AI Parliament - Complete Product Requirements Document (PRD)

Version: 1.0

Date: February 12, 2026

Status: Ready for Implementation

Project: AI Parliament - Multi-Agent Blockchain Governance Platform

Executive Summary

AI Parliament is a blockchain-integrated, multi-agent deliberation platform that simulates structured policy debates between 20+ specialized AI agents, each representing distinct philosophical and domain perspectives. Built on Archestra.ai's MCP-native infrastructure and secured by blockchain technology, it produces balanced, well-reasoned policy recommendations with full transparency and auditability.

Value Proposition

For Governments:

• Transparent policy-making process

• Multi-stakeholder perspectives considered systematically

• Immutable audit trail for accountability

• Public trust through verifiable deliberation

For Corporations:

• Strategic decision-making with comprehensive risk analysis

• Stakeholder impact assessment

• Board-level compliance documentation

• Ethical review automation

For Communities:

• Democratic deliberation at scale

• Budget allocation transparency

• Long-term planning with diverse perspectives

Key Differentiators

20+ Specialized Agents - Not generic AI, but purpose-built personas

Dynamic Participation - Agents self-select based on relevance

Blockchain-Verified - Every debate immutably recorded

Production-Ready - Built on Archestra's enterprise platform

Token Economics - Governance and incentive alignment

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1. Product Vision & Goals

1.1 Vision Statement

"To make governance transparent, inclusive, and verifiable through AI-powered deliberation that considers every stakeholder perspective while maintaining complete public accountability via blockchain."

1.2 Mission

Enable better collective decision-making by:

• Surfacing blind spots through diverse AI perspectives

• Documenting reasoning processes immutably
• Democratizing access to expert-level policy analysis
• Building trust through transparency

1.3 Primary Goals (6 Months)

Launch MVP with 20 agents and basic blockchain integration

100+ Debates conducted on production

5 Enterprise Pilots (government/corporate)

10,000+ PARL Tokens in circulation

Community of 500+ active governance participants

2. Target Users

2.1 Primary Personas

Persona 1: Policy Director Paula

• Role: Senior policy advisor at city government
• Age: 42
• Tech Savvy: Medium
• Goals:
• Make evidence-based policy decisions
• Show constituents transparent process
• Balance competing stakeholder interests
• Pain Points:
• Traditional consultations are slow and expensive
• Hard to demonstrate neutrality
• Missing perspectives in decision-making
• Use Cases:
• Climate policy development
• Budget allocation
• Zoning decisions

Persona 2: Corporate Strategist Sam

• Role: Chief Strategy Officer at tech company
• Age: 38

• Tech Savvy: High

• Goals:

• Risk assessment for strategic initiatives

• ESG compliance documentation

• Board-ready decision frameworks

• Pain Points:

• Blind spots in strategic planning

• Time-consuming stakeholder analysis

• Need audit trail for decisions

• Use Cases:

• M&A evaluation

• Product launch ethics review

• Sustainability strategy

Persona 3: Crypto DAO Member Devon

• Role: Active DAO governance participant

• Age: 29

• Tech Savvy: Very High

• Goals:

• Transparent governance processes

• Token-weighted voting

• Verifiable decision history

• Pain Points:

• DAO proposals lack depth

• Governance fatigue

• Need better deliberation tools

• Use Cases:

• Treasury allocation

• Protocol upgrades

• Partnership decisions

3. Core Features

3.1 Feature Hierarchy

■■ AI PARLIAMENT

F1: AGENT SYSTEM

• F1.1: 20+ Specialized Agents

• F1.2: Dynamic Agent Selection

• F1.3: Agent Reputation System

• F1.4: Coalition Formation

• F1.5: Devil's Advocate Mode

F2: DEBATE ENGINE

• F2.1: 6-Phase Debate Protocol

• F2.2: Evidence Integration (Web Search)

• F2.3: Real-Time Argumentation

• F2.4: Position Tracking

• F2.5: Policy Synthesis

F3: BLOCKCHAIN LAYER

• F3.1: On-Chain Debate Registry

• F3.2: IPFS Transcript Storage

• F3.3: Smart Contract Voting

• F3.4: Governance Token (PARL)

• F3.5: NFT Achievement Badges

F4: USER INTERFACE

• F4.1: Debate Setup Wizard

• F4.2: Live Debate Visualization

• F4.3: Coalition Map View

• F4.4: Argument Graph

• F4.5: Policy Document Export

• F4.6: Blockchain Explorer Integration

F5: COLLABORATION

• F5.1: Multi-User Observation

• F5.2: Moderator Controls

• F5.3: Comment System

• F5.4: Share & Export

• F5.5: Workspace Management

F6: ANALYTICS

• F6.1: Cost Dashboard
• F6.2: Performance Metrics
• F6.3: Quality Scoring
• F6.4: Historical Trends
• F6.5: Agent Leaderboard

F7: TOKEN ECONOMY
• F7.1: Prediction Markets
• F7.2: Staking Mechanisms
• F7.3: Reward Distribution
• F7.4: DAO Governance
• F7.5: Token Utility

4. Technical Architecture

4.1 System Overview

4.2 Technology Stack

Frontend:
• Next.js 14 (App Router)
• React 18
• Tailwind CSS
• RainbowKit (Wallet Connection)
• wagmi (Ethereum Hooks)
• Socket.io Client (WebSocket)

Backend:
• Node.js 20
• Express.js
• PostgreSQL (Database)
• Redis (Caching)
• Socket.io (WebSocket Server)

AI/MCP:
• Archestra.ai (Agent Runtime)

• Model Context Protocol SDK

• Claude Sonnet 4.5

Blockchain:

• Base L2 (Network)

• Ethers.js v6 (Web3 Library)

• Hardhat (Development)

• OpenZeppelin Contracts

Storage:

• IPFS (via Pinata)

• AWS S3 (Backup)

Deployment:

• Vercel (Frontend)

• AWS ECS (Backend)

• CloudFlare (CDN)

5. Agent System

5.1 Complete Agent Roster (21 Agents)

5.2 Agent Characteristics

Each agent has:

• System Prompt: 500-800 token personality definition

• Temperature: 0.4-0.9 (varies by personality)

• Max Tokens: 300-500 per turn

• Tools: Web search, calculator, parliament MCP

• Cost Limit: $2 per debate maximum

• Expertise Keywords: For auto-selection algorithm

5.3 Dynamic Agent Selection

Agents are selected based on:

Core 5: Always included (Utilitarian, Risk-Averse, Innovation, Ethical, Budget)

Keyword Matching: Topic analyzed for relevant expertise

Relevance Scoring: Algorithm scores each agent 0-10

User Override: User can manually add/remove agents

Cost Consideration: More agents = higher cost

Selection Algorithm:

• Extract keywords from topic

• Match against agent expertise areas

• Score based on keyword frequency + domain relevance

• Recommend top 5 additional agents beyond core 5

• Maximum 15 agents per debate (performance limit)

6. Debate Protocol

6.1 Six-Phase Structure

Phase 1: Initial Positions (2-3 min)

• Each agent states their position

• 1 turn per agent

• No cross-talk yet

• Establishes baseline stances

Phase 2: Socratic Questioning (3-4 min)

• Agents ask clarifying questions

• 2 turns per agent

• Expose assumptions

• Identify factual vs. value disagreements

Phase 3: Evidence Presentation (4-5 min)

• Agents support positions with data

• Web search enabled

• 2-3 turns per agent

• Citations required

Phase 4: Argument Refinement (3-4 min)

• Respond to critiques

• Acknowledge valid points

• Shift positions if warranted

• 2 turns per agent

Phase 5: Coalition Building (2-3 min)

• Identify areas of agreement

• Form temporary alliances

• Propose compromises

• 1-2 turns per agent

Phase 6: Synthesis (1-2 min)

• System generates final policy

• Categorizes recommendations

• Preserves dissent

• 1 turn (automated)

6.2 Phase Transition Criteria

Debate advances when:

• All agents have spoken required number of times

• Minimum time elapsed for phase

• Quality threshold met (e.g., citations provided)

• Moderator manually advances (if needed)

6.3 Coalition Detection Algorithm

Coalitions form when:

• 2+ agents share similar position (>70% overlap)

• Agents reference each other supportively

• Shared priorities identified

Coalition strength calculated by:

• Position similarity score

• Number of members

• Confidence levels of members

• Stability over time

7. Blockchain Integration

7.1 Smart Contract Architecture

ParliamentRegistry.sol

• Stores all agent metadata

• Tracks agent reputation scores

• Manages authorized deployers

DebateSession.sol

• Records debate metadata on-chain

• Stores statement hashes (not full text)

• Tracks phase progression

• Links to IPFS for full content

ParliamentToken.sol (PARL)

• ERC-20 governance token

• Staking mechanisms

• Reward distribution

• 1,000,000 total supply

DAOGovernance.sol

• Proposal creation & voting

• Quorum requirements (100,000 PARL)

• 7-day voting periods

• Execution logic

ParliamentBadges.sol

• ERC-721 NFT badges

• Achievement tracking

• Unique metadata per badge

• Viewable on OpenSea

7.2 IPFS Storage Strategy

What goes on IPFS:

• Full debate transcripts (JSON)

• Final policy documents (JSON + rendered HTML)

• Evidence bundles (all cited sources)

• Agent response signatures

IPFS Structure:

Pinning Strategy:

• Use Pinata for reliable pinning

• Pin immediately upon upload

• Verify CID after pinning

• Store CID on-chain

• Gateway: https://gateway.pinata.cloud/ipfs/{CID}

7.3 Token Economics

PARL Token Allocation:

• 40% Public Sale (400,000)

• 20% Reward Pool (200,000)

• 15% Team (150,000)

• 15% Treasury (150,000)

• 10% Liquidity (100,000)

Token Utility:

Governance Voting - Vote on proposals

Prediction Markets - Stake on outcomes

Debate Initiation - Burn to create debates (anti-spam)

Agent Sponsorship - Stake on favorite agents

Premium Features - Access private debates

Reward Mechanisms:

• Debate participation: 10 PARL

• Correct prediction: 20% bonus on stake

• Proposal creation: 5 PARL

• Top agent performance: 50 PARL

• NFT minting: Free with debate participation

8. UI/UX Design System

8.1 Color Palette

Primary Colors:

Agent Colors:

8.2 Typography

Fonts:

• Display & Body: Inter

• Monospace: JetBrains Mono

Scale:

• xs: 12px

• sm: 14px

• base: 16px

• lg: 18px

• xl: 20px

• 2xl: 24px

• 3xl: 30px

• 4xl: 36px

• 5xl: 48px

8.3 Component Examples

Button:

Agent Card:

Statement Card:

9. User Flows

9.1 New User Onboarding

Land on homepage → See value proposition

Click "Start a Debate" → Tutorial begins

Choose topic → Suggested topics or custom

Meet agents → Interactive agent cards

Set preferences → Blockchain, budget, duration

Launch debate → Watch in real-time

Policy generated → Download & share

Achievement unlocked → "Parliament Founder" NFT

Next steps → Create another or explore

Success Criteria:

• Time to first debate: < 5 minutes

• Completion rate: > 80%

• Return rate (7d): > 50%

9.2 Creating a Debate

Click "New Debate"

Enter topic → AI suggests refinements

Select agents → Auto-recommended + manual

Enable blockchain → Toggle options

Review summary → Cost estimate shown

Approve transaction → MetaMask popup

Debate launches → Real-time stream begins

Share link → Invite observers

Success Criteria:

• Setup completion: > 85%

• Time to launch: < 3 minutes

• Blockchain opt-in: > 60%

9.3 Observing a Debate

Receive link → Email, social, direct

Load debate page → See live stream

Watch agents → Real-time statements

View coalitions → Sidebar updates

Make prediction → Stake PARL tokens

Debate completes → Policy appears

Claim rewards → If prediction correct

Mint NFT → Observer badge

Success Criteria:

• Observer retention: > 70% stay until end

• Engagement: > 40% comment or interact

• Share rate: > 15%

10. API Specifications

10.1 Base URL

10.2 Authentication

10.3 Key Endpoints

POST /debates

Create a new debate

GET /debates/{debateId}

Get debate details

GET /debates/{debateId}/statements

Get all statements

GET /debates/{debateId}/policy

Get final policy document

GET /agents

List all agents

GET /agents/{agentId}

Get agent details

POST /governance/proposals/{id}/vote

Vote on governance proposal

GET /governance/tokens/balance

Get PARL token balance

10.4 WebSocket Events

Connection:

Events:

• agent_statement - New statement posted

• phase_change - Debate phase advanced
• coalition_formed - Agents formed alliance
• position_changed - Agent changed stance
• debate_completed - Policy generated
• cost_update - Cost tracking update
• error - Error occurred

11. Smart Contract Specifications

11.1 Contract Suite

ParliamentRegistry.sol
• Register agents
• Update reputation
• Track performance

DebateSession.sol
• Create debates
• Record statements
• Advance phases
• Complete debates

ParliamentToken.sol
• ERC-20 token
• Staking functions
• Reward distribution

DAOGovernance.sol
• Proposal creation
• Voting mechanism
• Execution logic

ParliamentBadges.sol
• ERC-721 NFTs
• Achievement tracking
• Metadata storage

11.2 Deployment

Networks:

• Base Sepolia (Testnet): Chain ID 84532

• Base Mainnet: Chain ID 8453

Estimated Gas Costs:

• Deploy all contracts: ~$50 (one-time)

• Create debate: ~$0.50

• Record statement: ~$0.10

• Complete debate: ~$0.30

• Mint NFT: ~$0.25

• Vote on proposal: ~$0.15

Contract Addresses (will be deployed):

12. Security & Compliance

12.1 Security Measures

Smart Contracts:

• OpenZeppelin audited libraries

• Reentrancy guards

• Access control

• Rate limiting

• Emergency pause

• Multisig ownership

API:

• JWT authentication

• Rate limiting (100 req/min)

• Input validation

• SQL injection prevention

• XSS protection

• HTTPS only (TLS 1.3)

Data Privacy:

• GDPR compliant
• CCPA compliant
• Right to deletion (off-chain only)
• Encrypted at rest (AES-256)
• Encrypted in transit (TLS)

12.2 Compliance

Legal:
• Terms of Service
• Privacy Policy
• Cookie Policy
• DMCA Compliance

Blockchain:
• No securities (PARL is governance only)
• Compliance with local regulations
• KYC/AML for large transactions (if required)

13. Performance Requirements

13.1 Performance Targets

13.2 Scalability

• Horizontal scaling (Kubernetes)
• Database read replicas
• Redis caching
• CDN for static assets
• IPFS gateway caching
• Load balancers

14. Analytics & Metrics

14.1 Key Metrics

Product:

• Daily/Weekly/Monthly Active Users

• Debates created per day

• Debate completion rate

• Average debate duration

• Consensus achievement rate

Engagement:

• Time spent per session

• Observer participation

• Prediction market engagement

• Governance voting rate

• NFT mint rate

Business:

• PARL token price

• Token circulation

• Enterprise pilots

• Revenue (if monetized)

Technical:

• API uptime (99.9% target)

• Error rate (< 0.1%)

• Average response time

• Blockchain tx success rate

15. Implementation Timeline

15.1 Hackathon Sprint (48 Hours)

Day 1 (0-24h):

• Hours 0-4: Setup & Foundation

• Hours 4-12: Core MCP Server

• Hours 12-20: Smart Contracts

• Hours 20-24: Frontend Foundation

Day 2 (24-48h):

• Hours 24-32: Integration
• Hours 32-40: Polish & Features
• Hours 40-46: Demo Preparation
• Hours 46-48: Final Touches

15.2 Post-Hackathon (6 Months)

Month 1-2: MVP Polish
• UI/UX improvements
• More agents (30+)
• Performance optimization
• Security audit
• Beta testing (50 users)

Month 3-4: Enterprise Features
• Team workspaces
• Private debates
• Custom agents
• API access
• SSO authentication

Month 5-6: Public Launch
• Marketing campaign
• Token sale (if applicable)
• Partnerships
• Community building

16. Success Metrics

16.1 Hackathon Success

Judging Criteria:
• Innovation: AI + MCP + Blockchain
• Technical Depth: 3 systems integrated
• Practical Impact: Solves real problem
• Demo Quality: Live on blockchain

• Completeness: End-to-end functional

Target Metrics:

• Complete 3+ debates during demo

• Record all on Base Sepolia

• Mint 3+ NFT badges

• Sub-$5 cost per debate

• < 2 min demo setup

16.2 Post-Launch (6 Months)

User Metrics:

• 500+ registered users

• 100+ debates created

• 10,000+ PARL distributed

• 50+ NFT badges minted

• 5 enterprise pilots

Quality Metrics:

• 70%+ consensus rate

• 8.5/10 quality score

• 4.5/5 user satisfaction

• < 0.5% error rate

• 99.9% uptime

17. Appendices

17.1 Glossary

• Agent: AI persona with specific philosophy

• Coalition: Temporary alliance between agents

• Consensus: Agreement level (>70% = strong)

• Debate: Structured deliberation

• IPFS: Decentralized storage

• MCP: Model Context Protocol

• NFT: Non-fungible token

• PARL: Parliament governance token

• Phase: Stage of debate (6 total)

• Policy: Final recommendation

• Synthesis: Policy generation process

17.2 References

• Anthropic Claude: https://docs.anthropic.com

• Archestra: https://archestra.ai/docs

• MCP: https://modelcontextprotocol.io

• Base Network: https://base.org

• IPFS: https://ipfs.io

• OpenZeppelin: https://docs.openzeppelin.com

17.3 Contact

• GitHub: https://github.com/aiparliament/core

• Discord: https://discord.gg/aiparliament

• Twitter: @AIParliament

• Email: support@aiparliament.xyz

• Demo: https://demo.aiparliament.xyz

Conclusion

AI Parliament represents a novel approach to governance by combining:

• AI Multi-Agent Systems for diverse perspectives

• Model Context Protocol for structured tool use

• Blockchain Technology for transparency and trust

• Archestra Platform for production-ready deployment

The result is a platform that can:

Generate balanced, well-reasoned policy recommendations

Consider 20+ distinct philosophical and domain perspectives

Provide complete transparency through blockchain verification

Scale to handle government and enterprise use cases

Enable democratic participation through token governance

This is not just a hackathon demo—it's a glimpse into the future of collaborative decision-making.

Document Status: Complete

Ready for Implementation: Yes

Estimated Implementation Time: 48 hours (MVP)

Long-term Vision: 6-12 months to production scale

■■ AI Parliament - Making governance transparent, one debate at a time.

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