	7 days	3 days
Treasury Value	$128M	$8.2B	$2.1B	$850M
Quantum-Secure	Yes	No	No	No
Cross-Chain	Yes	No	No	No

Table 7: DAO comparison metrics

14 Future Enhancements

14.1 Planned Improvements

1. **Futarchy Integration** (Q4 2024):
   - Prediction markets for all proposal outcomes
   - Bet on proposal impact rather than preference
   - "Vote values, bet beliefs" paradigm
2. **Cross-Chain Governance Expansion** (Q1 2025):
   - Support for Cosmos IBC governance
   - Ethereum L2 governance integration
   - Bitcoin governance via threshold signatures
3. **AI-Assisted Review** (Q2 2025):
   - Automated security analysis of LPs
   - Economic impact simulation
   - Natural language LP summarization
   - Conflict detection with existing proposals
4. **Continuous Voting** (Q3 2025):
   - Real-time preference aggregation
   - Fluid democracy with dynamic delegation
   - Instant governance for non-critical parameters

15 Conclusion

Lux Governance demonstrates that decentralized coordination across multiple ecosystems is achievable through thoughtful protocol design. By combining holographic consensus for scalability, LP standardization for quality assurance, quantum-secure voting for long-term security, and cross-ecosystem coordination for unified decision-making, the framework achieves 18.3% voter participation (4-5× higher than typical DAOs) while successfully coordinating protocol upgrades across Lux blockchain infrastructure, Zoo DeFi marketplace, and Hanzo AI compute.

Key achievements include:

- 94 LPs successfully activated across 3 ecosystems
- $128M treasury managed transparently
- Zero successful governance attacks
- 12,847 active participants with growing engagement
- Quantum-secure vote aggregation for future-proof security

The framework provides a blueprint for multi-ecosystem governance that maintains decentralization, security, and efficiency as blockchain and AI systems continue to converge.

Acknowledgments

Lux Governance has been developed with input from:

- Lux core development team
- Zoo community and marketplace participants
- Hanzo AI infrastructure contributors
- Independent security researchers
- Validator operators and delegators
- Active LP authors and reviewers

Special thanks to DAOstack for pioneering holographic consensus, Ethereum Foundation for establishing the EIP process, and the broader DAO research community for advancing decentralized governance mechanisms.

Appendix A: LP Template

```
---
lp: <LP number>
title: <LP title>
description: <Brief description>
author: <Name> (@github)
discussions-to: <URL>
status: Draft|Proposed|Review|Implementable|Voting|Activated
type: Standards Track|Informational|Meta
category: Core|Networking|Interface|Application
created: YYYY-MM-DD
requires: <LP numbers>
replaces: <LP numbers>
---

## Abstract
[200-word summary]

## Motivation
[Why this change is needed]
```

```
## Specification
[Technical details]

## Rationale
[Design decisions and alternatives]

## Backwards Compatibility
[Breaking changes and migration]

## Test Cases
[Test scenarios]

## Reference Implementation
[Code or pseudocode]

## Security Considerations
[Security implications]

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Code: Apache 2.0
```

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