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# **Reshaping the Media Ecosystem: Transformations in the Media Industry Driven by Blockchain Technology**

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**Abstract:** Since its inception, blockchain technology has had an intrinsic connection with the media industry. It presents a new vision for building a decentralized, transparent information world. This paper systematically reviews the three developmental stages of blockchain media (BcM<sup>1</sup>): the initial phase of cryptocurrency news media, the growth phase of decentralized content management, and the current phase of innovations such as NFTs, DAOs, and decentralized social media. The study concludes that emerging technologies are pioneering unprecedented development paths for the media industry through innovative infrastructures, yet significant hurdles remain. This paper aids in comprehensively understanding how blockchain technology is reshaping the media landscape and provides theoretical insights and practical implications for the future development of the industry. **Keywords:** Blockchain technology; Media transformation; Blockchain media; Decentralized content production and curation

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## Introduction

Since the publication of the Bitcoin white paper in 2008, blockchain technology, as a decentralized digital ledger and trust mechanism, has garnered widespread attention and application in various fields such as finance, supply chain, and healthcare. The media industry has always been a significant arena where blockchain technology is expected to bring about transformative changes.

The intrinsic connection between blockchain technology and the media industry is not only because the genesis block of Bitcoin embedded a news headline from "The Times" but also because it envisions a decentralized, transparent information world. In this vision, individuals gain equal participation and freedom of expression, and content production and dissemination are no longer subject to the censorship and manipulation of any centralized institution.

Initially, the Bitcoin network primarily served payment systems, failing to meet the storage and dissemination needs of multimedia content. It was not until 2015, with the introduction of Ethereum and its smart contracts, that blockchain technology broke through in the media field, giving rise to a series of innovative media forms based on decentralized frameworks.

New business models and operational mechanisms in content distribution, intellectual property protection, news publishing, and the creator economy emerged one after another. Nevertheless, doubts and concerns have persisted: Can blockchain media truly operate entirely independent of centralized institutions? Is decentralization genuinely beneficial for content production and distribution? What technical, commercial, and social obstacles must blockchain media overcome?

# 1. Development Stages of Blockchain Media

The development of blockchain media can be roughly divided into three stages, each reflecting different aspects and characteristics of the integration between blockchain technology and the media industry.

### 1.1 Initial Phase: The Era of Cryptocurrency News Media (2009-2015)

The birth of Bitcoin laid the foundation for cryptocurrency news. Due to the mainstream media's lack of attention to this emerging field, new media specializing in reporting Bitcoin and blockchain-related content emerged, such as Cointelegraph and CoinDesk.

However, due to the early Bitcoin network's technical limitations, there was little innovation in the media field. Bitcoin's 1MB block size limit made it incapable of storing large amounts of multimedia content. Additionally, the limited APIs further restricted the

possibilities of building applications based on Bitcoin.

#### **1.2** Growth Phase: The Wave of Decentralized Content Management (2015-2020)

The launch of Ethereum with smart contracts initiated a new stage of blockchain media innovation. Numerous new models of content distribution and monetization for creators based on blockchain emerged, such as Steemit and DTube. These platforms used token economics to incentivize users to contribute and review content, aiming to build a truly decentralized content ecosystem.

It is worth noting that although many "decentralized" projects emerged during this stage, some of them still relied on centralized server architectures, with crypto-economics serving only as an incentive mechanism, leading to disputes over "pseudo-decentralization."

#### 1.3 Innovation Peak: NFTs, DAOs, and Web3 (2021-Present)

2021 was dubbed the "Year of Cryptocurrency," with innovative concepts such as NFTs and DAOs quickly gaining attention and application in traditional media institutions. Media giants like Time Magazine and Reuters embraced NFTs, seeking new monetization paths and ways to interact with audiences<sup>[1]</sup>.

Meanwhile, some media-related DAOs (e.g., Friends With Benefits) leveraged blockchain's transparency and consensus mechanisms to attempt to establish a new type of decentralized media ecosystem. Other projects (e.g., Mirror) focused on creating comprehensive NFT publishing and trading systems to empower content creators.

In addition to NFTs and DAOs, the rise of the Web3 concept also drove demand for decentralized social media platforms (e.g., Mastodon, Damus). These platforms, based on federated networks and the ActivityPub protocol, offered users a new way of content distribution and interaction free from centralized platform censorship.

In summary, the development of blockchain media has transitioned from cryptocurrency news to content management and then to innovations in NFTs and Web3. This progression reflects the deepening and expansion of blockchain technology in the media field. Each new stage has brought novel innovation models and challenges to the media industry.

# 2. Opportunities and Challenges for Blockchain Media

Since the combination of blockchain technology and the media industry, it has brought unprecedented innovation possibilities while also triggering a series of complex challenges and resistance that the industry must collectively face and address.

#### 2.1 Infrastructure Limitations Hindering Innovation

Blockchain media innovation is significantly constrained by the performance of underlying blockchain networks. For instance, Ethereum's network experiences severe congestion during high-demand periods, leading to exorbitant transaction fees and deteriorated user experiences. A notable example occurred in October 2021, when the release of 9,999 NFTs by the "CryptoRaccoons" collective caused a traffic jam on the Ethereum network, with transaction fees skyrocketing to as much as \$2,000. This severely impacted user experience.<sup>[2]</sup>

Moreover, many so-called "decentralized" applications still rely heavily on centralized servers, failing to provide a fully decentralized experience. For example, Damus, a decentralized version of Twitter, requires users to upload images to third-party servers and cannot handle video content. This "semi-decentralized" status largely results from the nascent state of blockchain infrastructure. Continuous technological advancements and scalability improvements are essential for blockchain media innovations to deliver seamless, real-time experiences that challenge traditional centralized platforms.

#### 2.2 Content Governance Dilemmas

Decentralization offers new freedoms for content creation and distribution but also introduces significant governance challenges. How can we prevent the unchecked spread of misinformation and inappropriate content in a decentralized network? Establishing effective review and accountability mechanisms in a decentralized environment is a pressing issue.

Similarly, decentralized autonomous organizations (DAOs) aiming to create content platforms face risks of "mob rule" and lack professional oversight.<sup>[3]</sup>

The tension between centralization and decentralization is evident: centralized content moderation often faces criticism for censorship and manipulation, while full decentralization can lead to poor content quality and ethical crises related to information security and social responsibility. Striking a balance in content governance is crucial. We need to provide a flexible but bounded environment for free expression, respect diverse values, and establish legal frameworks and protective mechanisms to prevent misinformation.

Despite the challenges, there are significant opportunities for innovation and growth in blockchain media, particularly in three main areas:

#### 2.3 Deepening Application of NFTs and Web3 in Mainstream Media

In recent years, traditional media outlets such as Reuters, Bloomberg, and CNBC have expanded their cryptocurrency coverage

and offered more educational content on blockchain and cryptocurrencies. Despite criticism, more traditional media brands are adopting NFTs as tools for monetization and user engagement, even during downturns in the crypto market.

Web3 technologies are also becoming increasingly common in the media industry. For example, The Times is doubling down on its Web3 strategy, while Forbes and NBC Universal are looking for vice presidents in charge of Web3, as evidenced by job postings on LinkedIn.

The year 2023 has seen more media companies adopting NFTs. In February, GQ launched its first NFT collection, and Fox Entertainment's "The Masked Singer" introduced a token-gated fan experience. Fox also plans to release an NFT-based TV series created by Dan Harmon, co-creator of "Rick and Morty," called "Krapopolis" later this year.

## 2.4 Zero-Knowledge Proofs (ZKP) and Combating Misinformation

ZKPs hold significant potential for the media industry, especially in combating misinformation. Researchers at Stanford University have demonstrated the feasibility of using blockchain-based ZK technology to verify the authenticity of digital images and videos. Trisha Datta and Dan Boneh, part of the research team, explained in a Medium blog how ZK proofs could be utilized to fight misinformation. By leveraging the robust capabilities of blockchain and ZK technology, digital media authenticity can be verified without exposing underlying data, helping prevent the spread of false information and media manipulation.

ZKPs provide a powerful tool for data verification without data disclosure, which is crucial in fighting misinformation. By using ZKPs to authenticate digital media, media companies can create more secure and trustworthy platforms for users to consume and interact with content. Additionally, ZKPs can protect user privacy by preventing the tracking and collection of personal data. This privacy preservation can enhance user confidence and engagement on media platforms.

#### 2.5 Exploring Decentralized Content Curation Models

With the rise of Web3 and the decentralization of media landscapes, the importance of developing decentralized content curation systems is increasingly evident. While Web2 social media platforms empower individuals to create content, their centralized curation systems driven by opaque algorithms limit transparency and democratic access.

Most existing media-related DAOs (Decentralized Autonomous Organizations) naturally function as decentralized subcuration systems. New DAOs, such as KurateDAO, specifically address these issues. Founded in 2023, KurateDAO aims to use "cryptoeconomic games to curate the world's information," showcasing the potential impact of decentralized content curation systems in the media industry. It is expected that more innovative ideas will emerge in this field in the coming years.

# 3. Conclusion

In summary, blockchain is opening unprecedented avenues for the media industry through innovative infrastructure. However, this requires continuous innovation and refinement across technology, business models, and governance systems. Facing numerous obstacles, we must adopt an open and inclusive mindset to tackle challenges, solve problems, and jointly advance towards the vision of blockchain reshaping the media landscape.

#### **Annotation :**

1.Inspired by the abbreviation "DeFi" for decentralized finance, the use of "BcM" for "Blockchain Media" aptly captures the essence of this emerging media landscape. The "Bc" in "BcM" stands for Blockchain, which signifies the underlying technology that enables secure, transparent, and decentralized transactions and data management. The "M" highlights the Media aspect, emphasizing the role of blockchain in revolutionizing content creation, distribution, and consumption. By combining these two elements, "BcM" succinctly encapsulates the intersection of blockchain technology and media, signaling a new era of decentralized, trustless, and user-driven media experiences.

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