
AI translation · View original & related papers at
chinaxiv.org/items/chinaxiv-202310.00822

Xinhua News Agency's Exploration of Blockchain Technology for Copyright Protection: Postprint

Authors: Zhao Danwen

Date: 2023-10-08T00:00:00+00:00

Abstract

This article introduces the technical advantages of blockchain technology in digital copyright protection for the news media industry, discusses the application of blockchain technology in Xinhua News Agency's digital copyright protection domain, presents the practical implementations by Xinhua Zhiyun, China Search's "Media Convergence Chain", and the Xinhua Quanmei Copyright Monitoring Platform in achieving digital copyright protection through blockchain technology, and explores the design of business processes for blockchain-based digital copyright protection tailored to Xinhua News Agency's actual circumstances.

Full Text

Xinhua News Agency's Exploration of Blockchain Technology in Copyright Protection

Xinhua News Agency Communication Technology Bureau, Beijing
100803

Abstract: This paper introduces the technical advantages of blockchain technology in digital copyright protection for the news media industry, discusses the application of blockchain technology in Xinhua News Agency's digital copyright protection domain, presents practical implementations by Xinhua Zhiyun, China Search's "Media Fusion Chain," and Xinhua's Quanmei Copyright Monitoring Platform in achieving digital copyright protection through blockchain technology, and designs an exploratory business process for blockchain-based digital copyright protection tailored to Xinhua's actual conditions.

Keywords: blockchain; copyright protection; news traceability; digital content; news media

Classification: TP311

Document Code: A

Article ID: 1671-0134(2021)10-138-04

DOI: 10.19483/j.cnki.11-4653/n.2021.10.042

Citation Format: Zhao Danwen. Xinhua News Agency' s Exploration of Blockchain Technology in Copyright Protection[J]. China Media Technology, 2021(10):138-141.

1. Background

Digital content copyright protection encompasses three primary components: rights confirmation, infringement monitoring, and rights protection. The internet era has made rights protection particularly challenging due to difficulties in evidence collection, resulting in high difficulty, long cycles, and many infringed parties ultimately abandoning judicial proceedings due to evidentiary hurdles. Blockchain technology applications in electronic data preservation can provide trustworthy and usable foundational data for rights confirmation and protection in digital copyright, substantially reducing the difficulty and cost of rights protection. Furthermore, the immutability of blockchain technology can be applied to news traceability.

2. Advantages of Blockchain Technology in Digital Copyright Protection

Current digital copyright protection methods primarily rely on traditional copyright registration and electronic data registration and filing. For rights protection, the industry still generally follows the paper-based era practice of using copyright registration to confirm ownership, combined with public authority to safeguard creators' rights. This approach involves cumbersome processes and high costs, typically requiring hundreds to tens of thousands of yuan per work, with copyright determination cycles generally lasting half a month to several months.

Due to blockchain' s unique “decentralized” characteristics, copyright holders no longer need to rely on offline copyright registration institutions for certification, thereby effectively reducing registration costs. Simultaneously, copyright registration institutions using blockchain technology for online registration can reduce management costs and dramatically improve registration efficiency. The “smart contract” feature enables trustworthy transactions that are traceable, irreversible, and tamper-proof. Smart contracts provide a more secure and trustworthy method than traditional contracts, solving the core issue of “mutual trust” in copyright transactions. Additionally, blockchain' s “distributed ledger” model, where multiple nodes in different locations jointly maintain records, prevents false accounting and effectively ensures data security.

2.1 Reducing Copyright Registration Costs and Improving Efficiency

At the rights confirmation level, current challenges include difficult confirmation processes. Traditional offline registration at copyright institutions incurs considerable labor, time, and financial costs. For original creators, these costs make copyright registration seem troublesome, leading many to abandon registration and leaving their works vulnerable to infringement without effective legal protection. Meanwhile, in today's internet era, massive amounts of digital works are created daily and spread at extremely high speeds, making traditional registration methods far too inefficient to keep pace with "internet speed." Blockchain technology can significantly help copyright holders reduce registration costs while helping registration institutions improve efficiency. Copyright institutions can use blockchain to build online registration systems where original creators encrypt and upload their original content and registration information, which receives a unique blockchain ID. The decentralized nature of blockchain ensures information is permanently preserved and tamper-proof. The distributed ledger at the core of blockchain acts like a unique, permanently valid, and tamper-proof "original electronic ID card" for original works.

2.2 Meeting Large-Scale Digital Copyright Transaction Needs

By adopting blockchain technology to build digital copyright trading platforms, massive amounts of digital content and copyright information can be uploaded to the platform. Smart contracts manage transactions such as downloads, forwarding, and purchases, while recording all transaction and operation information on the blockchain. This behavioral data stored on the platform enables information sharing while ensuring security. Blockchain-based copyright trading platforms can better connect original creators with markets, meeting the needs of large-scale digital copyright transactions while effectively protecting digital copyrights.

2.3 Helping Solve Evidence and Rights Protection Difficulties

When original creators upload content and related information to a blockchain copyright registration platform, each piece of original content receives a unique, tamper-proof ID that serves as blockchain evidence. Due to blockchain's traceability, initial copyright information can always be traced when works are republished. Once infringement is discovered, evidence can be promptly collected and uploaded to the blockchain platform. When blockchain copyright registration platforms interface with judicial authentication institutions, copyright information and infringement evidence stored on the blockchain can be simultaneously transmitted to these institutions, making them legally credible evidence and thereby solving the difficulties of evidence collection and rights protection in judicial proceedings.

3. Practice Cases

3.1 Xinhua Zhiyun

On November 26, 2019, Xinhua Zhiyun Technology Co., Ltd. released the “Media Brain 3.0 Converged Media Center Intelligent Solution,” featuring blockchain technology and AI content risk control, providing a complete intelligent solution for converged media centers. Through Xinhua Zhiyun’s copyright protection platform, content creators can easily confirm rights for their copyrighted works. Through Xinhua Zhiyun’s full-network monitoring system, users can conveniently and efficiently track the dissemination of their works. Upon discovering infringement, creators can use electronic evidence collection tools to secure evidence. All these actions are executed in a trustworthy environment supported by blockchain technology, with critical data uploaded to the chain in real-time to form immutable, valid evidence. Through blockchain cross-chain technology, the copyright chain is effectively connected with the judicial chain, allowing courts to directly access relevant evidence for rapid trials when disputes arise.

3.2 China Search “Media Fusion Chain”

China Search Information Technology Co., Ltd. independently developed the “Media Fusion Chain,” which has completed registration with the Cyberspace Administration. The system provides integrated online services for copyright deposit, monitoring, evidence collection, judiciary, and dispute resolution, enabling parties and mediators to complete mediation processes from application, evidence submission, cross-examination, mediation to delivery without leaving their premises.

[Figure 1: see original paper]

The Media Fusion Chain achieves full-chain online integration of copyright deposit, monitoring, evidence collection, judiciary, and dispute resolution.

[Figure 2: see original paper]

3.2.1 Core Functions (1) Original Content On-Chain: Original creators upload their works to the Media Fusion Chain, which generates blockchain copyright deposit certificates.

(2) Image and Video Infringement Monitoring: The system monitors infringement of images and videos.

(3) News Traceability: Leveraging China Search’s big data analytics capabilities, blockchain search tracks news sources in real-time and uploads them to the chain, monitoring, recording, and storing evidence of disorderly dissemination, illegal reprinting, and content laundering to maintain news dissemination order.

[Figure 3: see original paper]

3.2.2 Advantages and Features (1) Autonomous Security and Control: The Media Fusion Chain is independently developed based on the Fabric open-source platform, enhanced with national encryption algorithms, featuring security, tamper-proof capabilities, and strong scalability. Built on underlying blockchain technology combined with hierarchical and sharded search technology, it enables high-speed data upload and rapid infringement evidence 固化 (solidification), with high-speed retrieval of on-chain data.

(2) Manuscript Circulation Traceability: Through China Search's blockchain news search, full-network news data is crawled and uploaded to the chain in real-time, providing a clear view of news publication and forwarding chains, with each data point having a hash value and deposit record. News parsing methods identify original news among similar articles.

(3) Full-Network Monitoring and Comparison: China Search's powerful data mining, cleaning, and analysis capabilities enable high-concurrency processing of complex internet dynamic and static data. Hundreds of millions of existing search data points and millions of daily incremental news search data provide essential capabilities for full-network monitoring and comparison. Through intelligent text semantics discrimination, the system accurately locates the source and author of infringing works.

(4) Alliance Authoritative Certification: The China News Media Copyright Protection Alliance provides authoritative certification for on-chain works and evidence. Key media outlets, industry associations, and other institutions participate in node consensus, enhancing immutability and trustworthiness.

(5) Efficient and Economical Rights Protection: The system integrates national copyright registration institution digital copyright registration functions and incorporates court-approved electronic notarization, trusted timestamps, and other electronic evidence, providing convenient, efficient, and cost-controlled evidence collection methods.

3.3 Xinhua Quanmei Copyright Monitoring Platform

3.3.1 Building a Copyright Protection Technology Platform to Support Xinhua's Rights Protection As a national news agency with massive digital resources including text, images, and videos, Xinhua News Agency faces copyright protection challenges in the new environment of media convergence. For years, copyright tracking has been a major task for Xinhua's rights protection department. Through traditional methods, some institutions illegally using Xinhua's news products have been converted to legal users annually, achieving certain results in manual copyright protection. However, as internet and mobile internet applications have become widespread, emerging dissemination channels and methods evolve daily, with news spreading faster and wider. Online media infringement has become rampant, with increasing types and quantities of violations and growing difficulty in rights protection. Xinhua's copyright protection work has seen substantial increases in both workload and difficulty, urgently

requiring auxiliary means to improve efficiency. This necessitates building a corresponding digital copyright tracking and monitoring system to gradually provide comprehensive copyright protection for various products released by Xinhua.

In this context, Xinhua's Technology Bureau conducted in-depth analysis of copyright protection needs and launched the Xinhua Quanmei Copyright Monitoring Platform to support rights protection for Xinhua's news information products.

3.3.2 Introducing Blockchain Technology and Integration with Beijing Internet Court's "Tianping Chain" By the end of 2020, the Xinhua Quanmei Copyright Monitoring Platform completed integration with China Search's technology platform, introduced blockchain technology, and achieved connection with Beijing Internet Court's "Tianping Chain." The platform provides full-chain copyright monitoring services including manuscript rights confirmation, infringement clue discovery, evidence upload and fixation, and evidence package download. To date, it has completed copyright confirmation for approximately 200,000 manuscripts, providing strong technical support for Xinhua's news rights protection and elevating copyright confirmation and protection to a new level.

[Figure 4: see original paper]

The platform utilizes digital feature extraction and comparison intelligent algorithms and big data crawling technology to include Xinhua's text, image, and video manuscripts within its protection scope. It monitors copyright usage across key websites, electronic newspapers, mobile clients, WeChat, and Weibo that are prioritized by Xinhua's News Information Center and its branches, enabling automatic discovery and presentation of infringement clues. Rights protection personnel can search for infringement clues across different dimensions including hot manuscript reprints, designated media reprints, or reprint timelines, significantly improving work efficiency while regulating external users' use of Xinhua's new media manuscript copyright assets.

Since its launch in 2018, Xinhua's News Information Center has used the platform to discover infringement clues and successfully protect rights, signing agreements with multiple users including previously lost users who returned through rights protection efforts, with total agreement value exceeding 10 million yuan. The platform's data has played an important role in negotiations with users. Additionally, monitoring contracted users' usage of Xinhua manuscripts through the platform has promoted stable user renewals and agreement negotiations, while providing support for recommending new channels and additional products.

In 2020, the platform completed switching to external data sources, substantially expanding media monitoring scope and effectively enhancing overall monitoring capabilities.

4. Blockchain-Based Digital Copyright Protection Business Process Design

Based on Xinhua' s manuscript production, distribution, and copyright protection status, a blockchain-based copyright protection business process can consist of the following steps:

- (1) The news information sharing platform uploads news content published by various media institutions to the blockchain copyright protection platform for original copyright deposit and stores the deposit results.
- (2) The blockchain copyright protection platform records all status information related to news content from generation, review, and publication to download, collection, reprint, subscription, comment, deletion, and infringement. The platform provides manuscript traceability interfaces to query all status change information for a given manuscript.

[Figure 5: see original paper]

- (3) The Xinhua Quanmei Copyright Monitoring Platform monitors news information published by the news information sharing platform. After discovering infringement clues, rights protection personnel conduct daily rights protection, demanding infringers remove news or convert to legal users.
- (4) For institutions that refuse to stop infringement, the copyright monitoring platform sends infringement clues to third-party copyright evidence collection platforms, which complete evidence extraction and fixation based on the clues.
- (5) The copyright monitoring platform uploads infringement evidence to the blockchain copyright protection platform to complete evidence deposition, while simultaneously sending infringement information to the news information sharing platform to alert original authors.
- (6) The blockchain copyright protection platform interfaces with judicial authentication institutions, making deposited electronic evidence legally credible and valid.
- (7) If judicial proceedings become necessary, the rights protection department initiates rights protection applications to judicial institutions, which use the blockchain platform to complete electronic evidence verification, rapid law enforcement, and final archiving of enforcement outcomes.

5. Limitations of Blockchain Technology in Copyright Protection

Although blockchain technology has solved many old difficulties and pain points in copyright protection, some issues remain to be addressed.

First, while blockchain is an emerging technology direction, copyright protection

must still operate within national laws and regulations. Blockchain technology itself cannot replace law; it must be combined with copyright protection laws and regulations, and blockchain-based copyright registration platforms must connect with internet courts to ensure electronic evidence such as copyright confirmation and infringement deposition information stored on blockchain is recognized by judicial institutions nationwide. Only then can blockchain technology be better applied in copyright protection.

Second, blockchain technology can only authenticate original content and infringement evidence on-chain but cannot itself discover infringement. Blockchain must be combined with big data collection and recognition technologies to form a complete copyright protection chain of “rights confirmation—INFRINGEMENT discovery—evidence fixation—rights protection.”

6. Future Business Prospects

Given the development of new media in the internet era and the low barrier to entry for social platforms, fake news can damage the reputation and credibility that authoritative news institutions have built over time. To effectively improve content quality and news authenticity, Xinhua can gradually establish a Xinhua Trusted News Ecosystem Platform based on blockchain verification, using technology to guarantee news quality and high credibility within the ecosystem.

The Xinhua Trusted News Ecosystem Platform can use hyperlinked markers to identify each news article originally published by Xinhua or republished by Xinhua’s certified partners after modification. These markers can demonstrate the publisher’s authority and reliability while allowing users to trace news content through hyperlinks, understanding the propagation trajectory and secondary editing at each node within the Xinhua Trusted News Ecosystem Platform. Through blockchain, this approach can enhance public credibility for Xinhua and its users, improve brand effect, and help users identify reliable news produced by the Xinhua Trusted News Ecosystem Platform amid complex internet news.

References

- [1] Shen Tu Xiaoming. Analysis of Blockchain Application in News Media Copyright Field[J]. China Radio, 2018(6):95.
- [2] Du Yuhui. Analysis of Digital Copyright Protection Issues Based on Blockchain Technology[J]. China Media Technology, 2018(7):119-120.
- [3] Yang Yuwan. Research on Copyright Protection Issues Based on Blockchain Technology[J]. Science and Technology Communication, 2018(13):165-168.
- [4] Ledao Finance. Addressing Pain Points in Content Manufacturing Industry: Xinhua Zhiyun Releases “Media Brain 3.0” [EB/OL]. Ledao Finance, 2019-11-26.

Author Bio: Zhao Danwen (1980-), male, Senior Engineer at Xinhua News Agency Communication Technology Bureau. Research interests: news information copyright protection, internet data collection, and satellite link-based news information distribution.

Editor: Chen Xuguan

Note: Figure translations are in progress. See original paper for figures.

Source: ChinaXiv –Machine translation. Verify with original.