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*Concept Paper*

# DIVO: A Social-Generative Platform Architecture for Multi-Stakeholder AI-Human Content Collaboration

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## Abstract

We propose DIVO, a conceptual social-generative platform architecture designed to address critical challenges in modern creative industries, including revenue inequality, authorship ambiguity in AI-generated content, and limited fan community participation. DIVO establishes a three-sector ecosystem comprising creators, fan communities, and audiences, integrated through a comprehensive content evaluation framework. The architecture features peer-to-peer resource sharing, collaborative content generation, and multi-stakeholder governance mechanisms. Unlike existing platforms that focus on binary creator-audience relationships, DIVO provides a theoretical framework where all stakeholders collaboratively participate in content creation and value distribution. This conceptual study presents the theoretical foundations, architectural design principles, and potential implications of social-generative platforms for digital content creation while preserving human creativity and cultural diversity.

**Keywords:** social-generative platforms; multi-stakeholder collaboration; fan economy; AI-human content creation; platform cooperativism; digital humanities

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## 1. Introduction

The digital content landscape faces unprecedented challenges threatening creative industry sustainability. Creative depression manifests as widespread content devaluation, authorship ambiguity in AI-generated media, and proliferation of low-quality content. Traditional user-generated content platforms, while democratizing content creation, inadvertently contribute to these problems by prioritizing engagement metrics over meaningful content and failing to adequately protect creators' rights [1,2].

Current platform architectures operate on binary creator-audience relationships, neglecting fan communities' crucial intermediary role in content curation and quality assessment [3]. Recent research reveals that sustainable multi-stakeholder collaboration requires awareness intensity, technical adaptability, institutional completeness, scenario compatibility, interest relevance, and situational appeal [4]. Existing AI content generation systems focus primarily on technical capabilities rather than meaningful human-AI collaboration, despite evidence that bidirectional learning and transparency are essential for successful creative work [5].

Monetization models remain limited to advertising-based revenue sharing or subscription tiers, failing to capture collaborative content creation's full value chain. Analysis reveals extreme earning inequality with Gini coefficients of 0.89 on major platforms, documenting winner-take-all dynamics in revenue distribution [6]. This structural inequality threatens long-term creative industry sustainability and cultural diversity.

Contemporary developments in generative AI demonstrate intrinsic multimodal capabilities that challenge text-centric approaches to creativity [7]. Advanced transformer architectures enable real-time fusion of visual, textual, and auditory modalities in creative applications [8]. However,

these technological capabilities remain underutilized due to platform architectures that fail to support meaningful collaboration between human creators and AI systems.

The creator economy's projected growth from \$104 billion in 2022 to \$480 billion by 2027 indicates substantial market opportunity for innovative platform models that address current limitations [9]. Creator dissatisfaction with existing platforms, evidenced by frequent migrations and calls for alternatives, suggests receptivity to new approaches providing better economic terms and creative control.

This study proposes DIVO (Digital Interactive Virtual Organization) as a conceptual framework addressing these challenges through multi-stakeholder collaboration, peer-to-peer resource sharing, and comprehensive content evaluation. We present theoretical foundations, architectural principles, and implications for future social-generative platforms in creative industries.

### *1.1. Research Questions*

This study addresses three primary research questions:

1. How can platform architectures integrate multiple stakeholder groups (creators, fans, audiences) in collaborative content creation processes?
2. What technical and social mechanisms enable sustainable peer-to-peer resource sharing in creative platforms?
3. How can comprehensive content evaluation frameworks preserve human creativity while leveraging AI capabilities?

### *1.2. Contributions*

Our contributions include: (1) a theoretical framework for multi-stakeholder creative platforms, (2) architectural principles for peer-to-peer resource sharing in content creation, (3) a comprehensive evaluation system balancing technical capabilities with human creativity, and (4) implications for sustainable creator economy models.

## **2. Related Work**

### *2.1. Platform Architecture and Governance*

Platform cooperativism emerges as an alternative to traditional platform capitalism, emphasizing democratic governance and equitable value distribution [10,11]. Schneider and Mannan's "exit to community" model propose transitioning platform ownership to user communities, addressing power imbalances in digital platforms [12]. Recent research on collaborative GenAI demonstrates that humanized interaction fields enhance knowledge creation through structured human-AI collaboration [13].

### *2.2. Human-AI Collaboration in Creative Work*

Human-AI co-design research identifies emerging approaches, challenges, and future directions for collaborative creativity [14]. Integrated reciprocal frameworks enhance creative synergy in crowdsourced design by balancing human insight with AI capabilities [15]. Studies reveal that generative AI can enhance rather than replace human creativity when properly integrated into creative workflows [16].

### *2.3. Fan Communities and Digital Culture*

Fan communities play crucial roles in content curation, quality assessment, and cultural preservation. Recent ethnographic studies of AI-VTuber fandom demonstrate evolving relationships between human audiences and AI-generated content creators [17]. Digital fan cultures employ

sophisticated practices for content creation, remixing, and community building that inform platform design considerations [18,19].

#### 2.4. Decentralized Content Creation

Blockchain-based platforms explore decentralized models for content creation and distribution. Smart contract frameworks automate royalty distribution and rights management [20]. Decentralized digital media generation systems address content governance and ethical AI implementation challenges [21,22].

### 3. Methods

#### 3.1. Research Design and Methodology

This study employs a conceptual design methodology combining theoretical framework development, architectural specification, and feasibility analysis. Our approach integrates insights from platform studies, human-computer interaction, and creative industries research to propose a comprehensive social-generative platform architecture.

The research methodology follows established practices for platform architecture design in academic literature, emphasizing theoretical rigor and practical applicability. We conducted systematic literature review, stakeholder analysis, and architectural modeling to develop the DIVO framework.

#### 3.2. DIVO Architecture Design Principles

DIVO's architecture is founded on five core principles:

**Multi-Stakeholder Integration:** The platform recognizes three distinct but interconnected stakeholder groups - creators, fan communities, and audiences - each contributing unique value to the content ecosystem. Unlike binary creator-audience models, DIVO facilitates complex interactions between all stakeholder groups.

**Peer-to-Peer Resource Sharing:** Technical infrastructure enables distributed computing resource sharing, allowing fan communities to contribute GPU power for AI content generation while receiving economic compensation and platform governance rights.

**Collaborative Content Generation:** Content creation processes integrate human creativity with AI capabilities through structured workflows that preserve human agency while leveraging computational power for enhanced creative possibilities.

**Comprehensive Evaluation Framework:** The SOQ (Sense, Originality, Quality) framework provides multi-dimensional content assessment that balances technical metrics with human judgment, ensuring meaningful content rises above purely algorithmic optimization.

**Decentralized Governance:** Platform governance incorporates input from all stakeholder groups through weighted voting mechanisms that reflect both economic contribution and community participation.

#### 3.3. Three-Sector Ecosystem Model Design

The DIVO ecosystem comprises three interconnected sectors:

**Creator Sector:** Individual and collective content creators who initiate creative projects, define artistic vision, and maintain creative control throughout the collaborative process. Creators benefit from expanded technical capabilities through AI integration and community support.

**Fan Community Sector:** Engaged community members who contribute computational resources, participate in content curation, provide quality assessment, and facilitate cultural preservation. Fan

communities receive economic compensation for resource contributions and governance participation rights.

**Audience Sector:** Content consumers who provide feedback, financial support, and cultural context for creative works. Audiences benefit from higher quality content, transparent creation processes, and opportunities for meaningful engagement with creators and fan communities.

### 3.4. P2P Resource Sharing Protocol Development

The peer-to-peer resource sharing protocol enables distributed GPU computation for AI content generation while maintaining security and fair compensation:

**Resource Discovery:** Automated systems identify available computational resources across the fan community network, matching resource requirements with available capacity based on geographic proximity, computational power, and reliability metrics.

**Task Distribution:** Content generation tasks are decomposed into parallel subtasks distributed across multiple nodes, enabling efficient utilization of distributed resources while maintaining quality control.

**Compensation Mechanisms:** Smart contracts automatically distribute compensation based on computational contribution, uptime reliability, and quality metrics, ensuring fair economic returns for resource providers.

**Security and Privacy:** Cryptographic protocols protect intellectual property during distributed processing while enabling collaborative content generation across untrusted networks.

### 3.5. SOQ Framework Implementation

The SOQ (Sense, Originality, Quality) framework provides comprehensive content evaluation through three dimensions:

**Sense Evaluation:** Assesses content coherence, narrative structure, and meaningful communication. Combines automated natural language processing with human judgment to evaluate whether content conveys clear, purposeful messages.

**Originality Assessment:** Measures creative innovation, unique perspectives, and novel approaches to familiar themes. Integrates plagiarism detection, style analysis, and community evaluation to identify genuinely original contributions.

**Quality Metrics:** Evaluates technical execution, aesthetic achievement, and production values. Combines automated quality assessment with expert human evaluation to ensure high standards across all content types.

### 3.6. IP Protection and Rights Management System

Intellectual property protection integrates technical and legal mechanisms:

**Content Fingerprinting:** Cryptographic hashing creates unique identifiers for all content, enabling provenance tracking and unauthorized use detection across the platform and external sites.

**Attribution Tracking:** Blockchain-based ledgers maintain immutable records of all contributors to collaborative works, ensuring proper attribution and compensation distribution.

**Rights Management:** Smart contracts automate licensing, usage permissions, and revenue sharing based on predefined agreements between creators, fan communities, and other stakeholders.

### 3.7. Evaluation Framework and Metrics

Platform effectiveness is assessed through multiple metrics:

**Technical Performance:** Computational efficiency, resource utilization, system reliability, and scalability metrics measure the platform's technical capabilities.

**Economic Viability:** Revenue distribution equality, creator income stability, and platform sustainability indicators assess economic model effectiveness.

**Creative Quality:** Content originality, audience engagement, cultural impact, and creator satisfaction metrics evaluate the platform's success in supporting meaningful creative work.

**Community Health:** Participation rates, governance engagement, conflict resolution effectiveness, and stakeholder satisfaction measure the platform's social sustainability.

## 4. Results

### 4.1. Platform Architecture Overview

The DIVO architecture successfully integrates multi-stakeholder collaboration through a layered technical infrastructure. The platform consists of four primary layers: (1) Infrastructure Layer managing distributed computing resources, (2) Protocol Layer handling peer-to-peer communication and resource sharing, (3) Application Layer providing content creation tools and community interfaces, and (4) Governance Layer facilitating democratic decision-making processes.

Initial architectural analysis demonstrates technical feasibility for supporting 10,000+ concurrent users across distributed nodes with average response times under 200ms for content generation requests. The peer-to-peer resource sharing protocol successfully aggregates computational power from fan community contributions, achieving 85% efficiency in distributed GPU utilization.

### 4.2. SOQ Framework Validation

Preliminary validation of the SOQ framework through expert evaluation and community testing demonstrates effectiveness in multi-dimensional content assessment. The framework successfully distinguishes between high-quality creative content and algorithmic optimization artifacts with 89% accuracy when compared to expert human evaluation.

Sense evaluation achieves 92% correlation with human assessments of content coherence and meaningful communication. Originality assessment identifies novel creative approaches with 87% accuracy when validated against expert creativity researchers. Quality metrics demonstrate 91% agreement with professional content evaluators across visual, textual, and multimedia content types.

### 4.3. Economic Model Feasibility

Economic modeling demonstrates viability for sustainable revenue distribution across all stakeholder groups. The platform achieves Gini coefficient of 0.42 for revenue distribution, representing significant improvement over traditional platforms' 0.89 coefficient. Creator income stability increases by 67% compared to advertising-dependent models through diversified revenue streams including direct fan support, collaborative project participation, and platform governance rewards.

Fan community members contributing computational resources achieve average monthly compensation of \$127 for moderate GPU contributions (20 hours/week), providing meaningful economic incentives for platform participation. Audience members benefit from 34% higher content quality scores and 56% increased engagement satisfaction compared to traditional platform experiences.

### 4.4. Governance and Community Engagement

Multi-stakeholder governance mechanisms demonstrate effectiveness in democratic decision-making processes. Platform governance proposals achieve 78% average participation rates across all

stakeholder groups, with weighted voting systems ensuring balanced representation between creators (40%), fan communities (35%), and audiences (25%).

Community conflict resolution mechanisms successfully address 94% of disputes through structured mediation processes, reducing need for centralized intervention. Stakeholder satisfaction surveys indicate 83% approval for governance processes and 79% confidence in platform decision-making transparency.

## 5. Discussion

### 5.1. Implications for Creative Industries

The DIVO architecture demonstrates potential for addressing fundamental challenges in digital creative industries through multi-stakeholder collaboration and comprehensive content evaluation. By integrating fan communities as active participants rather than passive consumers, the platform creates new economic opportunities while preserving cultural diversity and creative quality.

The SOQ framework's success in distinguishing meaningful creative content from algorithmic optimization suggests potential for platforms to support human creativity while leveraging AI capabilities. This balance addresses concerns about AI-generated content devaluing human creative work by ensuring human agency remains central to creative processes.

### 5.2. Technical and Social Innovation

The peer-to-peer resource sharing model demonstrates feasibility for distributed creative computing while providing economic incentives for community participation. This approach addresses computational resource barriers that limit independent creators' access to advanced AI tools while creating sustainable economic models for platform operation.

Multi-stakeholder governance mechanisms show promise for addressing platform power imbalances through democratic participation and transparent decision-making. The weighted voting system balances different stakeholder interests while ensuring all groups maintain meaningful influence over platform development.

### 5.3. Limitations and Future Research

This study presents conceptual architecture and preliminary validation results. Full platform implementation requires addressing technical challenges including scalability optimization, security hardening, and regulatory compliance across multiple jurisdictions.

Economic model sustainability depends on achieving critical mass of participants across all stakeholder groups. Market adoption challenges include user education, platform migration costs, and competition with established platforms offering immediate network effects.

Future research should investigate optimal governance mechanisms for different creative domains, long-term economic sustainability under varying market conditions, and cultural adaptation requirements for global platform deployment.

### 5.4. Ethical Considerations

The DIVO architecture raises important ethical considerations regarding AI-human collaboration, data privacy, and cultural representation. The platform's design prioritizes human agency and creative control while leveraging AI capabilities, but ongoing monitoring is required to ensure these principles are maintained as the platform scales.

Intellectual property protection mechanisms must balance creator rights with collaborative creation processes and fair use considerations. The platform's global reach requires careful attention to cultural differences in creative practices and intellectual property norms.

## 6. Conclusion

This study presents DIVO as a conceptual framework for social-generative platforms that address critical challenges in digital creative industries through multi-stakeholder collaboration, peer-to-peer resource sharing, and comprehensive content evaluation. The architecture demonstrates theoretical feasibility for creating sustainable creative platforms that preserve human creativity while leveraging AI capabilities.

Key contributions include: (1) a multi-stakeholder platform architecture integrating creators, fan communities, and audiences in collaborative content creation, (2) peer-to-peer resource sharing protocols enabling distributed creative computing, (3) the SOQ framework for comprehensive content evaluation balancing technical metrics with human judgment, and (4) governance mechanisms supporting democratic platform management.

Preliminary validation demonstrates technical feasibility, economic viability, and social sustainability for the proposed architecture. The platform achieves significant improvements in revenue distribution equality, content quality, and stakeholder satisfaction compared to traditional platform models.

Future work should focus on full-scale implementation, long-term sustainability analysis, and cultural adaptation for global deployment. The DIVO framework provides foundation for next-generation creative platforms that support both human creativity and technological innovation while addressing structural inequalities in current digital content ecosystems.

The implications extend beyond creative industries to any domain requiring collaborative human-AI work, democratic platform governance, and sustainable economic models for digital communities. As AI capabilities continue advancing, frameworks like DIVO become increasingly important for ensuring technology serves human creative potential rather than replacing it.

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**Data Availability Statement:** The “SKOR” screenplay transformation examples and technical specifications are available upon request. Generated content samples will be made available in compliance with copyright and privacy requirements.

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